



Health Evidence Review Commission

August 13, 2015

1:30 PM

**Clackamas Community College
Wilsonville Training Center, Room 111-112
29373 SW Town Center Loop E, Wilsonville, Oregon,
97070**

Section 1.0

Call to Order

AGENDA
HEALTH EVIDENCE REVIEW COMMISSION
Wilsonville Training Center, Rooms 111-112
August 13, 2015
1:30-4:30 pm

(All agenda items are subject to change and times listed are approximate)

#	Time	Item	Presenter	Action Item
1	1:30 PM	Call to Order	Som Saha	
2	1:35 PM	Approval of Minutes (5-7-2015)	Som Saha	X
3	1:40 PM	Director's Report	Darren Coffman	
4	1:45 PM	Planned out-of-hospital birth <ul style="list-style-type: none"> • HTAS coverage guidance recommendation • VbBS Prioritized List recommended changes 	Cat Livingston Valerie King	X
5	2:15 PM	Value-based Benefits Subcommittee Report	Ariel Smits Cat Livingston	X
6	3:05 PM	Coverage Guidance process redesign	Jason Gingerich	X
7	3:25 PM	Coverage guidance topic 2-year review <ul style="list-style-type: none"> • Review and approve scope documents 	Cat Livingston	
8	3:45 PM	Biomarker tests of cancer tissue for prognosis and potential response to treatment <ul style="list-style-type: none"> • HTAS coverage guidance recommendation • VbBS Prioritized List recommended changes 	Cat Livingston Robyn Liu	X
9	4:05 PM	Policies <ul style="list-style-type: none"> • Approve BHAP/OHAP membership changes • Discuss using SOI for best practices 	Darren Coffman Cat Livingston	X
10	4:15 PM	2016 Biennial Review <ul style="list-style-type: none"> • Formation of task force on obesity management 	Ariel Smits	
11	4:25 PM	Next Steps <ul style="list-style-type: none"> • Schedule next meetings (Wilsonville Training Center, Rooms 111-112) <ul style="list-style-type: none"> ○ October 8, 2015 (if needed) ○ November 12, 2015 	Som Saha	
12	4:30 PM	Adjournment	Som Saha	

Note: Public comment will be taken on each topic per HERC policy at the time at which that topic is discussed.

Minutes

HEALTH EVIDENCE REVIEW COMMISSION
Clackamas Community College
Wilsonville Training Center, Rooms 111-112
Wilsonville, Oregon
May 7, 2015

Members Present: Som Saha, MD, MPH, Chair; Beth Westbrook, PsyD; Wiley Chan, MD (teleconference); Vern Saboe, DC; Irene Crosswell, RPh; Mark Gibson; Leda Garside, RN, MBA; Susan Williams, MD; Gerald Ahmann, MD, PhD; Holly Jo Hodges, MD; Chris Labhart.

Members Absent: None

Staff Present: Darren Coffman; Ariel Smits, MD, MPH; Cat Livingston, MD, MPH; Wally Shaffer, MD; Denise Taray, RN; Jason Gingerich; Daphne Peck.

Also Attending: Jill Scantlan, Robyn Liu, MD & Valerie King, MD, Center for Evidence-based Policy; Jesse Little, OHA Actuarial Services Unit; Marty Carty, Perseverance Strategies; Nico Hamacher, ¡Salud! Services; Derrick Sorweide, DO.

Call to Order

Som Saha, Chair of the Health Evidence Review Commission (HERC), called the meeting to order. Role was called.

Minutes Approval

Westbrook noted her credentials in the April 2, 2015 EbGS draft minutes are incorrect; staff will correct this error.

MOTION: To approve the minutes of the 3/12/2015 HERC meeting as amended.
CARRIES 11-0.

Director's Report

Membership:

Darren Coffman reported that Jim Tyack, DMD, has resigned and the HERC is actively seeking a new dental member. Coffman introduced Derrick Sorweide, DO, whose appointment is pending Senate confirmation. Dr. Sorweide, a former family practice physician, is an Army Major, teaches at Western University of Health Sciences and is the current president of the Osteopathic Physicians & Surgeons of Oregon (OPSO). His first meeting will be in August.

Legislation:

- One Senate bill proposes that language from the Affordable Care Act may be tweaked to apply to prioritization process. Were it to pass, we could not consider factors such as age, expected length of life, disability, or quality of life in our methodology, putting the

Commission's current methodology in jeopardy. Our process does not use those factors to discriminate, but rather factors to prioritize conditions *higher* on the List.

- A House bill would require the OHA to produce a report on the diagnosis and treatment of Lyme disease, which may fall to HERC and/or its staff
- Another bill would require a report on prescription drugs that are likely to come to market in the next two years, which could just be assigned to HERC staff
- Livingston mentioned a potential bill that may profoundly affect our work and OHA budget. It is proposed to abolish the current six-month window for the review of new pharmaceuticals by the P&T Committee.

Evidence presented for coverage guidances:

Coffman discussed how we are moving to an abbreviated evidence presentation to the Commission, shifting the more weighty discussion to the VbBS meetings, as attempted at the March meeting. This morning, staff presented the full evidence to VbBS to very positive comments. All the detailed material will continue to appear in the HERC packet.

Value-based Benefits Subcommittee (VbBS) Report

[Meeting materials](#), pages 113-165

Drs. Ariel Smits and Cat Livingston reported the VbBS met earlier in the day, May 7, 2015. Each helped to summarize a number of topics discussed.

Recommended code movement (effective 10/1/2015):

- Add and delete various straightforward coding changes
- Move several codes for diagnostic tests done during pregnancy from the diagnostic file to the covered pregnancy line
- Add various treatment codes for outpatient minimally invasive therapies for varicose veins to the covered ulcerations caused by varicose veins line
- Delete diagnosis codes for developmental coordination disorder, unspecified delay in development, and unspecified condition of the brain
- Add procedure code for cervical epidural medication injections to two covered dysfunction lines
- Delete procedure codes for epidural medication pumps from the new back lines

Recommended guideline changes (effective 10/1/15):

- Correct four guidelines with straightforward changes, clarification of intent, or affirmation of combining changes made at two separate meetings
- Modify the prenatal genetic testing guideline to add several CPT codes and to allow microarray testing when it would replace karyotyping
- Modify the ventral hernia guideline to clarify that this type of hernia is not covered even if incarcerated
- Add a new guideline covering repair of penile anomalies and delete the two current guidelines dealing with particular related anomalies.
- Modify the guideline regarding maintenance of intrathecal pumps to update line numbers and add a missing CPT code
- Smits presented the VbBS's recommendations on the back pain line organization topic. There was considerable discussion about the definition of radiculopathy. Saboe strongly contended the presented definition (radiculopathy is defined as pain in a nerve root distribution, with or without weakness or sensory deficits.) is not accurate. Smits and Saha

explained that the definition comes directly from the Agency for Healthcare Research and Quality's (AHRQ) study.

- Modify the epidural steroid injection guideline to define radiculopathy as pain in a dermatomal distribution, to be consistent with the AHRQ review definition. *HERC added the phrase "lower extremity" to one paragraph. The guideline reads:
GUIDELINE NOTE 105, EPIDURAL STEROID INJECTIONS FOR LOW BACK PAIN

Line 407

Epidural lumbar steroid injections (CPT 62311, 64483, 64484) are included on this line for patients with persistent radiculopathy due to herniated lumbar disc, where radiculopathy is defined as [lower extremity](#) pain in a nerve root distribution, with or without weakness or sensory deficits.

One epidural steroid injection is included on this line; a second epidural steroid injection may be provided after 3-6 months only if objective evidence of 3 months of sustained pain relief was provided by the first injection. It is recommended that shared decision-making regarding epidural steroid injection include a specific discussion about inconsistent evidence showing moderate short-term benefits, and lack of long-term benefits. Epidural lumbar steroid injections are not included on this line for spinal stenosis or for patients with low back pain without radiculopathy. Epidural steroid injections are only included on this line when the patient is also participating in an active therapy such as physical therapy or home exercise therapy.

The development of this guideline note was informed by a HERC coverage guidance. See <http://www.oregon.gov/oha/herc/Pages/blog-percutaneous-low-back.aspx>

- Modify the diagnostic guideline for advanced imaging for back pain to include pain in the definition for radiculopathy and to remove any reference to being a candidate for epidural steroid injection from the criteria for MRI for spinal stenosis symptoms

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Biennial Review changes (effective 1/1/2016):

- Merge the open wound of ear drum medical treatment line with the chronic otitis media line. This follows the previous merging of the open wound of eardrum surgical treatment line with the chronic otitis media line.

MOTION: To accept the VbBS recommendations on Prioritized List changes not related to coverage guidances, as stated. See the VbBS minutes of 5/7/15 for a full description. Carries: 10-0. (Dissenting: Saboe on back line portion only, 9-1).

Coverage Guidance: Revascularization for Chronic Stable Angina

[Meeting materials](#), pages 62-112

Livingston began by providing background on the three treatments for angina:

- *Percutaneous coronary intervention (PCI)*
 - Non-surgical treatment to treat narrowing coronary arteries
 - Includes balloon angioplasty, bare metal stents, and drug-eluting stents
- *Coronary artery bypass grafting (CABG)*
 - Bypass surgery that creates new routes around narrowed and blocked coronary arteries
- *Optimal medical therapy (OMT)*
 - Two or more antianginals (in addition to standard treatment for coronary artery disease)
 - beta-blocker, nitrate, calcium channel blocker, or ranolazine

She clarified that the guidance only pertains to chronic stable angina, where the patient has known coronary artery disease and is presenting with symptoms such as episodes of chest pain and/or shortness of breath.

Livingston directed the Commissioners to [page 79 of the materials](#) and reviewed the GRADE-informed Framework table that led to the coverage recommendations on this topic.

Livingston then presented the changes VbBS is recommending to the Prioritized List based on this coverage guidance. She noted that while there are many unspecified ICD-10 codes being suggested for this condition, which often aren't included on the list, in this case having coronary artery disease with angina, whether of a specified type or not, is sufficient for treatment reimbursement.

Saha commented that this coverage guidance proposal is meant to be a 30,000-foot view of when these procedures are appropriate and represents a good consensus between the subcommittee and the cardiology community. He added that a data analysis performed did not suggest a lot of inappropriate use of these procedures in Oregon compared to the rest of the US. Saha commended Dr. Ed Toggart, the appointed ad hoc expert, on his tireless and dedicated effort to help the Commission through this process.

MOTION: To approve the proposed coverage guidance for Revascularization for Chronic Stable Angina as amended or as presented. Carries 10-0.

MOTION: To approve the proposed coding changes and new Revascularization for Chronic Stable Angina guideline for the Prioritized List as proposed. Carries 10-0.

Approved Coverage Guidance:

HERC Coverage Guidance

Coronary revascularization (with percutaneous coronary intervention (PCI) or coronary artery bypass surgery (CABG)) is recommended for coverage in patients with stable angina whose symptoms are not controlled with optimal medical therapy¹ or who cannot tolerate such therapy (*weak recommendation*).

CABG is recommended for coverage for patients with stable angina who have left main coronary artery stenosis or three-vessel coronary artery stenosis, with or without a trial of optimal medical therapy (*strong recommendation*).

¹Optimal medical therapy for angina symptom control is defined as two or more antianginals (in addition to standard treatment for coronary artery disease). Antianginals are defined as: beta-blocker, nitrate, calcium channel blocker, or ranolazine.

Changes to the Prioritized List of Health Services:

Coding changes to the Prioritized List:

- 1) Add ICD-10 I25.119, I25.709, I25.719, I25.729, I25.739, I25.759, I25.769, I25.799 (Atherosclerosis with unspecified angina) to line 193
- 2) Adopt the following new guideline for line 193

New guideline note:

GUIDELINE NOTE XXX REVASCULARIZATION FOR CHRONIC STABLE ANGINA

Line 193

Coronary revascularization with percutaneous coronary intervention (PCI; CPT 92920-92944) or coronary artery bypass surgery (CABG; CPT 33510-33516, 33517-33530, 33533-33536) is included on this line for patients with stable angina (ICD-9 413.x, 414.0x, 414.8, 414.9/ICD-10 I20.x, I25.111-119, I25.701-9, I25.711-9, I25.721-9, I25.731-9, I25.751-9, I25.761-9, I25.791-9, I25.89, I25.9) whose symptoms are not controlled with optimal medical therapy for angina or who cannot tolerate such therapy.

Optimal medical therapy for angina symptom control is defined as two or more antianginals (beta-blocker, nitrate, calcium channel blocker, or ranolazine) in addition to standard treatment for coronary artery disease.

For those with left main coronary artery stenosis or three-vessel coronary artery stenosis, CABG is included on this line with or without a trial of optimal medical therapy.

Biennial Report

Coffman mentioned he and staff recently completed writing a report for the Governor and Legislature which is due every two years. The report is meant to be a factual statement of the Commission's work on the Prioritized List. He welcomed comments and corrections by Monday, May 11, 2015.

Coverage Guidance Development Process

[Meeting materials](#), pages 166-168

Saha started the discussion mentioning our early coverage guidiances were based on the "low hanging fruit" principle; topics where there was a clear direction and where intervention was needed. The topics we are addressing now are more complex and may have very low quality evidence, which leads to uncertain net benefit vs. alternatives. In order to identify a more complete and relevant set of evidence sources for the initial guidance draft, HERC staff are proposing the following methodologic and process revisions for guidance development.

Dr. Valerie King, Center for evidence-Based Policy (CeBP) staff, outlined options:

1. Identify critical and important outcomes for each topic under consideration at the initiation of the guidance when the population, intervention, comparator and outcomes (PICO) and key questions are developed. This will facilitate development of GRADE tables for these critical and important outcomes.
2. Adopt a "best evidence" approach for evidence searches. This involves searches for high quality systematic reviews, health technology assessments and meta-analyses as is the current practice for the HERC, but also adds a thorough search (i.e. Medline) to identify any more recent studies.
3. Continue to search for high-quality, evidence-based clinical practice guidelines that may inform the guidance and coverage decisions.
4. Implement the internationally accepted GRADE system more fully into development of strength of evidence assessments and strength of recommendation ratings for use by the HERC.

5. Replace our existing GRADE table, working with HERC leadership to develop a format that is easier to follow and better integrates the factors which lead to our decisions.
6. Pilot test the GRADE/DECIDE “Evidence to Decision” framework to assist in development of transparent coverage decision development. Assess whether this framework is useful for HERC guidance development.
7. Assess the time to development and HERC satisfaction with guidances that are developed using these revisions over the upcoming cycle of topics (beginning September 2015.)

Saha went on to say this pilot may cause extra upfront work but the hope is it will offset the extra downstream work we have continually asked the CeBP to do.

Saha asked if there is a way to get input from the stakeholders before we begin a topic, such as AHRQ’s process to have public feedback on the key questions in advance. He opined that if we get the intervention and the outcomes right, this will better shape the key questions. Further, he wondered when to involve the appointed ad hoc experts; should it be sooner in the process? That may help us refine and scope the questions. Gingerich mentioned there has been and will be discussion and informal consultation with the expert community.

Mark Gibson offered support and volunteered to assist. Coffman remarked there is no need for an official task force but staff would value a feedback loop or sounding board for staff questions or to discuss alternatives. Saha suggested opening up a regular time slot in the HERC Leadership meeting to discuss this process. Coffman cautioned we have to make sure we keep below the number of members required for a quorum if we want discussion to take place without holding a public meeting. Staff will poll the Commission to determine who would like to participate and will ensure we are following all public meeting laws.

There was general consensus to approve this new direction. Staff and the CeBP may move forward.

Saha began to discuss ways we may better frame decision making. HERC has struggled with aspects of the GRADE tables as well as the differences in the recommendations they lead to vs. the recommendations suggested by our internal algorithm.

First, in terms of the GRADE-informed framework, Staff mocked up two versions that are in line with the evolution of the GRADE methodology.

- Tabular framework: Includes details about outcomes, quantifying the benefit in terms of relative and absolute measures, the level of confidence there is in the evidence, and other considerations where important factors not spelled out in other columns are included.
- Narrative structure: The same information is included in narrative format but the style allows for more flexibility, especially when evidence is ambiguous.

Jason Gingerich offered that CeBP will likely create a lot of tables for topics we will not have time to go over in a meeting. This new format will help us abstract key points that lead to decision making. The “recommendation” section at the bottom of the table would ideally match the box language.

Saha continued that we want to be systematic and explicit in the work we do but we want to also acknowledge that there is nuance and subtlety, incorporating of a lot of different factors like values and cost that cannot be rigidly structured. A problem we have had with the current algorithm is that it is so rigidly structured that it does not allow for the flexibility needed for a

more holistic decision. Gingerich said we could adopt both tables and use the one that is more attuned to the topic. King elaborated to say when there is not a nice meta-analysis with really clean numbers; the narrative style may work better in extracting information from multiple types of studies.

Susan Williams asked to take a step back and review the current GRADE-informed framework, which does a good job pulling out evidence quality, resource allocation, costs and values and preferences; she stressed the importance of having these factors specifically addressed in each coverage guidance. The column labeled “confidence” was discussed and whether that was meant to represent quality of evidence. Saha clarified that section is akin to strength of evidence finding, what is our confidence level in this finding. Williams cautioned this format may lose the systematic way to think about the categories. Gingerich clarified our current method addresses “quality of evidence” which speaks to study design. The current method automatically gives a higher quality of evidence rating to RCTs, where this method would allow high confidence in the strength of evidence in, for example, a large observational cohort study. King added this change is in line with the GRADE group’s process evolution. Saha added that the current table does not allow us to convey properly the magnitude of benefit, noting there was little room for nuance that the proposed tables capture.

Saha enumerated the 12 factors for consideration in the GRADE evidence-to-decision framework:

1. Problem
2. Desirable effects
3. Undesirable effects
4. Balance of desirable and undesirable effects
5. Certainty of the evidence
6. Values
7. Resources required
8. Certainty of evidence about resources (meaning data about cost)
9. Cost effectiveness
10. Equity-impact on health equity
11. Acceptability
12. Feasibility

Saha stated it is our job to decide which of these considerations are so important to our decision-making they need separate columns for each topic rather than being part of “other considerations.” Coffman explained HERC currently uses some of the factors to evaluate topics for selection and would not need to be included in the table. For example, if there isn’t a significant problem or a feasible way to address an issue, we would not undertake the topic in the first place.

Livingston stressed this proposal represents a complete change in our process and work-level. She urged consideration of how much this change might affect decision-making currently in the higher-level presentation of evidence. King commented they will use data from good meta-analyses if it is available. She cautioned many topics are not appropriate for RCTs; in those cases we would do our best to “meta-analyze” the non-randomized and observational trials to present in a narrative format.

Staff was directed to mock up revised tables explicitly calling out evidence quality, resource allocation, costs, and values and preferences -- perhaps in rows rather than columns.

Saha touched on the algorithm which we have used as a secondary tool. Sometimes using it boxes us into a certain recommendation. He wondered if we adopted a new GRADE informed framework, if there is still a need for the algorithm. He asked members to review the latest version, found on [meeting materials, page 168](#). He shared that the algorithm was developed by

the Evidence-based Guidelines Subcommittee as a way to help explain how decisions were made sometime *before* the Commission adopted the GRADE methodology. He expressed his feeling that the algorithm fails to capture more nuanced thinking because there is no clear way to express the thought process that brought us to the logic steps. It was suggested at a recent meeting to just use it as a tool and not to publish with the coverage guidance.

Gibson expressed his agreement that as a tool, the benefit is marginal; however, he felt it has a value as an archival illustration of the progression of our process. Wiley Chan agreed the algorithm may still serve as a visual tool to show the general process. Its limitations exist because to make it *functional* it must be opaque; to make it *clear* it is too confining and doesn't capture nuanced thinking, diminishing its intended functionality.

Members discussed adding a blog page to the Commission's website with the algorithm's history and subsequent retirement, though no decision was made. Coffman noted that a flow-chart is included in the Biennial Report illustrating the procedure to remove services from the Prioritized List. He added the report might be the appropriate place to capture the algorithm's history.

MOTION: To discontinue use of this algorithm, or any of its predecessors, as a routine part of our decision-making. Carries: 10-0.

Other Business:

Coffman asked how the trial of the new microphones worked for everyone. Members felt they could hear each other well and audience members agreed. Williams voiced concern that when members are inconsistent about speaking into the microphones, it might be difficult for Daphne Peck to produce written minutes. Coffman will follow up with Peck for feedback.

Public Comment

There was no public comment at this time.

Adjournment

Meeting adjourned at 4:30 pm. Next meeting will be from 1:30-4:30 pm on Thursday, August 13, 2015 at Clackamas Community College Wilsonville Training Center, Rooms 111-112, Wilsonville, Oregon. Ahmann and Garside indicated they will be absent.

MINUTES

Health Technology Assessment Subcommittee

Clackamas Community College Wilsonville Training Center

29353 SW Town Center Loop E

Wilsonville, OR 97070

June 11, 2015

1:00-4:00pm

Members Present: Som Saha, MD, MPH (Chair Pro Tempore); Jim MacKay, MD; Chris Labhart; Gerald Ahmann, MD; Mark Bradshaw, MD; Leda Garside, RN.

Members Absent: Tim Keenen, MD.

Staff Present: Darren Coffman; Cat Livingston, MD, MPH; Jason Gingerich.

Also Attending: Adam Obley, MD, Val King, MD, MPH, Robyn Liu, MD, MPH, and Aasta Thielke, OHSU Center for Evidence-based Policy; Troy Rayburn, American Cancer Society; Ronnie Castro, PORCH; Carl Rossi, Scripps; Carol Marquez, OHSU; Ramesh Rengan, Seattle Cancer Care Alliance; Stephen Holm, MD Anderson; Mark Pledger, Novartis.

1. CALL TO ORDER

Som Saha called the meeting of the Health Technology Assessment Subcommittee (HTAS) to order at 1:00 pm.

2. MINUTES REVIEW

Minutes from the February 18, 2015 meeting were approved as presented 6-0.

3. STAFF REPORT

Coffman reported on membership changes. Saha and Garside have joined the HTAS, and membership is now balanced with seven members on each subcommittee. Derrick Sorweide, DO, plans to join the subcommittee in September. King introduced Adam Obley, part of the clinical epidemiology staff at the Center for Evidence-based Policy. He will take over the work Robyn Liu has been doing in recent months. Coffman thanked Liu for her work. Wally Shaffer, who has served as clinical staff to the subcommittee, has retired and Cat Livingston will serve as staff to this subcommittee for the time being.

Coffman reported that the HERC is revising its coverage guidance process to perform additional work up front to prevent the starts and stops that have occurred on more complex topics in the past. We will also be more explicit about important versus critical outcomes as we report evidence, and are working on a revamped GRADE table which includes more specific outcome information when it is available. We will continue to use the GRADE domains including values and preferences, benefits and harms, resource allocation and strength of evidence. The

Coverage Guidance Development Framework (algorithm) has been retired as it has sometimes created confusion and unnecessary complexity. It served its purpose initially but GRADE has proven more useful.

4. BIOMARKER TESTS OF CANCER TISSUE FOR PROGNOSIS AND POTENTIAL RESPONSE TO TREATMENT

Liu reviewed the public comment disposition and staff suggested responses. For MSI for detecting Lynch Syndrome, Saha asked what the alternative test was and for the argument against clinical utility. Liu explained that IHC4 is available and that there are no studies showing MSI to have additional benefit on patient-centered outcomes. Saha asked whether it has better discriminating capacity. Liu said it does not. IHC4 is less costly.

Liu reviewed public comments and responses regarding Prolaris for Prostate Cancer. Saha said that he doesn't believe it's reasonable to hold such a diagnostic test to a standard of decreasing mortality as conducting such a trial would be almost impossible. The utility of the test could also reduced aggressive treatment. He is more interested in whether the test accurately predicts who needs therapy more than whether the test changes decisionmaking or mortality. Ahmann said the test isn't useful because if a man is told he has prostate cancer and is not too old for surgery, he is very likely to opt for surgery unless you can tell him that there is zero chance that the cancer will progress. Saha said a study showing that it would actually prevent surgery may be difficult to conduct. King noted that there were similar issues with Oncotype Dx for breast cancer; the evidence wasn't there a few years ago but now it is. There are competing tests for prostate cancer, and it remains to be seen which will obtain evidence of effectiveness in changing decision-making. She suggested that the subcommittee should revisit this test in two years to see whether the evidence develops. Livingston said that staff will shift the public comment disposition to focus on avoiding unnecessary care rather than mortality.

Saha offered an opportunity for public comment. Carol Marquez, a radiation oncologist at OHSU testified. She disclosed no conflicts of interest. Though she doesn't see prostate cancer patients, she said she has seen an evolution of cancer care in that some patients are now choosing to avoid invasive treatments because of concerns about quality of life and treatment side effects. Ahmann said that most prostate cancer patients are generally over 65, and that much of that generation is very fearful of cancer. Marquez noted that with PSA testing, prostate cancer is sometimes diagnosed earlier in life. Saha asked about cost. Coffman said that staff found data indicating the test costs about \$3,400. While acknowledging that the test could prevent some surgeries, Saha said that if the cost of the test were lower, it might not be such an issue as long as there were no potential harms.

Livingston noted that multiple molecular testing is not recommended for coverage, but there is no GRADE row for that. Staff will add one, reflecting the insufficient evidence reported in the body of the text, putting in the validity and utility if possible.

Livingston reviewed the changes to the GRADE table where staff listed the analytic validity, clinical validity or clinical utility. Rationale used to refer to the Coverage Guidance Development Framework (algorithm) which is no longer present. Therefore the rationales have been updated. Livingston reviewed the updated rationales. Saha asked that the definitions of the terms be defined as footnotes to the GRADE table.

The draft coverage guidance was approved for referral to VbBS and HERC with the changes

requested by the subcommittee.

DRAFT HERC COVERAGE GUIDANCE

Oncotype DX is recommended for coverage in early stage breast cancer when used to guide adjuvant chemotherapy treatment decisions for women who are lymph node negative (*strong recommendation*).

The following genetic tests of cancer tissue are recommended for coverage (*strong recommendation*):

- BRAF gene mutation testing for melanoma
- Epidermal growth factor receptor (EGFR) gene mutation testing for non-small-cell lung cancer
- KRAS gene mutation testing for colorectal cancer

The following genetic tests of cancer tissue are not recommended for coverage (*weak recommendation*):

- Mammaprint, ImmunoHistoChemistry 4 (IHC4), and Mammostrat for breast cancer
- Prolaris and Oncotype DX for prostate cancer
- BRAF, microsatellite instability (MSI), and Oncotype DX for colorectal cancer
- KRAS for lung cancer
- Urovysion for bladder cancer
- Oncotype DX for lymph node-positive breast cancer

The use of multiple molecular testing to select targeted cancer therapy is not recommended for coverage (*weak recommendation*).

5. INDICATIONS FOR PROTON BEAM THERAPY

Liu reviewed the public comment disposition and staff's recommended responses. She reviewed the comments by cancer type, using the groupings from page 56 of the meeting materials.

For brain and paraspinal tumors, Saha asked Liu about the results of the updated literature search. Liu said that the information about cognitive impact and quality of life was new, though the Washington HTA had already recommended coverage based on incremental net benefit, so she's not sure the additional evidence changes the assessment of evidence. For the benefit of the new members, Coffman noted that for this indication and pediatric tumors the subcommittee appeared to be on the fence about its recommendation at the last meeting. The subcommittee previously recommended against coverage but appeared open to changing the recommendation based on public comment. The balance of benefits and harms in the GRADE table has been changed to incremental benefits to match Table 1 of the coverage guidance. Livingston clarified the incremental benefit of the treatment is that there are fewer harms, not some other benefit. There is insufficient comparative evidence about survival or other cancer-related outcomes. Saha requested that staff separate the benefits of treating the cancer from the harms (side effects of treatment). After discussion the subcommittee agreed to make a weak recommendation for coverage related to brain and spinal tumors. Saha then asked about the

cost comparison. The cost is more than IMRT or photon therapy but only approximately twice as expensive (not 10 times more expensive).

For breast cancer, liver cancer and other gastrointestinal cancers the subcommittee made no change based on public comments after minimal discussion.

For head and neck cancers, Saha asked about the rate of local control with typical photon therapy. Liu referred him to comment L68 in which an error was discovered during discussion: the local control rate for skull based tumors with photon therapy is 30-50%, not 3-5% as shown in the disposition document. After brief discussion, the subcommittee decided to recommend coverage for some, but not all, head and neck tumors. After discussion, including testimony and clarification from radiation oncologists Marquez and Rossi, who were in the audience, the subcommittee decided to recommend coverage for brain, skull-based and juxtaspinal and paranasal sinus tumors based on the evidence cited in the public comment disposition. As these are rarer tumors, the subcommittee chose to recommend coverage based on lower-quality evidence which shows better outcomes than is typical with standard therapies.

For nasopharyngeal and oropharyngeal carcinoma, the subcommittee discussed that these tissues are more radiosensitive but also sensitive to chemotherapy. Marquez said that because the tumors are more radiosensitive, there may not be as much benefit of proton therapy over photons. Rengan agreed that they are sensitive to chemotherapy but said that radiation therapy is needed for a cure, and added that for more sensitive tumors the benefit would be the ability to safely increase the dose to the tumor, rather than reduced harms. Rossi said that proton beam centers have only recently developed the ability to target these tumors due to improved technology. After discussion, the subcommittee decided not to recommend coverage for these tumor types, based on insufficient evidence of superiority and the fact that these tumors are common enough that one might expect future evidence development.

In discussion of retreatment, Ahmann asked if people who were retreated were ever cured. A member of the audience said sometimes yes, but often treatment is to improve quality of life or to extend life. The audience member said that these are difficult decisions and depend on the characteristics of each patient. Ahmann noted that treatment of recurrent tumors would significantly differ depending on their location. Saha suggested they are rare enough not to include a restriction for them, so perhaps the subcommittee could remain silent. However in subsequent discussion, Rengan noted that there is a blanket recommendation for all other conditions which could be interpreted as a recommendation of noncoverage for retreatments. Livingston agreed to look into clarifying language around this issue.

Saha asked about liver cancer. Liu reviewed the evidence from the public comments and the cited Chi study. The reported five-year survival benefit was 25 times higher in the proton population, with less dramatic benefits at shorter time horizons. Benefits were, however, similar to stereotactic body radiation therapy (SBRT). Gingerich noted that HERC recently elected not to cover SBRT for liver cancer. Harms of proton therapy were reported as less serious than either SBRT or standard photon radiation, though harms were just general hepatic toxicity, which Saha said are not important as an outcome. Upon further research into this article, King found indications of heterogeneity (high i^2 values) that call these results into question. The subcommittee did not change its recommendation.

Discussion turned to pediatric cancers. Most of the comments on pediatric cancers were for eye, head and neck cancers, which would already be recommended for coverage regardless of age per previous discussion, so the subcommittee did not discuss the comments related to

these cancers. For lymphomas and Ewing sarcomas, Marquez noted that many Ewing Sarcomas occur in the juxtaspinal region. Saha asked about the intent of separating out pediatric and adult tumors. Staff responded that toxicity will develop over decades, so long-term outcomes are more important because children typically have more life expectancy. Rengan said that treatment-related secondary malignancies can appear decades after primary treatment, and that children's tissue is more radiosensitive than adult tissue. Based on these factors, the subcommittee decided to make a weak recommend for coverage for all tumors that occur in children.

Saha invited additional public comments.

Ronnie Castro, of Seattle, offered comment as a patient. He had a skull-based brain tumor, diagnosed in 2013 at age 32. After six months, he was able to raise private funds for proton beam therapy despite an insurance denial and the tumor has not grown again. He wondered what would have happened if he had not been able to raise the money and expressed concern about long-term harms, which may have occurred with photon therapy. He expressed satisfaction at the subcommittee's decision to recommend coverage for these cancers.

Rengan gave a brief presentation focusing on the deleterious effects of radiation exposure to normal tissue. He also said that toxicity of therapy creates costs to the health system. In many cases this creates savings which compensate for the additional cost of proton-based therapies.

Livingston then asked for guidance on completing the next draft for the September meeting. After discussion the subcommittee decided that nasopharyngeal and oropharyngeal carcinoma would remain recommended for noncoverage, and that brain, skull based, juxtaspinal and paranasal sinus tumors would be given a separate row with a weak recommendation for coverage. Rare tumors will not get a separate row on the GRADE table. Malignant pediatric cancers (including lymphoma) will have their own GRADE row with a recommendation for coverage. Staff will research the thinking behind the varied definitions of pediatric, with age limits of 21 and 30 in different sources.

Saha thanked the members of the audience for their testimony and assistance with the coverage guidance and invited them to call in by phone to the next meeting. Prostate cancer, lung cancer and adult lymphoma will be the main areas of interest.

6. NEXT TOPICS

At the next meeting the subcommittee will continue discussion on proton beam therapy and take up a new topic related to bariatric and metabolic surgery.

7. ADJOURNMENT

The meeting was adjourned at 4:10 pm. The next meeting is scheduled for September 10, 2015 from 1:00-4:00 pm in Room 155 of the Clackamas Community College Wilsonville Training Center.

MINUTES

Evidence-based Guidelines Subcommittee

Meridian Park Community Health Education Center, Room 117B&C

19300 SW 65th Avenue, Tualatin, OR

June 4, 2015

2:00-5:00pm

Members Present: Wiley Chan, MD, Chair; Eric Stecker, MD, MPH (joined at 2:30), Vice-Chair; Kathryn Lueken, MD (by phone); Vern Saboe, DC; Beth Westbrook, PsyD; George Waldmann, MD; Bob Joondeph, JD (by phone).

Members Absent: None

Staff Present: Darren Coffman; Catherine Livingston, MD, MPH; Jason Gingerich.

Also Attending: Adam Obley, MD, Val King MD, MPH, and Aasta Thielke, OHSU Center for Evidence-based Policy, Carol Levanda, Sharron Fuchs, Duncan Neilson, MD (Legacy Health), Kimberly Kincade and Silke Akerson (Oregon Midwifery Council), Colleen Forbes (Direct Entry Midwifery Board).

1. CALL TO ORDER

Wiley Chan called the meeting of the Evidence-based Guidelines Subcommittee (EbGS) to order at 2:00 pm.

2. MINUTES REVIEW

In review of the April 2, 2015 minutes, Leda Garside's transition from EbGS to HTAS was omitted.

Minutes approved as corrected 6-0 (Stecker not present).

3. STAFF REPORT

Coffman reported that George Waldmann has officially joined the subcommittee. In addition he reported that HERC authorized staff to remove the Coverage Guidance Development Framework from coverage guidances, as it was causing confusion. HERC also authorized staff to work on a revised GRADE table format that will hopefully aid in decisionmaking and presentation of factors leading to a decision. Furthermore, an updated evidence search and clearer definitions of scope (including identification of critical and important outcomes) will be added to the coverage guidance process to minimize rework and simplify public comment.

He also reported that Stecker volunteered to be vice-chair. Chan nominated Stecker as vice-chair. The motion was approved 6-0 (Stecker not present).

4. PLANNED OUT-OF-HOSPITAL BIRTH

Valerie King reported the results of a new systematic review she performed in order to address the subcommittee's questions about the safety of out-of-hospital birth for primiparous women. Regardless of planned birth location, risk of adverse neonatal outcomes is higher when the mother has not given birth before. Increased risk for planned out-of-hospital birth for primiparous women appears higher than planned in-hospital birth, though the differences are not statistically significant. There was minimal discussion.

Livingston then led the discussion of the High Risk Conditions List/Dispo document. The subcommittee discussed row 9 regarding intrapartum third- and fourth-degree lacerations. After discussion the subcommittee made intrapartum fourth-degree lacerations and third-degree lacerations requiring hospital repair a criterion for transfer, with intrapartum third-degree lacerations not requiring hospital repair requiring consultation.

A member of the audience said that the concern underlying her comment on the intrapartum lacerations was that some midwives have arrangements with providers who can do these repairs in the home setting. Therefore there would be a transfer of care but not to a hospital setting; however, the coverage recommendation language requires transfer to a hospital. Waldmann said it would be difficult to make a black and white delineation because providers' skill levels vary widely. Chan asked if the proposed change to allow third-degree not requiring hospital repair to be done in the home would address the concern. Cheyney said that it would. In this situation a third-degree laceration not requiring hospital repair could be repaired in the home by an experienced licensed direct-entry midwife, a certified nurse midwife or a physician.

Discussion then moved to rows 31 and 32 regarding small for gestational age and fetal growth retardation. The subcommittee accepted staff recommendations for these items as exclusion criteria without discussion. For prelabor rupture of membranes, the recommendation for exclusion of coverage will remain at 24 hours per the staff recommendation.

For genital herpes, the subcommittee clarified that only a current active infection (outbreak) would necessitate a hospital birth. As discussion progressed, the subcommittee decided to separate the recommendations for chickenpox and rubella, as rubella anytime during pregnancy requires planned hospital birth, whereas chickenpox only requires hospital birth if the infection is active at the time of birth. The subcommittee discussed varicella syndrome but agreed that fetuses with varicella syndrome due to exposure early in pregnancy has a relatively low risk of harm but if harm occurred there would be a different qualifying reason for a hospital birth.

Livingston discussed the comment regarding thick meconium staining with the possibility of imminent birth. After brief discussion the subcommittee accepted the staff recommendation of hospital transfer. The guidance has language for a variety of indicators where transfer is appropriate but not practical due to imminent birth.

For retained placenta, the subcommittee accepted the staff recommendation to require transfer but discussed that a home birth attendant might initiate care at home. The subcommittee agreed with the staff recommendation to add a time limit of 60 minutes, following the NICE definition of retained placenta, rather than the 3 hours used by the Oregon Birth Center criteria. Regarding the suggestion to require a defined system of transfer, the subcommittee affirmed its previous decision not to require this because it may be difficult for home birth attendants to obtain this due to liability concerns of hospital-based providers.

For low maternal hemoglobin levels, the subcommittee accepted the staff recommendations in the meeting materials. On the public comment regarding history of a strep B septic infant, the subcommittee decided to make no change. This recommendation differs from the NICE recommendation because there is no antenatal strep testing in Britain. Livingston noted that some women who choose home birth may refuse strep testing or antibiotics. Others noted that these women might refuse antibiotics in the hospital as well, though hospital management might help the infant in such cases. A member of the audience said she found it difficult to believe a mother whose prior infant had this condition would refuse antibiotics.

For hypertension (exclusion), thrombocytopenia/thrombopenia (exclusion) and chorioamnionitis (transfer to hospital), the group decided to follow the staff recommendation.

For blood group compatibility, the subcommittee decided to change the language to “Blood group incompatibility with atypical antibodies, or Rh sensitization” as a requirement for planned hospital birth.

For substance abuse, the subcommittee had extensive discussion about the risks associated with various substances at various levels of use and times of pregnancy. Westbrook suggested requiring consultation for mild or moderate levels of substance use or dependence, with higher levels requiring hospital birth. After discussion, the subcommittee decided not to require consultation for these levels, because home birth attendants may not be trained in the nuances of DSM-5. After discussion the subcommittee authorized Livingston to refine language for the criterion requiring hospital birth after consulting with members with behavioral health expertise and the Chair before the draft is sent to HERC.

For primiparity, Livingston reviewed the request to make it an indication for hospital birth. Based on the review presented by King earlier in the meeting, the subcommittee elected to make no change to the coverage guidance.

Livingston offered an opportunity for additional public comment but no one wished to comment.

Livingston then reviewed the changes to the coverage recommendation (box) language, including the extensive revisions to the first two paragraphs to clarify that this is a coverage recommendation, not a clinical practice guideline. Chan expressed some concern that the transfer criteria still sound like a guideline, but no better proposal was suggested. After correction of a typographical error, the subcommittee accepted the recommended language.

The subcommittee made changes to the coverage recommendations to match the decisions made above, and reviewed the changes made in response to discussion during the last meeting. A member of the audience said that many patients electing out of hospital birth have low risk for HIV, and expressed concern that there would be an outcry if they were ‘forced’ to have an HIV test. The subcommittee elected not to make a change because of the preventable risk to the baby if there were an undetected HIV infection.

Cheyney raised a concern about the inclusion of prior cesarean section in the criteria for which hospital birth is required in order for there to be coverage. There had been a report that women with a prior cesarean who had also had a vaginal birth had lower risk than primiparous women. King said she consulted with the author and got additional information on this study. The adjusted risk for nulliparous women is actually lower than for trial of labor after cesarean (TOLAC). She also said that in review of world literature, she found numerous studies reporting

neonatal death in home births. Most frequently, the pregnancies resulting in neonatal death met one of the following risk criteria: >42 weeks gestation, breech presentation, twins, prior c-section or myomectomy through the uterine wall. In addition, unlike the risks for nulliparous women, the risk with TOLAC is uterine rupture, which happens suddenly, without time for a safe transfer to hospital.

Neilson asked whether a prior successful vaginal birth after cesarean might lower the risk. King said these women have a significantly lower rate of cesarean than a primiparous woman. However the rapidity with which a complication would occur is still quite different.

An audience member then asked whether the definition of history of retained placenta requiring surgical removal included a manual removal. Livingston said manual removal requires consultation, while a surgical removal would require hospital birth.

There was further public comment and discussion regarding the HIV test. The subcommittee discussed the alternative of requiring the baby to be tested, but this might not be practical in the out-of-hospital setting. While recognizing strong preferences of some women to avoid HIV testing, the subcommittee based their rationale on the risks of vertical transmission outweighing cultural preferences of the mother in cases where the health plan would pay for the out-of-hospital birth. The subcommittee decided that for both HIV and hepatitis B, because of the ethical duty and medical ability to intervene, results of this testing would be required for out of hospital birth to be recommended for coverage.

The subcommittee discussed some ambiguity with the criteria related to prior pregnancy; in some cases the bulleted language includes the words “history of,” and in other cases it does not. The subcommittee asked staff to make this consistent before sending to the HERC.

A member of the audience asked that the language around hypertension be clarified with specific blood pressure levels greater than or equal to 140 systolic or 90 diastolic and be in line with the NICE guidelines both as a requirement for planned hospital birth as well as a criteria for transfer if it occurs during labor. The subcommittee clarified this as their intent.

The subcommittee discussed that a number of licensure and practical issues have arisen in the course of development of this coverage guidance. There was a proposal to make a formal request of the licensure board to think about distance from the hospital (is 30 minutes too long?) and to address some of the other practice issues that arose during conversation.

DRAFT HERC COVERAGE GUIDANCE

Planned out-of-hospital (OOH) birth is recommended for coverage for women who do not have high-risk coverage exclusion criteria as outlined below (*weak recommendation*). This coverage recommendation is based on the performance of appropriate risk assessments¹ and the OOH birth attendant’s compliance with the consultation and transfer criteria as outlined below.

Planned OOH birth is not recommended for coverage for women who have high risk coverage exclusion criteria as outlined below, or when appropriate risk assessments are not performed, or where the attendant does not comply with the consultation and transfer criteria

as outlined below (*strong recommendation*).

High-risk coverage exclusion criteria:

Complications in a previous pregnancy:

- Cesarean section or other hysterotomy
- Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty
- Baby with neonatal encephalopathy
- HELLP syndrome
- Placental abruption with adverse outcome
- Pre-eclampsia requiring preterm birth
- Eclampsia
- Uterine rupture
- Retained placenta requiring surgical removal
- Fourth-degree laceration without satisfactory functional recovery

Complications of current pregnancy:

- Gestational age - preterm or postdates (defined as gestational age < 37 weeks + 0 days or > 41 weeks + 6 days)
- Pre-existing chronic hypertension
- Pregnancy-induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken at least 30 minutes apart
- Multiple gestation
- Non-cephalic fetal presentation
- Low lying placenta within 2 cm or less of cervical os at term; placenta previa, vasa previa
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding
- Anemia – hemoglobin less than 8.5 g/dL
- Induction of labor
- Drug or alcohol use with high risk for adverse effects to fetal or maternal health
- Recurrent antepartum hemorrhage
- IUGR (defined as fetal weight less than fifth percentile using ethnically-appropriate growth tables, or concerning reduced growth velocity on ultrasound)
- Abnormal fetal heart rate/Doppler/surveillance studies
- Oligohydramnios or polyhydramnios
- Blood group incompatibility with atypical antibodies, or Rh sensitization
- Prelabor rupture of membranes > 24 hours
- Life-threatening congenital anomalies
- Unknown HIV or Hepatitis B status
- Current active infection of varicella
- Rubella infection anytime during pregnancy
- Active infection (outbreak) of genital herpes
- Refractory hyperemesis gravidarum
- Thrombosis/thromboembolism/ thrombocytopenia (platelets <100,000), or other maternal bleeding disorder
- Uteroplacental insufficiency
- Molar pregnancy

- Maternal mental illness requiring inpatient care
- Diabetes, type I or II, uncontrolled gestational diabetes, or gestational diabetes controlled with medication

Transfer criteria:

If out-of-hospital birth is planned, certain intrapartum and postpartum complications may necessitate transfer to a hospital to meet coverage criteria. For these indications, an attempt should be made to transfer the mother and/or her newborn; however, imminent fetal delivery may delay or preclude actual transfer prior to birth.

- Non-cephalic fetal presentation
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding
- Anemia – hemoglobin less than 8.5 g/dL
- Current active infection of varicella at the time of labor
- Current active infection (outbreak) of genital herpes at the time of labor
- Repetitive or persistent abnormal fetal heart rate pattern
- Thick meconium staining of amniotic fluid
- Pregnancy-induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or raised systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken at least 30 minutes apart
- Chorioamnionitis or other serious infection (including toxoplasmosis, rubella, CMV, HIV, etc.)
- Failure to progress/failure of head to engage in active labor
- Prolapsed umbilical cord
- Uterine rupture, inversion or prolapse
- Hemorrhage (hypovolemia, shock, need for transfusion)
- Retained placenta > 60 minutes
- Temperature \geq 38.0 C
- Laceration requiring hospital repair (e.g., extensive vaginal, cervical or third- or fourth-degree trauma)
- Enlarging hematoma
- Infection (endometritis, UTI, wound, breast)
- Thrombophlebitis/thromboembolism
- Bladder or rectal dysfunction

If the infant is delivered out-of-hospital, the following complications require transfer to a hospital for the out-of-hospital birth to meet coverage criteria:

- Low Apgar score (< 5 at 5 minutes, < 7 at 10 minutes)
- Temperature instability, fever, suspected infection or dehydration
- Hypotonia, tremors, seizures, hyperirritability
- Respiratory or cardiac irregularities, cyanosis, pallor
- Weight less than 5th percentile for age
- Unexpected significant or life-threatening congenital anomalies
- Excessive bruising, enlarging cephalohematoma, significant birth trauma
- Hyperglycemia/hypoglycemia unresponsive to treatment
- Vomiting/diarrhea

Consultation criteria:

Certain high risk conditions require consultation (by a provider of maternity care who is credentialed to admit and manage pregnancies in a hospital) for coverage of a planned out-of-hospital birth to be recommended. These complications include (but are not limited to) patients with:

Complications in a previous pregnancy:

- More than three first trimester spontaneous abortions, or more than one second trimester spontaneous abortion
- Blood group incompatibility
- Pre-eclampsia, not requiring preterm birth
- More than one preterm birth, or preterm birth less than 34 weeks 0 days in most recent pregnancy
- Cervical insufficiency/prior cerclage
- Unresolved intrauterine growth restriction (IUGR) or small for gestational age (defined as fetal or birth weight less than fifth percentile using ethnically-appropriate growth tables)
- Third degree laceration; Fourth-degree laceration with satisfactory functional recovery
- Perinatal death
- Child with congenital and/or hereditary disorder
- Baby > 4.5 kg or 9 lbs 14 oz
- Unexplained stillbirth/neonatal death or previous death unrelated to intrapartum difficulty
- Shoulder dystocia, with or without fetal clavicular fracture
- Postpartum hemorrhage requiring additional pharmacologic treatment or blood transfusion
- Retained placenta requiring manual removal

Complications of current pregnancy:

- Fetal macrosomia (estimated weight >4.5 kg or 9 lbs 14 oz)
- Family history of genetic/heritable disorders
- History of maternal seizure disorder (excluding eclampsia)
- Laparotomy during pregnancy
- Cervical dysplasia requiring evaluation
- Gestational diabetes, diet-controlled
- Maternal mental illness under outpatient psychiatric care
- Maternal anemia with hemoglobin < 10.5 g/dL
- Third-degree laceration not requiring hospital repair
- Confirmed intrauterine death
- Maternal seizure disorder (excluding eclampsia)
- Inadequate prenatal care (defined as less than five prenatal visits or care began in the third trimester)
- Body mass index at first prenatal visit of greater than 35 kg/m²

¹Risk assessment should be done initially when planning the location of birth, and updated throughout pregnancy, labor, and delivery to determine if out-of-hospital birth is still appropriate (*weak recommendation*).

5. ADJOURNMENT

The meeting was adjourned at 5:00 pm. The next meeting is scheduled for September 3, 2015 from 2:00-5:00pm in Room 117B&C of the Meridian Park Hospital Community Health Education Center in Tualatin.

DRAFT

Section 3.0

Coverage Guidances

HEALTH EVIDENCE REVIEW COMMISSION (HERC)

COVERAGE GUIDANCE: PLANNED OUT-OF-HOSPITAL BIRTH

DRAFT for VbBS/HERC meeting materials 8/13/15

HERC COVERAGE GUIDANCE

Planned out-of-hospital (OOH) birth is recommended for coverage for women who do not have high-risk coverage exclusion criteria as outlined below (*weak recommendation*). This coverage recommendation is based on the performance of appropriate risk assessments¹ and the OOH birth attendant's compliance with the consultation and transfer criteria as outlined below.

Planned OOH birth is not recommended for coverage for women who have high risk coverage exclusion criteria as outlined below, or when appropriate risk assessments are not performed, or where the attendant does not comply with the consultation and transfer criteria as outlined below (*strong recommendation*).

High-risk coverage exclusion criteria:

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- Cesarean section or other hysterotomy
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- Baby with neonatal encephalopathy
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- Pre-eclampsia requiring preterm birth
- Eclampsia
- Uterine rupture
- Retained placenta requiring surgical removal
- Fourth-degree laceration without satisfactory functional recovery

Complications of current pregnancy:

- Gestational age - preterm or postdates (defined as gestational age < 37 weeks + 0 days or > 41 weeks + 6 days)
- [Pre-existing](#) chronic hypertension
- Pregnancy-induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken [at least](#) 30 minutes apart
- Multiple gestation
- Non-cephalic fetal presentation
- Low lying placenta within 2 cm or less of cervical os at term; placenta previa, vasa previa
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding
- Anemia – hemoglobin less than 8.5 g/dL

- Induction of labor
- [Drug or alcohol use with high risk for adverse effects to fetal or maternal health](#)
- Recurrent antepartum hemorrhage
- IUGR (defined as fetal weight less than fifth percentile using ethnically-appropriate growth tables, or concerning reduced growth velocity on ultrasound)
- Abnormal fetal heart rate/Doppler/surveillance studies
- Oligohydramnios or polyhydramnios
- Blood group incompatibility with atypical antibodies, or Rh sensitization
- Prelabor rupture of membranes > 24 hours
- Life-threatening congenital anomalies
- Unknown HIV or Hepatitis B status
- Current active infection of varicella at the time of labor
- Rubella infection anytime during pregnancy
- Active infection (outbreak) of genital herpes [at the time of labor](#)
- Refractory hyperemesis gravidarum
- Thrombosis/thromboembolism/ thrombocytopenia (platelets <100,000), or other maternal bleeding disorder
- Uteroplacental insufficiency
- Molar pregnancy
- Maternal mental illness requiring inpatient care
- Diabetes, type I or II, uncontrolled gestational diabetes, or gestational diabetes controlled with medication

Transfer criteria:

If out-of-hospital birth is planned, certain intrapartum and postpartum complications may necessitate transfer to a hospital to meet coverage criteria. For these indications, an attempt should be made to transfer the mother and/or her newborn; however, imminent fetal delivery may delay or preclude actual transfer prior to birth.

- Non-cephalic fetal presentation
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding
- ~~Anemia — hemoglobin less than 8.5 g/dL~~
- ~~Current active infection of varicella at the time of labor~~
- ~~Current active infection (outbreak) of genital herpes at the time of labor~~
- Repetitive or persistent abnormal fetal heart rate pattern
- Thick meconium staining of amniotic fluid
- ~~Pregnancy-induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or raised systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken at least 30 minutes apart~~
- Chorioamnionitis or other serious infection (including toxoplasmosis, rubella, CMV, HIV, etc.)
- Failure to progress/failure of head to engage in active labor
- Prolapsed umbilical cord
- Uterine rupture, inversion or prolapse
- Hemorrhage (hypovolemia, shock, need for transfusion)
- Retained placenta > 60 minutes
- Temperature ≥ 38.0 C

- Laceration requiring hospital repair (e.g., extensive vaginal, cervical or third- or fourth-degree trauma)
- Enlarging hematoma
- Infection (endometritis, UTI, wound, breast)
- ~~Thrombophlebitis/thromboembolism~~
- Bladder or rectal dysfunction

If the infant is delivered out-of-hospital, the following complications require transfer to a hospital for the out-of-hospital birth to meet coverage criteria:

- Low Apgar score (< 5 at 5 minutes, < 7 at 10 minutes)
- Temperature instability, fever, suspected infection or dehydration
- Hypotonia, tremors, seizures, hyperirritability
- Respiratory or cardiac irregularities, cyanosis, pallor
- Weight less than 5th percentile for [gestational age](#)
- Unexpected significant or life-threatening congenital anomalies
- Excessive bruising, enlarging cephalohematoma, significant birth trauma
- Hyperglycemia/hypoglycemia unresponsive to treatment
- Vomiting/diarrhea

Consultation criteria:

Certain high risk conditions require consultation (by a provider of maternity care who is credentialed to admit and manage pregnancies in a hospital) for coverage of a planned out-of-hospital birth to be recommended. These complications include (but are not limited to) patients with:

Complications in a previous pregnancy:

- More than three first trimester spontaneous abortions, or more than one second trimester spontaneous abortion
- Blood group incompatibility, [and/or Rh sensitization](#)
- Pre-eclampsia, not requiring preterm birth
- More than one preterm birth, or preterm birth less than 34 weeks 0 days in most recent pregnancy
- Cervical insufficiency/prior cerclage
- Unresolved intrauterine growth restriction (IUGR) or small for gestational age (defined as fetal or birth weight less than fifth percentile using ethnically-appropriate growth tables)
- Third degree laceration; fourth-degree laceration with satisfactory functional recovery
- ~~Perinatal death~~
- Child with congenital and/or hereditary disorder
- Baby > 4.5 kg or 9 lbs 14 oz
- Unexplained stillbirth/neonatal death or previous death unrelated to intrapartum difficulty
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- Confirmed intrauterine death
- Inadequate prenatal care (defined as less than five prenatal visits or care began in the third trimester)
- Body mass index at first prenatal visit of greater than 35 kg/m²

¹Risk assessment should be done initially when planning the location of birth, and updated throughout pregnancy, labor, and delivery to determine if out-of-hospital birth is still appropriate (*weak recommendation*).

Note: Definitions for strength of recommendation are provided in Appendix B GRADE Element Description

RATIONALE FOR GUIDANCE DEVELOPMENT

The HERC selects topics for guideline development or technology assessment based on the following principles:

- Represents a significant burden of disease
- Represents important uncertainty with regard to efficacy or harms
- Represents important variation or controversy in clinical care
- Represents high costs, significant economic impact
- Topic is of high public interest

Coverage guidance development follows to translate the evidence review to a policy decision. Coverage guidance may be based on an evidence-based guideline developed by the Evidence-based Guideline Subcommittee or a health technology assessment developed by the Health Technology Assessment Subcommittee. In addition, coverage guidance may utilize an existing evidence report produced by one of HERC's trusted sources, generally within the last three years.

EVIDENCE SOURCES

[Note: an additional source search was done at the request of the Evidence-based Guidelines Subcommittee (EbGS) at their April 2, 2015 meeting. A narrative and tabular description of this additional evidence follows that of the initial evidence sources description. A complete listing of the sources included from the new search immediately follows those identified in the initial search below. A full evidence table for these new sources is included in Appendix C.]

Initial search – trusted sources

Olsen, O., & Clausen, J. A. (2012). Planned hospital birth versus planned home birth. *Cochrane Database of Systematic Reviews*, 9. Accessed August 9, 2014, from http://almenpraksis.ku.dk/nyheder/oleolsen/Hjemmef_dsel.pdf

National Institute for Clinical Excellence (2014). *Intrapartum care: care of healthy women and their babies during childbirth*. *Clinical Guideline 190*, December 2014. Accessed December 15, 2014, from <https://www.nice.org.uk/guidance/cg190/resources/guidance-intrapartum-care-care-of-healthy-women-and-their-babies-during-childbirth-pdf>

Initial search – additional sources

Cochrane, A. L. (2000). 1931-1971: A critical review, with particular reference to the medical profession. *Medicines for the year*, 1-11.

College of Midwives of British Columbia. (2014). *Indications for discussion, consultation, and transfer of care*. Accessed August 4, 2014, from <http://www.cmbc.bc.ca/pdf.shtml?Registrants-Handbook-12-01-Indications-for-Discussion-Consultation-and-Transfer-of-Care>

College of Midwives of Ontario (2015). *Consultation and transfer of care*. Accessed October 1, 2014, from http://www.cmo.on.ca/?page_id=1026

de Jonge, A., van der Goes, B. Y., Ravelli, A. C., Amelink-Verburg, M. P., Mol, B. W., Nijhuis, J. G., et al. (2009). Perinatal mortality and morbidity in a nationwide cohort of 529, 688 low-risk planned home and hospital births. *BJOG: An International Journal of Obstetrics & Gynaecology*, 116(9), 1177-1184.

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TOPIC BACKGROUND

The Licensed Direct Entry Midwife (LDM) Staff Advisory Workgroup was convened in January 2014 by the Director of the Oregon Health Authority (OHA). The workgroup was established to provide recommendations regarding perinatal services provided to Medicaid enrollees by LDMs. The workgroup was guided by the Triple Aim goals of improving population health, improving the individual's experience of care, and reducing per capita costs. One of the recommendations of the final report of this workgroup to the OHA was to request that the Health Evidence Review Commission develop a Coverage Guidance related to home birth, including evidence regarding:

- The maternal and fetal/neonatal/child health outcomes of home birth compared with birth in other settings
- Appropriate candidates for home birth
- Criteria for optimizing safety with regard to provider training, equipment, standards, consultation, and other systems of care

EVIDENCE OVERVIEW

Clinical background

From Cochrane 2012

Medicalization of childbirth is a central feature in Western societies. The majority of women living in high and middle-income countries have given birth in hospitals since the middle of the 20th century. However, there are regions where home birth is considered part of normal practice. The most cited case is the Netherlands where planned home birth is supported by the official healthcare system. There, planned home birth is considered an appropriate choice for a woman of low risk and approximately 30% of all births take place at home. It is of historical interest to note that the transfer of low-risk births from home to hospital in the 1960s, despite lack of high-quality evidence, was one of the pivotal issues when Archie Cochrane laid out the ideological ground for The Cochrane Collaboration. Cochrane awarded 'the wooden spoon' to obstetrics, because "the specialty missed its first opportunity in the sixties, when it failed to randomize the confinement of low-risk pregnant women at home or hospital. Then, having filled the emptying beds by getting nearly all pregnant women into hospital, the obstetricians started to introduce a whole series of expensive innovations into the routines of pre- and postnatal care and delivery, without any rigorous evaluation. The list is long, but the most important were induction, ultrasound, fetal monitoring, and placental function tests" (Cochrane 1979). The relationship between hospitalization, childbirth, and intervention is still an important issue as "Concern about the iatrogenic effects of obstetric intervention in women who do not have a clinical need for it has put 'normal' birth firmly on the agenda for the 21st century." (EURO-PERISTAT 2008).

A range of interventions continue to be used routinely in relation to births at many hospitals despite the fact that for a long time they have been proven to have harmful effects, or only marginal or no beneficial effect (e.g., fetal monitoring, episiotomy and early cord clamping). Even though the use of a few specific interventions have been reduced (e.g., placental function tests), in general “routine medical interventions have [...] increased steadily over time despite the efforts of the Cochrane Pregnancy and Childbirth Group, its predecessors, and other researchers carrying out systematic reviews” (Hodnett 2009).

The Cochrane review is about healthy pregnant women at term for whom no serious complications have been identified prior to the spontaneous initiation of birth and for which the birth is expected to be medically uncomplicated. Generally, between 70% and 80% of all pregnant women may be considered as low risk at the start of labor.

Initial evidence review

Cochrane 2012

The inclusion criteria for the Cochrane 2012 review was limited to randomized controlled trials that compared planned hospital births to planned home births. Authors identified two RCTs; however one was only able to recruit one patient. This study (Hendrix 2009) was conducted in the Netherlands and recruited nulliparous women of low obstetric risk ($n = 1$). In this trial, 35 midwives in 14 primary care midwifery practices were involved in recruiting pregnant women in different parts of the Netherlands where 30% of all births are home births. However, the study author reported that only one of 116 women was willing to be randomized, the others having all decided where they wanted to deliver before being recruited into the study.

The second trial, Dowswell 1996, was conducted in the United Kingdom and recruited multiparous women judged to be at low obstetric risk by a consultant obstetrician and likely to have suitable home support and home circumstances ($n = 71$). Recruitment was carried out by one consultant obstetrician in an area where planned home birth was otherwise uncommon (0.5% to 1%). The midwives assisting the home births were community midwives who spent a few days each month in hospital; all UK midwives are trained to do home births, but the ones in the trial were probably not experienced with home birth. The hospital births were standard hospital care with intermittent auscultation at a university hospital with consultant obstetrician on call (but not called routinely) and full neonatal facilities. One midwife served one to two women in single rooms; she used intermittent auscultation and was not continuously present. This study was rated as having high methodologic quality, except for the small size.

The fully assessed trial with reported outcomes was too small to draw reliable conclusions. Only 11 women agreed to randomization. Four of the primary outcomes in this review were available for inclusion: baby not breast fed, assisted vaginal birth, caesarean section, and other (non-epidural) medical pain relief. In addition, three other outcomes were reported and these are also included here: perineal sutures, mother disappointed about allocation, and father did not state that he was relieved. One difference seems statistically significant: the majority of mothers in the hospital group were disappointed about the allocation while none of the mothers in the home birth group were disappointed [(Peto odds ratio 12.18, 95% confidence interval (CI) 1.05 to 141.17; however, the difference is non-significant using a Fisher’s exact test P value = 0.07)].

There were no instances of assisted vaginal birth or cesarean section, and for the other outcomes, there were no statistically significant differences between groups.

The Cochrane authors report that these results do not “contradict the evidence from the largest observational studies (de Jonge 2009; Hutton 2009; Janssen 2009) identified in the most recent systematic review (Wax 2010).”

Because of the paucity of RCTs addressing this comparison, the systematic review and observational studies listed above are summarized below.

Wax 2010

This systematic review did not limit inclusion criteria by study design. The search was through November 2009, and included MEDLINE, EMBASE and Cochrane Database of Systematic Reviews. Inclusion criteria included performance in developed western countries, English language, peer reviewed and outcomes analyzed by planned delivery location. Twelve studies were included, including the three cohort studies described below and the single RCT described above, with a total of 342,056 planned home and 207,551 planned hospital deliveries.

Meta-analysis of maternal outcomes found that planned home births experienced significantly fewer medical interventions including epidural analgesia, electronic fetal heart rate monitoring, episiotomy, and operative vaginal and cesarean deliveries. Likewise, women intending home deliveries had fewer infections, third degree lacerations, perineal and vaginal lacerations, hemorrhages, and retained placentas. There was no significant difference in the rate of umbilical cord prolapse.

Meta-analysis of neonatal outcomes found that women planning home births were less likely to have preterm deliveries or babies who were low birth weight. Planned home births more often progressed to at least 42 weeks. While there was no overall pooled difference in the rate of assisted ventilation, one large study found more frequent ventilation among planned home births, while two smaller studies noted lower rates in this group. Perinatal mortality was similar by intended delivery location (OR 0.95 95% CI 0.77 to 1.18), as well as just among non-anomalous offspring (OR 0.95, 95% CI 0.76 to 1.18). In contrast, neonatal mortality was almost twice as high in planned home versus planned hospital births (OR 1.98, 95% CI 1.19 to 3.28, absolute number 32 out of 16,500 planned home births [0.20%] compared to 32 out of 33,302 planned hospital births [0.09%]), and almost tripled among non-anomalous neonates (OR 2.87, 95% CI 1.32 to 6.25, absolute number 23 out of 15,633 planned home births [0.15%] compared to 14 out of 31,999 planned hospital births [0.04%]). While the reason for the difference between neonatal and perinatal mortality rates is unclear from this analysis, the authors speculate that it may be due to the lower obstetric risk associated with patients planning home births. If this is the case, planned home births may face a higher perinatal mortality rate than similar risk planned hospital births.

The results of the sensitivity analyses excluding studies that included home births attended by other than certified midwives or certified nurse midwives had findings similar to the original analysis, except that the ORs for neonatal deaths among all (OR, 1.57; 95% CI, 0.62–3.98) and non-anomalous (OR, 3.00; 95% CI, 0.61–14.88) newborns were not statistically significant.

de Jonge 2009

This is a nationwide cohort study conducted in the Netherlands that included a total of 529,688 low-risk women who were in primary midwife-led care at the onset of labor. In the Netherlands, the indications for referral to an obstetrician have been agreed upon by the professional groups involved and are laid out in the “Obstetric Indication List” (see Appendix A). Of these, 321,307 (60.7%) intended to give birth at home, 163,261 (30.8%) planned to give birth in hospital and for 45,120 (8.5%), the intended place of birth was unknown. Authors adjusted for a number of maternal characteristics (e.g., parity, gestational age, maternal age, ethnic background and socioeconomic status).

No significant differences were found between planned home and planned hospital birth in neonatal outcomes reported. Adjusted relative risks (RR) and 95% CI were as follows: intrapartum death (RR 0.97, 95% CI: 0.69 to 1.37), intrapartum death and neonatal death during the first 24 hours (RR 1.02, 95% CI: 0.77 to 1.36), intrapartum death and neonatal death up to 7 days (RR 1.00, 95% CI: 0.78 to 1.27), admission to neonatal intensive care unit (RR 1.00, 95% CI: 0.86 to 1.16).

Hutton 2009

Midwives in Ontario, Canada, provide care in the home and hospital and are required to submit data for all births to the Ontario Ministry of Health database. The purpose of this study was to compare maternal and perinatal/neonatal mortality and morbidity and intrapartum intervention rates for women attended by Ontario midwives who planned a home birth compared with similar low-risk women who planned a hospital birth between 2003 and 2006. The following types of pregnancies are not eligible for home birth in Ontario:

- Twins
- Breech
- Medical complications in the mother
- More than one prior cesarean section
- Gestational age less than 37 or more than 42 weeks

The database provided outcomes for all women planning a home birth at the onset of labor (n = 6,692) and for a cohort, stratified by parity, of similar low-risk women planning a hospital birth. The rate of perinatal and neonatal mortality was very low (1/1,000) for both groups, and no difference was shown between groups in a composite measure of perinatal and neonatal mortality or serious morbidity (RR 2.4% vs 2.8%, 95% CI: 0.84 [0.68–1.03]). No maternal deaths were reported. All measures of maternal morbidity were lower in the planned home birth group, including augmentation (RR 0.76, 95% CI 0.72 to 0.80), pharmaceutical pain relief (RR 0.37, 95% CI 0.35 to 0.39), episiotomy (RR 0.73, 95% CI 0.63 to 0.84), assisted delivery (RR 0.67, 95% CI 0.56 to 0.80), perineal trauma (RR 0.87, 95% CI 0.83 to 0.90), and blood loss greater than 1,000 ml (RR 0.68, 95% CI 0.49 to 0.96). In addition, the rates for cesarean section were lower in the planned home birth group (5.2% vs 8.1%, RR 0.64, 95% CI 0.56 to 0.73). When stratified by parity, nulliparas were less likely to deliver at home, and had higher rates of ambulance transport from home to hospital than multiparas planning home birth. However,

nulliparas planning home birth still had rates of intervention and outcomes that were similar to, or lower than, nulliparas planning hospital births.

Janssen 2009

This study was also a retrospective cohort study utilizing a database of all births in the province of British Columbia that occurred between 2000 and 2004. Eligibility for home birth by the College of Midwives of British Columbia includes the following:

- Absence of significant pre-existing disease in the mother
- Absence of significant disease arising during pregnancy (e.g., pregnancy-induced hypertension, hemorrhage, diabetes, herpes, placenta previa, abruption)
- Singleton fetus
- Cephalic presentation
- Gestational age between 36 and 41 weeks
- No more than one prior cesarean section
- Spontaneous labor (or induced as an outpatient)
- No transfer from a referring hospital

Planned home births were compared to midwife attended planned hospital births and physician attended planned hospital births, both limited to patients who met the criteria for home birth and matched by age, parity, single parent status, maternal age, and hospital location. There were 2,899 women in the planned home birth group, 4,752 in the planned hospital birth group attended by midwives, and 5,331 in the planned hospital group attended by physicians.

The perinatal mortality rate was 0.35/1,000 births in the home birth group, 0.57/1,000 in the hospital midwife group and 0.64/1,000 in the hospital physician group, with no statistically significant differences between groups (RR for home midwife vs. hospital midwife 0.61, 95% CI 0.06 to 5.88; RR for home midwife vs. hospital physician 0.55, 95% CI 0.06 to 5.25). Infants in the planned home birth group were significantly less likely to have an Apgar score less than seven at one minute, to suffer birth trauma, or to require resuscitation or oxygen therapy for more than 24 hours when compared to either hospital group.

Compared to planned home birth, the frequency of obstetric interventions was higher in the planned hospital group (either physician or midwife), including fetal monitoring (RR 0.32, 95% CI 0.29 to 0.36 for midwife, RR 0.17, 95% CI 0.16 to 0.19 for physician), augmentation of labor (RR 0.59, 95% CI 0.55 to 0.69 for midwife, RR 0.47, 95% CI 0.44 to 0.51 for physician), assisted vaginal delivery (RR 0.41, 95% CI 0.33 to 0.52 for midwife, RR 0.22, 95% CI 0.18 to 0.27 for physician), cesarean section (RR 0.76, 95% CI 0.64 to 0.91 for midwife, RR 0.65, 95% CI 0.56 to 0.76 for physician) and episiotomy (RR 0.49, 95% CI 0.38 to 0.63 for midwife, RR 0.19, 95% CI 0.15 to 0.23 for physician). They were also more likely to have third or fourth degree perineal tears (RR 0.43, 95% CI 0.29 to 0.63 for midwife, RR 0.34, 95% CI 0.24 to 0.49 for physician).

April 2015 New Evidence Search Results

(References listed on pages six to nine.)

Background

At the April 2, 2015 meeting, the EbGS asked for a full evidence search on OOH birth literature due to concerns raised in public comment and testimony about the completeness of evidence identified in the initial trusted source search published to the OHA website in August 2014. Public comments and testimony raised the issue of risk of perinatal mortality, particularly for primiparous women, in planned OOH birth. It also raised the issue of assuring that the evidence spoke to planned OOH birth compared to planned hospital birth, with the recognition that unplanned OOH birth was outside the topical area and that mixing evidence from these two populations would be misleading. Staff were also concerned that the initial search did not explicitly include birth centers. Amending the coverage guidance to encompass this site, staff determined that a broader, new evidence search was warranted. The new evidence search focused on perinatal mortality and mode of birth because those outcomes appeared to encompass both the greatest potential harm and benefit of OOH birth. In addition, the new search explicitly included terms related to birth centers since the initial search was focused on home birth. Appendix C includes details about the search, inclusion criteria, review methodology, and a full evidence table with the 15 included studies.

New Evidence Search

The new evidence search (MEDLINE®) conducted on April 22, 2015 yielded 596 citations and a final search on May 20, 2015 identified an additional 21 citations. The MEDLINE® search was limited to the past 10 years and not limited by study design. These 617 citations were subject to dual review for possible inclusion. See Appendix C for details on the search strategy and inclusion criteria. Inclusion criteria specified study size, relevant fetal/neonatal and maternal outcomes, and location of study. At least one study arm had to include subjects with planned OOH birth, either at home or in a birth center. Two staff epidemiologists reviewed 40 full text articles and found 15 that met inclusion criteria. All included studies were dual rated for quality of evidence for key outcomes, based on the GRADE system. No study was excluded based on quality in accord with accepted practice for systematic reviews (SRs). See Appendix C for GRADE quality ratings.

The new search located two SRs and no randomized controlled trials (RCTs). The first SR (Olsen, 2012) was the Cochrane Review discussed in the prior evidence summary. It included two RCTs, one with a single patient and another with 11 subjects. Neither of these individual trials met the new evidence search inclusion criteria based on study date and sample size. The second SR identified (Wax, 2010) was also identified in the trusted sources and is discussed in the initial evidence summary above. It was excluded from the new evidence summary because, on closer examination, it was clear that it incorporated studies including women who had unplanned births at home rather than restricting inclusion to studies reporting planned home birth exclusively. Three of 12 studies included in the Wax (2010) SR are also included in this new evidence search and summary. Nine of 12 of the individual studies captured in the Wax SR (2010) were excluded from the new evidence search on the basis of date (published more than

10 years ago). It appears that the new search strategy was more comprehensive than that used by Wax (2010), yielding 617 citations as compared with 237 for Wax (2010). The 15 studies meeting final inclusion criteria are included in the evidence table in Appendix C.

Results

Context

To contextualize the results it is important to understand baseline risks of perinatal mortality and other harms among women experiencing hospital births. For the U.S. as a whole, perinatal mortality has remained relatively stable over recent years.¹ Perinatal mortality is defined and reported in the U.S. in two ways: first, as the number of fetal and early neonatal deaths (0 to 7 days of life) per 1000 live births and eligible fetal deaths (over 20 weeks of gestation); and second, with the addition of late neonatal deaths (those taking place between 7 and 28 days of life).² Some countries and studies use alternate definitions, such as reporting only neonatal deaths during the first week of life (early neonatal death) or only including gestations above 24 weeks, making international comparison difficult. However, there are still clear differences across countries and among populations, even with these definitional issues. For example, the World Health Organization reported a 2000 perinatal mortality rate of 6 in Australia, Belgium, Finland, and Canada; 7 for the U.S.; 8 for the U.K. and rising to rates well above 80 in many countries of the developing world.³ The U.S. National Center for Health Statistics (NCHS) reported a U.S. rate (first definition, using stillbirths and early neonatal deaths) of 6.51 in 2006 with a slight decline to 6.26 in 2011,¹ but did not report perinatal mortality by parity. However, the risk of perinatal death varies by gestational age and co-existing maternal and fetal/neonatal factors. For example, infant mortality rates for low-risk pregnancies at term vary from a high of 0.66 at 37 weeks to a nadir of 0.33 at 39 weeks and an intermediate level of 0.40 at 41 weeks.⁴ Similarly, the fetal mortality rate varies from 1.40 at 37 to 39 weeks, to 0.88 at 40 weeks and increases late in pregnancy to 1.76 at 42 or more weeks of gestation.²

In 2006, the overall perinatal mortality rate in Oregon was 5.27.² During 2012, there were 92 reported term fetal deaths and early neonatal deaths in the state. Of these 92 deaths, 84 occurred in planned hospital births and 8 occurred in planned OOH births.⁵ These rates were not reported by parity. Chart review of the eight cases of intrapartum and early neonatal death

¹ Gregory, E.C., MacDorman, M.F., & Martin, J.A. (2014). Trends in fetal and perinatal mortality in the United States, 2006-2012. *NCHS Data Brief*, Nov(169), 1-8. <http://www.cdc.gov/nchs/data/databriefs/db169.pdf>

² MacDorman, M. F., Kirmeyer, & S. E., Wilson, E.C. (2012). Fetal and perinatal mortality. United States, 2006. *National vital statistics reports*, 60(8). http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_08.pdf

³ World Health Organization (WHO). (2006). Neonatal and Perinatal Mortality. Country, Regional and Global Estimates. Geneva: WHO Press. http://whqlibdoc.who.int/publications/2006/9241563206_eng.pdf

⁴ Zhang X., & Kramer, M. S. (2009). Variations in mortality and morbidity by gestational age among infants born at term. *Journal of Pediatrics*, 154(3), 358-62. DOI: <http://dx.doi.org/10.1016/j.jpeds.2008.09.013>

⁵ Oregon Public Health Division. (2013). Oregon Birth Outcomes, by Planned Birth Place and Attendant. Pursuant to: HB 2380. Prepared by Oregon Public Health Division, August 30, 2013. Available at: <http://public.health.oregon.gov/BirthDeathCertificates/VitalStatistics/birth/Documents/PlannedBirthPlaceandAttendant.pdf>

found that six of the eight did not meet low-risk criteria. The total term perinatal mortality rate for planned OOH births in Oregon in 2012 was 4.0 and for planned in-hospital births was 2.1.⁵

The perinatal mortality rate, and perinatal morbidity more generally, is higher among women having a first birth (primiparous women) than those having a subsequent birth (multiparous women), regardless of birth setting. For example, Cheng (2013) found that the risk of low Apgar score was nearly twice as high among low risk primiparous women having a hospital birth in the U.S. than among multiparous women in that setting. The Birthplace study, conducted in the U.K., reported that the incidence of stillbirth among low risk multiparous women giving birth in hospital obstetric units was half of what it was for primiparous women in the same types of hospital settings (Birthplace, 2011). They also reported that the incidence of neonatal death within the first week of life was four times as common among primiparas (Birthplace, 2011). Similarly, de Jonge (2009) reported that the adjusted relative risk of stillbirth or death within the first week of life was 1.68 for primiparous women compared to multiparous women in a study from the Netherlands. While the absolute risk of these outcomes is low, it is important to note the relative baseline differences among first and subsequent births.

Summary of Results – New Search

A summary table of included studies and results for our primary outcomes of interest is presented in Table 1 below. Four of the 15 studies were conducted in the U.S. and the remainder were based in Australia, Canada, England, the Netherlands, and New Zealand. Two studies provided low quality evidence for the primary outcomes of interest and 13 studies yielded very low quality evidence. This is largely because all studies were observational and most (11 of 15) were conducted outside the U.S., thus introducing indirectness and potential for non-comparability to the U.S. setting. Ten studies reported measures of perinatal mortality with definitions ranging from intrapartum fetal deaths plus neonatal deaths within the first 24 hours of life up to 28 days. These rates (per 1000 births) ranged from 0.87 to 2.06 for planned home birth among non-comparative studies. Among comparative studies, perinatal mortality (measured as stillbirths and neonatal deaths up to 28 days) ranged from a protective relative risk (RR) of 0.61 in the Canadian study by Janssen (2009) to an excess adjusted RR of 1.38 in the Australian study by Kennere (2009). No confidence interval (CI) was statistically significant and the CIs of these studies were overlapping. Cesarean delivery rates were low overall, but statistically lower in the planned OOH birth group among comparative studies. Two studies contributed data only on postpartum hemorrhage (Davis, 2011; Nove, 2012). Both found a decreased risk of postpartum hemorrhage with home birth, but only one of these findings was statistically significant.

Table 1. Summary of Included Studies from New Search, Primary Outcomes of Interest Reported, and Study Quality

Citation	Study Description <ul style="list-style-type: none"> Country Study design Number of planned OOH births included 	Primary Fetal & Neonatal Outcome Reported	Primary Maternal Outcome Reported	Study Quality (GRADE)
Birthplace, 2011	<ul style="list-style-type: none"> England Prospective comparative cohort comparing planned home (n=16,840), freestanding midwifery unit (FMU) (11,282), alongside midwifery unit (AMU) (n=16,710), and obstetric unit (OU) (n=19,706) sites 	<p>Composite outcome (CO) (stillbirth, neonatal death 0-7d, neonatal encephalopathy, meconium aspiration, brachial plexus injury, fractured humerus or clavicle)</p> <p>CO incidence (95% CI), by site Home 4.2 (3.2-5.4) FMU 3.5 (2.5-4.9) AMU 3.6 (2.6-5.9) OU 4.4 (3.2-5.9)</p>	<p>Cesarean delivery</p> <p>Cesarean incidence/1000 (99% CI), by site Home 2.8 (2.3-3.4) FMU 3.5 (2.8-4.2) AMU 4.4 (3.5-5.5) OU 11.1 (9.5-13.0)</p>	Very low (OOO+)
Catling-Paull, 2013	<ul style="list-style-type: none"> Australia Retrospective, non-comparative cohort of planned home birth 1807 	<p>Perinatal mortality (fetal to 7d)</p> <p>Home 1.7/1000</p>	<p>Cesarean delivery</p> <p>Home 5.4%</p>	Very low (OOO+)
Cheng, 2013	<ul style="list-style-type: none"> U.S. Retrospective cohort comparing planned home birth to hospital birth using vital statistics data (27 states) 12,039 	<p>5 minute Apgar score < 4</p> <p>Home v. Hospital adjOR 1.87 (95% CI 1.36-2.58)</p>	<p>Operative vaginal delivery</p> <p>Home v. Hospital adjOR 0.12 (95% CI 0.08-0.17)</p>	Very low (OOO+)
Cheyney, 2014	<ul style="list-style-type: none"> U.S. Prospective, non-comparative cohort of planned home birth 16,924 	<p>Perinatal mortality (intrapartum to 28d)</p> <p>Home (non-anomalous) 2.06/1000</p>	<p>Cesarean delivery</p> <p>Home 5.2%</p>	Low (OO++)

Citation	Study Description <ul style="list-style-type: none"> Country Study design Number of planned OOH births included 	Primary Fetal & Neonatal Outcome Reported	Primary Maternal Outcome Reported	Study Quality (GRADE)
Davis, 2011	<ul style="list-style-type: none"> New Zealand Retrospective, comparative cohort of planned home birth and planned hospital (primary, secondary, tertiary) birth 1830 	None	Postpartum hemorrhage (>1000mL) Home v. Primary hospital adjOR 0.93 (95% CI 0.49-1.74)	Very low (OOO+)
de Jonge, 2009	<ul style="list-style-type: none"> Netherlands Retrospective cohort study of planned home and planned hospital birth 466,041 	Perinatal mortality (intraparum to 7d) Home v. Hospital adjRR 1.00 (95%CI 0.78-1.27)	None	Very low (OOO+)
de Jonge, 2013	<ul style="list-style-type: none"> Netherlands Retrospective cohort study of planned home and planned hospital birth 92,333 	None	Composite outcome (ICU admission, uterine rupture, eclampsia/preeclampsia, transfusion) incidence Home v. Hospital 1.5/1000 v. 2.7/1000	Very low (OOO+)
de Jonge, 2015	<ul style="list-style-type: none"> Netherlands Retrospective cohort study of planned home and planned hospital birth 335,683 	Perinatal mortality (intrapartum to 28d) Home v. Hospital (nulliparous) adjOR 0.99 (95% CI 0.79-1.24) Home v. Hospital (multiparous) adjOR 1.16 (95% CI 0.87-1.55)	None	Very low (OOO+)

Citation	Study Description <ul style="list-style-type: none"> Country Study design Number of planned OOH births included 	Primary Fetal & Neonatal Outcome Reported	Primary Maternal Outcome Reported	Study Quality (GRADE)
Hutton, 2009	<ul style="list-style-type: none"> Ontario, Canada Retrospective matched cohort of planned home birth 6692 	Perinatal mortality (intrapartum to 28d) Home v. Hospital 9/6692 (0.13%) v. 8/6692 (0.12%)	Cesarean delivery Home v. Hospital RR 0.64 (95% CI 0.56-0.73)	Very low (OOO+)
Janssen, 2009	<ul style="list-style-type: none"> British Columbia, Canada Retrospective cohort of planned home and planned hospital births 2889 	Perinatal mortality (intrapartum to 28d) Home v. Hospital (both with registered midwife) RR 0.61 (95% CI 0.06-5.88)	Cesarean delivery Home v. Hospital (both with registered midwife) adjRR 0.76 (95% CI 0.64-0.91)	Very low (OOO+)
Johnson, 2005	<ul style="list-style-type: none"> U.S. Retrospective, non-comparative cohort of planned home births 5418 	Perinatal mortality (intrapartum to neonatal) Home (non-anomalous) 2.03/1000	Cesarean delivery Home 3.7%	Very low (OOO+)
Kennere, 2009	<ul style="list-style-type: none"> South Australia Retrospective cohort of planned home and planned hospital births 1141 	Perinatal mortality (intrapartum to 28d) Home v. Hospital adjOR 1.38 (95% CI 0.56-3.41)	Cesarean delivery Home v. Hospital adjOR 0.27 (95% CI 0.22-0.34)	Very low (OOO+)
Nove, 2012	<ul style="list-style-type: none"> North West Thames Region, England Retrospective cohort of planned home and planned hospital births 5598 	None	Postpartum Hemorrhage (>1000mL) Home v. Hospital adjOR 0.40 (95% CI 0.26-0.59)	Very low (OOO+)
Stapleton, 2013	<ul style="list-style-type: none"> US Retrospective, non-comparative cohort of planned birth 	Perinatal mortality (intrapartum to 7d)	Cesarean delivery	Low (OO++)

Citation	Study Description <ul style="list-style-type: none"> Country Study design Number of planned OOH births included 	Primary Fetal & Neonatal Outcome Reported	Primary Maternal Outcome Reported	Study Quality (GRADE)
	center birth <ul style="list-style-type: none"> 15, 574 	Birth center (non-anomalous) 0.87/1000	Home 6.1%	
van der Kooy, 2011	<ul style="list-style-type: none"> Netherlands Retrospective cohort of planned home and planned hospital births 402,912 	Perinatal mortality (intrapartum to 7d) Home v. Hospital adjRR 1.05 (95% CI 0.91-1.21)	None	Very low (OOO+)

Table Abbreviations: adjOR – adjusted odds ratio; AMU – planned alongside midwifery unit birth; CI – confidence interval; CO – composite outcome; d – days; FMU – planned freestanding midwifery unit birth; home – planned home birth; n – number of subjects in study or group; OOH – out of Hospital; OU – planned obstetric unit birth; RR – relative risk.

Note: Study quality: (OOO+) represents very low, (OO++) represents low.

While several studies presented data on the overall perinatal mortality rate for the entire study population of women having a first birth and women having subsequent birth, only four studies provided those data by parity. See Table 2 below for perinatal mortality outcomes reported by parity. Only one non-comparative U.S.-based study contributed information on the risk of perinatal mortality among primiparous women compared to multiparous women. Cheyney (2014) reported 18/3771 (0.48%) cases of perinatal death (intrapartum stillbirth through 28 days) among primiparas compared to 17/13,153 (0.13%) for multiparas. The unadjusted intrapartum stillbirth rate was 2.92 vs. 0.84 for primiparas compared to multiparas. Among primiparous women experiencing perinatal death, eight women had risk factors including breech presentation, gestational diabetes and preeclampsia. For the 10 cases of perinatal death among women who did not have these risk factors, the intrapartum stillbirth rate was 2.21; the early neonatal perinatal mortality rate was 0.28; and the late neonatal mortality rate was also 0.28, for a total perinatal mortality rate of 2.77 among low-risk primiparous women (Cheyney, personal communication, 2015).

Table 2. Perinatal Mortality, New Search, Among Studies Reporting by Parity

Citation, Year (Country) [Quality]	Perinatal Mortality (PM) – Primiparous Women (per 1000 births)	Perinatal Mortality (PM) – Multiparous Women (per 1000 births)	Total Deaths Reported (total N of study)
Cheyney, 2014 (U.S.) [OO++]	Crude PM (Home) Intrapartum: 2.92 Early neonatal: 0.41 Late neonatal: 0.80	Crude PM (Home) Intrapartum: 0.84 Early neonatal: 0.27 Late neonatal: 0.23	35 (N=16,924)

Citation, Year (Country) [Quality]	Perinatal Mortality (PM) – Primiparous Women (per 1000 births)	Perinatal Mortality (PM) – Multiparous Women (per 1000 births)	Total Deaths Reported (total N of study)
	Total crude PM, primiparas: 4.13 adjPM (Home), parimiparas 2.77 (after excluding high risk)	Total crude PM: 1.34 (adjPM not reported)	
Birthplace, 2011 (England) [OOO+]	Intrapartum Stillbirth (n (95% CI) Home 0.9 (0.2-3.3) FMU 0.3 (0.0-3.5) AMU 0.1 (0.0-1.6) OU 0.1 (0.0-1.5) Early Neonatal Death (n (95% CI) Home 0.4 (0.1-2.4) FMU 0.5 (0.1-1.7) AMU 0.1 (0.0-1.7) OU 0.4 (0.1-1.3)	Intrapartum Stillbirth (n (95% CI) Home 0.1 (0.0-0.9) FMU 0.5 (0.1-2.2) AMU 0 events OU 0.2 (0.0-1.2) Early Neonatal Death (n (95% CI) Home 0.3 (0.1-1.3) FMU 0.3 (0.1-2.2) AMU 0.1 (0.0-1.4) OU 0.1 (0.0-1.8)	32 (N=44,434)
Hutton, 2009 (Canada) [OOO+]	PM (fetal death to neonatal 28d) Home: 2.18 Hospital: 1.74	PM (fetal death to neonatal 28d) Home: 0.91 Hospital: 0.91	18 (N=13,384)
de Jonge, 2015 (Netherlands) [OOO+]	PM (fetal death to neonatal 28d) Home: 1.02 Hospital: 1.09	PM (fetal death to neonatal 28d) Home: 0.59 Hospital: 0.58	592 (N=743,070)

Table Abbreviations: adj – adjusted; AMU – planned alongside midwifery unit birth; CI – confidence interval; d – days; FMU – planned freestanding midwifery unit birth; home – planned home birth; N – number of subjects in study; OU – planned obstetric unit birth; PM – perinatal mortality. -number of subjects in study.

Note: Study quality (OOO+) represents very low , (OO++) represents low.

U.S.-based Studies Reporting Perinatal Mortality and Cesarean Delivery Rate

There were four U.S.-based studies with two presenting low quality evidence (Cheyney, 2014; Stapleton, 2013) and two with very low quality evidence (Cheng, 2013; Johnson, 2005). Neither of the low quality evidence studies was comparative, but both were large and well-conducted (Cheyney, 2014; Stapleton, 2013). Cheyney (2014) presented data on home birth and the Stapleton (2013) studied birth center outcomes. Cheng (2013) did not report perinatal mortality and is discussed in a separate section below. Johnson (2005) used data collected by midwives registered by the North American Registry of Midwives (NARM) as a requirement of

recertification. It is smaller and older than Cheyney (2014), but similar in that it was conducted by a midwifery registration organization.

For home birth in the U.S., Cheyney (2014) found a non-anomalous perinatal mortality rate (stillbirth to neonatal death within 28 days) of 2.06. Johnson (2005) reported a similar finding with a non-anomalous perinatal mortality rate (intrapartum stillbirth to 28 days) of 2.03. Stapleton (2013) reported a non-anomalous perinatal mortality rate (stillbirth to neonatal death within 7 days) of 0.87. The reported cesarean delivery rates were similar across the U.S.-based studies, ranging from 3.7% (Johnson, 2005) to 5.2% (Cheyney, 2014) to 6.1% (Stapleton, 2013).

U.S.-based Study Reporting Low Apgar Score Outcome

The fourth U.S.-based study did not report perinatal mortality, but instead reported the surrogate outcome of low Apgar score (5-minute Apgar score less than 4) (Cheng, 2013). Cheng (2013) reported lower odds (but not statistically different) of low Apgar score for home births attended by certified nurse midwives (CNMs) compared to hospital births for either primiparous or multiparous women (adjusted odds ratio [adjOR] 0.47 [95% CI 0.55-3.22]; adjOR 0.83 [95% CI 0.27-2.60]). When the comparison was for home birth attended by other types of midwives compared with hospital birth, Cheng and colleagues (2013) found the odds of low Apgar score to be elevated in both parity groups (not statistically significant for primiparous women, but statistically significant for multiparous women), with the adjOR of 1.34 (95%CI 0.55-3.22) for primiparas and an adjOR of 1.84 (95% CI 1.04-3.26) for multiparas. Based on other research, the association between a low 5-minute Apgar and the live born infant dying when this occurs is moderate, with about 20 neonatal deaths out of every 1000 (2%) births.^{6,7} Other methodologic limitations also exist for this type of birth certificate-based study^{8,9} and contributed to the rating of very low quality evidence for this study.

Non-U.S.-based Studies Reporting Perinatal Mortality by Parity

Among non-U.S. studies, three provided information on perinatal mortality by parity and compared planned home and hospital birth (Birthplace, 2011; de Jonge, 2015; Hutton, 2009). The information from the prospective Birthplace study (2011) for stillbirth and neonatal death in the first week of life should be interpreted cautiously as these items were not the primary outcome (which was a composite outcome including both items, but also including items such as humeral and clavicular fracture). Total event rates were small, confidence intervals (CI) are

⁶ Casey, B. M., McIntire, D. D., & Leveno, K. J. (2001). The continuing value of the Apgar score for the assessment of newborn infants. *New England Journal of Medicine*, 344(7), 467-471.

⁷ Moster, D., Lie, R. T., Irgens, L. M., Bjerkedal, T., & Markestad, T. (2001). The association of Apgar score with subsequent death and cerebral palsy: A population-based study in term infants. *Journal of Pediatrics*, 138(6), 798-803.

⁸ Martin, J. A., Wilson, E. C., Osterman, M. J. K., Saadi, E. W., Sutton, S. R., & Hamilton, B. E. (2013). Assessing the quality of medical and health data from the 2003 birth certificate revision: Results from two states. *National Vital Statistics Reports*, 62(2). http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_02.pdf

⁹ Reichman, N. E., & Hade, E. M. (2001). Validation of birth certificate data: A study of women in New Jersey's HealthStart Program. *Annals of Epidemiology*, 11(3), 186-193.

wide, and only unadjusted figures are available from the online appendices to the article. For primiparous women, the rate of stillbirth with planned home birth was 0.9 (95% CI 0.2-3.3), while the rate for multiparous women was 0.1 (95% CI 0.0-0.9) (Birthplace, 2011). The rate of early neonatal death was 0.4 (95% CI 0.1-2.4) among primiparas and 0.3 (95% CI 0.1-1.3) for multiparas (Birthplace, 2011). Hutton (2009) conducted a retrospective matched cohort study of planned home birth in Ontario, Canada. They reported that the proportion of non-anomalous perinatal deaths (stillbirth to 28 days) for primiparous (0.2%) vs. multiparous women (0.1%) was the same for both planned home and hospital birth (Hutton, 2009). The total number of non-anomalous perinatal deaths was small, with nine among primiparous women and six among multiparas (Hutton, 2009). A large retrospective, national study from the Netherlands by de Jonge and colleagues (de Jonge, 2015) found that for primiparous women planning home birth, 1.02% experienced perinatal death (stillbirths and neonatal deaths up to 28 days) compared to 1.09% planning a hospital birth, with an adjOR of 0.99 (95% CI 0.79-1.24). Among multiparous women the comparable figures were 0.59% vs. 0.58%, with an adjOR of 1.16 (95% CI 0.87-1.55) (de Jonge, 2015).

Summary – New Evidence Search

In summary, the additional literature review found that rates of cesarean delivery are lower for both primiparous and multiparous women planning a home birth compared to a hospital birth. Neonatal risks varied across studies. Among comparative studies, two reported a slightly higher perinatal mortality risk for nulliparous women planning a home birth compared to a hospital birth and one reported a slightly lower risk at home compared to hospital. These three comparative studies were from three different countries and the only U.S. study to report perinatal mortality by parity was not comparative. Estimates of perinatal mortality are unstable because of small numbers of this fortunately rare outcome. Among the four studies in Table 2 there were 677 occurrences of perinatal death among 817,812 total births (0.82%). Comparisons are limited by differences in outcome and population definitions, differences among OOH birth provider training and regulation, differences among risk status of women planning home birth, and differences among health systems. Because of all these factors and the low quality of available evidence, we cannot exclude a small increase in perinatal risk, particularly for nulliparous women who choose to plan a home birth rather than a hospital birth. However, available evidence indicates that the absolute risk is small, particularly among low-risk women and in situations where there are well-trained OOH birth attendants and functioning systems for consultation and transfer to higher levels of care when the need arises.

Guidelines

The NICE guideline on intrapartum care in healthy women was published in December 2014. The guideline recommends the following regarding place of birth:

Women at low risk of complications

1.1.1 Explain to women who are at low risk of complications that giving birth is generally very safe for both the woman and her baby. [new 2014]

1.1.2 Explain to both multiparous and nulliparous women that they may choose any birth setting (home, freestanding midwifery unit, alongside midwifery unit or obstetric unit), and support them in their choice of setting wherever they choose to give birth: [new 2014]

- Advise low-risk multiparous women that planning to give birth at home or in a midwifery-led unit (freestanding or alongside) is particularly suitable for them because the rate of interventions is lower and the outcome for the baby is no different compared with an obstetric unit. [new 2014]
- Advise low-risk nulliparous women that planning to give birth in a midwifery-led unit (freestanding or alongside) is particularly suitable for them because the rate of interventions is lower and the outcome for the baby is no different compared with an obstetric unit. Explain that if they plan birth at home there is a small increase in the risk of an adverse outcome for the baby. [new 2014]

1.1.3 Using Tables 3 and 4, explain to low-risk multiparous women

- Planning birth at home or in a freestanding midwifery unit is associated with a higher rate of spontaneous vaginal birth than planning birth in an alongside midwifery unit, and these 3 settings are associated with higher rates of spontaneous vaginal birth than planning birth in an obstetric unit
- Planning birth in an obstetric unit is associated with a higher rate of interventions, such as instrumental vaginal birth, caesarean section and episiotomy, compared with planning birth in other settings
- There are no differences in outcomes for the baby associated with planning birth in any setting. [new 2014]

Table 3. Rates of spontaneous vaginal birth, transfer to an obstetric unit, and obstetric interventions for each planned place of birth: low-risk multiparous women

	Number of incidences per 1,000 multiparous women giving birth			
	Home	Freestanding midwifery unit	Alongside midwifery unit	Obstetric unit
Spontaneous vaginal birth	984	980	967	927
Transfer to an obstetric unit	115	94	125	10**
Regional anesthesia (epidural and/or spinal)***	28	40	60	121
Episiotomy	15	23	35	56
Cesarean birth	7	8	10	35
Instrumental birth (forceps or ventouse)	9	12	23	38
Blood transfusion	4	4	5	8

Table 4. Outcomes for the baby for each planned place of birth: low-risk multiparous women

	Number of babies per 1,000 births			
	Home	Freestanding midwifery unit	Alongside midwifery unit	Obstetric unit
Babies without serious medical problems	997	997	998	997
Babies with serious medical problems	3	3	2	3

1.1.4 Using Tables 5 and 6, explain to low-risk nulliparous women that:

- Planning birth at home or in a freestanding midwifery unit is associated with a higher rate of spontaneous vaginal birth than planning birth in an alongside midwifery unit, and these 3 settings are associated with higher rates of spontaneous vaginal birth than planning birth in an obstetric unit
- Planning birth in an obstetric unit is associated with a higher rate of interventions, such as instrumental vaginal birth, caesarean section and episiotomy, compared with planning birth in other settings
- There are no differences in outcomes for the baby associated with planning birth in an alongside midwifery unit, a freestanding midwifery unit or an obstetric unit
- Planning birth at home is associated with an overall small increase (about 4 more per 1,000 births) in the risk of a baby having a serious medical problem compared with planning birth in other settings.

Table 5. Rates of spontaneous vaginal birth, transfer to an obstetric unit, and obstetric interventions for each planned place of birth: low-risk nulliparous women

	Number of incidences per 1,000 nulliparous women giving birth			
	Home	Freestanding midwifery unit	Alongside midwifery unit	Obstetric unit
Spontaneous vaginal birth	794	813	765	688
Transfer to an obstetric unit	450	363	402	10
Epidural	218	200	240	349
Episiotomy	165	165	216	242
Cesarean birth	80	69	76	121
Instrumental birth (forceps or ventouse)	126	118	159	191
Blood transfusion	12	8	11	16

Table 6. Outcomes for the baby for each planned place of birth: low-risk nulliparous women

	Number of babies per 1,000 births			
	Home	Freestanding midwifery unit	Alongside midwifery unit	Obstetric unit
Babies without serious medical problems	991	995	995	995
Babies with serious medical problems	9	5	5	5

Medical conditions and other factors that may affect planned place of birth

1.1.10 Use tables 7, 8, 9 and 10 as part of an assessment for a woman choosing her planned place of birth:

- Tables 7 and 8 show medical conditions or situations in which there is increased risk for the woman or baby during or shortly after labour, where care in an obstetric unit would be expected to reduce this risk.
- The factors listed in tables 9 and 10 are not reasons in themselves for advising birth within an obstetric unit, but indicate that further consideration of birth setting may be required.
- Discuss these risks and the additional care that can be provided in the obstetric unit with the woman so that she can make an informed choice about planned place of birth. [2007, amended 2014]

Table 7. Medical conditions indicating increased risk suggesting planned birth at an obstetric unit

Disease Area	Medical Condition
Cardiovascular	<ul style="list-style-type: none"> • Confirmed cardiac disease • Hypertensive disorders
Respiratory	<ul style="list-style-type: none"> • Asthma requiring an increase in treatment or hospital treatment • Cystic fibrosis
Haematological	<ul style="list-style-type: none"> • Haemoglobinopathies – sickle-cell disease, beta-thalassaemia major • History of thromboembolic disorders • Immune thrombocytopenia purpura or other platelet disorder or platelet count below 100,000 • Von Willebrand's disease • Bleeding disorder in the woman or unborn baby

Disease Area	Medical Condition
	<ul style="list-style-type: none"> Atypical antibodies which carry a risk of haemolytic disease of the newborn
Endocrine	<ul style="list-style-type: none"> Hyperthyroidism Diabetes
Infective	<ul style="list-style-type: none"> Risk factors associated with group B streptococcus whereby antibiotics in labour would be recommended Hepatitis B/C with abnormal liver function tests Carrier of/infected with HIV Toxoplasmosis – women receiving treatment Current active infection of chicken pox/rubella/genital herpes in the woman or baby Tuberculosis under treatment
Immune	<ul style="list-style-type: none"> Systemic lupus erythematosus Scleroderma
Renal	<ul style="list-style-type: none"> Abnormal renal function Renal disease requiring supervision by a renal specialist
Neurological	<ul style="list-style-type: none"> Epilepsy Myasthenia gravis Previous cerebrovascular accident
Gastrointestinal	<ul style="list-style-type: none"> Liver disease associated with current abnormal liver function tests
Psychiatric	<ul style="list-style-type: none"> Psychiatric disorder requiring current inpatient care

Table 8. Other factors indicating increased risk suggesting planned birth at an obstetric unit

Factor	Additional Information
Previous complications	<ul style="list-style-type: none"> Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty Previous baby with neonatal encephalopathy Pre-eclampsia requiring preterm birth Placental abruption with adverse outcome Eclampsia Uterine rupture Primary postpartum haemorrhage requiring additional treatment or blood transfusion Retained placenta requiring manual and/or surgical removal in theatre Caesarean section Shoulder dystocia

Factor	Additional Information
Current pregnancy	<ul style="list-style-type: none"> • Multiple birth • Placenta praevia • Pre-eclampsia or pregnancy-induced hypertension • Preterm labour or preterm prelabour rupture of membranes • Placental abruption • Anaemia – haemoglobin less than 8.5 g/dl at onset of labour • Confirmed intrauterine death • Induction of labour • Substance misuse • Alcohol dependency requiring assessment or treatment • Onset of gestational diabetes • Malpresentation – breech or transverse lie • Body mass index at booking of greater than 35 kg/m² • Recurrent antepartum haemorrhage • Small for gestational age in this pregnancy (less than fifth centile or reduced growth velocity on ultrasound) • Abnormal fetal heart rate/Doppler studies • Ultrasound diagnosis of oligo-/polyhydramnios
Previous gynaecological history	<ul style="list-style-type: none"> • Myomectomy • Hysterotomy

Table 9. Medical conditions indicating individual assessment when planning place of birth

Disease Area	Medical Condition
Cardiovascular	<ul style="list-style-type: none"> • Cardiac disease without intrapartum implications
Haematological	<ul style="list-style-type: none"> • Sickle-cell trait • Thalassaemia trait • Atypical antibodies not putting the baby at risk of haemolytic disease • Anemia – haemoglobin 8.5-10.5 g/dl at onset of labor
Infective	<ul style="list-style-type: none"> • Hepatitis B/C with normal liver function tests
Immune	<ul style="list-style-type: none"> • Nonspecific connective tissue disorders
Endocrine	<ul style="list-style-type: none"> • Unstable hypothyroidism such that a change in treatment is required
Skeletal/Neurological	<ul style="list-style-type: none"> • Spinal abnormalities • Previous fractured pelvis • Neurologic deficits
Gastrointestinal	<ul style="list-style-type: none"> • Liver disease without current abnormal liver function • Crohn's disease • Ulcerative colitis

Table 10. Other factors indicating individual assessment when planning place of birth

Factor	Additional Information
Previous complications	<ul style="list-style-type: none"> • Stillbirth/neonatal death with a known non-recurrent cause • Pre-eclampsia developing at term • Placental abruption with good outcome • History of previous baby more than 4.5 kg • Extensive vaginal, cervical, or third- or fourth-degree perineal trauma • Previous term baby with jaundice requiring exchange transfusion
Current pregnancy	<ul style="list-style-type: none"> • Antepartum bleeding of unknown origin (single episode after 24 weeks of gestation) • Body mass index at booking of 30–35 kg/m² • Blood pressure of 140 mmHg systolic or 90 mmHg diastolic or more on two occasions • Clinical or ultrasound suspicion of macrosomia • Para 4 or more • Recreational drug use • Under current outpatient psychiatric care • Age over 35 at booking
Fetal indications	<ul style="list-style-type: none"> • Fetal abnormality
Previous gynaecological history	<ul style="list-style-type: none"> • Major gynaecological surgery • Cone biopsy or large loop excision of the transformation zone • Fibroids

Service organization and clinical governance

1.1.15 Ensure that all women giving birth have prompt access to an obstetric unit in case they need transfer of care for medical reasons or because they request regional analgesia. [new 2014]

1.1.16 Ensure that there are

- robust protocols in place for transfer of care between settings (see also section 1.6). [new 2014]
- clear local pathways for the continued care of women who are transferred from one setting to another, including:
 - when crossing provider boundaries
 - if the nearest obstetric or neonatal unit is closed to admissions or the local midwifery-led unit is full [new 2014]

Risk criteria for planned home birth

The 2014 NICE draft guideline for antepartum care clearly outlines conditions that make a woman high-risk. In addition, the Oregon Public Health Division referenced a report from the American College of Obstetrics and Gynecology (ACOG) on Planned Home Birth¹⁰ as their published criteria for being low-risk. This includes the following requirements:

- Gestational age \geq 36 weeks and \leq 41 completed weeks of pregnancy
- Singleton
- Vertex position
- Absence of preexisting or pregnancy-related maternal disease

The ACOG committee opinion references Hutton 2006 and Janssen 2009 as a source for these criteria. They also note that the low-risk criteria utilized in these two observational studies did not exclude women with a prior cesarean section; however, because of potential risks they state that ACOG “considers a prior cesarean delivery to be an absolute contraindication to planned home birth”. They also note that studies showing favorable perinatal outcomes (de Jonge 2009; Hutton 2006; Janssen 2009) were conducted in settings that have “highly integrated health care systems with established criteria and provisions for emergency intrapartum transport.” Therefore, ACOG “believes that the availability of timely transfer and an existing arrangement with a hospital for such transfers is a requirement for consideration of a home birth.”

The final report of the Licensed Direct Entry Midwife (LDM) Staff Advisory Workgroup also recommends that planned home birth be limited to patients who are low-risk, defined as pregnancies that do not have any of the following characteristics:

- Presentation other than cephalic
- Previous cesarean delivery
- Gestational age < 36 or > 43 weeks
- Multiple gestations
- Diabetes/uncontrolled gestational diabetes or gestational diabetes controlled with medication
- Pre-eclampsia

Current Oregon law¹¹ outlines risk criteria which birthing centers must follow. A proposed rule would apply those same criteria to home births. Those criteria can be found in Appendix A.

All three observational studies included in this document were based on registries in countries or provinces that strictly control the practice of midwifery and adhere to established criteria for planned home birth. All three lists of criteria are provided in Appendix A.

¹⁰ American College of Obstetricians and Gynecologists. (2011). Planned home birth. Committee Opinion No. 476. *Obstetrics & Gynecology*, 117, 425–428.

¹¹ http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_333/333_076.html

Midwifery certification

Training and certification requirements for midwives vary among the countries referenced in this document. A summary is presented below:

The Netherlands¹²

“The midwifery training is a four year fulltime direct entry education, which eventually leads to a Bachelor’s degree. The total study load is 240 ECTS and equals nearly 6,800 hours of education. Altogether, there are two years of theory, one year of primary care internships, and one year of secondary and tertiary care internships. The internships are spread equally over these four years. Students are primarily trained to become independent primary care midwives. 190 Students enroll each year nationwide. They have had an extensive assessment, which selects the best candidates. Around three times more candidates apply for the course than places are available.”

British Columbia¹³

“All current CMBC approved programs are Canadian four year direct-entry education programs leading to a university degree, or bridging programs leading to equivalency.”

Ontario¹⁴

“1. The applicant must have at least one of the following:

- A baccalaureate degree in health sciences (midwifery) from a university in Ontario.
- A degree, diploma or certificate from a program listed in Schedule 1.
- Qualifications that are equivalent to the degree referred to in subparagraph i, as determined by the Council or by a body or bodies designated by the Council.

2. The applicant must:

- Have current clinical experience consisting of active practice for at least two years out of the four years immediately before the date of the application, and
- Have attended at least 60 births, of which at least:
 - 40 were attended as primary midwife
 - 30 were attended as part of the care provided to a woman in accordance with the principles of continuity of care
 - 10 were attended in hospital, of which at least five were attended as primary midwife, and
 - 10 were attended in a residence or remote clinic or remote birth centre, of which at least five were attended as primary midwife

3. The applicant must have successfully completed the qualifying examination that was set or approved by the Registration Committee at the time the applicant took the examination.”

¹² <http://www.nurse.or.jp/nursing/international/icm/report/data/2012/icm-dutch.pdf>

¹³ <http://www.cmhc.bc.ca/pdf.shtml?Exploring-Midwifery-as-a-Career>

¹⁴ http://www.e-laws.gov.on.ca/html/source/regs/english/2011/elaws_src_regs_r11168_e.htm

*United Kingdom*¹⁵

Midwifery degree

- Students are awarded both an academic and a professional qualification, through integrated study of theory and supervised midwifery practice
- Supervised midwifery practice is 50% of the program and takes place in both community and hospital settings, including antenatal clinics and wards, labour wards, postnatal wards and neonatal care
- The programs are normally three years in length and studied on a full-time basis

*Oregon*¹⁶

Mandatory licensure of direct entry midwives in Oregon was established in 2013 with passage of House Bill 2997, which requires any direct entry midwife practicing after January 1, 2015, to hold a license. The Oregon Board of Direct Entry Midwifery already requires that LDMs hold a certified professional midwife (CPM) credential from the North American Registry of Midwives, complete an examination, be certified in infant and adult cardiopulmonary resuscitation, have a written plan for transport of the patient, hold a high school diploma (or equivalent), and attend and participate in, at a minimum:

- Twenty-five assisted deliveries
- Twenty-five deliveries for which the LDM applicant was the primary care provider
- One hundred prenatal care visits
- Twenty-five newborn examinations, and
- Forty postnatal examinations

*North American Registry of Midwives (NARM)*¹⁷

There are multiple routes to certification by the NARM, but in general they include a written test, a skills assessment test, and the following experience requirements:

Phase 1: Births as an Observer

- Ten births in any setting, in any capacity

Phase 2: Clinicals as Assistant under Supervision

- Twenty births, 25 prenatal exams, 20 newborn exams, 10 postpartum visits

Phase 3: Clinicals as Primary under Supervision

- Twenty births, 75 prenatal visits, 20 newborn exams, and 40 postpartum exams

It is also required that the applicant have a preceptor(s) that attests to the applicant's proficiency on "skills, knowledge, and abilities essential for competent practice" and that the applicant be certified in Adult CPR, and Neonatal Resuscitation Certification.

¹⁵ <http://www.nhscareers.nhs.uk/explore-by-career/midwifery/training-to-be-a-midwife/>

¹⁶ http://www.oregon.gov/OHLA/DEM/Pages/Midwifery_How_to_Get_Licensed.aspx

¹⁷ <http://narm.org/entry-level-applicants/>

Oregon data on planned out-of-hospital birth

In 2013 the Oregon Public Health Division published its first report on birth outcomes by planned birth place and attendant. Because this report specifically addresses home birth outcomes in the state of Oregon, a summary is presented here.

In 2011, the Oregon Legislature passed House Bill 2380, which required the Oregon Public Health Division to add two questions to the Oregon Birth Certificate to determine planned place of birth and birth attendant, and to report annually on birth outcomes, including death, by location and attendant type. The specific questions were: "Did you go into labor planning to deliver at home or at a freestanding birthing center? If yes, what was the planned primary attendant type at the onset of labor?" In addition, for 2012, the Oregon Public Health Division conducted a special study of deaths in term infants (≥ 37 weeks' gestation) intended to deliver out-of-hospital. The perinatal fatality analysis includes fetal and early neonatal deaths ≥ 37 weeks' estimated gestational age through the first 6 days of life.

During 2012, 42,011 live term births occurred in Oregon. Of these 2,021 (4.8%) planned an out-of-hospital birth (home birth or freestanding birthing center).

Key findings of term fetal and early neonatal deaths by planned place of birth and planned birth attendant include the following:

- Sixty-two term (≥ 37 weeks' gestation) fetal deaths occurred in Oregon during 2012; 4 (6.5%) of these occurred among planned out-of-hospital births.
- Thirty term early neonatal deaths (during the first 6 days of life) occurred in Oregon during 2012; 4 (13.3%) of these occurred among planned out-of-hospital births.
- In total, 92 term fetal and early neonatal deaths occurred in Oregon during 2012; 8 (8.7%) occurred among planned out-of-hospital births. These 8 deaths underwent a fetal and neonatal mortality case review per published national guidelines.

Key findings of the perinatal fatality case review of term births planned to occur out-of-hospital include the following:

- Four term fetal and four early neonatal deaths occurred during 2012 among women who planned to deliver out-of-hospital
- Planned birth attendants: Certified Nurse Midwife (1), Licensed Direct-Entry Midwives (4), Unlicensed Midwife (1), Undetermined Licensure Midwife (1), and Naturopathic Physician (1)
- Median birth weight (3515 grams)
- Maternal characteristics were similar to the larger group of planned out-of-hospital births
- Two pregnancies had inadequate or no prenatal care
- Chart review noted that, among perinatal deaths:
 - Two pregnancies were twin gestations

- Four mothers declined prenatal ultrasound (to confirm gestation and identify pathology)
- Five mothers declined Group B streptococcal testing (to identify women who are carriers of GBS; treatment during labor is recommended to decrease the risk of early GBS neonatal sepsis)
- Two mothers declined prophylaxis during labor for Group B streptococcal positive tests
- Six of eight transferred to the hospital during labor:
 - Indications for transfer to a hospital from home or birthing center included (multiple causes may apply): loss of fetal heart tones (3), prolonged labor (2), decreased fetal movement (2), and malpresentation (2)
 - One mother initially declined transfer during labor despite recommendation by birth attendant
- Six of eight pregnancies did not meet published low-risk criteria for out-of-hospital birth*:
 - More than 41 weeks gestation (4)
 - Twin gestation (2)
 - Morbid obesity (> 40 BMI) (1)
 - Planned attendants among these 6: Certified Nurse Midwife (1), Licensed Direct-Entry Midwives (3), Unlicensed Midwife (1), and Naturopathic Physician (1)
- Causes of death and major contributing factors (more than one may apply):
 - Hypoxic ischemic encephalopathy or cardiorespiratory failure (lack of blood flow) (3)
 - Chorioamnionitis (infection in the womb) (3)
 - Pre-existing or pregnancy-related maternal disease (2)
 - Respiratory failure (1)
 - Undetermined, umbilical cord wrapped around neck, large baby (1)
 - Undetermined, twin gestation, small baby (2)

The term perinatal mortality rate for planned out-of-hospital births (4.0/1,000 pregnancies) was nearly twice that of in-hospital births (2.1/1,000). When excluding those pregnancies that did not meet published criteria for being low risk, the perinatal mortality rate for planned out-of-hospital births is 1.0/1000.

EVIDENCE SUMMARY

The evidence pertaining to home birth from randomized trials is extremely sparse, limited to just 12 participants, and hence an insufficient evidence base from which to draw conclusions. The largest observational studies suggest that home birth results in significantly fewer obstetrical

interventions and maternal adverse outcomes. The evidence pertaining to neonatal outcomes is less clear; while one meta-analysis found an elevated risk of neonatal death, this was not true when the analysis was limited to studies in which the attendant was either a certified midwife or certified nurse midwife. Observational studies conducted in settings where there are clear criteria for appropriateness of home birth, differing regulatory and training requirements, and systems of care (e.g., Canada, the Netherlands) do not find an elevated neonatal death rate. The NICE guideline's evidence review (based on the Birthplace study) found that there is a slightly increased risk of adverse neonatal events for primiparous women, but the NICE panel still suggested that these women be eligible for planned home birth after participating in informed decision-making using risk tables.

The new search and evidence summary done at the request of the EbGS at the April 2, 2015 meeting found that the absolute risk of perinatal mortality is very low overall, but that there are few U.S.-based studies, that evidence quality is low at best, and that available studies provide conflicting estimates of perinatal mortality risk. However, an elevated risk of perinatal mortality, particularly among primiparous women, cannot be ruled out by current research. This is in alignment with the findings of the Birthplace study (2011) on which the NICE guideline was based and generally supports that guideline's conclusions of offering home birth to low-risk women who have participated in informed decision-making.

In their first year of reporting, evidence from the State of Oregon Public Health Department identified an elevated risk of perinatal death in pregnancies with a planned home delivery. However, when excluding those pregnancies that did not meet published criteria for being low-risk, the rate is not elevated compared to planned hospital births.

Criteria for low-risk pregnancy at the time of labor and delivery have been established by national or provincial governments as well as by US national and state provider organizations. These criteria have varying levels of detail, but each has criteria for consultation with other providers, indications requiring hospital birth and indications requiring transfer of care.

Good outcomes for planned out-of-hospital birth have been demonstrated in several countries. However, these settings have system characteristics that help to maximize safety. Chief among these is a robust system of consultation and referral/transfer that can assure seamless care for the woman and her newborn when transfer is needed. In addition, these systems include thorough education (informed consent) of women and families about the potential need for consultation/referral/transfer and the potential risks associated with having a delay to receipt of emergency obstetric and neonatal care. Consideration of distance and time from a hospital able to provide emergency obstetric and neonatal services is important in managing intrapartum complications and in providing fully informed consent. Another characteristic is written agreements that cover consultation/referral/transfer and a well-defined and practiced system of transfer. Out-of-hospital birth attendants in these systems are appropriately trained and experienced in the identification and management of obstetric and neonatal emergencies, and are also licensed and certified. These providers should be capable of initiating appropriate newborn resuscitation, and be able to provide standard newborn care in addition to the routine postpartum care of women. Certification requirements for the practice of midwifery can vary significantly between the U.S. and other countries, with U.S. requirements for midwives, other

than CNM/CMs, generally being less rigorous with regard to both years of formal education and experience.

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GRADE-INFORMED FRAMEWORK

The HERC develops recommendations by using the concepts of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. GRADE is a transparent and structured process for developing and presenting evidence and for carrying out the steps involved in developing recommendations. There are four elements that determine the strength of a recommendation, as listed in the table below. The HERC reviews the evidence and makes an assessment of each element, which in turn is used to develop the recommendations presented in the coverage guidance box. Balance between desirable and undesirable effects, and quality of evidence, are derived from the evidence presented in this document, while estimated relative costs, values and preferences are assessments of the HERC members.

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
Planned out-of-hospital birth for low-risk pregnancies	<p>Include fewer intrapartum interventions and cesarean births (common outcome).</p> <p>Mixed results on neonatal outcomes, including potential increased risk of fetal/neonatal death (very rare outcome), particularly for primiparous women.</p>	<p>Very low to low based on 15 observational studies. Risk of bias generally acceptable, but some studies had marked limitations. Many studies downgraded because of indirectness due to different country and</p>	<p>Low. (favors out of hospital birth)</p>	<p>Low (women planning out-of-hospital birth prefer a non-hospital setting)</p>	<p>Recommended for coverage (<i>weak recommendation</i>)</p>	<p>There is low quality, but consistent evidence of benefit and lower quality evidence of significant, rare harms, including increased perinatal mortality. Women choosing out-of-hospital birth have strong values and preferences toward this choice, despite the potential risk of significant harm. Additional evidence search and summary results in no change</p>

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
		context of study.				in weak recommendation for coverage.
Planned out-of-hospital birth for unselected pregnancies (including those with unknown or known high risk factors)	Possible lower maternal morbidity, increased fetal/neonatal mortality	Very low based on one systematic review of 12 studies (downgraded to very low because of internal and external validity concerns). Additional evidence search and summary also found very low-quality evidence suggesting increased risk for pregnancy complicated by maternal diseases,	Moderate. Increased risk of poor outcomes leading to increased medical and societal costs.	Low (women planning out-of-hospital birth prefer a non-hospital setting)	Not recommended for coverage (<i>strong recommendation</i>)	Based on very low evidence that suggests increased fetal/neonatal mortality, increased resources (for associated harms), and rapidity of evolution of complications (e.g. uterine rupture). This leads to a strong recommendation against coverage, despite values and preferences that lead some women to choose this despite potential harms.

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
		breech, multiple gestation and TOLAC.				

*The Quality of Evidence rating was assigned by the primary evidence source for initial literature search (not the HERC Subcommittee), and determined for critical and important outcomes for each individual study included in the new evidence search,

Note: GRADE framework elements are described in Appendix B

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POLICY LANDSCAPE

Quality measures

No pertinent quality measures were identified when searching the [National Quality Measures Clearinghouse](#).

Coverage guidance is prepared by the Health Evidence Review Commission (HERC), HERC staff, and subcommittee members. The evidence summary is prepared by the Center for Evidence-based Policy at Oregon Health & Science University (the Center). This document is intended to guide public and private purchasers in Oregon in making informed decisions about health care services.

The Center is not engaged in rendering any clinical, legal, business or other professional advice. The statements in this document do not represent official policy positions of the Center. Researchers involved in preparing this document have no affiliations or financial involvement that conflict with material presented in this document.

APPENDIX A. RISK CRITERIA FOR PLANNED HOME BIRTH

Oregon birth center absolute risk criteria

Risk factors that if present **on admission** to the birthing center for labor and delivery, would prohibit admission to the birthing center

- Current substance abuse which has the potential to adversely affect labor and/or the infant
- Quadriplegia
- Hypertension >150/100 on at least two occasions
- For this pregnancy, Type I Diabetes, other diabetes requiring insulin to maintain acceptable control, or Type II Diabetes
- Thrombosis, active/current
- Severe anemia, <9 hemoglobin
- Uncontrolled seizure disorder
- Life-threatening congenital defects in fetus. This does not include documented lethal anomalies
- History of previous uterine wall surgery, including Caesarean section, if one or more of the following risk factors is present:
 - Conception occurred < 12 months following that surgery or uterine procedure;
 - Absence of ultrasound to rule out placenta previa and/or placental attachment to the surgical site;
 - History of two or more Caesarean sections without a prior successful vaginal delivery;
 - History of myomectomy which invaded the endometrium;
 - History of a known uterine perforation;
 - History of Caesarean section which included classical incision;
 - History of Caesarean section and complications including postoperative infection, diabetes, or steroid use;
 - Absence of signed, detailed informed consent

NOTE: Any woman with previous uterine wall surgery must be evaluated for the presence of risk factors, and must go through an informed consent process. The Information given to the woman must include an explanation of the risk; including non-absolute risks, of a vaginal birth after Caesarean section, and an explanation of the contingency plan in place should transport be necessary. If transport becomes necessary, the birthing center should notify the receiving facility when the transport is imminent.

- Need for Caesarean delivery this birth
- Multiple gestation without reassuring bio-physical profile of greater than or equal to 8 out of 10
- No previous prenatal care or written prenatal records available
- Abnormal fetal surveillance studies
- Fetal presentation other than vertex, when known
- Rising antibody titre -types known to affect fetal well-being; significant Rh sensitization

- Amniotic fluid index >30 at term
- Amniotic fluid index <5 without reassuring labor progress, without reassuring fetal heart tones and/or abnormal non- stress test
- Abnormal bleeding
- Need for chemical and/or pharmacological induction of labor
- Need for general or conduction anesthesia
- Eclampsia; preeclampsia with lab abnormalities
- Low-lying placenta within 2 cm. or less of cervical os; vasa previa; complete placenta previa; abruption placenta
- Genital herpes, primary; secondary uncoverable at onset of labor
- Labor or premature rupture of membranes at <36 weeks; pregnancy >43 weeks or >42 weeks with abnormal non- stress test
- Chorioamnionitis
- Thick meconium-stained amniotic fluid without reassuring Doppler heart tones
- Known pre-term fetal demise

Risk factors that if they develop **during labor and delivery**, require transfer of the client to a higher level of care

- Failure to progress in active labor with strong contractions and/or maternal/fetal compromise
- Abnormal fetal heart tone (FHT) pattern unresponsive to treatment; inability to auscultate fetal heart tones unless birth is imminent
- Thick meconium-stained amniotic fluid without reassuring Doppler heart tones and birth is not imminent
- Hypertension > 150/100 on at least two occasions
- Abnormal bleeding
- Prolapsed umbilical cord
- Fetal presentation other than vertex, when known, and birth is not imminent
- Multiple gestation when birth is not imminent
- Amniotic fluid index <5 without reassuring labor progress or without reassuring fetal heart tones or abnormal non-stress test
- Persistent fever of equal to or greater than 101 degrees Fahrenheit (oral) or indication of serious infection with the potential to harm the mother or the fetus
- Development of severe medical or surgical problem

Risk factors that, if they develop **during the postpartum period** in the mother or infant, would require transfer to a higher level of care

Mother

- Abnormal bleeding unresponsive to treatment and/or symptoms of hypovolemia
- Need for transfusion
- Retained placenta or incomplete placenta, with bleeding; suspected placenta accreta; retained placenta > 3 hours

Other

- Hypertension >150/100 on at least two occasions
- Shock, unresponsive to treatment
- Laceration requiring repair in a hospital
- Enlarging hematoma
- Development of preeclampsia or eclampsia
- Signs or symptoms of serious infection

Infant

- Apgar problems <5 at 5 minutes or <7 at 10 minutes
- Inability to maintain [axillary] temperature between 97 degrees Fahrenheit and 100 degrees Fahrenheit at 2 hours
- Hypotonia >10 minutes
- Tremors, seizures, or hyperirritability
- Life-threatening congenital defects in fetus. This does not include documented lethal abnormalities; (in the presence of known and documented lethal fetal abnormalities, the denial of admission and the requirements to transfer do not apply)
- Respiratory or cardiac irregularities (examples: abnormal capillary refill time, disturbance of rate or rhythm; grunting or retracting after 30 minutes postpartum, need for oxygen > 30 minutes without improvement; cyanosis, central and persistent)
- Signs/symptoms of infection

Final report of the Obstetric Working Group of the National Health Insurance Board of the Netherlands (abridged version)

What follows is the list of specific obstetric indications, including an explanation of the description of the obstetrical care provider and guidelines on how to deal with the consultative situation.

The obstetric indication list is divided into six main groups, within which reference is made to the various obstetric and medical disorders and diseases. Where necessary, an explanation is provided about the obstetric policy related to specific indications and upon what the referral policy is based. The right-hand column shows for each indication who is the most suitable care provider.

The main purpose of the indication list is to provide a guide for risk-selection. The primary obstetric care provider, midwife, or GP is primarily responsible for this risk-selection. The Manuel is a consensus document showing the agreement reached by the professional groups on their decision-making structure.

Explanation of the codes used for the care providers

Code	Description	Care provider
A	The responsibility for obstetric care in the situation	Midwife/G.P.

Code	Description	Care provider
Primary obstetric care	described is with the primary obstetric care provider.	
B Consultation situation	This is a case of evaluation involving both primary and secondary care. Under the item concerned, the individual situation of the pregnant woman will be evaluated and agreements will be made about the responsibility for obstetric care (see Section 4.5).	Depending on Agreements
C Secondary obstetric care	This is a situation requiring obstetric care by an obstetrician at secondary level for as long as the disorder continues to exist.	Obstetrician
D Transferred primary obstetric care	Obstetric responsibility remains with the primary care provider, but in this situation it is necessary that birth takes place in a hospital in order to avoid possible transport risk during birth.	Midwife/G.P.

1. Pre-existing disorders - non-gynaecological

In cases of pre-existing disorders that are relevant to obstetrics, other care providers other than the midwife are regularly involved with care of the pregnant woman. In cases requiring consultation, it is necessary to involve the other care providers in the consultation.

For this reason, in disorders given code B in this section, attention should be given to collaboration with others outside the field of obstetrics. Attention should be paid to the counselling of women who are considering the possibility of becoming pregnant.

1.1	Epilepsy, without medication	A
1.2	Epilepsy, with medication Prenatal diagnostics are recommended in connection with the disorder and its medication. Optimal care requires consultation between all care providers concerned (midwife, G.P, obstetrician, neurologist).	B
1.3	Subarachnoid haemorrhage, aneurysms Care during puerperium can be at primary level.	C
1.4	Multiple sclerosis Depending upon the neurological condition, a complicated delivery and the possibility of urine retention should be taken into account. For optimal care, consultation between all care providers concerned is indicated.	B
1.5	Hernia nuclei pulposi This represents a C-situation in cases of a recently suffered HNP or where there are still neurogenic symptoms. It is an A-situation after treated hernia,	A/ C

	especially if a previous pregnancy was normal. Both the medical history and the current clinical condition are relevant.	
1.6	Lung function disorder The opinion of the lung specialist should be taken into account during evaluation.	B
1.7	Asthma Care during pregnancy, birth and puerperium can only take place at a primary level when the asthma involves lengthy symptom-free intervals, whether or not use is made of inhalation therapy. Consultation with the GP/specialist involved is recommended.	A/ C
1.8	Tuberculosis, active Tuberculosis, non-active In cases of an active tuberculosis process and subsequent treatment, consultation should take place with the physician involved and the obstetrician regarding the clinical condition and care during pregnancy and birth. In cases of non-active tuberculosis, care during pregnancy and birth can take place at a primary level.	C A
1.9	HIV-infection As a result of the current possibilities of medical therapy for preventing vertical transmission, these patients should be cared for during pregnancy and birth in a hospital equipped for the treatment of HIV and AIDS.	C
1.10	Hepatitis B with positive serology (Hbs-AG+) Since 1988 it is important that a screening programme for this serology is carried out on pregnant women.	A
1.11	Hepatitis C Consultation with the obstetrician and follow-up by the pediatrician is recommended.	B
1.12	A heart condition with haemodynamic consequences Pregnancy and birth will have an effect on the pre-existing haemodynamic relationships. A cardiac evaluation is important.	C
1.13	Thrombo-embolic process Of importance are the underlying pathology and the presence of a positive family medical history. Pre-conceptual counselling is important.	B
1.14	Coagulation disorders	C
1.15	Renal function disorders When there is a disorder in renal function, with or without dialysis, referral to secondary care is recommended.	C

1.16	<p>Hypertension</p> <p>Pre-existing hypertension, with or without medication therapy, will require referral to secondary care.</p> <p>Hypertension has been defined by the ISSHP as: A single event of diastolic blood pressure of 110 mm Hg or more (Korotkoff IV). Diastolic blood pressure of 90 mm Hg or more at two subsequent blood pressure measurements with an interval of at least 4 hours between the two measurements. A distinction should be drawn between a diastolic blood pressure under 95 mm and a pressure of 95 mm and higher. Extra attention should be paid to a pregnant woman with a diastolic pressure between 90 and 95 mm; from 95 mm, referral to secondary care should take place.</p>	A/ C
1.17	Diabetes mellitus	C
1.18	Hyperthyroidism	C
1.19	<p>Hypothyroidism</p> <p>In cases of biochemical euthyroid, without antibodies and without medication, or stable on levothyroxine medication, care can take place at a primary level. Where levothyroxine medication is given, specific tests are recommended due to the frequent increase in medication required during pregnancy.</p>	B
1.20	<p>Anemia, due to a lack of iron</p> <p>Anemia is defined as Hb<6.0 mmol that has existed for some time.</p>	B
1.21	<p>Anemia, other</p> <p>This includes the haemoglobinopathies.</p>	B
1.22	<p>Inflammatory Bowel Disease</p> <p>This includes ulcerative colitis and Crohn's disease.</p>	C
1.23	<p>System diseases and rare diseases</p> <p>These include rare maternal disorders such as Addison's disease and Cushing's disease. Also included are systemic lupus erythematosus (SLE), anti-phospholipid syndrome (APS), scleroderma, rheumatoid arthritis, periarteritis nodosa, Marfan's syndrome, Raynaud's disease and other systemic and rare disorders.</p>	C
1.24	<p>Use of hard drugs (heroin, methadone, cocaine, XTC, etc.)</p> <p>Attention should be paid to actual use. A urine test can be useful even in cases of past use in the medical history. The involvement of the pediatrician is indicated during the follow-up postpartum.</p>	C
1.25	<p>Alcohol abuse</p> <p>The fetal alcohol syndrome is important. The involvement of the pediatrician is indicated during the follow-up postpartum.</p>	C

1.26	<p>Psychiatric disorders</p> <p>Care during pregnancy and birth will depend on the severity and extent of the psychiatric disorder. Consultation with the physician in charge is indicated.</p>	B
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2. Pre-existing gynaecological disorders

2.1	<p>Pelvic floor reconstruction</p> <p>This refers to colpo-suspension following prolapse, fistula and previous rupture. Depending on the cause, the operation technique used and the results achieved, the obstetrician will determine policy regarding the birth. A primary caesarean section or an early primary episiotomy can be considered, to be repaired by the obstetrician. If the chosen policy requires no special measures and no specific operating skill, then care during birth can be at primary level.</p>	C
2.2	<p>Cervical amputation</p>	C
	<p>Cervical cone biopsy</p>	B
	<p>Cryo- and lis-treatment</p> <p>The practical application of obstetric policy in this field can be worked out in local mutual agreements. If an uncomplicated pregnancy and birth have taken place following cone biopsy then a subsequent pregnancy and birth can take place at primary level.</p>	A
2.3	<p>Myomectomy (serous, mucous)</p> <p>Depending on the anatomical relationship, the possibility of a disturbance in the progress of the pregnancy or birth should be taken into account.</p>	B
2.4	<p>Abnormalities in cervix cytology (diagnostics, follow-up)</p> <p>There should be differentiation according to obstetric versus gynaecological policy. Gynaecological consultation can be indicated even without obstetric consequences.</p> <p>Participation in national cervical cancer screenings program is not provided pregnant women. The gynaecological follow-up is not an impediment to obstetric care at primary level.</p>	B/A
2.5	<p>DES-daughter (untreated and under supervision)</p> <p>There should be a differentiation according to obstetric versus gynecological policy.</p> <p>Gynaecological care related to the problems surrounding DES may be necessary, while obstetric care can take place at primary level.</p>	B
2.6	<p>IUD in situ</p>	B

	Status following removal of the IUD	A
2.7	Status following infertility treatment In practice, the wish of the patient to be cared for at secondary level plays a role here, even though the pregnancy and birth are otherwise normal. There is no question of an increased obstetric risk.	A
2.8	Pelvic deformities (trauma, symphysis rupture, rachitis) Consultation should take place at the start of the last trimester. It should be pointed out that care at secondary level has not been shown to have any added value in cases of pelvic instability and symphysis pubis dysfunction.	B
2.9	Female circumcision/Female genital mutilation Circumcision as such can require extra psychosocial care. Where there are serious anatomical deformities, consultation should take place in the third trimester.	A/B

3. Obstetric medical history

3.1	Active blood group incompatibility (Rh, Kell, Duffy, Kidd)	C
	ABO-incompatibility Pregnancy and birth can take place at primary care level in cases of ABO-antagonism, but one should be on the alert for neonatal problems. Consultation is indicated.	B
3.2	Pregnancy induced hypertension in the previous pregnancy	A
	Pre-eclampsia in the previous pregnancy	B
	HELLP-syndrome in the previous pregnancy	C
3.3	Habitual abortion (3 times) If an abortion should occur again, the need to carry out pathological study of fetal material should be discussed. Genetic counselling prior to pregnancy is also advised.	A
3.4	Pre-term birth (<37 weeks) in a previous pregnancy If a normal pregnancy has taken place subsequent to the premature birth, then a further pregnancy can be conducted at primary care level.	B
3.5	Cervix insufficiency (and/or Shirodkar-procedure) Secondary level care during pregnancy is indicated up to 37 weeks; with a full term pregnancy, home birth is allowed. If a subsequent pregnancy was normal, then future pregnancies and deliveries can be conducted at primary care level.	C/A
3.6	Placental abruption	C

3.7	<p>Forceps or vacuum extraction</p> <p>Evaluation of information from the obstetrical history is important. Documentation showing a case of an uncomplicated assisted birth will lead to the management of the present pregnancy and birth at primary care level. Consultation should take place when no documentation is available or when there are signs of a complicated assisted birth.</p>	A/B
3.8	<p>Caesarean section</p>	C
3.9	<p>Fetal growth retardation (Light for date)</p> <p>A birth weight of P<2.3 or obvious neonatal hypoglycemia related to fetal growth retardation.</p>	C
3.10	<p>Asphyxia</p> <p>Defined as an APGAR score of <7 at 5 minutes. It is important to know whether a pediatrician was consulted because of asphyxia at a previous birth.</p>	B
3.11	<p>Perinatal death</p> <p>Such an obstetrical history requires consultation. It is also important to know whether there was a normal pregnancy following the perinatal death. Pregnancy and birth can then be conducted at primary care level.</p>	B
3.12	<p>Prior child with congenital and/or hereditary disorder</p> <p>It is important to know the nature of the disorder and what diagnostics were carried out at the time. If no disorders can currently be discerned, then further care can be at primary care level.</p>	B
3.13	<p>Postpartum haemorrhage as a result of episiotomy</p>	A
3.14	<p>Postpartum haemorrhage as a result of cervix rupture (clinically demonstrated)</p> <p>The assumption is that there is a chance of a recurrence; the pregnancy and birth can be conducted at primary care level. The decision can be taken to allow birth to take place in the hospital.</p>	D
3.15	<p>Postpartum haemorrhage, other causes (>1000 cc)</p> <p>In view of the chance of a recurrence, although the pregnancy and birth can be conducted at primary care level, the decision can be taken to allow birth to take place in the hospital.</p>	D
3.16	<p>Manual placenta removal in a previous pregnancy</p> <p>In view of the increased recurrence risk, the next following pregnancy and birth can be cared for at primary care level, with the birth taking place in hospital. When the birth following one in which the manual placenta removal has taken place has had a normal course, a subsequent pregnancy and birth can be cared for at primary level. When in the previous birth a placenta accreta is diagnosed, obstetrical care at secondary level is indicated.</p>	D

3.17	4th degree perineal laceration (functional recovery/no functional recovery) If satisfactory functional recovery has been achieved following the 4th degree tear, then pregnancy and birth can be managed at primary care level. The possibility of performing a primary episiotomy during birth should be considered. If secondary repair surgery was necessary, then referral to secondary care is indicated (similarly to that which is stated for pelvic floor reconstruction). If no functional repair has been achieved following a 4th degree tear, then birth should be managed at secondary care level.	A/C
3.18	Symphysis pubis dysfunction There is no added value to managing pregnancy or birth at secondary care level in cases with a symphysis pubis dysfunction in the history or with pelvic instability.	A
3.19	Postpartum depression There is no added value to managing pregnancy or birth at secondary care level in cases with a p.p.d. in the history. Postpartum depression occurs at such a time postpartum that even the puerperium can be cared for at primary care level.	A
3.20	Postpartum psychosis It is necessary to distinguish whether there is a case of long-term medicine use. It is important to have a psychiatric evaluation of the severity of the psychosis and the risk of recurrence.	A
3.21	Grand multiparity Defined as parity >5. There is no added value to managing a pregnancy and birth at secondary care level.	A
3.22	Post-term pregnancy Post-term pregnancy in the obstetrical history has no predictive value for the course of the current pregnancy and birth.	A

4. Developed/discovered during pregnancy

In this section it is the case that supervision at secondary level care is necessary in situations given the code C, as long as the problem described still exists. If it no longer exists, then the patient can be referred back to primary level care.

4.1	Uncertain duration of pregnancy by amenorrhoea >20 weeks Consultation is required when the duration of pregnancy is uncertain after 20 weeks amenorrhoea. The primary care provider has access to sufficient additional diagnostic tools in the first 20 weeks.	B
4.2	Anemia (Hb<6.0 mmol/l) It is important that the nature and the severity of the anemia are analysed	B

	during consultation.	
4.3	<p>Recurrent urinary tract infections</p> <p>One can speak of recurrent urinary tract infection when an infection has occurred more than twice. Further analysis of the infection is required. The risk of renal function disorders and the risk of pre-term birth are important. The course of further diagnostics can take place within the local mutual agreements made between the three professional groups.</p>	B
4.4	<p>Pyelitis</p> <p>Hospital admission is required for the treatment of pyelitis, so that care will have to be at secondary level. After successful treatment of the pyelitis, further care during pregnancy and birth can be at primary level.</p>	C
4.5	<p>Toxoplasmosis, diagnostics and therapy</p> <p>Referral to secondary level is required both for diagnostics and for therapeutic policy.</p>	C
4.6	<p>Rubella</p> <p>An increased risk of fetal growth retardation, pre-term birth and visual and hearing disorders should be taken into account in a case of primary infection with rubella during pregnancy.</p>	C
4.7	<p>Cytomegalovirus</p> <p>An increased risk of perinatal death and subsequent morbidity should be taken into account.</p>	C
4.8	<p>Herpes genitalis (primary infection)</p> <p>Herpes genitalis (recurrent)</p> <p>During a primary infection there is a (slight) risk of transplacental fetal infection. In the first year after the primary infection, there is a higher frequency of recurrences and asymptomatic virus excretion. If a primary infection occurs shortly before or during birth, there is an increased risk of neonatal herpes. Due to the possibility of treatment with antiviral drugs, referral to secondary care is indicated for primary infections. For recurrences and where herpes genitalis is in the medical history, it is advisable to carry out a virus culture from the oropharynx of the neonate. If there are frequent recurrences (>1/month) or where there is a recurrence during birth, referral is indicated due to the increased risk of infection of the neonate. It is as yet not clear whether the presence of antibodies are sufficient protection for the child.</p>	C A
4.9	<p>Parvo virus infection</p> <p>This infection can lead to fetal anemia and hydrops. Possibilities exist for treating these problems.</p>	C
4.10	<p>Varicella/Zoster virus infection</p>	B

	This refers to a maternal infection. Primary infection with varicella/zoster virus (chicken pox) during the pregnancy might require treatment of the pregnant woman with VZV-immunoglobulin due to the risk of fetal varicella syndrome. If varicella occurs shortly before birth or early during the puerperium, there is a risk of neonatal infection. Treatment of the mother and child with an antiviral drug is sometimes indicated. If there is a case of manifest herpes zoster (shingles), then there is no risk of fetal varicella syndrome.	
4.11	Hepatitis B (Hbs-Ag+)	A
4.12	Hepatitis C This is an indication for referral to secondary care for consultation. Attention must be given to follow-up by the pediatrician.	B
4.13	Tuberculosis This refers to an active tuberculous process.	C
4.14	HIV-infection In connection with the present possibilities of medical therapy for preventing vertical transmission, care for these patients during pregnancy and birth should take place in a hospital/center equipped to deal with HIV and AIDS.	C
4.15	Syphilis Positive serology and treated	A
	Positive serology and not yet treated	B
	Primary infection Attention should be paid to collaboration between the primary and secondary care providers involved during referral. It is important to ensure perfect information exchange between the midwife, the GP, the obstetrician and the venereologist. Structural agreements can be worked out in local collaboration.	C
4.16	Hernia nuclei pulposi, (slipped disk) occurring during pregnancy Policy should be determined according to complaints and clinical symptoms. Where there are no complaints, (further) care can take place at primary level.	B
4.17	Laparotomy during pregnancy As soon as wound healing has occurred and if the nature of the operation involves no further obstetric risks, care for the pregnant woman can return to primary level. During hospitalisation the obstetrician will be involved in the care. If there are no further obstetric consequences then care for the pregnant woman can return to primary level.	C
4.18	Cervix cytology PAP III or higher What is important here is that further gynaecological policy (for the purpose of subsequent diagnostics) may be necessary, while the pregnancy and birth can	B

	be conducted at primary level.	
4.19	<p>Medicine use</p> <p>What is obviously important here is the effect of drugs on the pregnant woman and the unborn child. Attention should also be paid to the effect on lactation and the effects in the neonatal period. In cases of doubt, consultation should take place. Note: information is available from the NIAD (030-2971100) and from the teratology center of the RIVM (030-2742017).</p>	A/ B
4.20	<p>Use of hard drugs (heroin, methadone, cocaine, XTC etc.)</p> <p>The severity of the addiction to hard drugs is important here and their effects during pregnancy and birth and in the puerperium, particularly for the neonate.</p>	C
4.21	<p>Alcohol abuse</p> <p>This involves the fetal alcohol syndrome. Obviously the long-term involvement of the pediatrician can be necessary during follow up.</p>	C
4.22	<p>Psychiatric disorders (neuroses/psychoses)</p> <p>The severity of the psychiatric problems and the opinion of the physician in charge of treatment are important.</p>	A/ C
4.24	<p>Hyperemesis gravidarum</p> <p>Referral to secondary care is necessary for treatment of this condition. After recovery the pregnancy and birth can take place at primary care level.</p>	C
4.24	Ectopic pregnancy	C
4.25	<p>Antenatal diagnostics</p> <p>Attention should be given to the presence of a risk for congenital deformities. If no deformities can be found, then further care can take place at primary level. In cases of an age-related indication, direct referral from primary care level to a genetic center can take place.</p>	C
4.26	(Suspected) fetal deformities	B
4.27	Pre-term rupture of membranes (<37 weeks amenorrhoea)	C
4.28	Diabetes Mellitus (incl. pregnancy diabetes)	C
4.29	<p>Pregnancy induced hypertension</p> <p>This refers to hypertension (according to the ISSHP definition, see 1.16) in the second half of pregnancy in a previously normotensive woman. Distinction is drawn between diastolic blood pressure up to 95 mm and blood pressure starting at 95 mm. At a diastolic pressure between 90 and 95 mm, a pregnant woman should receive extra care, from 95 mm upwards, she should be referred to secondary level care.</p>	A/ C
4.30	Pre-eclampsia, super-imposed pre-eclampsia, HELLP-syndrome	C

	<p>Pre-eclampsia is a combination of pregnancy induced hypertension and proteinuria. The latter is defined by an albustix ++ in a urine sample or by a total protein excretion of 30 mg or more during a period of 24 hours. A super-imposed pre-eclampsia exists when there is 'de novo' proteinuria during a pregnancy in a patient with pre-existing hypertension.</p> <p>The HELLP-syndrome is characterised by the combination of haemolysis, liver function disorder and a decrease in the number of platelets.</p>	
4.31	Blood group incompatibility	C
4.32	Thrombosis	C
4.33	Coagulation disorders	C
4.34	Recurring blood loss prior to 16 weeks	B
4.35	<p>Blood loss after 16 weeks</p> <p>After the blood loss has stopped, care can take place at primary care level if no incriminating causes were found.</p>	C
4.36	Placental abruption	C
4.37	<p>(Evaluation of) negative size-date discrepancy</p> <p>A negative size-date discrepancy exists if the growth of the uterus remains 2 to 4 weeks behind the normal size for the duration of the pregnancy.</p>	B
4.38	(Evaluation of) positive size-date discrepancy	B
4.39	<p>Post-term pregnancy</p> <p>This refers to amenorrhoea lasting longer than 294 days.</p>	C
4.40	<p>Threat of or actual pre-term birth</p> <p>As soon as there is no longer a threat of pre-term birth, care during the pregnancy and birth can be continued at primary care level.</p>	B
4.41	<p>Insufficient cervix</p> <p>Once the pregnancy has lasted 37 weeks, further care can take place at primary care level.</p>	C
4.42	<p>Symphysis pubis dysfunction (pelvic instability)</p> <p>This refers to complaints that started during the present pregnancy</p>	A
4.43	Multiple pregnancy	C
4.44	Abnormal presentation at full term (including breech presentation)	C
4.45	<p>Failure of head to engage at full term</p> <p>If at full term there is a suspected cephalo-pelvic disproportion, placenta praevia or comparable pathology, consultation is indicated.</p>	B

4.46	No prior prenatal care (full term) Attention should be paid to the home situation. The lack of prenatal care can suggest psychosocial problems. This can lead to further consultation and a hospital delivery.	A
4.47	Baby up for adoption The prospective adoption often goes hand-in-hand with psychosocial problems. This can lead to further consultation and a hospital delivery.	A
4.48	Dead fetus If the mother prefers to give birth at home, the care she receives should be the same as if the birth were to take place in a hospital. Attention should be paid to postmortem examination study and evaluation according to protocol.	C
4.49	Obstetrically relevant fibroids (myoma) Depending on the anatomical proportions, the possibility of a disturbance in the progress of pregnancy or birth should be taken into account.	B

5. Occurring during birth

For the C-category in this section, when one of the items mentioned below occurs, an attempt should still be made to achieve an optimal condition for further intrapartum care, whilst referral to secondary care level may be urgent, depending on the situation. When referring from the home situation, the risk of transporting the woman also needs to be included in the considerations.

5.1	Abnormal presentation of the child What counts here is abnormal presentation and not abnormal position.	B
5.2	Signs of fetal distress It is important that fetal distress can be expressed in various ways (fetal heart rate, meconium staining in the amniotic fluid).	C
5.3	Intrapartum fetal death Attention should be paid to post-mortem examinations	C
5.4	Pre-labour rupture of membranes Referral should take place the morning after the membranes have been broken for 24 hours.	C
5.5	Failure to progress in the first stage of labour If the contractions are good, both regarding strength and frequency, but there is no change in the cervix or progress in dilation after the latent phase for duration of 4 hours; one can speak of a failure to progress in labour. Consultation is necessary to be able to determine further treatment based on an analysis of the possible cause.	B

5.6	<p>Failure to progress in second stage of labour</p> <p>This exists where there is a lack of progress, after a maximum of one hour, in cases with full dilation, ruptured membranes, strong contractions and sufficient maternal effort.</p>	C
5.7	<p>Excessive bleeding during birth</p> <p>The degree of bleeding during birth cannot be objectively measured, but needs to be estimated. Excessive loss of blood can be a sign of a serious pathology.</p>	C
5.8	Placental abruption	C
5.9	Umbilical cord prolapse	C
5.10	<p>(Partial) retained placenta</p> <p>It is not always possible to be sure of the retention of part of the placenta. If there is reasonable cause to doubt, then referral to secondary care should take place</p>	C
5.11	Fourth degree perineal laceration	C
5.12	Meconium stained amniotic fluid	C
5.13	<p>Fever</p> <p>It is obviously important to find out the cause of the fever. In particular, the possibility of an intrauterine infection should be taken into account and the administration of antibiotics intrapartum should be considered.</p>	C
5.14	<p>Analgesia</p> <p>It is important to be aware of the effects on dilatation and respiratory depression. The use of painkillers during birth is a subject that can be covered during local discussions with the aid of guidelines. One should attempt to achieve well-founded consensus.</p>	B
5.15	<p>Vulva haematoma</p> <p>Treatment policy is determined according to the complaints intrapartum and in the early puerperium.</p>	C
5.16	<p>Symphiolysis</p> <p>This refers to rupturing of the symphyseal rupture. It should be distinguished from pelvic instability. The added value of consultation in cases of pelvic instability has not been proven.</p>	B
5.17	<p>Birth with no prior prenatal care</p> <p>A lack of prenatal care can be a sign of psychosocial problems and in particular addiction. Intrapartum monitoring, serological screening and immunisation are of utmost importance.</p>	C

6. Occurring during the puerperium

6.1	Puerperal fever It is important to know the underlying cause. In cases of reasonable doubt, referral should be considered.	A/C
6.2	(Threat of) eclampsia, (suspected) HELLP-syndrome	C
6.3	Thrombosis	C
6.4	Psychosis It is important to involve (non-obstetrically) the GP and the psychiatrist in treating the psychiatric disorder.	B
6.5	Postpartum haemorrhage	C
6.6	Hospitalisation of child It is obviously important here to involve (non-obstetrically) the GP and the pediatrician. The bonding between mother and child are important in the period following birth.	C

Ontario College of Midwives Indications for Mandatory Discussion, Consultation and Transfer of Care (effective January 2015)

According to the midwifery model of care, the midwife works in partnership with the client. As a provider of primary healthcare, the midwife is fully responsible for the clinical assessment, planning and delivery of care for each client. The client remains the primary decision-maker regarding her own care, and that of her newborn.

Throughout the antepartum, intrapartum and postpartum periods, clinical situations may arise in which the midwife will need to initiate involvement of other health care providers in the care of a client or her newborn. According to the requirements of this Standard, she will:

- **Consult** with a physician, or the most appropriate available health care provider, or
- **Transfer responsibility for primary care** to a physician

Definitions

Consultation with a Physician, or other appropriate health care provider

- Consultation is an explicit request from a midwife of a physician, or other appropriate health care provider, to give advice on a plan of care and participate in the care as appropriate.
- It is the midwife's responsibility to decide when and with whom to consult and to initiate consultations.
- Consultation may result in the physician, or other health care provider, giving advice, information and/or therapy to the woman/newborn directly or recommending a plan of care and/or therapy to be carried out by the midwife.
- After consultation with a physician, the role of most responsible provider either remains with the midwife or is transferred to the consulting physician.
- Consultation may be initiated at the client's request.

Transfer of Care to a Physician

- Transfer of care occurs when the primary care responsibilities required for the appropriate care of the client fall outside of the midwife's scope of practice.
- A transfer of care may be permanent or temporary.
- When primary care is transferred from the midwife to a physician, the physician assumes full responsibility for the subsequent planning and delivery of care to the client.
- The client remains the primary decision-maker regarding her care and the care of her newborn.
- After a transfer of care has taken place the midwife shall remain involved as a member of the health care team and provide supportive care to the client within the scope of midwifery.
- If the condition for which the transfer of care was initiated is resolved, the midwife may resume primary responsibility for the care of the mother and/or newborn.

Midwife's Responsibilities

- In all instances where another health care provider is required in the care of a midwife's client or her newborn, the midwife shall:
- Review the *Consultation and Transfer of Care Standard* with the client as part of an informed choice discussion.
- Respect the principles of informed choice, and support the client decision making process.
- Ensure that a client's decision not to pursue a consultation with another health care provider is clearly documented in the client's health record, in accord with the standards of the College of Midwives.
- Ensure that a client's decision not to follow a consultant's recommendation, once it is communicated to the midwife, is documented in the client's health record, in accord with the standards of the College of Midwives.
- Involve the other health care provider within an appropriate time frame.
- Ensure that the request for a consultation or transfer of care are both clearly articulated to the other health care provider and the client, and documented in the client's health record.⁴
- Ensure, where possible, that a consultation includes an in-person evaluation of the client or her newborn and that a consultation is initiated by phone where urgency, distance or climatic conditions make an in-person consultation impossible.
- Ensure that the subsequent plan of care, including the roles and responsibilities of the primary care providers involved, are communicated to the clinicians, and to the client and documented in the client's health record.
- Remain accountable for the care they have provided whether working collaboratively or independently.
- Throughout the course of care other indications not specifically referenced in this Standard may arise which require the involvement of other health care providers. Notwithstanding the indications listed in this Standard, midwives are expected to use their best clinical judgment supported by the highest quality available evidence and relevant guidelines, to determine when the involvement of other health care practitioners is warranted.

Indications: Initial History and Physical Examination

Consultation

- Significant current medical conditions that may affect pregnancy or are exacerbated due to pregnancy
- Significant use of drugs, alcohol or other substances with known or suspected teratogenicity or risk of associated complications
- Previous uterine surgery other than one documented low-segment cesarean section
- History of cervical cerclage
- History of more than one second-trimester spontaneous abortion
- History of three or more consecutive first-trimester spontaneous abortions
- History of more than one preterm birth, or preterm birth less than 34+ 0 weeks in most recent pregnancy
- History of more than one small for gestational age infant
- History of severe hypertension or pre-eclampsia, eclampsia or HELLP syndrome

- Previous neonatal mortality or stillbirth which likely impacts current pregnancy

Transfer of care

- Cardiac disease
- Renal disease
- Insulin-dependent diabetes mellitus
- HIV positive status

Indications: Prenatal Care

Consultation

- Significant mental health concerns presenting or worsening during pregnancy
- Persistent or severe anemia unresponsive to therapy
- Severe hyperemesis unresponsive to pharmacologic therapy
- Abnormal cervical cytology requiring further evaluation
- Significant non-obstetrical or obstetrical medical conditions arising during pregnancy
- Sexually transmitted infection requiring treatment
- Gestational diabetes unresponsive to dietary treatment
- Urinary tract infection unresponsive to pharmacologic therapy
- Persistent vaginal bleeding other than uncomplicated spontaneous abortion less than 14+0 weeks
- Fetal anomaly that may require immediate postpartum management
- Evidence of intrauterine growth restriction
- Oligohydramnios or polyhydramnios
- Twin pregnancy
- Isoimmunization
- Persistent thrombocytopenia
- Thrombophlebitis or suspected thromboembolism
- Gestational hypertension
- Vasa previa
- Asymptomatic placenta previa persistent into third trimester
- Presentation other than cephalic, unresponsive to therapy, at or near 38+0 weeks
- Intrauterine fetal demise
- Evidence of uteroplacental insufficiency
- Uterine malformation or significant fibroids with potential impact on pregnancy

Transfer of care

- Molar pregnancy
- Multiple pregnancy (other than twins)
- Severe hypertension or pre-eclampsia, eclampsia or HELLP syndrome
- Placental abruption or symptomatic previa
- Cardiac or renal disease with failure
- Gestational diabetes requiring pharmacologic treatment

Indications: Labor, Birth, and Immediate Post-Partum

Consultation

- Preterm prelabour rupture of membranes (PPROM) between 34 +0 and 36 +6 weeks
- Twin pregnancy
- Breech or other malpresentation with potential to be delivered vaginally
- Hypertension presenting during the course of labour
- Abnormal fetal heart rate pattern
- Suspected intra amniotic infection
- Labor dystocia unresponsive to therapy
- Intrauterine fetal demise
- Retained placenta
- Third or fourth degree laceration
- Periurethral laceration requiring repair

Transfer of care

- Active genital herpes at time of labour or rupture of membranes
- HIV positive status
- Preterm labour or PPRM less than 34 +0 weeks
- Fetal presentation that cannot be delivered vaginally
- Multiple pregnancy (other than twins)
- Prolapsed or presenting cord
- Placental abruption, placenta previa or vasa previa
- Severe hypertension or pre-eclampsia, eclampsia or HELLP syndrome
- Suspected embolus
- Uterine rupture
- Uterine inversion
- Hemorrhage unresponsive to therapy

Indications: Post-partum (Maternal)

Consultation

- Breast or urinary tract infection unresponsive to pharmacologic therapy
- Suspected endometritis
- Abdominal or perineal wound infection unresponsive to non-pharmacologic treatment
- Persistent or new onset hypertension
- Significant post-anesthesia complication
- Thrombophlebitis or suspected thromboembolism
- Significant mental health concerns including postpartum depression and signs or symptoms of postpartum psychosis
- Persistent bladder or rectal dysfunction
- Secondary postpartum hemorrhage
- Uterine prolapse

- Abnormal cervical cytology requiring treatment

Transfer of care

- Postpartum eclampsia
- Postpartum psychosis

Indications: Post-partum (Infant)

Consultation

- 34 +0 to 36 +6 weeks gestational age
- Suspected neonatal infection
- In utero exposure to significant drugs, alcohol, or other substances with known or suspected teratogenicity or other associated complications
- Findings on prenatal ultrasound that warrant postpartum follow up
- Prolonged PPV or significant resuscitation
- Failure to pass urine or meconium within 36 hours of birth
- Suspected clinical dehydration
- Feeding difficulties not resolved with usual midwifery care
- Significant weight loss unresponsive to interventions or adaptation in feeding plan
- Failure to regain birth weight by three weeks of age
- Infant at or less than 5th percentile in weight for gestational age
- Single umbilical artery not consulted for prenatally
- Congenital anomalies or suspected syndromes
- Worsening cephalhematoma
- Excessive bruising, abrasions, unusual pigmentation and/or lesions
- Significant birth trauma
- Abnormal heart rate, pattern or significant murmur
- Hypoglycemia unresponsive to initial treatment
- Hyperglycemia
- Suspected neurological abnormality
- Persistent respiratory distress
- Persistent cyanosis or pallor
- Fever, hypothermia or temperature instability
- Vomiting or diarrhea
- Evidence of localized or systemic infection
- Hyperbilirubinemia requiring medical treatment or any jaundice within the first 24 hours
- Suspected seizure activity

Transfer of care

- Major congenital anomaly requiring immediate intervention

College of Midwives of British Columbia: Indications for Mandatory Discussion, Consultation and Transfer of Care

As a primary caregiver, the midwife is fully responsible for decision-making, together with the client. The midwife is responsible for writing orders and carrying them out or delegating them to an appropriate regulated health professional in accordance with the standards of the College of Midwives.

The midwife discusses care of a client, consults, and/or transfers primary care responsibility according to the *Indications for Discussion, Consultation and Transfer of Care*. The responsibility to consult with a family physician/general practitioner, obstetrician, pediatrician, other specialist physician or a nurse practitioner lies with the midwife. It is also the midwife's responsibility to initiate a consultation within an appropriate time period after detecting an indication for consultation. The severity of the condition and the availability of a physician will influence these decisions.

The College of Midwives expects members to use their professional judgment in making decisions to consult or transfer care. The following list is not exhaustive. Other circumstances may arise where the midwife believes consultation or transfer of care is necessary.

The informed choice agreement between the midwife and client should outline the extent of midwifery care, so that the client is aware of the scope and limitations of midwifery care. The midwife should review the *Indications for Discussion, Consultation and Transfer of Care* with the client.

Definitions

Discussion with a midwife, a physician, or nurse practitioner

It is the midwife's responsibility to initiate a discussion with, or provide information to, another midwife or a physician in order to create an appropriate plan of care. It is also expected that the midwife will conduct regularly scheduled reviews of client charts with her colleagues to assist in planning care. Discussion should be documented by the midwife in the client record.

Consultation with a physician or a nurse practitioner

It is the midwife's responsibility to initiate a consultation in accordance with the standards of the College and to communicate clearly to the consultant that she is seeking a consultation and why. In requesting a consultation, a midwife uses her professional knowledge of the client and requests the opinion of a physician or nurse practitioner qualified to give advice in the area of clinical concern. A midwife may also seek a consultation when another opinion is requested by the client. The midwife must document each consultation in the client record in accordance with the standards of the College of Midwives.

The midwife should expect the consultant to address the problem described in the consultation request, conduct an in-person assessment(s) of the client, and promptly communicate findings and recommendations to the client and to the referring midwife. Discussion will then normally occur between the midwife and the consultant regarding the future plan of care for the client.

Where urgency, distance or climatic conditions do not allow the client to see a physician or nurse practitioner for an in-person consultation visit, the midwife should seek advice from the consultant by phone or other similar means. The consultant may use alternative means of communication (e.g., via telehealth) to assess the client as available and appropriate. The midwife should document such requests for advice in client records, in accordance with the standards of the College of Midwives, and discuss the advice received with the client.

A consultation can involve the physician or nurse practitioner providing advice and information, and/or providing therapy to the woman/newborn, or recommending therapy for the woman/newborn to the midwife to provide within her scope of practice.

After consultation with a physician or nurse practitioner, primary care of the client and responsibility for decision-making, with the agreement of the consultant and the informed consent of the client, may:

- Continue with the midwife;
- Be shared between the midwife, nurse practitioner and/or physician; or
- Be transferred to the physician.

Once a consultation has taken place and the consultant's findings, opinions and recommendations have been communicated to the client and the midwife, the midwife must discuss the consultant's recommendations with the client and ensure that the client understands which health professional will have responsibility for primary care.

Shared primary care

In a shared care arrangement the consultant may be involved in, and responsible for, a discrete area of the client's care, with the midwife maintaining overall responsibility within her scope of practice, or vice versa. Areas of involvement in client care and the plan for communication between care providers must be clearly agreed upon and documented by the midwife and the consultant.

It is recommended that one health professional take responsibility for coordinating the client's care. This arrangement should be clearly communicated to the client and documented in the records. Responsibility can be transferred temporarily from one health professional to another, or be shared between health professionals, according to the client's best interests and optimal care. Transfer of care or an arrangement for sharing care should be discussed with the client, agreed to between the midwife and the consultant(s), and documented in the client record.

Shared primary care arrangements may vary depending on community and on the experience and comfort levels of the care providers involved. Midwives who gain more skills and abilities and experience over time may be able to manage more complex care within their scope of practice in collaboration with their physician colleagues.

Transfer to a physician for primary care

When primary care is transferred permanently or temporarily from the midwife to a physician, the physician assumes full responsibility for subsequent decision-making, together with the client. When primary care is transferred to a physician, the midwife may continue to provide

supportive care, and any care within her scope of practice that is agreed to by the physician who is in the role of most responsible care provider, and that has the consent of the client.

Indications: Initial History and Physical Examination

Discussion

- Adverse socio-economic conditions
- Age less than 17 years or over 40 years
- Cigarette smoking
- Grand multipara (5 or more previous births)
- History of infant over 4,500 g
- History of one late miscarriage (after 14 weeks) or pre-term birth
- History of one low-birth-weight infant
- History of serious psychological problems
- Less than 12 months from last delivery to present due date
- Obesity
- Poor nutrition
- Previous antepartum hemorrhage
- Previous postpartum hemorrhage
- One documented previous low-segment cesarean section
- History of hypertensive disorders of pregnancy
- Known uterine malformations or fibroids
- History of trauma or sexual abuse

Consultation

- Current medical conditions, for example: cardiovascular disease, pulmonary disease, endocrine disorders, hepatic disease, neurologic disorders, severe gastrointestinal disease
- Family history of genetic disorders, hereditary disease or significant congenital anomalies
- History of cervical cerclage or incompetent cervix
- History of repeated spontaneous abortions
- History of more than one late miscarriage or pre-term birth
- History of more than one low-birth-weight infant
- History of eclampsia
- History of significant medical illness
- Previous myomectomy, hysterotomy or cesarean section other than one
- Documented previous low-segment cesarean section
- Previous neonatal mortality or stillbirth
- Rubella during first trimester of pregnancy
- Significant use of drugs, alcohol or other toxic substances
- Age less than 14 years
- History of postpartum hemorrhage requiring transfusion

Transfer

- Any serious medical condition, for example: cardiac or renal disease with failure, or insulin-dependent diabetes mellitus

Indications: Prenatal Care

Discussion

- Presentation other than cephalic at 4 weeks prior to due date
- No prenatal care before 28 weeks gestation
- Uncertain expected date of delivery

Consultation

- Anemia (unresponsive to therapy)
- Documented post-term pregnancy (42 completed weeks) suspected or diagnosed
- Fetal anomaly that may require physician management during or immediately after delivery
- Inappropriate uterine growth
- Medical conditions arising during prenatal care, for example: endocrine disorders, hypertension, renal disease, suspected or confirmed significant infection, including h1n18, hyperemesis
- Placenta previa without bleeding
- Polyhydramnios or oligohydramnios
- Gestational hypertension
- Isoimmunization, haemoglobinopathies, blood dyscrasia
- Serious psychological problems
- Sexually transmitted disease
- Twins
- Repeated vaginal bleeding other than transient spotting
- Presentation other than cephalic at 37 weeks
- Insulin-dependent gestational diabetes

Transfer

- Cardiac or renal disease with failure
- Multiple pregnancy (other than twins)
- Severe pre-eclampsia¹² or eclampsia
- Symptomatic placental abruption

Indications: During Labor and Delivery

Discussion

- No prenatal care
- Thin, non-particulate meconium

Consultation

- Breech presentation
- Pre-term labor (34 – 36 + 6 weeks)

- Prolonged active phase
- Prolonged rupture of membranes
- Prolonged second stage
- Suspected placenta abruption and/or previa
- Retained placenta
- Third or fourth degree tear
- Twins
- Unengaged head in active labor in primipara
- Thick or particulate meconium
- Temperature of 38°C or greater on more than one occasion

Transfer

- Active genital herpes at time of labor
- Pre-term labor (less than 34 weeks)
- Abnormal presentation (other than breech)
- Multiple pregnancy (other than twins)
- Severe pre-eclampsia or eclampsia
- Prolapsed cord
- Placenta abruption and/or previa
- Severe hypertension
- Abnormal fetal heart rate patterns unresponsive to therapy
- Uterine rupture
- Uterine inversion
- Hemorrhage unresponsive to therapy
- Obstetric shock

Indications: Post-partum (Maternal)

Consultation

- Breast infection unresponsive to therapy
- Wound infection
- Uterine infection
- Signs of urinary tract infection unresponsive to therapy
- Temperature over 38°C on more than one occasion
- Persistent hypertension
- Serious psychological problems

Transfer

- Hemorrhage unresponsive to therapy
- Eclampsia
- Thrombophlebitis or thromboembolism
- Uterine prolapse

Indications: Post-partum (Infant)

Discussion

- Feeding problems
- Excessive moulding
- Cephalohaematoma

Consultation

- Suspicion of or significant risk of neonatal infection
- 34 to 36 +6 weeks gestational age
- Infant less than 2,500 g
- Less than 3 vessels in umbilical cord
- Abnormal findings on physical exam
- Excessive bruising, abrasions, unusual pigmentation and/or lesions
- Birth injury requiring investigation
- Congenital abnormalities, for example: cleft lip or palate, developmental dysplasia of the hip, ambiguous genitalia
- Abnormal heart rate or pattern
- Persistent poor suck, hypotonia or abnormal cry
- Persistent abnormal respiratory rate and/or pattern
- Persistent cyanosis, pallor or jitteriness
- Jaundice in first 24 hours
- Failure to pass urine or meconium within 24 hours of birth
- Suspected pathological jaundice after 24 hours
- Temperature less than 36°C unresponsive to therapy
- Temperature of 38°C or more unresponsive to therapy
- Vomiting or diarrhea
- Infection of umbilical stump site
- Significant weight loss (more than 10% of body weight)
- Failure to regain birth weight in 3 weeks
- Failure to thrive

Transfer

- Apgar score lower than 7 at 10 minutes
- Suspected seizure activity
- Significant congenital anomaly requiring immediate medical intervention, for example: omphalocele, myelomeningocele
- Temperature instability

APPENDIX B. GRADE ELEMENT DESCRIPTIONS

Element	Description
Balance between desirable and undesirable effects	The larger the difference between the desirable and undesirable effects, the higher the likelihood that a strong recommendation is warranted. The narrower the gradient, the higher the likelihood that a weak recommendation is warranted
Quality of evidence	The higher the quality of evidence, the higher the likelihood that a strong recommendation is warranted
Resource allocation	The higher the costs of an intervention—that is, the greater the resources consumed—the lower the likelihood that a strong recommendation is warranted
Values and preferences	The more values and preferences vary, or the greater the uncertainty in values and preferences, the higher the likelihood that a weak recommendation is warranted

Strong recommendation

In Favor: The subcommittee is confident that the desirable effects of adherence to a recommendation outweigh the undesirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences.

Against: The subcommittee is confident that the undesirable effects of adherence to a recommendation outweigh the desirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences.

Weak recommendation

In Favor: The subcommittee concludes that the desirable effects of adherence to a recommendation probably outweigh the undesirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences, but is not confident.

Against: The subcommittee concludes that the undesirable effects of adherence to a recommendation probably outweigh the desirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences, but is not confident.

Quality or strength of evidence rating across studies for the treatment/outcome¹⁸

High: The subcommittee is very confident that the true effect lies close to that of the estimate of the effect. Typical sets of studies are RCTs with few or no limitations and the estimate of effect is likely stable.

Moderate: The subcommittee is moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different. Typical sets of studies are RCTs with some limitations or well-performed nonrandomized studies with additional strengths that guard against potential bias and have large estimates of effects.

Low: The subcommittee's confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect. Typical sets of studies are RCTs with serious limitations or nonrandomized studies without special strengths.

Very low: The subcommittee has very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect. Typical sets of studies are nonrandomized studies with serious limitations or inconsistent results across studies.

¹⁸ Includes risk of bias, precision, directness, consistency and publication bias

APPENDIX C. METHODOLOGY, NEW EVIDENCE SEARCH, AND SUMMARY PROCESS DESCRIPTION

- 1) Conduct MEDLINE® search to update and expand on trusted source review conducted in 2014 at initiation of the topic for HERC. Search strategy attached below was developed by an Research Associate for the Center for Evidence-based Policy (Center) and an experienced health care librarian at Oregon Health & Science University with extensive experience working on systematic reviews (SRs). The search was conducted with the following parameters:
 - a. 10-year search (January 2005-April 2015) to capture sources that Wax 2010 SR, which was included from initial trusted source search, may have missed or excluded. Search also limited to 10-year time frame to avoid including studies that were conducted in time periods that now would be considered to be outdated obstetric practice.
 - b. MEDLINE® search for both SRs (with or without meta-analyses), randomized trials and cohort studies
 - c. Broad search terms encompassing out-of-hospital birth, home birth, and birthing center locations with a variety of outcomes, both in the U.S. and abroad
 - d. Review of included study reference lists and public comments to the HERC to identify any additional studies
- 2) Dual review by Center epidemiology staff for inclusions & exclusions
 - a. Inclusion criteria:
 - i. Population-based study of relevant patient populations in countries with developed health care systems similar to the U.S.;
 - ii. N > 1000 in OOH birth group;
 - iii. Exclusion or control or reporting of patients deemed a priori high-risk by HERC (multiple birth, breech, prior Cesarean birth, non-vertex);
 - iv. Inclusion and analysis by planned birth setting;
 - v. Reporting of relevant maternal or fetal/neonatal outcomes;
 - vi. Abstractable data; or
 - vii. Not a narrative review, opinion, comment or letter to the editor.
- 3) Evidence summary and addendum to HERC Coverage Guidance document based on additional studies meeting inclusion criteria, with quality rating of evidence
- 4) EbGS to update coverage guidance language, as appropriate, based on updated evidence search and additional discussion

Table C1. MEDLINE® Search Strategy

Database: Ovid MEDLINE® without Revisions <1996 to April Week 3 2015>

1	exp Home Childbirth/	2152
2	((plan or plans or plann\$) adj3 (birth\$ or born or deliver\$) adj7 (house\$ or home or homes or ((away or outsid\$) adj3 (hospital\$ or facilit\$))))).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	191
3	exp Birthing Centers/	567
4	(birth\$ adj center\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	831
5	(birth\$ adj2 setting\$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	235
6	(midwi\$ adj3 (home or homes or hous\$)).mp.	186
7	1 or 2 or 3 or 4 or 5 or 6	3216
8	exp Mortality/	291819
9	mo.fs.	436286
10	advers\$.mp.	327767
11	exp "Outcome and Process Assessment (Health Care)"/	765349
12	exp Economics/	503207
13	ec.fs.	345974
14	exp Pregnancy Complications/	349245
15	exp Risk/	874947
16	8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	2976033
17	7 and 16	1360
18	limit 17 to yr="2005 -Current"	721
19	limit 18 to english language	677
20	limit 19 to journal article	593

21	limit 19 to (comment or editorial or letter or news)	92
22	19 not 21	585
23	20 or 22	596

Center staff excluded 558 citations of the 596 identified by the MEDLINE® search based on not meeting inclusion criteria for this review and reviewed 38 full text articles for possible final inclusion.

During full text review of the MEDLINE® search results, two studies were excluded as duplicates, four studies did not have abstractable data, two were excluded because of country setting and five on the basis of the included population.

An additional 20 sources were identified from references in included studies, a final MEDLINE® update conducted on May 20, 2015 (21 citations were identified; two were selected for full text review, and one was included), and/or from public comment and testimony to the HERC. Twelve of these were peer reviewed publications. Of these 12, three were identified in the initial MEDLINE® search on April 22, 2015 and two were identified in the final MEDLINE® search on May 20, 2015. The remaining nine articles were not specifically on the topic of OOH birth and were submitted as part of public comment related to risk criteria.

After full text review of a total of 40 studies, 15 met inclusion criteria and were abstracted into Table C1.

The authors of two studies (Cheyney, 2014; Janssen, 2009) which had not reported all perinatal mortality outcomes by parity, and which were relevant to Oregon, were contacted for additional data.

References Suggested Through Public Comment And Testimony Process

Suggested references that were also identified in MEDLINE® search and are included in evidence summary

Birthplace in England Collaborative Group; Brocklehurst, P., Hardy, P., Hollowell, J., Linsell, L., Macfarlane, A., McCourt, C. ... Stewart, M. (2011). Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: The Birthplace in England national prospective cohort study. *British Medical Journal*, 343, d7400.
<http://www.bmj.com/content/343/bmj.d7400.full.pdf+html>

Cheyney, M., Bovbjerg, M., Everson, C., Gordon, W., Hannibal, D., & Verdam, S. (2014). Outcomes of care for 16,924 planned home births in the United States: the Midwives Alliance of North America Statistics Project, 2004-2009. *Journal of Midwifery & Women's Health*, 59(1), 17-27.
<http://onlinelibrary.wiley.com/doi/10.1111/jmwh.12172/epdf>

Stapleton, S. R., Osborne, C., & Illuzzi, J. (2013). Outcomes of care in birth centers: Demonstration of a durable model. *Journal of Midwifery & Women's Health*, 58(1), 3-14. <http://onlinelibrary.wiley.com/doi/10.1111/jmwh.12003/epdf>

Suggested references which were not included in evidence summary because they did not meet inclusion criteria (but which were included in public comment disposition)

American Congress of Obstetricians and Gynecologists (ACOG). (2013, November 14). *Ob-gyns issue task force report on hypertension in pregnancy: Preeclampsia diagnosis no longer requires presence of proteinuria*. <http://www.acog.org/About-ACOG/News-Room/News-Releases/2013/Ob-Gyns-Issue-Task-Force-Report-on-Hypertension-in-Pregnancy>

American College of Nurse-Midwives. (2010). Intermittent auscultation for intrapartum fetal heart rate surveillance (replaces ACNM Clinical Bulletin #9, March 2007). *Journal of Midwifery and Womens Health*, 55(4), 397-403.

American College of Obstetricians and Gynecologists.. (2014). Safe prevention of the primary cesarean delivery. *American Journal of Obstetrics & Gynecology*, 123, 693-711.

Fretts, R. C. (2005). Etiology and prevention of stillbirth. *American Journal of Obstetrics and Gynecology*, 193(6),1923-35.

International Confederation of Midwives (ICM). (2011). *International definition of the midwife. Revised and adopted by ICM Council June 15, 2011*. <http://www.internationalmidwives.org/assets/uploads/documents/Definition%20of%20the%20Midwife%20-%202011.pdf>

International Confederation of Midwives (ICM). (2013) *Global standards for basic midwifery education (2010, amended in 2013)*. http://www.internationalmidwives.org/assets/uploads/documents/CoreDocuments/ICM%20Standards%20Guidelines_ammended2013.pdf

Kramer, M. S., Liu, S., Luo, Z., Yuan, H., Platt, R. W., & Joseph, K. S. (2002). Fetal and infant health study group of the Canadian perinatal surveillance system. Analysis of perinatal mortality and its components: Time for a change? *American Journal of Epidemiology*, 156(6), 493-7.

Leveno, K. J., Cunningham, F. G., Nelson, S., Roark, M., Williams, M. L., Guzick, D. ... Buckley, A. (1986). A prospective comparison of selective and universal electronic fetal monitoring in 34,995 pregnancies. *New England Journal of Medicine*, 315(10), 615-9.

Magee, L., Pels, A., Helewa, M., Rey, E., & von Dadelszen, P. (2014). Diagnosis, evaluation, and management of the hypertensive disorders of pregnancy: Executive summary. *Journal of Obstetrics and Gynecology Canada*, 36(5), 416-438.

National College of Naturopathic Medicine. (2014). *Course catalogue 2013-2014*. Portland, Oregon. http://www.ncnm.edu/images/Publications/coursecatalog/2013-2014_Course_Catalog_FINAL_web.pdf

- North American Registry of Midwives (NARM). (2009, April 20). *10 things you should know about PEP*. <http://narm.org/forum/viewtopic.php?f=3&t=3#p3>
- North American Registry of Midwives, Midwifery Education Accreditation Council, National Association of Certified Professional Midwives, Midwives Alliance of North America. (2008). Certified professional midwives in the United States. https://www.google.com/search?q=Issue+Brief%E2%80%94Certified+Professional+Midwives+in+the+United+States&og=Issue+Brief%E2%80%94Certified+Professional+Midwives+in+the+United+States&ags=chrome..69i57.3411j0j7&sourceid=chrome&es_sm=91&ie=UTF-8
- Oregon Licenses, Permits and Registrations, Detailed Information for Natural Childbirth Certificate (Naturopathic) http://licenseinfo.oregon.gov/index.cfm?fuseaction=license_seng&link_item_id=14456
- Oregon Health Authority. (2013). *Oregon birth outcomes by planned birth place and attendant, Pursuant to: HB 2380 (2011)*. <https://public.health.oregon.gov/BirthDeathCertificates/VitalStatistics/birth/Documents/PlannedBirthPlaceandAttendant.pdf>
- Prata, N., Hamza, S., Bell, S., Karasek, D., Vahidnia, F., & Holston, M. (2011). Inability to predict postpartum hemorrhage: Insights from Egyptian intervention data. *BMC Pregnancy and Childbirth*, 11, 97. <http://www.biomedcentral.com/content/pdf/1471-2393-11-97.pdf>
- Rosenstein, M. G., Snowden, J. M., Cheng, Y. W., & Caughey, A. B. (2014). The mortality risk of expectant management compared with delivery stratified by gestational age and race and ethnicity. *American Journal of Obstetrics and Gynecology*, 211(6), 660.e1-8. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3719843/>
- Rowe, T. (2007). Fetal health surveillance: Antepartum and intrapartum consensus guideline. *Journal of Obstetrics and Gynecology Canada*, 29(9), S3-S50.

Table C2: Evidence Table for Out-of-Hospital Birth Studies, New Search

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
Studies with Outcomes Reported by Parity				
U.S.-based Studies				
Cheng, 2013	<p>U.S. Retrospective cohort study U.S. birth certificates from 27 states using 2003 modification noting planned and actual place of birth. N=12,039 planned home births of 2,081,753 births meeting study criteria, out of 4,247,694 total U.S. births in 2008.</p> <p>Exclusion criteria included <37, >=43 wk EGA; breech; multifetal; birth at freestanding birth cntr; accidental home birth; unclear planned location of birth.</p> <p>Included multips with history of prior CS. 21.0% Nulliparas in home birth group.</p> <p>Significant differences (p<0.001) among planned home and hospital groups for all reported characteristics, including parity, age, race/ethnicity, marital status, years of education, month of</p>	<p>Results below are for planned site of birth and also by attendant, abbreviations as follows: Hospital (Hosp) Home CNM-CM (Home-CNM) Home-Other Midwife (Home-OMW)</p> <p>Primary outcome--5 min Apgar <4 [# (%)], by parity, by site/provider</p> <p>Nulliparas Hosp: 2843 (0.34%) Home-CNM: 3 (0.42%) Home-OMW: 5 (0.37%)</p> <p>Multiparas Hosp: 2185 (0.18%) Home-CNM: 3 (0.12%) Home-OMW: 12 (0.25%)</p> <p>adjOR 5 min Apgar<4 [crudeOR not reported, adjOR adjusted for parity, maternal age, race/ethnicity, education, GA, number of PN care visits, cigarette smoking, medical/obstetric conditions] <i>Home-CNM v. Hospital</i></p>	<p>CS not reported For mode of delivery, only operative vaginal delivery was reported: adjOR (planned home v. hospital) 0.12 (0.08-0.42) (Very small data cell for planned home birth where only 10 cases reported among 12,039 births)</p> <p>Other maternal outcomes reported: Induction of Labor Augmentation of Labor Antibiotic use in labor</p>	<p>Very low (OOO+)</p> <p>Sample included fewer than 50% of U.S. births during 2008.</p> <p>No linkage to fetal/neonatal death files for mortality outcomes.</p> <p>All outcomes are surrogates/short term outcomes with most relevant outcome being 5 min Apgar <4 which is associated with poor perinatal outcome. Two studies were cited with 5 min Apgar score of 0-3 associated with neonatal mortality rate of 20-21/1000 among term births.</p> <p>Some birth certificate items very poor sensitivity. Large state variation in 2003 revised birth certificate sensitivity compared to medical records has also been reported for some items (such as NICU admission, neonatal assisted ventilation, antibiotics for suspected neonatal sepsis and meconium staining) by the National Center for Health Statistics.</p> <p>Planned place of birth a relatively new data item on birth certificates and no validation offered for this key variable. The 2003 birth certificate revision asks "Place where birth occurred (Check one)" and gives options of Hospital,</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>initiation of prenatal care and gestational age at birth. Multivariable logistic regression model adjusted for parity, maternal age, race/ethnicity, educational attainment, marital status, EGA at delivery, cigarette use during pregnancy, prenatal visits, medical conditions (prepregnancy htn or DM, gestational htn or GDM and/or preeclampsia, eclampsia.</p> <p>Total Nulliparas, N=840,641 Total Multiparas, N=1,227,272</p>	<p>Nullip adjOR 0.47 (0.07-3.38) Multip adjOR 0.83 (0.27-2.6)</p> <p><i>Home-OMW v. Hospital</i> Nullip adjOR 1.34 (0.55-3.22) Multip adjOR 1.84 (1.04-3.26)</p> <p><i>Other outcomes reported</i> 5 min Apgar <7 Ventilator support >6 hrs NICU admission Neonatal seizures (very small cells—2 each among nullips and multips at home with other midwife and 1 among multip at home with CNM)</p>		<p>Freestanding birthing center, Home Birth, Clinic/Doctor's Office, or Other (Specify). Only the home birth selection asks the additional question of "Planned to delivery at home?" (2003 Revisions of the U.S. Standard Certificates of Live Birth: http://www.cdc.gov/nchs/data/dvs/birth11-03final-ACC.pdf)</p> <p>No way to attribute intention to treat analysis factors (planned home vs. transfer to hospital for actual place of birth). Transfer from hospital to home much less likely than home to hospital may give positive bias to home birth.</p> <p>Large sample size with use of U.S. data and analysis by parity and type of OOH birth attendant.</p> <p>adjOR may be overadjusted for risk factors and not present adequate impression of average case, but useful for assessment of lowest risk population estimate.</p> <p>Despite adjustment, likely residual confounding based on factors not captured on birth certificate.</p>
Cheyney, 2014	<p>U.S. Prospective, non-comparative cohort</p> <p>Data collected using MANA (Midwives Alliance of North America) web-based tool (MANA Stats 2.0), 2004-2009</p> <p>20-30% of active CPMs in</p>	<p>Perinatal mortality [# , rate per 1000, (95% CI)]</p> <p>Overall PM (non-anomalous), all parities 35/16,980 or 2.06/1000</p> <p><i>By time of death</i> Intrapartum: 22/16,980 [1.30 (0.75-</p>	<p>CS birth 887/16,984 (5.2%)</p> <p>Other maternal outcomes reported: Intrapartum transfer (and if transferred, use of epidural, oxytocin augmentation) Postpartum maternal</p>	<p>Low (OO++)</p> <p>Largest study of home births, primarily attended by CPMs, in the U.S.</p> <p>Prospective data collection with outcomes reported by parity. Good attention to data quality with prior</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>North American participated (n=432), with ~95% of women consenting to participate. Over 79% of birth attendants were CPMs, with other types including CNMs, naturopaths, non-licensed midwives</p> <p>Prospective entry of subjects into database, usually early in pregnancy, before outcomes of interest known.</p> <p>Database variables cover first prenatal visit through 6 wks postpartum.</p> <p>Multiple data reviews after entry. Quality of data accuracy tested previously and found to be high.</p> <p>Final sample size, N=16,924 (Total dataset N=24,848. Excluded women transferred to care prior to labor, planned birth location other than home, women living outside the U.S.)</p> <p>Nulliparas, 22.3% of sample</p>	<p>1.84/1000]</p> <p>Early neonatal: 7/16,950 [0.41 (0.11-0.72)/1000]</p> <p>Late neonatal: 6/16,942 [0.35 (0.07-0.64)/1000]</p> <p>Total intrapartum mortality when higher-risk women removed from sample (multiple gestations, breech, TOLAC, GDM, preeclampsia): 0.85/1000 (95% CI 0.39-1.31)</p> <p>Intrapartum: 11/3771 [2.92 (1.20-4.64)]</p> <p>Early neonatal: 1/3757 [0.41 (0.11-0.72)]</p> <p>Late neonatal: 6/16,942 [0.35 (0.07-0.64)]</p> <p>Primiparous v. multiparous, intrapartum death 2.92/1000 v. 0.84/1000 (p<0.01)</p> <p>Primiparous v. multiparous, without risk factors 2.77/1000 v. 0.30/1000</p> <p>[Author contacted for additional information since many perinatal deaths were associated with risk conditions that might preclude home birth. For primiparous women at low risk (with a non-breech presentation, no gestational diabetes and no preeclampsia) there were a total of 10 perinatal deaths (8 intrapartum, 1 early neonatal, and 1 late neonatal), for PM rates of 2.21/1000, 0.28/1000, and 0.28/1000, or a total low</p>	<p>transfer</p> <p>SVD, OVD</p> <p>Primary CS</p> <p>TOLAC</p> <p>Breech presentation</p>	<p>validation study published.</p> <p>Not possible to assemble a comparable comparative group of CPM attended hospital births, but there were birth center births which were excluded from this sample (n=3895) and which may be reported in the future.</p> <p>Some additional data on nulliparity and perinatal mortality obtained from first author—see neonatal outcomes. Additional papers are in process or press from this dataset.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		<p>risk primiparous PM rate of 2.77/1000]</p> <p># (out of total of 35) Perinatal deaths, by risk factor Breech: 5 TOLAC: 5 Multiple gestation: 1 GDM: 2 Preeclampsia: 1</p> <p>Intrapartum fetal death rate by risk factor <i>Breech</i> 13.51/1000 v. 1.09/1000 vertex (p<0.01)</p> <p><i>TOLAC</i> 2.85/1000 v. 0.66/1000 for multiparas without h/o prior CS (p=0.05)</p> <p>Other fetal/neonatal outcomes reported: Breech presentation (early and late neonatal death) GA (pre- v. post-term) Low BW, Macrosomia Neonatal transfer NICU admission</p>		
Non-U.S.-based Studies				
Birthplace, 2011	England Prospective, comparative cohort	Primary composite outcome (CO) (stillbirth after the start of care in labor, early neonatal death, neonatal encephalopathy, meconium aspiration syndrome, brachial plexus injury,	Intrapartum Cesarean Section (events/1000) for women with low risk status Overall CS incidence (all	Very Low (OOO+) High quality, large, population-based prospective study with robust attention to data quality, design, conduct and

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>Collected all planned home (home), freestanding midwifery unit (FMU), and alongside midwifery unit (AMU) births, and a stratified random sample of births in obstetric units (OU). Data from all NHS trusts providing home birth services between April 2008 and April 2010.</p> <p>Composite primary outcome used in study was combination of stillbirth after the start of care in labor, early neonatal death, neonatal encephalopathy, meconium aspiration syndrome, brachial plexus injury, fractured humerus, and fractured clavicle.</p>	<p>fractured humerus, and fractured clavicle for women with low risk status)</p> <p>Organization of presentation of CO outcome below:</p> <p>Incidence of events/1000</p> <p>crudeOR (95% CI) weighted for duration of unit's participation in study, probability of being sampled, and clustering.</p> <p>adjOR adjusted for maternal age, ethnicity, understanding of English, marital/partner status, BMI, deprivation score, prior pregnancies, GA.</p> <p>Referent group for crudeOR and adjOR calculations are OU group.</p> <p>Overall CO incidence, all parities</p> <p>Home 4.2 (3.2-5.4)</p> <p>FMU 3.5 (2.5-4.9)</p> <p>AMU 3.6 (2.6-5.9)</p> <p>OU 4.4 (3.2-5.9)</p> <p><i>crudeOR</i></p> <p>Home 0.96 (0.65—1.42)</p> <p>FMU 0.82 (0.52-1.28)</p> <p>AMU 0.84 (0.54-1.30)</p> <p><i>adjOR</i></p> <p>Home 1.16 (0.76-1.77)</p> <p>FMU 0.92 (0.58-1.46)</p> <p>AMU 0.92 (0.60-1.39)</p>	<p>parities)</p> <p>9.9 (8.4-11.5)</p> <p>By planned location</p> <p>Home 2.8 (2.3-3.4)</p> <p>FMU 3.5 (2.8-4.2)</p> <p>AMU 4.4 (3.5-5.5)</p> <p>OU 11.1 (9.5-13.0)</p> <p>Crude and adjORs for Cesarean birth compared to referent OU category</p> <p><i>crudeOR</i></p> <p>Home 0.23 (0.17-0.30)</p> <p>FMU 0.28 (0.21-0.37)</p> <p>AMU 0.37 (0.28-0.49)</p> <p><i>adjOR</i></p> <p>Home 0.31 (0.23-0.41)</p> <p>FMU 0.32 (0.24-0.42)</p> <p>AMU 0.39 (0.29-0.53)</p> <p>Other outcomes reported:</p> <p>Spontaneous vertex birth</p> <p>Vaginal breech birth</p> <p>Ventouse delivery</p> <p>Forceps delivery</p> <p>3rd/4th degree perineal trauma</p> <p>Blood transfusion</p>	<p>appropriate statistical analysis.</p> <p>Study formed basis for 2014 NICE guideline recommendations on planned place of birth.</p> <p>English NHS health system, training, practice patterns, regulation of midwives and other professionals are different from U.S. systems, and may not be applicable to U.S. setting.</p> <p>Supplementary tables (online with study available at: http://www.bmj.com/content/343/bmj.d7400/related)</p> <p>Supplementary tables have event counts for stillbirth and neonatal death at 0-7d. for low risk women. These are secondary analyses and were not presented in main paper because number of events was small (total of 18 cases of stillbirth/early neonatal death among nullips and 14 among multips) and not statistically stable. The incidence figures (expressed as # (95% CI)/1000) below should be treated with caution:</p> <p>Stillbirth</p> <p>Nulliparas</p> <p>Home 0.9 (0.2-3.3)</p> <p>FMU 0.3 (0.0-3.5)</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		<p>Nulliparas</p> <p>Home 9.3 (6.5-13.1)</p> <p>FMU 4.5 (2.8-7.1)</p> <p>AMU 4.7 (3.1-7.2)</p> <p>OU 5.3 (3.9-7.3)</p> <p><i>crudeOR</i></p> <p>Home 1.76 (1.10-2.82)</p> <p>FMU 0.85 (0.49-1.48)</p> <p>AMU 0.90 (0.53-1.54)</p> <p><i>adjOR</i></p> <p>Home 1.75 (1.07-2.86)</p> <p>FMU 0.91 (0.52-1.80)</p> <p>AMU 0.96 (0.58-1.61)</p> <p>Multiparas</p> <p>Home 2.3 (1.6-3.2)</p> <p>FMU 2.7 (1.6-4.6)</p> <p>AMU 2.4 (1.4-4.3)</p> <p>OU 3.3 (2.2-5.0)</p> <p><i>crudeOR</i></p> <p>Home 0.70 (0.40-1.21)</p> <p>FMU 0.86 (0.44-1.69)</p> <p>AMU 0.77 (0.38-1.57)</p> <p><i>adjOR</i></p> <p>Home 0.72 (0.41-1.27)</p> <p>FMU 0.91 (0.46-1.80)</p>	<p>Admission to higher level of care</p> <p>Syntocinon augmentation</p> <p>Immersion in water for pain relief</p> <p>Epidural or spinal analgesia</p> <p>General anesthetic</p> <p>No active management of 3rd stage</p> <p>Episiotomy</p> <p>Transfer during labor</p> <p>Transfer immediately after birth</p>	<p>AMU 0.1 (0.0-1.6)</p> <p>OU 0.1 (0.0-1.5)</p> <p>Multiparas</p> <p>Home 0.1 (0.0-0.9)</p> <p>FMU 0.5 (0.1-2.2)</p> <p>AMU 0 events</p> <p>OU 0.2 (0.0-1.2)</p> <p>Early neonatal death (within 7d)</p> <p>Nulliparas</p> <p>Home 0.4 (0.1-2.4)</p> <p>FMU 0.5 (0.1-1.7)</p> <p>AMU 0.1 (0.0-1.7)</p> <p>OU 0.4 (0.1-1.3)</p> <p>Multiparas</p> <p>Home 0.3 (0.1-1.3)</p> <p>FMU 0.3 (0.1-2.2)</p> <p>AMU 0.1 (0.0-1.4)</p> <p>OU 0.1 (0.0-1.8)</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		<p>AMU 0.81 (0.40-1.62)</p> <p>Overall CO incidence, all parities, women without complicating conditions at start of labor (prolonged ROM >18h., meconium stained fluid, proteinuria >=1+, hypertension, abnormal vaginal bleeding, non-cephalic presentation, abnormal fetal heart rate, other-unspecified)</p> <p>Home 4.0 (3.0-5.3)</p> <p>FMU 3.2 (2.3-4.6)</p> <p>AMU 3.4 (2.4-4.9)</p> <p>OU 3.1 (2.2-4.2)</p> <p><i>crudeOR</i></p> <p>Home 1.34 (0.88-2.05)</p> <p>FMU 1.11 (0.69-1.77)</p> <p>AMU 1.19 (0.74-1.91)</p> <p><i>adjOR</i></p> <p>Home 1.59 (1.01-2.52)</p> <p>FMU 1.22 (0.76-1.96)</p> <p>AMU 1.26 (0.80-1.99)</p> <p>Nulliparas</p> <p>Home 9.5 (6.6-13.7)</p> <p>FMU 4.5 (2.8-7.4)</p> <p>AMU 4.4 (2.7-7.0)</p> <p>OU 3.5 (2.4-5.1)</p>		

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		<p><i>crudeOR</i> Home 2.81 (1.66-4.76) FMU 1.33 (0.72-2.46) AMU 1.31 (0.71-2.39)</p> <p><i>adjOR</i> Home 2.80 (1.59-4.92) FMU 1.40 (0.74-2.65) AMU 1.38 (0.75-2.52)</p> <p>Multiparas Home 2.0 (1.4-2.9) FMU 2.2 (1.3-3.8) AMU 2.5 (1.4-4.5) OU 2.6 (1.5-4.4)</p> <p><i>crudeOR</i> Home 0.80 (0.41-1.54) FMU 0.90 (0.42-1.94) AMU 1.04 (0.47-2.30)</p> <p><i>adjOR</i> Home 0.83 (0.44-1.58) FMU 0.97 (0.46-2.04) AMU 1.09 (0.50-2.39)</p>		
Hutton, 2009	Ontario, Canada Retrospective matched cohort	Planned home v. planned hospital birth Intrapartum Stillbirth 3 v. 4	Planned home v. planned hospital birth Cesarean birth 348/6692 (5.2%) v. 544/	Very Low (OOO+) Population-based retrospective matched cohort study of midwifery care. Subjects matched on parity and for

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>Ontario Ministry of Health Database of planned home births during 2003 to 2006.</p> <p>Planned home (N=6692) v. Planned hospital (N=6692)</p> <p>Nulliparas, 34.3% of both groups (groups matched on parity)</p>	<p>Neonatal mortality (0-28d) 6 v. 4</p> <p>Neonatal death (28-42d) 0 v. 1</p> <p>Total perinatal mortality (stillbirths and neonatal deaths from 0-42d) 9 v. 9 (denominator N= 6692 for each group)</p> <p>Composite outcome (CO) (perinatal/neonatal mortality or morbidity, including 5 min Apgar <4, neonatal resuscitation w/ PPV and cardiac compressions, admission to NICU w/ LOS>4d, BW<2500g) 159/6692 v. 190/6692 RR 0.84 (0.68-1.03)</p> <p>CO, Nulliparas v. Multiparas Home 80 (3.5%) v. 79 (1.8%) Hospital 85 (3.7%) v. 105 (2.4%)</p> <p>Perinatal/neonatal mortality, Nulliparas v. Multiparas Home 5 (0.2%) v. 4 (0.1%) Hospital 4 (0.2%) v. 2 (0.1%)</p>	<p>6692 (8.1%)</p> <p>RR 0.64 (0.56-0.73)</p> <p>CS, by parity</p> <p>Nulliparas 276/2293 (12%) v. 365/2298 (15.9%)</p> <p>Multiparas 71/4393 (1.3%) v. 179/4394 (2.6%)</p> <p>Other outcomes reported: Actual place of birth Ambulance transport from home during or after birth Intrapartum transfer of care Postpartum transfer of care Est. intrapartum blood loss Consultation or transfer of care for bleeding Genital tract laceration Episiotomy Induction of labor Labor augmentation Pharmaceutical pain relief</p>	<p>multiparous women on h/o prior CS.</p> <p>Matching by parity would not eliminate unmeasured confounding (systematic differences between women desiring a home v. hospital birth), but both groups were registered with midwives who have both home and hospital birth privileges which would make them more similar than a comparable group of low risk women not seeking midwifery care.</p> <p>Records required to be kept from entry to care, but no comment on when the “planned” place of birth was elected (early/late prenatal v. onset of labor). Records audited regularly by the College of Midwives of Ontario.</p> <p>Ontario midwives adhere to provincial standards for low-risk care and have education comparable to U.S. CPM or CNM.</p> <p>Indirectness due to non-U.S. setting as described above. Canadian practice likely most similar to U.S. compared to other non-U.S. studies, but there are differences in health care systems, as well as midwifery accreditation, licensure, and monitoring.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		Other outcomes reported: Breech presentation Gestational age Birthweight Apgar scores Infant resuscitation NICU admission Significant congenital anomalies Infant feeding at 1 wk, 6 wks		
de Jonge, 2015	Netherlands Retrospective cohort Nationwide national database of birth registration for 10 years from 2000-2009. (This study contains 7 years of overlapping data from de Jonge, 2009.) Data from women in primary midwifery care, eligible for home birth and planning either a home or hospital birth. Planned home birth Nulliparas, n=198,515 Multiparas, n=267,526 Planned hospital birth Nulliparas, n=137,168 Multiparas, n=139,740	Perinatal Mortality (stillbirths and neonatal deaths up to 28d) (certain and uncertain time of death) Nulliparas Planned home birth 203/198,515 (1.02%) Planned hospital birth 150/137,168 (1.09%) Nulliparas--Home v. Hospital crudeOR 0.94 (0.76-1.16) adjOR 0.99 (0.79-1.24) (adjusted for GA, maternal age, SES, ethnicity) Multiparas Planned home birth 158/267,526 (0.59%)	No maternal outcomes reported.	Very Low (OOO+) Netherlands has national primary care midwifery, and home birth criteria, integrated system of home and hospital care with clear lines of responsibility for transfer and consultation. This is a high quality set of cohort studies from the Netherlands and this study represents largest database analyzed for these outcomes. Quality rating is related to the fact that these are non-randomized studies and have some indirectness as practice situation may not be applicable to U.S. settings.

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		Planned hospital birth 81/139,740 (0.58%) Multiparas--Home v. Hospital crudeOR 1.02 (0.78-1.33) adjOR 1.16 (0.87-1.55) Other outcomes reported: Perinatal mortality, certain time of death Intrapartum death Neonatal death, 0-7d Neonatal death, 0-28d 5 min Apgar <4, <7 Admission to NICU Admission to NICU within 7d, 28d Severe adverse perinatal outcome (PM or NICU admission, to 28d)		
de Jonge, 2013	Netherlands Retrospective cohort Data for singleton, term (37-42 wks) births among women in primary midwifery care at onset of spontaneous labor, planning either a home or hospital birth, using national registration database, 2004-2006. National database was merged with that from the	No neonatal outcomes reported.	Planned home v. Planned hospital birth Severe acute maternal morbidity (composite outcome, including admission to ICU, uterine rupture, eclampsia/HELLP, transfusion of ≥4 units PRBCs, or other severe morbidity as diagnosed by attending clinician) [adjOR adjusted for parity, GA, maternal age, ethnicity, SES]	Very Low (OOO+) Netherlands has national primary care midwifery, and home birth criteria, integrated system of home and hospital care with clear lines of responsibility for transfer and consultation. Study setting may not be applicable to U.S. settings.

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>LEMMon database (database of severe maternal morbidity) to give more full information on maternal morbidity among planned home births compared to planned hospital births.</p> <p>Study sample size Home: N=92,333 Hospital: N=54,419</p> <p>Nulliparas, n=65,227 (44.4% of sample) Multiparas, N=81,521 (55.6% of sample)</p>		<p>Nulliparas crudeOR 0.74 (0.55-1.00) adjOR 0.77 (0.56-1.06)</p> <p>Multiparas crudeOR 0.42 (0.29-0.60) adjOR 0.43 (0.29-0.63)</p> <p>Other outcomes reported: Admission to ICU Eclampsia or severe HELLP syndrome Transfusion of >=4 units PRBCs PPH>1000mL Manual removal of placenta</p>	
Studies with Outcomes NOT Reported by Parity				
U.S.-based Studies				
Johnson, 2005	<p>U.S.</p> <p>Retrospective cohort</p> <p>Database of births attended by CPMs and with participating made mandatory by NARM CPM recertification during 2000. 409 practicing CPMs agreed to participate in study and 18 excluded for non-participation as they decided over the year not to</p>	<p>Perinatal Mortality (PM) 14/5418 (0.26%) Crude PM = 2.58/1000</p> <p>adjPM (adjusted for lethal congenital anomalies [11/5415]) = 2.03/1000</p> <p>PM among low risk women (removing breech/twins) = 1.7/1000</p> <p>Intrapartum deaths = 5 (1 cord prolapse after AROM in hospital [note that this should have been classed</p>	<p>Cesarean Birth 200/5418 (3.7%)</p> <p>Other outcomes reported: Timing, urgency and indication for maternal transfer to hospital Use of electronic fetal monitoring Intravenous fluids/medications Artificial rupture of membranes</p>	<p>Very Low (OOO+)</p> <p>Over 4% of CPMs did not fully participate and were excluded after agreeing to take part in study. This could have introduced selection bias or outcome assessment bias if these CPMs had poor outcomes and elected to stop re-certification because of this. Appears to be some potential misclassification of type of death (one early neonatal classed as an intrapartum death). Limited information available for cause/location of some</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>re-certify. 0.8% of clients declined to participate.</p> <p>CPM clients logged prospectively and data collected prospectively using paper forms at start of care. Care entry logs collected every 3 months and verified against data forms received. Data collected through 6 wks postpartum. Stratified random sample of CPM patients contacted as data validity check and satisfaction. Additional data collection done for cases of perinatal mortality.</p> <p>Final N=5418 women planning a home birth in the U.S. with a CPM.</p> <p>Nulliparas, 31.2% of study sample</p>	<p>as a neonatal death as Apgars were 1/0]; 1 cord accident [true knot], 2 complications of breech delivery, 1 subgaleal/subdural/subarachnoid hemorrhage)</p> <p>Neonatal deaths = 9 (3 lethal congenital anomalies; 2 with low 5 min Apgar scores died in neonatal period; 2 with high 5 min Apgar scores died suddenly at 15 and 26 hours of age; 1 post-CS for vasa previa; 1 with late onset GBS)</p> <p>Sample included 80 breech births (2 cases of perinatal death); and 13 twin gestations (no deaths)</p> <p>Other outcomes reported: Timing, urgency and indication for neonatal transfer to hospital Admission to NICU 5 min Apgar < 7 Health problems in first 6 wks Breastfeeding</p>	<p>Epidural Induction of labor Stimulation of labor Episiotomy Forceps Vacuum extraction Health problems in first 6 wks Breastfeeding Client satisfaction</p>	<p>perinatal deaths. Data not presented by parity. Included all births, with some at <37 wks (1.4%), some at >42 wks (6.7%). 6% of study population had maternal age >=40y. Although a PM rate adjusted for lethal congenital anomalies, and breech/twin births was provided, no information given about contribution of other high risk conditions such as these or TOLAC.</p> <p>However, this study likely represents average CPM practice in the U.S. in 2000, where practice is regulated differently across states and not integrated into systems of care. The PM rate is also comparable to that found in other studies.</p>
Stapleton, 2013	<p>U.S.</p> <p>Retrospective registry-based outcomes study.</p> <p>Data collected for women planning birth center birth in a participating center from 2007 through 2010.</p>	<p>Perinatal mortality (stillbirths and neonatal death within 7d.)</p> <p>Fetal deaths 14/15,574 (0.09%) (7 fetal deaths occurred prior to admission in labor and 7 were intrapartum deaths. 4 intrapartum deaths occurred after auscultation of abnormal</p>	<p>Cesarean birth</p> <p>Overall CS incidence, all parities 949/15,574 (6.1%)</p> <p>Other maternal outcomes reported:</p>	<p>Low (OO++)</p> <p>This is the only included study of U.S. birth centers meeting inclusion criteria. It has a large sample size and collected data from a geographically diverse group of centers, including the only AABC accredited birth center in Oregon, over a 4 year period. Birth centers contributing data to the UDS</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>Prenatal data collected prospectively using the American Association of Birth Centers (AABC) Uniform Data Set (UDS). Intrapartum, postpartum and neonatal data entered during and after birth. The UDS has been previously validated for data quality and there is ongoing audit for data quality. Seventy-nine (78%) of AABC member birth centers use the UDS registry and approximately 40% of known U.S. birth centers are members of AABC. Most AABC centers have midwifery-led care (both CNM and RM or CPM providers) in collaboration with physicians.</p> <p>Women are entered into the UDS at first prenatal visit and data is collected through a postpartum visit which generally occurs at 4 to 6 weeks postpartum.</p> <p>AABC eligibility for care criteria for low risk pregnancy include singleton, vertex presentation, term gestation</p>	<p>heart tones and transfer. 3 occurred to women who labored and had unexpected stillbirths.)</p> <p>Neonatal deaths 9/15,560 (0.058%) (2 neonatal deaths were due to known lethal congenital anomalies. 1 was due to a congenital diaphragmatic hernia not detected on 2nd trimester anatomy ultrasound scan. 2 deaths occurred among infants of women who were transferred emergently in labor for non-reassuring fetal heart tones and 1 with rupture of a velamentous cord insertion. 2 births occurred in infants who were transferred emergently after birth and had respiratory distress syndrome and 1 in an infant with hypoxic ischemic encephalopathy attributed to a prenatal insult.)</p> <p>Perinatal mortality rate for women admitted in labor (excluding lethal anomalies) 0.87/1000</p> <p>Other neonatal outcomes reported: Neonatal transfer Incidence and indication for emergency neonatal transfer</p>	<p>Intrapartum transfer Postpartum transfer Incidence and indication for emergency transfer Spontaneous vaginal birth Vaginal breech birth VBAC Assisted vaginal birth Repeat CS, with and without TOLAC</p>	<p>registry may not be similar to those who do not support AABC membership standards and thus the findings may not be generalizable to all birth centers in the U.S.</p> <p>The care providers make the coding determination for intrapartum data elements such as the urgency of transfer. However, chart audit indicated that some providers coded a transport as emergent when it was not.</p> <p>Outcomes are not reported by parity. Although TOLAC and breech birth do not meet AABC risk criteria for accredited birth centers there were several women who experienced both in this study. It is not clear where these births took place, but all were admitted in labor to a birth center.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>and no precluding medical or obstetric risks.</p> <p>Planned birth center birth, N=15,574</p> <p>Nulliparas, N=7355, 47.2% of sample</p>			
Non-U.S.-based Studies				
<p>Catling-Paull, 2013</p>	<p>Australia</p> <p>Retrospective cohort</p> <p>Non-comparative analysis of routinely collected data for 2005-2010 from the 12 publically-funded home birth programs in Australia at that time. Data was collected and stored by hospitals in which the home birth program was based. 3 smaller programs did not contribute data (55/1862 births).</p> <p>Publically funded home birth programs have strict low-risk criteria, including singleton gestation, 37-42 wks EGA, no medical, surgical, or obstetric/fetal risk factors. Despite these criteria, there were</p>	<p>Perinatal Mortality (stillbirth and early neonatal death within 7d. for planned home birth group)</p> <p>6/1807 (0.33%)</p> <p>Perinatal mortality excluding expected deaths of infants with lethal anomalies</p> <p>1.7/1000 (0.17%)</p> <p>Other outcomes reported:</p> <p>5 min Apgar score <7</p> <p>BW</p> <p>Admission to special care nursery</p> <p>Neonatal morbidity (respiratory distress, hypoxic-ischemic encephalopathy)</p> <p>Breastfeeding initiation</p> <p>Breastfeeding at 6 weeks</p>	<p>Cesarean Section (for planned home birth group)</p> <p>Other outcomes reported:</p> <p>Place of birth</p> <p>Normal vaginal birth</p> <p>Assisted vaginal birth</p> <p>Vaginal breech birth</p> <p>Transfer to hospital before birth</p> <p>Transfer to hospital after birth</p> <p>Perineal trauma</p> <p>Episiotomy</p> <p>Management of 3rd stage</p>	<p>Very Low (OOO+)</p> <p>9 of 12 programs participated in study, raising possibility of underreporting of poor outcomes.</p> <p>Australian health system, training, practice patterns, regulation of midwives and other professionals are different from U.S. systems, and results may not be applicable to U.S. settings.</p> <p>Prior studies had raised questions about the safety of home birth in Australia and in 2001 the provision of home birth services by private midwives was in marked decline due to the collapse of international indemnity insurance. In a 2009 governmental national Maternity Services Review, the majority of public submissions related to homebirth, most of these from women who wanted access to the service. In response, the government established publically funded home birth in all</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	Nulliparas, N=575, 31.8% of study sample			states/territories with the exception of Queensland. The services operate within the public hospital system. Midwives are accredited, their cases subject to peer review and they engage in emergency training.
Davis, 2012	<p>New Zealand</p> <p>Retrospective cohort</p> <p>Data from New Zealand College of Midwives research database for low-risk women giving birth in 2006 & 2007. Database included data for 32% of all NZ births and is subject to regular audit and validation.</p> <p>Midwives in NZ are the primary caregivers for most women and care for women at home, in primary units (or birth centers), secondary- and tertiary-level hospitals. There is a nationally agreed set of consultation and referral criteria</p> <p>Low-risk births, N=16,453 (mean parity only reported as descriptive variable with home birth cohort having</p>	No neonatal outcomes reported.	<p>Postpartum Hemorrhage (PPH) (greater than 1000mL)</p> <p>Planned primary unit birth is referent category for each RR calculation (PPH in primary unit, 23/2904 [1.1%])</p> <p>Planned home birth 19/1830 (1.0%) crudeRR 0.93 (0.53-1.65) adjRR 0.93 (0.49-1.74) (adjusted for smoking, age, parity, ethnicity, augmentation, length of labor, mode of birth, episiotomy, perineal trauma, BW>4kg, and mode of third stage management)</p> <p>Planned secondary hospital 96/7359 (1.3%) crudeRR 1.2 (0.08-1.79) adjRR 1.07 (0.68-1.69)</p>	<p>Very Low (OOO+)</p> <p>No analysis by parity.</p> <p>No report of neonatal outcomes.</p> <p>Limited to outcomes related to PPH. Did not report any critical outcomes.</p> <p>Indirectness present due to non-U.S. setting.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	mean parity of 1.4)		Planned tertiary hospital 67/4107 (1.6%) crudeRR 1.47 (0.96-2.24) adjRR 1.10 (0.67-1.79) No other relevant outcomes reported.	
de Jonge, 2009	Netherlands Retrospective cohort National database of birth registrations Data for singleton, term (37-42 wks) births among low-risk women in primary midwifery care at onset of labor, planning either a home or hospital birth, using national registration database, for 7 years from 2000-2006. Planned home birth, N=312,307 Primiparous, 40.9% of study sample Planned hospital birth, N=163,261 Primiparous, 46.7% of study sample	Planned home v. Planned hospital birth Intrapartum and neonatal death (0-7 days) [adjOR adjusted for parity, gestational age, maternal age, SES, ethnicity] adjRR 1.00 (0.78-1.27) Other outcomes reported: Intrapartum and neonatal death within 1d. NICU admission	No maternal outcomes reported.	Very Low (OOO+) Very large, 7 year, population-based national registry study. Netherlands has national primary care midwifery, and home birth criteria, integrated system of home and hospital care with clear lines of responsibility for transfer and consultation. Study setting may not be applicable to U.S. settings.
Janssen,	British Columbia, Canada	Perinatal mortality rate (intrapartum	Cesarean delivery	Very Low (OOO+)

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
2009	<p>Retrospective cohort</p> <p>Prospectively collected data of all planned home births attended by registered midwives (RM) compared to planned hospital births meeting eligibility requirements for home birth and attended by the same group of registered midwives from 2000 through 2004. A second comparison group of planned, home birth eligible, hospital births attended by physicians was included. RMs are required to offer women choice of planned delivery in home or hospital for those meeting College of Midwives of British Columbia eligibility requirements. These allow 1 prior CS, and require woman to be term (37-42 wks), singleton fetus, spontaneous labor or with outpatient induction method only, and absence of significant pre-existing or pregnancy-related disease. Provincial standards require RM to have baccalaureate degree in midwifery from a Canadian university. If trained outside of Canada they are required to pass</p>	<p>stillbirth or death in first 28 days of life)</p> <p>RM-Home: 0.35 (0.00-1.03)/1000 RM-Hosp: 0.57 (0.00-1.43)/1000 Phys-Hosp: 0.64 (0.00-1.56)/1000</p> <p>Overall RR Perinatal Mortality (all parities)</p> <p>RM-Home v. RM-Hosp RR 0.61 (0.06-5.88)</p> <p>RM-Home v. Phys-Hosp RR 0.55 (0.06-5.25)</p> <p>Other outcomes reported: 1 and 5 min Apgar<7 Meconium aspiration Asphyxia at birth Birth trauma Resuscitation at birth BW<2500g Seizures Oxygen therapy >24h. Assisted ventilation>24h. Admission to hospital after birth or readmission if hospital birth</p>	<p>CS-Nulliparous RM-Home: 158/1215 (13%) RM-Hosp: 453/2428 (18.7%) Phys-Hosp: 481/2204 (21.8%)</p> <p>CS-Multiparous RM-Home: 50/1684 (3.0%) RM-Hosp: 45/2324 (1.9%) Phys-Hosp: 107/3127 (3.4%)</p> <p>Overall RR for CS (all parities and adj for parity)</p> <p>RM-Home v. RM-Hosp adjRR 0.76 (0.64-0.91)</p> <p>RM-Home v. Phys-Hosp adjRR 0.65 (0.56-0.76)</p> <p>Other outcomes reported: Electronic fetal monitoring Augmentation of labor Narcotic analgesia Epidural analgesia Assisted vaginal delivery Episiotomy 3rd or 4th degree perineal tear</p>	<p>No analysis of perinatal mortality outcomes by parity. (Authors have been contacted to see if additional information available for outcomes by parity.)</p> <p>Perinatal mortality reported in text and tables as stillbirth and death within 7d., but group followed longer and no deaths occurred from days 7 through 28 in any group so we have reported this as the more conventional measure of PM.</p> <p>This study has the strength of controlling for birth attendant by use of the same group of midwives in both home and hospital settings. Quality rating is due to study being conducted outside of the U.S., but to the extent that there are similarities to situation in Oregon the results may be more applicable than for some other non-U.S. studies.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>written, oral and practice-based exams.</p> <p>Planned home—RM (RM-Home), n=2889 (41.9% nulliparous)</p> <p>Planned hospital—RM (RM-Hosp), n=4752 (51.1% nulliparous)</p> <p>Planned hospital—Physician (Phys-Hosp), n=5331 (41.3% nulliparous)</p>		<p>Postpartum hemorrhage</p> <p>Infection</p> <p>Pyrexia</p>	
<p>Kennere, 2010</p>	<p>South Australia (SA) region of Australia</p> <p>Retrospective cohort</p> <p>Analysis of perinatal database of all births in SA, 2001-2006, plus additional information on perinatal deaths from expert committee reviews of all deaths in SA.</p> <p>Planned home birth, N=1141, 31.2%, nulliparas</p> <p>Planned hospital birth, N=297,192, 41.0% nulliparas</p> <p>All GA included, but proportions not specified.</p>	<p>Perinatal Mortality, rate per 1000 births (stillbirths and neonatal deaths up to 28d.):</p> <p>Planned home births 8.2/1000</p> <p>Planned hospital births 7.9/1000</p> <p>adjOR 1.38 (0.56-3.41) (Adjusted for maternal age, parity, occupational status, smoking, plurality, medical and obstetric complications, GA, SGA, congenital anomalies, type of hospital, mode of delivery.)</p> <p>Perinatal mortality standardized by GA 2.18 (0.87-4.50)/1000</p> <p>Perinatal mortality standardized by BW</p>	<p>Cesarean birth:</p> <p>Planned home birth 104/1136 (9.2%)</p> <p>Planned hospital birth 79,238/292,469 (27.1%)</p> <p>adjOR 0.27 (0.22-0.34)</p> <p>Other outcomes reported: Instrumental delivery Episiotomy 3rd or 4th degree perineal tear Postpartum hemorrhage</p>	<p>Very Low (OOO+)</p> <p>No information on types of home birth attendants or training and other systems of referral/transfer.</p> <p>Included all gestational ages >20 wks EGA and with BW >=400g, but little information about the population included in study, including proportions of women with risk factors such as breech, multiple gestation, or prior CS.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
		<p>groups 2.36 (0.95-4.86)/1000</p> <p>Total perinatal deaths Home: 9/1141 Hospital: 2440/297,192</p> <p>Attributed causes of 9 perinatal deaths-- 2 lethal congenital anomaly; 1 in context of waterbirth with limited monitoring at home; 1 second twin from intrapartum asphyxia; 1 hydropic fetus with non-lethal congenital anomaly; 1 growth restricted with suspected karyotype abnormality; 1 unexplained, but with tight nuchal cord x 4; 1 early gestation ROM resulting in pulmonary hypoplasia; 1 "seriously post-term" with refusal of all intervention.</p> <p>Other neonatal outcomes reported: Intrapartum deaths Deaths attributed to intrapartum asphyxia 5 min Apgar <7 Specialized neonatal care</p>		
Nove, 2012	<p>UK, North West Thames Regional Health Authority Retrospective cohort</p> <p>15 NHS hospitals in region, all using the computerized St. Mary's Infirmary Information System.</p>	No neonatal outcomes reported.	<p>(Only outcome reported) Postpartum Hemorrhage (PPH) of $\geq 1000\text{ml}$</p> <p>Risk of PPH, Hospital v. Home crudeOR 2.7 (no CI, $p < 0.001$)</p>	<p>Very Low (OOO+)</p> <p>Database included "most" hospitals in region, but how many not included not specified. Sample may not be considered low risk by current standards (no upper limit on GA, no specification on what meant by high-risk)</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	<p>Data from 1988-2000 for low risk pregnancies planning a home or hospital birth, and that did not have medical induction of labor, elective cesarean, GA<37 wks, unplanned home birth, and which resulted in live births or stillbirths.</p> <p>Planned home birth, N=5998 Planned hospital birth, N=7874</p>		<p>adjOR 2.5 (1.7-3.8)</p> <p>Risk of PPH, Hospital v. Home Primiparas: crudeOR 1.7 (no CI, p<0.001) adjOR 2.0 (1.9-2.2)</p> <p>[model adjusted for pregnancy risk status, suspected macrosomia, prior BW <4500g, BMI, borderline anemia, parity, age, ethnicity, BW, infant sex, # ultrasound scans in pregnancy, yr of birth, hospital providing care, time of day of delivery]</p>	<p>pregnancy) which may have introduced selection bias.</p> <p>Data from time period as late as 1988 and up to 2000, in system different from U.S., thus contributing to indirectness.</p> <p>No critical outcome reported.</p>
van der Kooy, 2011	<p>Netherlands Retrospective cohort</p> <p>Data from the Netherlands Perinatal Registry for planned home and hospital births, attended by a community midwife, taking place from 2000-2007. Subjects met low-risk national criteria and were eligible for planned birth in either location.</p> <p>Note that this study overlaps with the series of</p>	<p>Perinatal Mortality (stillbirth and neonatal death within 7d.)</p> <p>Planned home birth 594/402,912 (0.15%)</p> <p>Planned hospital birth 403/219,105 (0.18%)</p> <p>Planned home v. planned hospital birth, risk of PM</p> <p><i>crudeRR</i> 0.80 (0.71-0.91)</p>	<p>No maternal outcomes reported.</p>	<p>Very Low (OOO+)</p> <p>Outcomes not reported by parity.</p> <p>Perinatal mortality outcome includes neonatal deaths to 7d. rather than to 28d.</p> <p>The Netherlands has national primary care midwifery, and home birth criteria, integrated system of home and hospital care with clear lines of responsibility for transfer and consultation.</p>

Citation	Study Description	Fetal & Neonatal Outcomes ^{#, +}	Maternal Outcomes [#]	Study Quality* (GRADE) Comments
	studies by de Jonge. Planned home birth: Total (all parities) N=402,912 Primiparas, N=171,986 Multiparas, N=230,926 Planned hospital birth: Total (all parities) N=219,105 Primiparas, N=104,249 Multiparas, N=114,856	$adjRR$ 1.05 (0.91-1.21) (adjusted for intended place of birth, parity, age, ethnicity, neighborhood, GA, SGA, prematurity, low Apgar score, congenital abnormality.) [note: RR for primiparas v. multiparas was presented in Table 2, but mixed intended place of birth such that abstractable data by parity not available.] Other outcomes reported: GA at birth Proportions in categories of SGA, prematurity, low Apgar score, and congenital abnormality, for each planned birth location.		Study setting may not be applicable to U.S. settings.

Evidence table presents outcomes of fetal/neonatal death under neonatal outcomes and data on incidence of Cesarean delivery under maternal outcomes when it was reported by the study. If those data not available then next most relevant outcome abstracted for table. Additional outcomes reported by study are listed in each column. Primary available outcome indicated in bold text. Specific and subgroup analyses are indicated by underlining outcome.

+ Measures of effect presented when possible with 96% Confidence Interval (CI) when available, the CI is indicated by placing it in parentheses after the measure of effect.

*Study quality based on most relevant/critical perinatal/neonatal mortality/morbidity outcome reported in study unless otherwise indicated

Table Abbreviations: adjOR-adjusted OR; adjPM-adjusted perinatal mortality; adjRR-adjusted relative risk; AMU-planned alongside midwifery unit birth; BW-birth weight; CI-confidence interval; CNM-certified nurse midwife; CO-composite outcome; CPM-certified professional midwife; crudeOR-basic OR without any adjustment; CS-cesarean section; d-days; DM-diabetes; EGA-estimated gestational age; FMU-planned freestanding midwifery unit birth; GA-gestational age; GDM-gestational diabetes; GRADE- Grading of Recommendations Assessment, Development and Evaluation HELLP-hemolysis, elevated liver enzymes, low platelets; Home-planned home birth; htn-hypertension; ICU-intensive care unit; OOH-Out of Hospital; OR-odds ratio; p-p-value; PPH-postpartum hemorrhage; PN-prenatal; PRBCs-packed red blood cells; N-number of subjects in study or group; NHS-National Health Service (UK); NICU-neonatal intensive care unit; OR-odds ratio; OU-planned obstetric unit birth; OVD-operative vaginal delivery; PM-perinatal mortality; RM-registered midwife; ROM-rupture of membranes; RR-relative risk; SGA-small for gestational age; SVD-spontaneous vaginal delivery;

Study Quality (OOO+) represents very low, (OO++) represents low.

Table C3. GRADE Evidence Profile (Quality Assessment) for Primary Outcomes, New Search, by Study

Quality Assessment							
Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	Quality Rating	Outcome Importance
5 min Apgar score <4 (Cheng, 2013; US, vital stats)							
observational studies	serious ¹	no serious inconsistency	serious ^{2, 3}	no serious imprecision	increased effect for RR ~1 ²	OOO+ VERY LOW	IMPORTANT
Perinatal Mortality (intrapartum stillbirth to 28d.) (Cheyney, 2014; US, MANA registry)							
observational studies ⁴	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	OO++ LOW	CRITICAL
Fetal/Neonatal Composite Outcome (Birthplace, 2011; UK)							
observational studies ⁵	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Perinatal/Neonatal (intrapartum stillbirth to 28 d) Mortality (Hutton, 2009; Ontario, Canada)							
observational studies	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Perinatal Mortality (intrapartum stillbirth to 28d) (de Jonge, 2015; Netherlands)							
observational studies	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Severe Combined Maternal Morbidity (de Jonge, 2013; Netherlands)							
observational studies	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	IMPORTANT
Perinatal Mortality (intrapartum stillbirth and neonatal deaths) (Johnson, 2005; US, NARM CPM study)							
observational studies	serious ⁷	no serious inconsistency	serious	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Perinatal Mortality (intrapartum stillbirth to 7d) (Stapleton, 2013; US, birth center)							
observational studies ⁸	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	OO++ LOW	CRITICAL
Perinatal Mortality (intrapartum stillbirth to 7d) (Catling-Paull, 2013; Australian publically-funded home birth programs)							
observational	serious ¹⁰	no serious	serious ⁶	no serious	none	OOO+	CRITICAL

Quality Assessment							
studies ⁹		inconsistency		imprecision		VERY LOW	
Postpartum Hemorrhage (>=1000mL) (Davis, 2012; New Zealand)							
observational studies	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	IMPORTANT
Perinatal Mortality (intrapartum stillbirth to 7d) (de Jonge, 2009; Netherlands)							
observational studies	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Perinatal Mortality (intrapartum stillbirth to 28d.) (Janssen, 2009; British Columbia, Canada)							
observational studies ¹¹	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Perinatal Mortality (stillbirth to 28 days) (Kennare, 2009; South Australia)							
observational studies	serious ¹²	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL
Postpartum Hemorrhage (>=1000mL) (Nove, 2012; North West Thames, England)							
observational studies	serious ¹³	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	IMPORTANT
Perinatal Mortality (intrapartum stillbirth to 7d) (van der Kooy, 2011; Netherlands)							
observational studies ¹⁴	no serious risk of bias	no serious inconsistency	serious ⁶	no serious imprecision	none	OOO+ VERY LOW	CRITICAL

Table Footnotes:

¹ Vital statistics--US birth certificates--substantial differences among OOH and hospital birth cohorts--although logistic regression to attempt control of residual confounding was undertaken may still be substantial unmeasured confounding. No info on validity of measure by each group of providers/site of birth.

² If planned home birth mother or infant transferred to hospital then outcome attributed to hospital. This could have created bias against hospital and positively for home. However, the outcome numbers for home setting are small and all ORs are highly overlapping such that determination of plausible confounding effect for this surrogate outcome is uncertain.

³ Surrogate outcome used

⁴ Large, prospective data collection, non-comparative, registry study

⁵ Large prospective study of planned home, planned midwifery units and planned obstetric unit births with high quality control and sophisticated analysis

⁶ Non-US based study, closely regulated midwifery, with defined system of consultation and transfer.

⁷ 4% of CPMs did not participate after registering in study. If these stopped study/CPM re-certification process because of poor outcomes could have introduced a negative bias on measures of effect.

⁸ Large, prospective data collection, non-comparative study of planned birth center birth

⁹ Small, non-comparative study

¹⁰ 3 of 12 programs did not participate in study. Represented small numbers of births, but if poor outcome and participation linked then could introduce confounding.

¹¹ Provincial BC perinatal databases used to compare same midwives attending low-risk, home birth eligible women for planned home or hospital birth, and second comparison group of women receiving physician care in hospital.

¹² Included all births over 20 wks EGA and BW 400g, which could contribute bias to either group depending on care patterns and referral. There was robust inquiry into perinatal deaths.

¹³ Data from time older time period, as late as 1988 and up to 2000. Database included "most" hospitals in region, but how many not included not specified. Sample may not be considered low risk by current standards (no upper limit on GA, no specification on what meant by high-risk pregnancy) which may have introduced selection bias.

¹⁴ Data may overlap with de Jonge, 2009 and de Jonge, 2015

DRAFT

APPENDIX D. APPLICABLE CODES

CODES	DESCRIPTION
ICD-9 Diagnosis Codes	
V22	Normal pregnancy
V23	Supervision of high-risk pregnancy
V24	Post-partum care and examination
ICD-10 Diagnosis Codes	
Z34	Encounter for supervision of normal first pregnancy, unspecified trimester
O09	Supervision of high-risk pregnancy
Z39	Encounter for care and examination of mother immediately after delivery
ICD-9 Volume 3 (Procedure Codes)	
72	Forceps, vacuum and breech delivery
73	Other procedures inducing or assisting delivery
74	Cesarean section and removal of the fetus
75	Other obstetric operations
CPT Codes	
59400-10	Vaginal delivery
59412	External cephalic version, with or without tocolysis
59414	Delivery of placenta (separate procedure)
59425-6	Antepartum care only
59430	Postpartum care only (separate procedure)
59510-15	Cesarean delivery
59610-22	Delivery after previous cesarean
HCPCS Level II Codes	
H1000-5	Prenatal care, at risk assessment

Note: Inclusion on this list does not guarantee coverage

APPENDIX E. HERC GUIDANCE DEVELOPMENT FRAMEWORK

HERC Guidance Development Framework Principles

This framework was developed to assist with the decision making process for the Oregon policy-making body, the HERC and its subcommittees. It is a general guide, and must be used in the context of clinical judgment. It is not possible to include all possible scenarios and factors that may influence a policy decision in a graphic format. While this framework provides a general structure, factors that may influence decisions that are not captured on the framework include but are not limited to the following:

- Estimate of the level of risk associated with the treatment, or any alternatives;
- Which alternatives the treatment should most appropriately be compared to;
- Whether there is a discrete and clear diagnosis;
- The definition of clinical significance for a particular treatment, and the expected margin of benefit compared to alternatives;
- The relative balance of benefit compared to harm;
- The degree of benefit compared to cost; e.g., if the benefit is small and the cost is large, the committee may make a decision different than the algorithm suggests;
- Specific indications and contraindications that may determine appropriateness;
- Expected values and preferences of patients.

Planned out-of-hospital birth for low-risk pregnancies



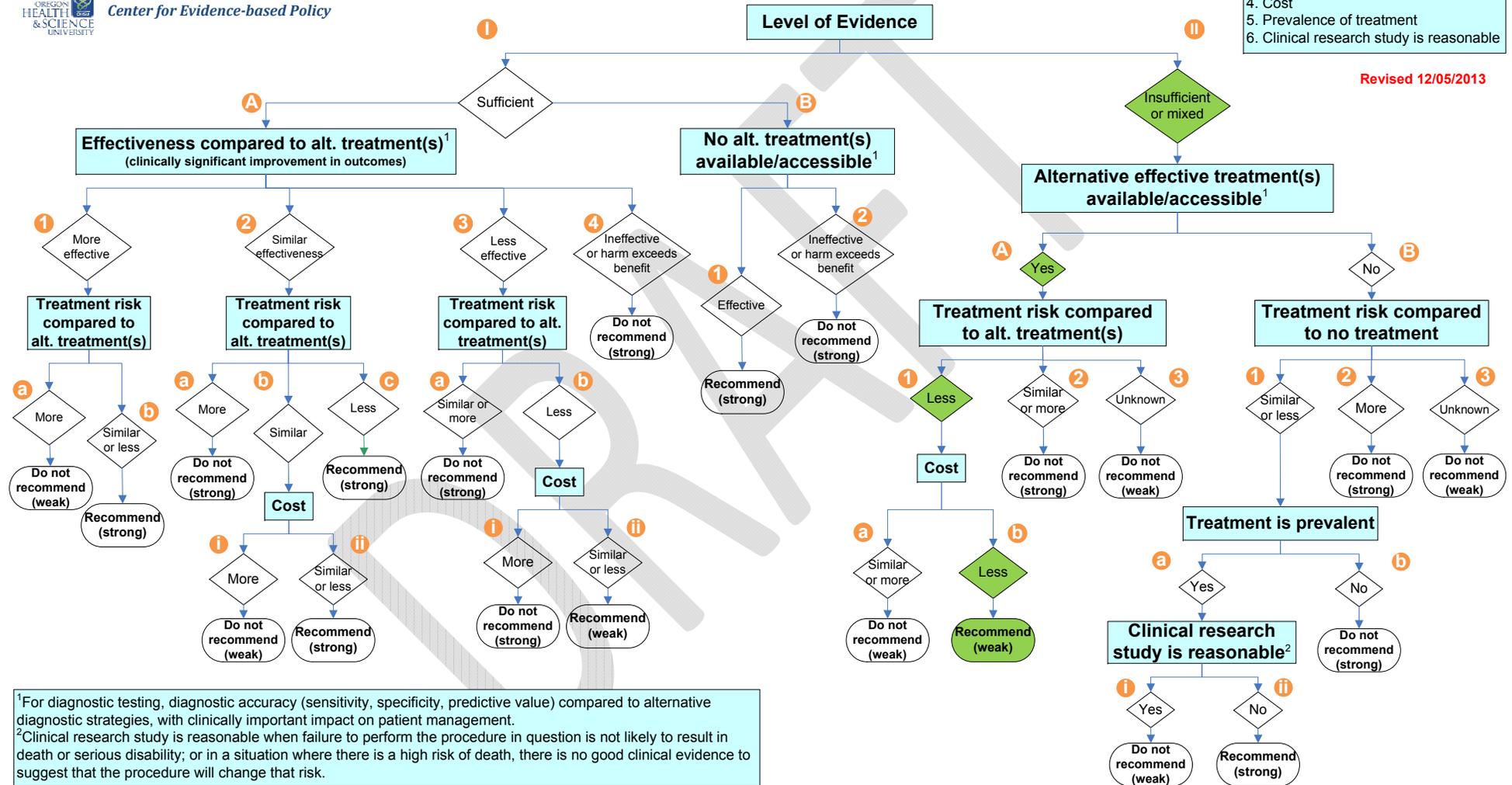
Center for Evidence-based Policy

HERC Guidance Development Framework

Refer to HERC Guidance Development Framework Principles for additional considerations

- Decision Point Priorities**
1. Level of evidence
 2. Effectiveness & alternative treatments
 3. Harms and risk
 4. Cost
 5. Prevalence of treatment
 6. Clinical research study is reasonable

Revised 12/05/2013



Planned out-of-hospital birth for unselected pregnancies



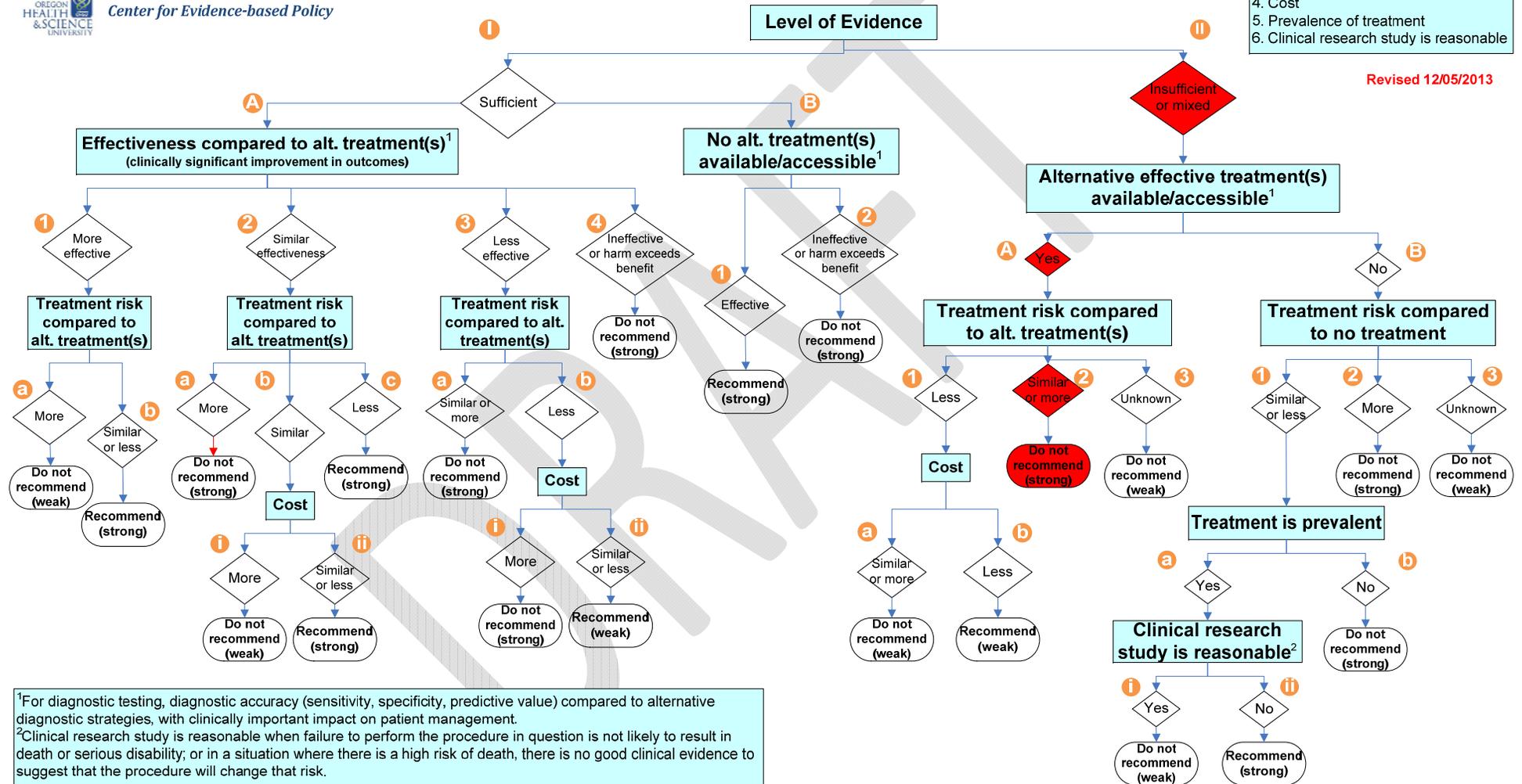
OREGON HEALTH & SCIENCE UNIVERSITY
Center for Evidence-based Policy

HERC Guidance Development Framework

Refer to *HERC Guidance Development Framework Principles* for additional considerations

- Decision Point Priorities**
1. Level of evidence
 2. Effectiveness & alternative treatments
 3. Harms and risk
 4. Cost
 5. Prevalence of treatment
 6. Clinical research study is reasonable

Revised 12/05/2013



¹For diagnostic testing, diagnostic accuracy (sensitivity, specificity, predictive value) compared to alternative diagnostic strategies, with clinically important impact on patient management.
²Clinical research study is reasonable when failure to perform the procedure in question is not likely to result in death or serious disability; or in a situation where there is a high risk of death, there is no good clinical evidence to suggest that the procedure will change that risk.

Coverage Guidance: Planned out-of-hospital birth

Question: How shall the Coverage Guidance on Planned out-of-hospital birth be applied to the Prioritized List?

Question source: Licensed Direct Entry Midwifery workgroup; Evidence-based Guidelines Subcommittee

Issue: The EbGS has approved a draft Coverage Guidance for when coverage is recommended for out of hospital birth. VbBS needs to evaluate application to the Prioritized List of Health Services.

Translating the coverage guidance box language to a List guideline raises a key implementation concern: whether or not each and every one of the risk criteria must be addressed in order to determine whether or not a planned out of hospital birth would be included in the funded region of the List. Therefore, there are two options to decide between.

Proposed List changes:

- 1) **Adopt a new Guideline Note on Planned Out-of-hospital Birth.**
 - a. Staff recommendations that have emerged after approval from EbGS are made in [blue](#) and ~~red~~, and reflect an attempt to remove duplication and add clarity
- 2) **Decide between 2 options:**
 - a. **OPTION 1 (preferred)** – require an assessment of all risk factors in order to determine appropriate candidacy for planned out-of-hospital birth

The clinical and/or diagnostic assessment of each criterion is required for planned out-of-hospital birth to be included on these lines. Documentation of continuing risk assessment and routine prenatal care is required.

- b. **OPTION 2** – allow for some risk factors to be unknown because of maternal choice and/or provider choice
 - i. **If option 2 is chosen, review each of the green choices and determine if they are required or optional**
 - ii. Footnote 1. The presence or absence of these criteria may not be known if there has been no antepartum clinical evidence and diagnostic testing has not been done (e.g. a patient declines to have a prenatal ultrasound or bloodwork). If there is clinical concern for one of these conditions, the criterion must be assessed and managed to determine inclusion on these lines.

Coverage Guidance: Planned out-of-hospital birth

Guideline Note XXX PLANNED OUT-OF-HOSPITAL BIRTH

Lines 1,2

Planned out-of-hospital birth is included on these lines when appropriate risk assessments are performed, and the consultation and transfer criteria are followed, and no high risk criteria exist. Risk assessment should be done initially when planning the location of birth, and updated throughout pregnancy, labor, and delivery to determine if out-of-hospital birth is still appropriate. **The clinical and/or diagnostic assessment of each criterion is required for planned out-of-hospital birth to be included on these lines. Documentation of continuing risk assessment and routine prenatal care is required.**

High risk criteria

Complications in a previous pregnancy:

- Cesarean section or other hysterotomy
- Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty
- Baby with neonatal encephalopathy
- HELLP syndrome
- Placental abruption with adverse outcome
- Pre-eclampsia requiring preterm birth
- Eclampsia
- Uterine rupture
- Retained placenta requiring surgical removal
- Fourth-degree laceration without satisfactory functional recovery

Complications of current pregnancy:

- Gestational age - preterm or postdates (defined as gestational age < 37 weeks + 0 days or > 41 weeks + 6 days)
- Pre-existing chronic hypertension
- Pregnancy-induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken at least 30 minutes apart
- **Multiple gestation**
- Non-cephalic fetal presentation
- **Low lying placenta within 2 cm or less of cervical os at term; placenta previa, vasa previa¹**
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding

Coverage Guidance: Planned out-of-hospital birth

- Anemia – hemoglobin less than 8.5 g/dL¹
- Induction of labor
- [Drug or alcohol use with high risk for adverse effects to fetal or maternal health](#)
- Recurrent antepartum hemorrhage
- IUGR (defined as fetal weight less than fifth percentile using ethnically-appropriate growth tables, or concerning reduced growth velocity on ultrasound)¹
- Abnormal fetal heart rate/Doppler/surveillance studies
- Oligohydramnios or polyhydramnios¹
- Blood group incompatibility with atypical antibodies, or Rh sensitization
- Prelabor rupture of membranes > 24 hours
- Life-threatening congenital anomalies¹
- Unknown HIV or Hepatitis B status
- Current active infection of varicella at the time of labor
- Rubella infection anytime during pregnancy
- Active infection (outbreak) of genital herpes [at the time of labor](#)
- Refractory hyperemesis gravidarum
- Thrombosis/thromboembolism/ thrombocytopenia (platelets <100,000), or other maternal bleeding disorder¹
- Uteroplacental insufficiency
- Molar pregnancy
- Maternal mental illness requiring inpatient care
- Diabetes, type I or II, uncontrolled gestational diabetes, or gestational diabetes controlled with medication¹

Transfer criteria:

If out-of-hospital birth is planned, certain intrapartum and postpartum complications may necessitate transfer to a hospital to still be included on these lines. For these indications, an attempt should be made to transfer the mother and/or her newborn; however, imminent fetal delivery may delay or preclude actual transfer prior to birth.

- Non-cephalic fetal presentation
- Eclampsia or pre-eclampsia
- Placental abruption/abnormal bleeding
- ~~Anemia – hemoglobin less than 8.5 g/dL~~

Coverage Guidance: Planned out-of-hospital birth

- ~~• Current active infection of varicella at the time of labor~~
- ~~• Current active infection (outbreak) of genital herpes at the time of labor~~
- Repetitive or persistent abnormal fetal heart rate pattern
- Thick meconium staining of amniotic fluid
- ~~• Pregnancy induced hypertension with diastolic blood pressure greater than or equal to 90 mmHg or raised systolic blood pressure greater than or equal to 140 mmHg on two consecutive readings taken at least 30 minutes apart~~
- Chorioamnionitis or other serious infection (including toxoplasmosis, rubella, CMV, HIV, etc.)
- Failure to progress/failure of head to engage in active labor
- Prolapsed umbilical cord
- Uterine rupture, inversion or prolapse
- Hemorrhage (hypovolemia, shock, need for transfusion)
- Retained placenta > 60 minutes
- Temperature ≥ 38.0 C
- Laceration requiring hospital repair (e.g., extensive vaginal, cervical or third- or fourth-degree trauma)
- Enlarging hematoma
- Infection (endometritis, UTI, wound, breast)
- ~~• Thrombophlebitis/thromboembolism~~
- Bladder or rectal dysfunction

If the infant is delivered out-of-hospital, the following complications require transfer to a hospital for the out-of-hospital birth to be included on this line:

- Low Apgar score (< 5 at 5 minutes, < 7 at 10 minutes)
- Temperature instability, fever, suspected infection or dehydration
- Hypotonia, tremors, seizures, hyperirritability
- Respiratory or cardiac irregularities, cyanosis, pallor
- Weight less than 5th percentile for [gestational](#) age [\(using ethnically-appropriate growth tables\)](#)
- Unexpected significant or life-threatening congenital anomalies
- Excessive bruising, enlarging cephalohematoma, significant birth trauma
- Hyperglycemia/hypoglycemia unresponsive to treatment
- Vomiting/diarrhea

Coverage Guidance: Planned out-of-hospital birth

Consultation criteria:

Certain high risk conditions require consultation (by a provider of maternity care who is credentialed to admit and manage pregnancies in a hospital) to be included on this line. These complications include (but are not limited to) patients with:

Complications in a previous pregnancy:

- More than three first trimester spontaneous abortions, or more than one second trimester spontaneous abortion
- Blood group incompatibility
- Pre-eclampsia, not requiring preterm birth
- More than one preterm birth, or preterm birth less than 34 weeks 0 days in most recent pregnancy
- Cervical insufficiency/prior cerclage
- Unresolved intrauterine growth restriction (IUGR) or small for gestational age (defined as fetal or birth weight less than fifth percentile using ethnically-appropriate growth tables)
- Third degree laceration; fourth-degree laceration with satisfactory functional recovery
- Child with congenital and/or hereditary disorder
- Baby > 4.5 kg or 9 lbs 14 oz

~~• Perinatal death~~

- Unexplained stillbirth/neonatal death or previous death unrelated to intrapartum difficulty
- Shoulder dystocia, with or without fetal clavicular fracture
- Postpartum hemorrhage requiring additional pharmacologic treatment or blood transfusion
- Retained placenta requiring manual removal

Complications of current pregnancy:

- Fetal macrosomia (estimated weight >4.5 kg or 9 lbs 14 oz)
- Family history of genetic/heritable disorders
- History of maternal seizure disorder (excluding eclampsia)
- Laparotomy during pregnancy
- Cervical dysplasia requiring evaluation
- Gestational diabetes, diet-controlled¹
- Maternal mental illness under outpatient psychiatric care
- Maternal anemia with hemoglobin < 10.5 g/dL

Coverage Guidance: Planned out-of-hospital birth

- Third-degree laceration not requiring hospital repair
- Confirmed intrauterine death
- Inadequate prenatal care (defined as less than five prenatal visits or care began in the third trimester)
- Body mass index at first prenatal visit of greater than 35 kg/m²

1. The presence or absence of these criteria may not be known if there has been no antepartum clinical evidence and diagnostic testing has not been done (e.g. a patient declines to have a prenatal ultrasound or bloodwork). If there is clinical concern for one of these conditions, the criterion must be assessed and managed to determine inclusion on these lines.

Health Evidence Review Commission Coverage Guidance Summary

August 13, 2015

Coverage Guidance

For HERC review and approval

- Planned Out-of-Hospital Births
- Biomarker Tests of Cancer Tissue for Prognosis and Potential Response to Treatment

Planned Out-of-Hospital Births

Planned OOH Births Process Overview

- Initial search – Trusted sources (Aug 2014)
- EbGS – 9/2014, 11/2014, 2/2015, 4/2015, 6/2015
 - New Search (April/May 2015)
 - Medline – 617 citations reviewed
 - Public Comment / Expert Testimony – 20 citations
- Expert Testimony
- Extensive Public Comment (13 commenters)
 - Add/Modify/Delete Table

Planned OOH Births Clinical Background

- Planned out-of-hospital birth
 - Home
 - Birth center
- Direct entry midwives
 - Must be licensed as of January 2015
- Oregon statistics (2012)
 - 4.8% (2,021) of 42,011 live term births were planned OOH
 - 4.0/1,000 (planned OOH birth) vs 2.1/1,000 (hospital) perinatal mortality rate

Planned OOH Births Evidence Summary

- 15 observational studies (low to very low quality)
 - Population-based
 - Focus on critical and important outcomes
 - Potential for indirectness
 - Results
 - Perinatal mortality – No statistically significant differences between groups (10 studies)
 - Cesarean rates – low overall, statistically lower in planned OOH birth group (8 studies)
 - Postpartum hemorrhage – decreased risk in planned OOH birth group (2 studies)

Planned OOH Births

Public Comment Summary

- Add / Modify / Delete Table (proposed high risk, transfer, and consultation criteria modifications)
 - Co-morbidities (e.g., diabetes, seizure disorder, obesity)
 - Previous pregnancy-related events (e.g., C-section, laceration, history of pre-term birth)
 - Current pregnancy conditions / fetal conditions (e.g., macrosomia, pregnancy-induced hypertension)
 - Intrapartum conditions (e.g., retained placenta, meconium staining, prelabor rupture of membranes over 24 hrs)
 - Demographics (e.g., age, religion, parity)
 - Health history (e.g., IUD, family genetic disorders)

Table 1. High risk conditions proposed for additions/~~deletions~~/modifications disposition

The HERC received many public comments on the list of proposed “High risk conditions necessitating consultation or transfer.” It was deemed more suitable that high risk conditions should be divided into separate lists; one encompassing conditions that would indicate planned hospital birth (or transfer), the other noting those conditions where consultation would be appropriate to assure the appropriateness of planned out of hospital birth.

In the table below, conditions that were raised as concerns in public comments are listed to the left. Disposition of these items to a list indicating consultation or transfer/planned hospital birth is noted, and sources cited.

	Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
1	Gestational age of 36 weeks (proposed <u>modification</u> to minimum low-risk criteria)		X (preterm, GA <37w0d)	NICE guideline	Low-risk criteria were clarified. Intention is 36 completed weeks of pregnancy (i.e. 37 weeks + 0 days) as recommended by NICE is required to be considered low-risk; therefore any point during 36 th week requires transfer.
2	Pregnancy past 41 weeks (proposed <u>modification</u> to minimum low-risk criteria)		X (postdates, GA >41w6d)	NICE guideline recommends 41 completed weeks. Oregon Birth Center risk criteria place the upper limit at 43 weeks, or 42 weeks with abnormal non-stress test.	Low-risk criteria were clarified. Intention is to be consistent with NICE guidance on completed weeks of pregnancy. Box language was modified to indicate upper limit is 41 weeks + 6 days.
3	Prior Cesarean section (proposed <u>addition</u> to minimum low-risk criteria)		X	NICE guideline, Table 6	EbGS agrees that patients with prior Cesarean section are not low-risk for out-of-hospital birth, it is considered an exclusion criteria for OOH birth coverage recommendation. See comment F15, commenter cites two studies.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
4 Ultrasound between 12-30 weeks (proposed addition to minimum low-risk criteria)			HERC Coverage Guidance on Ultrasound in Pregnancy	Not added to low-risk criteria based on previous evidence review finding no change in management of pregnancy based on routine ultrasound.
5 Diabetes, pre-existing or gestational (proposed addition)	X (Gestational, diet- and exercise-controlled only)	X (Type I, Type II, uncontrolled gestational, or gestational controlled with medication)	Oregon LDM low-risk criteria and birth center absolute risk criteria exclude existing diabetes, uncontrolled GDM or GDM controlled with medication. NICE guideline lists diabetes as an indication for hospital birth. Ontario suggests transfer of care for insulin-requiring diabetics and consultation for those unresponsive to dietary treatment. Netherlands guidance lists diabetes as indicating secondary-level obstetric care.	Previously was incorporated into nonspecific language about maternal disease. EbGS added gestational diet- and exercise -controlled diabetes mellitus to consultation and all other types as indications for planned hospital birth.
6 Having had an IUD (proposed addition)			Netherlands lists “Status following removal of the IUD” as category A (midwife/GP)	Not added to list based on absence of evidence of risk.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
7 Extremes of maternal age (proposed addition ; prior box language said age <14)			NICE recommends consultation for maternal age >35 but does not put a lower age limit on home birth. Guidelines from British Columbia specify age less than 17 or over 40 as indication for discussion, and age less than 14 as indication for consultation.	Commenters suggest <17 should be an indication for hospital birth, sources only recommend consultation for age less than 14. EbGS decided to strike these recommended criteria for consultation based on lack of evidence that age in of itself is a criterion necessitating consultation in the absence of other factors.
8 Prior third-degree laceration (proposed addition in E2) Prior fourth-degree laceration (proposed deletion in F9)	X		NICE lists “Extensive vaginal, cervical, or third- or fourth-degree perineal trauma” as a consultation indication; Netherlands guidance recommends midwife/GP care if function was restored (category A) and secondary obstetrical care if it was not (category C).	EbGS decided to require consultation for third - or fourth degree lacerations, and to require planned hospital birth where function has not been restored after a prior fourth-degree laceration.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
9 Intrapartum third- or fourth- degree laceration (proposed deletion in F24)		X	British Columbia and Ontario list third and fourth degree lacerations as indicating consultation. Netherlands lists fourth-degree laceration as an indication for transfer to secondary obstetrical care.	Laceration requiring hospital repair (e.g., extensive vaginal, cervical or third/fourth degree trauma), is included in box language on the list of intrapartum complications requiring transfer. Coverage guidance could be further amended to include third- or fourth-degree laceration not requiring hospital repair as an indication for consultation without transfer 4 th degree and 3 rd degree requiring hospital repair requires transfer to hospital. 3 rd degree not requiring hospital repair requires consultation.
10 Prior fractured clavicle and shoulder dystocia (proposed addition)	X		NICE guideline: NICE lists shoulder dystocia as an indication for planned hospital birth. Fetal clavicular fracture would presumably be secondary to dystocia so we have added clarification.	EbGS discussed that definition is challenging and ultimately determined that consultation should be obtained to elicit specific circumstances & severity, and determine likelihood of recurrence.
11 Maternal Jehovah's Witness status (proposed addition)			No evidence sources	No evidence was discovered or provided to support inclusion of maternal objection to transfusion as a high-risk condition. EbGS discussed that the reason for transfer would be to obtain blood products, which would be refused by the patient, so this was not added.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
12 Maternal seizure disorder/epilepsy (proposed addition)	X Maternal seizure disorder (excluding eclampsia)		Netherlands B if medicated NICE guideline indicates transfer regardless of medication status	Core sources differ. Medication use may not be a good proxy for risk level, and labor seldom triggers an underlying seizure disorder. EbGS discussed and ultimately decided to require consultation in this condition.
13 Prior infant > 9 lbs (proposed addition)	X (History of baby >4.5kg or 9lb14oz)		NICE guideline	NICE recommends history of previous baby >4.5kg as an indication for consultation.
14 Suspected macrosomia (proposed addition)	X (Suspected fetal macrosomia EFW >4.5kg or 9 lbs 14 oz)		NICE guideline	Suspicion of macrosomia in the <u>current</u> pregnancy is also an indication for consultation and was therefore also added.
15 Incomplete prenatal testing e.g. strep, STI, GDM (see comment G12) (proposed addition)	X (inadequate prenatal care (defined as less than 5 prenatal visits or care began in the third trimester)	X Unknown HIV or Hepatitis B status	USPSTF recommends the following screening tests & preventive services for pregnant women: EtOH misuse screening; bacteriuria screening; breastfeeding counseling; CT & GC; GDM screening; HIV; iron-deficient anemia screening; syphilis screening; tobacco use counseling NICE recommends screening if mother is willing on booking.	Women with inadequate prenatal care face increased risk regardless of birth setting, so this by itself should not exclude home birth as an option. EbGS decided that unknown HIV or HBV status should warrant a planned hospital birth, as early interventions could make a difference to the newborn.
16 Severe mental health issues not well-controlled (proposed addition)	X (Maternal mental illness under outpatient	X (Maternal mental illness requiring inpatient care)	NICE lists “psychiatric disorder requiring current inpatient care” as an indication for hospital birth, and “Under current outpatient	Follow more specific NICE guideline.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
	psychiatric care)		psychiatric care” as an indication for consultation. Under the Netherlands guidance, psychiatric illness is category B (consultation situation), noting severity and extent of the disorder will determine the best course.	
17 Intrapartum or postpartum complications (proposed deletion)				EbGS feels it is important to note intrapartum and postpartum complications of mother and infant that would necessitate transfer to a higher level of care. This does not imply that the services provided by an out of hospital provider who was compliant with the guidance prior to development of a complication, who then transferred the patient(s) appropriately, would not be covered.
18 History of preterm birth (proposed deletion)	X		NICE does not list a history of preterm birth as a high-risk indication. A history of preterm birth is listed by Netherlands guidance as category B (consultation situation). Ontario guidance recommends consultation for “History of more than one preterm birth, or preterm birth less than 34 weeks 0 days in most recent pregnancy.”	Continue to include certain prior preterm births as requiring consultation to be consistent with Netherlands and Ontario guidance.

	Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
19	History of more than three first trimester spontaneous abortions, or more than one second trimester spontaneous abortion (proposed deletion)	X		Ontario guidance	Retain box language including history of spontaneous abortions (i.e. miscarriage) as requiring consultation as taken from the Ontario guidance
20	Failure to progress/ failure of head to engage in active labor (proposed deletion)		X	Oregon birth center states this as a reason to transfer. Both the Ontario and Netherlands guidance recommend it as an indication for consultation.	EbGS discussed that consultation would result in a recommendation to transfer, so requiring transfer for failure to progress makes more sense.
21	Cervical dysplasia requiring evaluation (proposed deletion)	X		Netherlands guidance	Retain requirement as recommended by The Netherlands, which lists this as category B (consultation situation).
22	Hyperemesis gravidarum (proposed deletion)		X	Hyperemesis requires secondary level care until it is resolved (Netherlands guidance). Ontario and British Columbia also list refractory hyperemesis as an indication for consult.	Keep as a transfer criteria, but modify to “refractory hyperemesis gravidarum”
23	Family history of genetic/heritable disorders (proposed deletion)	X		Guidance from British Columbia lists “Family history of genetic disorders, hereditary disease or significant congenital anomalies” as an indication requiring consultation.	Retain to follow guidance from British Columbia, because some (but not all) heritable disorders require hospital care for the neonate in the immediate postpartum period.

	Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
24	History of pre-eclampsia/HELLP syndrome (proposed deletion)	X (if did not necessitate preterm birth)	X (if necessitated preterm birth)	NICE lists history of pre-eclampsia as necessitating individual assessment; and history of pre-eclampsia requiring preterm birth as an indication for planned hospital birth. Netherlands lists prior HELLP syndrome as an indication for secondary care (category C).	Commenter requests further refinement if this is to be included (see comment F 10) Box language modified to align with NICE/Netherlands on when consultation vs transfer necessary for history of pre-eclampsia.
25	History of unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty (proposed deletion)	X (unexplained stillbirth/neonatal death <u>un</u> related to intrapartum difficulty)	X (unexplained stillbirth/neonatal death related to intrapartum difficulty)	NICE guidance does include “Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty” as a condition indicating planned hospital birth. History of unexplained stillbirth is listed in multiple sources (Netherlands, Ontario, and British Columbia) as requiring consultation.	Commenter says this is a broad category best suited to careful evaluation, consultation and informed consent. Gives example of cord accident. (See comment F 11) Retain requirement of transfer to follow NICE guidance when related to intrapartum difficulty. Consult appropriate for unexplained stillbirth unrelated to intrapartum difficulty.
26	History of postpartum hemorrhage requiring additional treatment or blood transfusion (proposed deletion)	X	✗	NICE guideline	This language is being retained as it is taken directly from NICE as an indication for planned hospital birth, however, it is unclear as to what “additional treatment” entails; e.g. is intramuscular oxytocin “additional treatment?” As there are a variety of possible scenarios, EbGS elected to make it a condition requiring consultation.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
27 History of retained placenta requiring manual removal (proposed deletion)	X (if manual removal was required)	X (if surgical intervention was required)	NICE guideline	Commenter says this will exclude women with histories that are not actually clinically concerning for the current pregnancy, and that ultrasound evaluation is the appropriate course of action. However, even with ultrasound evaluation, the patient is at increased risk of undetected abnormal placentation. EbGS accepted expert recommendation to require a hospital birth only if surgical removal was required, and consultation for a history of manual removal.
28 Placenta previa, vasa previa, low lying placenta (proposed modification)	X	X (Complete placenta previa or low lying placenta within 2 cm or less of the cervical os <u>at term</u> ; known vasa previa)	Oregon birth center absolute risk criteria list “Low-lying placenta within 2 cm or less of cervical os; vasa previa; complete placenta previa” as prohibiting admission to the birth center. NICE table 7 lists “Placenta praevia” as a complication of current pregnancy indicating birth at an obstetric unit.	Commenter asked that this be clarified to specify placenta previa at term. Language modified to follow the combined criteria in Oregon Birth Center ARC and NICE guideline, and address commenter’s concern.
29 Confirmed intrauterine death (proposed deletion)	X	X	NICE lists “Confirmed intrauterine death” as a complication of current pregnancy indicating birth at an obstetric unit. In addition, “Dead fetus” is Netherlands C (requiring secondary obstetric care); however, Ontario guidelines list “Intrauterine fetal demise” as an indication for	Commenter expressed that the only risk to the mother is if there are signs of infection or DIC after the passage of significant time, and suggested that families should have home birth as an option after consultation and informed consent if safe. Coverage guidance language is made to be

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
30 Body mass index at first prenatal visit of greater than 35 kg/m ² (proposed deletion)	X		consultation only. NICE criteria list “BMI at booking > 35 kg/m ² ” as a complication of current pregnancy indicating birth at an obstetric unit.	consistent with Ontario recommendation. Commenter expressed that many larger women are excellent candidates for home birth if other risk factors are absent and recommended allowing home birth after consultation. EbGS decided to make it a requirement for consultation as risks are higher for some women and not for others, such as those that have had a number of uncomplicated prior births
31 Small for gestational age fetus (proposed modification)	X Prior pregnancy with unresolved IUGR or small for gestational age (defined as fetal or birth weight less than fifth percentile using ethnically-appropriate growth tables)	X Intrauterine growth restriction (IUGR) (defined as fetal weight less than fifth percentile using ethnically-appropriate growth tables, or concerning reduced growth velocity on ultrasound)	NICE guideline	As noted by commenter, NICE specifies < 5 th percentile or reduced growth velocity on ultrasound as indicating planned hospital birth. Coverage guidance was edited to clarify this, with additional language to specify ethnically-appropriate growth tables.
32 Fetal growth retardation (proposed modification)	X (also see SGA/IUGR above)	X (also see SGA/IUGR above)		Has been changed as requested to “Intrauterine growth restriction (IUGR)” for consistency. This is an indication for consultation in a prior pregnancy and planned hospital birth in current pregnancy, and is defined as <5 th ile using

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
33 Prelabor rupture of membranes > 24 hours (proposed deletion)	X	X	NICE recommends transfer to obstetric care after “rupture of membranes more than 24 hours before the onset of established labour.” Netherlands guidance also recommends secondary obstetric care after 24 hours (category C).	appropriate growth tables. Language retained to follow NICE/Netherlands guidance that rupture of membranes >24 hours is indicated for hospital birth. Commenter F said that risk of infection is small after 24 hours especially in home birth setting with minimal vaginal exams and recommends it be included in informed consent. Commenter G suggested > 18 hours as increasing chance for sepsis and necessitating other treatment.
34 Genital herpes (proposed modification)	X	(current active infection)	NICE guideline	Conflicting public comments (any history of genital herpes vs. active.) Guidance language changed to “Current active infection (outbreak) of genital herpes at the time of labor. “ “Current active infection of varicella at the time of labor” in accordance with NICE and to address one commenter’s concern. Rubella infection anytime during pregnancy.
35 Thick meconium staining of amniotic fluid (proposed deletion)	X	Possibly add language about imminent birth. Leave out language	Under Oregon birth center ARC, transfer is required for “Thick meconium-stained amniotic fluid without reassuring Doppler heart tones and birth is not imminent.”	Commenter said this should be considered individually and expressed concern about imminent deliveries. Revise language to include “Thick

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
		about reassuring tones.	Thick meconium is Netherlands C (secondary obstetric care) and is an indication for planned hospital birth.	meconium staining of amniotic fluid.” As an indication for transfer. Together with the indication about fetal heart rhythm, this matches the Oregon Birth Center ARC. Language about imminent deliveries was added, but not specifically to this indication.
36 Retained placenta (proposed deletion)		X	NICE recommends urgent transfer if uterine exploration is necessary. Ontario lists it as a consultation indication. Netherlands category C (secondary care)	Commenter says the provider will need to determine safest course based on clinical picture, and this is covered in rule and practice standards. Retained placenta is an indication for transfer to a hospital, whether or not management by an out-of-hospital provider is initiated before or during transfer.
37 Retained placenta >1 hour (proposed modification)		X (after 60 minutes)	Oregon birth center criteria list a 3-hour cutoff. NICE, Netherlands, Ontario, and British Columbia guidances do not define a time cutoff for retained placenta. NICE defines retained placenta as no delivery within 30 minutes of the birth with active management or within 60 minutes of the birth with physiological management.	Original box language recommended transfer for retained placenta without a defined time cutoff. A 60 minute cutoff has been added to coverage guidance to be consistent with birth center criteria.

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
38 Written transfer plan needs to be in effect that the accepting OB and pediatrician agree with (proposed addition)				A “well-defined system of transfer” is in the document but no longer in the box language. EbGS made a recommendation to HERC to share with appropriate other bodies the concerns raised on this and other related issues that are not addressed in the box coverage language, per say.
39 History of a blood clot, or bleeding disorder (proposed addition)		X (blood clot, or other maternal bleeding disorder)	Bleeding or coagulation disorder is Netherlands Category C (secondary obstetric care) and bleeding disorder in the mother is a NICE criterion for planned hospital birth.	Alternate language added related to current maternal disorders to follow Netherlands/NICE criteria.
40 Maternal hemoglobin <11 (proposed modification)	X (Maternal hemoglobin <10.5)	X (Maternal hemoglobin <8.5)	NICE specifies 8.5-10.5 as indication for individual assessment.	Box language will be modified to reflect 10.5 as cutoff for consultation with 8.5 retained as cutoff for transfer.
41 History of a group B Strep septic infant (proposed addition)			NICE lists “Risk factors associated with group B streptococcus whereby antibiotics in labour would be recommended” as indicating birth in an obstetrical unit.	No change made as qualified providers in Oregon should administer group B strep prophylaxis outside the hospital setting and so this is not by itself a contraindication to out of hospital birth.
42 Pregnancy-induced hypertension, pre-existing hypertension (proposed modification)		X (Raised diastolic blood pressure over 90 mmHg or raised systolic blood pressure	NICE guideline indicates a raised diastolic blood pressure over 90 mmHg or raised systolic blood pressure over 140 mmHg on two consecutive readings taken 30 minutes apart as an indication for	Commenter requested that blood pressure > 140/90 before or after delivery be added as a risk factor. Box language was added to reflect NICE cutoffs for hypertension as an indication

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
		over 140 mmHg on two consecutive readings taken 30 minutes apart)	planned hospital birth or transfer. Oregon birth center ARC specifies blood pressure >150/100 on at least two occasions.	for planned hospital birth.
43 Thrombopenia (proposed modification)		X (Thrombosis/thromboembolism/thrombocytopenia (platelets <100,000), or other maternal bleeding disorder)	NICE guideline Oregon Birth Center Criteria	Commenter requested maternal platelet count < 150,000 as a high-risk indication. Another requested <100,000. The word “thrombopenia” has been changed to “thrombocytopenia” and a cutoff of 100,000 is being added for consistency with NICE.
44 Chorioamnionitis or other serious infection with fever >38 C (proposed modification)		X		No change. Box language presently includes “chorioamnionitis or other serious infection.” Maternal temperature is only one piece of the diagnostic criteria for chorioamnionitis. Temperature ≥ 38.0 C is a separate transfer criteria.
45 Blood group incompatibility (proposed deletion)		X (with atypical antibodies or Rh sensitization)	NICE lists “atypical antibodies which carry a risk of haemolytic disease of the newborn” as indicating birth in an obstetrical unit. Active blood group incompatibility is Netherlands category C (secondary obstetric care).	The coverage guidance has been revised to include “Blood group incompatibility with atypical antibodies, or Rh sensitization” as an indication for hospital birth to align with NICE.
46 Substance abuse, including marijuana (proposed addition)	X (routine use of alcohol or marijuana)	X (substance misuse/abuse or	NICE Table 7 lists both “Substance misuse” and “alcohol dependency requiring assessment or treatment”	There was an extensive discussion about the appropriate language to use to delineate problematic substance use and

Pregnancy Complication (Comment)	Consultation required for coverage	Planned hospital delivery/transfer to hospital required for coverage	Source(s)	Recommendation/ Rationale
		dependence)	<p>as factors indicating planned hospital birth.</p> <p>Netherlands list “Use of hard drugs” as necessitating secondary obstetrical care.</p> <p>Ontario suggests consultation for “Significant use of drugs, alcohol, or other substances with known or suspected teratogenicity or risk of associated complications.”</p> <p>British Columbia also recommends consultation for “Significant use of drugs, alcohol, or other toxic substances.”</p>	<p>abuse. Decision made to require planned hospital birth in the case of “Drug or alcohol use with high risk for adverse effects to fetal or maternal health. “</p>
<p>47 <u>Primiparity</u> (proposed addition)</p>			<p>Birthplace & MANA studies (see memo). NICE recognizes increased risk of adverse neonatal events in primiparous women, but on balance recommends OOH birth should be offered using shared decision making with risk tables</p>	<p>No changes to guidance based on parity (see additional evidence search results in guidance document for details).</p>

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

Table of Contents

Commenters.....	1
Public Comments	2
References Provided by Commenters	35
Appendix 1.....	37

Commenters

Identification	Stakeholder
A	OB-Gyn physician <i>[Submitted December 3, 2014]</i>
B	CPM, LDM <i>[Submitted November 18, 2014]</i>
C	CPM, LDM <i>[Submitted November 18, 2014]</i>
D	QHOC Medical Directors <i>[Submitted December 9, 2014]</i>
E	Health plan medical director <i>[Submitted Dec. 10, 2014]</i>
F	Oregon Midwifery Council <i>[Submitted Dec. 10, 2014]</i>
G	Health Plan Midwife Committee Chairman <i>[Submitted Dec. 10, 2014]</i>
H	Oregon Pediatric Society, Doernbecher Children’s Hospital, OHSU, Portland, OR <i>[Submitted Dec. 12, 2014]</i>
I	LDM <i>[Submitted December 15, 2014]</i>
J	MD, Retired Ob/Gyn <i>[Submitted December 15, 2014]</i>
K	RN <i>[Submitted December 15, 2014]</i>
L	Epidemiologist and RN <i>[Submitted December 15, 2014]</i>
M	Community Health Plan <i>[Submitted December 15, 2014]</i>

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
A	1	Two items to consider: 36 weeks' gestation is technically preterm birth, not sure a great idea for preterm births to happen at home, so consider using ≥ 37 weeks.	Box language has been clarified to emphasize greater than 36 and less than 41 completed weeks of pregnancy, which would encompass EGA 37 weeks 0 days through 41 weeks 6 days, consistent with NICE guidance. Preterm is also a transfer requirement in the coverage guidance so aligning these to be 37 weeks 0 days would be appropriate.	1
	2	I don't see either pre-gestational or gestational diabetes on your pregnancy complications list. Certainly both put moms and babies at higher risk than genital herpes.	Diabetes (uncontrolled gestational, gestational requiring medication, or pre-existing Type I or Type II) has been added to the list of high-risk coverage exclusion criteria for planned out-of-hospital birth; diet-controlled gestational diabetes has been added to the list of criteria for consultation prior to planned out-of-hospital birth.	5
B	1	I am a licensed midwife, practicing in Portland Oregon in a blended licensed midwife/nurse-midwife practice. We offer prenatal care, home birth and postpartum services to low risk women and strongly desire to include low income women in our client base. However, I am concerned that the proposed coverage guidelines for out of hospital birth is NOT based on quality research in terms of what constitutes low risk. I am requesting that your committee review the evidence on low risk (see below) and reissue your guidelines based on unbiased, research.	Commenter does not specify which criteria she disagrees with. EbGS does not believe their evidence sources are biased or poor quality.	NA
B	2	Making normal birth a reality: Consensus statement from the Maternity Care Working Party http://mothersnaturally.org/pdfs/UKNormalBirthDocument.pdf	This is a consensus statement on the definition of a normal birth. They define normal birth as the following: <ul style="list-style-type: none"> • women whose labor starts spontaneously, progresses spontaneously without drugs, and who give birth spontaneously; • women who experience any of the following provided they do not meet the exclusion criteria: <ul style="list-style-type: none"> ○ augmentation of labour 	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			<ul style="list-style-type: none"> ○ artificial rupture of membranes (ARM) if not part of medical induction of labor ○ Entonox ○ Opioids ○ Electronic fetal monitoring ○ Managed third stage of labor ○ Antenatal, delivery or postnatal complications (including for example post partum hemorrhage, perineal tear, repair of perineal trauma, admission to SCBU or NICU) <p>Normal delivery excludes:</p> <ul style="list-style-type: none"> ● induction of labor (with prostaglandins, oxytocics or ARM) ● epidural or spinal ● general anaesthetic ● forceps or ventouse ● cesarean section ● episiotomy <p>While a list of references is provided, supporting evidence is not specifically discussed.</p>	
B	3	http://www.bmj.com/content/330/7505/1416.full?ehom=	Duplicate of the above document.	NA
B	4	Citizens for Midwifery Resources Webpage http://cfmidwifery.org/resources/	Website states that Citizens for Midwifery are “a non-profit, volunteer, grassroots organization. Founded by several mothers in 1996, it is the only national consumer-based group promoting the Midwives Model of Care.” No evidence specifically identified.	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
C	1	<p>I heard that the HERC is currently taking public comment on what constitutes low-risk for out of hospital birth. I have read the draft recommendations and am concerned about the proposed recommendations because they appear to risk women out for a large number of things that midwives are trained and qualified to handle.</p> <p>This is important to me because I am both a home birth midwife and a mother who has (safe, successful) had out of hospital births. I am concerned because I've known women who have chosen to have unassisted births because of similar strict sets of risk criteria. There are many women, who, when denied coverage due to unreasonable risk factors, will refuse to go to a hospital and will then be exposed to greater risks because of a lack of provider at their birth.</p>	<p>EbGS bases its decisions on the balance of benefits and harms according to the best available evidence, while taking into account patient values and preferences and limited resources. We understand that women have strong and highly variable preferences and that this report is a coverage guidance, which defines when home birth should be reimbursed as a safe and effective service.</p> <p>The coverage recommendation language now distinguishes between complications requiring consultation and those which require transfer or planned hospital birth, recognizing that some conditions require a planned hospital birth or transfer of care, while other risk factors require consultation to evaluate an individual situation and inform the patient's decision and provider's recommendation about where to plan to have her baby.</p>	NA
C	2	<p>Oregon's licensed midwives and birth centers both have sets of reasonable risk criteria that could be used to define coverage for out of hospital birth. The Midwives Association of Washington State also has a well-researched set of risk criteria that could be used in this situation (http://www.washingtonmidwives.org/documents/MAWS-indications-4.24.08.pdf). Please consider using these pre-existing sets of criteria when you consider who to offer coverage to.</p>	<p>Oregon birth center risk criteria are included in the guidance document as Appendix A. No reference provided for Oregon licensed midwives risk criteria. Washington criteria are provided in Appendix 1 of this document. They are similar to the other risk criteria already included. Commenter does not identify which of the proposed criteria she disagrees with.</p>	NA
D	1	<p>The possibility of VBAC is concerning given that many hospitals, especially in rural areas, cannot even offer VBAC. It would not be acceptable for these hospitals to be back up. And it is concerning that a condition that is too high risk for a hospital would be acceptable to be done at home.</p>	<p>Box language already indicated that women with prior Cesarean are not considered low-risk (and thus not candidates for out-of-hospital birth). The coverage recommendation has been modified to clarify the requirement for risk assessment at intake, during prenatal care and during labor and specify high-risk coverage exclusion criteria, consultation criteria and transfer criteria.</p>	3

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
E	2	<ul style="list-style-type: none"> a. Complications should include having had an IUD in place; b. Complications should include third degree lacerations as well as fourth degree lacerations; c. Complications should include fractured clavicle and shoulder dystocia; d. Complications should include parental Jehovah’s Witness status – due to inability to transfuse; e. Complications should include history of large babies (>9 pounds); f. Complications should include ‘incomplete prenatal testing’ such as strep and all STDs g. Complications should include VBACs (we agree with Cascade CCO); and h. Complications should include severe mental health issues not well controlled or addressed; 	<ul style="list-style-type: none"> a. There is no evidence supporting history of IUD use as a high-risk condition in pregnancy. “Status following removal of the IUD” is Category A in the Netherlands guidelines. b. History of third or fourth--degree laceration in a prior delivery is listed as a criterion for consultation. History of fourth-degree laceration is listed as a criterion for consultation or planned hospital birth depending on whether functional recovery has been achieved (following Netherlands). For laceration requiring hospital repair, see comment F24. Intrapartum third- or fourth-degree laceration requires transfer, unless it is a third-degree laceration not requiring hospital repair, (which is an indication for consultation). c. Shoulder dystocia with or without fetal clavicular fracture in a previous pregnancy is a criterion for consultation. EbGS discussed that definition is challenging and ultimately determined that consultation should be obtained to elicit specific circumstances & severity, and determine likelihood of recurrence. d. No evidence is presented by commenter on Jehovah’s Witness status. All women giving birth out of hospital should have a full informed consent procedure, including information about what would be done if transfusion is indicated but declined. Personal or cultural objection to transfusion is not found as risk exclusion criterion in other systems identified. e. NICE recommends consultation if a prior baby was > 4.5 kg; this appears in our recommendation. f. Inadequate prenatal care is listed as a criterion for consultation. However, because of the risk to the baby, unknown HIV or HBV status is a high-risk coverage exclusion criterion. g. Absence of prior cesarean or other hysterotomy is a minimum criterion for low-risk pregnancy 	<ul style="list-style-type: none"> 4 8, 9 10 11 13 15 3

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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			<p>h. Drug or alcohol use with high risk for adverse effects to fetal or maternal health requires hospital birth</p> <p>Maternal mental illness under outpatient psychiatric care has been added to coverage guidance as requiring consultation prior to planned out-of-hospital birth, consistent with NICE guidance in table 9. Maternal psychiatric illness requiring inpatient care is added as a high-risk coverage exclusion criterion, again consistent with NICE guidance (table 6).</p>	46
E	3	I thought there was criteria regarding specific distance requirements from a hospital that could perform resuscitative procedures and emergency C-sections.	No such requirement was identified in any of the sources used to generate the risk criteria; EbGS declines to make coverage recommendation based on distance.	NA
F	1	I am writing on behalf of the Oregon Midwifery Council, which represents Direct-Entry Midwives in Oregon, to express my serious concern about the Draft Coverage Guidance on Planned Home Birth. Firstly, I am concerned that the HERC makes only a weak recommendation for the coverage of planned home birth for low risk pregnancies when the evidence is strong that planned home birth with a trained midwife in low risk pregnancies is a safe option for women and babies.	Thank you for your comment. “Weak recommendation” is a language that comes from the GRADE system and indicates the degree of confidence for a recommendation (see HERC methodology for details.) In this case, because of the potential for bias in the observational studies, the subcommittee elected to make a weak recommendation for coverage of planned out-of-hospital birth.	NA
F	2	Secondly, many items on the “High Risk Conditions” list are completely out of line with the research on the safety of planned home birth with midwives. The list is much longer than is appropriate for coverage guidance for a provider type that is both skilled at, and required by OAR to use, risk assessment, consultation, referral, and transfer of care as needed. The current draft “high risk” list would prevent many healthy pregnant women from accessing basic maternity care with the provider type and at the location of their choice.	<p>The list of “high risk exclusion criteria” was compiled from the trusted sources utilized by the EbGS – the Netherlands, British Columbia, and Ontario guidances as well as the Oregon Birth Center absolute risk criteria.</p> <p>There are situations in which consultation is indicated to address appropriateness for home birth, but transfer to a hospital setting may not be required.</p> <p>The recommendation has been clarified to specify which conditions are high-risk coverage exclusion criteria, criteria for consultation, or criteria for transfer to hospital care. For some consultation criteria, coverage for out of hospital birth may still be</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			recommended. See revised coverage recommendation language.	
F	3	<p>The HERC itself identifies the Cochrane Review and the Guidelines on the Care of Healthy Women and Their Babies During Childbirth of the National Institute for Clinical Excellence as its only two trusted sources in its review of the evidence on planned home birth yet somehow arrives at a different conclusion than either of these sources. The Cochrane Review states clearly that there is no evidence to favor planned hospital or planned home birth for low risk women. In fact the review states,</p> <p style="padding-left: 40px;">It seems increasingly clear that impatience and easy access to many medical procedures at hospital may lead to increased levels of intervention which in turn may lead to new interventions and finally to unnecessary complications. In a planned home birth assisted by an experienced midwife with collaborative medical back up in case transfer should be necessary these drawbacks are avoided while the benefit of access to medical intervention when needed is maintained. Increasingly better observational studies suggest that planned hospital birth is not any safer than planned home birth assisted by an experienced midwife with collaborative medical back up, but may lead to more interventions and more complications. (Olsen, Clausen 2012).</p>	<p>This information is correct, quoted from the Plain Language Summary in the Cochrane review (p. 2).</p> <p>The NICE guideline review does review other studies beyond the Cochrane review in making its recommendation as well.</p> <p>This coverage guidance does not favor either planned hospital birth or planned out-of-hospital birth for low risk women. Rather, the coverage guidance recommends that out-of-hospital birth be covered under health plans as a safe and effective option for low risk women, and defines indications which may put a woman and her baby at risk for poor outcomes in a planned or actual out-of-hospital birth based on a review of high-risk criteria from other internationally-recognized bodies.</p>	NA
F	4	<p>Additionally, the NICE guidelines explicitly state that, for low-risk women, out-of-hospital birth is “particularly suitable for them because the rate of interventions is lower and the outcome for the baby is no different compared with an obstetric unit (National Institute for Clinical Excellence 2014).” The HERC is charged with making an evidence based recommendation and it must remedy this significant departure from that obligation.</p>	<p>This information is correct. See comment F3 above.</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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F	5	<p>While the HERC has identified a number of fully recognized, research based-risks for home birth such as multiple gestation, non-vertex presentation, and pre-existing disease in the mother that negatively impacts pregnancy outcomes (e.g. chronic hypertension), it has also included potential risk factors that are either not based in research or are absolutely not appropriate for inclusion in coverage guidance. Coverage guidance should be based on risks that can be identified at the start of care or upon reassessment at term. It is inappropriate to include emergency occurrences that the midwife could not have foreseen. If these occur, is this guidance asserting that the midwife should not be compensated for all care before and after the event?</p>	<p>This coverage guidance recommends coverage for out-of-hospital birth for women with low risk pregnancies.</p> <p>See comment F2.</p>	NA
F	6	<p>In addition, there are far too many risk factors included in this guidance that are outside of accepted guidelines in the US, Canada, and the UK (health systems with which we normally compare ourselves). The HERC Coverage Guidance on Planned Home Birth should only include those risk factors in the “High Risk” list that are based in high-quality evidence and are in common usage in comparable health systems that have good outcomes from out-of-hospital midwifery care such as Canada and the UK.</p>	<p>The risk factors included in this coverage guidance are all derived directly from the guidelines listed by the commenter. That said, systems of midwifery care in Canada and the UK are sufficiently distinct from those in the US as to make direct translation impractical. Not all conditions that are amenable to out-of-hospital management in those systems are appropriate for such in the US.</p> <p>See comment F2.</p>	NA
F	7	<p>Further, when the HERC creates such a lengthy list of “high risk” conditions (beyond those included in a basic absolute risk guideline) that would exclude a patient from coverage for home birth it circumvents the rights of low-income patients to make informed choices about their own health care. This draft “high risk” list is not equivalent to recommending against payment for an experimental or medically unnecessary surgery, it is actually a recommendation against coverage for basic maternity and newborn care for many healthy women experiencing normal pregnancies. Consider, for example, that a woman with a history of genital herpes with no outbreak in the past two years, who has hyperemesis until 14 weeks, but is able to gain weight normally, and has a brother with down syndrome is “risked” out three times even though she is a perfectly reasonable candidate for home birth as long as she does not have a herpes outbreak at the time of birth.</p>	<p>See comment F2.</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
F	8	There are a number of items that should be removed from the draft “High-Risk” list as they are not research-based and are not included in the high-risk or exclusion criteria from the 2014 Guidelines on the Care of Healthy Women and Their Babies During Childbirth of the National Institute for Clinical Excellence, The Indications for Discussion, Consultation, and Transfer of Care from the College of Midwives of British Columbia, or the Consultation and Transfer of Care Guidelines of the College of Midwives of Ontario, the three main Guidelines that the HERC has reviewed. Many of these items are absolutely appropriate for evaluation and consultation, but to exclude them from coverage is nonsensical because without the evaluation or consultation process we can’t know if significant risk is found in that particular case.	See comment F2.	NA
F	9	<p>The following items should be removed from the “High Risk” list for the above-stated reasons:</p> <ul style="list-style-type: none"> Pregnancy past 41 weeks (The NICE guidelines specifically include pregnancy to 41+6 weeks) History of preterm birth History of fourth degree laceration History of more than three first trimester spontaneous abortions, or more than one second trimester spontaneous abortion Failure to progress/ failure of head to engage in active labor Cervical dysplasia requiring evaluation Hyperemesis gravidarum Family history of genetic/ heritable disorders Age < 14 	<p>See comment F2 as well as comments about specific criteria below.</p> <p>The risk factor for post-term pregnancy has been clarified to define low risk as than 41 completed weeks (that is, the cutoff is > 41 weeks, 6 days.)</p> <p>Our recommendation includes history of preterm birth as an criterion for consultation, following the Netherlands guidance, which rates it as category B (consultation)</p> <p>History of 4th-deg laceration is listed by Netherlands guidance as category A or C, depending on whether satisfactory function is restored. After discussion, EbGS recommends consultation when there is a history of third- or fourth-degree laceration in prior pregnancy. The recommendation has been clarified that without functional recovery requires hospital birth, with functional recovery requires consultation.</p> <p>Box language on history of abortions is taken from the Ontario guidance (consultation recommended)</p> <p>Failure to progress/engage is taken from the Oregon birth center</p>	<p>2</p> <p>18</p> <p>9</p> <p>19</p> <p>20</p>

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			<p>ARC. Both the Ontario and Netherlands guidance recommend it as a criterion for consultation. EbGS decided this should be a criterion for transfer, since that would be the purpose of consult.</p> <p>Cervical dysplasia requiring evaluation is Netherlands category B (consultation)</p> <p>Hyperemesis gravidarum is recommended by Netherlands guidance as requiring a higher level of care until resolved. Language was changed to say “refractory” hyperemesis gravidarum indicates planned hospital birth.</p> <p>Family history of genetic/heritable disorders is taken from the British Columbia guidance as requiring consultation</p> <p>Age < 14: Please see comment D2.</p>	<p>21</p> <p>22</p> <p>23</p> <p>7</p>
F	10	<p>Beyond these, there are a number of items that should either be removed from the high-risk list for a variety of reasons or edited for clarity. I have addressed these items individually below:</p> <p>History of Pre-eclampsia/ HELLP syndrome. Of the three guidelines used in the HERC review, only the NICE guidelines do include history of pre-eclampsia but only if preterm birth was required. We know that risk of pre-eclampsia decreases for multiparas and we know that pre-eclampsia is a very broad diagnosis. While a history of pre-eclampsia may be a significant risk factor it should be further defined or specified if it is going to be included in the high risk list. For instance “HELLP syndrome and/or pre-eclampsia requiring preterm birth.” All patients will be evaluated for signs of pre-eclampsia in each pregnancy which is the more appropriate risk assessment tool in this case.</p>	<p>NICE lists history of pre-eclampsia as necessitating individual assessment (table 8).</p> <p>Pre-eclampsia requiring preterm birth and history of HELLP syndrome in prior pregnancy are high-risk coverage exclusion criteria. Pre-eclampsia not requiring preterm birth is a criterion for consultation prior to planned out of hospital birth. See revised box language.</p>	24
F	11	<p>History of Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty. This is a broad category that is best suited to careful evaluation, consultation, and informed consent rather than use as a risk for coverage exclusion. There are many cases included in this category that could be</p>	<p>History of unexplained stillbirth is listed in multiple sources (NICE, Netherlands, Ontario, and British Columbia) as requiring consultation.</p>	25

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		completely appropriate for a home birth, for instance a history of an intrapartum demise due to a cord accident should not exclude someone from a subsequent home birth. Additionally a person who had a previous unexplained stillbirth with no other past or current clinical risk factors could be an excellent candidate for home birth with full informed consent about the risks involved and should not face an additional financial hardship as a result of this choice.	<p>NICE guidance does include “Unexplained stillbirth/neonatal death or previous death related to intrapartum difficulty” as a condition indicating planned hospital birth.</p> <p>Both of these are reflected in the updated box language. If unexplained stillbirth/neonatal death or previous death was related to intrapartum difficulty, planned hospital birth is indicated. Otherwise, consultation is indicated.</p>	
F	12	History of postpartum hemorrhage requiring additional treatment or blood transfusion. The research is not clear as to whether history of postpartum hemorrhage is predictive of future postpartum hemorrhage (Prata 2011). If this item is to be included in the high risk list it should be further clarified so that it relates to truly concerning hemorrhages. A woman who had a 500 cc blood loss and received Pitocin for it (“further treatment”) would currently be defined as high risk which is not appropriate. Perhaps it could be worded “Postpartum hemorrhage requiring blood transfusion.”	<p>NICE table 6 lists “primary postpartum hemorrhage requiring <u>additional treatment or blood transfusion</u>” as an indication for birth at an obstetric unit, and specifies “additional pharmacologic treatment or blood transfusion.” As there are a variety of possible scenarios, EbGS decided to make this a condition requiring consultation.</p> <p>The Prata 2011 study cited was a prospective cohort conducted in Egypt with 2510 women experiencing singleton pregnancies. There were 93 cases of primary PPH in the cohort. The authors found that “history of PPH in a previous pregnancy increased the risk of PPH by almost 69 times” (OR 68.61, p<0.001), although this was based on only seven women with a history of PPH, five of whom had repeat PPH and two of whom did not.</p>	26
F	13	History of retained placenta requiring manual removal. This item is concerning because it may exclude many women with histories that are not actually clinically concerning for the current pregnancy. History of retained placenta may or may not be predictive for future complications and the appropriate clinical course of action is ultrasound evaluation for abnormal implantation.	NICE table 6 lists “retained placenta requiring manual removal in theatre” as an indication for birth at an obstetric unit. EbGS accepted expert recommendation to require transfer only if surgical removal was necessary, and consultation for history of manual removal.	27
F	14	History of shoulder dystocia. While a history of shoulder dystocia is a risk factor for future births this is an item that should necessitate careful evaluation of the records and current pregnancy course and consultation to determine whether the risk is significant for the current pregnancy rather than immediate denial of coverage	See comment E2.	10

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		without evaluation. A woman with tightly controlled blood glucose levels in a subsequent pregnancy with a smaller baby is likely, for example, not to experience a repeat complication.		
F	15	History of cesarean section. The two studies that include significant numbers of out-of-hospital vaginal births after cesareans (where the increased risk of rupture from tocolytics is not a factor as they are outside of scope of practice) showed good outcomes for mothers and babies as long as no other significant risk factors (e.g. breech, twins) were present (Cheyney et al 2014, Stapleton et al 2013).	<p>Our recommendation follows NICE table 6, which lists “Caesarean section” as a previous complication indicating birth at an obstetric unit.</p> <p>Stapleton et al 2013 is a retrospective cohort study of 15,574 women receiving care in US birth centers from 2007-2010. There were only 56 TOLACs in this cohort (0.004%), of which 39 (70%) had successful VBAC. Because of the very small sample size, the authors do not separately analyze outcomes by prior cesarean status.</p> <p>Cheney 2014 is a retrospective cohort study of 16,924 women who planned home births in the US between 2004-2010. This cohort included 1054 women with prior cesarean (0.06%), of whom 915 (87%) had successful VBAC. Authors found that TOLAC patients experienced “an increased risk of intrapartum fetal death, when compared to multiparous women with no prior cesarean (2.85/1000 TOLAC vs 0.66/1000 multiparas without a history of cesarean, P = 0.05)” and no increase in neonatal death.</p>	3
F	16	Placenta previa, vasa previa, low lying placenta. This item should specify placenta previa at term as placenta previa in early pregnancy is not relevant and simply requires reevaluation. Low lying placenta should be removed as it is vague, not research-based and is not included in other relevant guidelines	<p>NICE table 7 lists “Placenta praevia” as a complication of current pregnancy indicating birth at an obstetric unit.</p> <p>Oregon birth center absolute risk criteria list “Low-lying placenta within 2 cm or less of cervical os; vasa previa; complete placenta previa” as prohibiting admission to the birth center.</p> <p>Ontario guidelines list vasa previa and asymptomatic placenta previa persistent into third trimester as indications for antenatal consultation, and symptomatic previa as an indication for transfer.</p>	28

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			Coverage guidance has been edited to specify “Low lying placenta within 2 cm or less of cervical os at term; placenta previa, vasa previa” as a high risk exclusion criterion.	
F	17	Confirmed intrauterine death. This is an odd item to include in the high risk list as it is not a risk for the mother unless there are signs of infection or DIC after the passage of significant time. A family who has had a confirmed intrauterine death should have the option to have a home birth covered if they have received informed consent and it is what they want for their care during such a personal and trying process. This is yet another item that should necessitate careful evaluation, consultation, and informed consent but is not a reason for exclusion from coverage.	NICE table 7 lists “Confirmed intrauterine death” as a complication of current pregnancy indicating birth at an obstetric unit. “Dead fetus” is Netherlands C (requiring secondary obstetric care); however, Ontario guidelines list “Intrauterine fetal demise” as an indication for consultation only. Coverage guidance is consistent with the Ontario recommendation, requiring consultation to determine risk.	29
F	18	Body mass index at first prenatal visit of greater than 35 kg/m². BMI on its own is not appropriate for inclusion in the high risk list. Many larger women are excellent candidates for home birth as long as other risk factors, such as uncontrolled gestational diabetes or limited mobility are not present. This is another item for careful evaluation, consultation, and informed consent, not for exclusion from coverage	NICE table 7 lists “BMI at booking > 35 kg/m ² ” as a complication of current pregnancy indicating birth at an obstetric unit; EbGS decided to make it a requirement for consultation as risks are higher for some women and not for others, such as those who have had a number of uncomplicated prior births.	30
F	19	Small for gestational age fetus. This item needs to be clarified so that it does not unnecessarily exclude babies who are small but well within normal limits. The NICE guidelines do include this risk factor but specify that they mean less than 5th percentile. Additionally, if this item is to be included in the high risk list it should be specified that ethnically specific charts should be used so that babies of smaller ethnicities are not erroneously identified.	As noted by commenter, NICE specifies < 5%ile or reduced growth velocity on US as indicating planned hospital birth. Coverage guidance was edited to clarify this, with additional language to specify ethnically-appropriate growth tables.	31 32
F	20	Prelabor rupture of membranes > 24 hours. While the risk of infection does seem to increase somewhat after 24 hours of ruptured membranes that risk is still small, especially in the home birth setting and with minimal vaginal exams and other interventions. This should be a matter for the informed consent of the client within the OARs and practice standards of the provider.	Our recommendation follows the Netherlands and NICE sources. Netherlands guidance recommends secondary obstetric care after 24 hours (category C). NICE recommends transfer to obstetric care after “rupture of membranes more than 24 hours before the onset of established	33

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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			labour.”	
F	21	Genital herpes. While this is an important risk factor and is already included in the OARs, it is not appropriate for all genital herpes to fall under the high risk list. Both the British Columbia and the Ontario College of Midwives guidelines call for transfer when there is an active herpes outbreak in labor or at rupture of membranes. Many HSV positive women are excellent candidates for homebirth as long as they do not have an outbreak at the time of labor.	Guidance language changed to “active infection (outbreak) of genital herpes” in accordance with NICE and to address one commenter’s concern.	34
F	22	Thick meconium staining of amniotic fluid. While this is a recognized risk factor, this item is more appropriate for rule and practice standard and does not make sense in coverage guidance. Home birth providers will be in situations where they are dealing with thick meconium staining and each case will need to be considered individually by the provider taking into account distance from hospital, if delivery is imminent, and other factors.	Our inclusion of thick meconium as a factor requiring transfer is based rating as a Netherlands C (secondary obstetric care) indication. From the Netherlands guidance: “When one of the items mentioned below occurs, an attempt should still be made to achieve an optimal condition for further intrapartum care, whilst referral to secondary care may be urgent, depending on the situation. When referring from the home situation, the risk of transporting the woman also needs to be included in the considerations.” Revise language to include “Thick meconium staining of amniotic fluid” as a criterion for transfer. Language about imminent deliveries was added, but not specifically to this criterion.	35
F	23	Retained placenta. This is a strange item to include in coverage guidance because retained placentas do happen and the provider at hand will need to determine what is the safest course of action depending on the clinical picture. There will be cases where the safest course of action will be administration of anti-hemorrhagics and/or attempted manual removal before or during initiation of transport to hospital. This	Retained placenta is an indication for transfer to a hospital, whether or not management by an out-of-hospital provider is initiated before or during transfer. Original box language recommended transfer for retained placenta without a defined time cutoff. A 60 minute cutoff has been added to coverage	36 37

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
G	2	In addition to the concerns detailed below, we ask that a temporary rule change be made to not allow home births until the guidelines can be finalized. In their current state, we feel the guidance violates all aspects of the triple aim. If a bad maternal or fetal outcome occurs during a home birth that could have been prevented by improved guidelines, that decreases the quality of the patient's experience, directly lowers the quality of care, and will substantially increase the cost of care. Therefore, we ask that you seriously consider the additions/changes to the guidelines below.	Home birth is currently covered by fee-for-service Oregon Health Plan. HERC will review the Coverage Guidance and consider it in making potential changes to the Prioritized List of Health Services for the Oregon Health Plan. Once any changes to the Prioritized List are complete, rule changes would need to be made.	NA
G	3	Before getting to those specific details, there are other vital points we ask that you also consider. <ul style="list-style-type: none"> • Need for midwives to have appropriate malpractice insurance. • Need for increased litigation protection for OB and Pediatric physicians who take care of failed planned home births and/or their subsequent complications. • Patients who refuse to adhere the guidelines needs to sign an informed refusal consent form. 	All women giving birth out of hospital should have a full informed consent procedure. System characteristics associated with safe out of hospital birth include a system of consultation and referral/transfer that can assure seamless care. Written agreements that cover consultation/referral/transfer and a well-defined and practiced system of transfer are important as noted in the coverage guidance document.	38
G	4	Below are our overall recommendations: <ul style="list-style-type: none"> • Gestational age should be between 37 weeks/0 days and 40 weeks/6 days, thereby preventing a preterm or postdates birth. 	See comment A1.	1, 2
G	5	<ul style="list-style-type: none"> • Maternal age should be between 18 and 37 years old 	See comment D2.	7
G	6	<ul style="list-style-type: none"> • Place of planned home birth should be less than 15 min from the hospital providing obstetrical and pediatric care. Our past experience has proven that transfer plans are poor at best, and significantly contribute to the maternal/fetal morbidity and mortality. 	See comment E3.	NA
G	7	<ul style="list-style-type: none"> • Written transfer plan needs to be in effect that the accepting OB and pediatrician agree with. 	A “well-defined system of transfer” is in the document but no longer in the box language as a characteristic of a successful home birth.	38

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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G	8	<ul style="list-style-type: none"> Increase the current time from 30 to 60 days where an infant stays on open card before being assigned to an appropriate health plan 	Enrollment issues are outside the scope of this coverage guidance.	NA
G	9	<ul style="list-style-type: none"> A first trimester screening should be done with an OB to establish the due date and review maternal history to decide if home birth is a viable option. 	Other types of maternity care providers, including midwives as well as family physicians, are qualified to assess dating, maternal history, and infectious disease screening.	NA
G	10	<ul style="list-style-type: none"> A 2nd trimester anatomy ultrasound done with an OB to rule out any gross physical abnormalities. 	See comment E1.	4
G	11	<ul style="list-style-type: none"> Subsequent reevaluation by OB if any complication arises later in pregnancy. 	Complications of pregnancy necessitating consultation or transfer are listed in the box language.	NA
G	12	<ul style="list-style-type: none"> The following labs needs to obtained, as they constitute standard of care: CBC, type and screen, hepatitis B, HIV, syphilis, gonorrhea, chlamydia, urine toxicology screen, gestational diabetes screen and repeat CBC at 28 weeks gestational age, and group B Strep screen at 35+ weeks gestational age. 	<p>See comment E2 (f).</p> <p>Urine toxicology screening may be appropriate in some patients at higher risk but is not universally recommended.</p> <p>Some of these labs may not be obtained due to a variety of factors including patient preference. Inadequate prenatal care may be a proxy for measurement, and women may refuse one or more of these tests.</p> <p>NICE says: At the booking appointment, for women who choose to have screening, the following tests should be arranged:</p> <ul style="list-style-type: none"> blood tests (for checking blood group and rhesus D status and screening for haemoglobinopathies, anaemia, red-cell alloantibodies, hepatitis B virus, HIV, rubella susceptibility and syphilis), ideally before 10 weeks urine tests (to check for proteinuria and screen for asymptomatic bacteriuria) ultrasound scan to determine gestational age using: <ul style="list-style-type: none"> ○ crown–rump measurement between 	15

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			<p>10 weeks 0 days and 13 weeks 6 days</p> <ul style="list-style-type: none"> ○ head circumference if crown–rump length is above 84 millimetres • Down's syndrome screening using: <ul style="list-style-type: none"> ○ 'combined test' at 11 weeks 0 days to 13 weeks 6 days • serum screening test (triple or quadruple) at 15 weeks 0 days to 20 weeks 0 days <p>Then discusses 28 weeks, Etc.</p> <p>EbGS decided that unknown HIV or HBV status should warrant a planned hospital birth, as early interventions could make a difference to the newborn.</p>	
G	13	<p>Below are our other recommendation that would negate a home birth or require transfer to a hospital:</p> <ul style="list-style-type: none"> • Complications in previous pregnancy/maternal medical history <ul style="list-style-type: none"> ○ History of 3rd or 4th degree laceration ○ History of prior fetal clavicle fracture ○ History of a blood clot, or bleeding disorder ○ History of a group B Strep septic infant ○ History of gestational diabetes ○ History of diabetes mellitus (Type 1 or Type 2) ○ History of prior birth weight 2'.. 9 lbs ○ Any history of genital herpes 	<p>Lacerations—see comments F9, F24.</p> <p>Fetal clavicle fracture—see comment E2</p> <p>Bleeding or coagulation disorder is Netherlands Category C (secondary obstetric care) and bleeding disorder in the mother is a NICE criterion for planned hospital birth.</p> <p>NICE table 6 lists “Risk factors associated with group B streptococcus whereby antibiotics in labour would be recommended” as indicating birth in an obstetrical unit. However, qualified providers in Oregon may administer group B strep prophylaxis outside the hospital setting and so this is not by itself a high-risk coverage exclusion criterion for out-of-hospital birth.</p> <p>Diabetes mellitus and gestational diabetes mellitus—see comment A2.</p> <p>Genital herpes-see comment F21.</p>	<p>8, 9</p> <p>10</p> <p>39</p> <p>41</p> <p>5</p> <p>34</p>

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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G	14	<p>Complications in current pregnancy</p> <ul style="list-style-type: none"> ○ Any patient who would refuse a blood transfusion, as any postpartum hemorrhage can turn into a life-threatening event ○ Prolonged rupture of membranes greater than 18 hours, thereby increasing chance of neonatal sepsis and necessitating other treatment ○ Maternal seizure disorder ○ Severe maternal psychiatric disease ○ Any undiagnosed vaginal bleeding ○ Maternal hemoglobin < 11 ○ Maternal platelet count < 150,000 ○ Suspected macrosomia ○ Substance abuse, including marijuana 	See comment E2 regarding refusal of transfusion	11
			Prelabor rupture of membranes > 24 hours is a high-risk coverage exclusion criterion for planned out-of-hospital birth; none of the trusted sources provide evidence for an 18-hour cutoff. See also F20.	33
			Maternal seizure disorder: Netherlands B if medicated; should indicate consultation prior to planned home birth.	12
			Severe maternal psychiatric disease—see E2h.	16
			NICE specifies hemoglobin 8.5-10.5 as indication for individual assessment. Our recommendation specifies 10.5 as a consultation criterion and 8.5 as a high-risk coverage exclusion criterion.	40
			Abnormal bleeding is listed as an high-risk coverage exclusion criterion and a transfer criterion, based on Oregon Birth Center Criteria	39
			Thrombocytopenia is listed as a high-risk exclusion criterion, based on Oregon Birth Center and NICE criteria. Ontario lists it as an indication for consultation. See also comment J4.	43
			Fetal macrosomia is added as a criterion for consultation prior to planned home birth	14
			Drug or alcohol use with high risk for adverse effects to fetal or maternal health and mental health disorder requiring inpatient care are listed in box language as high-risk coverage exclusion criteria. Maternal mental illness under outpatient psychiatric care is a criterion for consultation.	16
			46	
G	15	<ul style="list-style-type: none"> • Transfer to hospital <ul style="list-style-type: none"> ○ Any meconium, not just thick meconium 	Thick meconium is currently mentioned in the Oregon Birth Center absolute risk criteria.	35

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
			<p>Meconium (any) is Netherlands C (secondary obstetric care)</p> <p>British Columbia lists “thick or particulate meconium” as indication for consultation</p> <p>See revised box language and comment F22.</p>	
G	16	<p>We fully realize the volatile and emotional aspects of home birth. We admit that we have dealt with past disastrous maternal/fetal outcomes, and as such we feel very strongly about this issue.</p> <p>Again, in their current state, we feel the guidelines violate all three aspects of the triple aim. We ask for your consideration for the above details. If we can provide any more information, please feel free to contact us.</p>	Thank you for your comments.	NA
H	1	<p>The Oregon Pediatric Society provides the following public comment regarding Oregon’s Home Birth Policy. When home births occur we support the American Academy of Pediatrics Policy Statement on Planned Home Birth:</p> <p>“The safest setting for a child’s birth is a hospital or birthing center, but the AAP recognizes that women and their families may desire a home birth for a variety of reasons. Pediatricians should advise parents who are planning a home birth that AAP and ACOG recommend only midwives who are certified by the American Midwifery Certification Board. There should be at least one person present at the delivery whose primary responsibility is the care of the newborn infant and who has the appropriate training, skills and equipment to perform a full resuscitation of the infant. All medical equipment, and the telephone, should be tested before the delivery, and the weather should be monitored. A previous arrangement needs to be made with a medical facility to ensure a safe and timely transport in the event of an emergency. AAP guidelines include warming, a detailed physical exam, monitoring of temperature, heart and respiratory rates, eye prophylaxis,</p>	Thank you for your comments and for including the American Academy of Pediatrics policy statement.	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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		<p>vitamin K administration, hepatitis B immunization, feeding assessment, hyperbilirubinemia screening and other newborn screening tests. If warranted, infants may also require monitoring for group B streptococcal disease and glucose screening. Comprehensive documentation and follow-up with the child’s primary health care provider is essential.”</p> <p>Although not detailed above, “other newborn screening tests” would include newborn blood spot screening as described by the Northwest Regional Newborn Screening Program, pulse oximetry screening for critical congenital heart disease and newborn hearing screening.</p>		
H	2	<p>In practice, the manner by which infants are assessed for their candidacy for planned home birth is sometimes of concern. We agree that only those infants who are deemed “low risk” be candidates for home birth, but that their candidacy be determined based on widely accepted and complete prenatal care. This includes, but is not limited to a high quality prenatal ultrasound and completed testing for all routine maternal screenings, including HIV.</p>	See comment E1.	15
H	3	<p>Lastly, we believe the gestational age definitions included in the online report are too permissive. The March of Dimes has initiated successfully the “Healthy Babies are Worth the Wait” campaign to protect against elective birth prior to 39 weeks. This is because a broad literature describes the risks to infants born between 37 and 39 weeks which include respiratory difficulties, hypoglycemia, hypothermia, jaundice, feeding difficulties, learning challenges, and even death. We do not support planned home birth for infants < 37 weeks.</p>	<p>See comment A1.</p> <p>The literature referenced here applies primarily to non-spontaneous labor occurring prior to 37 weeks’ gestation. Coverage recommendation on gestational age has been modified to 37 weeks 0 days through 41 weeks 6 days.</p>	1, 2
I	1	<p>This is to register my great concern on the HERC’s guidelines on planned homebirth in Oregon.</p> <p>I have read the proposed guidelines and do not think these are in the best interest of childbearing women in Oregon.</p> <p>Although it is vital to understand and to educate that certain very high-risk</p>	Thank you for your comments.	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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		<p>pregnancies will be better served in the hospital, using these (proposed) guidelines, in many cases, would rule out basic choice in basic maternity and newborn care for <i>HEALTHY WOMEN WHO ARE EXPERIENCING NORMAL PREGNANCIES</i>.</p> <p>Licensed midwives in Oregon work under risk assessment guidelines which are evidence-based and we continually assess and reassess women to evaluate who may need a consult with an MD or OB or other specialist and who may be too high risk for out of hospital birth.</p>		
I	2	<p>I have read [commenter F]’s letter to HERC on behalf of the Oregon Midwifery Council, and must say that I agree with [their] very specific comments, point by point, and I would refer you to that letter rather than renaming those points here. [Their] statements are a reflection of [their] extensive experience as a midwife and as an ardent researcher in the maternity care literature.</p> <p>As per [commenter F]’s letter, I agree that apparently, the HERC has identified certain risks for home birth that are truly research-based but has included as well many potential risk factors that are NOT based in research or that have no reason to be included in guidance for coverage.</p> <p>These items need to be addressed and hopefully removed from the list so that the HERC guidelines can be considered to have integrity and to be actually true to the task of providing "Evidence Based Recommendations."</p> <p>From my own limited experience as a midwife (>400 births) I can say that I have helped women with each of ([commenter F]’s named) risk factors and have had good outcomes. Risk assessment is an ongoing task for the midwife throughout the prenatal and birth and postnatal period, so that each woman and baby are assured the best outcomes.</p>	See comments C1, C2, and F2.	NA
J	1	<p>The ingredients necessary for good outcomes in out of hospital (OOH) births are not a secret. The literature shows that you need well-trained midwives, good transfer policies, and appropriate candidate selection.</p> <p>I agree with your concept of adopting coverage guidelines for Oregon that</p>	Thank you for your comments.	38

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		incorporate the risk criteria used in Canada, UK, and the Netherlands.		
J	2	<p>I have a few suggestions for changes in the wording that I think would improve the draft.</p> <p>“Planned Home Birth” should be changed back to “Planned Out-of-hospital birth.”</p> <p>The coverage guidelines should pertain to all OOH births, both home and birth center. In Oregon, many birth attendants work both in birth centers and also do home births. Birth centers do not provide any additional safety features over home birth for high risk situations. The current birth center rules exclude twins and breech, but allow Previous C-section, postterm pregnancies up to 43 weeks, and hypertension up to 150/100.</p> <p>I think it is already confusing to the consumer that there are two sets of rules – one for LDMs through the BDEM, and another for Birth Centers. I think it would compound the confusion to have two sets of coverage guidelines.</p>	<p>The Licensed Direct Entry Midwife Staff Advisory Workgroup specifically requested the HERC to develop a coverage guidance related to planned home birth. The primary source (NICE) groups home birth and freestanding or alongside midwifery-led units as appropriate choices for low-risk women.</p> <p>In light of this, we have changed the title to “Planned out-of-hospital birth.” It is appropriate to have a single set of criteria pertaining to all types of out of hospital births.</p>	NA
J	3	<p>In my view, “High risk conditions necessitating consultation or transfer include.....” should be changed to “High risk conditions necessitating transfer to a hospital provider include.....”</p> <p>In Canada, the UK, and the Netherlands, the licensed midwives have admitting privileges to hospitals. The criteria for consultation and transfer apply to women who labor both in and out of hospitals. There are some patients who have high risk conditions that make them inappropriate candidates for OOH births, but whose labors can still be attended by midwives in the hospital in consultation with a physician.</p> <p>In Oregon, the vast majority of midwives who attend OOH births do not have hospital privileges, so high risk clients should be transferred to a provider with hospital privileges.</p> <p>Currently, Oregon rules for LDMs regarding consultations for high risk</p>	<p>Coverage guidance has been edited to reflect a distinction between exclusion criteria for coverage of planned out-of-hospital birth, and those that necessitate antepartum consultation with a provider who has expertise in caring for higher risk pregnancies and when planning out of hospital birth and the ability to admit to a hospital. See also comment F2 and revised coverage recommendations.</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		clients, OAR 332-025-0021 (7) and (8), do not require that the consultation be with a physician with hospital privileges. The consultation can be with a physician, a PA, a CNM, a Naturopath, or another LDM with “direct experience”. I believe the word “consultation” in your draft should be removed.		
J	4	<p>I would recommend more precise definitions of certain risk criteria to avoid confusion. There are some discrepancies between the LDM rules, the birth center rules, and standard definitions in the medical literature. My suggestions are:</p> <ul style="list-style-type: none"> a. “Fetal growth retardation” should be changed to “Intrauterine growth restriction”. b. “Eclampsia, pre-eclampsia or pregnancy-induced hypertension, hypertension (before or after delivery) with blood pressure >140/90.” Both ACOG and SOGC use a systolic of 140 or a diastolic of 90 to define gestational hypertension. (1,2) NICE (p. 30) recommends transfer to obstetric care for “either raised diastolic blood pressure (over 90 mmHg) or raised systolic blood pressure (over 140 mm Hg) on 2 consecutive readings taken 30 minutes apart.” c. “Chorioamnionitis or other serious infection with fever >38 C.” Three out of the eight OOH fetal/ neonatal deaths in Oregon in 2012 had chorioamnionitis. d. “Thrombopenia” should be changed to “Thrombocytopenia with platelets <100,000.” e. “Uteroplacental Insufficiency and Intrauterine Growth Restriction.” f. “Retained placenta >1 hour.” 	<ul style="list-style-type: none"> a. “Fetal growth retardation” language was taken from the Netherlands guidance and has been changed to “Intrauterine growth restriction” for consistency. b. Box language has been edited to reflect NICE cutoffs for hypertension as a criterion for transfer. c. Box language presently includes “chorioamnionitis or other serious infection” and temperature ≥ 38.0 C as separate transfer criteria. Maternal temperature is only one piece of the diagnostic criteria for chorioamnionitis. d. The word “thrombopenia” has been changed to “thrombocytopenia” for consistency. NICE table 6 does include cutoff of 100,000. e. “Uteroplacental insufficiency” and “Intrauterine growth restriction” are presently listed separately in the box language. f. Box language recommends transfer for retained placenta without a defined time cutoff. Oregon birth center criteria list a 3-hour cutoff. Netherlands, Ontario, and British Columbia guidances do not define a time cutoff for retained placenta. A sixty-minute cutoff has been added to coverage guidance to be consistent with NICE. 	<p>31</p> <p>42</p> <p>44</p> <p>43</p> <p>32</p> <p>37</p>
J	5	<p>I think “failure to progress” also needs to be defined. Two out of the eight OOH fetal/neonatal deaths in Oregon in 2012 had prolonged labor. Some options:</p> <ul style="list-style-type: none"> a. The Dutch criteria for failure to progress in the first stage of active 	The definitions in a. through d. are correct. The box language does not presently include a definition of delay of labor. Defining “delay of labor” is a practice guideline definition outside the scope of	20

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		<p>labor is “no change in the cervix or progress in dilation after the latent phase for a duration of 4 hours”. Failure to progress in the second stage of labor is “lack of progress after a maximum of one hour, in cases with full dilation, ruptured membranes, strong contractions and sufficient maternal effort.”</p> <p>b. NICE (p. 57) states that delay in the first stage of active labor is suspected if cervical dilatation is less than 2 cm in 4 hours. Diagnosis of delay in the active second stage (p. 60) is after 2 hours for nulliparous woman and one hour for multiparous woman.</p> <p>c. ACOG recently defined arrest of labor in the first stage of labor as no cervical change in 4 hours of adequate contractions or 6 hours of inadequate contractions. In the second stage, 2 hours of pushing in multiparous women and 3 hours in nulliparous women.(3)</p> <p>d. LDM rule OAR 332-025-0021 (5)(b)(F)(i) defines lack of adequate progress in second stage for vertex presentation “is when there is no progress after a maximum of three hours in cases with full dilation, ruptured membranes, strong contractions and sufficient maternal effort. (Note: In this rule, this situation is considered non-absolute and requires a consultation, but not necessarily transfer.)</p> <p>e. My preference is a hybrid: First stage – no change in the cervix or progress in dilation after the latent phase for a duration of 4 hours. Second stage – 2 hours of pushing in multiparous women and 3 hours in nulliparous women. (Non-emergency transport can take up to an additional hour.)</p>	coverage guidance.	
J	6	For Postpartum complications, “Transfer to a higher level of care is recommended in the following circumstances:” should be changed to “The following post-partum complications require transfer to a hospital:”	Thank you for the suggestion. See revised box language.	NA
J	7	I agree that Previous Cesarean Section is a situation that should remain on the high risk list. In the recent MANAstats dataset of home births in the US, the intrapartum + neonatal death rate for term VBACs was 4.75/1000 compared to 1.24/1000 for	Thank you for your comment.	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		<p>women with no previous C-section in the same study. (4) OOH births use intermittent auscultation for fetal surveillance which is appropriate for low risk labors if done properly, but is not appropriate for VBACs. Quoting from the SOGC guidelines for intrapartum fetal surveillance: “For women attempting VBAC, there is little controversy. All professional jurisdictions recommend continuous electronic fetal monitoring.” That includes ACOG, SOGC, and RCOG. (5)</p>		
K	1	<p>My name is [commenter K] and I am a licensed Registered Nurse in the state of Oregon. I have had the choice and privilege to birth my three children safely and gently at home over the past several years.</p> <p>I am pleased that you have put forth a great effort to lay out guidelines for women in Oregon who want more comprehensive choices in their prenatal care and birth experiences. I am also thankful that these choices will be more readily available to women on OHP and related health insurances.</p> <p>I am concerned, however, with some of the restrictions placed in the proposed guidelines, and fear that some of them may inappropriately hinder otherwise healthy candidates for home births with safe outcomes. Some of the proposed restrictions on what is defined as "high risk" pregnancy fail to take into consideration individual situations and the possibility of individualized care rather than providing "blanket labels" on what is or isn't "safe enough."</p>	Thank you for your comments.	NA
K	2	<p>My firstborn was born at 41 weeks and 2 days; 2 days beyond your recommended 36-41 week window, and I had a safe birth and healthy and safe outcomes for my child and myself. I understand that it is not uncommon for first births to be as much as 10 days late, give or take, with no adverse outcomes. I took care to monitor utero activity on a daily basis, as recommended both by my midwives, and also by literature I had received from an OB clinic before my transfer of care to a midwife team.</p>	<p>Thank you for sharing your experience.</p> <p>Cutoff of 41 weeks is endorsed by ACOG. NICE does include pregnancy up to 41 completed weeks, or 41 weeks+ 6 days. The coverage guidance language uses 41 completed weeks of gestation which comports with the NICE definition.</p>	2
K	3	<p>According to a simple calculator, I have a BMI over 35, but you would never guess that just looking at me. Just a few years ago, I was 5ft 6in and 180lb. (BMI about 30), but I was fit enough to run a 10K in one hour, thin enough to count all my ribs in the</p>	<p>NICE table 7 lists “Body mass index at booking of greater than 35 kg/m²” as indicating increased risk, suggesting planned hospital</p>	30

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		<p>mirror, and lean enough to not be able to float in a pool to save my life. (I'd sink like a rock without actively swimming...it was impossible for me to do a dead-mans-float.) I had a flat stomach, and I ran a couple miles every day...but the BMI chart said I was overweight. Now, a little heavier and a little less active, I'm actually at just over a BMI of 35, but I'm still active, still healthy, have low cholesterol, and no indicators of diabetes, pre-diabetes, or high blood pressure. The typical BMI scale and chart doesn't accurately reflect my health status, but through an objective lens, a well-trained care provider would tell you that I'm a little overweight, but otherwise healthy.</p> <p>I know I'm not the only person like this. There are other women out there who are predisposed to higher muscle mass, whether genetically and/or through training. A BMI chart should be a tool in the overall evaluation of a candidate, not a defining point in whether or not services can or cannot be provided.</p>	<p>birth.</p> <p>EbGS decided to make it a criterion for consultation as risks are higher for some women and not for others, such as those that have had a number of uncomplicated prior births.</p>	
K	4	<p>I also have O- (RH negative) blood, and my husband has the Rh factor (Rh+), and all my children were consequently born with Rh+ blood, but I have had safe and healthy outcomes in all my pregnancies and births. My trained midwives were attentive to my needs and I had regular lab draws to monitor for any adverse reactions. A trained midwife is still a trained healthcare provider, and should be treated as such. Everything I was told that I would have available to me in the OB setting, I still had available to me in the midwife/home-birth setting of my care (Rhogam shots, appropriate and recommended lab draws, regular urine screening, blood glucose screening, newborn hearing screening, newborn lab draws, etc.)</p>	<p>Active blood group incompatibility is Netherlands category C (secondary obstetric care). NICE also lists “atypical antibodies which carry a risk of haemolytic disease of the newborn” as indicating birth in an obstetrical unit. The coverage guidance has been revised to include “Blood group incompatibility with atypical antibodies, or Rh sensitization” as a high risk coverage exclusion criterion for hospital birth to align with NICE.</p>	45
K	5	<p>As a trained healthcare provider myself, I see great potential in allowing women a better spectrum of choices in their prenatal and birthing experience. From firsthand experience, my care has been infinitely better and more comprehensive with a team of midwives versus a trained OB. For one, a typical OB visit is 15 minutes and they don't have the time or availability to provide holistic care to their clients. Their agenda is compressed into a "one-size-fits-all/most" model of the pregnancy process and they miss much opportunity to address specific points or concerns related to the individual woman. Consequently, if problems arise (even minor ones),</p>	<p>Thank you for your comments.</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		the OB is forced to be reactive to the situation rather than proactive before the issue arises.		
K	6	With a midwife as the trained provider, the average prenatal visit is one hour, and each visit is tailored to the individual woman and her pregnancy experience. In-depth discussions are focused on things like diet, rest and exercise, new or ongoing stressors in the mother-to-be's life, etc. and all of which may have a direct impact on the pregnancy and/or birthing experience. More time is also afforded to discuss various treatment plans and options that relate to the individual woman and her preferences. Skilled midwives, therefore, have more of an ability to be proactive in a woman's care and to address potential risks before they start or get out of hand. In this sense, having a trained midwife can be viewed as choosing a more prophylactic route to a positive pregnancy and birth outcome.	Thank you for your comments.	NA
K	7	<p>A skilled midwife, like a skilled OB, will have the client's best interest in mind, and will transfer care to a more skilled group if the situation necessitates. Just like an OB may transfer care of a high-risk patient to a more skillfully trained OB or specialist, or refer a woman to a more acute facility (Hospital instead of a birthing facility, or higher level hospital instead of community hospital), a midwife also has the ability and duty to refer a client to a more skilled professional or facility if the situation exceeds her scope of care.</p> <p>Autonomy should not be stripped from a trained and skilled provider. I think the stringency of the guidelines in the proposal should be modified so that trained and licensed midwives can still practice within the scope of what they were trained. Even VBAC's and Breach births can have healthy and safe outcomes at home if attended by a skilled midwife. And sometimes less intervention is more as far as quality of care and outcome.</p>	See comment C1.	NA
L	1	<p>I am not sure if or how this information will be of use to you, but HERC should know these things.</p> <p>The HERC draft greatly understates the mortality difference between planned</p>	It is true, as the commenter states, that the data we cite may group pre-labor fetal death with intrapartum death and that some hospital deliveries where there was pre-labor fetal death may have been originally planned as out-of-hospital births. However, it is	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		<p>hospital births and planned out-of-hospital (OOH) births in Oregon in 2012.</p> <p>The report on 2012 Oregon births by planned birth place (1) and HERC draft both say that “The term perinatal mortality rate for planned OOH birth (4.0/1,000 pregnancies) was nearly twice that of in-hospital births (2.1/1,000)” (1). That is true, but the comparison is misleading because the perinatal mortality rate for planned hospital births included an unknown but relatively large number of antepartum (AP) fetal deaths that occurred <i>before</i> the mother was in labor. Eighty-five to 90 percent of all fetal deaths in developed countries are <i>stillbirths prior to labor</i> (2), and the incidence increases with gestational age (3) and thus is highest among term births.</p> <p>Most women whose babies die before labor go to a hospital to have labor induced and deliver their dead fetus in the hospital. In contrast to antepartum fetal deaths, intrapartum (IP) fetal deaths <i>during labor</i> are very rare in hospitals in developed countries, <i>only about 1 per 10,000</i> births (4). There were no intrapartum fetal deaths in a prospective 1980s study of almost 35,000 hospital births using either selective (for high-risk pregnancies) or universal electronic fetal monitoring (5). Antepartum fetal deaths comprise the vast majority of all fetal deaths that occur in American hospitals.</p> <p>Fifty-eight term fetal deaths were <i>associated with</i> 39,990 planned hospital births in Oregon in 2012 (1). We don’t know how many were IP, but it is highly unlikely that more than six fetal deaths occurred during labor in Oregon hospitals that year. Four intrapartum fetal deaths were associated with planned OOH births in Oregon in 2012. All four were investigated by a public health pediatrician; all of them were intrapartum.</p> <p>It is misleading to compare a perinatal mortality rate that included an unknown but relatively high proportion of the 58 term fetal deaths associated with nearly 40,000 planned hospital births in Oregon in 2012 with the perinatal mortality rate for planned 2,021 planned OOH births, which included 4 early neonatal deaths and 4 intrapartum fetal deaths but no antenatal fetal deaths.</p>	<p>also true that chart review of the eight term fetal deaths and early neonatal deaths from the Oregon birth study shows that six of these deaths would not have met the criteria for coverage as outlined in this coverage guidance. The 2012 Oregon mortality rate, when adjusted for risk factors that should have excluded women from attempting OOH birth (and which this coverage guidance does not support) lies within the range of rates seen in the international and U.S. literature for both OOH and low-risk hospital births.</p>	

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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L	2	<p>The draft Guidance does not address the educational qualifications of home-birth attendants in Oregon.</p> <p>The reviewed evidence is based primarily on studies from the Netherlands, Ontario and British Columbia. <i>All</i> midwives who attend home births in those jurisdictions are educated to the standards in the International Confederation of Midwives (ICM) Definition of the Midwife (6) and Global Standards for Basic Midwifery Education (7), as are all certified nurse-midwives (CNMs) in the United States (US). ICM defines a “midwife” in part as a person who has completed a three-year midwifery education program, or 18 months for students who enter as nurses or other healthcare professionals (6,7).</p> <p>In contrast to home births in those jurisdictions, most OOH births in Oregon are attended by direct entry midwives (DEMs), naturopaths and others with less midwifery education. In 2012, 62 percent of all planned out-of-hospital (OOH) births were attended by DEMs, 25 percent by CNMs, 11 percent by naturopaths (1).</p> <p>DEMs are limited to OOH births. Although some are knowledgeable and competent, some aren’t; very few have completed a midwifery curriculum that meets ICM standards. Most, including certified professional midwives (CPMs), are trained through apprenticeship and self-study (8,9).</p> <p>Most naturopaths who attend births in Oregon graduated from the National College of Naturopathic Medicine (NCNM) in Portland. One three-credit lecture course in natural childbirth is part of the curriculum for all naturopathic physicians (10). NCNM also offers four three-credit lecture courses, one each on pregnancy, labor and birth, the postpartum period, and neonatology. Films are used to enhance lectures on techniques for monitoring the fetal/maternal condition and progress of labor, complications of labor and birth are discussed and skills needed to respond to them are demonstrated. Although NCNM does not provide any supervised clinical experience with pregnant women (10), to be licensed in Oregon naturopaths must have observed and assisted in 50 births supervised by a naturopath or obstetrician, pass a test and complete 15 hours of continuing education every year (11).</p>	<p>Thank you for your comment and information. Oregon law allows practice by midwives and other providers who do not have ICM standards of education. The draft guidance states “Certification requirements for the practice of midwifery vary significantly between the US and other countries, with US requirements being less rigorous with regard to both years of formal education and experience. See also comment F6.</p> <p>Box language requires home birth providers to be certified and licensed.</p>	NA

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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		<p>CNMs attended only 25 percent of all planned OOH births in Oregon in 2012. All CNMs are educated to ICM standards in masters’ degree programs, including one at OHSU.</p> <p>The IP fetal death rates from studies of home births attended by midwives who meet ICM education standards were zero in the small study from British Columbia, 0.31/1000 births in the very large study from the Netherlands, 0.45 in Ontario, and 0.36/1000 in England (12,13). In comparison the rate was 1.3 in a 2014 study of nearly 17,000 home births attended by members of the Midwives Alliance of North America (MANA) (14), four times higher than the mean rate if findings from all four of the ICM-education standard studies were combined. Eighty-five percent of births in the MANA study were attended by midwives who don’t meet ICM education standards (15). The Ontario study reported total neonatal mortality (NN) instead of early NN mortality. ENN is preferable and was reported by the other three studies. The IP+NN rate for the Ontario study was 1.35/1000 births and 2.07/1000 for the MANA study. The IP+ENN mortality rates for the studies from British Columbia, the Netherlands and England were 0.35, 0.64 and 0.65 respectively. At 1.71/1000, the IP+ENN mortality rate for the MANA study (14) was more than three times higher than the average for the studies based on births attended by midwives who meet ICM education standards.</p> <p>Intermittent auscultation is used to monitor the fetal heart rate in OOH births (15). It requires concentrated attention and a deep understanding of fetal heart rate changes and their significance during labor. Home birth midwives must be proficient in intermittent auscultation.</p>		
L	3	HERC should add distance or time (not more than 30 minutes) from the home-birth residence to a hospital staffed and equipped to provide emergency care to a parturient woman or newborn to the criteria for coverage.	See comment E3.	NA
M	1	The Health Evidence Based Rules Commission (HERC) is in the process of developing Home Birth Draft Coverage Guidance defining low risk pregnancy that would be appropriate for planned home birth, as well as for maternal or pregnancy conditions	See comments D2, E1, E2, and G14.	

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

ID	#	Comment	Disposition	High-Risk Table Line
		<p>that would indicate the need for a higher level of prenatal, antenatal or postpartum care. Trillium Community health Plan would like to provide a list of additional guidelines to consider when drafting coverage guidance.</p> <ul style="list-style-type: none"> • Should complications occur at any point in the pregnancy, a re-evaluation should be performed to determine risk/status level. • Low risk characteristics should include an ultrasound between 12 – 30 weeks. • Low risk characteristics should include maternal and paternal age parameters such as 18 – 45 years of age. • Complications in a previous pregnancy should include third degree lacerations. • Complications of a previous pregnancy should include fractured clavicle and shoulder dystocia. (currently just shoulder dystocia) • Complications of a previous pregnancy should include history of large babies (>9 pounds). • Complications of current pregnancy should include having an IUD in place when becoming pregnant. • Complications of a current pregnancy should include parental Jehovah’s Witness status – due to inability to transfuse. • Complications of current pregnancy vaginal delivery after C section. • Complications of a current pregnancy should include incomplete prenatal testing such as strep and all STDs. • Complications of a current pregnancy should include severe mental health issues not well controlled or addressed. • Transfer to a higher level of care considerations should include a transfer plan or protocol for DEMWs to include a transfer or back up plan for Obstetricians should be included. 		<p>15</p> <p>4</p> <p>7</p> <p>8</p> <p>10</p> <p>13</p> <p>6</p> <p>11</p> <p>3</p> <p>15</p> <p>16</p> <p>38</p>

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

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C2	<p>Midwives' Association of Washington State INDICATIONS FOR DISCUSSION, CONSULTATION, AND TRANSFER OF CARE IN AN OUT-OF-HOSPITAL MIDWIFERY PRACTICE http://www.washingtonmidwives.org/documents/MAWS-indications-4.24.08.pdf</p>
F12	<ol style="list-style-type: none"> 1. Prata N, Hamza S, Bell S, Karasek D, Vahidnia F, Holston M. Inability to Predict postpartum Hemorrhage: Insights from Egyptian Intervention Data. BMC Pregnancy and Childbirth. 2011 Nov 28;11:97
F15	<ol style="list-style-type: none"> 2. Cheyney M, Bovbjerg M, Everson C, Gordon W, Hannibal, Vedam S. Outcomes of Care for 16,924 Planned Home Births in the United States: The Midwives Alliance of North America Statistics Project, 2004 to 2009. Journal of Midwifery & Women's Health. Jan-Feb 2014; 59(1): 17-27 3. Stapleton SR, Osborne C, Illuzi J. Outcomes of Care in Birth Centers: Demonstration of a Durable Model. Journal of Midwifery & Women's Health. 2013 Jan-Feb;58(1):3-14
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J5	<ol style="list-style-type: none"> 4. American College of Obstetricians and Gynecologists (2014). Safe prevention of the primary cesarean delivery. American Journal of Obstetrics & Gynecology, 123: 693-711.
J7	<ol style="list-style-type: none"> 5. Cheyney, M., Bovbjerg, M., Everson, C., Gordon, W., Hannibal, D., et. al. (2014). Outcomes of Care for 16,924 Planned Home Births in the United States: The Midwives Alliance of North America Statistics Project, 2004 to 2009. Journal of Midwifery & Women's Health, 59(1): 17-27. 6. Rowe, T. (2007). Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline. Journal of Obstetrics and Gynecology Canada, 29(9): S3-S50.
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HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

Commenter	References
	<p>2013, from https://public.health.oregon.gov/BirthDeathCertificates/VitalStatistics/birth/Documents/PlannedBirthPlaceandAttendant.pdf</p> <ol style="list-style-type: none"> 2. Kramer MS, Liu S, Luo Z, Yuan H, Platt RW, Joseph KS; Fetal and Infant Health Study Group of the Canadian Perinatal Surveillance System. Analysis of perinatal mortality and its components: time for a change? <i>Am J Epidemiol.</i> 2002 Sep 15;156(6):493-7. 3. Rosenstein MG, Snowden JM, Cheng YW, Caughey AB. The mortality risk of expectant management compared with delivery stratified by gestational age and race and ethnicity. <i>Am J Obstet Gynecol.</i> 2014 Dec;211(6):660.e1-8. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3719843/ 4. Fretts RC. Etiology and prevention of stillbirth. <i>Am J Obstet Gynecol.</i> 2005 Dec;193(6):1923-35. 5. Leveno KJ, Cunningham FG, Nelson S, Roark M, Williams ML, Guzik D, Dowling S, Rosenfeld CR, Buckley A. A prospective comparison of selective and universal electronic fetal monitoring in 34,995 pregnancies. <i>N Engl J Med.</i> 1986 Sep 4;315(10):615-9.
L2	<ol style="list-style-type: none"> 6. International Confederation of Midwives (ICM). International Definition of the Midwife. Revised and adopted by ICM Council June 15, 2011. http://www.internationalmidwives.org/assets/uploads/documents/Definition%20of%20the%20Midwife%20-%202011.pdf 7. ICM. Global Standards for Basic Midwifery Education (2010, amended in 2013). http://www.internationalmidwives.org/assets/uploads/documents/CoreDocuments/ICM%20Standards%20Guidelines_ammended2013.pdf 8. North American Registry of Midwives, Midwifery Education Accreditation Council, National Association of Certified Professional Midwives, Midwives Alliance of North America. Certified Professional Midwives in the United States. June 2008. https://www.google.com/search?q=Issue+Brief%E2%80%9494Certified+Professional+Midwives+in+the+United+States&oq=Issue+Brief%E2%80%9494Certified+Professional+Midwives+in+the+United+States&aqs=chrome..69i57.3411j0j7&sourceid=chrome&es_sm=91&ie=UTF-8 9. North American Registry of Midwives (NARM). 10 Things You Should Know About PEP. April 20, 2009. http://narm.org/forum/viewtopic.php?f=3&t=3#p3 10. National College of Naturopathic Medicine. Course Catalogue 2013-2014. Portland, Oregon. 2014. <http://www.ncnm.edu/images/Publications/coursecatalog/2013-2014_Course_Catalog_FINAL_web.pdf> 11. Oregon Licenses, Permits and Registrations, Detailed Information for Natural Childbirth Certificate (Naturopathic) http://licenseinfo.oregon.gov/index.cfm?fuseaction=license_seng&link_item_id=14456 12. Birthplace in England Collaborative Group, Brocklehurst P, Hardy P, Hollowell J, Linsell L, Macfarlane A, McCourt C, Marlow N, Miller A, Newburn M, Petrou S, Puddicombe D, Redshaw M, Rowe R, Sandall J, Silverton L, Stewart M. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. <i>BMJ.</i> 2011 Nov 23;343:d7400. 13. Birthplace in England Study Appendix 8. (Data from that appendix is use in some of the table in the HERC draft, so I know that you have access.) 14. Cheyney M, Bobbjerg M, Everson C, Gordon W, Hannibal D, Vedam S. Outcomes of care for 16,924 planned home births in the United States: the midwives alliance of north america statistics project, 2004 to 2009. <i>J Midwifery Womens Health.</i> 2014 Jan-Feb;59(1):17-27. 15. American College of Nurse-Midwives. Intermittent Auscultation for Intrapartum Fetal Heart Rate Surveillance (replaces ACNM Clinical Bulletin #9, March 2007). <i>J Midwifery Womens Health.</i> 2010 Jul-Aug;55(4):397-403.

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

Appendix 1

Midwives' Association of Washington State

INDICATIONS FOR DISCUSSION, CONSULTATION, AND TRANSFER OF CARE IN AN OUT-OF-HOSPITAL MIDWIFERY PRACTICE

2. DEFINITIONS:

2.1 DISCUSSION WITH ANOTHER MIDWIFE, AN ARNP, OR A PHYSICIAN

A discussion refers to a situation in which the midwife seeks advice or information from a colleague about a clinical situation, presenting her management plan for feedback.

2.1.1 It is the midwife's responsibility to initiate a discussion with and provide accurate and complete clinical information to another midwife, a nurse practitioner, or a physician in order to plan care appropriately. This discussion can take place between midwives in the same practice.

2.1.2 Discussion should occur in a timely manner soon after the clinical situation is discovered.

2.1.3 Discussion may occur in person, by phone, fax, or e-mail.

2.1.4 Discussion may include review of relevant patient records.

2.1.5 Discussion may include request for prescriptive medication based on signs or symptoms and/or laboratory results.

2.1.6 Discussion should be documented by the midwife in her records. Documentation of discussion should refer only to practitioner type without specifying the name of the practitioner contacted. Documentation should also include the midwife's management plan.

2.1.7 Discussion need not occur if the midwife has previously encountered a particular situation, discussed it with a colleague, developed a management plan, and is currently managing the same clinical presentation. In this case, documentation of the management plan and discussion with the client of the management plan is sufficient.

2.2 CONSULTATION WITH A PHYSICIAN

A consultation refers to a situation in which the midwife, using her professional knowledge of the client and in accordance with this document, or by client request, seeks the opinion of a physician competent to give advice in the relevant field. The consultant will either conduct an in-person assessment of the client or will evaluate the client's records in order to address the problem that led to the consultation.

2.2.1 It is the midwife's responsibility to initiate a consultation and to communicate clearly to the consultant that she is seeking a consultation.

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

2.2.2 A consultation can involve the physician providing advice and information, and/or providing care to the woman/newborn, and/or prescribing treatment for the woman or newborn.

2.2.3 In the case of an in-person consultation, the midwife should expect that the consultant will promptly communicate findings and recommendations to the client and the referring midwife after the consultation has taken place.

2.2.4 Where urgency, distance, or climatic conditions do not allow an in-person consultation with a physician when it would otherwise be appropriate, the midwife should seek advice from the physician by phone or other similar means. The midwife should document this request for advice in her records and discuss the consultant's advice with the client.

2.2.5 It is the midwife's responsibility to provide all relevant medical records to the consultant, including a written summary of the client's history and presenting problem, as appropriate.

2.2.6 Consultation must be fully documented by the midwife in her records, including the consultant's name, date of referral, and the consultant's findings, opinions, and recommendations. The midwife must then discuss the consultant's recommendations with the client.

2.2.7 After consultation with a physician, care of the client and responsibility for decision making, with the informed consent of the client, either continues with the midwife, is shared collaboratively by the midwife and the consultant, or transfers completely to the consultant. Transfer or sharing of care should occur only after dialogue and agreement among the client, the midwife, and the consultant.

2.3 TRANSFER TO A PHYSICIAN OR OTHER QUALIFIED HOSPITAL-BASED PROVIDER

When care is transferred permanently or temporarily from the midwife to a qualified hospital based provider, the receiving practitioner assumes full responsibility for subsequent decision making, together with the client. For guidance about intrapartum transfers, see also the MAWS document Planned Out-of-Hospital Birth Transport Guideline.

3.1 PRE-EXISTING CONDITIONS AND INITIAL HISTORY

Discussion:

- family history of significant genetic disorders, hereditary disease, or congenital anomalies
- history of pre-term birth (< 36 weeks)
- history of IUGR
- history of severe postpartum hemorrhage
- history of severe pre-eclampsia
- history of gestational diabetes

Consultation:

- history of uterine surgery, including: myomectomy, hysterotomy, or prior cesarean birth
- current or significant history of cardiovascular disease, renal disease, hepatic disorders, neurological disorders, severe gastrointestinal disease

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

- current or significant history of endocrine disorders (excluding controlled mild hypothyroidism)
- pulmonary disease/active tuberculosis/asthma if severe
- collagen-vascular diseases
- significant hematological disorders
- current or significant history of cancer
- history of cervical cerclage
- history of 3 consecutive spontaneous abortions
- significant uterine anomalies
- essential hypertension
- history of eclampsia or HELLP
- previous unexplained neonatal mortality or stillbirth
- isoimmunization with an antibody known to cause hemolytic disease of the newborn
- history of postpartum hemorrhage requiring transfusion
- current severe psychiatric illness
- no prenatal care prior to third trimester
- current or history of epilepsy

Transfer:

- absent prenatal care at term
- any serious medical condition, for example: cardiac disease, renal disease with failure, insulin-dependent diabetes mellitus, or uncontrolled asthma

3.2 ANTEPARTUM CONDITIONS

Discussion:

- urinary tract infection unresponsive to treatment
- significant abnormal ultrasound finding
- well-controlled gestational diabetes
- persistent size/dates discrepancies

Consultation:

- significant abnormal Pap
- significant abnormal breast lump
- pyelonephritis
- ectopic pregnancy

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

- molar pregnancy
- thrombosis
- fetal demise after 14 weeks gestation
- persistent anemia, unresponsive to treatment
- primary herpes infection
- significant vaginal bleeding
- premature pre-labor rupture of membranes (PPROM)
- isoimmunization, hemoglobinopathies
- persistent abnormal fetal heart rate or rhythm
- significant placental abnormalities
- documented intrauterine growth restriction
- unresolved polyhydramnios or oligohydramnios
- significant infection the treatment of which is beyond the midwife's scope of practice
- 42 completed weeks with reassuring fetal surveillance
- presentation other than cephalic at 37 weeks

Transfer:

- multiple gestation
- persistent transverse lie, oblique lie, or breech presentation
- persistent hypertension, HELLP, pre-eclampsia, or eclampsia
- placenta previa at term
- clinically significant placental abruption
- cardiac or renal disease with failure
- uncontrolled gestational diabetes
- known fetal anomaly or condition that requires physician management during or immediately after delivery

3.3 INTRAPARTUM CONDITIONS

In certain intrapartum situations, the midwife may need to act immediately and transport may not be the most prudent course of action in that moment. It is expected that the midwife will use her clinical judgment and expertise in such situations, access 9-1-1 if appropriate, and then transport if and when it becomes necessary.

Discussion:

- arrested active phase of labor (>6 hours of regular, strong contractions without any significant change in cervix and/or station and/or position)
- arrested 2nd stage of labor (>3 hours of active pushing without any significant change)

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

- prolonged rupture of membranes (>48 hours)

Transfer:

- labor before 37 weeks
- transverse lie, oblique lie, or breech presentation
- multiple gestation
- sustained maternal fever (>100.4 F) or other evidence of maternal infection
- moderate or thick meconium
- persistent non-reassuring fetal heart rate pattern
- maternal exhaustion unresponsive to rest/hydration
- abnormal bleeding during labor
- suspected placental abruption
- suspected uterine rupture
- persistent hypertension
- pre-eclampsia
- maternal seizure
- ROM >72 hours or ROM >18 hours with unknown GBS status and no prophylactic antibiotics or GBS+ and no prophylactic antibiotics
- prolapsed cord or cord presentation
- significant allergic response
- active genital herpes in vaginal, perineal or vulvar area in labor or after ROM
- client's clear desire for pain relief or hospital transport

3.4 POSTPARTUM CONDITIONS

Discussion:

- urinary tract infection unresponsive to treatment
- mastitis unresponsive to treatment
- subinvolution

Consultation:

- breast abscess
- retained products/unresolved subinvolution
- sustained hypertension
- significant abnormal Pap
- postpartum depression

HERC Coverage Guidance – Out-of-hospital (OOH) Birth Disposition of Public Comments

Transfer:

- significant postpartum hemorrhage unresponsive to treatment, with or without sustained maternal vital sign instability or shock
- retained placenta (>1 hour or active bleeding and manual removal unsuccessful)
- lacerations beyond midwife's ability to repair
- unusual or unexplained significant pain or dyspnea
- significant hematoma
- endometritis
- postpartum psychosis
- maternal seizure
- anaphylaxis
- persistent uterine prolapse or inversion

3.5 NEWBORN CONDITIONS

It is strongly recommended that all newborns be seen by an appropriate pediatric provider by 2 weeks of age. The following conditions warrant contact sooner.

Discussion:

- low birth weight infant (< 2500 gm = 5 lbs 8 oz)
- loss of greater than 10% of birth weight

Consultation:

- persistent cardiac arrhythmias or murmurs
- significant clinical evidence of prematurity
- failure to thrive
- hypoglycemia
- significant jaundice in first 24 hours or pathologic jaundice at any time

Transfer:

- seizure
- persistent respiratory distress
- persistent central cyanosis or pallor
- persistent temperature instability
- persistent hypoglycemia
- Apgar score less than 7 at five minutes of age and not improving
- major apparent congenital anomalies
- birth injury requiring medical attention

Section 4.0

VbBS report

August 2015 Prioritized List Errata

- 1) Add ICD-9 750.0 (Tongue tie) is currently on line 604 TONGUE TIE AND OTHER ANOMALIES OF TONGUE.
 - a. It was intended to be added to line 19 FEEDING PROBLEMS IN NEWBORNS. The equivalent ICD-10 code (Q38.1 Ankyloglossia) is on line 19. CPT 41010 (Incision of lingual frenum (frenotomy)) is on line 19. GN139 clearly indicates intent to add this code to line 19.
 - b. GUIDELINE NOTE 139, FRENOTOMY FOR TONGUE-TIE IN NEWBORNS LINES 19,604
ICD-10 Q38.1 (Ankyloglossia)/ICD-9-CM 750.0 is included on Line 19 for pairing with CPT 41010 (Frenotomy) only when the ankyloglossia interferes with breastfeeding. Otherwise, Q38.1/750.0 and CPT 41010 are included on Line 604.
- 2) GN 62 has HCPCS codes which are no longer valid and were deleted from the guideline **GUIDELINE NOTE 62, NEGATIVE PRESSURE WOUND THERAPY** Lines 8,30,51,84,209,211,239,290,383,427
Negative pressure wound therapy (CPT 97605-97608, ~~HCPCS G0456, G0457, 97605, 97606~~) is included on these lines only for patients who:
 - Have wounds that are refractory to or have failed standard therapies;
 - Are not suitable candidates for surgical wound closure; or,
 - Are at high risk for delayed or non-healing wounds due to factors such as compromised blood flow, diabetic complications, wounds with high risk of fecal contamination, extremely exudative wounds, and similar situations.
- 3) CPT 90870 (Electroconvulsive therapy, ECT) was removed from line 442 STEREOTYPY/HABIT DISORDER AND SELF-ABUSIVE BEHAVIOR DUE TO NEUROLOGICAL DYSFUNCTION. This CPT code was added in error in late 2014.
- 4) Return the inclusion of parotic gland pleomorphic adenomas to the ENT cancer line. The coding changes were made in error with the January 1, 2015 Prioritized List.
 - a. Regarding ICD-9 210.2 (Benign neoplasm of major salivary glands)
 - i. Add to line 292 CANCER OF ORAL CAVITY, PHARYNX, NOSE AND LARYNX
 - ii. Keep on line 636 BENIGN NEOPLASMS OF SKIN AND OTHER SOFT TISSUES
 - b. Regarding ICD-10 D11(Benign neoplasm of parotid gland)
 - i. Remove from line 266 CANCER OF LUNG, BRONCHUS, PLEURA, TRACHEA, MEDIASTINUM AND OTHER RESPIRATORY ORGANS
 - ii. Add to line 292 CANCER OF ORAL CAVITY, PHARYNX, NOSE AND LARYNX
 - iii. Keep on line 636 BENIGN NEOPLASMS OF SKIN AND OTHER SOFT TISSUES
 - c. Modify the coding specification on line 292
 - i. "[ICD-9 210.2](#)/ICD-10-CM code D11.0 ~~is~~ [are](#) included on this line only for parotid gland pleomorphic adenomas."

Straightforward Issues—August, 2015

Code	Code Description	Line(s) Involved	Issue	Recommendation(s)
55720 55725	Prostatotomy, external drainage of prostatic abscess, any approach; simple complicated	209 SUPERFICIAL ABSCESSSES AND CELLULITIS	CPT 55720 is currently Ancillary and 55725 is Diagnostic. Both should be on line 209 to pair with ICD-9 601.2/ICD-10 N41.2 (Abscess of prostate).	Add CPT 55720 and 55725 to line 209 Advise DMAP to remove 55720 from the Ancillary List and 55725 from the Diagnostic List
Q54.4 Q55.62 Q55.64 Q55.69	Congenital chordee Hypoplasia of penis Hidden penis Other congenital malformation of penis	438 HYPOSPADIAS AND EPISPADIAS 667 GENITOURINARY CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY	The congenital conditions of the penis were reviewed in May, 2015 and a new guideline adopted which defined when certain conditions were on the funded line (438) and when on the unfunded line (667). However, these ICD-10 codes were mistakenly not added to both lines as was intended.	Add ICD-10 Q54.4, Q55.64, and Q55.69 to line 667 and keep on line 438 Add ICD-10 Q55.62 to line 438 and keep on line 667
G90.50	Complex regional pain syndrome I, unspecified	297 NEUROLOGICAL DYSFUNCTION IN POSTURE AND MOVEMENT 381 DYSFUNCTION RESULTING IN LOSS OF ABILITY TO MAXIMIZE LEVEL OF INDEPENDENCE IN SELF-DIRECTED CARE 612 DISORDERS OF SOFT TISSUE	ICD-10 G90.50 is currently on line 612. The other complex regional pain syndrome codes which specify a particular body area (G90.51, G90.52, etc.) are all on lines 297 and 381, as is the ICD-9 code equivalent.	Add G90.50 to lines 297 and 381 Remove G90.50 from line 612

Codes Without Line Placement for January 1, 2016

Code	Code Description	Recommended Placement	Comments
W94.31xA	Exposure to sudden change in air pressure in aircraft during descent, initial encounter	DMAP Informational Diagnosis File	
W94.31xD	Exposure to sudden change in air pressure in aircraft during descent, subsequent encounter	DMAP Informational Diagnosis File	
S16.1xxA	Strain of muscle, fascia and tendon at neck level, initial encounter	407 CONDITIONS OF THE BACK AND SPINE	Matches placement of S16.1xxD
69710	Implantation or replacement of electromagnetic bone conduction hearing device in temporal bone	Services Recommended for Non-Coverage Table	Previously removed from the List as technology is no longer in use
90378	Respiratory syncytial virus, monoclonal antibody, recombinant, for intramuscular use, 50 mg, each	3 PREVENTION SERVICES WITH EVIDENCE OF EFFECTIVENESS	
90460	Immunization administration through 18 years of age via any route of administration, with counseling by physician or other qualified health care professional; first or only component of each vaccine or toxoid administered	3	
90461	Immunization administration through 18 years of age via any route of administration, with counseling by physician or other qualified health care professional; each additional vaccine or toxoid component administered	3	
90644	Meningococcal conjugate vaccine, serogroups C & Y and Hemophilus influenza B vaccine (Hib-MenCY), 4 dose schedule, when administered to children 2-15 months of age, for intramuscular use	3	
90653	Influenza vaccine, inactivated, subunit, adjuvanted, for intramuscular use	3	

Codes Without Line Placement for January 1, 2016

90664	Influenza virus vaccine, pandemic formulation, live, for intranasal use	3	
90666	Influenza virus vaccine, pandemic formulation, split virus, preservative free, for intramuscular use	3	
90667	Influenza virus vaccine, pandemic formulation, split virus, adjuvanted, for intramuscular use	3	
90668	Influenza virus vaccine, pandemic formulation, split virus, for intramuscular use	3	
90672	Influenza virus vaccine, quadrivalent, live, for intranasal use	3	
90739	Hepatitis B vaccine, adult dosage (2 dose schedule), for intramuscular use	3	

FF

VbBS Issue Summaries from 8-13-2015

Straightforward Guideline Changes

HERC staff recommendations

- 1) Change GN39 as shown below
 - a. Changes the numbers in section B to match the actual number of clauses below
- 2) Change the medical back conditions guideline as shown below
 - a. Clarifies that patients who score medium or high risk on the STarT Back tool qualify for a larger package of services
- 3) Change the prenatal testing guideline as shown below
 - a. Add a second CPT code for cell free fetal DNA testing. This code was added to line 1 PREGNANCY for January 1, 2015 but mistakenly not added to the guideline.
- 4) Change the cochlear implant guideline as shown below
 - a. The GN wording needs to change to reflect the changed decibel threshold for qualification accepted in March, 2015

GUIDELINE NOTE 39, ENDOMETRIOSIS AND ADENOMYOSIS

Line 400

- A) Hysterectomy, with or without adnexectomy, for endometriosis may be appropriate when all of the following are documented (1-4):
 - 1) Patient history of (a and b):
 - a) Prior detailed operative description or histologic diagnosis of endometriosis
 - b) Presence of pain for more than 6 months with negative effect on patient's quality of life
 - 2) Failure of a 3-month therapeutic trial with both of the following (a and b), unless there are contraindications to use:
 - a) Hormonal therapy (i or ii):
 - i) Oral contraceptive pills or patches, progesterone-containing IUDs, injectable hormone therapy, or similar
 - ii) Agents for inducing amenorrhea (e.g., GnRH analogs or danazol)
 - b) Nonsteroidal anti-inflammatory drugs
 - 3) Nonmalignant cervical cytology, if cervix is present
 - 4) Negative preoperative pregnancy test result unless patient is postmenopausal or has been previously sterilized
- B) Hysterectomy, with or without adnexectomy, for adenomyosis may be appropriate when all of the following are documented (1-6 5):
 - 1) Patient history of dysmenorrhea, pelvic pain or abnormal uterine bleeding for more than six months with a negative effect on her quality of life.
 - 2) Failure of a six-month therapeutic trial with both of the following (a and b), unless there are contraindications to use:
 - a) Hormonal therapy (i or ii):
 - i) Oral contraceptive pills or patches, progesterone containing IUDs, injectable hormone therapy, or similar
 - ii) Agents for inducing amenorrhea (e.g., GnRH analogs or danazol)
 - b) Nonsteroidal anti-inflammatory drugs
 - 3) One of the following (a or b):
 - a) Endovaginal ultrasound suspicious for adenomyosis (presence of abnormal hypoechoic myometrial echogenicity or presence of small myometrial cysts)
 - b) MRI showing thickening of the junctional zone > 12mm
 - 4) Nonmalignant cervical cytology, if cervix is present

Straightforward Guideline Changes

- 5) Negative preoperative pregnancy test unless patient is postmenopausal or has been previously sterilized

GUIDELINE NOTE XXX NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE

Line 407

Patients seeking care for back pain should be assessed for potentially serious conditions (“red flag”) symptoms requiring immediate diagnostic testing, as defined in Diagnostic Guideline D4. Patients lacking red flag symptoms should be assessed using a validated assessment tool (e.g. STarT Back Assessment Tool) in order to determine their risk level for poor functional prognosis based on psychosocial indicators.

For patients who are determined to be low risk on the assessment tool, the following services are included on this line:

- Office evaluation and education,
- Up to 4 total visits, consisting of the following treatments: OMT/CMT, acupuncture, and PT/OT. Massage, if available, may be considered.
- First line medications: NSAIDs, acetaminophen, and/or muscle relaxers. Opioids may be considered as a second line treatment, subject to the limitations on coverage of opioids in Guideline Note YYY OPIOID PRESCRIBING FOR CONDITIONS OF THE BACK AND SPINE. See evidence table.

For patients who are determined to be [medium or high](#) risk on the validated assessment tool, the following treatments are included on this line:

- Office evaluation, consultation and education
- Cognitive behavioral therapy. The necessity for cognitive behavioral therapy should be re-evaluated every 90 days and coverage will only be continued if there is documented evidence of decreasing depression or anxiety symptomatology, improved ability to work/function, increased self-efficacy, or other clinically significant, objective improvement.
- Medications, subject to the limitations on coverage of opioids in Guideline Note YYY OPIOID PRESCRIBING FOR CONDITIONS OF THE BACK AND SPINE. See evidence table.
- The following evidence-based therapies, when available, are encouraged: yoga, massage, supervised exercise therapy, intensive interdisciplinary rehabilitation
- A total of 30 visits per year of any combination of the following evidence-based therapies when available and medically appropriate. These therapies are only covered if provided by a provider licensed to provide the therapy and when there is documentation of measurable clinically significant progress toward the therapy plan of care goals and objectives using evidence based objective tools (e.g. Oswestry, Neck Disability Index, SF-MPQ, and MSPQ).
 - 1) Rehabilitative therapy (physical and/or occupational therapy), if provided according to GUIDELINE NOTE 6, REHABILITATIVE SERVICES. Rehabilitation services provided under this guideline also count towards visit totals in Guideline Note 6
 - 2) Chiropractic or osteopathic manipulation
 - 3) Acupuncture

Straightforward Guideline Changes

These coverage recommendations are derived from the State of Oregon Evidence-based Guideline on the Evaluation and Management of Low Back Pain available here:

<http://www.oregon.gov/oha/herc/Pages/blog-low-back-non-pharmacologic-intervention.aspx>

Intervention Category*	Intervention	Acute < 4 Weeks	Subacute & Chronic > 4 Weeks
Self-care	Advice to remain active	●	●
	Books, handout	●	●
	Application of superficial heat	●	
Nonpharmacologic therapy	Spinal manipulation	●	●
	Exercise therapy		●
	Massage		●
	Acupuncture		●
	Yoga		●
	Cognitive-behavioral therapy		●
	Progressive relaxation		●
Pharmacologic therapy <small>(Carefully consider risks/harms)</small>	Acetaminophen	●	●
	NSAIDs	●(▲)	●(▲)
	Skeletal muscle relaxants	●	
	Antidepressants (TCA)		●
	Benzodiazepines**	●(▲)	●(▲)
	Tramadol, opioids**	●(▲)	●(▲)
Interdisciplinary therapy	Intensive interdisciplinary rehabilitation		●
<p>● Interventions supported by grade B evidence (at least fair-quality evidence of moderate benefit, or small benefit but no significant harms, costs, or burdens). No intervention was supported by grade "A" evidence (good-quality evidence of substantial benefit).</p> <p>▲ Carries greater risk of harms than other agents in table.</p>			

NSAIDs = nonsteroidal anti-inflammatory drugs; TCA = tricyclic antidepressants.

*These are general categories only. Individual care plans need to be developed on a case by case basis. For more detailed information please see: <http://www.annals.org/content/147/7/478.full.pdf>

**Associated with significant risks related to potential for abuse, addiction and tolerance. This evidence evaluates effectiveness of these agents with relatively short term use studies. Chronic use of these agents may result in significant harms.

DIAGNOSTIC GUIDELINE D17, PRENATAL GENETIC TESTING

The following types of prenatal genetic testing and genetic counseling are covered for pregnant women:

1. Genetic counseling (CPT 96040, HPCPS S0265) for high risk women who have family history of inheritable disorder or carrier state, ultrasound abnormality, previous pregnancy with aneuploidy, or elevated risk of neural tube defect.
2. Genetic counseling (CPT 96040, HPCPS S0265) prior to consideration of chorionic villus sampling (CVS), amniocentesis, microarray testing, Fragile X, and spinal muscular atrophy screening
3. Validated questionnaire to assess genetic risk in all pregnant women
4. Screening high risk ethnic groups for hemoglobinopathies (CPT 83020, 83021)

Straightforward Guideline Changes

5. Screening for aneuploidy with any of five screening strategies [first trimester (nuchal translucency, beta-HCG and PAPP-A), integrated, serum integrated, stepwise sequential, and contingency] (CPT 76813, 76814, 81508-81511)
6. Cell free fetal DNA testing (CPT [81420](#), 81507) for evaluation of aneuploidy in women who have an elevated risk of a fetus with aneuploidy (maternal age >34, family history or elevated risk based on screening).
7. Ultrasound for structural anomalies between 18 and 20 weeks gestation (CPT 76811, 76812)
8. CVS or amniocentesis (CPT 59000, 59015, 76945, 76946, 88235, 88267, 88280, 88291) for a positive aneuploidy screen, maternal age >34, fetal structural anomalies, family history of inheritable chromosomal disorder or elevated risk of neural tube defect.
9. Array CGH (CPT 81228, 81229) when major fetal congenital anomalies are apparent on imaging, or with normal imaging when array CGH would replace karyotyping performed with CVS or amniocentesis as in #8 above
10. FISH testing (CPT 88271, 88275) only if karyotyping is not possible due a need for rapid turnaround for reasons of reproductive decision-making (i.e. at 22w4d gestation or beyond)
11. Screening for Tay-Sachs carrier status (CPT 81255) in high risk populations. First step is hex A, and then additional DNA analysis in individuals with ambiguous Hex A test results, suspected variant form of TSD or suspected pseudodeficiency of Hex A
12. Screening for cystic fibrosis carrier status once in a lifetime (CPT 81220-81224)
13. Screening for fragile X status (CPT 81243, 81244) in patients with a personal or family history of
 - a. fragile X tremor/ataxia syndrome
 - b. premature ovarian failure
 - c. unexplained early onset intellectual disability
 - d. fragile X intellectual disability
 - e. unexplained autism through the pregnant woman's maternal line
14. Screening for spinal muscular atrophy (CPT 81401) once in a lifetime
15. Screening those with Ashkenazi Jewish heritage for Canavan disease (CPT 81200), familial dysautonomia (CPT 81260), and Tay-Sachs carrier status (CPT 81255)
16. Expanded carrier screening only for those genetic conditions identified above

The following genetic screening tests are not covered:

1. Serum triple screen
2. Screening for thrombophilia in the general population or for recurrent pregnancy loss
3. Expanded carrier screening which includes results for conditions not explicitly recommended for coverage

The development of this guideline note was informed by a HERC coverage guidance. See

<http://www.oregon.gov/oha/herc/CoverageGuidances/Prenatal%20Genetic%20Testing.pdf>

GUIDELINE NOTE 31, COCHLEAR IMPLANTATION

Line 331

Patients will be considered candidates for cochlear implants if the following criteria are met:

- c) [Severe to p](#)rofound sensorineural hearing loss in both ears (defined as 71dB hearing loss or greater at 500, 1000 and 2000 Hz)

Straightforward Guideline Changes

- D) Receive limited useful benefit from appropriately fitted hearing aids, defined as a speech discrimination score of <30% on age appropriate testing for children and as scores of 40% or less on sentence recognition test in the best-aided listening condition for adults
- E) No medical contraindications
- F) High motivation and appropriate expectations (both patient and family, when appropriate)

Bilateral cochlear implants are included on this line. Simultaneous implantation appears to be more cost-effective than sequential implantation.

VbBS Issue Summaries from 8-13-2015

Hypnotherapy

Question: should hypnotherapy (CPT 90880) be placed on any lines on the Prioritized List?

Question source: HERC staff

Issue: Hypnotherapy (hypnosis; CPT 90880) is currently on the Ancillary List. However, according to DMAP this code is not currently open for reimbursement. Hypnotherapy was listed on the Excluded List in the past. There were 3 claims for hypnotherapy in the DMAP claims database in the past year; all were denied. The diagnoses associated with these claims were anxiety, depression, and administrative encounter.

Hypnotherapy is a form of psychotherapy used to create subconscious change in a patient in the form of new responses, thoughts, attitudes, behaviors or feelings. It is undertaken with a subject in hypnosis. It is normally done in conjunction with other counseling or psychotherapy services.

Evidence

Cochrane reviews:

Insufficient evidence or only very low quality evidence was found to support the use of hypnotherapy for induction of labor or control of labor pain, assistance with dental treatment in children, smoking cessation, or treatment of enuresis, fibromyalgia, seizures, schizophrenia, tinnitus, bulimia or other eating disorders, chronic pain due to spinal cord injury, or irritable bowel syndrome.

Strong evidence was found to support the use of hypnosis for treatment of needle-phobia in children and adolescents (Umam 2013).

NICE

No evidence found to support the use of hypnosis for treatment of obsessive compulsive disorder, intrapartum pain management, nocturnal enuresis, or post traumatic stress disorder.

Other provider coverage:

Aetna and BCBS consider hypnotherapy to be experimental and do not cover.

HERC staff recommendation:

- 1) Place hypnotherapy (CPT 90880) on the Services Recommended for Non-Coverage List
 - a. Advice DMAP to remove CPT 90880 from the Ancillary List
 - b. Individual indications may be reviewed for coverage as they are brought to the attention of HERC staff

Abnormal Vaginal Pap Smears

Question: Where should abnormal vaginal pap smears be located on the Prioritized List?

Question source: DMAP and HERC staff

Issue:

Vaginal pap smears were moved from the Ancillary List to the Diagnostic List in May, 2011. At that time, V76.47 (Screening for vaginal cancer in women status-post hysterectomy for benign reasons) was removed from the Preventive Services Line and placed on the Excluded List as this type of screening has received a D recommendation from the USPSTF. However, V67.01 (Screening for vaginal cancer in women status-post hysterectomy for malignant conditions) was left on the prevention line for post hysterectomy cancer surveillance. The ICD-9 codes for abnormal vaginal pap smears (795.1x) were moved from the Ancillary List to the Diagnostic Workup File with the intent that these abnormalities need to be further worked up with procedures such as colposcopy. However, colposcopy CPT codes used for the work up of abnormal vaginal pap smears are only on line 28 DYSPLASIA OF CERVIX AND CERVICAL CARCINOMA IN SITU, CERVICAL CONDYLOMA. DMAP had a hearing request to pair ICD-9 795.11 with a colposcopy CPT code. On review, there are 2 specific colposcopy codes which are indicated for vaginoscopy. These CPT codes are separate from the type of colposcopy codes used for cervical evaluation.

Recommendations:

- 1) Add diagnostic codes for abnormal vaginal pap smears (ICD-9 795.1x / ICD-10 R87.62x) to line 291 CANCER OF VAGINA, VULVA, AND OTHER FEMALE GENITAL ORGANS
 - a. Advise DMAP to remove 795.1x/R87.62x from the Diagnostic Workup File.
- 2) Add CPT 57420 (Colposcopy of the entire vagina, with cervix if present) and 57421 (with biopsy(s) of vagina/cervix) to line 291
 - a. Advise DMAP to remove 57420 and 57421 from the Ancillary List
 - b. These 2 codes are specific for vaginoscopy
 - c. Do not add other colposcopy CPT codes as they specify cervical examination, biopsies or endocervical curettage

Revisions to the Wearable Cardiac Defibrillator Guideline

Question: Should the wearable cardiac defibrillator (WCD) guideline be amended to include criteria for implantable cardiac defibrillator (ICD) placement?

Question source: OHP Medical Directors

Issue: Coverage of WCDs was adopted in January, 2015 with a guideline. The CCO medical directors have requested that the HERC clarify this guideline. The guideline requires that a patient meet criteria for ICD placement to qualify for a WCD, but does not define what ICD placement criteria is. The default criteria would be CMS/Medicare criteria, which was the underlying intent of HERC staff but not clearly spelled out in the guideline.

Guideline adopted January, 2015:

GUIDELINE NOTE XXX WEARABLE CARDIAC DEFIBRILLATORS

Lines 73,103,115,193,286,350

Wearable cardiac defibrillators (WCDs; CPT 93745, HCPCS E0617, K0606-K0609) are included on these lines for patients at high risk for sudden cardiac death who meet the medical necessity criteria for an implantable cardioverter defibrillator (ICD) but are unable to have an ICD implanted due to medical condition (e.g. ICD explanted due to infection with waiting period before ICD reinsertion or current medical condition contraindicates surgery). WCDs are not included on these lines for use during the waiting period for ICD implantation after myocardial infarction, coronary bypass surgery, or coronary artery stenting.

CMS/Medicare 2005 National Coverage Determination for ICD placement:

- 1) Documented episode of cardiac arrest due to ventricular fibrillation (VF), not due to a transient or reversible cause
- 2) Documented sustained ventricular tachyarrhythmia (VT), either spontaneous or induced by an electrophysiology (EP) study, not associated with an acute myocardial infarction (MI) and not due to a transient or reversible cause
- 3) Documented familial or inherited conditions with a high risk of life-threatening VT, such as long QT syndrome or hypertrophic cardiomyopathy
- 4) Coronary artery disease with a documented prior MI, a measured left ventricular ejection fraction (LVEF) ≤ 0.35 , and inducible, sustained VT or VF at EP study. (The MI must have occurred more than 40 days prior to defibrillator insertion. The EP test must be performed more than 4 weeks after the qualifying MI.)
- 5) Documented prior MI and a measured LVEF ≤ 0.30 . Patients must not have:
 - 1) New York Heart Association (NYHC) classification IV;
 - 2) Cardiogenic shock or symptomatic hypotension while in a stable baseline rhythm;
 - 3) Had a coronary artery bypass graft (CABG) or percutaneous transluminal coronary angioplasty (PTCA) within past 3 months;
 - 4) Had an acute MI in the past 40 days;
 - 5) Clinical symptoms or findings that would make them a candidate for coronary revascularization; or
 - 6) Any disease, other than cardiac disease (e.g., cancer, uremia, liver failure), associated with a likelihood of survival less than 1 year.

Revisions to the Wearable Cardiac Defibrillator Guideline

- 6) Patients with ischemic dilated cardiomyopathy (IDCM), documented prior MI, NYHA Class II and III heart failure, and measured LVEF \leq 35%;
- 7) Patients with non-ischemic dilated cardiomyopathy (NIDCM) >9 months, NYHA Class II and III heart failure, and measured LVEF \leq 35%;
- 8) Patients who meet all current Centers for Medicare & Medicaid Services (CMS) coverage requirements for a cardiac resynchronization therapy (CRT) device and have NYHA Class IV heart failure;
- 9) Patients with NIDCM >3 months, NYHA Class II or III heart failure, and measured LVEF \leq 35%, only if the following additional criteria are also met:
 - 1) Patients must be able to give informed consent;
 - 2) Patients must not have:
 - Cardiogenic shock or symptomatic hypotension while in a stable baseline rhythm;
 - Had a CABG or PTCA within the past 3 months;
 - Had an acute MI within the past 40 days;
 - Clinical symptoms or findings that would make them a candidate for coronary revascularization;
 - Irreversible brain damage from preexisting cerebral disease;
 - Any disease, other than cardiac disease (e.g. cancer, uremia, liver failure), associated with a likelihood of survival less than 1 year;

All indications must meet the following criteria:

- 1) Patients must not have irreversible brain damage from preexisting cerebral disease;
- 2) MIs must be documented and defined according to the consensus document of the Joint European Society of Cardiology/American College of Cardiology Committee for the Redefinition of Myocardial Infarction

Indications 3 - 8 (primary prevention of sudden cardiac death) must also meet the following criteria:

- 1) Patients must be able to give informed consent
- 2) Patients must not have:
 - a. Cardiogenic shock or symptomatic hypotension while in a stable baseline rhythm;
 - b. Had a CABG or PTCA within the past 3 months;
 - c. Had an acute MI within the past 40 days;
 - d. Clinical symptoms or findings that would make them a candidate for coronary revascularization;
 - e. Any disease, other than cardiac disease (e.g., cancer, uremia, liver failure), associated with a likelihood of survival less than 1 year

Revisions to the Wearable Cardiac Defibrillator Guideline

HERC staff recommendation:

- 1) Amend the WCD guideline as shown below
 - a. Alternate: include entire CMS criteria in guideline (not preferred—very lengthy)

GUIDELINE NOTE XXX WEARABLE CARDIAC DEFIBRILLATORS

Lines 73,103,115,193,286,350

Wearable cardiac defibrillators (WCDs; CPT 93745, HCPCS E0617, K0606-K0609) are included on these lines for patients at high risk for sudden cardiac death who meet the medical necessity criteria for an implantable cardioverter defibrillator (ICD) [as defined by the CMS 2005 National Coverage Determination](#) but are unable to have an ICD implanted due to medical condition (e.g. ICD explanted due to infection with waiting period before ICD reinsertion or current medical condition contraindicates surgery). WCDs are not included on these lines for use during the waiting period for ICD implantation after myocardial infarction, coronary bypass surgery, or coronary artery stenting.

VbBS Issue Summaries from 8-13-2013

Left Ventricular Assist Devices as Destination Therapy

Question: should destination therapy be added as an indication for left ventricular assist devices (LVADs) on the Prioritized List?

Question source: HERC staff

Issue: LVADs are currently covered on the Prioritized List as a bridge to heart transplantation and as a bridge to recovery for severe heart failure. LVADs can also be used as destination therapy—treatment for severe heart failure when transplant is not an option for a patient. This indication for LVADs was discussed at the May, 2015 VBBS meeting, and HERC staff was asked to seek out additional information on coverage criteria for LVADs as destination therapy, heart transplant criteria, and other state Medicaid coverage criteria. Staff was asked to look at the patient criteria used in the studies of LVADs as destination therapy and to create a guideline note around these criteria if possible. Additionally, the subcommittee requested that an expert be invited to come to answer questions and provide expert input.

In March, 2015, NICE published a new coverage guidance based on a December 2014 evidence review which recommended coverage of LVADs as destination therapy. This change in NICE policy was driven mainly by the substantive decreased in mortality seen in end stage heart failure patients with LVADs as compared to medical management.

Evidence was reviewed at the May meeting finding that LVAD as destination therapy prolongs survival for patients with end stage heart failure compared to optimal medical management by a factor of approximately 4 (0.64 to 1.1 yr → 2.4 to 4.4 yr). Quality of life measures are significantly better with LVAD as destination therapy compared to optimal medical management for end stage heart failure. Heart transplantation is significantly better than LVAD for both survival length and quality of life; however, the supply of donor hearts is limited.

The cost/QALY of LVAD as destination therapy is approximately \$200,000. However, the anticipated cost/QALY of LVAD followed by heart transplant is actually higher, explained by the cost/complications of two major surgical procedures vs one. The cost/QALY of LVAD as a destination therapy has been significantly reduced with newer versions of the technology.

Left Ventricular Assist Devices as Destination Therapy

Current Prioritized List status:

CPT code	Code description	Current Line(s)
33979	Insertion of ventricular assist device, implantable intracorporeal, single ventricle	86 MYOCARDITIS, PERICARDITIS, AND ENDOCARDITIS 102 HEART FAILURE 267 ARDIOMYOPATHY, MALIGNANT ARRHYTHMIAS, AND COMPLEX CONGENITAL HEART DISEASE Treatment: CARDIAC TRANSPLANT
33980	Removal of ventricular assist device, implantable intracorporeal, single ventricle	86,102,267
33981-33983	Replacement of ventricular assist device pump(s), implantable intracorporeal,	86,102,267
93750	Interrogation of ventricular assist device (VAD), in person, with physician or other qualified health care professional analysis of device parameters	86,102,267

GUIDELINE NOTE 18, VENTRICULAR ASSIST DEVICES

Lines 102,267

Ventricular assist devices are covered only in the following circumstances:

- 1) as a bridge to cardiac transplant;
- 2) as treatment for pulmonary hypertension when pulmonary hypertension is the only contraindication to cardiac transplant and the anticipated outcome is cardiac transplant; or,
- 3) as a bridge to recovery.

Ventricular assist devices are not covered for destination therapy.

Ventricular assist devices are covered for cardiomyopathy only when the intention is bridge to cardiac transplant.

Long-term VADs are covered for indications 1 and 2. Long-term VADs are defined as a VAD that is implanted in a patient with the intent for the patient to be supported for greater than a month with the potential for discharge from the hospital with the device. Temporary or short term VADs are covered for indications 1 and 3. Short-term VADs are defined as a VAD that is implanted in a patient with the intent for the patient to be supported for days or weeks with no potential for discharge from the hospital with the device.

Left Ventricular Assist Devices as Destination Therapy

Evidence review—patients included in reviews

- 1) **NICE 2014**, evidence review for LVADs for destination therapy
 - a. N=1287; Patients ≥ 19 years with advanced heart failure who were ineligible for heart transplantation.
 - b. N=200; patients with advanced heart failure who were ineligible for heart transplantation and whose heart failure was refractory to optimal medical management were included. Included patients had NYHA class IIIB or IV heart failure for at least 45 of the 60 days before enrolment or dependence on an intra-aortic balloon pump for a period of 7 days or inotropes for 14 days before enrolment were included. Patients also had a left ventricular fraction $< 25\%$, and a peak oxygen consumption < 14 ml/kg/min. Exclusion criteria: patients with severe renal, hepatic, pulmonary obstructive pulmonary disease were excluded.
 - c. N=414; patients with advanced heart failure who were ineligible for heart transplantation and whose heart failure was refractory to optimal medical management were included. Included patients had NYHA class IIIB or IV heart failure for at least 45 of the 60 days before enrolment or dependence on an intra-aortic balloon pump for a period of 7 days or inotropes for 14 days before enrolment were included. Patients also had a left ventricular fraction $< 25\%$, and a peak oxygen consumption < 14 ml/kg/min. Exclusion criteria: patients with severe renal, hepatic, pulmonary obstructive pulmonary disease were excluded. Patients with uncontrolled infections, previous strokes, mechanical aortic valves, irreparable aortic insufficiency, aortic aneurysm > 5.0 cm or other mechanical circulatory support device
 - d. N=374; patients with NYHA Class IIIB or IV heart failure who were ineligible for heart transplantation and whose heart failure was refractory to optimal medical management. The BTT group included patients with NYHA class IV heart failure who were listed as high priority for heart transplantation. Exclusion criteria: patients with active uncontrolled infection, a mechanical aortic valve, aortic insufficiency, an aortic aneurysm, or who receiving other mechanical circulatory support (except and intra-aortic balloon pump) were excluded. Patients with severe renal, pulmonary or hepatic dysfunction were also excluded
 - e. N=128 (RCT; 68 randomized to LVAD); patients with chronic end-stage heart failure and contraindications to heart transplantation were included. Included patients had NYHA class IV heart failure for ≥ 90 days despite therapy with angiotensin-converting-enzyme inhibitors, diuretics and digoxin. Included patients had a left ventricular ejection fraction $< 25\%$, a peak oxygen consumption < 12 ml/kg/min, a continuous need for intravenous inotropic therapy due to symptomatic hypotension, decreasing renal function or worsening pulmonary congestion.
 - f. N=129 (RCT; 68 randomized to LVAD); patients with chronic end-stage heart failure and contraindications to heart transplantation were included. Included patients had NYHA class IV heart failure for ≥ 90 days despite therapy with angiotensin-converting-enzyme inhibitors, diuretics and digoxin. Included patients had a left ventricular ejection fraction $< 25\%$, a peak oxygen consumption < 12 ml/kg/min, a continuous need for intravenous inotropic therapy due to symptomatic hypotension, decreasing renal function or worsening pulmonary congestion. Subsequent inclusion criteria allowed for patients with NYHA class IIIB heart failure who were taking inotropes for 14 of 28 days prior to enrolment with intra-aortic balloon pumps.
 - g. N=280; patients over 65 years with advanced heart failure who were ineligible for heart transplantation and whose heart failure was refractory to optimal medical management

Left Ventricular Assist Devices as Destination Therapy

were included. Patients had NYHA class IV heart failure for at least 60 days despite maximised oral therapy or inotropic support. Patients also had a left ventricular fraction <25% and a peak oxygen consumption <12 ml/kg/min.

- h. N=58; patients with NYHA class IV heart failure with a contraindication to heart transplant were included.
 - i. N=42; patients with class IV end-stage left ventricular heart failure who were ineligible for heart transplantation and were on optimal medical management (digoxin, diuretic, beta blocker, angiotensin-converting enzyme) for 60 of the preceding 90 days were included. Included patients had a life expectancy of less than 2 years, a left ventricular ejection fraction <25% and a peak oxygen consumption <12 ml/kg/min
- 2) Rector 2012**, VA meta-analysis of LVADs for destination therapy
- a. 1 RCT, patient inclusion criteria included being ineligible for a heart transplant, being symptomatic at rest or with minimal exertion (New York Heart Association [NYHA] class IV heart failure) despite optimization of other therapies for heart failure, and a left ventricular ejection fraction less than 25%.
- 3) MED 2010**, review of VADs
- a. 1 RCT, N=129, *Inclusion criteria*: NYHA IV≥90 days, diminished LVEF, and diminished oxygen consumption or ionotrope dependence, ineligible for heart transplant
 - b. 1 non randomized controlled trial, N=55 *Inclusion criteria*: Stage D HF; adults; NYHA IV ≥3 mos; *not* candidates for transplant
 - c. Case series, N=377, inclusion criteria: end stage heart failure
 - d. Case series, N=100, inclusion criteria not given (rated poor quality study)

Other state Medicaid coverage policies for LVADs as destination therapy

- 1) Alabama**
 - a. Covers LVAD (cannot distinguish indication) if done as part of hospitalization and billed as part of DRG
- 2) Florida**
 - a. Covers without distinguishing indications for LVADs
- 3) Illinois**
 - a. Covers without distinguishing indications for LVADs
- 4) Minnesota**
 - a. Covers LVAD for destination therapy
 - b. Requesting further info on any coverage criteria (email 5/28)
- 5) North Carolina**
 - a. Covers LVADs for destination therapy with a modification of the CMS coverage criteria. Also has requirement that patient and/or caregiver's psychosocial history cannot limit the ability to comply with the required medical care
 - b. Destination Therapy
 - i. 1. The recipient has either:
 - 1. (i.) New York Heart Association (NYHA) class IV heart failure for more than 60 days; or
 - 2. (ii.) New York Heart Association (NYHA) class III/IV for 28 days and one of the following:
 - a. (A) received more than 14 days support with intraaortic balloon pump; or

Left Ventricular Assist Devices as Destination Therapy

- b. (B) is dependent on IV inotropic agents, with 2 failed weaning attempts.

AND

- ii. 2. The recipient has a peak O₂ consumption of less than 14 ml/kg.

AND

- iii. 3. The recipient shall not be a candidate for human heart transplant for one or more of the following reasons:

- 1. (i.) Age is older than 65 years;
- 2. (ii.) Insulin dependent diabetes mellitus with end-organ damage;
- 3. (iii.) Chronic renal failure (serum creatinine of greater than 2.5 mg/dL) for more than 90 days; or
- 4. (iv.) Presence of other clinically significant condition(s)

6) Pennsylvania

- a. Covers without distinguishing indications for LVADs

7) Rhode Island

- a. Covers without any coverage criteria

8) Texas

- a. Covers without distinguishing indications for LVADs

Additional information

OHSU criteria for heart transplantation

- 1) Candidacy for cardiac transplantation is defined by a multidisciplinary treatment team, also by UNOS
- 2) Criteria always include
 - a. Class IV heart failure
 - b. absence of irreversible end organ damage
 - c. psychological wellbeing and psychosocial support available for transplantation

OHSU criteria for LVAD as destination therapy

- 1) NYHA class IV heart failure
- 2) Not a candidate for heart transplantation
- 3) EF < 25%
- 4) Have demonstrated functional limitation with a peak oxygen consumption of ≤ 14 ml/kg/min unless balloon pump or inotrope dependent or physically unable to perform the test
- 5) Body surface area appropriate for the type of device being considered
- 6) Acceptable right heart function for VAD only, assess by ECHO and invasive hemodynamic monitoring
- 7) Worsening hemodynamic state despite maximum pharmacologic management
- 8) Adequate psychological condition and appropriate external psychosocial support for prolonged VAD support
- 9) Adequate end organ function

Left Ventricular Assist Devices as Destination Therapy

HERC staff summary:

All studies used in the evidence reviewed required patients to be ineligible for heart transplant, and generally had the same inclusion criteria. This inclusion criteria appears to correlate almost exactly with the CMS coverage criteria, as well as any other Medicaid state coverage criteria when such exist. All other state Medicaid programs that responded to staff queries are covering LVAD as destination therapy.

HERC Staff Recommendations:

- 1) Adopt LVADs for destination therapy
 - a. Modify GN1 as shown below
 - b. Guideline requirements reflect the population included in the studies on the efficacy of LVAD as destination therapy
 - c. All criteria found for LVAD as destination therapy agree with the suggested criteria below

GUIDELINE NOTE 18, VENTRICULAR ASSIST DEVICES

Lines 86,102,267

Ventricular assist devices are covered ~~only in the following circumstances: 1) as a bridge to cardiac transplant; 2) as treatment for pulmonary hypertension when pulmonary hypertension is the only contraindication to cardiac transplant and the anticipated outcome is cardiac transplant; or, 3) as a bridge to recovery.~~ and as destination therapy.

~~Ventricular assist devices are not covered for destination therapy.~~

~~Ventricular assist devices are covered for cardiomyopathy only when the intention is bridge to cardiac transplant.~~

~~Long-term VADs are covered for indications 1 and 2. Long-term VADs are defined as a VAD that is implanted in a patient with the intent for the patient to be supported for greater than a month with the potential for discharge from the hospital with the device. Temporary or short term VADs are covered for indications 1 and 3. Short-term VADs are defined as a VAD that is implanted in a patient with the intent for the patient to be supported for days or weeks with no potential for discharge from the hospital with the device.~~

When used as destination therapy, patients must

- 1) have chronic end-stage heart failure (New York Heart Association Class IIIB or IV end-stage left ventricular failure) for more than 60 days, AND
- 2) not be a candidate for heart transplantation, AND
- 3) meet all of the following conditions:
 - a. Have failed to respond to optimal medical management, including beta-blockers and ACE inhibitors (if tolerated) for at least 45 of the last 60 days, or have been balloon pump dependent for 7 days, or IV inotrope dependent for 14 days; and
 - b. Have a left ventricular ejection fraction (LVEF) <25%; and
 - c. Have demonstrated functional limitation with a peak oxygen consumption of <14 ml/kg/min unless balloon pump or inotrope dependent or physically unable to perform the test.

Left Ventricular Assist Devices as Destination Therapy

- 4) [Have adequate psychological condition and appropriate external psychosocial support for prolonged VAD support](#)
- 5) [Have adequate end organ function](#)

VbBS Issue Summaries from 8-13-2015

Gender Dysphoria Mental Health Provider Amendments

Questions:

- 1) Should the wording “qualified” referring to mental health professionals be altered in the gender dysphoria guideline?
- 2) Should the requirement for mental health professionals to have experience with gender dysphoria be modified in the guideline?
- 3) Should the requirement for a thorough psychosocial assessment be changed to a mental health evaluation?
- 4) Should there be any specific qualification/training requirements for the mental health professional conducting the evaluation?
- 5) Should the requirements for mental health professional referral letter(s) be different for chest/breast surgery and for genital surgery?

Question source: DMAP, various Medicaid CCO’s, Basic Rights Oregon

Issues:

1) The current gender dysphoria guideline has requirements for “qualified mental health professionals” to be involved in the care of transgendered persons. This wording was adopted from the international guideline on transgender health (WPATH). However, this term has a specific meaning for Medicaid programs, referring to mental health providers without the traditional degree or licenses. The intent of the commission was to specify mental health professionals with training/licenses/degrees (i.e. LCSW, psychologists, etc.). DMAP is suggesting that we change this phrase to “licensed mental health provider.” The current wording is a major implementation barrier.

Basic Rights Oregon (BRO) has raised concerns that the current definition of mental health providers is confusing and inadequate. They agree with the proposed change to remove “qualified” and replace with “licensed.” In addition, they are requesting the addition of examples of providers the HERC feels meets the guideline definition. BRO suggests adding a full list of permissible practitioners (regular master’s level social worker, licenses professional counselor, licensed marriage and family therapist, occupational therapist, psychologist, physician, psychiatrist, physician assistant, naturopathic doctor, nurse practitioner, and/or psychiatric nurse). BRO feels that this clarification of providers will increase access to care.

The WPATH international guidelines require the following:

The training of mental health professionals competent to work with gender dysphoric adults rests upon basic general clinical competence in the assessment, diagnosis, and treatment of mental health concerns. Clinical training may occur within any discipline that prepares mental health professionals for clinical practice, such as psychology, psychiatry, social work, mental health counseling, marriage and family therapy, nursing, or family medicine with specific training in behavioral health and counseling. The following are recommended minimum credentials for mental health professionals who work with adults presenting with gender dysphoria:

1. Clinical training may occur within any discipline that prepares mental health professionals for clinical practice, such as psychology, psychiatry, social work, mental health counseling, marriage and family therapy, nursing, or family medicine with specific training in behavioral health and counseling.

Gender Dysphoria Mental Health Provider Amendments

2) The current gender dysphoria guideline requires the mental health professional evaluating a patient for gender dysphoria to have “experience in working with patients with gender dysphoria.” DMAP and the CCOs are finding a significant shortage of mental health professionals with such experience. They are requesting that the requirement for experience be dropped to avoid having to pay for patient transportation out of their area to meet with a professional with this experience. Basic Rights Oregon has requested that “experience” be replaced with “knowledge about the assessment process and treatment of patients with gender dysphoria. The source of this knowledge could be academic coursework, continuing education class, residency exposure, mental health provider who is accessing supervision/consultation from an expert of specialist, etc.”

WPATH lists the following requirement for mental health professionals who work with patients with gender dysphoria:

Knowledgeable about gender-nonconforming identities and expressions, and the assessment and treatment of gender dysphoria.

3) BRO is requesting that we change our current requirement for a “thorough psychosocial assessment” to “mental health evaluation.” BRO feels that the term psychosocial assessment suggests a formal battery of objective measures, rather than a clinical interview. BRO considers a mental health evaluation sufficient to confirm a gender dysphoria diagnosis and provide results of a mental status exam. Requiring a psychosocial assessment is a high barrier and is difficult to obtain due to a shortage of qualified providers.

BRO is also requesting that HERC put in language clarifying that the mental health assessment does not have to provide a referral letter or other formal document prior to cross-sex hormone therapy initiation.

The WPATH guideline requires that a patient have an “evaluation of their psychosocial adjustment.”

4) HERC staff, in reviewing the requirements of other Medicaid programs and private insurers as well as WPATH guidelines, has found numerous instances where specific training is required for the mental health provider assessing a patient with gender dysphoria. Some insurers (**Cigna 2015** for example) require one mental health provider be a master’s level professional and the other provider be a psychiatrist or PhD level provider for the two evaluations required prior to gender reassignment surgery. **MED 2015** lists Maryland Medicaid, New York Medicaid, Vermont Medicaid, city of San Francisco, some BCBS plans, Cigna, and GroupHealth, and as having the requirement that “One of the referring professionals must have a doctoral degree (PhD, MD, EdD, DSc, DSW, or PsyD) and be capable of adequately evaluating co-morbid psychiatric conditions” prior to gender reassignment surgery.

The WPATH international guidelines require the following:

A master’s degree or its equivalent in a clinical behavioral science field. This degree, or a more advanced one, should be granted by an institution accredited by the appropriate national or regional accrediting board. The mental health professional should have documented credentials from a relevant licensing board or equivalent for that country

Gender Dysphoria Mental Health Provider Amendments

5) Dr. Joyce Lui as Kaiser Permanente has requested that the HERC review the requirement for two mental health referral letters prior to any surgery (both breast/chest and genital). WPATH guidelines specify that one referral letter is required prior to breast/chest surgery and two prior to genital surgery.

From Dr. Lui:

When HERC made the transgender guidelines for hormone therapy and surgery, there are some discrepancies from the WPATH guidelines. We are finding these inconsistencies somewhat difficult to administer (especially as some of our patients start off commercial and then becomes Medicaid patients or vice versa). I am not certain if this was intentional or an oversight. Examples include:

1. # of letters needed for top surgery
2. WPATH states that the letters needed for top surgery are different than the ones needed for bottom surgery

In past discussions, VBBS/HERC have been concerned about non-reversible procedures and felt that a high bar was required prior to consideration for these procedures.

VBBS Issue Summaries from 8-13-2015

Gender Dysphoria Mental Health Provider Amendments

HERC staff recommendations:

- 1) Modify GN127 as shown below
 - a. Strongly recommend: change the term for the mental health providers required to evaluate patients from “qualified” to “licensed”
 - i. Consistent with WPATH definition of providers
 - ii. Addresses Medicaid problem with the “qualified” specific term
 - b. Strongly recommend: allow mental health providers to be “knowledgeable” rather than “experienced” with providing care for transgendered persons
 - i. Increases the pool of available providers for Oregon patients
 - ii. Conforms with WPATH guidelines
 - c. Recommend: change the requirement for the mental health visit to be a “comprehensive mental health evaluation” rather than “thorough psychosocial assessment”
 - d. Recommend: specify the types of providers who can evaluate a patient with gender dysphoria prior to hormonal or surgical therapy
 - e. Recommend: change the referral letter requirement for breast/chest surgery to one letter while leaving the requirement for two letters for genital surgery
 - i. Aligns with WPATH guidelines
 - ii. Addresses CCO concern
 - f. Recommend: add in the level of training required for a professional supplying a referral letter(s) for surgery
 - i. Aligns with WPATH guidelines
 - ii. Brings Oregon into alignment with the majority of other private and public payers

GUIDELINE NOTE 127, GENDER DYSPHORIA

Line 413

Hormone treatment with GnRH analogues for delaying the onset of puberty and/or continued pubertal development is included on this line for gender questioning children and adolescents. This therapy should be initiated at the first physical changes of puberty, confirmed by pubertal levels of estradiol or testosterone, but no earlier than Tanner stages 2-3. Prior to initiation of puberty suppression therapy, adolescents must fulfill eligibility and readiness criteria and must have a comprehensive mental health evaluation. Ongoing psychological care is strongly encouraged for continued puberty suppression therapy.

Cross-sex hormone therapy is included on this line for treatment of adolescents and adults with gender dysphoria who meet appropriate eligibility and readiness criteria. To qualify for cross-sex hormone therapy, the patient must:

1. have persistent, well-documented gender dysphoria
2. have the capacity to make a fully informed decision and to give consent for treatment
3. have any significant medical or mental health concerns reasonably well controlled
4. have a comprehensive mental health evaluation ~~thorough psychosocial assessment~~ by a ~~qualified~~ licensed mental health professional (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) ~~with experience in~~ knowledgeable about the assessment and treatment of ~~working with~~ patients with gender dysphoria.

Gender Dysphoria Mental Health Provider Amendments

Sex reassignment surgery is included for patients who are sufficiently physically fit and meet eligibility criteria. To qualify for surgery, the patient must:

1. have persistent, well documented gender dysphoria
2. have completed twelve months of continuous hormone therapy as appropriate to the member's gender goals unless hormones are not clinically indicated for the individual
3. have completed twelve months of living in a gender role that is congruent with their gender identity unless a medical and a mental health professional both determine that this requirement is not safe for the patient
4. have the capacity to make a fully informed decision and to give consent for treatment
5. have any significant medical or mental health concerns reasonably well controlled
6. for breast/chest surgeries, have one referral from a licensed mental health professional with a master's degree or its equivalent or higher in a clinical behavioral science field (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) knowledgeable about the assessment and treatment of patients with gender dysphoria
7. for genital surgeries, have two referrals from ~~qualified-licensed~~ mental health professional (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) ~~with experience in~~ knowledgeable about the assessment and treatment of ~~working with~~ patients with gender dysphoria who have independently assessed the patient. Such an assessment should include the clinical rationale supporting the patient's request for surgery, as well as the rationale for the procedure(s). One of the referring professionals must be a master's level professional or higher and the other must have a doctoral degree or equivalent (PhD, MD, DO, EdD, DSc, DSW, or PsyD or psychiatric nurse practitioner) and be capable of adequately evaluating co-morbid psychiatric conditions.

Gender Dysphoria Medication Prescribing Issues

Questions:

- 1) Should there be any requirements regarding the qualifications for providers who prescribe cross-sex hormone therapy?
- 2) Should there be any requirements regarding the qualifications for providers who prescribe puberty suppression medications?

Question source: DMAP, CCOs, Basic Rights Oregon, pediatric endocrinology

Issues:

1) Cross-sex hormone therapy prescribing

The CCOs have raised questions about whether there should be minimal requirements for the training and/or experience of providers who are prescribing cross-sex hormone therapy. The concern about cross-sex hormone therapy has been mainly about whether naturopaths, chiropractors, or other non-MD/DO providers with prescribing privileges should be allowed to prescribe these medications. Other questions have been raised about whether a provider who prescribes cross-sex hormone therapy needs to demonstrate training or experience with this type of treatment and population.

Basic Rights Oregon (BRO) has submitted the following written testimony:

We recommend HERC retain the current language for prescribing hormone therapy. While there may be a desire to modify the language to be more consistent with other practitioner requirements within the policy, we believe keeping the most permissive language possible will better facilitate access. We generally rely on providers to determine their competency in delivering health care as their education permits and within their scope of practice, this should be no different. It would also be helpful to clarify that “letter(s)” are not required to initiate cross hormone therapy because there seems to be some confusion on this point, perhaps conflating HRT with surgery requirements.

There is no precedent on the Prioritized List for restricting the provider type or requiring specific provider training prior to prescribing a particular medication that is managed through pharmacies (i.e. not physician administered).

The WPATH guidelines outline recommendations for providers who prescribe cross-sex hormone therapy.

With appropriate training, feminizing/masculinizing hormone therapy can be managed by a variety of providers, including nurse practitioners, physician assistants, and primary care physicians. Many of the screening tasks and management of comorbidities associated with long-term hormone use, such as cardiovascular risk factors and cancer screening, fall more uniformly within the scope of primary care rather than specialist care, particularly in locations where dedicated gender teams or specialized physicians are not available.

Given the multidisciplinary needs of transsexual, transgender, and gender-nonconforming people seeking hormone therapy, as well as the difficulties associated with fragmentation of care in general, WPATH strongly encourages the increased training and involvement of primary care providers in the area of feminizing/masculinizing hormone therapy. If hormones are prescribed by a specialist, there should be close communication with the patient’s primary care provider. Conversely, an experienced hormone provider or endocrinologist should be involved if the primary care physician has no experience with this type of hormone therapy, or if the

Gender Dysphoria Medication Prescribing Issues

patient has a pre-existing metabolic or endocrine disorder that could be affected by endocrine therapy.

While formal training programs in transgender medicine do not yet exist, hormone providers have a responsibility to obtain appropriate knowledge and experience in this field. Clinicians can increase their experience and comfort in providing feminizing/masculinizing hormone therapy by co-managing care or consulting with a more experienced provider, or by providing more limited types of hormone therapy before progressing to initiation of hormone therapy. Because this field of medicine is evolving, clinicians should become familiar and keep current with the medical literature, and discuss emerging issues with colleagues

2) Puberty suppression

Many stakeholders have raised questions about whether there should be restrictions on prescribing puberty suppression medications and, if so, what these restrictions should be. Pharmacy and Therapeutics Committee (P&T) has created a PA criteria for puberty suppression medications requiring that they be prescribed by a pediatric endocrinologist. This restriction applies only to fee-for-service Medicaid (“open card”) patients only; however, CCOs can use P&T PA criteria if they wish.

Basic Rights Oregon has expressed concern about lack of access to providers caused by restricting these medications to pediatric endocrinology, particularly in more rural areas of the state. BRO and other advocates have suggested broadening the criteria to allow non-pediatric endocrinologists to prescribe these medications with consultation with a pediatric endocrinologist. From BRO’s submitted testimony:

We support expanding access by allowing medical providers, such as primary care physicians, internists, family medicine doctors and naturopathic physicians, with experience with prescribing puberty suppression medication to both prescribe and administer puberty delaying medication. We suggest HERC recommend but not require a consultation with a pediatric endocrinologist. Experience can be considered knowledge attained through coursework, continuing education, residency, or supervision/consultation with a pediatric endocrinologists or other puberty delaying medication medical expert.

Dr. Karin Selva, a Portland pediatric endocrinologist, has submitted testimony that these medications can only be safely prescribed by a pediatric endocrinologist, and argues against widening out the prescribing to other types of providers with pediatric endocrine consultation due to the complexity of the use these medications and their monitoring. She states that she has seen harm with a primary care provider prescribing these medications even in consultation with a pediatric endocrinologist. She feels these medications should be managed by a pediatric endocrinologist, or a OB/Gyn or urologist with extensive experience with adolescents. She does not feel that there is an access problem in Oregon.

The CCOs that responded to HERC staff inquiries all indicated that they are currently limiting puberty suppression medications to pediatric endocrinologists. However, several have expressed interest in leaving open an option for an interested and additionally trained pediatrician to prescribe these medications. From Dr. Joyce Liu at Kaiser: “I think there is room to have a very interested pediatrician get some extra training and do some of the prescribing instead. We have had great success doing this for some other diseases with great success.” Other CCO medical directors felt that the option of a generalist prescribing with consultation with pediatric endocrinology should be entertained, but with specifications such as the frequency of the required consultation.

Gender Dysphoria Medication Prescribing Issues

Currently, there are no requirements in the guideline for any specific training or experience for providers prescribing puberty suppression medications. These medications are physician administered, and other physician administered medications have various restrictions on the Prioritized List. The majority of these limitations are requiring other medications or therapies to be tried first, limiting the conditions for which the medication can be used, and similar restrictions.

Current P&T PA criteria for leuprolide:

- 1) Is the diagnosis gender dysphoria (ICD-9 302.6, 302.85)? If yes, then
- 2) Does the request meet all of the following criteria?
 - a. Diagnosis of gender dysphoria made by a mental health professional with experience treating gender dysphoria.
 - b. At least 6 months of counseling and psychometric testing for gender dysphoria.
 - c. Prescribed by a pediatric endocrinologist.
 - d. Confirmation of puberty (physical changes and hormone levels) no earlier than Tanner Stages 2-3 (bilateral breast budding or doubling to tripling testicular volume).
- 3) If yes, then approve through age 16 years

WPATH does not explicitly make a statement about the type of provider or qualifications required for prescribing puberty suppression medications. However, WPATH does state that “During pubertal suppression, an adolescent’s physical development should be carefully monitored—preferably by a pediatric endocrinologist...”

CPT codes for puberty suppression medications

96372 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug);
subcutaneous or intramuscular – currently Ancillary
Specific medications have J codes which are not on the Prioritized List.

HERC staff recommendations:

- 1) Do not add qualifications for cross-sex hormone therapy providers to the gender dysphoria guideline
 - i. Leave criteria to the Pharmacy and Therapeutics (P&T) Committee and the coordinated care organizations (CCOs)
 - ii. No other pharmacy supplied medication has restrictions in prescribing on the Prioritized List
- 2) Do not add qualifications for prescribing puberty suppression therapy
 - i. Leave criteria to P&T and the CCO’s
 1. CCOs are interested in developing innovative or alternative prescribing criteria/pathways in the future

Surgical Therapy for Gender Dysphoria

Questions:

- 1) Should the surgical procedures included on the gender dysphoria line be modified?
- 2) Should mastopexy (breast augmentation) be covered for gender dysphoria?
- 3) Should penile prosthesis for function be covered for gender dysphoria?
- 4) Should any restrictions be placed on who can provide surgical treatments for gender dysphoria?

Question Source: HERC staff, OHA, Medicaid CCO's

Issues:

The CCOs and DMAP have questions regarding the procedures included or omitted from the gender dysphoria line. The procedures included on the line were considered necessary for sex reassignment when this topic was discussed in 2014; a series of procedures were deliberately left off the line as they were considered cosmetic.

The specific questions raised by the CCOs and DMAP include

- a) Is there any evidence that one type of gender reassignment surgery or one subset of procedures is more effective than another at relieving gender dysphoria?
- b) Should breast augmentation be included for males transitioning to females? Is there evidence to support breast augmentation as being necessary for the treatment of gender dysphoria?
- c) Should tissue transplant and other procedures considered auxiliary to mastectomy be included on the line?
- d) Is there any guidance available on the type of provider or the qualifications for a provider to perform gender reassignment surgery?

As part of the research into these questions, HERC staff have identified multiple procedure codes on the line that need to be removed due to being inappropriate.

Surgical Therapy for Gender Dysphoria

Evidence:

HERC staff has been unable to identify any evidence for

- 1) Types of surgical procedures or groups of procedures with best outcomes for alleviating gender dysphoria or providing best mental health or functional outcomes
- 2) Particular surgical techniques to recommend. Specific techniques for various procedures have been studied or published, but no evidence was found that one technique is superior to another for resolution of gender dysphoria

Only 1 meta-analysis of surgical treatment for gender dysphoria was identified:

MED 2014

- 1) Hayes (2014c) reported that the evidence was insufficient to draw any conclusions regarding the comparative effectiveness of different types of sex reassignment surgery
- 2) Hayes (2014) rated ancillary procedures, such as facial surgeries, vocal cord procedures, and hair removal “D2”-- the intervention has no proven benefit and/or is not safe

Other Public and Private Payer Coverage

Based on the lack of published evidence, HERC staff undertook a review of current public and private payer coverage in an attempt to determine the current “standard of care” for gender dysphoria. Staff acknowledges that there is no actual widely accepted standard of care for surgical treatment of gender dysphoria and recognizes that other private and public payer policies are not evidence based. However, staff felt that it was desirable to align Oregon with other state and national policies when a majority of identified sources agree on a particular type or item of coverage.

General coverage policy information

MED 2015

Six state Medicaid programs and the District of Columbia have pending or current coverage criteria for the treatment of gender dysphoria (CA, MA, NY, OR, VT, WA), and two states (MD, WA) have recently initiated coverage for state employees. Of the 21 state Medicaid agencies reviewed, five explicitly do not provide coverage for gender reassignment services (AK, CT, MO, TN, WV). Note: Washington State Medicaid is not listed in the tables in this report as having coverage for gender dysphoria.

According to the Transgender Law Center, Illinois and Connecticut Medicaid also cover treatment for gender dysphoria [<http://transgenderlawcenter.org/equalitymap>]. Washington Medicaid is not listed as having specified coverage. Sixteen states listed as explicitly excluding Medicaid coverage for gender dysphoria.

Among states with coverage for hormone therapy and gender reassignment surgery, the requirements for these therapies (such as need for mental health evaluation, length of time living as the desired gender, etc.) generally agree with the current Prioritized List guideline requirements.

Surgical Therapy for Gender Dysphoria

Among states with Medicaid coverage for gender reassignment surgery, the procedures generally matched those included on the Prioritized List, with the exception of breast augmentation (covered by some but not Oregon) and penile prostheses (not covered by any except Oregon). The procedures listed as cosmetic in previous HERC discussions generally agree with the procedures listed as cosmetic by other public and private payers.

At least one private payer (Cigna 2015) requires that for sex reassignment surgery “the surgeon should have a demonstrated competency and extensive training in sexual reconstructive surgery.”

Coverage for mammoplasty

- **MED 2015:** breast augmentation coverage for gender dysphoria reported by 2 CMS regional coverage determinations, CA Medicaid, MD Medicaid, city of San Francisco, UnitedHealthcare.
 - 1) California and Maryland Medicaid only cover when an appropriate trial of hormone therapy has not resulted in breast enlargement. Maryland specifies that 12 months of hormone therapy must have been tried and breast size continues to cause clinically significant distress in social, occupational, or other areas of functioning.
- Breast augmentation is not covered for treatment of gender dysphoria by NY Medicaid, VT Medicaid, Cigna, Aetna and most BCBS plans
- The British NHS (2014) covers breast augmentation with a guideline
 - a. “Breast augmentation should only be considered where there is a clear failure of breast growth in response to adequate hormone treatment. Review of breast development in anticipation of breast augmentation surgery should be made no earlier than after the completion of 18 months of adequate hormone treatment.”

Evidence

Bartolucci 2015 (only abstract available)

- 1) 67 male-to-female and 36 female-to-male gender-dysphoric adults consecutively attending a gender dysphoria treatment clinic
 - a. 30.1% had undergone breast augmentation or reduction.
- 2) RESULTS: Age, sex, having undergone some breast surgery, and personality factors were not associated with their perception [of sexual quality of life].

Weigert 2013

- 1) N=35 patients receiving breast augmentation
- 2) Results: BREAST-Q subscale median scores (satisfaction with breasts, +59 points; sexual well-being, +34 points; and psychosocial well-being, +48 points) improved significantly ($p < 0.05$) at 4 months postoperatively and later. No significant change was observed in physical well-being.
- 3) Conclusions: In this prospective, noncomparative, cohort study, the current results suggest that the gains in breast satisfaction, psychosocial well-being, and sexual well-being after male-to-female transsexual patients undergo breast augmentation are

Surgical Therapy for Gender Dysphoria

statistically significant and clinically meaningful to the patient at 4 months after surgery and in the long term.

WPATH recommends that MtF patients undergo feminizing hormone therapy (minimum 12 months) prior to breast augmentation surgery. The purpose is to maximize breast growth in order to obtain better surgical (aesthetic) results.

Coverage for penile prostheses

- **MED 2015:** penile prostheses are only covered by Aetna and OR Medicaid. All other state Medicaid programs and private insurers surveyed did not cover.

VbBS Issue Summaries from 8-13-2015

Surgical Therapy for Gender Dysphoria

Testimony from Dr. Megan Bird regarding requested CPT code additions

Here would be what we are using or what I know to be used. I know it is a long list. I have bolded the codes that are not in the current structure.

Chest reconstruction for trans men:

19301 - 19304 Mastectomy

19316 Mastopexy - request addition

19318 Reduction mammoplasty - request addition

19350 Nipple/areola reconstruction - request addition

** the reason there are more than just one is that larger breasts require a different technique, including moving the nipple to make a male appearing chest, smaller breasts have different needs.*

Chest reconstruction for trans women:

19316 Mastopexy

19324 Mammoplasty, without prosthetics

19325 Mammoplasty, with prosthetics

19350 Nipple/areola reconstruction

19357 - 19380 Breast reconstruction

**I know this is controversial. In some patients this is a safety issue for passing as female. I think there can be clear guidelines on mammoplasty being available if patients don't reach Tanner IV after a period of time on estrogen or if estrogen is contra-indicated. Those are the requirements in use in Wash D.C and California which cover.*

Genital surgery for trans men:

53415 -53430 Urethroplasty; one and two stage - add 53415 - (encompasses all possible codes)

55175-55180 Scrotoplasty; simple and complex

56620 - 56625 Vulvectomy - add 56620 - (encompasses all possible codes)

56800 - 56810 Perineoplasty

57106-57111 Vaginectomy - add 57106 - (all possible codes)

58150 - 58180 Abdominal hysterectomy - large and small uterus, with and without salpingo-oophorectomy - adds all possible codes

58620 - 58294 Vaginal hysterectomy - large and small uterus, with and without salpingo-oophorectomy

adds all possible codes

58541 - 58544 Supracervical hysterectomy - large and small uterus, with and without salpingo-oophorectomy

58550 - 58554 Laparoscopic assisted hysterectomy - large and small uterus, with and without salpingo-oophorectomy

58570-58574 Laparoscopic hysterectomy - large and small uterus, with and without salpingo-oophorectomy

adds all possible codes

58661 Laparoscopic salpingo-oophorectomy

58720 Open Salpingo-oophorectomy

58940 Open oophorectomy

55899 Unlisted procedure: phalloplasty and metoidioplasty

55980 Intersex surgery: female to male

Surgical Therapy for Gender Dysphoria

**intersex surgery code is often the most appropriate code to explain what was done even if the patient is not intersex.*

Genital surgery for trans women:

17380 -17999 Electrolysis and laser hair removal; pre-requisite for vaginoplasty

53415 - 53430 Urethroplasty

adds all possible codes

54120 - 54125 Amputation of penis

adds all possible codes

54520 Orchiectomy

54690 Laparoscopic orchiectomy

55866 Laparoscopic prostatectomy

55150 Resection of scrotum

55970 Intersex surgery, male to female

56800 -56810 Plastic repair of perineum

57291 - **57296** Vaginoplasty with possible revision

adds all possible codes

57335 Vaginoplasty for intersex state

57426 Vaginal apex repair, laparoscopic

Surgical site electrolysis is required for some surgeries for both trans men and women. Specifically phalloplasty/metoidioplasty for trans men and gender affirming surgeries of all types for women

Further information from Dr. Bird:

The electrolysis code is an important one. To be clear, I am only requesting surgical site electrolysis. I agree that facial and chest electrolysis when not related to a surgery at that site is cosmetic. However there is a requirement for surgical site electrolysis for gender affirming surgery for both trans men and trans women. By leaving it off, we are essentially denying the gender affirming genital surgery to them.

Testimony from Basic Rights Oregon regarding CPT codes for consideration

Here are the codes we have been able to find and verify. We are still doing outreach to the offices of leading surgeons on these procedures across the country and if we learn more we will send an update. Thanks.

Breast construction/reconstruction for trans women and trans feminine people:

19316 Mastopexy

19324 Mammoplasty, without prosthetics

19325 Mammoplasty, with prosthetics

19350 Nipple/areola reconstruction

19357 Breast reconstruction with tissue expander

19361 Breast reconstruction with latissimus doors flap

19364 Breast reconstruction with free flap

19366-19369 Breast reconstruction

Surgical Therapy for Gender Dysphoria

19380 Revision of reconstructed breast

17380 Surgery preparation electrolysis epilation, each 30 minutes

Lower surgery for trans men and trans masculine individuals:

55899 Unlisted procedure: phalloplasty and metoidioplasty

53415 -53430 Urethroplasty; one and two stage - add 53415 - (encompasses all possible codes)

55175-55180 Scrotoplasty; simple and complex

56620 - 56625 Vulvectomy - add 56620 - (encompasses all possible codes)

56800 - 56810 Perineoplasty

57106-57111 Vaginectomy - add 57106 - (all possible codes)

58150 - 58180 Abdominal hysterectomy - large and small uterus, with and without salpingo-oophorectomy - adds all possible codes

58620 - 58294 Vaginal hysterectomy - large and small uterus, with and without salpingo-oophorectomy, adds all possible codes

58541 - 58544 Supracervical hysterectomy - large and small uterus, with and without salpingo-oophorectomy

58550 - 58554 Laparoscopic assisted hysterectomy - large and small uterus, with and without salpingo-oophorectomy

58570-58574 Laparoscopic hysterectomy - large and small uterus, with and without salpingo-oophorectomy, adds all possible codes

58661 Laparoscopic salpingo-oophorectomy

58720 Open Salpingo-oophorectomy

58940 Open oophorectomy

55980 Intersex surgery: female to male (global includes penile amputation, vaginoplasty, clitoroplasty)

54660 Insertion of testicular Prosthesis (separate procedure)

Lower surgeries for trans women and trans feminine individuals:

53415 - 53430 Urethroplasty

adds all possible codes

54120 - 54125 Amputation of penis

adds all possible codes

54520 Orchiectomy

54690 Laparoscopic orchiectomy

55866 Laparoscopic prostatectomy

55150 Resection of scrotum

55970 Intersex surgery, male to female (global includes phalloplasty or metoidioplasty, scrotoplasty)

56800 -56810 Plastic repair of perineum

57291 - 57296 Vaginoplasty with possible revision

adds all possible codes

57335 Vaginoplasty for intersex state

57426 Vaginal apex repair, laparoscopic

17380 Surgery preparation electrolysis epilation, Each 30 minutes

Surgical Therapy for Gender Dysphoria

Current included CPT codes for sex reassignment surgery

CPT code	Code description	Comments
19301-19304	Mastectomy	Need to remove 19301 as this is a lumpectomy Need to remove 19302 as this code includes axillary node dissection
53430	Urethroplasty, reconstruction of female urethra	
54125	Amputation of penis; complete	
54400-54417	Insertion/repair/removal of penile prosthesis	Consider non-coverage
54520	Orchiectomy, simple (including subcapsular), with or without testicular prosthesis, scrotal or inguinal approach	
54660	Insertion of testicular prosthesis (separate procedure)	Consider non-coverage
54690	Laparoscopy, surgical; orchiectomy	
55175-55180	Scrotoplasty	
55970	Intersex surgery; male to female	**closed for payment**
55980	Intersex surgery; female to male	**closed for payment**
56625	Vulvectomy simple; complete	
56800	Plastic repair of introitus	
56805	Clitoroplasty for intersex state	
56810	Perineoplasty, repair of perineum, nonobstetrical	
57106-57107	Vaginectomy, partial removal of vaginal wall;	
57110-57111	Vaginectomy, complete removal of vaginal wall	
57291-57292	Construction of artificial vagina	
57335	Vaginoplasty for intersex state	
58150, 58180, 58260-58262, 58275-58291, 58541-58544, 58550-58554, 58570-58573	Hysterectomy	
58661	Laparoscopy, surgical; with removal of adnexal structures	
58720	Salpingo-oophorectomy, complete or partial, unilateral or bilateral	

Note: Rhinoplasty, face-lifting, lip enhancement, facial bone reduction, blepharoplasty, liposuction of the waist (body contouring), reduction thyroid chondroplasty, hair removal, voice modification surgery (laryngoplasty or shortening of the vocal cords), and skin resurfacing, which have been used in feminization, are considered cosmetic. Similarly, chin implants, nose implants, and lip reduction, which have been used to assist masculinization, are considered cosmetic. Breast augmentation is currently considered cosmetic.

Surgical Therapy for Gender Dysphoria

CPT code	Code description	Comments	Add?
14000-14001	Adjacent tissue transfer or rearrangement, trunk	Suggested for addition. On current breast cancer line but not on breast anomalies line. Unclear if used for reconstruction after mastectomy or for augmentation. Has been requested by surgeon as part of augmentation	
15200-15201	Full thickness graft, free, including direct closure of donor site, trunk	See 14000-14001 above	
17380	Electrolysis epilation	Currently on line 593 DISEASE OF NAILS, HAIR AND HAIR FOLLICLES	?
17999	Unlisted procedure, skin, mucous membrane and subcutaneous tissue		
19316	Mastopexy	Alternate to mastectomy. Also be used for breast augmentation	✓
19318	Reduction mammoplasty	Alternate to mastectomy	✓
19324	Mammoplasty, augmentation; without prosthetic implant		?
19325	Mammoplasty, augmentation; with prosthetic implant		?
19340	Immediate insertion of breast prosthesis following mastopexy, mastectomy or in reconstruction		?
19342	Delayed insertion of breast prosthesis following mastopexy, mastectomy or in reconstruction		?
19350	Nipple/areola reconstruction	Used in mastectomy reconstruction and in augmentation	✓
19357-19380	Breast reconstruction		?
53415-53430	Urethroplasty		✓

Surgical Therapy for Gender Dysphoria

CPT code	Code description	Comments	Add?
54120	Amputation of penis, partial		√
55150	Resection of scrotum		√
55866	Laparoscopy, surgical prostatectomy		√
55899	Unlisted procedure, male genital system	Used for phalloplasty and metoidioplasty	
56620	Vulvoplasty, simple, partial	Used more commonly than the included 56625	√
57109	Vaginectomy, partial removal of vaginal wall; with removal of paravaginal tissue (radical vaginectomy) with bilateral total pelvic lymphadenectomy and para-aortic lymph node sampling (biopsy)		
57295-57296	Revision (including removal) of prosthetic vaginal graft		√
57426	Revision (including removal) of prosthetic vaginal graft		√
58152	Total abdominal hysterectomy (corpus and cervix), with or without removal of tube(s), with or without removal of ovary(s); with colpo-urethrocystopexy (eg, Marshall-Marchetti-Krantz, Burch)		√
58660-58661	Laparoscopic oophorectomy		√
58940	Oophorectomy, partial or total, unilateral or bilateral		√

Surgical Therapy for Gender Dysphoria

HERC staff recommendations:

- 1) Remove the following from line 413 GENDER DYSPHORIA as not appropriate as part of gender reassignment surgery
 - a. 19301 (Lumpectomy)
 - b. 19302 (Mastectomy, partial; with axillary dissection) – cancer treatment
- 2) Add the following to line 413 as these represent additional codes utilized in previously adopted procedures
 - a. 19316 (Mastopexy)
 - b. 19318 (Reduction mammoplasty)
 - c. 19350 (Nipple/areola reconstruction)
 - d. 53415-53430 (Urethroplasty)
 - e. 54120 (Amputation of penis, partial)
 - f. 55150 (Resection of scrotum)
 - g. 55866 (Laparoscopy, surgical prostatectomy)
 - h. 56620 (Vulvoplasty, simple, partial)
 - i. 57295-57296 (Revision (including removal) of prosthetic vaginal graft)
 - j. 57426 (Revision (including removal) of prosthetic vaginal graft)
 - k. 58152 (Total abdominal hysterectomy)
 - l. 58660-58661 (Laparoscopic oophorectomy)
 - m. 58940 (Oophorectomy, partial or total, unilateral or bilateral)
- 3) Add electrolysis (CPT 17380) to line 413 with the following guideline note modification:
 - a. “Electrolysis (CPT 17380) is only included on this line for surgical site electrolysis as part of pre-surgical preparation for chest or genital surgical procedures also included on this line. It is not included on this line for facial or other cosmetic procedures or as pre-surgical preparation for a procedure not included on this line.”
- 4) Consider changing current surgical procedure coverage to agree with other state Medicaid and private coverage
 - a. Consider adding mammoplasty (CPT 19316, 19324-19325, 19340, 19342, 19350, 19357-19380) to line 413
 - i. About half of public and private payers cover
 - ii. Limited literature finds mixed evidence of benefit
 - iii. Generally has been considered a cosmetic procedure by HERC other than for most-mastectomy reconstruction
 - iv. Parity issue with breast cancer coverage
 - v. If coverage is added, modify guideline as in #5b below
 - b. Consider removing penile prostheses (CPT 54400-54417, 54660) from line 413
 - i. Vast majority of public and private payers do not cover
 - ii. Currently on a non-covered line for sexual dysfunction on the Prioritized List
 - iii. Parity issue with erectile dysfunction coverage
 - c. Consider removing testicular prostheses (CPT 54660)
 - i. Not covered by many public and private plans
- 5) Modify GN127 as shown below
 - a. Previous suggested changes noted in **green** from separate mental health provider modification document
 - b. Wording changes recommended in #3 above for electrolysis

Surgical Therapy for Gender Dysphoria

- c. If mammoplasty is added in #4a above, add restrictions for breast augmentation [purple wording] following NICE/NHS guidelines and California and Maryland Medicaid guidelines
- d. Add provisions regarding the training/experience of the surgeon to address CCO concerns
- e. Do not add any recommendations for type of procedure/method/etc. to the guideline as no evidence was found that any particular procedure or group of procedures has better outcomes

GUIDELINE NOTE 127, GENDER DYSPHORIA

Line 413

Hormone treatment with GnRH analogues for delaying the onset of puberty and/or continued pubertal development is included on this line for gender questioning children and adolescents. This therapy should be initiated at the first physical changes of puberty, confirmed by pubertal levels of estradiol or testosterone, but no earlier than Tanner stages 2-3. Prior to initiation of puberty suppression therapy, adolescents must fulfill eligibility and readiness criteria and must have a comprehensive mental health evaluation. Ongoing psychological care is strongly encouraged for continued puberty suppression therapy.

Cross-sex hormone therapy is included on this line for treatment of adolescents and adults with gender dysphoria who meet appropriate eligibility and readiness criteria. To qualify for cross-sex hormone therapy, the patient must:

1. have persistent, well-documented gender dysphoria
2. have the capacity to make a fully informed decision and to give consent for treatment
3. have any significant medical or mental health concerns reasonably well controlled
4. have a comprehensive mental health evaluation through psychosocial assessment by a qualified-licensed mental health professional (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) with experience in knowledgeable about the assessment and treatment of working with patients with gender dysphoria

Sex reassignment surgery is included for patients who are sufficiently physically fit and meet eligibility criteria. To qualify for surgery, the patient must:

1. have persistent, well documented gender dysphoria
2. have completed twelve months of continuous hormone therapy as appropriate to the member's gender goals unless hormones are not clinically indicated for the individual
3. have completed twelve months of living in a gender role that is congruent with their gender identity unless a medical and a mental health professional both determine that this requirement is not safe for the patient
4. have the capacity to make a fully informed decision and to give consent for treatment
5. have any significant medical or mental health concerns reasonably well controlled
6. for breast/chest surgeries, have one referral from a licensed mental health professional with a master's degree or its equivalent or higher in a clinical behavioral science field (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) knowledgeable about the assessment and treatment of patients with gender dysphoria

Surgical Therapy for Gender Dysphoria

7. for genital surgeries, have two referrals from qualified-licensed mental health professional (i.e. LCSW, psychologist, psychiatric nurse practitioner, psychiatrist) with experience in knowledgeable about the assessment and treatment of working with patients with gender dysphoria who have independently assessed the patient. Such an assessment should include the clinical rationale supporting the patient's request for surgery, as well as the rationale for the procedure(s). One of the referring professionals must be a master's level professional or higher and the other must have a doctoral degree or equivalent (PhD, MD, DO, EdD, DSc, DSW, or PsyD or psychiatric nurse practitioner) and be capable of adequately evaluating co-morbid psychiatric conditions.

Additional surgical requirements include:

- 1) Mammoplasty (CPT 19316, 19324-19325, 19340, 19342, 19350, 19357-19380) is only included on this line when there is a clear failure of breast growth in response to adequate hormone treatment. Review of breast development in anticipation of breast augmentation surgery should be made no earlier than after the completion of 12 months of adequate hormone treatment. Breast size must continue to cause clinically significant distress in social, occupational, or other areas of functioning.
- 2) The surgeon for all sex reassignment genital procedures should have a demonstrated competency and extensive training in sexual reconstructive surgery.
- 3) Electrolysis (CPT 17380) is only included on this line for surgical site electrolysis as part of pre-surgical preparation for chest or genital surgical procedures also included on this line. It is not included on this line for facial or other cosmetic procedures or as pre-surgical preparation for a procedure not included on this line

Age Limitations for Gender Dysphoria Treatments

Question: Should any age restrictions be placed for surgical treatments for gender dysphoria?

Question source: multiple letters and email communication from members of the public, press reports/articles

Issue: The HERC has received multiple emails and phone calls regarding our coverage of surgery for adolescents after news stories were published/aired regarding this topic. Currently, gender-questioning children entering puberty can access puberty suppression medications. There is no age limit in the gender dysphoria guideline for initiating cross-sex hormone therapy or undergoing sex-reassignment procedures.

During the VBBS/HERC discussions regarding gender dysfunction in 2013 and 2014, there were multiple public meetings at which treatment of gender dysphoria in children and adolescents was discussed. Specific discussions and testimony occurred around puberty suppression medications, with the bulk of the evidence finding that this type of treatment was reversible and allowed pubertal children time to determine if they truly had gender dysphoria and, if so, desired any further treatment. There was a specific literature review and discussion regarding the possible harms of puberty suppression medications. The harms of not covering this type of therapy were thought to outweigh any harms from the therapy itself.

Additional discussions occurred regarding the access of adolescents to cross-sex hormone therapy. Testimony was heard that not allowing access to these types of therapies until the age of 18 could cause irreparable harm for some patients. The decision to allow persons younger than 18 to receive either cross-sex hormone therapy was not unanimous. The decision was made to allow coverage for persons younger than age 18, with various protections written into the guideline, including the requirement for one mental health evaluation prior to cross-sex hormone therapy.

The discussion around inclusion of sex reassignment surgery for adolescents was extensive and occurred at multiple meetings. Sex reassignment surgery is not reversible. There was considerable debate during Commission meetings regarding the ability to an adolescent to decide to undergo this type of surgery. The Commission heard testimony that surgery younger than age 18 is rare, but can be life saving for patients with severe depression or other mental health conditions arising from their gender dysphoria. The decision was made to cover with extensive guideline protections, including the requirement to have two separate mental health evaluations prior to irreversible procedures.

Recently, the Commission has received multiple letters and emails from citizens expressing concerns with allowing either cross-sex hormone therapy and/or gender reassignment procedures in persons younger than age 18 due to the developing nature of the adolescent brain and the inability of adolescents to make other significant decisions such as voting or drinking alcohol.

The age of consent for medical procedures of any type in Oregon is age 15. This age is based on statute. Any Oregon citizen age 15 or older may consent for any type of surgical procedure without parental consent.

There is precedent for restricting surgical procedures based on age in the Prioritized List. Currently, bariatric surgery is limited to patients aged 18 and older.

Other state and private policies

Age Limitations for Gender Dysphoria Treatments

Coverage for puberty suppression medications

MED 2015

- 1) New York Medicaid: no coverage. Cross sex hormone therapy limited to age 18 and older (MED 2015)
- 2) CA, MD, and VT Medicaid policies include coverage for medical therapy (i.e., hormone therapy) without specification if this is for cross-sex hormone therapy or puberty suppression medications (MED 2015)
- 3) Personal communication with MED staff, however, indicates that no other state Medicaid programs other than Oregon currently cover puberty suppression medications. MED is currently conducting a policy review for puberty suppression medications.

Age restrictions for gender reassignment surgeries

MED 2015

With the exception of Oregon and Vermont, all policies require an individual to be 18 years of age to receive hormone (where described) and gender reassignment surgery (Oregon does not specify an age requirement, and Vermont requires individuals be 21 years of age). These include all private payers surveyed.

Aetna (2015) and Cigna (2015) require a person to be 18 years of age for coverage of gender reassignment surgery.

Evidence for age for gender reassignment surgery:

1) deVries 2014

- a. N=55 young adults who had puberty suppression medications, cross sex hormone therapy and sex reassignment surgery
- b. Age at sex reassignment surgery: mean 19.2 yrs (SD 0.9), range 18.0–21.3 yrs
- c. Results: After gender reassignment, in young adulthood, the GD was alleviated and psychological functioning had steadily improved. Wellbeing was similar to or better than same-age young adults from the general population. Improvements in psychological functioning were positively correlated with postsurgical subjective well-being.

Age Limitations for Gender Dysphoria Treatments

HERC staff recommendations:

Discuss adding age restriction(s) for

- 1) Cross-sex hormone therapy to 18 yrs
 1. Staff does not recommend this change
- 2) Gender reassignment surgery to 18 yrs
 1. Pros:
 - a. Excellent outcomes noted in deVries study with this age limitation
 - b. Consistent with other state Medicaid and private payer policies
 2. Cons:
 - a. This would restrict this procedure unlike most other medical procedures in Oregon, where the age of consent for medical procedures is 15
 - i. Note: bariatric surgery is limited to age 18 on the Prioritized List
 - b. There may be potential harm to adolescents by delaying the procedure
 3. If an age limit is adopted, GN 127 would need be modified
 - a. "Sex reassignment surgery is included for patients 18 years of age and older who are sufficiently physically fit and meet eligibility criteria. "

Temporary Urethral Stents

Question: should temporary urethral stents continue to be included on the Prioritized List?

Question source: HERC staff, Dr. Eugene Fuchs, OHSU urology

Issue: temporary urethral stents were not included in the recent coverage guidance review for alternatives to transurethral resection of the prostate (TURP) for benign prostatic hypertrophy (BPH). However, as part of preparing that topic, HERC staff found that temporary urethral stents (CPT 53855) appear to be experimental. This code is currently on 2 lines on the List, 331 FUNCTIONAL AND MECHANICAL DISORDERS OF THE GENITOURINARY SYSTEM INCLUDING BLADDER OUTLET OBSTRUCTION and 333 CANCER OF PROSTATE GLAND. As this procedure was not reviewed through the coverage guidance process, HERC staff undertook an independent review of this topic.

CPT 53855 was a new code for 2010. It was added to its two current lines due to similarity with other procedures. The effectiveness of the treatment was not reviewed at that time.

Only the Spanner™ temporary stent currently has FDA approval. There are multiple other temporary stent versions under investigation, such as the Memokath. Alternatives to temporary urethral stents include permanent stents and long term Foley catheterization. Both of these alternatives are covered on the BPH line or as an Ancillary therapy.

Evidence

- 1) **Vanderbrink 2007**, review
 - a. Summary: Prostatic stents remain an option to treat men with benign prostatic obstruction/bladder outlet obstruction; however, stent migration remains an obstacle to their widespread use.
- 2) **Grimsley 2007**
 - a. Case series of 43 patients with the Spanner prostatic stent
 - b. *Results:* More than half of the patients (63%) had an unsatisfactory outcome, namely, immediate or delayed retention or elective removal because of unbearable symptoms. The remaining 37% of patients had a satisfactory outcome and either continue to have the stent *in situ* after a mean of five changes or are stent free after a successful voiding trial.
- 3) **Goh 2013** (only abstract available)
 - a. Case series of 16 patients
 - b. 12 stents were removed prematurely due to severe symptoms or retention. A total of 12 stents had to be removed endoscopically.
 - c. **CONCLUSIONS:** The Spanner is easy to insert. Stent removal via the retrieval suture has been difficult necessitating the use of endoscopy in the majority of cases. Possible causes of stent failure include underestimation of the prostatic urethral length by the Surveyor leading to obstruction by apical prostatic tissue, excessive suture length between the stent and distal anchor permitting proximal migration or inadequate suture length leading to urinary incontinence. Further design modifications are suggested
- 4) **Shore 2007**
 - a. RCT of spanner vs standard of care (SOC; Foley catheterization) following transurethral microwave thermotherapy
 - b. N=168 patients (100 Spanner, 86 SOC)

Temporary Urethral Stents

- c. At the 1 and 2-week visits the Spanner group showed significantly greater improvements from baseline in post-void residual urine, uroflowmetry and International Prostate Symptom Score compared to the standard of care group. The Spanner group experienced significantly greater improvements in quality of life at the 5 and 8-week visits. Patient satisfaction with the Spanner exceeded 86%. Cystourethroscopy findings in the Spanner and standard of care groups were comparable and adverse events associated with previous stents were rare.
- d. Conclusions: The Spanner is a safe, effective and well tolerated temporary stent for severe prostatic obstruction resulting from therapy induced edema after transurethral microwave thermotherapy. It may be a needed addition to the armamentarium for managing bladder outlet obstruction in a broad group of urological patients.
- e. Note: all but one author with significant conflicts of interest

Other guidelines

- 1) **American Urological Association 2010**, guideline for the management of BPH
 - a. Does not mention temporary stents in the treatment recommendations
 - i. Note: this is a change from the 2003 version, which mentioned stents but noted that they were under active investigation and their utility was uncertain
- 2) **European Association of Urology 2013**, guideline for the management of BPH
 - a. Temporary stents can provide short-term relief from LUTS secondary to BPO in patients temporarily unfit for surgery or after minimally invasive treatment
 - b. Note: other versions of the temporary stent other than the Spanner are available in Europe

Other coverage

- 1) Aetna, Cigna and BCBS consider temporary stents to be investigational

HERC staff recommendation:

- 1) Remove temporary prostatic stents (CPT 53855) from the Prioritized List and place on the Services Recommended for Non-Coverage Table
 - a. Investigational

Vertebral Fracture Assessment

Question: Should vertebral fracture assessment (VFA) testing be a covered service?

Question source: DMAP claims review, HERC staff

Issue: Vertebral Fracture Assessment (VFA; CPT 77086, Vertebral fracture assessment via dual-energy X-ray absorptiometry (DXA)) is a new technology using central DXA that permits imaging of the thoracic and lumbar spine to evaluate for the presence of vertebral fractures. VFA was added to the Diagnostic Procedures File in January, 2015 as a new CPT code (77086). This code was not reviewed for efficacy at that time. It was added to the Diagnostic File due to its code being similar to DEXA codes which are Diagnostic.

DMAP claims review queried HERC staff about whether this test could be done as part of a DEXA test and, if so, what the criteria for the test were. HERC staff subsequently reviewed this test and the evidence supporting its use.

Evidence review

--most studies identified in the literature search were validation studies comparing VFA to xray of the spine or were studies of the prevalence of vertebral fractures in various populations using VFA as a measurement tool

Lewiecki 2006, clinical review of the clinical applications of VFA

- 1) The primary clinical utility of VFA is the identification of patients with undiagnosed VFs who are at high risk for fracture but would otherwise not be selected for treatment. In a study of 482 postmenopausal women aged 65 yr and older with no prior knowledge of VFs who were screened for an osteoporosis clinical trial, VFA revealed that 18% had one or more VFs. Of the patients who had a densitometric diagnosis of osteopenia or normal (using the lowest T-score of the lumbar spine, total hip, or femoral neck), 18 and 13%, respectively, were reclassified to a clinical diagnosis of osteoporosis due to the presence of VF observed by VFA. Without VFA-acquired knowledge of VFs, these women would have received an incorrect diagnostic classification and underestimation of fracture risk. If these women had been seen in clinical practice without VFA being done, they might not have been considered for potentially beneficial pharmacological therapy. The authors of this study concluded that VFA is a useful tool for the management of osteoporotic patients.
- 2) Randomized, placebo-controlled clinical trials have demonstrated that treatment of patients with osteopenic T-scores and prevalent VFs reduces the risk of future fractures

Expert group recommendations

USPSTF and NICE (<https://www.nice.org.uk/guidance/cg146>) do not mention VFA in their recommendations for osteoporosis screening

Other coverage policies

Most private insurers (Wellmark BCBS, Aetna) find this test to be experimental and do not cover it.

Vertebral Fracture Assessment

Blue Cross/Blue Shield Position on VFA:

On October 26, 2004 the Blue Cross and Blue Shield (BC/BS) Medical Advisory Panel (MAP) met to review a report of VFA prepared by its Technology Evaluation Center (TEC). The findings of this evaluation were published in December 2004 (Assessment Program Vol 19; No 14). They concluded that VFA did not meet specific TEC criteria with the inherent assumption that health care providers would not be reimbursed for performing VFA in patients covered by BC/BS.

The MAP agreed that 3 of the 4 critical assumptions needed to prove that VFA would have an effect on health outcomes had been met based on their review of the available literature. These included: 1. "prevalent vertebral fractures predict future osteoporotic fractures" 2. "vertebral fracture assessment identifies additional patients who are potential candidates for pharmacologic treatment based on presence of fracture" 3. "vertebral fractures are accurately identified with vertebral assessment using DXA"

Evidence supporting the fourth assumption "patients identified (by VFA) benefit from pharmacologic therapy" was felt to be lacking. "There is a lack of clinical trial evidence showing that patients with vertebral fractures but with bone mineral density levels above treatment thresholds benefit from therapy". In the Executive Summary this conclusion was restated but in a different form: "...there is no evidence showing that treatment decisions based on joint determination of bone mineral density and vertebral assessment using DXA result in better patient outcomes than the usual method of clinical risk factors and measurement of bone mineral density."

HERC staff recommendations:

- 1) Place CPT 77086 (Vertebral fracture assessment via dual-energy X-ray absorptiometry (DXA)) on the Services Recommended for Non-coverage Table
 - a. Experimental
- 2) Advise DMAP to remove CPT 77086 from the Diagnostic Procedures File

Optic Neuritis

Question: should optic neuritis be moved to a higher priority position on the Prioritized list or added to the Diagnostic List?

Question source: William Hills, MD, Casey Eye Institute

Issue: Optic neuritis is inflammation of the optic nerve. It is also called papillitis (when the head of the optic nerve is involved) and retrobulbar neuritis (when the posterior of the nerve is involved). It is caused by many different conditions, and it may lead to complete or partial loss of vision. The most common cause is multiple sclerosis (MS). The only treatment commonly used for this condition is IV or oral steroids.

Dr. Hills has submitted a request to the HERC (see full letter in meeting packet) in which he requests that optic neuritis (ICD-9 377.30-9) be moved to a higher priority position on the Prioritized List and pair with ophthalmology visit and evaluation CPT codes. He cites literature finding that treatment of optic neuritis with IV steroids can delay the onset of MS by up to 2 yrs. He also argues that serial ophthalmologic examinations can help to determine the administration of disease altering medications for MS or other treatment interventions.

Currently, ophthalmology visit and evaluation CPT codes are found on various lines on the Prioritized List. They are not on the DMAP Diagnostic Procedures List, making a diagnostic ophthalmology visit difficult to bill.

HSC/HERC history

HOSC August 2011

Coverage of ophthalmology visits for optic neuritis in multiple sclerosis was reviewed, and there was no evidence of any effective treatment for optic neuritis. The decision at that time was to not change the very low priority line for optic neuritis.

Note: this review was prompted by a DMAP case review.

Current Prioritized List Placements

ICD-9 /10 Code	Code Description	Current location
377.30 H46.9	Optic neuritis, unspecified	659 INTRACRANIAL CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY
377.31 h46.0x	Optic papillitis	659
377.32 H46.1x	Retrobulbar neuritis (acute)	659
377.33 H46.2	Nutritional optic neuropathy	659
377.34 H46.3	Toxic optic neuropathy	659
377.39 H46.8	Other optic neuritis	659

Optic Neuritis

Evidence

Effect of corticosteroids on optic neuritis

- 1) **Gal 2012**, Cochrane review of IV and oral steroids for optic neuritis
 - a. N=6 RCTs (750 patients)
 - i. 2 with oral corticosteroids, 3 with IV steroids, and 1 with a combination of oral and IV steroids
 - b. In a meta-analysis of trials evaluating corticosteroids with total dose greater than 3000 mg administered intravenously the relative risk of normal visual acuity with intravenous corticosteroids compared with placebo was 1.06 (95% confidence interval (CI) 0.89 to 1.27) at six months and 1.06 (95% CI 0.92 to 1.22) at one year. The risk ratio of normal contrast sensitivity for the same comparison was 1.10 (95% CI 0.92 to 1.32) at six months follow up. The risk ratio of normal visual field for this comparison was 1.08 (95% CI 0.96 to 1.22) at six months and 1.02 (95% CI 0.86 to 1.20) at one year.
 - a. Authors' conclusions: There is no conclusive evidence of benefit in terms of recovery to normal visual acuity, visual field or contrast sensitivity with either intravenous or oral corticosteroids at the doses evaluated in trials included in this review
- 2) **Optic Neuritis Study Group 2008**
 - a. N=294 patients, randomized to corticosteroids or placebo and followed for 15 years after acute unilateral optic neuritis.
 - b. Results: Seventy-two percent of the eyes affected with optic neuritis at study entry had visual acuity of $\geq 20/20$ and 66% of patients had $\geq 20/20$ acuity in both eyes.
 - c. Treatment of acute optic neuritis with high-dose intravenous corticosteroids does not alter the long-term visual course, although it shortens the initial recovery period
 - d. Conclusions: Long-term visual outcome is favorable for the majority of patients who experience optic neuritis even when MS is present.
- 3) **Brusaferrri 2000**, meta-analysis of steroids for optic neuritis
 - a. N=4 studies (716 patients with optic neuritis), treated with oral or IV steroids
 - b. Odds ratio of benefit of steroids for optic neuritis was not significant at any time point (8 days, 30 days, or long term) [figures 1-3]
 - c. The authors conclude steroids were beneficial based on a combined analysis of steroids for MS and for optic neuritis
- 4) **Andersson 1998, review**
 - a. The modest benefit observed in the IV steroid recipients is short lived and has no significant effect on recovery of visual function at one year

Effect of corticosteroids on subsequent development of MS

- 1) **Beck 1993**, trial of IV vs PO steroids vs placebo
 - a. N=389 patients
 - b. Definite multiple sclerosis developed within the first two years in 7.5 percent of the intravenous-methylprednisolone group (134 patients), 14.7 percent of the oral-prednisone group (129 patients), and 16.7 percent of the placebo group (126 patients). The beneficial effect of the intravenous-steroid regimen appeared to lessen after the first two years of follow-up.
 - c. Most of the treatment effect was observed in the patients with abnormal MRI scans at study entry. Among patients with grade 3 or 4 scans, definite multiple sclerosis

Optic Neuritis

developed within two years in 35.9 percent of 39 patients in the placebo group, 32.4 percent of 37 patients in the oral-prednisone group, and only 16.2 percent of 37 patients in the intravenous-methylprednisolone group. Regardless of treatment assignment, the rate of development of definite multiple sclerosis in patients with grade 0 or 1 MRI scans was so low that therapeutic efficacy could not be determined.

- d. **Conclusions:** In this controlled study, patients treated with intravenous methylprednisolone followed by oral prednisone had a reduction in the risk of new clinical manifestations of multiple sclerosis within the next two years, as compared with patients receiving either placebo or oral prednisone. This protective effect was most apparent in the patients at highest risk for multiple sclerosis -- namely, those with multiple focal brain MRI abnormalities. Interpretation of the results must, however, be tempered by the fact that evaluating the randomized treatments with regard to the development of multiple sclerosis was not the primary study objective, and 14.2 percent of the originally randomized patients were not part of the current analysis because they were diagnosed as having multiple sclerosis at entry.
- 2) **Andersson 1998, review**
- a. Raised concerns about the analysis in the Beck 1993 study: 1) the analysis was post-hoc, the number of patients so affected was small, and some patients with optic neuritis had previously experienced symptoms suggestive of MS.
 - b. "It is noteworthy that both at 3 and 5 years after treatment on the ONTT, IV steroids, oral prednisone and placebo recipients are at similar risk to develop CDMS (RW Beck, personal communication)."
 - c. Thus, extended follow of patients in the ONTT fails to provide convincing evidence that treatment with IV steroids shortly after the onset of acute monosymptomatic optic neuritis reduces the risk of developing CDMS and the significance of an apparent treatment effect at 2 years remains uncertain and of doubtful clinical significance.

Other guidelines

- 1) **NICE 2014**, management of MS (<https://www.nice.org.uk/guidance/cg186>)
 - a. Optic neuritis
 - i. Does not mention steroid treatment for optic neuritis
 - ii. Only recommends referral to neurology for further assessment
- 2) **American Academy of Neurology 2000**, management of optic neuritis
 - a. Oral prednisone in doses of 1 mg/kg/day has no demonstrated efficacy in the recovery of visual function in acute monosymptomatic ON, and therefore is of no proven value in treating this disorder. Standard
 - b. Higher dose oral or parenteral methylprednisolone or ACTH may hasten the speed and degree of recovery of visual function in persons with acute monosymptomatic ON. There is, however, no evidence of long-term benefit for visual function. The decision to use these medications to speed recovery but not to improve ultimate visual outcome should therefore be based on other non-evidence-based factors such as quality of life, risk to the patient, visual function in the fellow eye, or other factors that the clinician deems appropriate. Guideline

Optic Neuritis

Summary: IV steroids may slightly hasten visual recovery in optic neuritis, but has no long term benefit and is not routinely recommended by specialty groups. There is no evidence of any benefit of IV steroid treatment of optic neuritis for delay or reduction in the development of subsequent MS.

HERC staff recommendations:

- 1) Do not change the current prioritization of optic neuritis on line **659 INTRACRANIAL CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY**
 - a. No effective treatment is currently available for this condition
- 2) Advise DMAP to add ophthalmology evaluation CPT codes to the Diagnostic Procedures File
 - a. 92002, 92004, 92012, 92014 (Ophthalmological services: medical examination and evaluation, new and established patients)
 - b. 92081-92083 (Visual field examination)
 - c. 92100 (serial tonometry for intraocular pressure measurement)
 - d. 92132-92134 (Scanning computerized ophthalmic diagnostic imaging)
 - e. 92140 (Provocative tests for glaucoma)
 - f. 92283 (Color vision examination)

VbBS Issue Summaries from 8-13-2015

Trochanteric Bursitis

Question: 1) where should trochanteric bursitis be located on the Prioritized List?

2) what treatments for trochanteric bursitis should be paired with this diagnosis?

Question source: DMAP hearings division; HERC staff

Issue: Trochanteric bursitis, also known as greater trochanteric pain syndrome or enthesopathy of the hip, is an inflammation of the tissue surrounding the hip joint (bursa) and causes lateral hip pain. The primary treatment is rest, ice, and NSAIDs. Physical therapy can be helpful, as can steroid injections.

In extreme cases, where the pain does not improve after physical therapy, cortisone shots, and anti-inflammatory medication, the inflamed bursa can be removed surgically. The procedure is known as a bursectomy. Tears in the muscles may also be repaired, and loose material from arthritic degeneration of the hip removed. There are numerous case reports in which surgery has relieved greater trochanteric pain syndrome, but its effectiveness is not documented in clinical trials.

Trochanteric bursitis (enthesopathy of the hip; ICD-9 726.5/ICD-10 M70.60) is on an upper, covered line, 380 DISRUPTIONS OF THE LIGAMENTS AND TENDONS OF THE ARMS AND LEGS, EXCLUDING THE KNEE, RESULTING IN SIGNIFICANT INJURY/IMPAIRMENT. Treatments for trochanteric bursitis on line 380 include steroid injection and physical therapy; however, other treatments including surgical treatments are only on the lower enthesopathy surgical line. Enthesopathy of the shoulder (rotator cuff syndrome, ICD-9 726.0) is on a covered line, 422 DISORDERS OF SHOULDER, INCLUDING SPRAINS/STRAINS GRADE 3 THROUGH 6. Enthesopathy of the elbow (olecranon bursitis, ICD-9 726.33) is only on the two uncovered enthesopathy lines. Enthesopathies of the knee, ankle, and foot joints are all only on the two uncovered enthesopathy lines, 492 PERIPHERAL ENTHESOPATHIES Treatment: MEDICAL THERAPY and 511 PERIPHERAL ENTHESOPATHIES Treatment: SURGICAL THERAPY.

The initial movement of trochanteric bursitis to the upper line occurred a considerable time ago and the rationale for this movement cannot be located in minutes. The likely rationale was the increased disability caused by this condition compared to other enthesopathies. This diagnosis was discussed during the ICD-10 Sports Medicine and Rheumatology reviews; however, no recommendations were made by these groups for any change in placement.

Trochanteric Bursitis

Current List Status

Code	Code Description	Current Line(s)	Comments
27062	Excision; trochanteric bursa or calcification	430 ACUTE PERIPHERAL MOTOR AND DIGITAL NERVE INJURY 511 PERIPHERAL ENTHESTOPATHIES Treatment: SURGICAL	Does not pair with any relevant diagnosis on line 430 Currently does not pair with any hip diagnoses on line 511
20610	Arthrocentesis, aspiration and/or injection, major joint or bursa (eg, shoulder, hip, knee, subacromial bursa); without ultrasound guidance	50,157,290,306,380,422,435,468, 511, 533, 597	
20611	With ultrasound guidance	50,157,290,306,422,435,468, 511, 533, 597	Mistakenly not added to line 380 during 2015 CPT code review
27305	Fasciotomy, iliotibial (tenotomy), open	135 CRUSH INJURIES OTHER THAN DIGITS; COMPARTMENT SYNDROME; INJURIES TO BLOOD VESSEL(S) OF THE NECK 239 LIMB THREATENING VASCULAR DISEASE, INFECTIONS, AND VASCULAR COMPLICATIONS	

Evidence

- 1) **Lustenberger 2011**, systematic review
 - a. N=24 articles,
 - i. 11 non-operative (745 hips)
 - ii. 13 operative therapies (193 hips)
 1. Mostly case series
 2. 7 involved IT band release
 3. 1 study involved bursectomy
 4. 3 studies involved bursectomy with gluteus medius repair
 - b. Symptom resolution and the ability to return to activity ranged from 49% to 100% with corticosteroid injection as the primary treatment modality with and without multimodal conservative therapy.
 - c. Bursectomy improved disability scores; bursectomy with gluteus medius repair studies reported most patients had significant improvement in pain
 - d. Author Conclusions: Efficacy among surgical techniques varied depending on the clinical outcome measure, but all were superior to corticosteroid therapy
- 2) **NICE 2011**, iliotibial band release for refractory greater trochanteric pain syndrome
 - a. Current evidence on the efficacy and safety of distal iliotibial band lengthening for refractory greater trochanteric pain syndrome is inadequate in quantity and quality. Therefore this procedure should only be used in the context of research.

Trochanteric Bursitis

Staff summary

Trochanteric bursitis is a debilitating condition that can be effectively treated with conservative therapy, PT, and steroid injections. The evidence for surgical interventions is weak, with the best evidence for bursectomy. Iliotibial band release surgery does not have evidence to support its use.

Traditionally, enthesopathies of large joints (hip, shoulder) have been prioritized more highly than enthesopathies of medium or small joints on the Prioritized List. This diagnosis was reviewed by the rheumatology and sports medicine ICD-10 groups, who made no recommendations to change its prioritization or to pair it with surgical CPT codes.

HERC staff recommendations:

- 1) Remove CPT 27062 (Excision; trochanteric bursa or calcification) from line 430 ACUTE PERIPHERAL MOTOR AND DIGITAL NERVE INJURY
 - a. No relevant diagnoses on this line
- 2) Keep trochanteric bursitis (enthesopathy of the hip, ICD-9 726.5/ ICD-10 M70.60) on line 380 DISRUPTIONS OF THE LIGAMENTS AND TENDONS OF THE ARMS AND LEGS, EXCLUDING THE KNEE, RESULTING IN SIGNIFICANT INJURY/IMPAIRMENT
 - a. Add CPT 20611 (Arthrocentesis, aspiration and/or injection, major joint or bursa (eg, shoulder, hip, knee, subacromial bursa); with ultrasound guidance) to line 380
 - b. Condition will pair with PT and steroid injections only
- 3) Add trochanteric bursitis (ICD-9 726.5/ICD-10 M70.60) to line 511 PERIPHERAL ENTHESOPATHIES Treatment: SURGICAL THERAPY
 - a. Keep CPT 27062 (Excision; trochanteric bursa or calcification) on line 511
 - b. Do not add CPT 27305 (Fasciotomy, iliotibial (tenotomy), open) to line 511
 - c. There are no PT codes (CPT 97001-97114, etc) on line 511
 - d. Steroid injection codes are present on 511
 - e. Surgical treatments will only pair below the line and therefore only be available using the co-morbidity rule
- 4) Adopt the new guideline below to clarify when trochanteric bursitis is included on the upper vs the lower line

GUIDELINE NOTE XXX TROCHANTERIC BURSITIS

Lines 380, 511

Trochanteric bursitis (enthesopathy of the hip, ICD-9 726.5/ ICD-10 M70.60) is included on line 380 for pairing with physical therapy and steroid joint injections. Trochanteric bursitis is included on line 511 for pairing with surgical interventions (i.e. CPT 27062).

Repair of Nose

Issue: Repair of nose deformities was discussed by the HOSC/HSC in January and February, 2010 and a new guideline note was adopted regarding reconstruction of a missing nose. The initial materials for the discussion contained detailed coding movement recommendations. However, the HOSC did not approve these coding changes during the initial discussion of this topic in January, and the ICD-9 coding changes were mistakenly referred to as already accepted and therefore not voted on at the February meeting. The ICD-9 code referred to in the guideline note was therefore never moved to the upper line referred to in the guideline. The correct ICD-10 codes are in the GN and on both lines. Lastly, the guideline was mistakenly added to an incorrect lower line due to a typo.

Additionally, staff had initially recommended a series of CPT codes for repair of a missing nose for the January, 2010 meeting. The HOSC requested that staff consult with experts to determine if these were the correct codes for the repair of a missing nose. This consultation was not done and no CPT codes for nose repair were added to either line referred to in the guideline note. HERC staff has researched major insurance coverage for similar nose repair and has found a CPT code for nose prostheses. However, per the 2010 materials from Dr. Kuang, the usual nose reconstruction procedure is highly involved and utilizes multiple tissues grafts and flaps. The possible CPT codes used for such a reconstruction are extensive.

In discussions with DMAP, it appears that major nose reconstruction is a very rare procedure (1-2 per year at most) and can be handled as an exception. Currently, as the diagnosis and procedure codes for this type of reconstruction were never placed on a covered line, these conditions are only covered as an exception. DMAP feels that the current guideline could be deleted without any issues from their perspective.

During the 2010 discussions, the CPT code for nose tip repair (30430) was discussed in terms of addition to the cleft palate line. It does not appear on this line, but does appear on 3 other lines which do not appear to have been intended. Previous HOSC/HSC decisions about this code were to not cover (2006). It was added to the cleft palate line in 2010 mistakenly, as the correct code for nose tip repair in cleft palate is 30460. It now appears to 2 additional lines and no mention could be found in the minutes of any discussion or rationale for this change.

Repair of Nose

HERC staff recommendations:

- 1) Adopt the code placement recommendations shown in the table below
 - a. Reverses the previous non-executed decision to add absent nose (ICD-9 748.1) to line 260 as the required CPT codes are too numerous to add with all the possible reconstruction types. All repairs would need to be done through the exceptions process as is now the case
 - i. Alternative: replace GN81 with a statement of intent
 - b. Clarifies placement of several other CPT codes
- 2) Modify GN80 as shown below
- 3) Delete GN81

GUIDELINE NOTE 80, REPAIR OF NOSE TIP

Line 305

Nose tip repair ([CPT 30460](#)) is included on this line only to be used in conjunction with codes 40700, 40701, 40702, or 40720 or subsequent correction of physical functioning.

~~GUIDELINE NOTE 81, RECONSTRUCTION OF THE NOSE~~

~~*Lines 260,648*~~

~~ICD-10-CM codes Q30.1, Q30.2 and Q30.8/ICD-9-CM code 748.1 are on this line only for reconstruction of absence of the nose and other severe nasal anomalies which significantly impair physical functioning.~~

Repair of Nose

Code	Code Description	Current Line(s)	Recommended Line(s)	Comments
<i>ICD-9</i>				
748.1	Other anomalies of nose	668 MUSCULOSKELETAL CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY	305 CLEFT PALATE AND/OR CLEFT LIP 668	Includes absent nose, accessory nose, cleft nose, deformity of the nose, and notching of tip of nose. Cleft nose repair was included in cleft palate repair in previous discussions and appropriate CPT codes are on line 305 for nose repair.
<i>ICD-10</i>				
Q30.1	Agenesis and underdevelopment of nose	260 668	260 668	
Q30.2	Fissured, notched and cleft nose	260 668	260 305 CLEFT PALATE AND/OR CLEFT LIP 668	Cleft nose is part of the cleft palate deformity spectrum. See discussion above.
Q30.8	Other congenital malformations of nose	260 668	260 512 NASAL POLYPS, OTHER DISORDERS OF NASAL CAVITY AND SINUSES 582 DEVIATED NASAL SEPTUM, ACQUIRED DEFORMITY OF NOSE, OTHER DISEASES OF UPPER RESPIRATORY TRACT 668	Includes accessory nose, congenital malformation of nasal septum

Repair of Nose

CPT				
21087	Impression and custom preparation; nasal prosthesis	Ancillary	Ancillary	
30400	Rhinoplasty, primary; lateral and alar cartilages and/or elevation of nasal tip	470 CHRONIC SINUSITIS 512 NASAL POLYPS, OTHER DISORDERS OF NASAL CAVITY AND SINUSES 582 DEVIATED NASAL SEPTUM, ACQUIRED DEFORMITY OF NOSE, OTHER DISEASES OF UPPER RESPIRATORY TRACT	470 512 582	Cosmetic procedure?
30410	Rhinoplasty, primary; complete, external parts including bony pyramid, lateral and alar cartilages, and/or elevation of nasal tip	470 512 582	470 512 582	Cosmetic procedure?
30420	Rhinoplasty, primary; including major septal repair	470 512 582	470 512 582	
30430	Rhinoplasty, secondary; minor revision (small amount of nasal tip work)	470 512 582	470 512 582 Services Recommended for Non-Coverage Table	Previous HOSC decision was to not cover (2006) Per GN80, nose tip repair is only covered on the cleft palate line and this repair uses another CPT code (30460)
30435	Rhinoplasty, secondary;	470	470	

Repair of Nose

	intermediate revision (bony work with osteotomies)	512	512	
30450	Rhinoplasty, secondary; major revision (nasal tip work and osteotomies)	232 FRACTURE OF FACE BONES; INJURY TO OPTIC AND OTHER CRANIAL NERVES 470 512	232 470 512	
30460	Rhinoplasty for nasal deformity secondary to congenital cleft lip and/or palate, including columellar lengthening; tip only	305 470 512	305 470 512	Specific for cleft palate related care only
30462	Rhinoplasty for nasal deformity secondary to congenital cleft lip and/or palate, including columellar lengthening; tip, septum, osteotomies	305 470 512	305 470 512	Specific for cleft palate related care only

Repair of Perforations of Eardrum with Hearing Loss

Question: Should repair of perforations of the eardrum which cause hearing loss be moved to a higher priority line?

Question source: VBBS

Issue: At the May, 2015 VBBS meeting, open wounds of the eardrum were moved to a lower, uncovered line. There was concern about not covering repair of open wounds or perforations of the eardrum which caused hearing loss. HERC staff was directed to review adding perforation/open wound ICD-9/10 codes and repair CPT codes to a hearing loss line with a guideline specifying that these repairs should only be covered if there is documented hearing loss.

Currently, both open wound and spontaneous perforations of the eardrum on are line 481 CHRONIC OTITIS MEDIA, OPEN WOUND OF EAR DRUM Treatment: PE TUBES/ ADENOIDECTOMY/ TYMPANOPLASTY, MEDICAL THERAPY. All relevant surgical repair codes are also on this line. This line is below the current funding line. The two hearing loss lines (line 317 and 450) have other surgical procedures on them, including PE tube placement.

Line: 317

Condition: HEARING LOSS - AGE 5 OR UNDER (See Guideline Notes 51,64,65,103)
Treatment: MEDICAL THERAPY INCLUDING HEARING AIDS
ICD-9: 388.00,388.02-388.2,388.40-388.5,388.8,389.00-389.9,V53.2
CPT: 64505-64530,69210,69424-69436,69714-69718,92590-92595,92597,96127,98966-98969,99051,99060,99070,99078,99201-99215,99281-99285,99341-99355,99358-99378,99381-99404,99408-99412,99429-99449,99487-99498,99605-99607
HCPCS: G0396,G0397,G0463,G0466,G0467

Line: 450

Condition: HEARING LOSS - OVER AGE OF FIVE (See Guideline Notes 64,65,103)
Treatment: MEDICAL THERAPY INCLUDING HEARING AIDS
ICD-9: 388.00-388.01,388.10-388.5,389.00-389.9,V53.2
CPT: 64505-64530,69210,69714-69718,92562-92565,92571-92577,92590-92595,92597,96127-96154,98966-98969,99051,99060,99070,99078,99201-99215,99281-99285,99341-99355,99358-99378,99381-99404,99408-99412,99429-99449,99487-99498,99605-99607
HCPCS: G0396,G0397,G0463,G0466,G0467

Repair of Perforations of Eardrum with Hearing Loss

HERC staff recommendations:

- 1) Add diagnosis codes for ear drum perforations/open wounds to lines 317 HEARING LOSS - AGE 5 OR UNDER and 450 HEARING LOSS - OVER AGE OF FIVE and keep on line 481 CHRONIC OTITIS MEDIA, OPEN WOUND OF EAR DRUM
 - a. ICD-9 384.2x (Perforation of tympanic membrane), 389.02 (Conductive hearing loss, tympanic membrane), 872.61 (Open wound of ear drum, without mention of complication), 872.71 (Open wound of ear drum, complicated)
 - b. ICD-10 H72.xx (perforation of tympanic membrane) and S09.2xx (Traumatic rupture of unspecified ear drum)
- 2) Add treatment CPT codes for perforations/open wounds to lines 317 and 450
 - a. 69610 (Tympanic membrane repair, with or without site preparation of perforation for closure, with or without patch)
 - b. 69620 (Myringoplasty)
 - c. 69631-69646 (Tympanoplasty with or without mastoidectomy)
- 3) Change the treatment description of lines 317 and 450 to MEDICAL THERAPY INCLUDING HEARING AIDS, [LIMITED SURGICAL THERAPY](#)
- 4) Adopt the following guideline note for lines 317, 450 and 481
 - a. Wording adapted from the guideline for repair of tympanic membrane from the American Academy of Otolaryngology (2010)

GUIDELINE NOTE XXX EAR DRUM REPAIR

Lines 317,450,481

Repair of open wounds or perforations of the ear drum (ICD-9 384.2x, 389.02, 872.61, 872.71/ICD-10 H72.xx, S09.2xx) are only included on lines 317 and 450 when there is documented conductive hearing loss greater than or equal to 25dB persistent for more than three months. Otherwise, such repairs are included on line 481.

Continuous Glucose Monitoring Guideline Revision

Question: Should Guideline Note 108 on continuous glucose monitoring be modified?

Question Source: DMAP

Issue: DMAP management committee and hearings division are finding difficulties with interpretations of the current GN108 Continuous Blood Glucose Monitoring. There are multiple questions about the intent of the guideline and the coverage in general which have been brought up in hearings and during review of claims.

- 1) The administrative law judges reviewing these cases have ruled that the current guideline wording “a history of recurrent hypoglycemia” requires that a patient only have some documentation of hypoglycemia at some point in the past. This hypoglycemia may be in the distant past and no longer be an issue, but still qualifies as meeting GN108 requirements. DMAP and HERC staff reading of the intent is that the hypoglycemia should be a current ongoing issue. Early drafts of the guideline merely referred to “repeated hypoglycemia.” DMAP is requesting revision to the guideline to address this. The CCO medical directors strongly support this change.
- 2) DMAP staff have questions about whether the phrase “despite compliance with treatment” should be applied only to the hemoglobin a1c level or whether this also applies to the recurrent hypoglycemia as well. Currently this phrase only appears on the line with the a1c level requirement. This phrase was added to the guideline initially at the request of the CCO medical directors and does not appear in the coverage guidance.
- 3) DMAP staff have read the underlying coverage guidance to indicate that the evidence for use of continuous glucose monitoring only supports use for 6 months. DMAP is requesting that the HERC review the guideline and consider adding in a clause either limiting use to 6 months or requiring re-evaluation for the medical necessity for a continuous monitor every 6 months. DMAP has received complaints from patients who change CCOs and have the new plan deny further coverage of the monitor; these patients would have had unlimited continued use if they had not changed plans. The plans strongly support wording in the guideline defining length of use or requiring re-evaluation for similar reasons.

Current Prioritized List Guideline Note

GUIDELINE NOTE 108, CONTINUOUS BLOOD GLUCOSE MONITORING

Line 8

Services related to real-time continuous blood glucose monitoring (for long-term use) or retrospective glucose monitoring (for short-term use) are included on Line 8 only when insulin pump management is being considered, initiated, or utilized and only when the patient has at least one of the following:

- HbA1c levels greater than 8.0% (despite compliance with treatment), or
- a history of recurrent hypoglycemia.

The development of this guideline note was informed by a HERC coverage guidance. See <http://www.oregon.gov/oha/herc/Pages/blog-continuous-glucose-monitoring.aspx>

Continuous Glucose Monitoring Guideline Revision

HERC history

This topic was initially discussed at VBBS in February and March, 2012. At that time, the VBBS felt that the evidence did not support adding CGM to the Prioritized List. CGM was then referred to the coverage guidance process and a coverage guidance was approved in May, 2013. HTAS recommended coverage for Type 1 diabetics only and only in very particular situations.

Evidence

Coverage guideline, approved May 2013

- 1) Continuous glucose monitoring (CGM) was found to be significantly superior to self-monitoring of blood glucose (SMCG) for children and non-significantly superior for adolescents for the first 3 months of use, but no significant difference was seen between these two groups by 6 months of use.
- 2) CGM was found to significantly reduce hemoglobin a1c values for adults for the first 6-12 months of usage, but this difference was no longer seen at 18 months. At 6 and 12 months, use of CGM was non-significantly associated with more severe hypoglycemic events
- 3) Meta-analyses for all age groups found that there was a statistically significant larger decline in HbA1c level for real-time CGM users starting insulin pump therapy compared to patients using multiple daily injections of insulin and SMBG (mean difference in HbA1c level change from baseline -0.7%). There were no statistically significant differences in the risk of severe hypoglycemia or ketoacidosis
- 4) Summary: Retrospective CGMs are not more efficacious for any outcome, in any age group. There is some evidence that real-time CGM is more effective at decreasing HbA1c in children, although this does not appear to be the case for adolescents. In adults, there is also some evidence that real-time CGM is more effective at decreasing HbA1c, although not all studies were statistically significant. The study with the longest period of follow up (18 months) found no differences. In addition, the amount of decrease in HbA1c may not be clinically significant (less than 0.5%), with two exceptions: studies that compared CGM plus insulin pump to multiple daily injections of insulin plus SMBG, and studies of poorly controlled diabetics (HbA1c > 8.0%). Two studies found no differences in quality of life, while two found increased patient satisfaction in the insulin pump plus CGM group (compared to multiple daily injections of insulin plus SMBG). There is no evidence of a difference between CGM and SMBG in the incidence of hypoglycemia or ketoacidosis. There is no evidence that addresses the effect of CGM on diabetic complications, costs or mortality.

Continuous Glucose Monitoring Guideline Revision

HERC COVERAGE GUIDANCE

Continuous blood glucose monitoring with real-time or retrospective continuous glucose monitoring systems should only be covered for Type 1 diabetes mellitus patients for whom insulin pump management is being considered, initiated, or utilized and who also have one of the following:

- HbA1c levels greater than 8.0% despite compliance with therapy, or
- a history of recurrent hypoglycemia.

Real-time and retrospective continuous glucose monitoring systems should not be covered for Type 2 diabetes mellitus patients.

VbBS Issue Summaries from 8-13-2015

Continuous Glucose Monitoring Guideline Revision

HERC staff recommendations:

- 1) Modify GN108 as shown below
 - a. Move the phrase regarding compliance with treatment to have it apply to either clinical requirement which is more in agreement with the intent of the initial medical director request
 - b. Clarify that recurrent hypoglycemia needs to be a current ongoing clinical issue
 - c. Add in a requirement for re-evaluation of the need for continuous glucose monitoring every 6 months as the evidence does not find this technology is beneficial after 6-12 months of usage.

GUIDELINE NOTE 108, CONTINUOUS BLOOD GLUCOSE MONITORING

Line 8

Services related to real-time continuous blood glucose monitoring (for long-term use) or retrospective glucose monitoring (for short-term use) are included on Line 8 only when insulin pump management is being considered, initiated, or utilized and only when the patient has at least one of the following despite compliance with treatment:

- HbA1c levels greater than 8.0% (~~despite compliance with treatment~~), or
- ~~a history of~~ ongoing recurrent hypoglycemia.

The need for continued use of continuous blood glucose monitoring should be re-evaluated every 6 months, and use only continued if the patient demonstrates:

- improvement in HbA1c levels of at least 0.5% but still has an HbA1c level greater than 8.0%, or
- reduction in the frequency of recurrent hypoglycemia but still has ongoing recurrent hypoglycemia.

The development of this guideline note was informed by a HERC coverage guidance. See <http://www.oregon.gov/oha/herc/Pages/blog-continuous-glucose-monitoring.aspx>

Acute Peripheral Nerve Injuries

Question: should GN133 regarding acute peripheral nerve injuries be modified to extend the time frame for such repairs?

Question source: Lyle Jackson, MD, OHP medical director

Issue: Dr. Jackson contacted HERC staff regarding a neurosurgeon's concerns about GN133. This GN restricts peripheral nerve repairs to <8 weeks. The neurosurgeon feels that it is standard of care and has good results if the surgery is gone up to 6 months after the injury. Dr. Jackson is requesting that the HERC examine GN133.

GN133 was created as part of a new line for peripheral nerve injuries. This line/guideline was created as part of the ICD-10 Plastic Surgery review. When this guideline was initially proposed, it simply limited repair to "acute nerve injury." The Commission requested clarification of what constituted acute. The experts gave the response of <8 weeks used in the current guideline.

GUIDELINE NOTE 133, ACUTE PERIPHERAL MOTOR AND DIGITAL NERVE INJURY

Lines 430,491,515,522,541

Repair of acute (< 8 weeks) peripheral nerve injuries are included on Line 430. Non-surgical medical care of these injuries are included on Line 491. Chronic nerve injuries are included on Lines 515, 522 and 541.

Expert input:

Dr. Kim Burchiel, OHSU neurosurgery

This depends on how far the injury is from the muscle it innervates. It is reanimation of the muscle(s) which is the time limiting factor. Sensory recovery can occur after a nerve repair many years after injury, but motor recovery is much more limited. We generally have about 18 months to get the nerve fibers back into the muscle. In humans, nerves grow ~ 1 mm/day or ~ 1 inch a month. If you measure the distance from the injury site (or repair site in the instance of nerve transfer) to the muscle, it will give the lag time for a surgery to be effective, if at all. That is, if the repair site is ~12 inches from the muscle, it will take 12 months for the nerve fibers to grow from the repair site to the muscle. This is even more complicated in that more modern repair surgery is call "nerve transfer", which puts the donor nerve closer to the muscle (shorter distance to have to grow). We like to see patients, and make a **decision on surgery around 2-3 months after injury**, but one number will not cover all the possibilities. I would say that all patients should be seen within 2-3 months of an injury, by an expert, to make an informed decision. That window to be evaluated could conceivably be extended to one year, since an expert nerve surgeon might still have something to offer even at that time. The chance of success falls off rapidly after that, and one year might be the latest interval that nerve repair should routinely be considered.

Acute Peripheral Nerve Injuries

I think a repair after a year is dubious, however it is done. The problem we have is that patients are in a timely fashion (within 2-3 months). Since there is so little knowledge regarding peripheral nerve injury in medical practice the usual approach is expectant care (that is, no care) until it is too late to do anything. If there is any way this policy could reinforce timely referral, it would be a boon to patient care, and to good outcomes from reconstructive nerve surgery.

HERC staff recommendation:

- 1) Modify GN133 as shown below

GUIDELINE NOTE 133, ACUTE PERIPHERAL MOTOR AND DIGITAL NERVE INJURY

Lines 430,491,515,522,541

Repair of acute (<~~8 weeks~~ 1 year) peripheral nerve injuries are included on Line 430. Non-surgical medical care of these injuries are included on Line 491. Chronic nerve injuries are included on Lines 515, 522 and 541.

Botulinum Toxin for Migraines and Bladder Indications

Questions:

- 1) Should a guideline be added to the Prioritized List restricting the use of botulinum toxin?

Question source: HERC staff, OHP Medical Directors

Issue: Botulinum toxin is a physician administered medication. Medications are generally reviewed by P&T Committee and PA criteria are adopted for their use. However, physician administered medications have CPT codes on the Prioritized List and do not normally go through a PA process like medications dispensed by pharmacies. Botox use was reviewed in August, 2014. At that time, P&T review of the use of this medication was discussed and various changes were made to the CPT codes for this medication (adding or deleting various codes from lines). At that time, HERC staff proposed adding a guideline to lines with Botox CPT codes which referred to the published P&T criteria. This guideline was not adopted by VBBS/HERC as the plans at that time expressed a desire to not be necessarily governed by P&T decisions. As part of the May, 2014 discussion, 2 guidelines were deleted regarding botox use for migraines and overactive bladder. The OHP CCOs have requested that the HERC add back guidance on Botox use for migraines as they are finding that this procedure is being overutilized. Additionally, P&T PA criteria cannot be applied to these medications as they are administered in the office and are paid through the medical claims process rather than the pharmacy claims process.

Botox use for migraines was reviewed at the March, 2014 VBBS meeting and “model” guideline wording was approved. HERC staff was charged with bringing a more specific guideline back to HERC when P&T recommendations were available.

Model guideline note language for Line 435

Chemodenervation for treatment of chronic migraine (CPT 64615) is included on this line for prophylactic treatment of adults with chronic migraine (defined as headaches on at least 15 days per month of which at least 8 days are with migraine) only when the patient meets [insert here the criteria for use as defined by the Pharmacy and Therapeutics Committee at its May, 2014 meeting].

The guideline regarding use of botulinum toxin for bladder indications was removed from the List during the 2014 discussion.

GUIDELINE NOTE 103, CHEMODENERVATION OF THE BLADDER

Line 331

Chemodenervation of the bladder (CPT 52287) is included on this line only for treatment of overactive bladder caused by spinal cord injury, multiple sclerosis and other spinal cord diseases in patients in whom appropriate pharmacologic therapy has proven to be ineffective or poorly tolerated.

Other indications for Botox use have coding specifications limiting their use in place on the Prioritized List.

Botulinum Toxin for Migraines and Bladder Indications

Summary of Conclusions/Recommendations from P&T

Conclusions:

- There is low quality evidence that unspecified BoNT A products may be associated with benefit in the prophylaxis of chronic migraine headaches (≥ 15 days a month), but results are inconsistent. In addition, the clinical significance remains uncertain, as the absolute reduction in the number of headaches is only 2 to 3 headache per month.³ There is moderate quality evidence of no benefit of prophylaxis with BoNT A in patients with intermittent migraine attacks (less than 15 headache days per month) or chronic tension type headache.
- There is moderate quality evidence that BoNT A injections in the detrusor are the most effective minimally invasive treatment to reduce urinary incontinence in patients with neurogenic detrusor overactivity that is unresponsive to more conservative therapies

Recommendations:

- For the prophylaxis of migraine, limit use to patients that meet the following criteria:
 - The patient has chronic migraines (at least 15 days per month with headache lasting 4 hours per day or longer)
 - In consultation with a neurologist or headache specialist
 - An inadequate response with a 3 month trial or contraindication to least two prior pharmacological prophylaxis therapies (beta-blocker, calcium channel blocker, or antiepileptic agents)
 - Do not approve for chronic tension type headaches or for prophylaxis of intermittent migraine attacks.
 - Approve for two injections (given 3 months apart) and then require additional documentation regarding migraines after therapy
- Limit BoNT for the treatment of urinary incontinence to patients' refractory to behavioral modification and antimuscarinic therapy.

Current P&T PA criteria for migraines

- 1) Does client have diagnosis of chronic migraine based on clinical symptoms; at least 15 headache days per month, of which, at least 8 of those days are considered migraine days? If yes, then
- 2) Has the client not responded or are they contraindicated to at least one drug in three of the following drug classes?
 - a. B-blocker (metoprolol, atenolol, nadolol, propranolol, timolol)
 - b. Tricyclic antidepressant (nortriptyline, amitriptyline)
 - c. Anticonvulsant (valproic acid, divalproate, carbamazepine, topiramate, gabapentin)
 - d. Calcium Channel Blocker (verapamil, diltiazem, nimodipine)
- 3) Yes: Approve for 180 days with subsequent approvals dependent on documented* positive response for annual approval. *Documented response means that follow-up and response is noted in client's chart by clinic staff.

Botulinum Toxin for Migraines and Bladder Indications

Current P&T PA criteria for bladder incontinence:

- 1) Does client have diagnosis of detrusor over-activity (596.5x) e.g. idiopathic detrusor over-activity (IDO) also called “overactive bladder syndrome” or Neurogenic detrusor over-activity (NDO)? If yes, then
- 2) Has the client tried or are they contraindicated to at least two of the following urinary incontinence antimuscarinic therapies? (e.g. fesoterodine, oxybutynin, solifenacin, darifenacin, tolterodine, trospium). If yes, then
 - a. Yes: Approve for 90 days with subsequent approvals dependent on documented* positive response for annual approval. *Documented response means that follow-up and response is noted in client’s chart by clinic staff.

VbBS Issue Summaries from 8-13-2015

Botulinum Toxin for Migraines and Bladder Indications

HERC staff recommendations:

- 1) Adopt the new guideline shown below for use of Botox in migraines and apply to line 414
MIGRAINE HEADACHES
 - a. Follows P&T criteria
- 2) Adopt a new guideline as shown below for use of Botox for overactive bladder and apply to line 331
FUNCTIONAL AND MECHANICAL DISORDERS OF THE GENITOURINARY SYSTEM INCLUDING
BLADDER OUTLET OBSTRUCTION
 - a. Follows P&T criteria

GUIDELINE NOTE XXX, CHEMODENERVATION FOR CHRONIC MIGRAINE

Line 414

Chemodenervation for treatment of chronic migraine (CPT 64615) is included on this line for prophylactic treatment of adults who meet all of the following criteria:

- 1) have chronic migraine defined as headaches on at least 15 days per month of which at least 8 days are with migraine
- 2) has not responded to or have contraindications to at least three prior pharmacological prophylaxis therapies (beta-blocker, calcium channel blocker, anticonvulsant or tricyclic antidepressant)
- 3) treatment is administered in consultation with a neurologist or headache specialist.

Treatment is limited to two injections given 3 months apart. Additional treatment requires documented positive response to therapy.

GUIDELINE NOTE XXX, CHEMODENERVATION OF THE BLADDER

Line 331

Chemodenervation of the bladder (CPT 52287) is included on this line only for treatment of idiopathic detrusor over-activity or neurogenic detrusor over-activity (ICD-9 596.5x/ICD-10-CM N32.81) in patients who have not responded to or been unable to tolerate at least two urinary incontinence antimuscarinic therapies (e.g. fesoterodine, oxybutynin, solifenacin, darifenacin, tolterodine, trospium). Treatment is limited to 90 days, with additional treatment only if the patient shows documented positive response.

Section 5.0

New Discussion Items

Coverage guidance process/format changes

August 2015

The logo for the Oregon Health Authority is centered within a light blue, curved banner. It features the word "Oregon" in a smaller, orange, serif font positioned above the "Health" part of the word "Health Authority". The word "Health" is in a large, dark blue, serif font, and "Authority" is in a smaller, orange, serif font positioned below it. A thin blue horizontal line is located under the "Health" portion of the logo.

Oregon
Health
Authority

Topic identification (existing process)

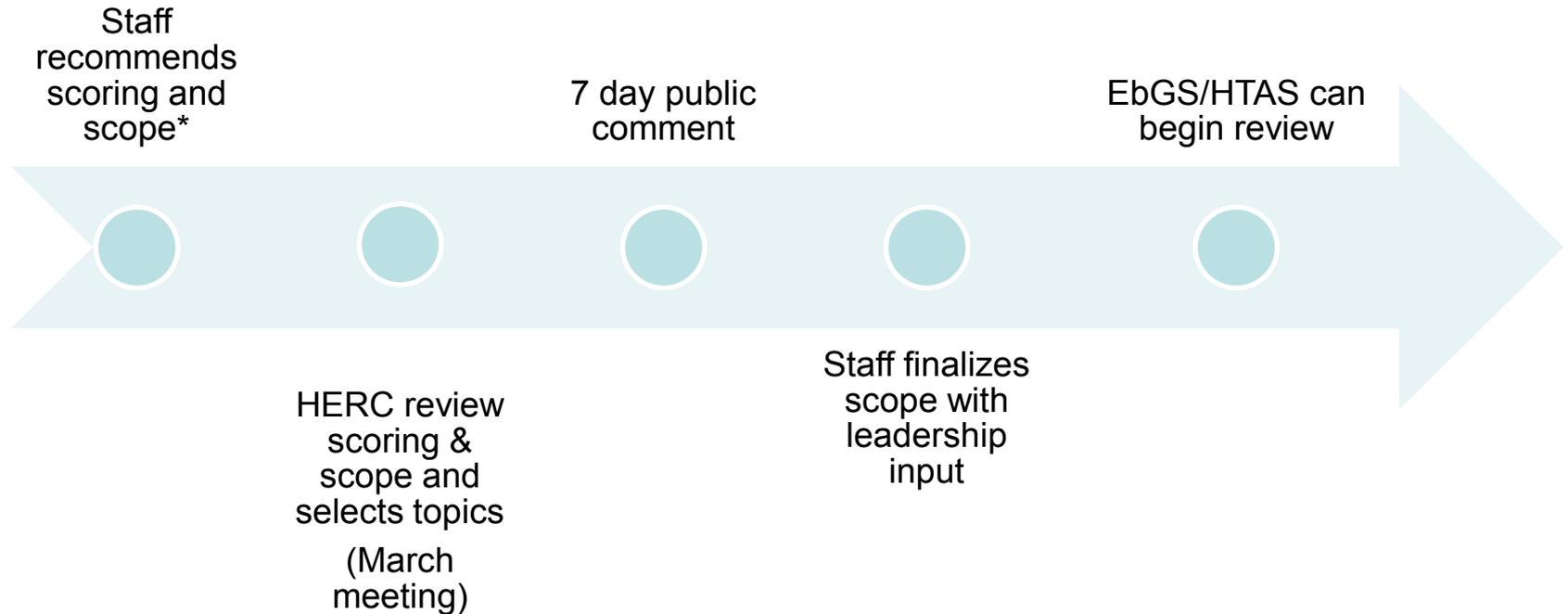
- Sources
 - Nomination survey
 - 2-year rescan of previous topics
 - Scan of core sources for useful reports
- Initial scoring/scoping by staff

Additional pre-selection work

- New focus on selecting key questions, outcomes, population, comparators—
Presented in scoping document
- Additional early outreach to experts
- For some topics, claims analysis or utilization research
- Identify pathway/levers for implementation

Coverage Guidance

Annual topic ID/selection



*Scope includes key questions and identification/exclusions of PICO (population, intervention, comparators and important/critical outcomes.)

Additional post-selection work

- Post scoping document for public comment
- Staff to consider comments (consult with leadership)
- Deeper search to ensure key questions and key outcomes are addressed in first draft

Search update

- Update prior search (later dates, ensure all outcomes are addressed)
 - Look for systematic reviews, technology assessments or meta-analyses from any source
 - If many SRs, select best SRs based on relevance (populations, outcomes, key questions), quality
 - Look at individual studies if necessary

Landscape changes

- Routinely search for and quality rate other relevant documents:
 - Guidelines for National Guidelines Clearinghouse
 - Other payer policies
 - Aetna, Cigna, Regence BCBS, Moda,
 - Washington state
 - Medicare National/Local Coverage Determinations

Format changes

- Evidence summaries – no excerpting
- Routine inclusion of:
 - lay language summary
 - other payer policy section
 - professional guidelines (with quality rating)
 - Methods section (appendix)

GRADE table changes

- Change format for easier reading, longer rationale
- Include quantitative data where possible
- Graphic representation of certainty (quality of evidence)
- Include other consideration
- Recommendation language can be moved directly to recommendation box
- Some variation in format for different topics

GRADE table examples

FORMATTING EXAMPLE 1 (NOT A STAFF RECOMMENDATION) * GRADE-informed framework FOR DISCUSSION ONLY

Coverage question: Should IVC filters be covered for hospitalized patients with trauma?						
Outcomes (benefits/harms) Confidence		Absolute	Relative	Resource allocation	Values and Preferences	Other subcommittee considerations
Critical outcomes	Mortality	Not Available**	RR 0.70 (0.40 to 1.23; I ² =6.7%)	Staff assessment: IVC filters have a moderate cost for placement and removal, but may create savings by reducing PE.	Subcommittee Assessment: Some patients would prefer to avoid an invasive surgery and device placement without proven mortality benefit. Others may prefer this device based on reduced risk of pulmonary embolism.	Prolonged immobilization and severe trauma creates the greatest risk of DVT and PE, so use of IVC filters may be most appropriate in these patient groups. Anticoagulants are quite effective for reducing DVT and PE so IVC filters may be most appropriate for patients who cannot be <u>anticoagulated</u> .
		●○○○ (Very low certainty)				
Pulmonary embolism	Not Available**	Any: RR:0.20, 95% CI:0.06-0.70; I ² =0%). Fatal: RR, 0.09, 95% CI 0.01 to 0.81; I ² =0%)				
Important outcomes	Deep Vein Thrombosis	Not Available**	RR of 1.76 (95% CI = 0.49 to 6.18; p=0.38), I ² =56.8%			
		●○○○ (Very low certainty)				
<p>Rationale: There is evidence of less PE and fatal PE but no difference in mortality. High variability in preferences leads to a weak recommendation for coverage for some patients (e.g. those who must be immobilized or who have severe trauma).</p> <p>Recommendation: IVC filters are recommended for coverage in some hospitalized patients with trauma* (weak recommendation)</p> <p>*Examples of trauma for which IVC filters may be indicated include patients with severe trauma and prolonged hospitalization.</p>						

*The content of this table was adapted for use as an example to use in evaluating ways of presenting research results; HERC has no plans to revisit IVC filters without a new evidence search and the research and opinions stated here are not reflective of HERC or its staff.

**Statistics were not available using HERC's previous coverage guidance methods. Using the new methods absolute data will be included where available.

GRADE table examples

FORMATTING EXAMPLE 2a (NOT A STAFF RECOMMENDATION) * GRADE-informed framework FOR DISCUSSION ONLY

Coverage question: Should HoLEP be covered as an alternative to transurethral resection of the prostate (TURP) for men with lower urinary tract symptoms due to benign prostate enlargement?						
Procedure: HoLEP vs TURP						
Outcomes (benefits/harms)		Absolute	Relative	Resource allocation	Values and Preferences	Other subcommittee considerations
		Certainty				
Critical outcomes	Mortality – no significant difference	Not available**	Not available**	Staff assessment: HoLEP generally requires an inpatient stay and/or general or spinal anesthesia and thus requires moderate resource needs.	Subcommittee assessment: Some patients would prefer to have alternative treatment options to TURP, and potentially avoid more invasive surgical treatment.	This procedure is often selected for large prostates which would have previously required open prostatectomy.
		●●○○ (Low certainty)				
Important outcomes	Symptom Improvement – no significant difference	Not available**	Not available**			
		●●○○ to ●●●○ (Low to moderate certainty)				
	Flow Rate – More effective than TURP	Not available**	Not available**			
		●●○○ to ●●●○ (Low to moderate certainty)				
Quality of Life – no significant difference	Not available**	Not available**				
	○○○○ to ●●●○ (Very low to moderate certainty)					
Rationale: There is evidence of being more effective at increasing flow rate than TURP, with similar or fewer adverse events and no difference in mortality. Low variability in preferences leads to a strong recommendation for coverage.						
Recommendation: HoLEP is recommended for coverage for men with LUTs due to benign prostate enlargement (strong recommendation)						

*The content of this table was adapted for use as an example to use in evaluating ways of presenting research results; HERC has no plans to take up this topic and the research and opinions stated here are not reflective of HERC or its staff.

**Statistics were not available using HERC's previous coverage guidance methods. Using the new methods absolute data will be included where available.

--continued on next page--

Format changes to public comment disposition

- Reformat to make better use of meeting time
 - Add discussion table to highlight key issues
 - Commenter list
 - Public comments (full detail)
 - Reference list

Coverage Guidance

Topic rescan scoping process 2015



*Scope includes key questions and identification/exclusions of PICO (population, intervention, comparators and important/critical outcomes.)

Section 6.0

New Discussion Items

Treatment of ADHD in Children

PICO & Key Questions for Updated Literature Search

Populations

Children 6 years of age or older diagnosed with ADHD, or

Children under 6 years of age deemed at-risk for ADHD

Interventions

Parent behavior training, teacher consultation, pharmacotherapy (methylphenidate, amphetamine salts, non-stimulant medications, atypical antipsychotics) other pharmacologic treatments, psychosocial and behavioral interventions

Comparators

Usual care, no intervention

Outcomes

Critical: Academic achievement

Important: Measures of, impulsiveness, and global functioning, grade retention, academic achievement, Growth restriction

Outcomes considered but not selected for GRADE table: Measures of inattention, overactivity, non-specific harms

Key Questions

KQ1: What is the effectiveness of pharmacologic, behavioral, and psychosocial interventions for children with ADHD?

KQ2: Is there comparative effectiveness evidence for interventions for children with ADHD?

KQ3: What is the effectiveness of interventions for children under 6 years of age deemed at-risk for ADHD?

KQ4: What is the evidence of harms associated with the interventions for ADHD in children?

Coronary Artery Calcium Scoring

PICO & Key Questions for Updated Literature Search

Populations

Asymptomatic adults with coronary heart disease (CHD) risk, adults with acute chest pain with normal EKG and negative cardiac enzymes, adults with chronic stable chest pain

Intervention

Coronary artery calcium scoring (CACS)

Comparators

No further risk stratification, other forms of risk stratification (including serial monitoring (EKG, troponins), exercise EKG, stress echocardiography, stress myocardial perfusion scanning, coronary angiography)

Outcomes

Critical: All-cause mortality, major adverse cardiovascular events

Important: Need for revascularization procedure; incidental findings, contrast induced nephropathy

Outcomes considered but not selected for GRADE table: Length of stay

Key Questions

KQ1: What is the comparative effectiveness of CACS in improving outcomes for asymptomatic patients with CHD risk or patients with chest pain (either acute chest pain with normal EKG and negative cardiac enzymes or chronic stable chest pain)?

KQ2: What is the cost-effectiveness of CACS?

KQ3: What are the harms of CACS?

Carotid Endarterectomy

PICO & Key Questions for Updated Literature Search

Populations

Adults with carotid stenosis with or without recent symptoms of cerebral ischemia

Intervention

Carotid endarterectomy

Comparators

Optimal medical therapy, carotid stenting

Outcomes

Critical: All-cause mortality, cerebrovascular accidents

Important: Transient ischemic attacks, development/progression of vascular dementia, quality of life

Outcomes considered but not selected for GRADE table: Need for reintervention (to be discussed by HERC)

Key Questions

KQ1: What is the comparative effectiveness of carotid endarterectomy for treatment of symptomatic or asymptomatic carotid stenosis?

- a. What degree of carotid stenosis predicts clinical utility of carotid endarterectomy?

KQ2: What are the harms of carotid endarterectomy?

KQ3 Under what circumstances should carotid endarterectomy be covered for asymptomatic patients (i.e. when stenosis is found as an incidental finding?)

Coronary CT Angiography

PICO & Key Questions for Updated Literature Search

Population

Adults with acute chest pain or chronic stable chest pain

Intervention

Coronary CT angiography (CTA)

Comparators

Usual care (including no additional testing, exercise EKG, stress echocardiography, stress myocardial perfusion scanning, coronary angiography; serial monitoring with EKG/troponin)

Outcomes

Critical: All-cause mortality, myocardial infarction, stroke,

Important: Diagnostic accuracy, costs/cost-effectiveness,

Outcomes considered but not selected for GRADE table: avoidance of invasive testing; radiation exposure; need for revascularization procedure

Key Questions

KQ1: What is the comparative effectiveness of coronary CTA for improving outcomes among adults with chest pain?

KQ2: What are the harms of coronary CTA (including incidental findings)?

KQ3: What are the comparative costs and/or cost-effectiveness of coronary CTA?

Cervical Cancer Screening

PICO & Key Questions for Updated Literature Search

Staff recommends retiring this coverage guidance and deferring to the United States Preventive Services Task Force (USPSTF). The USPSTF defines use of preventive services for the Essential Health Benefits which provide minimum coverage standards on preventive services for most health plans in the United States. Current coverage guidance aligns with USPSTF recommendations.

Continuous Blood Glucose Monitoring

PICO & Key Questions for Updated Literature Search

Populations

Children, adolescents, and adults with type 1 or type 2 diabetes mellitus (DM) on insulin therapy, including pregnant women

Intervention

Continuous blood glucose monitoring (CBGM), either retrospective or real time

Comparators

Self-monitoring blood glucose (SMBG) and/or routine HbA1c monitoring

Outcomes

Critical: All-cause mortality, severe morbidity (e.g. microvascular and macrovascular complications)

Important: Quality-of-life, change in HbA1c, ketoacidosis, severe hypoglycemia¹

Outcomes considered but not selected or GRADE table:

Myocardial infarction, cerebrovascular accident, amputations, neuropathy, retinopathy, nephropathy. We chose to generalize these into severe morbidity to simplify consideration.

Key Questions

1. What is the evidence of effectiveness of CGM in improving outcomes in people with diabetes?
2. What are the indications for retrospective and for real time CGM?
3. Is there evidence of differential effectiveness of CGM based on:
 - a. Type 1 vs Type 2 DM?
 - b. Insulin pump vs multiple daily insulin injections (MDII)?
 - c. Frequency and duration of CGM?

Special Considerations

- CBGM devices are reported to have highly variable rates of adherence; should we exclude studies that aren't analyzed by intention-to-treat? *Decided to indicate which studies are done on intention to treat.*

¹ "An event requiring assistance of another person to actively administer carbohydrate, glucagons, or other resuscitative actions." (ADA Workgroup on Hypoglycemia, 2005)

Continuous Blood Glucose Monitoring

PICO & Key Questions for Updated Literature Search

- Include specific studies of people with “hypoglycemia unawareness”? *This is already captured in the indications.*

DRAFT

Diagnosis of Sleep Apnea in Adults

PICO & Key Questions for Updated Literature Search

Populations

Adults with clinical signs and symptoms of obstructive sleep apnea (OSA)

Intervention

Polysomnography; attended or unattended, sleep lab or at home

Comparators

Usual care

Outcomes

Critical: All-cause mortality, major adverse cardiovascular events

Important: Improvement in HTN, quality of life, measures of daytime fatigue

Outcomes considered but not selected for GRADE table: Resolution of metabolic syndrome

Key Questions

KQ1: What is the effectiveness of polysomnography in improving outcomes for patients with suspected OSA?

KQ2: What is the differential effectiveness of polysomnography based on the type of device used or the setting in which testing is performed?

KQ3: What are the harms of polysomnography?

Contextual Questions

CQ1: Are there clinically validated tools (i.e. questionnaires and/or physical parameters) to assess the pretest probability of OSA?

- a. If validated tools exist, at what levels of pretest probability should polysomnography not be recommended?

Induction of Labor

PICO & Key Questions for Updated Literature Search

Populations

Pregnant adolescents and women at term (≥ 37 weeks of gestation)

Interventions

Medically or obstetrically indicated induction of labor (IOL), elective IOL

Comparator

Expectant management

Outcomes

Critical: Perinatal mortality

Important: Mode of birth, maternal length of stay, neonatal length of stay, need for higher-level neonatal care

Outcomes considered but not selected for GRADE table: iatrogenic prematurity, hemorrhage, epidural, patient satisfaction

Key Questions

KQ1: What are the outcomes of IOL versus expectant management for women with medical or obstetrical indications for induction of labor?

KQ2: What are the evidence-based medical or obstetrical indications for induction of labor?

KQ3: How do outcomes vary by cervical favorability, gestational age and parity?

Breast MRI after Diagnosis of Breast Cancer

PICO & Key Questions for Updated Literature Search

Population

Adults with recently diagnosed breast cancer

Intervention

Breast MRI

Comparator

Usual care, including other imaging modalities

Outcomes

Critical: All-cause mortality, cancer specific mortality

Important: Progression-free survival, false-positive test results, quality of life

Outcomes considered but not selected for GRADE table: change in surgical or non-surgical treatment plan

Key Questions

KQ1: What is the comparative effectiveness of breast MRI after the diagnosis of breast cancer for improving patient outcomes?

KQ2: What are the harms of breast MRI after the diagnosis of breast cancer?

Contextual Questions

CQ1: How often do the results of MRI after breast cancer diagnosis lead to changes in the surgical or non-surgical treatment plan?

CQ2: Does the information provided by MRI after breast cancer diagnosis change measurements of decisional conflict?

Neuroimaging for Headache

PICO & Key Questions for Updated Literature Search

Populations

Adults and children with non-traumatic, acute or chronic headache

Interventions

MRI or CT head/brain, with or without contrast enhancement

Comparators

Usual care, no neuroimaging

Outcomes

Critical: All-cause mortality, morbidity from significant intracranial abnormalities

Important: Headache-free days, quality of life, change in treatment plan

Outcomes considered but not selected for GRADE table:

Key Questions

KQ1: What is the comparative effectiveness of neuroimaging for headache in improving patient outcomes or detecting significant intracranial abnormalities?

KQ2: What are evidence-supported guideline-based red flag features which are indications for neuroimaging for headache?

KQ3: What are the harms (including incidental findings) of neuroimaging for headache?

PET CT for Breast Cancer Staging and Surveillance

PICO & Key Questions for Updated Literature Search

Populations

Adults with early stage breast cancer (DCIS, stage I, or stage II) or who have been treated for breast cancer with curative intent

Interventions

PET CT for initial staging, surveillance, or monitoring response to treatment

Comparators

Usual care (including axillary lymph node dissection [with or without sentinel lymph node biopsy], CT and radionuclide scintigraphy), MRI

Outcomes

Critical: All-cause mortality, cancer-specific mortality

Important: Progression-free survival, change in treatment plan, Quality of life

Outcomes considered but not selected for GRADE table:

Key Questions

KQ1: What is the comparative effectiveness of PET CT in early stage breast cancer or breast cancer treated with curative intent in improving patient important outcomes?

KQ2: What are the harms (including false positive tests) of PET in early stage breast cancer or breast cancer treated with curative intent?

Recurrent Acute Otitis Media

PICO & Key Questions for Updated Literature Search

Population

Children with recurrent acute otitis media (AOM)

Interventions

Prophylactic or suppressive antibiotics, tympanostomy tubes (grommets), tonsillectomy and/or adenoidectomy (note that these interventions may be used alone, serially or in combination)

Comparators

Usual care, episodic treatment of AOM

Outcomes

Critical: Severe infection (e.g systemic infection, sepsis, meningitis, locally invasive infection)

Important: Hearing loss, school performance/academic achievement, treatment-specific harms

Outcomes considered but not selected for GRADE table: Missed school days

Key Questions

KQ1: What is the comparative effectiveness of interventions for recurrent acute otitis media?

KQ2: What are the harms of interventions for recurrent acute otitis media?

Self-Monitoring of Blood Glucose

PICO & Key Questions for Updated Literature Search

Populations

Children, adolescents, and adults with type 2 diabetes mellitus who are not using multiple daily insulin injections (MDII)

Intervention

Self-monitoring of blood glucose (SMBG), with or without structured education and feedback programs.

Comparators

No routine monitoring using SMBG, periodic monitoring of HbA1c

Outcomes

Critical: All-cause mortality, severe morbidity (e.g. microvascular and macrovascular complications, hyperosmolar hyperglycemic state (HHS))

Important: Quality-of-life, change in HbA1c, severe hypoglycemia¹

Outcomes considered but not selected for GRADE table: Ketoacidosis, as this is not relevant to the target population.

Key Questions

1. What is the effectiveness of SMBG in improving outcomes in children, adolescents, and adults with type 2 diabetes mellitus who are not using multiple daily insulin injections (MDII)?
2. What is the evidence of harms associated with SMBG in this population?
3. Is there evidence of differential effectiveness of SMBG based on:
 - a. Type of treatment (i.e. diet and exercise, oral antidiabetic agents, basal insulin, non-insulin injectables)
 - b. Frequency of testing
 - c. Degree of glycemic control at baseline
 - d. Association with a structured education and feedback program
4. What are appropriate quantities of testing supplies for this population, and what factors should trigger allowances for additional supplies (e.g. infection, driving, etc.)

¹ "An event requiring assistance of another person to actively administer carbohydrate, glucagons, or other resuscitative actions." (ADA Workgroup on Hypoglycemia, 2005)

Self-Monitoring of Blood Glucose

PICO & Key Questions for Updated Literature Search

Special considerations

1. We will not search the literature on people with Type I diabetes or Type II diabetes with multiple daily insulin injections, as these are well-established and had a strong recommendation in the last coverage guidance.

Vertebroplasty, Kyphoplasty, and Sacroplasty

PICO & Key Questions for Updated Literature Search

Populations

Adults with acute or chronic vertebral compression or sacral insufficiency fractures

Interventions

Percutaneous vertebral and sacral procedures

Comparators

Open spinal surgical procedures, sham/placebo surgery, medical therapy (including non-pharmacologic interventions like physical therapy or acupuncture)

Outcomes

Critical: All-cause mortality, short- and long-term improvement in function

Important: Short- and long-term improvements in pain or quality of life, recurrent fracture, clinically significant embolization

Outcomes considered but not selected for GRADE table:

Key Questions

KQ1: What is the comparative effectiveness of percutaneous interventions for vertebral compression or sacral insufficiency fractures?

KQ2: What are the harms of percutaneous interventions for vertebral compression or sacral insufficiency fractures?

Section 7.0

Coverage Guidances

HEALTH EVIDENCE REVIEW COMMISSION (HERC)

COVERAGE GUIDANCE: BIOMARKER TESTS OF CANCER TISSUE FOR PROGNOSIS AND POTENTIAL RESPONSE TO TREATMENT

DRAFT for VbBS/HERC 8/13/2015 meeting materials

HERC Coverage Guidance

Oncotype DX is recommended for coverage in early stage breast cancer when used to guide adjuvant chemotherapy treatment decisions for women who are lymph node negative (*strong recommendation*).

The following genetic tests of cancer tissue are recommended for coverage (*strong recommendation*):

- BRAF gene mutation testing for melanoma
- Epidermal growth factor receptor (EGFR) gene mutation testing for non-small-cell lung cancer
- KRAS gene mutation testing for colorectal cancer

The following genetic tests of cancer tissue are not recommended for coverage (*weak recommendation*):

- Mammaprint, ImmunoHistoChemistry 4 (IHC4), and Mammostrat for breast cancer
- Prolaris and Oncotype DX for prostate cancer
- BRAF, microsatellite instability (MSI), and Oncotype DX for colorectal cancer
- KRAS for lung cancer
- Urovysion for bladder cancer
- Oncotype DX for lymph node-positive breast cancer

The use of multiple molecular testing to select targeted cancer therapy is not recommended for coverage (*weak recommendation*).

Note: Definitions for strength of recommendation are provided in Appendix A GRADE Element Description

RATIONALE FOR GUIDANCE DEVELOPMENT

The HERC selects topics for guideline development or technology assessment based on the following principles:

- Represents a significant burden of disease
- Represents important uncertainty with regard to efficacy or harms
- Represents important variation or controversy in clinical care
- Represents high costs, significant economic impact
- Topic is of high public interest

Coverage guidance development follows to translate the evidence review to a policy decision. Coverage guidance may be based on an evidence-based guideline developed by the Evidence-based Guideline Subcommittee or a health technology assessment developed by the Health

Technology Assessment Subcommittee. In addition, coverage guidance may utilize an existing evidence report produced by one of HERC's trusted sources, generally within the last three years.

EVIDENCE SOURCES

Trusted sources

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The summary of evidence in this document is derived directly from these evidence sources, and portions are extracted verbatim.

EVIDENCE OVERVIEW: BREAST CANCER

Clinical background

Breast cancer is the second most common cancer among women and one of the leading causes of death in the United States. The most recent estimates from the Centers for Disease Control and Prevention report that in 2007, 202,964 women in the United States were

diagnosed with breast cancer, and 40,598 women died from breast cancer. However, earlier detection, better risk prediction models, and advancements in preventive therapies are leading to improved outcomes for women diagnosed with breast cancer.

The spread of cancer is described in terms of breast cancer staging. Staging is determined by the size of the tumor and the presence and size of metastases. Stages are defined as 0, I (A or B), II (A or B), III (A, B, or C), or IV. Early stage breast cancer (stage I or stage II) has not spread to distant lymph nodes, but cancer cells may be found in nearby lymph nodes. These lymph nodes include ones in the axilla or near the breast bone.

Treatment for women with early stage breast cancer includes primary therapy (e.g., lumpectomy, mastectomy), but also may include adjuvant hormone therapy and chemotherapy. Studies from the National Surgical Adjuvant Breast and Bowel Project indicate that the probability of distant recurrence is 15% at 10 years in women treated only with tamoxifen. Since more than 15% of women with early stage breast cancer are receiving chemotherapy, this indicates that many women who receive adjuvant chemotherapy would be disease-free without this added therapy. This suggests that there is a population of low-risk patients that derives little additional therapeutic benefit from chemotherapy, and may be at risk of harm from this treatment.

Among women with early stage breast cancer who have undergone any adjuvant therapy, the recurrence rate has been found to be 11% at five years and 20% at 10 years post-treatment. Stratified by the stage of the cancer at diagnosis, the five year residual risk of recurrence is reported to be 7% among those diagnosed with stage I cancer (95% CI: 3 to 15%), 11% among those diagnosed with stage II cancer (95% CI: 9 to 13%), and 13% among those diagnosed with stage III cancer (95% CI: 10 to 17%).

There are a variety of clinical decision-making tools currently in use to estimate breast cancer recurrence risk, including the St. Gallen consensus recommendations, the National Comprehensive Cancer Network guidelines (NCCN), Adjuvant! Online, and the Nottingham Prognostic Index (NPI). These protocols incorporate various factors such as patient demographics (e.g., age, menopausal status, comorbidity) and tumor data (e.g., staging, size, estrogen-receptor (ER) status, number of positive lymph nodes, human epidermal growth factor-2 receptor (HER2) status) to estimate risk and guide choice of treatments.

Although each tool has separately been shown to have predictive ability and is supported by clinical trial data, in comparative studies these tools often disagree about a particular patient's risk, and none of them is considered the gold standard of prediction. Treatment decisions, particularly whether or not to pursue adjuvant chemotherapy, are made partially based on these risk estimates. With advances in cancer therapy, it is increasingly important to be able to predict which patients will benefit from particular types of treatment. Multiple genomic tests have been developed for this purpose, of which four will be reviewed here.

Technology description

NICE (2013): Gene Expression Profiling and Immunohistochemistry Tests for Guiding Adjuvant Chemotherapy Decisions in Early Breast Cancer: MammaPrint[®], Oncotype DX[®], IHC4, Mammostrat[®]

Some gene expression profiling tests work by identifying and quantifying mRNA transcripts in a specific tissue sample. Because only a fraction of the genes encoded in the genome of a cell are transcribed into mRNA, gene expression profiling provides information about the activity of genes that give rise to these mRNA transcripts. Other gene expression profiling tests work by measuring levels of cDNA, which is synthesized from mRNA. There are a range of different techniques for measuring mRNA levels in breast cancer tumor samples, including real-time reverse transcription polymerase chain reaction (RT-PCR) and DNA microarrays.

Different tests use different protocols for preparing the samples (for example, formalin fixation, paraffin embedding, snap freezing and fresh samples) and different methods for preparing the RNA. Furthermore, there are different algorithms for combining the raw data into a summary profile. All of these factors can affect the reproducibility and reliability of gene expression profiling tests.

- MammaPrint is based on microarray technology and uses an expression profile of 70 genes. MammaPrint is intended as a prognostic test for women of all ages, with LN- and LN+ (up to 3 nodes positive) breast cancer with a tumor size of 5 cm or less. MammaPrint is used to estimate the risk of distant recurrence of early breast cancer. It stratifies patients into 2 distinct groups – low risk (good prognosis) or high risk (poor prognosis) of distant recurrence. MammaPrint has been cleared by the Food and Drug Administration as an In Vitro Diagnostic Multivariate Index Assay. The test uses fresh or formalin-fixed paraffin-embedded samples that are processed centrally at laboratories run by the manufacturer in the USA or The Netherlands.
- Oncotype DX[®] quantifies the expression of 21 genes in breast cancer tissue by RT-PCR. It predicts the likelihood of recurrence in women of all ages with newly diagnosed stage I or II, ER+, LN- or LN+ (up to 3 nodes positive) breast cancer treated with tamoxifen. The test assigns the breast cancer a continuous recurrence score (RS) and a risk category – low (RS<18), intermediate (18≤RS≤30) or high (RS≥31). The test also reports ER, progesterone receptor (PR) and HER2 status. The test uses formalin-fixed paraffin-embedded samples that are processed centrally at a laboratory run by the manufacturer in the USA.

Immunohistochemistry tests measure protein levels in the tumor sample rather than RNA or cDNA. Some of these tests offer the advantage of using existing immunohistochemical markers (such as ER and HER2), which are routinely tested in UK pathology departments. The term 'expanded' has been used to describe the immunohistochemistry tests evaluated in this assessment that are used in addition to standard immunohistochemistry testing (such as ER and HER2) for early invasive breast cancer. Immunohistochemistry uses staining to identify protein expression and reports the level of protein expression in tumor tissue. Differences in

immunohistochemistry values can be caused by variability in several factors, including fixation of tissue, antigen retrieval (used to enhance staining), reagents, and interpretation.

- IHC4 measures the levels of 4 key proteins (ER, PR, HER2 and Ki-67) in addition to classical clinical and pathological variables (for example, age, nodal status, tumour size and grade) and calculates a risk score for distant recurrence using an algorithm. Quantitative assessments of ER, PR, and Ki-67 are needed for the IHC4 test. An online calculator for IHC4 is in development. The test uses formalin-fixed paraffin-embedded samples that can be processed in local NHS laboratories.
- Mammostrat uses 5 immunohistochemical markers (SLC7A5, HTF9C, P53, NDRG1 and CEACAM5) to stratify patients into risk groups to inform treatment decisions. These markers are independent of one another and do not directly measure either proliferation or hormone receptor status. The test calculates the relative risk of recurrence by using a weighted algorithm that is interpreted in the context of published clinical studies of appropriate patient populations. Patients are classified into 3 risk categories: prognostic index ≤ 0 defined as the 'low risk' group; prognostic index > 0 and ≤ 0.7 defined as the 'moderate-risk' group; prognostic index > 0.7 defined as the 'high risk' group. The test uses formalin-fixed paraffin-embedded samples that are processed centrally at a laboratory run by the manufacturer in the USA.

Evidence review

NICE (2014): Early and Locally Advanced Breast Cancer

The NICE Cancer Service Guidance, *Improving outcomes in breast cancer*, recommends that women at intermediate or high risk of recurrence who have not had neoadjuvant chemotherapy should normally be offered multi-agent chemotherapy, which includes anthracyclines. The *Early and locally advanced breast cancer: diagnosis and treatment* guideline recommends that adjuvant therapy should be considered for all patients with early invasive breast cancer after surgery, based on assessment of the prognostic and predictive factors, and the potential benefits and side effects of the treatment. These guidelines do not refer to the use of gene expression profiling and expanded immunohistochemistry tests to aid decision making, but recommend that decisions should be made following discussion of these predictive and prognostic factors with the patient and that Adjuvant! Online should be considered to support estimations of individual prognosis and the absolute benefit of adjuvant treatment. The NPI is also commonly used locally to aid decisions about chemotherapy for patients with early stage breast cancer.

The following outcomes were evaluated for the four included tests:

- Analytical validity (the ability of the test to accurately and reliably measure the expression of mRNA or proteins by breast cancer tumor cells)
- Clinical validity (prognostic ability, or the degree to which the test can accurately predict the risk of an outcome, such as the risk of distant metastases in 10 years)
- Clinical utility, defined as the ability of the test to improve clinical outcomes such as overall survival. This includes direct harms arising from the test, reclassification of risk

compared with existing tools, its impact on clinical decision-making and the ability of the test to predict benefit from chemotherapy.

MammaPrint®

Systematic reviews indicated that evidence relating to the clinical validity of MammaPrint® was not always conclusive nor supported the prognostic value of the test. Seven additional studies of MammaPrint® were identified by the guidance authors. Of these, four on the clinical validity of MammaPrint® demonstrated that the MammaPrint® score is a strong independent prognostic factor, and may provide additional value to standard clinic-pathological measures. There were no prospective studies of the impact of MammaPrint® on long-term outcomes such as overall survival. Six studies with data on the clinical utility of MammaPrint® were identified, and reported a high level of discordance between MammaPrint® and current classification, although these studies did not demonstrate how this would impact on treatment decisions.

In summary, robust evidence of clinical utility is not available for MammaPrint® so it is not yet clear whether using the test will improve the use of adjuvant chemotherapy in the management of breast cancer in the UK. Most studies of MammaPrint® were retrospective in design, used small sample sizes and had heterogeneous patient populations; some studies included only premenopausal women. The evidence for MammaPrint® is based on the use of the test with fresh samples. It is not clear whether this evidence would apply if the test were used on formalin-fixed paraffin-embedded samples.

Oncotype DX®

Systematic reviews reported evidence that the Oncotype DX® recurrence score was significantly correlated with disease-free survival and overall survival. Furthermore, the recurrence score was shown to be a better predictor of distant recurrence at 10 years than traditional clinico-pathological predictors. The evidence on clinical utility was limited. One study demonstrated a significantly increased benefit from the use of chemotherapy in the Oncotype DX® high-risk group compared with the low-risk group.

The guidance authors identified 12 additional studies of Oncotype DX® supporting the prognostic ability of Oncotype DX®. One large-scale UK study in post-menopausal women with ER+, LN- early breast cancer found that an increase in risk score was significantly associated with an increased risk of distant recurrence. Furthermore, the evidence base has been extended to include the LN+ population. No prospective studies of the impact of Oncotype DX® on long-term outcomes such as overall survival were identified. Four studies presented further evidence on the impact of Oncotype DX® on clinical decision making. These indicated that the use of Oncotype DX leads to changes in treatment decisions for between 32% and 38% of patients.

Four publications reported evidence that Oncotype DX® predicts benefit from chemotherapy. The first evidence of improvements in quality of life and reduced patient anxiety as a result of using Oncotype DX® have been reported, although the studies had small sample sizes.

In summary, Oncotype DX® is considered to have the most robust evidence base of the tests reviewed in this guidance, with data on the analytical validity, clinical validity, and clinical utility of the test. The studies varied considerably in their size, design and patient populations. Many of the Oncotype DX studies were small and retrospective.

IHC4

No studies of analytical validity of IHC4 were identified. One study on clinical validity was identified, which reported that the IHC4 score is a highly significant predictor of distant recurrence. No prospective studies of the impact of IHC4 on long-term outcomes such as overall survival, or its ability to change treatment decisions or predict chemotherapy benefit were identified. In summary, the guidance authors concluded that the evidence base for IHC4 is currently limited to clinical validity (prognostic ability), although this evidence is considered to be relatively robust.

Mammostrat®

The guidance authors did not identify any specific studies on the analytical validity of Mammostrat®, although some limited evidence on analytical validity was reported in studies of clinical validity and clinical utility. Three studies were identified that provided data to support the use of Mammostrat® as an independent prognostic tool for women with ER+, tamoxifen-treated breast cancer. Although the evidence base for Mammostrat® is at present relatively limited, these studies included a large sample size and appeared to be of reasonable quality. No prospective studies of the impact of Mammostrat on long-term outcomes such as overall survival were identified. Clinical utility data on Mammostrat® from 1 study suggests that the low- and high-risk groups benefit from chemotherapy, but not the intermediate-risk group. There was no published evidence on reclassification of risk groups compared with conventional means of risk classification, and no evidence on the impact of the test on clinical decision-making.

Recommendations

Oncotype DX® is recommended as an option for guiding adjuvant chemotherapy decisions for people with oestrogen receptor positive (ER+), lymph node negative (LN-) and human epidermal growth factor receptor 2 negative (HER2-) early breast cancer if:

- The person is assessed as being at intermediate risk and information on the biological features of the cancer provided by Oncotype DX® is likely to help in predicting the course of the disease and would therefore help when making the decision about prescribing chemotherapy and
- The manufacturer provides Oncotype DX® to NHS organizations according to the confidential arrangement agreed with NICE.
- The analysis leading to this recommendation was based on intermediate risk of distant recurrence being defined as a NPI score above 3.4. It is anticipated that an NPI score can be simply calculated from information that is routinely collected about people with breast cancer. Other decision-making tools or protocols are also currently used in the NHS and these may also be used to identify people at intermediate risk.
- MammaPrint®, IHC4, and Mammostrat® are only recommended for use in research in people with ER+, LN- and HER2- early breast cancer, to collect evidence about potentially important clinical outcomes and to determine the ability of the tests to predict the benefit of chemotherapy. The tests are not recommended for general use

in these people because of uncertainty about their overall clinical benefit and consequently their cost effectiveness.

CADTH (2014): Oncotype DX in Women and Men with ER-Positive, HER2-Negative Early Stage Breast Cancer who are either Lymph Node Negative or Lymph Node Positive

Lymph Node Negative Disease

The evidence base for the use of Oncotype DX[®] in women with ER+ HER2- LN- early stage breast cancer to guide adjuvant chemotherapy treatment decisions includes four recent examples of secondary research (health technology assessments and systematic reviews) and four additional primary studies. There is no evidence related specifically to men. Results consistently show about 30% of treatment plans are affected, primarily being lower rates of adjuvant chemotherapy for patients determined to be at low recurrence risk. For a smaller proportion determined to be at higher risk, adjuvant chemotherapy is suggested where initial treatment planning did not include it. The most uncertainty relates to the intermediate risk category where evidence is unclear; a large 7-country study (TAILORx) is focusing on the treatment of this group with study completion planned for late 2017.

Lymph Node Positive Disease

A single UK National Institute for Health Research (NIHR) health technology assessment (HTA) by Ward et al. published in October 2013, which reviewed nine gene expression profiling and expanded immunohistochemistry tests used in the adjuvant treatment setting of breast cancer was included in this review. In addition to identifying new evidence, Ward et al. summarized two previous systematic reviews on the topic by Marchionni et al. (all LN- studies) and Smartt. (mix of LN- and LN+ studies). A total of three trials from the HTA were identified that looked at the LN+ population in isolation; the remainder of the evidence applied to the LN- or the undifferentiated (LN-/LN+) population. Smartt included a nested case control study by Goldstein et al. (n=465, LN-/LN+; 1-3 nodes: 43.6%) which examined clinical validity; in the subgroup of LN+ patients, Oncotype DX was found to better predict relapse at 5 years in chemotherapy/hormonal therapy-treated patients than usual clinical features. Two other retrospective cohort studies were identified by Ward et al. Dowsett et al. (n=1231, LN-/LN+; LN+: 25%) also examined clinical validity in the subgroup of LN+ patients and found that the Oncotype DX recurrence score was significantly associated with time to distant recurrence (HR 3.47, 95% CI 1.64 to 7.38; $P < 0.002$). Albain et al. looked at clinical utility in an exclusively LN+ population. RS was found to be prognostic in the tamoxifen alone group (HR 2.64, 95% CI 1.33 to 5.27; $p = 0.006$); there was no benefit of chemotherapy found with a low RS, but improved disease-free survival when RS was high (adjusted HR 0.59, 95% CI 0.35 to 1.01; $P = 0.033$).

In summary, the clinical effectiveness of Oncotype DX[®], as defined by its clinical validity and clinical utility in the population of early invasive breast cancer that is ER+, HER2-, and LN+, remains uncertain as only three trials were identified, and they are limited by their retrospective designs.

BCBS (2014). Gene Expression Analysis for Prostate Cancer Management.

Evidence overview: Prostate Cancer

Clinical background

Prostate cancer is the second most common cancer diagnosed among men in the U.S. According to the National Cancer Institute, nearly 240,000 new cases are expected to be diagnosed in the U.S. in 2013, associated with around 30,000 deaths. Localized prostate cancers may appear clinically very similar at diagnosis. However, they often exhibit diverse risk of progression that may not be captured by accepted clinical risk categories (e.g., D'Amico criteria) or prognostic tools that are based on clinical findings, including prostate-specific antigen (PSA) titers, Gleason grade, or tumor stage. This creates uncertainty whether or not to treat immediately. A patient may choose definitive treatment comprising radiotherapy, surgery, chemotherapy, or androgen deprivation. Alternatively, the patient may forgo immediate therapy and continue regular monitoring until signs or symptoms of disease progression are evident, at which point curative treatment is instituted. This approach is referred to as "active surveillance." Given the unpredictable behavior of early prostate cancer, additional prognostic tests are under investigation. These include gene expression profiling using RTPCR-based technology. Gene expression profiling refers to analysis of mRNA expression levels of many genes simultaneously in a tumor specimen.

Technology description

Two gene expression profiling tests are now offered, intended to biologically stratify prostate cancers: Prolaris[®] (Myriad Genetics, Salt Lake City, UT) and Oncotype Dx[®] Prostate Cancer Assay (Genomic Health, Redwood City, CA). Both use archived tumor specimens as the mRNA source, reverse transcriptase polymerase chain reaction amplification, and a low density RTPCR array platform. Prolaris[®] is used to quantify expression levels of 31 cell cycle progression (CCP) genes and 15 housekeeper genes to generate a CCP score. Oncotype Dx[®] Prostate is used to quantify expression levels of 12 cancer-related and 5 reference genes to generate a Genomic Prostate Score (GPS). In the final analysis, the CCP score (median 1.03, interquartile range 0.41–1.74) and GPS (range 0–100) are combined in proprietary algorithms with clinical risk criteria (PSA, Gleason grade, tumor stage) to generate new risk categories (e.g., reclassification) intended to reflect biological indolence or aggressiveness of individual lesions, and thus inform management decisions.

Evidence review

The review sought to answer the primary question: what is the incremental value of gene expression tests for discriminating men with aggressive and indolent disease to guide treatment decisions that improve net health outcomes?

Analytic Validity

No specific information on the analytic validity of Prolaris[®] or Oncotype Dx[®] Prostate in the peer-reviewed literature, through an Internet search for grey literature, or on the developers' websites was identified. The FDA website does not contain specific information on either test.

Clinical Validity

Prolaris®

One retrospective validation study on Prolaris® is based on patients (n=349) culled from 6 cancer registries in Great Britain. The study was designed to examine the clinical validity of the test showing association between a CCP gene expression score combined with clinical risk factors (PSA, Gleason score), and risk of prostate cancer death at 10 years post-diagnosis. The test was performed using micro-dissected tissue prepared from archived tumor specimens obtained through needle biopsy. A primary univariate analysis suggests that a 1-unit increase in CCP score was associated with a 2-fold increase in the hazard ratio for death from prostate cancer (hazard ratio=2.02, 95% confidence interval: 1.62 to 2.53, p<10⁻⁹). Three other studies of the Prolaris® CCP gene expression test were identified. Two used archived pathological specimens obtained from patients who underwent radical prostatectomy or transurethral resection of the prostate. The role of CCP analysis in those studies was to prognosticate for biochemical recurrence or prostate-specific mortality following treatment or watchful waiting, respectively. A third study reported results of CCP analysis as adjunct to clinical criteria to predict biochemical recurrence in men who underwent external-beam radiotherapy. The patients and management approaches in these studies do not represent the population of interest or address the primary question asked in this review.

Oncotype Dx® Prostate

No full-length peer-reviewed publications on the Oncotype Dx® Prostate test were identified. The developer's website contains information on a validation study to evaluate this test in needle biopsy specimens in a cohort of men in the United States. This study was presented at the 2013 annual meeting of the American Urological Association and had not been published. It evaluated the test in men who could be considered for active surveillance, and who would be representative of patients in contemporary practice. They report that a combination of the GPS from the test and clinical findings (e.g., PSA level, Gleason score) identified patients in specific risk categories and allowed reclassification between groupings as shown in Table 1. However, the number of patients correctly or incorrectly classified between all three categories cannot be ascertained.

Table 1. Reclassification of Prostate Cancer Risk Categories With Oncotype Dx® Prostate

NCCN Risk Level	Number of Patients Using Clinical Assessment (%)	Number of Patients Using GPS Plus Clinical Assessment (%)
Very low	37 (10)	100 (26)
Low	191 (49)	119 (31)
Intermediate	160 (41)	169 (44)

Clinical Utility

No published evidence on the clinical utility of the Prolaris® or Oncotype Dx® Prostate test was identified. In summary, direct evidence is insufficient to establish the analytic validity, clinical validity, or clinical utility of either test.

EVIDENCE OVERVIEW: OTHER CANCERS

AHRQ (2014): Prognosis in Multiple Cancers

Clinical background

Molecular pathology tests that identify pathogenic mutations and cytogenetic translocations help define the molecular subtypes of common cancers. Because several of these acquired mutations/translocations may predict response to specific therapies, screening tests for “targetable” mutations are now commonly available. It is unclear whether these test results can also serve as independent prognostic factors. This review aims to clarify the value of certain molecular pathology tests for improving estimates of prognosis for common cancers (breast, lung, colon, urinary bladder). The main purpose of this review is to determine whether these tests improve estimation of prognosis (for recurrence), affect physician decision making, and/or improve clinical outcomes when compared with traditional assessment of prognosis of recurrence. These genetic tests are used in two different contexts. In one, the tests are used in a specific context of a diagnostic/therapy combination, where the diagnostic test is being used to predict response to a very specific treatment. In the second context, the genetic tests are used to estimate the patient’s prognosis, and physicians use this prognostic information to choose from a variety of different treatment options. This report evaluates the second context. Therefore, studies that evaluate specific diagnostic/therapy combinations are excluded from this report.

The following tests are under consideration for this assessment: microsatellite instability (MSI) for colorectal cancer (CRC), MLH1 promoter methylation for CRC, KRAS mutations for CRC, BRAF mutations for CRC, Oncotype DX Colon® mRNA expression for CRC, Oncotype DX Breast® mRNA expression for breast cancer, MammaPrint® mRNA expression for breast cancer, ALK cytogenetics for lung cancer, EGFR mutations for lung cancer, KRAS mutations for lung cancer, and UroVysion cytogenetics for urinary bladder cancer.

Evidence review

No studies directly addressed the overarching question of whether the addition of the specified molecular pathology tests used alone or in combination with traditional prognostic factors changes physician decision making and improves outcomes. In addition, no studies addressed whether modified decisions lead to improved health outcomes.

Analytic Validity

Included studies provide some evidence regarding analytic validity for all of the included tests. Data from included studies was supplemented with proficiency tests results provided by the College of American Pathologists (CAP) for five tests for which this data was available. Data on intra- and interlab reproducibility is available in the primary literature and through national

organization proficiency testing programs. The College of American Pathologists sends proficiency test unknowns to CLIA-approved US clinical laboratories or International clinical laboratories, an excellent mechanism for assessing nationwide interlab reproducibility. The three most recent surveys for each of these analytes showed average accuracy rates of 95% for EGFR, 98% for KRAS, 99% for BRAF, 99% for MSI, and 99% for UroVysion™.

Clinical Validity

Included studies provided some evidence on clinical validity for nine of the included tests, adjusted for known prognostic factors (Table 2). Evidence from multiple studies supports clinical validity, with added value beyond traditional prognostic factors, for MammaPrint®, Oncotype DX Breast®, KRAS mutation testing for lung cancer, BRAF mutation testing for CRC, KRAS mutation testing for CRC, and MSI for CRC for at least one outcome [risk of recurrence (RR), cancer-specific survival (CSS), or overall survival (OS)]. For UroVysion™, limited evidence from 2 small studies (total N=168) rated as low or medium risk of bias supported prognostic value for RR. EGFR lung cancer did not add prognostic value to the traditional factors used to determine prognosis. For CRC, evidence did not adequately support added prognostic value for Oncotype DX Colon®. The metric used to assess the clinical validity of the test for recurrence, CSS, or OS in all of these studies was the hazard ratio (HR), which in this report range from 0.57 to 3.93. If the test is non-informative, it would be expected that the probability of experiencing the end point would be the same for either group, with a HR of 1. If the HR is greater than 1, the probability of the endpoint is higher in the group with the higher hazard. If the HR is lower than 1, the probability of experiencing the endpoint is lower in the group with the lower hazard. For example, an HR of 2 for CSS indicates that one group (e.g., those with high risk results for Oncotype DX Breast®) has twice the rate per unit of time as the comparison group (e.g., those with low-risk test results).

Table 2. Summary of Findings on Clinical Validity

Test: Cancer	Outcome	N studies/ N subjects	Results (95% Confidence Interval)
MammaPrint®: Breast	RR	6/1913	HR: 2.84 (2.11 to 3.89) for poor prognosis vs. good prognosis
	CSS	5/1615	HR: 3.3 (2.22 to 4.9) for poor prognosis vs. good prognosis
	OS	1/144	HR: 1.67 (0.73 to 3.82) for poor prognosis vs. good prognosis
Oncotype DX®: Breast	RR	6/3222	HR: 2.97 (2.19 to 4.02) for high risk vs. low risk
	CSS	2/1234	HR: 2.02 (1.35 to 3.00) for high risk vs. low risk
	OS	1/668	HR: 1.65 (1.24 to 2.19) for high risk vs. low risk
EGFR: Lung	RR	6/1870	HR: 0.87 (0.65 to 1.15); No association
	CSS	0	N/A
	OS	6/ 1820	HR: 0.76 (0.50 to 1.19); No association

Test: Cancer	Outcome	N studies/ N subjects	Results (95% Confidence Interval)
KRAS: Lung	RR	4/611	2.84 (1.14 to 7.1) KRAS mutation associated with greater RR
	CSS	0	N/A
	OS	2/253	2.69 (1.91 to 3.8); 3.33 (1.03 to 10.82)
BRAF: CRC	RR	5/4106	HR 1.07 (0.76 to 1.52) for wild-type vs. mutation
	CSS	7/5409	HR 1.50 (1.26 to 1.77) for wild-type vs. mutation
	OS	11/7610	HR 1.45 (1.29 to 1.62) for wild-type vs. mutation
KRAS: CRC	RR	5/4085	HR 1.02 (0.91 to 1.14) for wild-type vs. mutation
	CSS	2/1174	HR 1.30 (1.02 to 1.66) for wild-type vs. mutation
	OS	10/5328	HR 1.22 (0.93 to 1.60) for wild-type vs. mutation
MSI: CRC	RR	10/7130	HR 0.60 (0.50 to 0.72) for MSI-H vs. MSS
	CSS	6/3439	HR 0.65 (0.51 to 0.82) for MSI-H vs. MSS
	OS	12/8839	HR 0.57 (0.43 to 0.77) for MSI-H vs. MSS
Oncotype DX®: CRC	RR	1/690	HR 1.68 (1.18 to 2.38)
	CSS	0	N/A
	OS	0	N/A
UroVysion™: Bladder	eRR	2/168	Association between mutation and RR in 2 small studies
	CSS	0	N/A
	OS	0	N/A

Clinical Utility

The evidence was insufficient to answer the overarching question for most tests. Even in the cases where the tests seemed to add value in determining prognosis (e.g., evidence of clinical validity), no evidence was identified that suggested using the test was related to improved outcomes for patients. For a few tests (EGFR for lung cancer, BRAF for colorectal cancer and KRAS for colorectal cancer), there was low SOE suggesting that using the test would not improve outcomes for patients, since if there is a lack of clinical validity, it is unlikely that the tests will be found to have clinical utility. For impact on treatment decisions, there was moderate SOE that one test, Oncotype DX Breast®, leads to changes in decisions. Although the decision

changes were observed in both directions for individual patients, studies consistently showed an overall shift to less-intensive treatment recommendations as a result of using Oncotype DX Breast[®], with fewer recommendations for chemotherapy. In these situations, there is less exposure to potential harms of chemotherapy, however, the studies did not follow patients to actually report on harms or to assess the overall balance of clinical benefits and harms. One study of low or medium risk of bias was found for the impact of MammaPrint[®] on treatment decisions; the authors concluded that evidence was insufficient to determine the impact of MammaPrint[®] on treatment decisions, primarily because of unknown consistency and imprecision.

BCBS (2013): Multiple Molecular Testing of Cancers to Identify Targeted Therapies

Clinical Background

Measurement of genetic or other molecular markers in cancer tissue is established in the diagnosis, staging, and treatment of cancer. Currently, there is interest in the utility of measuring a large number of molecular markers at a single time in order to identify a treatment which targets the biological pathway involving that molecular marker. The available methods, or assays, may include molecular markers that individually might be indicated for a specific cancer, but are not indicated for most cancers. This may result in a different treatment than usually selected for a patient based on the type of cancer and its stage.

The use of multiple molecular testing to select targeted therapy is based on a shift in thinking about cancer behavior and treatment. Rather than thinking about cancer based on site and histology, molecular markers represent biological pathways that may be common across cancers. Choosing treatment based on these biological pathways is hypothesized to be a better method of selecting treatment.

Use of multiple molecular markers to select treatment can generally be categorized in two ways. Performing a large number of tests might increase the probability of a positive test, which indicates possible susceptibility of the cancer to a targeted therapy usually not indicated for that particular cancer. Alternatively, the results of large numbers of tests might be integrated in some manner to construct an interlinked biologic pathway for that particular cancer, thereby providing insight into a potentially more effective targeted therapy for that particular patient.

A variety of techniques are used to profile cancers. Several of the commercially available panels combine different techniques. Some provide highly related or what might be considered redundant information regarding the tumor. Because of rapid changes in technology and the development of novel methods, the actual technique employed may be less relevant than the nature of the information derived from the test. Some types of information such as presence of specific mutations can be obtained from several different techniques. The authors state that it is beyond the scope of their report to detail the many different panels that are commercially available at the time the report was written. This report also does not evaluate the use of multiple molecular testing in the setting where such tests have been selected and combined in a specific computational model to create a single “test” used for prognosis or treatment selection, such as Oncotype DX.

Evidence Review

Three published studies, including a variety of cancers (breast, colon, ovarian, melanoma, thyroid, miscellaneous) report health outcomes for patients whose treatments were selected using multiple molecular marker panels. Two of the studies compare the time to progression on the targeted treatment to the time to progression on the most recently failed treatment. This is not an established measure of efficacy or treatment response. One study compares patients who had targeted treatment to another group of patients who did not have targeted treatment. This study was not randomized and thus may be subject to confounding. In two of the studies, subjects were given targeted treatments in Phase I trials. Outcomes of these patients could be dependent on the experimental treatment rather than the selection strategy. In summary, use of multiple molecular testing to assist in making treatment decisions for cancer patients is rapidly evolving. Strong evidence of clinical effectiveness of this approach is not available, and a number of issues remain to be solved, particularly patient selection.

Supplemental Evidence Searches

Based on expert testimony, the Health Technology Assessment Subcommittee identified three specific tests for additional evidence review: BRAF for melanoma, EGFR for lung cancer, and KRAS for colorectal cancer. BRAF testing in melanoma was not addressed in any other core sources, while EGFR for lung cancer and KRAS for colorectal cancer were both found by AHRQ to lack clinical utility based on low SOE.

Evidence for BRAF testing in melanoma

A Special Report published by BCBS in 2011 investigated the targeted drug design and companion test co-development of vemurafenib (a BRAF inhibitor that targets a mutated form of the BRAF kinase) and the cobas® 4800 BRAF V600 Mutation Test real-time polymerase chain reaction (PCR) test. The primary evidence of clinical validity and utility for the cobas 4800 BRAF V600 Mutation Test is provided by the Phase III clinical trial of vemurafenib, which also supported the FDA approval of the drug.

The Phase I single-arm clinical trial of vemurafenib used a prototype assay to detect BRAFV600E mutations in enrolled patients. After dose determination, the extension phase of the study resulted in 81% of 32 patients responding according to Response Evaluation Criteria in Solid Tumors (RECIST); nearly all were partial responses. The Phase II single-arm clinical trial is currently ongoing; interim results presented at a meeting showed a 53% objective response rate, median progression-free survival of 6.7 months, and median overall survival not reached at the time of analysis. Patients were selected for enrollment based on a finalized version of the cobas 4800 BRAF V600 Mutation Test.

The Phase III comparative trial of vemurafenib versus standard chemotherapy (dacarbazine) also enrolled patients based on the results of the finalized companion test. At a planned interim analysis, the results met the specified criteria for primary endpoints, and patients in the dacarbazine treatment arm were allowed to cross over to vemurafenib. At this time, median survival had not been reached; the hazard ratio for death was 0.37 (95% CI: 0.26–0.55). At 6 months, overall survival was 84% (95% CI: 78 to 89) for vemurafenib-treated patients and 64% (95% CI: 56 to 73) for dacarbazine-treated patients. Progression-free survival was evaluable in

549 patients; the hazard ratio for tumor progression was 0.26 (95% CI: 0.20–0.33). The median progression-free survival was estimated to be 5.3 months for patients treated with vemurafenib and 1.6 months for patients treated with dacarbazine. Tumor response was evaluable in 439 patients; the objective response rate was 48% in patients treated with vemurafenib versus 5% in those treated with dacarbazine. Only 2 patients treated with vemurafenib had a complete response.

Extended follow-up of this trial was published in 2014 by McArthur and colleagues. Median overall survival was significantly longer in the vemurafenib group than in the dacarbazine group (13.6 months [95% CI 12.0–15.2] vs 9.7 months [7.9–12.8]; hazard ratio [HR] 0.70 [95% CI 0.57–0.87]; $p=0.0008$), as was median progression-free survival (6.9 months [95% CI 6.1–7.0] vs 1.6 months [1.6–2.1]; HR 0.38 [95% CI 0.32–0.46]; $p<0.0001$). For the 598 (91%) patients with *BRAF* V600^E disease, median overall survival in the vemurafenib group was 13.3 months (95% CI 11.9–14.9) compared with 10.0 months (8.0–14.0) in the dacarbazine group (HR 0.75 [95% CI 0.60–0.93]; $p=0.0085$); median progression-free survival was 6.9 months (95% CI 6.2–7.0) and 1.6 months (1.6–2.1), respectively (HR 0.39 [95% CI 0.33–0.47]; $p<0.0001$). For the 57 (9%) patients with the more uncommon *BRAF* V600^K disease, median overall survival in the vemurafenib group was 14.5 months (95% CI 11.2–not estimable) compared with 7.6 months (6.1–16.6) in the dacarbazine group (HR 0.43 [95% CI 0.21–0.90]; $p=0.024$); median progression-free survival was 5.9 months (95% CI 4.4–9.0) and 1.7 months (1.4–2.9), respectively (HR 0.30 [95% CI 0.16–0.56]; $p<0.0001$). The most frequent grade 3–4 events were cutaneous squamous-cell carcinoma (65 [19%] of 337 patients) and keratoacanthomas (34 [10%]), rash (30 [9%]), and abnormal liver function tests (38 [11%]) in the vemurafenib group and neutropenia (26 [9%] of 287 patients) in the dacarbazine group. Eight (2%) patients in the vemurafenib group and seven (2%) in the dacarbazine group had grade 5 events.

The results of the Phase III trial, supported by the results of the earlier trials, support the clinical validity and clinical utility of the cobas 4800 *BRAF* V600 Mutation Test, the companion diagnostic test for vemurafenib. Using the test to select patients for treatment results in improved outcomes compared to the usual standard of care, dacarbazine. In addition, comparison of these results with the trial results of the recently approved ipilimumab, suggests that treatment with vemurafenib results in improved outcomes compared to ipilimumab. Ipilimumab is notable as the first therapy to show a survival advantage in a Phase III trial for patients with advanced melanoma, and while vemurafenib was in clinical trials, may have become the new treatment standard for late stage disease and thus is an important comparator.

Evidence for EGFR testing in lung cancer

The 2014 AHRQ report referenced above concluded that “EGFR lung cancer did not add prognostic value to the traditional factors used to determine prognosis.” However, other authors have drawn different conclusions. A diagnostics guidance from NICE (2013) concluded that epidermal growth factor receptor tyrosine kinase (EGFR-TK) mutation testing is indicated in adults with previously untreated, locally advanced or metastatic non-small-cell lung cancer (NSCLC). Clinical trials have shown that patients with EGFR-TK mutation-positive tumours gain more benefit from treatment with EGFR-TK inhibitors than from standard chemotherapy treatment. Conversely, patients with EGFR-TK mutation-negative tumours gain more benefit

from standard chemotherapy than from EGFR-TK inhibitors. However, there was no consensus on which laboratory test should be used for clinical decision-making.

A clinical effectiveness review by CADTH (Mujoomdar 2010) concluded that PCR-based tests are likely useful for identifying patients with NSCLC who are likely to respond to treatment with a TKI, and notes that in December 2009, Health Canada approved the TKI gefitinib as a first-line treatment for patients with locally advanced or metastatic NSCLC who also have activating mutations in the EGFR gene.

Evidence for KRAS testing in colorectal cancer

The 2014 AHRQ report concluded that there was low SOE suggesting that using this test would not improve outcomes for patients, since if there is a lack of clinical validity, it is unlikely that the tests will be found to have clinical utility. Other authors have suggested that, although testing may not improve mortality in colorectal cancer, it may save patients from unnecessary treatment by identifying those who are unlikely to benefit from anti-epidermal growth factor receptor monoclonal antibody therapy. A 2010 AHRQ report on selected pharmacogenetic tests for cancer treatment (Terasawa 2010) included 47 eligible studies and concluded that when treated with anti-EGFR antibodies, patients with KRAS mutations were less likely to experience treatment benefit, compared to patients whose tumors were wild-type for KRAS mutations, for all outcomes assessed. These results were confirmed in several RCT-based analyses of progression-free survival that demonstrated a significant treatment-by-KRAS mutation interaction in three out of the four cases where such analyses were reported. The direction of effect was consistent among studies, and formal significance was achieved in the majority of individual studies that reported information on the clinically relevant outcomes of overall and disease-free survival.

A working group convened by Evaluation of Genomic Applications in Practice and Prevention (EGAPP) found that, for patients with metastatic colorectal cancer who are being considered for treatment with cetuximab or panitumumab, there is convincing evidence to recommend clinical use of KRAS mutation analysis to determine which patients are KRAS mutation positive and therefore unlikely to benefit from these agents before initiation of therapy. The level of certainty of the evidence was deemed high, and the magnitude of net health benefit from avoiding potentially ineffective and harmful treatment, along with promoting more immediate access to what could be the next most effective treatment, is at least moderate.

EVIDENCE SUMMARY

For breast cancer, there is moderate quality evidence that Oncotype DX® has adequate analytic validity, clinical validity and clinical utility, at least in intermediate risk women. A similar statement cannot be made for the other gene profiling tests: Mammaprint® has reasonable evidence of clinical validity but insufficient evidence pertaining to clinical utility. The evidence base for IHC4 is limited to clinical validity (no evidence on analytic validity or clinical utility). For Mammostrat®, evidence from three studies suggests adequate clinical validity, however evidence on clinical utility is limited to one study, and is considered insufficient.

This evidence primarily pertains to women with lymph node negative breast cancer. The evidence for lymph node positive cancer is limited to Oncotype DX®, for which only 3 studies

were identified, and clinical utility is uncertain as most women with lymph node positive cancer will receive chemotherapy regardless.

For prostate cancer, there is no analytic validity or clinical utility evidence for either approved test (Polaris® or OncotypeDX Prostate®). Evidence on the clinical validity is also quite limited for both tests.

For other cancers, AHRQ 2014 found insufficient evidence to suggest that use of any evaluated gene profiling test would result in improved outcomes for patients; but concluded that a low strength of evidence suggests an absence of clinical validity for EGFR for lung cancer, BRAF for colorectal cancer and KRAS for colorectal cancer. A supplemental MEDLINE search on EGFR for lung cancer and KRAS for colorectal cancer revealed that other authors have reached different conclusions. Lung cancer patients with wild-type EGFR-TK are more likely to benefit from standard chemotherapy, while patients with mutated EGFR-TK are more likely to respond to targeted gene inhibitors (hence it has demonstrated clinical utility). Colorectal cancer patients with KRAS mutations are unlikely to benefit from anti-EGFR antibodies such as cetuximab or panitumumab – the test has clinical utility in helping to avoid unhelpful treatments. A supplemental search was also conducted for BRAF testing for melanoma, which was not addressed by AHRQ. BRAF testing to select melanoma patients for treatment with a targeted BRAF inhibitor results in improved outcomes compared to the usual standard of care, according to results of a Phase III trial (clinical utility).

There is insufficient evidence of clinical effectiveness pertaining to the use of multiple molecular testing to select targeted therapy in a variety of cancers.

GRADE-INFORMED FRAMEWORK

The HERC develops recommendations by using the concepts of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. GRADE is a transparent and structured process for developing and presenting evidence and for carrying out the steps involved in developing recommendations. There are four elements that determine the strength of a recommendation, as listed in the table below. The HERC reviews the evidence and makes an assessment of each element, which in turn is used to develop the recommendations presented in the coverage guidance box. Balance between desirable and undesirable effects, and quality of evidence, are derived from the evidence presented in this document, while estimated relative costs, values and preferences are assessments of the HERC members.

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*#	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
Oncotype DX® (lymph node - breast)	Analytic validity ¹ : Yes Clinical validity ² : Yes Clinical utility ³ : Yes Change in treatment decision in ~1/3rd of patients	Moderate#	Moderate, this cost may be somewhat offset by the change in treatment decisions	Moderate variability	Recommended for coverage (<i>strong recommendation</i>)	There is sufficient moderate quality evidence that there is change in treatment planning, with greater benefit and fewer harms, and resource use is significant but likely justified.
Oncotype DX® (lymph node + breast)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Yes	Low#	Moderate	Moderate variability	Do not recommend (<i>weak recommendation</i>)	There is some evidence of analytic, clinical validity and clinical utility but it is uncertain how the information will change

¹ Analytical validity refers to how well the test predicts the presence or absence of a particular gene or genetic change.

² Clinical validity refers to how well the genetic variant being analyzed is related to the presence, absence, or risk of a specific disease.

³ Clinical utility refers to whether the test can provide clinically useful information about diagnosis, treatment, management, or prevention of a disease.

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*#	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
						management, and the test involves significant cost. Expert opinion indicates women with lymph positive breast cancer receive chemotherapy regardless of test results. Therefore, additional utility of obtaining this test at this time is unclear, hence a recommendation for noncoverage.
Mammaprint® (breast)	Analytic validity: Insufficient Clinical validity: Yes Clinical utility: Insufficient	Very low#	Moderate	Low variability	Do not recommend (<i>weak recommendation</i>)	There is insufficient evidence, unknown benefit/risks and available alternatives.
IHC4 (breast)	Analytic validity: Insufficient Clinical validity: Yes Clinical utility: Insufficient	Very low#	Low	Low variability	<i>Do not recommend (weak recommendation)</i>	There is insufficient evidence of harms/benefits and there are available alternatives.
Mammostrat® (breast)	Analytic validity: Insufficient Clinical validity: Yes	Very low#	Moderate	Low variability	Do not recommend (<i>weak recommendation</i>)	There is insufficient evidence of harms/benefits and

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*#	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
	Clinical utility: Insufficient Unknown					there are available alternatives.
Prolaris®/ Oncotype DX® (prostate)	Analytic validity: Insufficient Clinical validity: Insufficient Clinical utility: Insufficient	Very low*	Moderate	Low variability	Do not recommend (<i>weak recommendation</i>)	There is insufficient evidence of harms/benefits and there are available alternatives.
EGFR (Lung)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Yes	Low*	Moderate, this cost may be somewhat offset by change in treatment decisions	Low variability	Recommend (<i>strong recommendation</i>)	There is sufficient evidence of clinical validity and utility with less harms. While expensive, the costs may be offset by the change in treatment decisions and patients would likely desire the information.
KRAS (Lung)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Insufficient	Very low*	Low	Low variability	Do not recommend (<i>weak recommendation</i>)	There is insufficient evidence of harms/benefits and there are available alternatives.
BRAF (CRC)	Analytic validity: Yes Clinical validity: No Clinical utility:	Low*	Low	Low variability	Do not recommend (<i>strong recommendation</i>)	There is sufficient evidence it is ineffective.

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*#	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
	Insufficient					
KRAS (CRC)	Analytic validity: Yes Clinical validity: Insufficient Clinical utility: Yes	Low*	Low	Low variability	Recommended for coverage (<i>strong recommendation</i>)	There is sufficient evidence that it is more effective and reduces harms clinically, there is low resource allocation and low variability in values and preferences.
MSI (CRC)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Insufficient	Very low*	Low	Low variability	Do not recommend (<i>weak recommendation</i>)	Evidence insufficient for clinical utility; available alternatives
Oncotype DX® (CRC)	Analytic validity: Yes Clinical validity: No Clinical utility: Insufficient	Very low*	Moderate	Low variability	Do not recommend (<i>weak recommendation</i>)	It is not clinically valid (does not appear to add any prognostic value).
UroVysion™ (Bladder)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Insufficient	Very low*	Moderate	Low variability	Do not recommend (<i>weak recommendation</i>)	There is insufficient evidence of harms/benefits and there are available alternatives.
BRAF (melanoma)	Analytic validity: Yes Clinical validity: Yes Clinical utility: Yes	Low#	Low	Low variability	Recommended for coverage (<i>strong recommendation</i>)	Sufficient evidence of benefit and of harm reduction, low resource allocation and low variability in

Indication/ Intervention	Balance between desirable and undesirable effects	Quality of evidence*#	Resource allocation	Variability in values and preferences	Coverage recommendation	Rationale
						values and preferences.
Multiple molecular testing (all cancers)	Analytic validity: Insufficient Clinical validity: Insufficient Clinical utility: Insufficient	Very low#	Moderate - High	High variability	Not recommended for coverage (<i>weak recommendation</i>)	Evidence of clinical effectiveness of this approach is not available, and a number of issues remain to be solved, particularly patient selection.

*The Quality of Evidence rating was assigned by the primary evidence source

#The Quality of Evidence rating was assigned by the HERC Subcommittee

Note: GRADE framework elements are described in Appendix A.

POLICY LANDSCAPE

Quality measures

No quality measures were identified when searching the [National Quality Measures Clearinghouse](#).

Professional society guidelines

The National Comprehensive Cancer Network produced a Task Force report pertaining to the clinical utility of tumor markers in oncology. For this report, they combined the Tumor Marker Utility Grading System (TMUGS) and the levels of evidence standards for using archived tissue to assess the level of evidence that supports a particular test. They are presented in the tables below:

Table 3. Tumor Marker Utility Grading System

Level of Evidence	Definition/ Trial Design
I	Prospective, marker primary objective, well-powered or meta-analysis
II	Prospective, marker the secondary objective
III	Retrospective, outcomes, multivariate analysis
IV	Retrospective, outcomes, univariate analysis
V	Retrospective, correlation with other marker, no outcomes

Table 4. Levels of evidence standards for using archived tissue to assess the level of evidence that supports a particular test

Level of Evidence Category	Trial design required to determine clinical validity
A	Prospective, designed to address tumor marker
B	Prospective using archived samples (not designed to address tumor marker, but can accommodate)
C	Prospective observational registry (treatment and follow up not dictated)
D	Retrospective observational

In addition, the NCCN uses categories of evidence and consensus, outlined in Table 5:

Table 5. NCCN Categories of Evidence and Consensus

Category	Definition
1	Based upon high-level evidence, there is uniform NCCN consensus that the intervention is appropriate.
2A	Based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate.
2B	Based upon lower-level evidence, there is NCCN consensus that the intervention is appropriate.
3	Based upon any level of evidence, there is major NCCN disagreement that the intervention is appropriate.

For the cancers considered in this coverage guidance document, the NCCN lists levels and categories of evidence for selected tumor markers. These are outlined in Table 6.

Table 6. Tumor Markers for Selected Cancers With Accepted Clinical Utility

Cancer	Tumor Marker	Level of Evidence	Category of Evidence
Breast	ER/PR	IB	2A
	HER2	IA	2A
	Oncotype DX	Prognostic: IB Predictive: IIA	2A/ 2B
	KRAS mutations	Predictive: IB Prognostic: IIB	2A
Colon	MSI and/or MMR protein loss	Screening: IB Prognostic: IB Predictive: IIB	2A
	CEACAM5	IIC	2A
	BRAF c. 1799T>A	Prognostic: IB Predictive: IIIC	2A
	EGFR mutation	IA	1
Non-Small Cell Lung Cancer	ALK gene fusion	IIB	2A
	PSA (KLK3)	IA	2A
Prostate			

Coverage guidance is prepared by the Health Evidence Review Commission (HERC), HERC staff, and subcommittee members. The evidence summary is prepared by the Center for Evidence-based Policy at Oregon Health & Science University (the Center). This document is intended to guide public and private purchasers in Oregon in making informed decisions about health care services.

The Center is not engaged in rendering any clinical, legal, business or other professional advice. The statements in this document do not represent official policy positions of the Center. Researchers involved in preparing this document have no affiliations or financial involvement that conflict with material presented in this document.

DRAFT

APPENDIX A. GRADE ELEMENT DESCRIPTIONS

Element	Description
Balance between desirable and undesirable effects	The larger the difference between the desirable and undesirable effects, the higher the likelihood that a strong recommendation is warranted. The narrower the gradient, the higher the likelihood that a weak recommendation is warranted
Quality of evidence	The higher the quality of evidence, the higher the likelihood that a strong recommendation is warranted
Resource allocation	The higher the costs of an intervention—that is, the greater the resources consumed—the lower the likelihood that a strong recommendation is warranted
Values and preferences	The more values and preferences vary, or the greater the uncertainty in values and preferences, the higher the likelihood that a weak recommendation is warranted

Strong recommendation

In Favor: The subcommittee is confident that the desirable effects of adherence to a recommendation outweigh the undesirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences.

Against: The subcommittee is confident that the undesirable effects of adherence to a recommendation outweigh the desirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences.

Weak recommendation

In Favor: The subcommittee concludes that the desirable effects of adherence to a recommendation probably outweigh the undesirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences, but is not confident.

Against: The subcommittee concludes that the undesirable effects of adherence to a recommendation probably outweigh the desirable effects, considering the quality of evidence, cost and resource allocation, and values and preferences, but is not confident.

Quality or strength of evidence rating across studies for the treatment/outcome⁴

High: The subcommittee is very confident that the true effect lies close to that of the estimate of the effect. Typical sets of studies are RCTs with few or no limitations and the estimate of effect is likely stable.

Moderate: The subcommittee is moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different. Typical sets of studies are RCTs with some limitations or well-performed nonrandomized studies with additional strengths that guard against potential bias and have large estimates of effects.

Low: The subcommittee's confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect. Typical sets of studies are RCTs with serious limitations or nonrandomized studies without special strengths.

Very low: The subcommittee has very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect. Typical sets of studies are nonrandomized studies with serious limitations or inconsistent results across studies.

⁴ Includes risk of bias, precision, directness, consistency and publication bias

APPENDIX B. APPLICABLE CODES

CODES	DESCRIPTION
ICD-9 Diagnosis Codes	
153.0	Malignant neoplasm of hepatic flexure
153.1	Malignant neoplasm of transverse colon
153.2	Malignant neoplasm of descending colon
153.3	Malignant neoplasm of sigmoid colon
153.4	Malignant neoplasm of cecum
153.5	Malignant neoplasm of appendix vermiformis
153.6	Malignant neoplasm of ascending colon
153.7	Malignant neoplasm of splenic flexure
153.8	Malignant neoplasm of other specified sites of large intestine
153.9	Malignant neoplasm of colon unspecified site
154.0	Malignant neoplasm of rectosigmoid junction
154.1	Malignant neoplasm of rectum
154.2	Malignant neoplasm of anal canal
154.3	Malignant neoplasm of anus unspecified site
154.8	Malignant neoplasm of other sites of rectum rectosigmoid junction and anus
162.2	Malignant neoplasm of main bronchus
162.3	Malignant neoplasm of upper lobe bronchus or lung
162.4	Malignant neoplasm of middle lobe bronchus or lung
162.5	Malignant neoplasm of lower lobe bronchus or lung
162.8	Malignant neoplasm of other parts of bronchus or lung
162.9	Malignant neoplasm of bronchus and lung unspecified
174.0	Malignant neoplasm of nipple and areola of female breast
174.1	Malignant neoplasm of central portion of female breast
174.2	Malignant neoplasm of upper-inner quadrant of female breast
174.3	Malignant neoplasm of lower-inner quadrant of female breast
174.4	Malignant neoplasm of upper-outer quadrant of female breast
174.5	Malignant neoplasm of lower-outer quadrant of female breast
174.6	Malignant neoplasm of axillary tail of female breast
174.8	Malignant neoplasm of other specified sites of female breast
174.9	Malignant neoplasm of breast (female) unspecified site
185	Malignant neoplasm of prostate
188.0	Malignant neoplasm of trigone of urinary bladder
188.1	Malignant neoplasm of dome of urinary bladder
188.2	Malignant neoplasm of lateral wall of urinary bladder
188.3	Malignant neoplasm of anterior wall of urinary bladder
188.4	Malignant neoplasm of posterior wall of urinary bladder
188.5	Malignant neoplasm of bladder neck
188.6	Malignant neoplasm of ureteric orifice
188.7	Malignant neoplasm of urachus

CODES	DESCRIPTION
188.8	Malignant neoplasm of other specified sites of bladder
188.9	Malignant neoplasm of bladder part unspecified
196.0	Secondary and unspecified malignant neoplasm of lymph nodes of head face and neck
196.1	Secondary and unspecified malignant neoplasm of intrathoracic lymph nodes
196.2	Secondary and unspecified malignant neoplasm of intra-abdominal lymph nodes
196.3	Secondary and unspecified malignant neoplasm of lymph nodes of axilla and upper limb
196.5	Secondary and unspecified malignant neoplasm of lymph nodes of inguinal region and lower limb
196.6	Secondary and unspecified malignant neoplasm of intrapelvic lymph nodes
196.8	Secondary and unspecified malignant neoplasm of lymph nodes of multiple sites
196.9	Secondary and unspecified malignant neoplasm of lymph nodes site unspecified
V07.51	Use of selective estrogen receptor modulators (serms)
V07.52	Use of aromatase inhibitors
V07.59	Use of other agents affecting estrogen receptors and estrogen levels
V10.3	Personal history of malignant neoplasm of breast
V58.11	Encounter for antineoplastic chemotherapy
V84.01	Genetic susceptibility to malignant neoplasm of breast
V86.0	Estrogen receptor positive status [ER+]
V86.1	Estrogen receptor negative status [ER-]
ICD-10 Diagnosis Codes	
C18.3	Malignant neoplasm of hepatic flexure
C18.4	Malignant neoplasm of transverse colon
C18.6	Malignant neoplasm of descending colon
C18.7	Malignant neoplasm of sigmoid colon
C18.0	Malignant neoplasm of cecum
C18.1	Malignant neoplasm of appendix
C18.2	Malignant neoplasm of ascending colon
C18.5	Malignant neoplasm of splenic flexure
C18.8	Malignant neoplasm of overlapping sites of colon
C18.9	Malignant neoplasm of colon, unspecified
C19	Malignant neoplasm of rectosigmoid junction
C20	Malignant neoplasm of rectum
C21.1	Malignant neoplasm of anal canal
C21.0	Malignant neoplasm of anus, unspecified
C21.8	Malignant neoplasm of overlapping sites of rectum, anus and anal canal
C34.00	Malignant neoplasm of unspecified main bronchus
C34.10	Malignant neoplasm of upper lobe, unspecified bronchus or lung
C34.2	Malignant neoplasm of middle lobe, bronchus or lung
C34.30	Malignant neoplasm of lower lobe, unspecified bronchus or lung
C34.80	Malignant neoplasm of overlapping sites of unspecified bronchus and lung
C34.90	Malignant neoplasm of unspecified part of unspecified bronchus or lung
C50.019	Malignant neoplasm of nipple and areola, unspecified female breast

CODES	DESCRIPTION
C50.119	Malignant neoplasm of central portion of unspecified female breast
C50.219	Malignant neoplasm of upper-inner quadrant of unspecified female breast
C50.319	Malignant neoplasm of lower-inner quadrant of unspecified female breast
C50.419	Malignant neoplasm of upper-outer quadrant of unspecified female breast
C50.519	Malignant neoplasm of lower-outer quadrant of unspecified female breast
C50.619	Malignant neoplasm of axillary tail of unspecified female breast
C50.819	Malignant neoplasm of overlapping sites of unspecified female breast
C50.919	Malignant neoplasm of unspecified site of unspecified female breast
C61	Malignant neoplasm of prostate
C67.0	Malignant neoplasm of trigone of bladder
C67.1	Malignant neoplasm of dome of bladder
C67.2	Malignant neoplasm of lateral wall of bladder
C67.3	Malignant neoplasm of anterior wall of bladder
C67.4	Malignant neoplasm of posterior wall of bladder
C67.5	Malignant neoplasm of bladder neck
C67.6	Malignant neoplasm of ureteric orifice
C67.7	Malignant neoplasm of urachus
C67.8	Malignant neoplasm of overlapping sites of bladder
C67.9	Malignant neoplasm of bladder, unspecified
C77.0	Secondary and unspecified malignant neoplasm of lymph nodes of head, face and neck
C77.1	Secondary and unspecified malignant neoplasm of intrathoracic lymph nodes
C77.2	Secondary and unspecified malignant neoplasm of intra-abdominal lymph nodes
C77.3	Secondary and unspecified malignant neoplasm of axilla and upper limb lymph nodes
C77.4	Secondary and unspecified malignant neoplasm of inguinal and lower limb lymph nodes
C77.5	Secondary and unspecified malignant neoplasm of intrapelvic lymph nodes
C77.8	Secondary and unspecified malignant neoplasm of lymph nodes of multiple regions
C77.9	Secondary and unspecified malignant neoplasm of lymph node, unspecified
Z79.810	Long term (current) use of selective estrogen receptor modulators (SERMs)
Z79.811	Long term (current) use of aromatase inhibitors
Z79.818	Long term (current) use of other agents affecting estrogen receptors and estrogen levels
Z85.3	Personal history of malignant neoplasm of breast
Z51.11	Encounter for antineoplastic chemotherapy
Z15.01	Genetic susceptibility to malignant neoplasm of breast
Z17.0	Estrogen receptor positive status [ER+]
Z17.1	Estrogen receptor negative status [ER-]
ICD-9 Volume 3 (Procedure Codes)	
32	Excision of lung and bronchus
85.2	Excision or destruction of breast tissue
85.4	Mastectomy
45.7	Open and other partial excision of large intestine
45.8	Total intra-abdominal colectomy
45.9	Intestinal anastomosis

CODES	DESCRIPTION
48.4	Pull-through resection of rectum
48.5	Abdominoperineal resection of rectum
48.6	Other resection of rectum
57.4	Transurethral excision or destruction of bladder tissue
57.5	Other excision or destruction of bladder tissue
57.6	Partial cystectomy
57.7	Total cystectomy
60.5	Radical prostatectomy
CPT Codes	
19301	Mastectomy, partial
19302	Mastectomy, with axillary lymphadenectomy
19303	Mastectomy, simple, complete
19304	Mastectomy, subcutaneous
19305	Mastectomy, radical, including pectoral muscles, axillary lymph nodes
19306	Mastectomy, radical, including pectoral muscles, axillary and internal mammary lymph nodes
19307	Mastectomy, modified radical, including axillary lymph nodes, with or without pectoralis minor muscle but excluding pectoralis major muscle
32440	Removal of lung, pneumonectomy
32442	Removal of lung, pneumonectomy; with resection of segment o trachea followed by broncho-tracheal anastomosis
32445	Removal of lung, pneumonectomy; extrapleural
32480	Removal of lung other than pneumonectomy; single lobe
32482	Removal of lung other than pneumonectomy; 2 lobes
32484	Removal of lung other than pneumonectomy; single segment
32486	Removal of lung other than pneumonectomy; with circumferential resection of segment of bronchus followed by broncho-bronchial anastomosis
32488	Removal of lung other than pneumonectomy; with all remaining lung following previous removal of a portion of lung
32491	Removal of lung other than pneumonectomy; with resection-plication of emphysematous lung(s) for lung volume reduction, sternal split or transthoracic approach, includes any pleural procedure, when preformed
32501	Resection and repair of portion of bronchus when performed at a time of lobectomy or segmentectomy
32503	Resection of apical lung tumor including chest wall resection, rib(s) resection(s), neurovascular dissection, when performed; without chest wall reconstruction(s)
32504	Resection of apical lung tumor including chest wall resection, rib(s) resection(s), neurovascular dissection, when performed; with chest wall reconstruction(s)
44139	Mobilization (take-down) of splenic flexure performed in conjunction with partial colectomy (List separately in addition to primary procedure)
44140	Colectomy, partial; with anastomosis
44141	Colectomy, partial; with skin level cecostomy or colostomy
44143	Colectomy, partial; with end colostomy and closure of distal segment (Hartmann type procedure)
44144	Colectomy, partial; with resection, with colostomy or ileostomy and creation of mucofistula
44145	Colectomy, partial; with coloproctostomy (low pelvic anastomosis)
44146	Colectomy, partial; with coloproctostomy (low pelvic anastomosis), with colostomy

CODES	DESCRIPTION
44147	Colectomy, partial; abdominal and transanal approach
44150	Colectomy, total, abdominal, without proctectomy; with ileostomy or ileoproctostomy
44151	Colectomy, total, abdominal, without proctectomy; with continent ileostomy
44155	Colectomy, total, abdominal, with proctectomy; with ileostomy
44156	Colectomy, total, abdominal, with proctectomy; with continent ileostomy
44157	Colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, includes loop ileostomy, and rectal muscosectomy, when performed
44158	Colectomy, total, abdominal, with proctectomy; with ileoanal anastomosis, creation of ileal reservoir (S or J), includes loop ileostomy, and rectal muscosectomy, when performed
44160	Colectomy, partial, with removal of terminal ileum with ileocolostomy
51570	Cystectomy, complete; (separate procedure)
51575	Cystectomy, complete; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes
51580	Cystectomy, complete, with ureterosigmoidostomy or ureterocutaneous transplantations;
51585	Cystectomy, complete, with ureterosigmoidostomy or ureterocutaneous transplantations; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes
51590	Cystectomy, complete, with ureteroileal conduit or sigmoid bladder, including intestine anastomosis;
51595	Cystectomy, complete, with ureteroileal conduit or sigmoid bladder, including intestine anastomosis; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes
51596	Cystectomy, complete, with continent diversion, any open technique, using any segment of small and/or large intestine to construct neobladder
51597	Pelvic exenteration, complete, for vesical, prostatic or urethral malignancy, with removal of bladder and ureteral transplantations, with or without hysterectomy and/or abdominoperineal resection of rectum and colon and colostomy, or any combination thereof
55810	Prostatectomy, perineal radical;
55812	Prostatectomy, perineal radical; with lymph node biopsy(s) (limited pelvic lymphadenectomy)
55815	Prostatectomy, perineal radical; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric and obturator nodes
55821	Prostatectomy (including control of postoperative bleeding, vasectomy, meatotomy, urethral calibration and/or dilation, and internal urethrotomy); suprapubic, subtotal, 1 or 2 stages
55831	Prostatectomy (including control of postoperative bleeding, vasectomy, meatotomy, urethral calibration and/or dilation, and internal urethrotomy); retropubic, subtotal
55840	Prostatectomy, retropubic radical, with or without nerve sparing
55842	Prostatectomy, retropubic radical, with or without nerve sparing; with lymph node biopsy(s) (limited pelvic lymphadenectomy)
55842	Prostatectomy, retropubic radical, with or without nerve sparing; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes
55860	Exposure of prostate, any approach, for insertion of radioactive substance
55862	Exposure of prostate, any approach, for insertion of radioactive substance; with lymph node biopsy(s) (limited pelvic lymphadenectomy)
55865	Exposure of prostate, any approach, for insertion of radioactive substance; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes
81210	BRAF (v-raf murine sarcoma viral oncogene homolog B1) (eg colon cancer) gene analysis, V600E variant

CODES	DESCRIPTION
81235	EGFR (epidermal growth factor receptor) (eg non-small lung cancer) gene analysis, common variants (exon 19 LREA deletion, L858R, T790M, G719A, G719S, L861Q)
81504	Oncology (tissue of origin), microarray gene expression profiling of > 2,000 genes, utilizing formalin-fixed paraffin-embedded tissue, algorithm reporting a risk score
83950	Oncoprotein; HER-2/neu
84233	Receptor assay; estrogen
84234	Receptor assay; progesterone
84999	Unlisted chemistry procedure
88239	Tissue culture for neoplastic disorders; bone marrow, blood cells
88240	Cryopreservation, freezing and storage of cells, each cell line
88241	Thawing and expansion of frozen cells, each aliquot
4179F	Tamoxifen or aromatase inhibitor
HCPCS Level II Codes	
S3854	Gene expression profiling panel for the use in the management of breast cancer treatment

Note: Inclusion on this list does not guarantee coverage

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

Question: How shall the Coverage Guidance, Biomarker tests of cancer tissue for prognosis and potential response to treatment, be applied to the Prioritized List?

Question source: Health Technology Assessment Subcommittee

Issue: HTAS has developed a new coverage guidance regarding cancer biomarkers. Most of these tests do not have specific CPT or HCPCS codes; rather they use non-specific CPT codes.

CPT code	Code Description	Current location
81479	Unlisted molecular pathology procedure	DMAP Suspend for Manual Review File
81599	Unlisted multianalyte assay with algorithmic analysis	DMAP Suspend for Manual Review File
84999	Unlisted chemistry procedure	DMAP Diagnostic Procedure File

Relevant lines:

Diagnosis	ICD-9 code	Current line
Melanoma	172.9	233 MALIGNANT MELANOMA OF SKIN
Non-small cell lung cancer	162.x	266 CANCER OF LUNG, BRONCHUS, PLEURA, TRACHEA, MEDIASTINUM AND OTHER RESPIRATORY ORGANS
Colorectal cancer	153.x	161 CANCER OF COLON, RECTUM, SMALL INTESTINE AND ANUS
Breast cancer	174.x	195 CANCER OF BREAST; AT HIGH RISK OF BREAST CANCER
Prostate cancer	185	333 CANCER OF PROSTATE GLAND
Bladder cancer	188	274 CANCER OF BLADDER AND URETER

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

Test/ (indication)	Coverage recommendation	Code	Current Prioritized List Placement	Recommended Placement
Oncotype DX® (lymph node - breast)	Recommended for coverage (<i>strong recommendation</i>)	81519 Oncology (breast), mRNA, gene expression profiling by real time RT-PCR of 21 genes, utilizing formalin fixed paraffin embedded tissue, algorithm reported as recurrence score S3854 Gene expression profiling panel for use in the management of breast cancer treatment	195 CANCER OF BREAST; AT HIGH RISK OF BREAST CANCER DMAP Ancillary Codes File	Add a guideline. Add S3854 to Line 195. Advise DMAP to remove S3854 from Ancillary Codes File.
Oncotype DX® (lymph node + breast)	Do not recommend (<i>weak recommendation</i>)	81519 Oncology (breast), mRNA, gene expression profiling by real time RT-PCR of 21 genes, utilizing formalin fixed paraffin embedded tissue, algorithm reported as recurrence score S3854 Gene expression profiling panel for use in the management of breast cancer treatment	195 CANCER OF BREAST; AT HIGH RISK OF BREAST CANCER DMAP Ancillary Codes File	Add a guideline. Add S3854 to Line 195. Advise DMAP to remove S3854 from Ancillary Codes File.

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

Test/ (indication)	Coverage recommendation	Code	Current Prioritized List Placement	Recommended Placement
Mammaprint® (breast)	Do not recommend (<i>weak recommendation</i>)	n/a	n/a	Add a guideline
IHC4 (breast)	<i>Do not recommend (weak recommendation)</i>	88341-88344	DMAP Diagnostic Procedure File	Add a guideline
Mammostrat® (breast)	Do not recommend (<i>weak recommendation</i>)	n/a	n/a	Add a guideline
Prolaris®/ Oncotype DX® (prostate)	Do not recommend (<i>weak recommendation</i>)	n/a	n/a	Add a guideline
EGFR (Lung)	Recommend (<i>strong recommendation</i>)	81235 EGFR (eg non- small cell lung cancer) gene analysis, common variants (eg exon 19 LREA deletion, L858R, T790M, G719A, G719S, L861Q)	266 CANCER OF LUNG, BRONCHUS, PLEURA, TRACHEA, MEDIASTINUM AND OTHER RESPIRATORY ORGANS	No change
KRAS (Lung)	Do not recommend (<i>weak recommendation</i>)	81275 KRAS (v-Ki- ras2 Kirsten rat sarcoma viral oncogene (e.g	DMAP Diagnostic Procedure File	Add a guideline. Advise DMAP to remove 81275 from

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

Test/ (indication)	Coverage recommendation	Code	Current Prioritized List Placement	Recommended Placement
		carcinoma) gene analysis, variants in codons 12 and 13		the Diagnostic Procedures File. Do not place on Lung Cancer line.
BRAF (CRC)	Do not recommend (<i>strong recommendation</i>)	81210 BRAF (v-raf murine sarcoma viral oncogene homolog B1	DMAP Diagnostic Procedure File	Add a guideline Advise DMAP to remove 81210 from Diagnostic Procedure File. Do not place on colorectal cancer line.
KRAS (CRC)	Recommended for coverage (<i>strong recommendation</i>)	81275 KRAS (v-Ki-ras2 Kirsten rat sarcoma viral oncogene (e.g carcinoma) gene analysis, variants in codons 12 and 13	DMAP Diagnostic Procedure File	Add a guideline. Advise DMAP to remove 81275 from the Diagnostic Procedures File. . Place 81275 on Line 161 (colon cancer)
MSI (CRC)	Do not recommend (<i>weak recommendation</i>)	n/a	n/a	Add a guideline
Oncotype DX® (CRC)	Do not recommend (<i>weak</i>)	No specific code (81479)	DMAP Suspend for Manual Review File	Add a guideline

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

Test/ (indication)	Coverage recommendation	Code	Current Prioritized List Placement	Recommended Placement
	<i>recommendation)</i>			
UroVysion™ (Bladder)	Do not recommend (<i>weak recommendation</i>)	n/a	n/a	Add a guideline
BRAF (melanoma)	Recommended for coverage (<i>strong recommendation</i>)	81210	DMAP Diagnostic Procedure File	Add a guideline Advise DMAP to remove 81210 from Diagnostic Procedures File. Place 81210 on Line 233 (malignant melanoma of skin).
Multiple molecular testing (all cancers)	Not recommended for coverage (<i>weak recommendation</i>)	81504 Oncology (Tissue of origin), microarray gene expression profiling of >2000 genes, utilizing formalin-fixed paraffin- embedded tissue, algorithm reported as tissue similarity scores	Services recommended for non-coverage table	No change

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

HERC Staff Assessment

Some codes are used for the same test in multiple cancers, with only some being recommended for coverage. A number of these biomarker tests do not have specific cpt or hcpcs codes making it more difficult to clearly identify pairings or recommend a code for noncoverage. Compiling these into a single guideline is likely helpful for clarity.

HERC staff recommendations:

- 1) Making the following coding changes:
 - a. Add S3854 (Gene expression profiling panel for use in the management of breast cancer treatment) to Line 195 (breast cancer).
 - i. Advise MAP to remove S3854 from Ancillary Codes File.
 - b. Place 81275 (KRAS) on Line 161 (colon cancer).
 - i. Advise MAP to remove 81275 from the Diagnostic File.
 - c. Place 81210 (BRAF) on Line 233 (malignant melanoma).
 - i. Advise MAP to remove 81210 from Diagnostic Procedures
 - d. Add the following to the Services recommended for noncoverage table (nonspecific CPT codes)
 - i. Mammaprint
 - ii. ImmunoHistoChemistry 4 (IHC4)
 - iii. Mammostrat
 - iv. Microsatellite instability (MSI)
 - v. Urovysion
 - vi. Prolaris
 - vii. Multiple molecular testing (81504)

- 2) Adopt a new Guideline Note as shown below

CG-Biomarker tests of cancer tissue for prognosis and potential response to treatment

GUIDELINE NOTE XXX BIOMARKER TESTS OF CANCER TISSUE

Lines 161, 188, 195, 233, 266, 274, 333

The use of multiple molecular testing to select targeted cancer therapy (CPT 81504) is included on the Services recommended for non-coverage table.

For breast cancer, Oncotype Dx testing (CPT 81519, HCPCS S3854) is included on line 195 only for early state breast cancer when used to guide adjuvant chemotherapy treatment decisions for women who are lymph node negative. Oncotype Dx is not included on this line for lymph node-positive breast cancer. Mammaprint, ImmunoHistoChemistry 4 (IHC4), and Mammostrat for breast cancer are included on the Services recommended for noncoverage table.

For melanoma, BRAF gene mutation testing (CPT 81210) is included on line 233.

For lung cancer, epidermal growth factor receptor (EGFR) gene mutation testing (CPT 81235) is included on line 266 only for non-small cell lung cancer. KRAS gene mutation testing (CPT 81275) is not included on this line.

For colorectal cancer, KRAS gene mutation testing (CPT 81275) is included on line 161. BRAF (CPT 81210) and Oncotype DX are not included on this line. Microsatellite instability (MSI) is included on the Services recommended for noncoverage table.

For bladder cancer, Urovysion testing is included on Services recommended for noncoverage table.

For prostate cancer, Oncotype DX is not included on line 333 and Prolaris is included on the Services recommended for noncoverage table.

The development of this guideline note was informed by a HERC coverage guidance. See [website](#).

Health Evidence Review Commission Coverage Guidance Summary

August 13, 2015

Coverage Guidance

For HERC review and approval

- Planned Out-of-Hospital Births
- Biomarker Tests of Cancer Tissue for Prognosis and Potential Response to Treatment

Biomarker Tests of Cancer Tissue for Prognosis and Potential Response to Treatment

Biomarker Tests of Cancer Tissue

Process Overview

- Initial Search – Trusted Sources (Aug 2014)
- EbGS –11/2014, 2/2015, 6/2015
 - Additional search (January 2015)
 - KRAS in colorectal cancer
 - EGFR in lung cancer
 - BRAF for melanoma
- Expert testimony
- Public comment (5 commenters)

Biomarker Tests of Cancer Tissue

Clinical Background

- **Analytical validity** – ability of the test to accurately and reliably measure the expression of mRNA or proteins by tumor cells
- **Clinical validity** – prognostic ability or the degree to which the test can accurately predict the risk of an outcome
- **Clinical utility** – ability of the test to improve clinical outcomes, such as overall survival
 - Direct harms arising from the test
 - Reclassification of risk compared with existing tools
 - Impact on clinical decision making
 - Ability of test to predict benefit from chemotherapy

Biomarker Tests of Cancer Tissue Evidence Summary

- 13 Evidence sources

Biomarker Test	Analytic Validity	Clinical Validity	Clinical Utility
<ul style="list-style-type: none"> • Oncotype DX® (LN- or LN+) [Breast] • EGFR [Lung] • BRAF [Melanoma] 	√	√	√
<ul style="list-style-type: none"> • KRAS [Lung] • MSI [Colorectal] • UroVysion™ [Bladder] 	√	√	Insufficient
<ul style="list-style-type: none"> • KRAS [Colorectal] 	√	Insufficient	√
<ul style="list-style-type: none"> • BRAF [Colorectal] • Oncotype Dx® [Colorectal] 	√	X	Insufficient

Biomarker Tests of Cancer Tissue Evidence Summary

Test	Analytic Validity	Clinical Validity	Clinical Utility
<ul style="list-style-type: none"> MammaPrint® [Breast] IHC4 [Breast] Mammostrat® [Breast] 	Insufficient	√	Insufficient
<ul style="list-style-type: none"> Prolaris® [Prostate] Oncotype Dx® [Prostate] Multiple molecular testing [Bladder, Breast, Colorectal, Lung, Melanoma, Prostate] 	Insufficient	Insufficient	Insufficient

Biomarker Tests of Cancer Tissue

Public Comment Summary

- Support of MSI test for colorectal cancer
- Support of BRAF test for melanoma
- Support of EGFR test for non-small cell lung cancer
- Support for Prolaris[®] and Oncotype Dx[®] for prostate cancer

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Table of Contents

Commenters.....	1
Public Comments	2
References Provided by Commenters	14

Commenters

Identification	Stakeholder
A	Oncology and Genetics Clinical Nurse Specialist, Providence Cancer Center
B	Senior Director, Health Policy & Reimbursement, Roche Diagnostics Corporation North America
C	President and CEO, ZERO - The End of Prostate Cancer
D	Genetic counselor, Myriad Genetic Laboratories (which performs the Prolaris® test)
E	Urologist, Oregon Urology Institute

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Public Comments

Ident.	#	Comment	Disposition
A	1	<p>The National Comprehensive Cancer Network (NCCN), the American Society of Clinical Oncology (ASCO), and the European Society for Clinical Oncology (ESMO) recommend routine microsatellite instability (MSI) testing of either all colorectal (CRC) tumors, or all CRC <70 years, with MSI testing of those >70 if Bethesda guidelines are met. Universal screening for MSI identification is more sensitive than following previously established testing criteria using Bethesda and/or Amsterdam criteria (Balmana, J, et al, 2013).</p>	<p>NCCN guidelines are considered in the CG document. As noted in Table 6, NCCN rates evidence about MSI as category 2A, “based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate.” Screening of colon tumor tissue may be done with either MSI or IHC testing, and IHC is considered the more cost-effective option.</p> <p>The AHRQ review found evidence of analytic and clinical validity for MSI testing, but did not identify evidence of improved patient outcomes. Therefore there is not yet evidence of clinical utility.</p> <p>There are also appropriate, perhaps more cost-effective alternatives available, therefore MSI is not recommended for coverage.</p>
A	2	<p>The rationale for routine MSI testing is for its potential to identify individuals with Lynch Syndrome (aka Hereditary non-polyposis colorectal cancer syndrome - HPNCC). Lynch Syndrome is inherited in autosomal dominant fashion and is estimated to be the cause of 2-4% of colorectal cancers.</p>	<p>This background information is correct.</p>
A	3	<p>MSI testing to detect Lynch Syndrome affects the care of colorectal cancer patients. The diagnosis of Lynch Syndrome is useful for determining optimal surgical management in colorectal cancer patients (Balmana, J (2013).</p>	<p>See comment A1. Identifying a syndrome which would affect planning and screening would be an important patient oriented outcome. However, there is an alternative available and there is currently insufficient</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
			evidence of clinical utility.
A	4	Patients with Lynch Syndrome are on average, younger at diagnosis, and MSI is associated with improved prognosis. Therefore, the identification of Lynch Syndrome affects the management of colorectal cancer survivors.	<p>AHRQ meta-analysis of 6 studies (total N = 3439) found an overall hazard ratio for cancer-specific survival for patients with MSI-H (microsatellite instability high) tumors compared with MSS (microsatellite stability) tumors of 0.63; 95% CI, (0.51 to 0.79). Risk of bias was rated as medium.</p> <p>MA of 12 studies (total N = 8839) rated as low or medium risk of bias found an overall hazard ratio for overall survival for patients with MSI-H compared with MSS of 0.57; 95% CI (0.43 to 0.77).</p> <p>Despite these numbers, AHRQ found no direct evidence that using the test was related to improved outcomes for patients, even in the cases such as this one where tests had evidence of clinical validity. In other words, there is not yet proof of clinical utility and alternatives are available.</p> <p>Therefore, HTAS has made a weak recommendation against coverage.</p>
A	5	Colorectal cancer patients with Lynch Syndrome are at significantly increased risk for 2nd primary colorectal cancers. Colonoscopy every 1-2 years is recommended by the NCCN for people with Lynch Syndrome.	This NCCN recommendation is correct. See A3.
A	6	Women with Lynch Syndrome are also at substantially increased risk for endometrial and ovarian cancer, which can be prevented with surgery after childbearing is complete.	This is correct. See A3.
A	7	In 2009, the Evaluation of Genomic Applications in Practice and Prevention (EGAPP), a CDC working group, recommended routine MSI testing of all newly diagnosed colorectal cancer. The EGAPP working group concluded that	The EGAPP report from 2009 is considered in the AHRQ review that

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
		there was sufficient evidence to support routine MSI testing of patients with newly diagnosed colorectal cancers in order to achieve improved health outcomes for their relatives.	provided the basis of this CG document (reference #1096). Discussion of MSI testing from the AHRQ review has been added to the CG document; AHRQ found insufficient evidence of clinical utility as discussed above.
A	8	In genetics, the standard of care is to consider relatives when choosing tests. This is commonly at odds with the structure of health care reimbursement in the United States. Individuals often have insurance benefits that are dependent on genetic test information from relatives. For individual patients and families at risk for Lynch Syndrome, testing colon tumors for MSI as a first step is usually less expensive and more efficient than initiating testing for germline Lynch Syndrome-causing mutations first, especially in unaffected relatives.	Commenter notes that testing tumors for MSI is more cost-effective than alternatives; no new sources are cited.
A	9	Thank you for your consideration of Oregon Health Plan coverage for routine MSI testing. Please contact me if I can be of assistance.	Thank you for your comments.
B	10	Dear Health Evidence Review Commission Members: On behalf of The Roche Group (“Roche”), a global leader in research-focused healthcare with combined strengths in pharmaceuticals and diagnostics, I am pleased to submit comments in response to the draft coverage guidance from the Health Evidence Review Commission (“the Commission”) entitled “Biomarker Tests of Cancer Tissue for Prognosis and Potential Response to Treatment”.	Thank you for your comments.
B	11	In the draft coverage guidance, the Commission recommends (with a strong recommendation) for coverage of BRAF gene testing for melanoma and epidermal growth factor receptor (EGFR) gene mutation testing for non-small-cell lung cancer (NSCLC). Roche applauds the strong recommendation from the Commission regarding BRAF gene mutation testing for melanoma and EGFR gene mutation testing for NSCLC.	Thank you for your comments.
B	12	BRAF Test Citing a Blue Cross Blue Shield Technology Evaluation Center report, the Commission noted that the evidence supports the clinical validity and utility of the cobas® 4800 BRAF V600 Test1 in “[U]sing the test to select patients for treatment results in improved outcomes compared to the usual standard of care.”	This is correct.
B	13	The Commission’s recommendation is also supported by the National Comprehensive Cancer Network Guidelines (NCCN). ² The Roche cobas® 4800 BRAF V600 test received FDA approval as a test to determine the tumor mutational status and as a companion diagnostic to vemurafenib (Zelboraf™). The drug’s “Indications and Usage” section of its labeling specifically notes the use of an FDA approved test: <i>“ZELBORAF™ is a kinase inhibitor indicated for the treatment of patients with unresectable or metastatic melanoma with BRAFV600E mutation as detected by an FDA-approved test.”</i> (3)	This background information from NCCN is correct.

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
B	14	<p>EGFR Test</p> <p>Based on its evaluation, the Commission found that there was sufficient evidence demonstrating that the test was more effective and had similar or less risk than the alternatives. While the reports referenced in the development of this guideline note the differing opinions regarding the usefulness of the test in affecting outcomes, we support the Commission’s decision to give the test a strong recommendation.</p>	Thank you for your comments.
B	15	<p>This position is consistent with the NCCN Guidelines on NSCLC which recognize EGFR variants as critical considerations in the selection of targeted therapies for patients with NSCLC. (4)</p>	This is correct.
B	16	<p>The Roche cobas® EGFR Mutation Test also received FDA-approval as a companion diagnostic to erlotinib (Tarceva®) and the drug’s “Indications and Usage” section of its labeling specifically notes the use of an FDA approved test:</p> <p><i>“First-line treatment of patients with metastatic non-small cell lung cancer (NSCLC) whose tumors have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations as detected by an FDA-approved test.” (5)</i></p>	Thank you for your comment. HTAS recommends coverage for EGFR in non small cell lung cancer.
B	17	<p>The Commission’s decision to support the use of BRAF and EGFR biomarker tests for the prognosis and potential response to treatment is consistent with that of numerous Medicare Administrative Contractors (MACs) including Palmetto GBA that have decided to provide coverage for these tests under the Medicare program. Palmetto administers Medicare’s Molecular Diagnostics Services Program (MolDX), a program that was developed to identify and establish coverage and reimbursement for molecular diagnostic tests. Palmetto, in reviewing the clinical evidence on BRAF and EGFR, developed coverage policies specifically calling out the use of an FDA-approved companion diagnostic in order to receive coverage for the EGFR and BRAF tests.</p>	Thank you for the information.
B	18	<p>We appreciate the opportunity to submit comments on this draft coverage guidance and, again, strongly support the position taken by the Commission.</p>	Thank you for your comments.
C	19	<p>I write today on behalf of ZERO – The End of Prostate Cancer, a national nonprofit organization dedicated to ending prostate cancer. In 2015 alone, more than 228,000 men will be diagnosed with prostate cancer. More than 90 percent of these new cases will be diagnosed at an early stage when the possibility of cure is best.</p>	Thank you for your comments.
C	20	<p>There is a significant problem with over- and under-treatment in prostate cancer which results in some men receiving unnecessary treatments with significant side effects, and some men dying unnecessarily of prostate cancer. Risk stratification in prostate cancer is significantly improved with the addition of genomic testing tools. These tools provide valuable information about how the prostate tumor will behave and the possibility that the cancer will kill helping to shape treatment plans. The National Comprehensive Cancer Network (NCCN) guidelines suggest considering tumor based molecular testing to guide treatment, specifically Oncotype Dx for prostate and Prolaris.</p>	The AHRQ review used as a basis for the coverage guidance found that direct evidence is insufficient to establish the analytic validity, clinical validity, or clinical utility of either test (Prolaris® or Oncotype Dx®).

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
C	21	ZERO does not endorse specific products, treatments or brands but we strongly believe that patients should have access to the full array of available tools to make an informed and educated decision about their treatment. We encourage you to approve coverage for the existing molecular tests to improve and save lives of men diagnosed with prostate cancer. As President and CEO of ZERO - The End of Prostate Cancer, I encourage you to consider the thousands of men that can be negatively impacted by not covering these tests.	Thank you for your comments.
D	22	Thank you for the opportunity to comment on HERC’s draft biomarker coverage guidance; our comments are particular to Prolaris®, Myriad’s prostate cancer prognostic test. We are encouraged by HERC’s recognition of the need for additional prognostic tests for prostate cancer. Currently available clinical and pathologic parameters are limited in their ability to distinguish between aggressive and indolent localized prostate tumors. (1-3)	References 1-2 describe PSA as a screening tool for prostate cancer, which is outside the scope of this document. Reference 3 is a validation study of CAPRA, a risk assessment tool for cancer recurrence after radical prostatectomy. This study of 2,096 men in a military database found that “Increasing CAPRA scores were significantly associated with increasing risk of adverse pathologic outcomes.”
D	23	Despite a 10-year mortality risk of only 3% (4) and knowledge that many prostate cancers do not cause death when initial management is conservative, nearly 90% of men receive definitive treatment, with the potential for significant treatment-related side effects. (5-8) Under-treatment of men with more aggressive tumors also remains a significant clinical risk. (4)	SEER reports a 98.9% survival rate at 5 years; 10-year survival was not available at the link provided in reference 4 . This link also did not opine on the dangers of undertreatment. Reference 5 is a case vignette. Reference 6 , Wilt 2012, is an RCT (N=731) of observation vs radical prostatectomy for localized prostate cancer, which found no significant difference in all-cause or cancer-specific mortality through 12 years of follow-up. Reference 7 is a descriptive analysis of trends in cancer treatment,

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
			<p>highlighting substantial, unexplained variability in management. The 90% figure provided in the comment is not supported.</p> <p><u>Reference 8</u> is a retrospective cohort study (N=32,465) of men who underwent surgery or radiotherapy for prostate cancer, which found that complications of treatment are frequent.</p>
D	24	Clinical validity studies in varied patient cohorts demonstrate Prolaris' consistent ability to better stratify patients based on meaningful oncologic endpoints. ⁹⁻¹⁴	<p><u>References 9, 10, 11, and 12</u> provide the basis for the analysis done by BCBS, which is the core source for the CG document. The authors conclude that "As a whole, the evidence on clinical validity ... is insufficient."</p> <p><u>Bishoff 2014 (reference 13)</u> was published after the BCBS search date. It is a cohort study (N=582) in which the CCP score (Prolaris® test) was performed on actual or simulated biopsy specimens, and records were analyzed for biochemical recurrence (BCR, defined as postoperative PSA greater than 0.2 ng/ml or secondary treatment [radiation or androgen therapy] for increasing PSA regardless of attaining the 0.2 ng/ml cutoff point) and metastatic disease. No other outcomes were reported (OS, DSS, etc).</p> <p>Because of small sample size and lack of reporting on critical and important</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
			<p>outcomes, HTAS does not consider this evidence sufficient to recommend coverage.</p> <p><u>Reference 14, Cuzick 2014</u>, is not a peer-reviewed publication.</p>
D	25	<p>Clinical utility studies show that physicians and patients use this new information to alter medical management based on the level of risk predicted by the Prolaris score.¹⁵⁻¹⁷ Prolaris’ net effect is to reduce the treatment burden for localized prostate cancer.¹⁵⁻¹⁷</p>	<p>BCBS did not identify any published data on clinical utility. <u>Shore 2013 (Reference 15)</u> was published after the BCBS search dates; however it would not have been included because it relied on a retrospective questionnaire administered to 15 community urologists. HTAS does not consider this sufficient evidence to guide coverage recommendations.</p> <p><u>Reference 16 (Crawford 2014)</u> was done similarly, but in a pre-post style survey of clinicians treating 331 patients. It concludes that CCP testing changes treatment decisions in about 65% of cases. Number of clinicians is not stated and it is unknown how patients were selected for CCP testing. Actual treatment decisions were only available for 116 cases and showed 80% concordance with the survey. This study is not of sufficient quality to alter HTAS decision.</p> <p><u>Reference 17 (Gonzalگو 2014)</u> is not a peer-reviewed publication.</p>
D	26	<p>Independent studies suggest that reducing unnecessary interventions reduces morbidity without increasing mortality.^{6,18,19} This shift away from unnecessary treatments yields cost-savings to the healthcare system.</p>	<p><u>Reference 18</u> is a guideline panel report from 1995 and is not relevant</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
			<p>in the current environment.</p> <p><u>Reference 19</u> is a simulation model of a hypothetical cohort demonstrating that active surveillance is a viable option under a wide range of assumptions. This does not inform the HTAS decision on coverage.</p> <p>The subcommittee discussed that avoidance of unnecessary aggressive treatment is an important outcome; however, there is insufficient evidence that this test reduces aggressive treatment more effectively than other existing tools.</p>
D	28	<p>Prolaris received a favorable technical assessment by MoDX²² and has been incorporated into treatment guidelines²³. Based on this new information, we request coverage for Prolaris for beneficiaries with biopsy-proven, localized prostate cancer when a clinician requires additional patient-specific information to make treatment recommendations.</p>	<p>It is correct that a LCD has recommended coverage under very specific clinical conditions and only when the ordering physician is certified in the Myriad Prolaris Certification and Training Registry.</p> <p>NCCN states certain men “could consider” biomarker testing in its 2015 guidelines for risk stratification, stating “clinical utility awaits evaluation by prospective, randomized clinical trials, which are unlikely to be done [because the tests are being marketed under the less rigorous FDA regulatory pathway for biomarkers].” The subcommittee determined that coverage should not be recommended unless the biomarker test has greater utility than</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

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			existing technology for patient-centered outcomes such as avoidance of surgery or cancer related mortality.
D	29	<p>Evidence: Analytical Validation: Prolaris has well-established analytical validity published and documented in:</p> <ul style="list-style-type: none"> • Cuzick (2011)⁹ (selection process for cell cycle progression genes; development of Prolaris score) <p>Technical specifications (http://www.prolaris.com/information-for-physicians/pathology/technical-specifications/).</p>	See comment D24, this study was considered by the core source and deemed insufficient to establish clinical validity of the test. .
D	30	<p>Clinical Validation:</p> <p>Prolaris was clinically validated in nine cohorts involving >2,900 patients, published in five peer-reviewed publications⁹⁻¹³ and one poster presentation¹⁴. The HERC review accurately states that some cohorts include management approaches not representative of the population of interest; however, each study’s goal was to demonstrate the Prolaris score’s prognostic significance in treated patients (prostatectomy cohorts) and conservatively managed patients (TURP and biopsy cohorts). The Prolaris score was consistently predictive of meaningful oncologic outcomes (recurrence or disease-specific mortality) with similar hazard ratios around two, and multivariate analyses demonstrated the Prolaris score added significant unique, prognostic information beyond that obtained from standard clinico-pathologic variables.</p>	See comment D24.
D	31	<p>The validation cohorts/outcomes are listed below:</p> <ul style="list-style-type: none"> • Cuzick (2011)⁹ - 353 post-prostatectomy/biochemical recurrence; 337 conservatively managed/10-year mortality • Cuzick (2012)¹⁰ - 349 conservatively managed/10-year mortality • Cooperberg (2013)¹¹ - 413 post-prostatectomy/biochemical recurrence • Freedland (2013)¹² - 141 post-radiation/biochemical recurrence • Bishoff¹³ (2014 - published after the last BCBSA TEC review) – post-prostatectomy (biopsy samples)/biochemical recurrence (283) or metastatic disease (299) <p>Cuzick (2014)¹⁴ - 757 conservatively managed/disease specific mortality</p>	<p>See Comment D24. Cuzick 2011, Cuzick 2012, Cooperberg 2013, and Freedland 2013 are all considered in the core source and found to be insufficient to establish clinical validity of the test.</p> <p>Bishoff 2014 is a multicenter retrospective cohort study (N = 582) in which CCP score is associated with biochemical recurrence and metastatic disease. The study has methodologic limitations including lack of standardization of patient selection and biopsy methods across centers. While this study despite its</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

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			<p>limitations may support clinical validity, there is no evidence linking the CCP score to critical outcomes such as mortality, or changes in treatment.</p> <p>Cuzick 2014 is not a peer-reviewed publication.</p>
D	32	<p>Clinical Utility:</p> <p>The Center for Medical Technology Policy (CMTTP) recognizes that prospective randomized controlled trials of molecular diagnostics in oncology may not be necessary when evidence exists linking treatment choices to patient outcomes.²⁰</p>	<p>The source provided is a PowerPoint presentation from the Center for Medical Technology Policy and in fact states that “Under limited, specified circumstances, longitudinal observational study designs are acceptable options for assessing clinical utility,” and that there must be a “compelling rationale” for not doing RCT. This rationale does not exist in prostate cancer; prospective RCTs are feasible and ethical.</p>
D	33	<p>CMTTP suggests prospective observational studies to demonstrate clinical utility in specified circumstances, including when “there is genuine uncertainty on the part of the expert medical community regarding the preferred clinical pathway;” as is the case for localized prostate cancer. Prolaris’ clinical utility is documented in two decision impact studies^{15,16}. A third, larger study is underway; preliminary results were presented in poster form¹⁷ and a manuscript has been submitted for publication.</p> <ul style="list-style-type: none"> • Shore (2013)¹⁵ - Hypothesis-generating retrospective survey of 15 urologists participating in a clinical validation trial revealed that Prolaris would have led to a change in management for 32% of the 294 cases, with a net-effect of shifting from more aggressive to more conservative treatment. • Crawford (2013)¹⁶ – Prospective study evaluated the impact of Prolaris for 150 physicians in 31 states ordering Prolaris on prostate cancer needle biopsy specimens from 305 patients (low, intermediate and high-risk groups). Surveyed physicians reported that Prolaris influenced their decisions 98% of the time, with a change in recommendations post-Prolaris for 65% of cases. Prostatectomies were reduced by 49.5%; radiation was 	<p>Please see above.</p> <p>Shore 2013 was a small retrospective survey.</p> <p>Crawford 2013 had a high loss to follow-up and, in those cases that were audited, an 80% concordance with actual treatment.</p> <p>Gonzalgo is a poster presentation that is not published in a peer-reviewed journal. It is a prospective registry of 816 patients assessing how a physician’s recommended treatment</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
		<p>reduced by 29.6%. Actual treatment selections were confirmed via third-party patient chart audit.</p> <p>Gonzalgo¹⁷ - PROCEED-1000 is the largest clinically-controlled, prospective registry evaluating Prolaris' impact on prostate cancer treatment by 105 physicians from 20 states, including Oregon. In addition to physician recommendations pre- and post-Prolaris testing, physician/patient consensus treatment decisions and actual treatment administered are evaluated. Interim analysis of 816 patients shows Prolaris resulted in significant reductions in prostatectomies (27%), radiation therapy (44% primary; 56% adjuvant), brachytherapy (46% interstitial, 66% HDR) and hormonal therapy (33% neoadjuvant, 68% concurrent). For every 1-unit increase in mortality risk by Prolaris, there was an associated 3.3% rise in the odds of increase in treatment (vice-versa for decrease in treatment) (estimated OR = 1.033).</p>	<p>was altered by CCP testing. Treatment plans changed in 44.24% of cases, with the majority (31.86%) having less treatment than initially recommended. This is an interim analysis and does not consider critical outcomes such as mortality.</p>
D	34	<p>Positive Technical Assessment and Medicare coverage:</p> <p>MolDX performs technical assessments for Medicare contractors, evaluating clinical utility, analytical validity and clinical validity based on 'ACCE' criteria developed by CDC.²¹ Prolaris received a favorable evaluation by MolDX, and an LCD (MolDX: Prolaris™ Prostate Cancer Genomic Assay L35629, effective March 2, 2015) provides coverage for Medicare beneficiaries with biopsy-proven, untreated localized prostate cancer in low and very low-risk groups.²² Additional registry data and treatment guidelines are being reviewed to consider expanding coverage to intermediate and high-risk cohorts, since clinical validation and clinical utility studies support benefits for all risk levels.</p>	<p>Please see comment D28.</p>
D	35	<p>Societal Guidelines:</p> <p>National Comprehensive Cancer Network (NCCN) 2015 Prostate Cancer treatment guidelines were updated October 24, 2014 to include Prolaris.²³ Footnote 'b' on page PROS-1 suggests Prolaris be considered in the initial clinical assessment of men with clinically localized disease who are symptomatic or with a life expectancy of >5y, to better stratify risk of adverse outcome (and therefore guide treatment decisions).</p>	<p>NCCN states "could consider," please see Comment D28.</p>
D	36	<p>Cost-Benefit to Healthcare System:</p> <p>A system economic analysis of Prolaris demonstrated a net savings of \$2,850 per patient tested over 10 years. (24) Savings result from increased use of active surveillance in low- and intermediate-risk patients, and reduced progression rates in high-risk patients with more aggressive disease who transition to multi-modality therapy. The model estimates over \$1 million in savings per year for the Oregon Health Plan with the use of Prolaris for all localized prostate cancer compared with the current approach.</p>	<p><u>Reference 24</u> is not a peer-reviewed publication.</p> <p>Thank you for your comments.</p>
E	37	<p>I am a practicing urologist in Springfield with a large population of prostate cancer patients. I strongly urge you to consider coverage through Oregon Medicaid.</p>	<p>Thank you for your comments.</p>
E	38	<p>I have used the test for more than a year and have found it quite beneficial in the decision-making process for treatment</p>	<p>Thank you for your comments.</p>

HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

Ident.	#	Comment	Disposition
		of prostate cancer.	
E	39	As you may know, prostate cancer is the most common malignancy in men and the second cause of cancer death.	This information is correct.
E	40	Some cancers are aggressive and need aggressive treatments. Others can be monitored without treatment. Risk stratification is key. The Prolaris test is a useful component of our decision-making process as we decide whom to treat and whom to observe. This has been recognized by the National Comprehensive Cancer Network (NCCN) in their treatment guidelines – arguably the gold standard for cancer treatment.	NCCN guidelines are discussed in the CG document under “Policy Landscape”.
E	41	I appreciate your consideration in this matter	Thank you for your comments.

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HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

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HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

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HERC Coverage Guidance – Biomarker tests of cancer tissue for prognosis and potential response to treatment Disposition of Public Comments

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