Health Evidence Review Commission's Value-based Benefits Subcommittee

(with links to references added)

March 14, 2019

8:30 AM - 1:00 PM

Human Services Building
Rooms 137 A-D
500 Summer Street, Salem Oregon 97301

Section 1.0

Call to Order

AGENDA
VALUE-BASED BENEFITS SUBCOMMITTEE
3/14/2019
8:30am - 1:00pm
Human Services Building, Rooms 137 A-D
500 Summer Street NE
Salem Oregon
A working lunch will be served at approximately 12:00 PM
All times are approximate

I. Call to Order, Roll Call, Approval of Minutes – Kevin Olson **8:30 AM**

II. Staff report – Ariel Smits, Cat Livingston, Darren Coffman **8:35 AM**

III. Straightforward/Consent agenda – Ariel Smits **8:40 AM**
1) Straightforward code change table
2) Straightforward guideline corrections

IV. 2020 Biennial Review
A. Reprioritization of certain chronic pain conditions **8:45 AM**

V. Previously discussion items **10:45 AM**
A. Pulmonary rehabilitation

VI. New discussion items **11:00 AM**
A. Non-invasive testing for liver fibrosis guideline
B. Endometrial ablation requirements for menstrual bleeding disorders
C. Posterior urethral valves
D. Breast MRI for breast cancer screening in breast cancer survivors
E. Indications for adenotonsillectomy/tonsillectomy
F. Embolization of vascular malformations
G. Injections for plantar fasciitis
H. Screening for ophthalmologic complications of high-risk drugs
I. Shoulder decompression surgery for shoulder impingement syndrome
J. Guideline note 172/173 modifications

VII. Coverage guidances **12:15 PM**
A. Newer Interventions For Osteoarthritis Of The Knee

VIII. Public comment **12:55 PM**

IX. Adjournment – Kevin Olson **1:00 PM**

Value-based Benefits Subcommittee Recommendations Summary
For Presentation to:
Health Evidence Review Commission on January 17, 2019

For specific coding recommendations and guideline wording, please see the text of the 1/17/2019 VbBS minutes. Note that due to the length of other items on the 1/17/2019 HERC agenda, only an update on the Chronic Pain Task Force proposal was heard. The remainder of the items will be heard at a future HERC meeting as time allows.

RECOMMENDED CODE MOVEMENT (effective 10/1/2019 unless otherwise noted)

- Add the diagnosis code for failure to thrive in children to a covered line
- Delete the procedure codes for procalcitonin and fecal calprotectin testing from an uncovered line and suggested for addition to the Diagnostic Procedures File
- Make various straightforward coding changes
- Add the Diabetes Prevention Program (DPP) codes to the obesity line

RECOMMENDED GUIDELINE CHANGES (effective 10/1/2019 unless otherwise noted)

- Make various straightforward guideline note changes
- Modify the guideline on human donor breast milk for high risk infants
- Modify the DPP guideline and overweight and obesity guideline to enable coverage of the DPP program for obesity, along with other various straightforward changes

BIENNIAL REVIEW CHANGES (effective 1/1/2020)

- Create a new line above the funding line for hidradenitis suppurativa with a new guideline
- Create a new line above the funding line for minimally invasive surgery for sacroiliac joint dysfunction

VALUE-BASED BENEFITS SUBCOMMITTEE
Wilsonville Holiday Inn, Dogwood Room
25425 SW 95th Ave, Wilsonville, Oregon
January 17, 2019
8:00 AM – 1:00 PM

Members Present: Kevin Olson, MD, Chair; Mark Gibson (at 8:15); Holly Jo Hodges, MD; Gary Allen, DMD (via phone), Adriane Irwin, PharmD (via phone until 10:00, in person beginning at 11:15)

Members Absent: Vern Saboe, DC

Staff Present: Darren Coffman; Ariel Smits, MD, MPH; Cat Livingston, MD, MPH; Daphne Peck; Dana Hargunani, MD

Also Attending: Renae Wentz, MD, Mark Altenhofen, Saerom England, and Wally Shaffer, MD (Oregon Health Authority); Adam Obley, MD and Craig Mosbek (OHSU Center for Evidence-based Medicine); Dr. Julie Dhossche and Dr. Tracy Fett (OHSU); Carolyn Concia, NP; Amara M, Windy Sinclair and Sue Griffin, Oregon Pain Action Group; Margaret Olmon and Laura Jeffcoat (Abbvie); Kristin McGarity; Crispin Davies; Jill Joines, Stacey Bunk, Shannon Russell, Amin Medjamia, Erik Schurlwolf, and Channing Wyles (Abiomed); Cherry Amabisca; Erin Hanussak; Jess Flaum (Lund Report); Laura Dolph; Jaqueline Conner; Barbara Culpepper; Todd Caulfield, MD (Providence).

- **Roll Call/Minutes Approval/Staff Report**

  The meeting was called to order by Chair Olson at 8:10 am and roll was called. Minutes from the November 8, 2018 VbBS meeting were reviewed and approved.

  Smits reviewed the HERC change in the VbBS placement recommendation for the new 2019 CPT code for home administration of subcutaneous immunotherapy to line 660, as the MED report supports this change. There was no discussion; this was an informational item only.

- **Topic: Straightforward/Consent Agenda**

  Discussion: There was no discussion about the consent agenda items.

  Recommended Actions:
  1) Add CPT 44320 (Colostomy or skin level cecostomy) to line 239 CANCER OF OVARY
  2) Add CPT 68110-68130 (Excision of lesion, conjunctiva) to lines 113 CANCER OF EYE AND ORBIT and 310 CORNEAL OPACITY AND OTHER DISORDERS OF CORNEA
  3) Add CPT 68135 (Destruction of lesion, conjunctiva) to line 310 CORNEAL OPACITY AND OTHER DISORDERS OF CORNEA
  4) Remove CPT 28111-28114 (Ostectomy, metatarsal head) from line 359 DEFORMITY/CLOSED DISLOCATION OF JOINT AND RECURRENT JOINT DISLOCATIONS
  5) Modify guideline note 137 as shown in Appendix A

6) Remove HCPCS G0513 and G0514 (Prolonged preventive service(s)) from all current lines except for Line 3 PREVENTION SERVICES WITH EVIDENCE OF EFFECTIVENESS

MOTION: To approve the recommendations stated in the consent agenda. CARRIES 4-0. *(Absent: Gibson)*

- **Topic: 2020 Biennial Review: Chronic Pain Taskforce report/reprioritization of certain chronic pain conditions**

Discussion: Hargunani gave an introduction and review of the process to date. Smits presented the December 2018 Chronic Pain Taskforce recommendation with subsequent staff changes.

In the proposed new guideline for the new chronic pain line, there was discussion about the need for training in pain science for providers "managing" or "seeing" patients. Members noted that they agreed with the staff attempt to only require training in pain science for those providers who were managing the chronic pain for the patient, as opposed to specialists who only care for one aspect of the patient such as a cardiologist. HERC staff was requested to identify better wording for this section.

The section of the proposed new guideline for the new line regarding prescribing opioid pain medications generated considerable discussion. The clause that "No concurrent prescribing of benzodiazepines without extenuating circumstances" was felt to be too vague. Most members thought there were no extenuating circumstances. If this phrase is kept in, Hodges requested that what circumstances might be considered should be spelled out. The clause that "Careful reassessment of the evidence of individual benefits and risks should be undertaken for dosages > 50 MED. Dosages >90 MED should be avoided or carefully justified" was felt to be problematic. Hodges wondered if this wording contradicted national and state guidelines. Hargunani replied that this wording actually aligns with state and national guidelines. There was discussion about the requirement to address mental health issues. What if mental health resources are limited and the patient's mental health issues cannot be adequately addressed. Hodges noted that telemedicine and OPAL-A are available as resources to help manage mental health. Irwin requested that a requirement for naloxone co-prescribing be added to this section. Livingston expressed concern that such a change would not be in line with a payer policy; rather, it would be more of a practice guideline. There were questions about what would happen if the prescriber for the opioid did not provide this prescription? It was noted that pharmacists in Oregon can prescribe naloxone if needed. Hodges advocated for adding a clause requiring naloxone as it focuses on patient safety. As one last comment on this section, Olson requested that the patient requirements and the provider requirements be grouped together for clarity.

Next, the group discussed the opioid tapering section of the new guideline. The introductory line was noted to be confusing and not needed. The group suggested deletion. There was then discussion about whether the requirement for tapering patients with fibromyalgia off opioids was intended to apply to prescriptions for fibromyalgia or does it to apply to patients with fibromyalgia who may be getting opioid prescriptions for other indications. The group felt that the intent was it should apply to opioid prescriptions for fibromyalgia. A patient with fibromyalgia with another painful condition such as cancer may receive opioid prescriptions for that other diagnosis.

There was no discussion regarding line scoring, the additional changes suggested for the back medication or back opioid guideline, the acupuncture guideline or the deletion of the fibromyalgia guideline.

Public Testimony

Amara (advocate, Oregon Pain Action Group) testified that she has chronic back pain due to a back injury. She feels this proposal is cruel and unusual punishment. Policies like these are creating pain refugees. Affects children of whose parents are affected by this proposed policy.

Kristin McGarity: Has interstitial cystitis, a condition that doctors used to think that opioids did not treat. However, high dose opioids is now known to help. Unidirectional tapers do not allow re-evaluation of the risk/benefit analysis. This proposal needs a clear appeal process. Doctors are not perfect. One doctor makes a bad call, and you are tapered for life. The resources reviewed by the Taskforce and VbBS are all from one viewpoint. Chronic pain is more than pain that continues beyond tissue healing. Some things just don't heal. Policy does not account for new evidence, or for new understanding of disease. Stop making individual decisions from population-based data.

Cherry Amabisca: CCOs are right about increased costs in this proposal. Big increase in cost for alternate therapies to reduce a small amount of opioids that are being prescribed for this population. She is concerned about conflict of interest for members of taskforce due to more patients coming into their practice or grants or other funding they might receive. According to Dr. Hedberg, 144 prescription opioids deaths in Oregon (Medicaid plus all other payers). Opioid crisis peaked and is coming down. Why are you punishing patients? Objects to tapering off opioids for back conditions. Her experience is that CCOs are not enforcing opioid tapers for back conditions.

Windy Sinclair: founder of Oregon Pain Action Group. If the intent of the Commission is only adding services, then there is no need for the paragraph on opioid tapering, this is taking away treatment for some patients. Concerned for patients with fibromyalgia. People are getting letters from Medicaid that their doctors are getting instructed to taper them off opioids. Decisions of HERC have unintended consequences—feeds into environment that is shaming chronic pain patients. Absolute need for individualized medical care that allows doctors to give appropriate medical care. Each patient is unique. Don't dictate how doctors practice medicine. Does not agree with statement that opioids are harmful for fibromyalgia. Many fibromyalgia patients are greatly benefiting from opioids. Patients don't take opioids when not effective.

Jacqueline Connor: patient with fibromyalgia and spine conditions. Spent years resisting opioid therapy, not able to work. Starting opioids 15 years ago, which allowed her to work and care for herself. When CDC opioid prescribing guidelines came out, her doctor tapered her dose by 80% in 10 days. Has not been able to work, very limited in functionality since that taper. Blanket statement that opioids don't work are wrong. Interferes with doctors' ability to treat their patients. Oregon law passed in 2006 controlling Sudafed, but meth related deaths are higher than ever---- taking this med away did not help. Chronic shortage in mental health care is another concern.

Carolyn Concia: geriatric NP in private practice. Concerned about patients getting forced tapers off opiates, being forced to say they are drug addicts. Reccommends adding an ethicist on the commission.

The VbBS decided that staff should work on the sections of the proposal that they had identified as needing further work and bring back suggested changes to the March 2019 VbBS meeting.

Recommended Actions:

1) HERC staff to address the issues raised by VbBS members, along with consideration of public testimony, and bring a revised proposal back to the March 2019 VbBS meeting

- **Topic: 2020 Biennial Review: hidradenitis suppurativa**

Discussion: Smits reviewed the summary document. Dr. Julie Dhossche and Dr. Nicole Fett form OHSU Dermatology provided a presentation about the nature and treatment of hidradenitis suppurativa (HS).

There was discussion about how long adalimumab/Humira therapy would be continued if it was effective. Fett indicated that therapy would be indefinite, similar to other chronic autoimmune diseases. Hodges asked whether HS was autoimmune. Fett responded that it is autoinflammatory, with increase in inflammatory cytokines, rather than autoimmune with a measurable autoantibody.

Hodges wondered if adalimumab therapy would reduce scarring. Fett indicated that the scarring is permanent; adalimumab treats the malodorous discharge, pain, etc.

Hodges asked whether Hurley staging is standard. Fett responded that it is, and it would be reasonable to request Hurley staging from a dermatologist on something like a PA form.

Gibson raised concerns about the risks of Humira. Smits reviewed P&T review of adverse events showing similar rates with Humira vs placebo. Fett also noted that untreated HS increased risk of squamous cell cancer (1-2%).

There was discussion that adalimumab is effective only in a subset of people. The guideline as written was expected to determine which patients benefit. There was also discussion regarding the cost of adalimumab. Dhossche noted that use may reduce cost of ER visits, etc. Wentz also noted that the cost effectiveness of conventional therapy is low and the cost effectiveness of Humira in responding patients is considered reasonable.

Recommended Actions:

1) Create a new line and guideline with line scoring as shown below
2) Leave ICD-10 L73.2 (Hidradenitis suppurativa) on line 512 for cases not meeting the new guideline requirements, and rename this line 512 MILD HIDRADENITIS SUPPURATIVA; DISSECTING CELLULITIS OF THE SCALP

HERC staff proposed line scoring (current scores for line 512 in parentheses)

Category 7 (7)
Impact on Healthy Life Years 3 (2)
Impact on Pain and Suffering 4 (3)
Population effects 0 (0)
Vulnerable populations 0 (0)
Tertiary prevention 2 (1) (decreases risk of scarring down axilla; abscesses)

Effectiveness 2 (1)
Need for treatment 1 (1)
Net cost 2 (4)
SCORE 360 (120), approximate new line 418 (512)

Line: XXX
Condition: MODERATE TO SEVERE HIDRADENITIS SUPPURATIVA
Treatment: MEDICAL AND SURGICAL THERAPY
ICD-10: L73.2 (Hidradenitis suppurativa)
CPT/HCPCS: those currently appearing on line 512 HIDRADENITIS SUPPURATIVA; DISSECTING CELLULITIS OF THE SCALP

GUIDELINE NOTE YYY, HIDRADENITIS SUPPURATIVA

Line XXX, 512

Hidradenitis suppurativa is included on line XXX only for moderate to severe disease (e.g. Hurley Stage II or Hurley Stage III); otherwise this condition is included on line 512.

Initial treatment with adalimumab is limited to adults whose disease has not responded to at least a 90-day trial of conventional therapy (e.g., oral antibiotics), unless such a trial is not tolerated or contraindicated. Treatment with adalimumab after 12 weeks is only included on line XXX for patients with a clear evidence of response, defined as:

1. a reduction of 25% or more in the total abscess and inflammatory nodule count, AND
2. no increase in abscesses and draining fistulas.

MOTION: To recommend the adoption of the new line, line scoring, and guideline note as presented. CARRIES 4-0. *(Absent: Irwin)*

- **Topic: 2020 Biennial Review: SI joint dysfunction surgical treatment reprioritization**

Discussion: Smits reviewed the summary document, including the Washington HTA report on SI joint fusion.

There was discussion about how nerve dysfunction was an important criteria for coverage of other types of back conditions. Gibson was concerned that coverage of SI joint dysfunction without nerve dysfunction might set a poor precedent. Olson felt that this was not an issue, as there are no nerves exiting in the SI joint area, unlike other anatomic back conditions. Kranenburg noted that requiring neurologic dysfunction would not allow any treatment of the SI joint, as it is does not fall neatly into back pathology.

Hodges requested information on long term outcomes of SI joint fusion. Kranenburg replied that the surgery has been done for about 10 years. Five-year data has been published showing the success of the fusion surgery is durable over time. This makes sense to him, as the fusion does not allow joint movement, and therefore there is no breakdown due to movement like in a knee replacement.

Hodges wondered what number of people with SI joint dysfunction fail 6 months of conservative therapy. Kranenburg replied that the majority of acute or subacute SI joint injury will improve with conservative care, although there is no published evidence to support this. With chronic SI joint paint (>3 months), about 1 in 5 pts will respond to conservative therapy based on studies with a conservative therapy arm.

The decision was to approve the biennial review changes as recommended.

Recommended Actions:

1) Create a new line for SI joint fusion as shown below
    a. Leave ICD-10 M46.1 (Sacroiliitis, not elsewhere classified) on line 527 CONDITIONS OF THE BACK AND SPINE WITHOUT URGENT SURGICAL INDICATIONS for mild cases
    b. Leave M46.1 on line 401 CONDITIONS OF THE BACK AND SPINE for medical care
2) Score the new line as shown below
3) Modify guideline note 161 as shown in appendix A

LINE: XXX
CONDITION: SEVERE SACROILIITIS
TREATMENT: SURGICAL THERAPY

ICD-10: ICD-10 M46.1 (Sacroiliitis, not elsewhere classified)

CPT: 27096 (Injection procedure for sacroiliac joint, anesthetic/steroid, with image guidance (fluoroscopy or CT) including arthrography when performed), 27279 (Arthrodesis, sacroiliac joint, percutaneous or minimally invasive (indirect visualization), with image guidance, includes obtaining bone graft when performed, and placement of transfixing device), 98966-98969, 99051, 99060,99070,99078,99201-99215,99281-99285,99304-99337,99340-99404, 99408-99449,99487-99490,99495,99496,99605-99607 (medical office visits, including ER and SNF)

HCPCS: G0260 (Injection procedure for sacroiliac joint; provision of anesthetic, steroid and/or other therapeutic agent, with or without arthrography), G0396-G0397 (alcohol and substance abuse screening), G0463-G0467,G0469,G0470 (FQHC care), G0490, G0511-G0513 (RFQHC care)

HERC staff proposed line scoring (current scores for line 527 in parentheses)

Category 7 (7)
Impact on Healthy Life Years 4 (4)
Impact on Pain and Suffering 3 (3)
Population effects 0 (0)
Vulnerable populations 0 (0)
Tertiary prevention 0 (0)
Effectiveness 4 (1)
Need for treatment 0.8 (0.8)
Net cost 2 (2)
SCORE 560 (112), approximate new line 418 (527)

MOTION: To recommend the adoption of the new line, line scoring, and guideline note as presented. CARRIES 4-0. *(Absent: Irwin)*

- **Topic: Human donor breast milk guideline update**

Discussion: Livingston presented the issue summary. There was a concern raised about one of the requirements regarding the ongoing outpatient medical need of human donor breast milk. It was thought that eliminating this requirement may lead to requirements that are too lenient, whereas the current wording would make it impossible for any infants to be eligible for coverage as they would likely be sick enough to require re-hospitalization. It was clarified that OHP does not pay for inpatient use of human donor breast milk and this guideline only applies in the outpatient setting. Members discussed the role of hospitals making decisions about medical necessity for human donor milk and in the end, the group agreed to modify the guideline note to simply require ongoing outpatient medical need for human donor breast milk.

Recommended Actions:

1) Modify GUIDELINE NOTE 183 DONOR BREAST MILK FOR HIGH RISK INFANTS as shown in Appendix A

MOTION: To recommend the guideline note changes, as amended. CARRIES 5-0.

- **Topic: Diabetes Prevention Program (DPP) guideline update**

Discussion: Livingston presented the issue summary. Members clarified the need for using the DPP for patients with obesity but not prediabetes, and that this program would be appropriate given the DPP's ability to result in weight loss. Livingston queried the intent on coverage with programs actively pursuing CDC recognition/certification. There was a concern raised that some programs could pursue certification but fail to achieve it, then OHP dollars could be spent on an ineffective/inappropriate program. Despite this concern, members felt that the likelihood of abuse was small, and that CCOs would let them know if there were to be a problem emerging with DPP programs in the process of certification who do not end up achieving that status. An edit to the proposal was also made for patients who may have a history of type 2 diabetes that has since resolved.

Recommended Actions:

1) Make the following code changes
    a. Add DPP codes to Line 320 OBESITY IN ADULTS AND CHILDREN; OVERWEIGHT STATUS IN ADULTS WITH CARDIOVASCULAR RISK FACTORS
        i. Add G9873-G9885, and G9890-G9891
        ii. Add 0403T and 0488T
    b. Remove Z68.53-Z68.54 from Line 3 for pediatric overweight/obesity (i.e., for 18-19 year olds). Place on Line 320.
    c. Add Z68.25- Z68.29 (overweight BMI codes) to Line 320
        i. Advise HSD to remove from informational file
    d. Remove E66.01 Morbid (severe) obesity due to excess calories from Line 659 MISCELLANEOUS CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY
2) Modify the Diabetes Prevention Program Guideline Note 179 as shown in Appendix A
3) Modify the Obesity and Overweight Guideline Note 5 as shown in Appendix A

MOTION: To recommend the code and guideline note changes as amended. CARRIES 4-0.
(Abstained: Irwin)

- **Topic: Failure to thrive in children**

Discussion: Smits introduced the summary document. There was minimal discussion.

Recommended Actions:
1) Add ICD10 R62.51 (Failure to thrive (child)) to Line 71 NEUROLOGICAL DYSFUNCTION IN BREATHING, EATING, SWALLOWING, BOWEL, OR BLADDER CONTROL CAUSED BY CHRONIC CONDITIONS; ATTENTION TO OSTOMIES

MOTION: To recommend the code change as presented. CARRIES 5-0.

- **Topic: Procalcitonin**

Discussion: Livingston reviewed the summary document. There was minimal discussion

Recommended Actions:
1) Delete CPT 84145 (Procalcitonin) from Line 660 CONDITIONS FOR WHICH CERTAIN INTERVENTIONS ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS
2) Remove the entry for CPT 84145 from Guideline Note 173 as shown in Appendix A
3) Recommend HSD add CPT 84145 to the Diagnostic Procedures File

MOTION: To recommend the code and guideline note changes as presented. CARRIES 5-0.

- **Topic: Fecal calprotectin**

Discussion: Smits reviewed the summary document. There was minimal discussion

Recommended Actions:
1) Delete 83993 (fecal calprotectin) from Line 660 CONDITIONS FOR WHICH CERTAIN INTERVENTIONS ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS
2) Remove the entry for CPT 83993 from Guideline Note 173 as shown in Appendix A
3) Recommend HSD add CPT 83993 to the Diagnostic Procedures File

MOTION: To recommend the code and guideline note changes as presented. CARRIES 5-0.

- **Topic: Pulmonary rehabilitation**

  Discussion: Smits reviewed the summary document. She noted two errors in the document that need correction. First, HCPCS S9273 was mistakenly noted to be S9237; this was corrected. Line 223 was not included in the list of lines for the new pulmonary rehab guideline and should be added.

  There was discussion about the indications for repeat pulmonary rehabilitation. Hodges noted that the evidence seemed to support it only after lung reduction surgery. Livingston noted that Aetna covered it after lung transplant. Smits noted that the British Thoracic Society recommended it if at least a year had passed since the last pulmonary rehabilitation series. HERC staff was directed to research what the evidence supports for repeat pulmonary rehabilitation and propose alternative wording in the new guideline.

  Hodges advised striking the clause that the required PT/OT done as part of pulmonary rehabilitation be counted towards the 30 visit a year limit. This is not consistent with how cardiac rehabilitation is treated.

  There was discussion about whether 2 sessions a week should be the minimum or the maximum number of visits. There was also discussion about whether 36 total visits should be put in the guideline, to mirror the CMS guidelines. HERC staff will research these issues and propose wording changes to the new guideline.

  Recommended Actions:
  1) HERC staff will research indications for repeat pulmonary rehabilitation and propose alternate wording for this in the proposed new guideline
  2) HERC staff will research overall visit limits for pulmonary rehabilitation
  3) HERC staff will bring this topic back for further discussion at a future VbBS meeting

- **Topic: Coverage Guidance—Newer interventions for GERD**

  Discussion: Obley presented the evidence reviewed by the Health Technology Assessment Subcommittee on two newer procedures for gastroesophageal reflux disease: transoral incisionless fundoplication (TIF) and magnetic sphincter augmentation (MSA). Shaffer presented the HTAS coverage guidance recommendations. Fouad Otaki, MD, OHSU gastroenterologist, who serves as ad hoc expert on this topic, joined the discussion by phone. Otaki noted that an RCT comparing MSA and PPI therapy was just published in print a few days ago. The subcommittee was advised that the study was already included as a result of previous online publication.

  There was minimal discussion of the reviewed evidence, other than noting that the effectiveness of GERD surgical procedures wanes over time, perhaps sooner for TIF than for laparoscopic fundoplication.

  Attention was turned to the staff recommendations for coverage. The TIF procedure is currently in the funded portion of the Prioritized List, but placement on Line 56 (Ulcers, etc.) is not necessary. Continued coverage on Line 380 (Esophagitis, GERD) is recommended, with the addition of guideline

note criteria based on the coverage guidance recommendations. The MSA procedure is not currently on the List, and addition to Line 660 is recommended.

Gibson expressed concerns regarding the low level of evidence to support TIF coverage, and the limitation of coverage to a specific single device (EsophyX). TIF had previously been added to the List as a straightforward new CPT code, and typically it would require evidence of ineffectiveness to remove TIF from coverage at this point. Obley, Shaffer and Otaki confirmed that TIF evidence included in the CG review was solely based on the EsophyX device, and that a more recently developed system (MUSE) differs significantly in device components and technique, and currently lacks comparative evidence comparable to EsophyX.

Hodges questioned whether gastroenterologists would always include the "LA grade" of esophagitis in requests for TIF authorization, and Otaki confirmed that the LA classification is part of good quality documentation, but it is not always included. Guideline Note criterion 6) b. was amended to "severe esophagitis, for example LA grade of C or D".

Irwin asked about the diagnostic tests included in the guideline note. Otaki stated that all patients considering these surgical interventions would have had previous endoscopic evaluation, but also that ambulatory pH testing could be used for inclusion or exclusion of some patients.

Recommended Actions:

1) Remove CPT 43210 (transoral incisionless fundoplication) from line 56 ULCERS, GASTRITIS, DUODENITIS, AND GI HEMORRHAGE
    a. No appropriate GERD type diagnoses on this line
    b. Leave only on line 380 ESOPHAGITIS; GERD
2) Add a new Guideline Note to line 380, as follows:

GUIDELINE NOTE XXX, TRANSORAL INCISIONLESS FUNDOPLICATION FOR TREATMENT OF GERD

Line 380

Transoral incisionless fundoplication (TIF), CPT 43210, utilizing the EsophyX device only, is included on Line 380 for surgical treatment of GERD only when the patient meets ALL the following criteria:

1) 18 years of age or older; AND
2) Confirmed diagnosis of esophageal reflux by endoscopy, ambulatory pH, or barium swallow testing; AND
3) History of GERD symptoms for one year, occurring at least two to three times per week in the past month; AND
4) History of daily proton pump inhibitor therapy for the most recent six months; AND
5) Body mass index (BMI) ≤ 35, AND
6) Absence of ALL of the following conditions
    a. Hiatal hernia larger than 2 cm
    b. Severe esophagitis, for example LA grade of C or D
    c. Barrett's esophagus greater than 2 cm
    d. Achalasia
    e. Esophageal ulcer
    f. Esophageal motility disorder

g. Altered esophageal anatomy preventing insertion of the device
h. Previous failed anti-reflux surgery or procedure

Repeat TIF is not included on Line 380 for patients who have recurrent symptoms or fail the initial TIF procedure.

3) Add CPT 43284 (magnetic sphincter augmentation) to Line 660 and add an entry to Guideline Note 173 as shown in Appendix A.

MOTION: To approve the recommended changes to the Prioritized List, as amended, based on the draft coverage guidance Newer Interventions for GERD, scheduled for review by HERC at their January 17, 2019 meeting. CARRIES 5-0.

- **Topic: Coverage Guidance—Temporary percutaneous mechanical circulatory support with Impella devices**

  Discussion: Tabled to the January 17, 2019 HERC meeting

- **Public Comment**

  No additional public comment was received.

- **Issues for next meeting**
  - Reprioritization of certain chronic pain conditions
  - Pulmonary rehabilitation

- **Next meeting:**

  March 14, 2019 at Human Services Building, Rooms 137 A-D, 500 Summer Street NE, Salem, OR.

- **Adjournment:**

  The meeting adjourned at 1:10 PM.

Appendix A
Revised Guideline Notes

GUIDELINE NOTE 5, OBESITY AND OVERWEIGHT

Line 320

Medical treatment of overweight (with known cardiovascular risk factors) and obesity in adults is limited to intensive counseling on nutrition and physical activity, provided by health care professionals. Intensive counseling is defined as face-to-face contact more than monthly. A multidisciplinary team is preferred, but a single clinician could also deliver intensive counseling in primary care or other settings.

Intensive counseling visits are included on this line for 6 months. Intensive counseling visits may continue for an additional 6 months (up to 12 months) as long as there is evidence of continued weight loss or improvement in cardiovascular risk factors based on the intervention.

Maintenance visits at the conclusion of the intensive treatment are included on this line no more than monthly after this intensive counseling period. The characteristics of effective behavioral interventions include: high intensity programs; multicomponent (including at a minimum diet and exercise), group-based commercial programs; Mediterranean diet; and the following sub-elements -- calorie counting, contact with a dietician, and comparison to peers.

Known cardiovascular risk factors in overweight persons for which this therapy is effective include: hypertension, dyslipidemia, prediabetes, or the metabolic syndrome.

Treatment of prediabetes with the Diabetes Prevention Program (DPP) is addressed on Line 3 in Guideline Note 179. The DPP program can be used as an alternative to the intensive counseling as above, even in the absence of prediabetes as required by Guideline Note 179.

Medical treatment of obesity in children is limited to comprehensive, intensive behavioral interventions. For treatment of children up to 12 years old, interventions may be targeted only to parents, or to both parents and children.

Pharmacological treatments and devices (e.g. gastric balloons, duodenal jejunal bypass liners, and vagus nerve blocking devices) for obesity are not intended to be included as services on this line or any other line on the Prioritized List.

GUIDELINE NOTE 137, BENIGN BONE AND JOINT TUMORS

Lines 400,556

Treatment of benign conditions of joints ~~(ICD-10-CM D18.09 synovial hemangioma, D17.79 lipoma arborescens, D48.1 tenosynovial giant cell tumor, M67.8 synovial chondromatosis and M12.2 villonodular synovitis)~~ are included on Line 400 for those conditions only when there are significant functional problems of the joint due to size, location, or progressiveness of the disease. Treatment of all other benign joint conditions are included on Line 556.

Treatment of benign tumors of bones ~~(ICD-10-CM D16.00-D16.9, K09.0, K09.1, M27.1, M27.40, M27.49, M85.40-M85.69)~~ are included on Line 400 for those neoplasms associated with pathologic fractures, at high risk of fracture, or which cause function problems including impeding joint function due to size, causing nerve compression, have malignant potential or are considered precancerous. Treatment of all other benign bone tumors are included on Line 556.

Appendix A
Revised Guideline Notes

GUIDELINE NOTE 161, SACROILIAC ANESTHETIC INJECTIONS AND SACROILIAC JOINT FUSION

Line XXX,527

Sacroiliac joint (SIJ) injection (CPT 20610 and 27096, and HCPCS G0260) is included on ~~this line~~ these lines for diagnostic sacroiliac injections with anesthetic only, but not for therapeutic injections or corticosteroid injections. Injections are only covered for patients for whom SIJ fusion surgery is being considered.

SIJ fusion (CPT 27279) is included on ~~this~~ line XXX for patients who have all of the following:

A) Baseline score of at least 30% on the Oswestry Disability Index (ODI)
B) Undergone and failed a minimum six months of intensive non-operative treatment that must include non-opioid medication optimization and active therapy. Active therapy is defined as activity modification, chiropractic/osteopathic manipulative therapy, bracing, and/or active therapeutic exercise targeted at the lumbar spine, pelvis, SIJ and hip including a home exercise program. Failure of conservative therapy is defined as less than a 50% improvement on the ODI.
C) Typically unilateral pain that is caudal to the lumbar spine (L5 vertebrae), localized over the posterior SIJ, and consistent with SIJ pain.
D) Thorough physical examination demonstrating localized tenderness with palpation over the sacral sulcus (Fortin's point, i.e. at the insertion of the long dorsal ligament inferior to the posterior superior iliac spine or PSIS) in the absence of tenderness of similar severity elsewhere (e.g. greater trochanter, lumbar spine, coccyx) and that other obvious sources for their pain do not exist.
E) Positive response to at least three of six provocative tests (e.g. thigh thrust test, compression test, Gaenslen's test, distraction test, Patrick's sign, posterior provocation test).
F) Absence of generalized pain behavior (e.g. somatoform disorder) and generalized pain disorders (e.g. fibromyalgia).
G) Diagnostic imaging studies that include ALL of the following:
    1) Imaging (plain radiographs and a CT or MRI) of the SIJ that excludes the presence of destructive lesions (e.g. tumor, infection), fracture, traumatic sacroiliac joint instability, or inflammatory arthropathy that would not be properly addressed by percutaneous SIJ fusion
    2) Imaging of the pelvis (AP plain radiograph) to rule out concomitant hip pathology
    3) Imaging of the lumbar spine (CT or MRI) to rule out neural compression or other degenerative condition that can be causing low back or buttock pain
    4) Imaging of the SIJ that indicates evidence of injury and/or degeneration
H) At least 75 percent reduction of pain for the expected duration of two anesthetics (on separate visits each with a different duration of action), and the ability to perform previously painful maneuvers, following an image-guided, contrast-enhanced intra-articular SIJ injection.

Otherwise, SIJ fusion is included on line 527.

Appendix A
Revised Guideline Notes

GUIDELINE NOTE 179 DIABETES PREVENTION PROGRAM

Line 3

Prediabetes (R73.03) and personal history of gestational diabetes (Z86.32) are included on this line only for the Diabetes Prevention Program (DPP). The only programs included are CDC-recognized lifestyle change programs for DPP.

To be eligible for referral to a CDC-recognized lifestyle change program, patients must meet the following requirements:

1) Be at least 18 years old and
2) Be overweight (body mass index ≥25; ≥23 if Asian; BMI percentile ≥85th percentile for 18-19 years old) and
3) Have no ~~previous~~ current diagnosis of type 1 or type 2 diabetes and
4) Not have end-stage renal disease and
5) Have a blood test result in the prediabetes range within the past year:
    a. Hemoglobin A1C: 5.7%–6.4% or
    b. Fasting plasma glucose: 100–125 mg/dL or
    c. Two-hour plasma glucose (after a 75 gm glucose load): 140–199 mg/dL OR
    d. Have a previous diagnosis of gestational diabetes

GUIDELINE NOTE 173, INTERVENTIONS THAT ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS FOR CERTAIN CONDITIONS

Line 660

The following Interventions are prioritized on Line 660 CONDITIONS FOR WHICH CERTAIN INTERVENTIONS ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS:

~~83993~~	~~Calprotectin, fecal~~		
~~84145~~	~~Procalcitonin (PCT)~~	~~Insufficient evidence of effectiveness~~	~~December 2009~~

GUIDELINE NOTE 183 DONOR BREAST MILK FOR HIGH RISK INFANTS

Line 16, 34, 88, 101

Donor breast milk (T2101) is included on these lines for infants up to 6 months of age (adjusted for gestational age) who meet all of the following criteria:

- Low birth weight (<1500g) OR with severe underlying gastrointestinal disease
- Human donor milk was continued through neonatal hospital discharge for a clear medical indication
- Persistent outpatient medical need for human donor breast milk ~~due to ongoing severe concerns with persistent diarrhea or malabsorption with improvement on breast milk compared to formula)~~
-

- When maternal breast milk is not available, appropriate or sufficient to meet the infant's needs, despite lactation support for the mother.

Donor human milk may only be obtained through a milk bank with ~~appropriate quality and infection control standards.~~ accreditation from the Human Milk Banking Association of North America (HMBANA).

Section 2.0

Staff Report

Errata
March 2019

1) The USPSTF recommendation date in GN106 was updated to reflect changes in effect as of January 1, 2018, in accordance to ACA requirements.

GUIDELINE NOTE 106, PREVENTIVE SERVICES

Lines 3,619

Included on Line 3 are the following preventive services:

A) US Preventive Services Task Force (USPSTF) "A" and "B" Recommendations in effect and issued prior to January 1, 2018.
   1) http://www.uspreventiveservicestaskforce.org/Page/Name/uspstf-a-and-b-recommendations/
   2) USPSTF "D" recommendations are not included on this line or any other line of the Prioritized List.

B) American Academy of Pediatrics (AAP) Bright Futures Guidelines:
   1) http://brightfutures.aap.org. Periodicity schedule available at http://www.aap.org/en-us/professional-resources/practice-support/Periodicity/Periodicity Schedule_FINAL.pdf.
   2) Screening for lead levels is defined as blood lead level testing and is indicated for Medicaid populations at 12 and 24 months. In addition, blood lead level screening of any child between ages 24 and 72 months with no record of a previous blood lead screening test is indicated.

C) Health Resources **and Services Administration (HRSA) Women's Preventive Services-Required Health Plan Coverage Guidelines a**s updated by HRSA on December 20, 2016. Available at https://www.hrsa.gov/womens-guidelines-2016/index.html as of 3/6/2019.

D) Immunizations as recommended by the Advisory Committee on Immunization Practices (ACIP): http://www.cdc.gov/vaccines/schedules/hcp/index.html or approved for the Oregon Immunization Program: https://public.health.oregon.gov/PreventionWellness/VaccinesImmunization/ImmunizationProviderResources/Documents/DMAPvactable.pdf

Colorectal cancer screening is included on Line 3 for average-risk adults aged 50 to 75, using one of the following screening programs:

A) Colonoscopy every 10 years
B) Flexible sigmoidoscopy every 5 years
C) Fecal immunochemical test (FIT) every year
D) Guaiac-based fecal occult blood test (gFOBT) every year

Colorectal cancer screening for average-risk adults aged 76 to 85 is covered only for those who

A) Are healthy enough to undergo treatment if colorectal cancer is detected, and
B) Do not have comorbid conditions that would significantly limit their life expectancy.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

Section 3.0

Consent Agenda-

Straightforward Items

Consent Agenda Issues—March 2019

Code	Code Description	Line(s) Involved	Issue	Recommendation(s)
Q66.21	Congenital metatarsus primus varus	359 DEFORMITY/CLOSED DISLOCATION OF JOINT AND RECURRENT JOINT DISLOCATIONS. 540 DEFORMITIES OF FOOT	ICD10 Q66.21 is a foot deformity where the first metatarsal bone is rotated and angled away from the second metatarsal bone. This predisposes patients to develop bunions. It is not treated by itself; the bunion, if it develops, would be treated. Q66.21 is currently on line 359. Bunion surgery as well as ICD-10 Q22.1 (Hallux valgus (acquired)) are on line 540.	Remove Q66.21 from line 359 Add Q66.21 to line 540
28292	Correction, hallux valgus (bunionectomy), with sesamoidectomy, when performed; with resection of proximal phalanx base, when performed, any method	356 RHEUMATOID ARTHRITIS, OSTEOARTHRITIS, OSTEOCHONDRITIS DISSECANS, AND ASEPTIC NECROSIS OF BONE	CPT 28292 is on both lines 365 and line 540. All other bunionectomy codes (i.e. 28295-28299) are only on line 540.	Remove 28292 from line 356
R33.8	Other retention of urine	Diagnostic Workup File (DWF) Line 327 FUNCTIONAL AND MECHANICAL DISORDERS OF THE GENITOURINARY SYSTEM INCLUDING BLADDER OUTLET OBSTRUCTION	While a diagnostic code, sometimes urinary retention may not require further workup and just needs ongoing management with interventions like Foley catheters and/or bladder training. By placement on DWF rather than being on a line, it is impeding chronic management of urinary retention.	Add R33.8 on Line 327 Keep R33.8 on the Diagnostic Workup File
H04.55 H04.56	Acquired stenosis of nasolacrimal duct Stenosis of right lacrimal punctum	393 STRABISMUS WITHOUT AMBLYOPIA AND OTHER DISORDERS OF BINOCULAR EYE MOVEMENTS; CONGENITAL ANOMALIES OF EYE; LACRIMAL DUCT OBSTRUCTION IN CHILDREN	GN134 specifies when nasolacrimal duct obstruction can be treated on line 393. However, line 393 is missing several ICD10 codes for nasolacrimal duct obstruction.	Add the H04.55 and H04.56 code series to line 393

Consent Agenda Issues—March 2019

Code	Code Description	Line(s) Involved	Issue	Recommendation(s)
44186	Laparoscopy, surgical; jejunostomy (eg, for decompression or feeding)	157 CANCER OF COLON, RECTUM, SMALL INTESTINE AND ANUS	CPT 44186 is on various lines for cancers of the upper GI tract, but not line 157. Similar code 44186 is on line 157.	Add 44186 to line 157

Straightforward Guideline Note Changes
March 2019

1) An additional CPT code for tympanostomy tubes that appears on line 389 needs to be added to Guideline Note 29
    a. CPT 69433 (Tympanostomy (requiring insertion of ventilating tube), local or topical anesthesia)

GUIDELINE NOTE 29, TYMPANOSTOMY TUBES IN ACUTE OTITIS MEDIA

Line 389

Tympanostomy tubes (CPT 69433, 69436) are only included on this line as treatment for:

A) recurrent acute otitis media (three or more well-documented and separate episodes in six months or four or more well-documented and separate episodes in the past 12 months with at least one episode in the past six months) in patients who have unilateral or bilateral middle ear effusion at the time of assessment for tube candidacy, or
B) patients with complicating conditions (immunocompromised host, meningitis by lumbar puncture, acute mastoiditis, sigmoid sinus/jugular vein thrombosis by CT/MRI/MRA, cranial nerve paralysis, sudden onset dizziness/vertigo, need for middle ear culture, labyrinthitis, or brain abscess).

Patients with craniofacial anomalies, Down's syndrome, cleft palate, permanent hearing loss of 25dB or greater independent of otitis media with effusion, and patients with speech and language delay may be considered for tympanostomy if unresponsive to appropriate medical treatment or having recurring infections (without needing to meet the strict "recurrent" definition above).

Removal of retained tympanostomy tubes requiring anesthesia (CPT code 69424) or as an office visit, is included on Line 422 as a complication, pairing with ICD-10-CM H74.8.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

2) When Diagnostic Guideline D1 was amended to remove the cancer-related tests, there was a reference to section F1 that was not corrected to be section E1 (former section E1 was removed to become the new cancer-related genetic testing guideline)

DIAGNOSTIC GUIDELINE D1, NON-PRENATAL GENETIC TESTING GUIDELINE

A) Genetic tests are covered as diagnostic, unless they are listed below in section ~~F1~~ E1 as excluded or have other restrictions listed in this guideline. To be covered, initial screening (e.g. physical exam, medical history, family history, laboratory studies, imaging studies) must indicate that the chance of genetic abnormality is > 10% and results would do at least one of the following:
    1) Change treatment,
    2) Change health monitoring,
    3) Provide prognosis, or
    4) Provide information needed for genetic counseling for patient; or patient's parents, siblings, or children

…

E) Related to other tests with specific CPT codes:
   1) Certain genetic tests have not been found to have proven clinical benefit.

3) There is an "or" missing in GN36.

GUIDELINE NOTE 36, ADENOTONSILLECTOMY FOR INDICATIONS OTHER THAN OBSTRUCTIVE SLEEP APNEA

Lines 42,47,368,548

Tonsillectomy/adenotonsillectomy is an appropriate treatment for patients with:

A) Five documented attacks of strep tonsillitis in a year or 3 documented attacks of strep tonsillitis in each of two consecutive years where an attack is considered a positive culture/screen and where an appropriate course of antibiotic therapy has been completed; or
B) Peritonsillar abscess requiring surgical drainage; or,
C) Unilateral tonsillar hypertrophy in adults; unilateral tonsillar hypertrophy in children with other symptoms suggestive of malignancy.

ICD-10-CM J35.1 and J35.3 are included on Line 368 only for 1) unilateral tonsillar hypertrophy in adults and 2) unilateral tonsillar hypertrophy in children with other symptoms suggestive of malignancy. Bilateral tonsillar hypertrophy and unilateral tonsillar hypertrophy in children without other symptoms suggestive of malignancy are included only on Line 548.

See Guideline Note 118 for diagnosis and treatment of obstructive sleep apnea in children.

4) The new SI joint surgery line approved for the Biennial Review list effective 1/1/2020 needs references to guideline notes 6, 64, and 65.

LINE: XXX
CONDITION: SEVERE SACROILIITIS
TREATMENT: SURGICAL THERAPY

Attach GUIDELINE NOTE 6, REHABILITATIVE AND HABILITATIVE THERAPIES, GUIDELINE NOTE 64, PHARMACIST MEDICATION MANAGEMENT, and GUIDELINE NOTE 65, TELEPHONE AND EMAIL CONSULTATIONS

5) The new line for hidradenitis suppurativa approved for the Biennial review list 1/1/2020 needs references to guideline notes 64 and 65.

Line: XXX
CONDITION: MODERATE TO SEVERE HIDRADENITIS SUPPURATIVA

Attach GUIDELINE NOTE 64, PHARMACIST MEDICATION MANAGEMENT, and GUIDELINE NOTE 65, TELEPHONE AND EMAIL CONSULTATIONS

Section 4.0

Biennial Review

Value-based Benefits Subcommittee: Chronic Pain Reprioritization

March 14, 2019

Oregon Health Authority

Agenda

- Background
- Evidence summary
- Options for HERC consideration
  - Revised proposal
  - No action
- Public testimony
- Discussion and decision

Status quo

- All 5 of the conditions under consideration are “below the line” currently
- No treatments (e.g. cognitive behavioral therapy, PT) are available for patients with these conditions, unless they have another funded condition
- Medications (e.g. gabapentin, opioids) may be covered for patients with these conditions if their CCO does not prior authorize that drug
  - Current guideline calls out non-coverage of opioids for fibromyalgia
- Many CCOs have conducted initiatives to taper patients off opioids for these conditions as “below the line”

Conditions

ICD-10 Code	Description
G89.21	Chronic pain due to trauma
G89.28	Other chronic postprocedural pain
G89.29	Other chronic pain
G89.4	Chronic pain syndrome
M79.7	Fibromyalgia

No proposal today to change coverage requirements for other conditions associated with chronic pain other than these five conditions and consideration for adjusting the back pain taper requirement

Decision 1: Create new line?

- Review evidence, scoring, cost

Impact if funded

- Adds non-pharmacologic treatments and non-opioid pharmacologic treatments
- Adds explicit chronic opioid coverage if guideline is followed
- Taper plan for fibromyalgia and prescribing outside guideline

Impact if unfunded

- No change in noncoverage for any of these conditions
- Patients may continue to receive opioids if they have another funded painful condition (other than back pain), no PA requirement, or receiving through exception
- Still need to address back pain taper

Treatment	Effect	Level of Evidence
Tai Chi	Small but clinically significant short term benefit in pain and function	Low
Yoga	Inconsistent evidence	Low
Exercise	Non-clinically significant improvement in pain (S) and function (S,I)	Low to Moderate
Acupuncture	Small, non-clinically significant improvement in function (S,I)	Low
Interdisciplinary rehab	Clinically meaningful improvement in function in the short, intermediate, and long term	Low
Mindfulness	No clear improvement in function or pain	Moderate
Massage/PT	Small, non-clinically significant impact on short term function; insufficient evidence of impact on pain	Low
CBT	Small, non-clinically significant effects on pain, function and mood immediately post-treatment but not intermediate or long term	Low
Pain Education	No improvement in pain or function	Low

Drug	Effect	Level of Evidence
Milnacipran (Savella)	Improves pain and function by 30% or more (NNT 5-11)	Low
Duloxetine (Cymbalta)	Improves pain and function by 30% or more (NNT 5-11)	Low
Pregabalin (Lyrica)	Improves pain 30-50% (NNT 7-22)	Low
opioids	Small, non-clinically significant short-term improvement in pain and functioning Insufficient evidence of benefit for long-term prescribing	High Insufficient

Harms of Therapies

Therapy	Harms
Non-pharmaceutical therapies (eg PT, CBT)	Few if any
Non-opioid medications (eg pregabalin, duloxetine)	Sedation, weight gain, nausea
Opioids	Constipation, fatigue, dependence, overdose, opioid induced hyperalgesia, death

MED report on opioid tapering

- Overall quality of the evidence is very low
- Findings suggested that pain, function, and quality of life might improve during and after opioid discontinuation or dose reduction
- Scant evidence on harms associated with tapering strategies

Options for HERC Consideration

- ***OPTION: Do not reprioritize chronic pain syndrome, fibromyalgia and related conditions due to lack of evidence of effectiveness of available treatment modalities. Consider readdressing the prioritization of these conditions as part of the 2022 or 2024 Biennial Review.***
  - Rationale:
    - Low level of evidence of small, non-clinically significant effectiveness of various therapies
    - Wait for studies on back line changes
  - Impact:
    - Continued HERC intent of non-coverage for various treatments and medications (including opioids) for these 5 conditions

Options for HERC Consideration

- ***OPTION: Adopt the CPTF informed proposal from January with consideration of VbBS/HERC staff suggested edits***
  - ***Rationale:*** Chronic pain patients would have access to alternative therapies to opioids (physical treatments, pharmaceutical options). The Chronic Pain Taskforce felt these were beneficial treatments in their expert opinion.
  - ***Impact:*** New coverage would be created for nonpharmacologic and pharmacologic treatments for patients with these specific chronic pain conditions, including new coverage of long-term opioid therapy if patients meet certain criteria. This will have cost implications which will require actuarial analysis.

	Current HERC status	Future status with modified CPTF proposal
Fibromyalgia		
Opioids	Not covered	Covered, with required taper
Non-opioid medications	Not covered	Covered
Non-medication therapies	Not covered	Covered
Chronic pain syndrome		
Opioids	Not covered	Covered, within statewide guidelines
Non-opioid medications	Not covered	Covered
Non-medication therapies	Not covered	Covered
Back pain		
Chronic opioids	Covered for acute and subacute, not covered generally for chronic	No change. Improves tapering language to be more individualized.
Non-opioid medications	Covered	Covered
Non-medication therapies	Covered	Covered

New Line

- ***Create a new line for five chronic pain conditions including fibromyalgia for the 2020 Biennial Review***

CONDITION: FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS

TREATMENT: LIMITED PHYSICAL MODALITIES, COGNITIVE BEHAVIORAL THERAPY, MEDICAL THERAPY

Diagnoses:

- Chronic pain due to trauma
- Other chronic postprocedural pain
- Other chronic pain
- Chronic pain syndrome
- Fibromyalgia

Procedures:

- Standard outpatient codes
- Psychotherapy (for CBT/ACT)
- Physical therapy
- Occupational therapy
- Acupuncture
- Health and behavior assessment

New Guideline with VBBS/Staff Suggested Changes

GUIDELINE NOTE XXX, TREATMENT OF FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS

Line XXX

Chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), other chronic pain (ICD-10 G89.29), and fibromyalgia (ICD-10 M79.7) are included on Line XXX when symptoms have been present for at least 3 months.

The following treatments are included on Line XXX:

- Office evaluation, consultation and education.
- Pain education, if done, should include but not be limited to sleep, nutrition, stress reduction/mood, exercise, and knowledge of pain as a biopsychosocial phenomenon. All providers with primary responsibility for managing fibromyalgia, chronic pain syndrome and related conditions ~~patients~~ should be trained in pain science (e.g., a contemporary understanding of the central and peripheral nervous system in chronic pain), motivational interviewing, culturally sensitive care, and trauma informed care. Care should be multidisciplinary and focus on active therapies.

Guideline continued

- Cognitive behavioral therapy (CBT). The necessity for CBT 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.
- The following therapies, when available, may be provided: adaptive and restorative yoga, tai chi, mindfulness training, massage, supervised exercise therapy (land based and aquatic), intensive interdisciplinary rehabilitation. HCPCS S9451 is only included on Line XXX for the provision of yoga or supervised exercise therapy.

Guideline continued

- A total of 30 visits per year of any combination of the following therapies when available and medically appropriate. These therapies are only included on these lines 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. Once the pre-determined goals of care have been achieved, an additional two visits may be authorized for maintenance therapy to maintain these improvements. These 30 visits count toward the visit totals in GUIDELINE NOTE 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE if the patient has comorbid back or spine conditions.
  - Rehabilitative therapy (physical and/or occupational therapy), if provided according to Guideline Note 6 REHABILITATIVE AND HABILITATIVE THERAPIES. Rehabilitation services provided under this guideline also count towards visit totals in Guideline Note 6. CPT 97124 is included in this category.
  - Acupuncture

Guideline continued

- Non-opioid medications are only included on Line XXX if all of the following apply:
  - The patient is also being treated with active therapy (e.g., physical therapy, CBT) or is continuing maintenance of self-management strategies learned from such therapy.
  - The benefit of non-opioid medication is re-evaluated at least every 90 days and medications are only continued if there is documented evidence of initial improvement of function of at least fifteen percent as compared to baseline based on a validated tool (e.g., Pain average, interference with Enjoyment of life, and interference with General activity" (PEG) Assessment Scale, Oswestry, Oswestry, SF-MPQ, MSPQ), and function is maintained thereafter. Less frequent monitoring may be appropriate for certain medications after safety and efficacy are established.
- Short term opioid therapy (<90 days) is included on these lines only for chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), and other chronic pain (ICD-10 G89.29), and only when prescribed in alignment with the Oregon Opioid Prescribing Guideline (2017-2018 version) [link]

Guideline continued

- Long-term opioid therapy (>90 days) is included on these lines only for chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), and other chronic pain (ICD-10 G89.29) when all of the following criteria are met:
  - In alignment with the Oregon Opioid Prescribing Guidelines (2017-2018 version)
    - No illicit drug use or active substance use disorder (excluding tobacco)
    - The patient has been prescribed the patient pain education module through OPMC when it becomes available
    - Verification that the patient is not high risk for opioid misuse or abuse
      - Appropriate risk assessment has been performed (e.g., Opioid Risk Assessment Tool)
      - PDMP checked at least annually and shows no aberrant behavior
      - Urine drug testing is performed at least once per year and is appropriate

Guideline continued

- Prescribing criteria
  - Initial functional improvement has been documented of at least 30%, and function is maintained throughout the prescribing period
  - When prescribed with nonpharmacologic treatment options for managing pain
  - Careful reassessment of the evidence of individual benefits and risks should be undertaken for dosages > 50 MED. Dosages >90 MED should be avoided or carefully justified. When dosages > 50 MED are prescribed, naloxone should also be prescribed to the patient.
  - Patient and provider have assessed the relative risks and benefits of therapy and agree benefits outweigh risks, and have completed a material risk notice https://www.oregon.gov/omb/OMBForms1/material-risk-notice.pdf
  - No additional opioids are prescribed for flares of the chronic pain condition, although opioids may be prescribed separately for other acute injuries or surgeries as clinically appropriate
  - Comorbid mental health disorders are appropriately addressed

Guideline continued

- Opioid therapy is not included on this line for the following conditions/situations due to the evidence for harm:
  - When prescribed for fibromyalgia
  - For patients who fail to meet the guideline requirements regarding opioids above who have chronic pain syndrome, chronic pain due to trauma, other chronic postprocedural pain, and other chronic pain conditions included on this line

Guideline continued

- If a patient is already receiving chronic opioid therapy for these conditions/situations, then tapering is indicated. Opioid tapering should be done on an individualized basis which includes a taper goal of zero. Tapering should be unidirectional with a shared goal set by the patient and provider, generally with a 5-10% decrease monthly, and can be paused or slowed if the prescriber believes this is medically appropriate based on the patient's overall status. Taper plans should include nonpharmacological treatment strategies for managing the patient's pain. During the taper, behavioral health conditions need to be regularly assessed and appropriately managed. In some situations (e.g., in the setting of active substance use disorder, history of opioid overdose, aberrant behavior), more rapid tapering or transition to medication assisted treatment may be appropriate and should be directed by the prescribing provider. If a patient has developed opioid use disorder, treatment is included on Line 4 SUBSTANCE USE DISORDER.

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Actuarial Analysis of Creation of New Chronic Pain Line Above Funding Line

- Preliminary estimate of $10.8-$16.2 million per year total funds starting in 2020
- Approximately 89,700 individuals with paid claims in 2017 with at least one of the five diagnoses in proposal (didn't necessarily receive paid service for those diagnosis)
- About 62,900 of those also have diagnosis on back line who would already qualify for new benefits
- Therefore, an estimated 26,800 would be able to receive additional services
- Of 39,600 of these individuals currently receiving opioids, 12,900 with at least 120-day supply (majority of the others with 14 days or less)

Line Scoring

	Line 401	Line XXX	Line 528
Category (Non-Fatal Condition)	7	7	7
Healthy Life (0-10)	5	TBD	4
Suffering (0-5)	3	TBD	3
Population effects (0-5)	0	0	0
Vulnerable population (0-5)	0	0	0
Tertiary prevention (0-5)	2	TBD	0
Effectiveness (0-5)	3	TBD	1
Need for service (0-1)	0.8	TBD	0.8
Net cost	2	2	2
Score	432	TBD	112
Approximate line	401	TBD	528

HLY Score	Line Examples
5	Arthritis, back conditions
4	Migraine, persistent depression
Tertiary Prevention	
2	Strep throat, back conditions
1	Anxiety, Vestibular conditions
0	Arthritis, migraines
Effectiveness	
3	Back conditions, anxiety, arthritis
2	Peripheral nerve disorder, prostate disorders
1	Pelvic pain syndrome, colitis

Line 528 Revision

Line:	**528**
Condition:	~~FIBROMYALGIA,~~ CHRONIC FATIGUE SYNDROME~~, AND RELATED DISORDERS~~ (See Guideline Notes 64,65~~,135~~)
Treatment:	MEDICAL THERAPY
ICD-10:	~~G89.21,G89.28-G89.29,G89.4,M79.7,~~R53.82
CPT:	90785,90832-90840,90846-90853,93792,93793,98966-98969,99051, 99060,99070,99078,99201-99215,99281-99285,99341-99378,99381-99404,99408-99449,99487-99490,99495-99498,99605-99607
HCPCS:	G0248-G0250,G0396,G0397,G0463-G0467,G0490,G0511,G0513, G0514

Other Proposed Changes

- Back conditions guideline note edits (GN 56)
  - Wording changes to tie into new chronic pain line/guideline
  - Deletion of obsolete table
- Opioids for back condition guideline note edits (GN 60)
  - Removes “flare” as indication for short-term opioids
  - Tapering section revised to exactly match the section in the new chronic pain line guideline, with staff suggested edits
    - See wording on next slide
- Acupuncture guideline note edit (GN 92)
  - Adds entry for new line
- Delete fibromyalgia guideline note (GN 135)

Opioids for Back Conditions Guideline: Taper Paragraph

Transitional coverage for patients on long-term opioid therapy ~~as of July 1, 2016~~:

For patients ~~on covered chronic~~ receiving long-term opioid therapy (>90 days) for conditions of the back and spine ~~as of July 1, 2016, opioid medication is included on these lines only from July 1, 2016 to December 31, 2016. During the period from January 1, 2017 to December 31, 2017~~, continued coverage of opioid medications requires an individual treatment plan which includes a taper plan ~~developed by January 1, 2017 which includes a taper with an end to opioid therapy no later than January 1, 2018~~. Opioid tapering should be done on an individualized basis and include a taper goal to zero. Tapering should be unidirectional with a shared goal set by the patient and provider, generally with a 5-10% decrease monthly and can be paused or slowed if the prescriber believes this is medically appropriate based on the patient's overall status. Taper plans ~~must~~ should include nonpharmacological treatment strategies for managing the patient's pain ~~based on Guideline Note 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE~~. During the taper, behavioral health conditions need to be regularly assessed and appropriately managed.

Opioids for Back Conditions Guideline: Taper Paragraph Revisions Continued

In some situations (e.g., in the setting of active substance use disorder, history of opioid overdose, aberrant behavior), more rapid tapering or transition to medication assisted treatment may be appropriate and should be directed by the prescribing provider. If a patient has developed ~~dependence and/or addiction related to their opioids~~ opioid use disorder, treatment is ~~available~~ included on Line 4 SUBSTANCE USE DISORDER.

Discussion and Decision

Reprioritization of Certain Chronic Pain Conditions
March 2019

WORK TO DATE AND INTERVAL INPUT

The Chronic Pain Taskforce met multiple times in 2017 and 2018. The in-process CPTF proposal was reviewed at the August 2018 and January 2019 VbBS meetings. The current proposal was informed by evidence and multiple stakeholder perspectives, including extensive public testimony, input from partners in public health, the CCOs, and various experts.

January VBBS meeting

At the January 2019 VbBS meeting, HERC staff presented proposed Prioritized List changes regarding coverage of certain chronic pain conditions, as informed by the Chronic Pain Taskforce and extensive public comment to date. HERC staff were directed to work on several sections of the proposal and bring it back for further consideration at the March 2019 VbBS and HERC meetings.

VbBS and HERC concerns to be addressed by HERC staff included:

1) Clarification of wording for the portion of the proposed new guideline regarding pain education:
    a. …. All providers ~~seeing~~ managing *[staff to propose improved wording here]* chronic pain patients should be trained in pain science (e.g., a contemporary understanding of the central and peripheral nervous system in chronic pain)…
2) Clarifications or modifications to the section of the proposed new guideline referring to opioid prescribing:
    a. Clarification regarding what (if any) circumstances would allow co-prescribing opioids with benzodiazepines
    b. Consideration for adding a requirement for co-prescribing naloxone for patients prescribed over 50 MED of opioids
    c. Suggestion to group provider qualifications together and patient requirements together for improved clarity.
3) Clarify or modify the section of the proposed new guideline referring to opioid tapering:
    a. Remove the title of the section as it is confusing
    b. Clarify that the opioid taper requirement in fibromyalgia is for "when prescribed for fibromyalgia."
    c. Clarify whether "evidence of harm" should be removed from the section when referring to opioid use in fibromyalgia

Additional Stakeholder Feedback

Since the January 2019 VbBS meeting, HERC staff have received feedback from the CCO Pharmacy Directors during their monthly public meetings. A summary of CCO Pharmacy Directors input includes:

1) High level of concern that the overall effect of this proposal would be to increase access to opioids
2) Appreciation of the VbBS/HERC goal to reduce opioid reliance for these conditions by offering alternative treatments, but unanimous concern that the other services and medications proposed for these conditions will have costs that outweigh any benefits
3) Many CCOs have implemented opioid controls for prescribing related to a broad range of conditions. There was general concern that the current proposed new guideline wording would require coverage of a second taper when the CCOs have already covered a taper for a patient.
4) Concern about the ability to track whether a provider or patient has completed the required pain education component of the opioid portion of the guideline

5) The high cost of the non-opioid medications used to treat fibromyalgia.
    a. *Note: Per OHA Pharmacy Team, duloxetine and amitriptyline are mental health carve-out drugs covered by FFS. Gabapentin is currently frequently covered without prior authorization. The only high cost drug added for coverage for fibromyalgia in this proposal would be pregabalin [Lyrica], which could have a substantial financial impact on the CCOs. However, pregabalin is scheduled to become generic in mid-2019, which could substantially reduce the cost of this drug over the next few years. A new drug, milnacipran (brand name Savella), has received FDA approval for treatment of fibromyalgia but has only very limited use to date.*
6) The proposed new guideline as written would add a significant prior authorization burden for CCOs, providers and patients
7) Concern that the magnitude of benefit and level of evidence for all of the drugs used to treat fibromyalgia is low.

EVIDENCE SUMMARY

HERC staff have summarized the overall level of evidence for the various treatment modalities proposed for the new line. This should be taken into consideration when discussing prioritization of the proposed new line. This evidence has been previously reviewed by the CPTF and VbBS; however, two of the reviewed articles [AHRQ 2018, Cochrane 2017] have been updated and are included in the abstracts below.

Evidence for Non-Pharmacologic Therapies

1) **Exercise (including Tai Chi)**
    a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
        i. Tai Chi and quigong
            1. Over the short-term, two trials of mind-body practices reported slight improvement in function for qigong compared with waitlist (MD −7.5, 95% CI −13.3 to −1.68) and for tai chi compared with attention control (MD −23.5, 95% CI −30 to −17) based on 0 to 100 scale total FIQ score; Significantly more participants in the tai chi group also showed clinically meaningful improvement on total FIQ (RR 1.6, 95% CI 1.1 to 2.3) consistent with a slight effect (SOE: low).
            2. Note: minimum clinically important difference (MCID) in the 100 point FIQ scale is 14% change
            3. Qigong and tai chi were associated with moderately greater improvement in pain (0-10 scale) compared with waitlist and attention control in the short term (2 trials, pooled MD −1.54, 95% CI −2.67, −0.41, I2=75%). Significantly more participants in the tai chi group also showed clinically meaningful improvement on VAS pain (RR 2.0, 95% CI 1.1 to 3.8) consistent with a slight effect (SOE: low).
            4. Note: MCID for VAS pain scale is 1.0-1.4
            5. No evidence in the intermediate or long term.
            6. Data for harms were insufficient.
        ii. Exercise
            1. Exercise improved function short term (7 trials, pooled MD −7.61 on a 0 to 100 scale, 95% CI −12.78 to −2.43, I2= 59.9%) (SOE: low) and intermediate term (8 trials, pooled MD −6.04, 95% CI −9.05 to −3.03, I2=0%) (SOE: moderate). There were no clear effects in the long term (3 trials, pooled MD −4.33, 95% CI −10.18 to 1.52, I2=0%) (SOE: low).
                a. Note: minimum clinically important difference (MCID) in the 100 point FIQ scale is 14% change
            2. Exercise had a slightly greater effect on VAS pain (0 to 10 scale) compared with usual care, attention control, or no treatment short term (6 trials, pooled MD −0.89, 95% CI −1.32 to −0.46, I2=0%), but there were no clear effects at intermediate term (7 trials, pooled MD −0.41, 95% CI −0.87 to 0.05, I2=9.5%) or long term (4 trials, pooled MD −0.18, 95% CI −0.77 to 0.42, I2=0%) (SOE: moderate for all time frames).
                a. Note: MCID for VAS pain scale is 1.0-1.4

3. Data on harms were insufficient.

b. Cochrane review 2017 (Geneen) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5461882/
   i. Conclusions: The evidence in this overview suggests that the broad spectrum of physical activity and exercise interventions assessed here (aerobic, strength, flexibility, range of motion, and core or balance training programmes, as well as yoga, Pilates, and tai chi) are potentially beneficial, though the evidence for benefit is low quality and inconsistent.

c. Cochrane review 2018 (Geneen 2017b) https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD011279.pub3/full
   i. N=264 studies (19,642 participants)
   ii. Pain conditions included rheumatoid arthritis, osteoarthritis, fibromyalgia, low back pain, intermittent claudication, dysmenorrhoea, mechanical neck disorder, spinal cord injury, postpolio syndrome, and patellofemoral pain.
   iii. Interventions included aerobic, strength, flexibility, range of motion, and core or balance training programmes, as well as yoga, Pilates, and tai chi.
   iv. The quality of evidence was low due to participant numbers (most included studies had fewer than 50 participants in total), length of intervention and follow-up (rarely assessed beyond three to six months).
   v. Pain severity: several reviews noted favourable results from exercise but results were inconsistent across interventions and followup
   vi. Physical function: significantly improved as a result of the intervention in 14 reviews, though even these statistically significant results had only small-to-moderate effect sizes
   vii. Psychological function and quality of life**:** had variable results, results were either favourable to exercise (generally small and moderate effect size, with two reviews reporting significant, large effect sizes for quality of life), or showed no difference between groups.
   viii. **Authors' conclusions** The quality of the evidence examining physical activity and exercise for chronic pain is low. There were some favourable effects in reduction in pain severity and improved physical function, though these were mostly of small to-moderate effect, and were not consistent across the reviews.

2) Acupuncture

a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
   i. Acupuncture was associated with slightly greater improvements in function based on 0 to 100 FIQ Total Score compared with sham acupuncture in the short term (2 trials, pooled MD −8.63, 95% CI −12.12 to −5.13, I2=0%) and intermediate term (2 trials, pooled MD −9.41, 95% CI −13.96 to −4.85, I2=27.4%) (SOE: moderate).
      1. Note: minimum clinically important difference (MCID) in the 100 point FIQ scale is 14% change
   ii. There was no clear effect of acupuncture on pain (0 to 10 scale) versus sham acupuncture in the short term (3 trials, pooled MD −0.13, 95% CI −1.06 to 0.79, I2=72%) or intermediate term (3 trials, pooled MD −0.53, 95% CI −1.15 to 0.09, I2=45.5%) (SOE: low).
   iii. No data on long-term effects were reported.
   iv. Discomfort & bruising were the most common adverse events. (SOE: moderate).

3) **Mindfulness therapy**
    a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
        i. No clear short-term effects of mindfulness-based stress reduction (MBSR) were seen on function compared with waitlist or attention control (MD 0 to 0.06 on a 0-10 scale) in two trials (one fair and one poor quality) (SOE: moderate).
        ii. No clear short-term effects of MBSR on pain (MD 0.1 on a 0-100 VAS pain scale in one poor quality trial; MD −1.38 to −1.59 on the affective and −0.28 to −0.71 on the sensory dimension [scales not reported] of the Pain Perception Scale in one fair-quality trial) compared with waitlist or attention control in two trials (SOE: moderate). Intermediate-term and long-term outcomes were not reported.
    b. Cochrane review 2017 (Eccleston) https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010323.pub3/full
        i. N=3 studies. Two studies found a significant difference between groups at post-treatment and follow-up in opioid consumption. The remaining study found reduction in opioid consumption in both treatment and control groups, and between-group differences were not significant. We also found mixed findings for pain intensity and physical functioning.
        ii. Authors' conclusions No conclusions can be drawn from this small amount of information.

4) **Multidisciplinary rehabilitation programs**
    a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
        i. More multidisciplinary treatment participants experienced a clinically meaningful improvement in FIQ total score (≥14% change) compared with usual care at short (odds ratio [OR] 3.1, 95% CI 1.6 to 6.2), intermediate (OR 3.1, 95% CI 1.5 to 6.4) and long term (OR 8.8, 95% CI 2.5 to 30.9) in one poor-quality trial. Multidisciplinary treatment was associated with a slight improvement in function (based on a 0-100 FIQ total score) versus usual care or waitlist in the short-term (3 trials, pooled MD −6.52, 95% CI −12.84 to −0.21, I2=67.3%), and versus usual care at intermediate term (3 trials, pooled MD −7.84, 95% CI −11.43 to −4.25, I2=18.2%) and long term (2 trials, pooled MD −8.42, 95% CI −13.76 to −3.08, I2=24.9%) (SOE: low for short, intermediate and long term).
        ii. Multidisciplinary treatment was associated with a slight improvement in pain compared with usual care or waitlist at intermediate term (3 trials, pooled MD −0.68, 95% CI −1.07 to −0.30, I2 = 0%); there were no clear differences compared with usual care or waitlist in the short term (2 trials [excluding an outlier trial], pooled MD on a 0-10 scale −0.24, 95% CI −0.63 to 0.15, I2 = 0%) or with usual care in the long term (2 trials, pooled MD −0.25, 95% CI −0.68 to 0.17, I2 = 0%) (SOE: low for short, intermediate and long-term).
            1. Note: MCID for VAS pain scale is 1.0-1.4
        iii. Data were insufficient for harms.
    b. MED 2014

i. Multidisciplinary chronic pain programs are likely to be more effective than usual care at reducing pain intensity, disability, and number of sick days, and increasing quality of life and return-to-work likelihood compared to usual care. The majority of studies evaluating multidisciplinary chronic pain programs focus on, or include a high proportion of, individuals with low back pain.
ii. A limited body of evidence suggests that multidisciplinary pain programs may be cost-effective at reducing sick absences and increasing return-to-work status for individuals with chronic non-cancer pain. There is insufficient evidence to determine the cost-effectiveness of multidisciplinary pain programs for other outcomes.

5) Massage

a. See AHRQ 2018 under Physical Therapy below
b. 2016 meta-analysis (Crawford 2016) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4925170/pdf/pnw099.pdf
    i. For pain
        1. N=5 studies of massage vs sham for musculoskeletal pain
            a. overall standardized mean difference (SMD) of -0.44 (95% CI, -0.84 to -0.05).
            b. Note: MCID for VAS pain scale is 1.0-1.4
        2. N=4 studies (245 patients) of massage vs no treatment
            a. The overall SMD across these studies (219 participants) was -1.14 (95% CI, -1.94 to -0.35)
        3. N=24 studies (1349 patients) of massage vs active therapy
            a. Overall SMD of -0.26 (95% CI, -0.53 to 0.003)
    ii. For activity
        1. N=3 studies (211 patients) of massage vs sham
            a. overall SMD of 0.36 (95% CI, -0.53 to 1.25);
            b. Note: unclear what scale was utilized
        2. N=7 studies (450 patients) of massage vs active therapy
            a. The overall SMD of -0.23 (95% CI, -0.50 to 0.05
    iii. Overall, low confidence in evidence that showed a small but statistically significant improvement in pain with massage for pain, activity and mood [note: not clinically meaningful]

6) Cognitive behavioral therapy

a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
    i. CBT was associated with a slightly greater effect on function (FIQ Total Score) compared with usual care or waitlist in the short term (2 trials, pooled MD −10.67, 95% CI −17 to −4.30, I2=0%, 0-100 scale). The pooled estimate at intermediate term was not statistically significant (SOE: low for short term and intermediate term, insufficient for long term).
        1. Note: MCID for FIQ is a 14% change
    ii. CBT was associated with a slight improvement in pain (on a 0-10 scale) compared with usual care or waitlist in the short term (3 trials, pooled MD −0.78, 95% CI −1.30 to −0.17), but not in the intermediate term (2 trials, pooled MD −0.44, 95% CI −1.30 to 0.01); evidence from one poor-quality trial

was insufficient to determine effects on long-term pain (SOE: low for short term and intermediate term, insufficient for long term
    1. Note: MCID for VAS pain scale is 1.0-1.4
iii. Data on harms were insufficient.

b. Cochrane review 2017 (35 studies, 4788 patients) (Williams) https://www.ncbi.nlm.nih.gov/pubmed/23152245
    i. CBT vs active control (N=13 studies, 1258 patients)
        1. The overall effect of CBT on pain was not significant immediately post treatment (Z = 1.43, P > 0.05) or at follow up (Z = 1.12, P > 0.05)
        2. The effects of CBT on disability immediately after treatment was significant (Z = 2.66, P < 0.01) with a small effect size: standardised mean difference (SMD) -0.19 (95%confidence interval (CI) -0.33 to -0.05). The effect of CBT at follow-up was significant (Z = 2.28, P < 0.05) with a small effect size of SMD -0.15 (95% CI -0.28 to -0.02)
        3. The effect of CBT on mood; the overall effect was not significant (Z = 0.72, P > 0.05) immediately after treatment or at follow up (Z = 1.15, P > 0.05)
    ii. CBT vs usual care (N=16 studies with 1148 patient)
        1. The effect on pain was significant (Z = 2.59, P < 0.05) with an effect size of SMD -0.21 (95% CI -0.37 to -0.05) immediately after treatment; however, on follow up, the effect was non-significant (Z = 0.99, P > 0.05)
        2. The effect on disability was significant (Z = 2.35, P < 0.05) with an effect size of SMD - 0.26 (95% CI -0.47 to -0.04) immediately after treatment; however, on follow up, the effect was non-significant (Z = 0.66, P > 0.05)
    iii. The effect on mood was significant (Z = 3.84, P < 0.01) with an effect size of SMD -0.38 (95% CI -0.57 to -0.18) immediately after treatment; follow up showed with an overall effect of CBT was just significant (Z = 1.99, P = 0.05) with a small effect size of SMD -0.26 (95%CI -0.51 to 0.00)

7) Pain education

a. 2015 systematic review and meta-analysis (9 studies) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4591560/pdf/13643_2015_Article_120.pdf
    i. Pooled data from five studies, where the comparator group was usual care, showed no improvement in pain or disability.
    ii. Conclusions: The evidence base is limited by the small numbers of studies, their relatively small sample sizes, and the diversity in types of education studied.

8) Physical therapy (specifically myofascial release)

a. AHRQ 2018 https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/nonpharma-chronic-pain-cer-209.pdf
    i. Myofascial release therapy was associated with a slightly greater effect on intermediate-term function as measured by the FIQ (mean 58.6 ± 16.3 vs. 64.1 ± 18.1 on a 100 point scale, P=0.048 for group by repeated measures ANOVA), but not long-term function (mean 62.8 ± 20.1 vs. 65.0 ± 19.8 on the FIQ, 0-100

scale, P=0.329), compared with sham in one fair-quality trial (SOE: low). Short-term function was not reported.

1. Note: MCID for FIQ is a 14% change

ii. There was insufficient evidence to determine the effects of myofascial release therapy on short-term pain (1 poor-quality trial) and intermediate-term pain (1 fair-quality and 1 poor-quality trial) compared with sham; there were inconsistencies in effect estimates between the intermediate-term trials (SOE: insufficient).

iii. Data were insufficient for harms

HERC staff summary of evidence for non-pharmacologic interventions

1) **Tai chi**: small but clinically significant benefit in pain and function in the short term but not intermediate or long term (SOE: low)
2) **Yoga**: inconsistent evidence (SOE: low)
3) **Exercise**: short term non-clinically significant improvement in pain and function (SOE: low to moderate); intermediate term non-clinically significant improvement in function (SOE: moderate); no long term impact on pain (SOE: moderate)
4) **Acupuncture:** small, short to intermediate term, non-clinically significant improvement in function (SOE: moderate); no improvement in pain (SOE: low)
5) **Interdisciplinary rehabilitation**: clinically meaningful improvement in function in the short, intermediate, and long term based on one poor quality study (SOE: low). No clinically meaningful impact on pain (SOE: low)
6) **Mindfulness**: no clear improvement in function or pain (SOE: moderate)
7) **Massage/PT with myofascial release**: small, non-clinically significant impact on short term function (SOE: low); insufficient evidence of impact on pain
8) **Cognitive behavioral therapy**: small, non-clinically significant effects on pain, function and mood immediately post-treatment that is not sustained in the intermediate or long term (SOE: low)
9) **Pain education**: no improvement in pain or disability (SOE: low)

Summary of evidence for non-pharmacological treatments for fibromyalgia from AHRQ review article (2018) compared with usual care, placebo, sham, attention control, or waitlist:

	Function *Short-Term* *Effect Size SOE*	**Function** *Intermediate - Term* Effect Size SOE	**Function** *Long-Term* Effect Size SOE	**Pain** *Short-Term* Effect Size SOE	**Pain** *Intermediate-Term* Effect Size SOE	**Pain** *Long-Term* Effect Size SOE
Exercise	slight +	slight ++	none +	slight ++	none ++	none ++
Psychological Therapies: CBT	slight +	slight +	insufficient evidence	slight +	none +	insufficient evidence
Psychological Therapies: Biofeedback, Imagery	insufficient evidence	insufficient evidence	insufficient evidence	insufficient evidence	insufficient evidence	insufficient evidence
Physical Modalities: Magnetic Pads	insufficient evidence	none +	no evidence	insufficient evidence	none +	no evidence
Manual Therapies: Massage (Myofascial Release)	no evidence	slight +	none +	insufficient evidence	insufficient evidence	slight +
Mindfulness Practices: MBSR	none ++	no evidence	no evidence	none ++	no evidence	no evidence
Mind-Body Practices: Qigong, Tai Chi	slight +	no evidence	no evidence	moderate +	no evidence	no evidence
Acupuncture	slight ++	slight ++	no evidence	none +	none +	no evidence
Multidisciplinary Rehabilitation	slight +	slight +	slight +	none +	slight +	none +

Short-Term: 1 to <6 months; Intermediate-Term: ≥6 to <12 months; Long-Term: ≥12 months
Effect Size: none, slight/small, moderate, or large improvement
Strength of Evidence: + = low, ++ = moderate, +++ = high
CBT = cognitive-behavioral therapy; MBSR = mindfulness-based stress reduction; none = no effect/no statistically significant effect; SOE = strength of evidence

Summary of Evidence for Non-Pharmacologic Therapies for Back and Neck Pain

Treatment	Strength of Evidence	Magnitude of Benefit
Spinal manipulation	Good	Small to moderate short term benefit
Yoga (viniyoga)	Fair	Moderate benefit
Acupuncture	Fair	Moderate benefit
Cognitive behavioral therapy	Good	Moderate benefit
Exercise therapy	Good	Moderate benefit
Intensive interdisciplinary rehabilitation	Good	Moderate benefit
Massage therapy	Fair	Moderate benefit
Progressive relaxation	Fair	Moderate benefit

Note: This evidence table was previously reviewed by the HERC when considering coverage for back pain. The back pain interventions summarized above are abstracted from Chou 2007 and may not be directly comparable to the same treatment summarized by HERC staff above for chronic pain conditions

Evidence for Non-opioid Therapy

Pharmacy and Therapeutics (P&T) Committee review of non-opioid pharmacologic interventions for fibromyalgia

Note: Chronic pain was too undefined a condition for P&T to conduct a meaningful literature review

- There is no moderate or high strength evidence for any pharmacological treatment compared to placebo or other therapy. Like many other conditions for chronic pain, evidence supporting benefit of long-term pharmacological treatment for fibromyalgia is limited, efficacy of pharmacotherapy is relatively modest, and clinical trials often document a large placebo response upon evaluation of symptom improvement. Pharmacological interventions with the most evidence of benefit include duloxetine, milnacipran, and pregabalin, but applicability to a broader population is limited.
- There is low strength evidence that milnacipran or duloxetine may improve pain symptoms as evaluated by patient global impression of improvement or change (PGI-I or PGIC) of much or very much improved, 30% improvement in pain, pain intensity, and disability, but have no clinical improvement for pain relief of 50% or more, sleep, fatigue, depression, cognitive disturbances, anxiety or quality of life. The number needed to treat (NNT) for pain improvement ranged from 5-11 depending on the outcome evaluated.
- There is low strength evidence that, compared to placebo, pregabalin may improve outcomes of pain relief of more than 50%, pain relief of more than 30%, and pain improvement as evaluated by a PGIC score of much or very much improved. The estimated NNT varied depending on dose and outcome, but ranged from 7 to 22.
- Adverse effects more common with pregabalin compared to placebo included somnolence (number needed to harm [NNH] 7), dizziness (NNH 3), weight gain (NNH 18) and peripheral edema (NNH 19; low strength evidence). SNRIs (duloxetine, milnacipran and desvenlafaxine) were associated with an increased incidence of nausea (NNH 6) and somnolence (NNH 20).
- Evidence of benefit or harms for other pharmacological treatments was insufficient.

Update of Evidence for Opioid Therapy

1) **Busse 2018,** JAMA systematic review and meta-analysis of opioids for chronic non-cancer pain
    a. N=96 RCTs (26, 169 patients)
    http://www.partnershiphp.org/Providers/Quality/Documents/MPS%202019/jama_busse_2018_01_09_19.pdf
        i. 25 trials of neuropathic pain, 32 trials of nociceptive pain, 33 trials of central sensitization (pain present in the absence of tissue damage), and 6 trials of mixed types of pain.
        ii. Studies were a minimum of 4 weeks long
        iii. It was not stated what the maximum length of studies were
    b. The primary outcomes were pain intensity (score range, 0-10 cm on a visual analog scale for pain; lower is better and the minimally important difference [MID] is 1 cm), physical functioning (score range, 0-100 points on the 36-item Short Form physical component score [SF-36 PCS]; higher is better and the MID is 5 points)

c. Compared with placebo, opioid use was associated with reduced pain (weighted mean difference [WMD], −0.69 cm [95%CI, −0.82 to −0.56 cm] on a 10-cm visual analog scale for pain, although the difference did not reach the minimally important difference of 1 cm; modeled risk difference for achieving the MID, 11.9% [95%CI, 9.7%to 14.1%]). Studies with longer follow-up reported less pain relief.
d. High-quality evidence from 51RCTs (15 754patients) showed opioids were associated with a small improvement in physical functioning compared with placebo, but did not meet the criterion for the minimally important difference (weighted mean difference, 2.04 points [95% CI, 1.41-2.68 points] on the 100-point SF-36 physical component score, *P* < .001; minimally important difference, 5 points; modeled risk difference for achieving the minimally important difference, 8.5% [95% CI, 5.9%-11.2%]
e. Opioids were not significantly associated with emotional functioning compared with placebo (weighted mean difference, 0.14 points [95% CI, −0.58 to 0.86 points] on the 100-point SF-36 mental component score, *P* = .70)
f. Opioids were associated with increased vomiting (5.9% with opioids vs 2.3% with placebo for trials that excluded patients with adverse events during a run-in period).
g. Low- to moderate-quality evidence suggested similar associations of opioids with improvements in pain and physical functioning compared with nonsteroidal anti-inflammatory drugs (pain: WMD, −0.60 cm [95%CI, −1.54 to 0.34 cm]; physical functioning: WMD, −0.90 points [95%CI, −2.69 to 0.89 points]), tricyclic antidepressants (pain: WMD, −0.13 cm [95%CI, −0.99 to 0.74 cm]; physical functioning: WMD, −5.31 points [95%CI, −13.77 to 3.14 points]), and anticonvulsants (pain: WMD, −0.90 cm[95%CI, −1.65 to −0.14 cm]; physical functioning: WMD, 0.45 points [95%CI, −5.77 to 6.66 points]).
h. CONCLUSIONS Compared with placebo, opioids were associated with small improvements in pain, physical functioning, and sleep quality; unimportant improvements in social functioning; and no improvements in emotional functioning or role functioning. Compared with placebo, opioids were associated with increased vomiting, drowsiness, constipation, dizziness, nausea, dry mouth, and pruritus.

2) **Els 2018**, Cochrane review on intermediate and long term harms of opioid therapy for chronic non-cancer pain
https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012509.pub2/epdf/full
   a. N=16 reviews
      i. The longest study was 13 months in duration, with most in the 6- to 16-week range.
      ii. The quality of the included reviews was high using AMSTAR criteria
      iii. The quality of the evidence for the generic adverse event outcomes according to GRADE ranged from very low to moderate. A GRADE assessment of the quality of the evidence for specific adverse events led to a downgrading to very low- to moderate-quality evidence due to risk of bias, indirectness, and imprecision.
   b. Based on the 14 selected Cochrane Reviews, there was a significantly increased risk of experiencing any adverse event with opioids compared to placebo (risk ratio (RR) 1.42, 95% confidence interval (CI) 1.22 to 1.66) as well as with opioids compared to a non-opioid active pharmacological comparator, with a similar risk ratio (RR 1.21, 95% CI 1.10 to 1.33).

c. There was also a significantly increased risk of experiencing a serious adverse event with opioids compared to placebo (RR 2.75, 95% CI 2.06 to 3.67).
d. Furthermore, we found significantly increased risk ratios with opioids compared to placebo for a number of specific adverse events: constipation, dizziness, drowsiness, fatigue, hot flushes, increased sweating, nausea, pruritus, and vomiting.
e. There was no data on any of the following prespecified adverse events of interest in any of the included reviews in this overview of Cochrane Reviews: addiction, cognitive dysfunction, depressive symptoms or mood disturbances, hypogonadism or other endocrine dysfunction, respiratory depression, sexual dysfunction, and sleep apnea or sleep-disordered breathing.
f. **Authors' conclusions** A number of adverse events, including serious adverse events, are associated with the medium- and long-term use of opioids for CNCP. The absolute event rate for any adverse event with opioids in trials using a placebo as comparison was 78%, with an absolute event rate of 7.5% for any serious adverse event. Based on the adverse events identified, clinically relevant benefit would need to be clearly demonstrated before long-term use could be considered in people with CNCP in clinical practice.

Evidence on Opioid Tapering

The following is a summary of the MED 2018 Evidence Review for opioid tapering as completed by Oregon Health & Science University's Center for Evidence-based Policy:

1) Overall quality of the evidence is very low
2) Findings suggested that pain, function, and quality of life might improve during and after opioid discontinuation or dose reduction
3) Scant evidence on harms associated with tapering strategies
    a. Adverse events—mortality, suicide or overdose
        i. 5 studies in the Frank review included adverse events
            1. 1 opioid-related overdose death in a patient in a buprenorphine treatment program (after discontinuation of buprenorphine) out of a total of 5 studies (no N given)
        ii. A retrospective cohort study conducted in a VA population whose opioid therapy was discontinued by their clinician (primarily for aberrant behaviors) reported that 12% of the cohort had documented suicidal ideation and nonfatal suicidal self-directed violence (SSV) in the 12 months after opioid discontinuation
            1. This study identified Hispanic ethnicity (adjusted odds ratio [OR] 7.25 (95% CI 1.96–27.18), PTSD diagnosis: 2.56 (1.23–5.32), and psychotic-spectrum disorder diagnoses (OR 3.19; 95% CI 1.14 to 8.89) were correlated with suicidal ideation and SSV in the 12 months following clinician-initiated opioid discontinuation.
        iii. Other new studies did not report information on serious adverse events such as mortality, suicide, or overdose events.
    b. Adverse events—opioid withdrawal symptoms

   i. In the systematic review by Frank et al., 18 studies (3 fair and 15 poor methodological quality) reported opioid withdrawal symptoms. Rates of withdrawal symptoms ranged widely across the studies (0% to 100%).

4) Taper length
   a. Not able to draw any conclusions regarding rapid versus slow tapering.
5) Patient-initiated vs nonpatient-initiated tapering
   a. Very little information found on this issue. In almost all of the studies included in the previous MED report and in this update, patients had some autonomy in the decision to taper their opioids.

HERC Staff Evidence Summary of overall evidence for pharmacologic and non-pharmacologic treatments for certain chronic pain conditions

Of the various non-pharmacologic interventions proposed for the new chronic pain line, only Tai Chi and interdisciplinary rehabilitation resulted in clinically meaningful but small improvements in short term function. This improvement only continued into the intermediate and long term for interdisciplinary rehabilitation. Tai Chi and possibly massage/PT with myofascial release had clinically meaningful improvement in short term pain, but this improvement did not continue to the intermediate or long term. The strength of evidence for all these findings is low. Topic experts making up the Chronic Pain Taskforce recommended inclusion of these therapies because, in their experience, these therapies can be helpful for certain patients and have low level of risk. Overall, there was a significantly higher level of evidence that non-pharmacological therapies had a clinically significant impact on back pain (which informed the HERC's Back Pain Guideline) as compared to the chronic pain conditions under current coverage consideration.

The pharmacologic interventions indicated for fibromyalgia included only 3 medications with low evidence of effectiveness (duloxetine [Cymbalta], milnacipran [Savella], and pregabalin [Lyrica]). All other medications reviewed had insufficient evidence of effectiveness. Non-opioid pharmacologic interventions had evidence of adverse effects, including weight gain, nausea and somnolence. Opioid therapy has no to minimal evidence of long term clinically significant benefit for chronic pain conditions for improvement of pain function, or role functioning; there is evidence of harms associated with long term opioid therapy including fatigue, constipation, and nausea, as well as reported risks of dependence, overdose, opioid-induced hyperalgesia, and death. There is limited evidence on the benefits or harms of opioid tapering, although early studies indicate that tapering long term opioid therapy may improve pain, function, and quality of life.

OPTIONS FOR HERC CONSIDERATION:

NO CHANGE

Do not reprioritize chronic pain syndrome, fibromyalgia and related conditions due to lack of evidence of effectiveness of available treatment modalities. Consider readdressing the prioritization of these conditions as part of the 2022 or 2024 Biennial Review.

Note: if this option is adopted, the HERC will still need to discuss any changes required to the chronic back line opioid guideline (see below)

Rationale: There is limited evidence that the proposed interventions have meaningful clinical impact on fibromyalgia and chronic pain syndrome; these interventions will have costs associated with them. The revised proposal may have the effect of increasing access to opioid medications. The decision regarding reprioritization of certain chronic pain conditions can be delayed until the 2022 or 2024 Biennial Review, to allow this decision to be informed by emerging evidence, including the impacts of the 2016 changes in coverage for back conditions. These studies will provide the most relevant evidence to date on the proposed policy, including a better understanding of the impact of the back pain policy on outcomes (positive and negative) in the OHP population.

Impact: Making no change in the prioritization of certain chronic pain conditions including fibromyalgia will continue the status quo. This does not allow access for patients with these conditions to non-pharmaceutical treatments such as physical therapy, acupuncture, or cognitive behavioral therapy, as well as not allowing access to certain medications which require a prior authorization, unless the patient has a covered comorbid condition (e.g. arthritis) or has gone through the exceptions process.

ADOPT MODIFIED PROPOSAL

Adopt the modified CPTF proposal from January with consideration of VbBS/HERC staff suggested edits

Rationale: Currently, patients with these five chronic pain conditions (and who do not have co-morbid covered conditions) do not have access to any therapies other than medications which are not currently subject to prior authorization controls by their CCO or FFS. Such medications may include opioids and gabapentin. In the face of the opioid epidemic, alternative nonpharmacologic therapies for these conditions would be offered to patients. The Chronic Pain Taskforce recommended these changes based on their expert opinion and experience.

Impact: New coverage will be created for non-pharmacologic and pharmacologic treatments for patients with these specific chronic pain conditions, including new coverage of long-term opioid therapy for these conditions if patients meet certain criteria. This will have cost implications that have initially been estimated by the Actuarial Services Unit to be between $10.8-$16.2 million/year starting in 2020. Patients with fibromyalgia will continue to not have opioids intended to be covered, although an opioid taper for patients with fibromyalgia would be newly covered.

The following are the recommended edits for adopting the modified proposal:

a. Create a new line for five chronic pain conditions including fibromyalgia for the 2020 Biennial Review Prioritized List as shown below
b. Adopt a new guideline for this line as shown below
    i. Discuss if all suggested treatments should be included on this line
c. Determine scoring for this new line
d. Modify line 528 FIBROMYALGIA, CHRONIC FATIGUE SYNDROME AND RELATED CONDITIONS as shown below
    i. Remove all diagnoses other than chronic fatigue syndrome and modify line title
    ii. Rescore this line if necessary
e. Modify GUIDELINE NOTE 56, NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE as shown below
    i. Matches changes in the new chronic pain conditions guideline
    ii. Removes obsolete table
f. Modify GUIDELINE NOTE 92, ACUPUNCTURE as shown below
    i. Adds the new chronic pain line to the guideline
g. Delete GUIDELINE NOTE 135, FIBROMYALGIA
    i. Components are all incorporated into the new guideline

LINE: XXX
CONDITION: FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS
TREATMENT: LIMITED PHYSICAL MODALITIES, COGNITIVE BEHAVIORAL THERAPY, MEDICAL THERAPY
ICD-10: G89.21 (Chronic pain due to trauma), G89.28 (Other chronic postprocedural pain), G89.29 (Other chronic pain), G89.4 (Chronic pain syndrome), M79.7 (fibromyalgia)
CPT: 90785, 90832-90840, 90853 (psychotherapy—for CBT and ACT), 96150-96155 (Health and behavior assessment and intervention), 97110-97124, 97140-97168, 97530, 97535 (PT/OT), 97810-97814 (acupuncture), 98966-98969, 99051, 99060,99070,99078,99201-99215,99281-99285,99304-99337,99340-99404,99408-99449,99487-99490,99495,99496,99605-99607 (medical office visits, including ER and SNF)
HCPCS: G0157-G0160 (PT/OT assistant), G0396-G0397 (alcohol and substance abuse screening), G0463-G0467,G0469,G0470 (FQHC care), G0490, G0511-G0513 (RFQHC care), G0514 (prolonged office visit)

GUIDELINE NOTE XXX, TREATMENT OF FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS

Line XXX

Chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), other chronic pain (ICD-10 G89.29), and fibromyalgia (ICD-10 M79.7) are included on line XXX when symptoms have been present for at least 3 months.

The following treatments are included on line XXX:

- Office evaluation, consultation and education.
    - Pain education, if done, should include but not be limited to sleep, nutrition, stress reduction/mood, exercise, and knowledge of pain as a biopsychosocial phenomenon. All providers with primary responsibility for managing fibromyalgia, chronic pain

syndrome and related conditions ~~patients~~ should be trained in pain science (e.g., a contemporary understanding of the central and peripheral nervous system in chronic pain), motivational interviewing, culturally sensitive care, and trauma informed care. Care should be multidisciplinary and focus on active therapies.

- Cognitive behavioral therapy (CBT). The necessity for CBT 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.
- The following therapies, when available, may be provided: adaptive and restorative yoga, Tai Chi, mindfulness training, massage, supervised exercise therapy (land based and aquatic), intensive interdisciplinary rehabilitation. HCPCS S9451 is only included on Line XXX for the provision of yoga, Tai Chi, or supervised exercise therapy.
- A total of 30 visits per year of any combination of the following therapies when available and medically appropriate. These therapies are only included on these lines 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. Once the pre-determined goals of care have been achieved, an additional two visits may be authorized for maintenance therapy to maintain these improvements. These 30 visits count toward the visit totals in GUIDELINE NOTE 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE if the patient has comorbid back or spine conditions.
    1) Rehabilitative therapy (physical and/or occupational therapy), if provided according to Guideline Note 6 REHABILITATIVE AND HABILITATIVE THERAPIES. Rehabilitation services provided under this guideline also count towards visit totals in Guideline Note 6. CPT 97124 is included in this category.
    2) Acupuncture

Non-opioid medications are only included on line XXX if all of the following apply:

1) The patient is also being treated with active therapy (e.g., physical therapy, CBT) or is continuing maintenance of self-management strategies learned from such therapy.
2) The benefit of non-opioid medication is re-evaluated at least every 90 days and medications are only continued if there is documented evidence of initial improvement of function of at least fifteen percent as compared to baseline based on a validated tool (e.g., Pain average, interference with Enjoyment of life, and interference with General activity" (PEG) Assessment Scale, Oswestry, SF-MPQ, MSPQ), and function is maintained thereafter. Less frequent monitoring may be appropriate for certain medications after safety and efficacy are established.

Short term opioid therapy (<90 days) is included on these lines only for chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), and other chronic pain (ICD-10 G89.29), and only when prescribed in alignment with the Oregon Opioid Prescribing Guideline (2017-2018 version) https://www.oregon.gov/oha/PH/PREVENTIONWELLNESS/SUBSTANCEUSE/OPIOIDS/Documents/taskforce/oregon-opioid-prescribing-guidelines.pdf

Long-term opioid therapy (>90 days) is included on these lines only for chronic pain syndrome (ICD-10 G89.4), chronic pain due to trauma (ICD-10 G89.21), other chronic postprocedural pain (ICD-10 G89.28), and other chronic pain (ICD-10 G89.29) when all of the following criteria are met:

- In alignment with the Oregon Opioid Prescribing Guideline (2017-2018 version) https://www.oregon.gov/oha/PH/PREVENTIONWELLNESS/SUBSTANCEUSE/OPIOIDS/Documents/taskforce/oregon-opioid-prescribing-guidelines.pdf
    - No illicit drug use or active substance use disorder (excluding tobacco)
    - The patient has been prescribed the patient pain education module through OPMC when it becomes available
    - Verification that the patient is not high risk for opioid misuse or abuse
        - Appropriate risk assessment has been performed (e.g., Opioid Risk Assessment Tool)
        - PDMP checked at least annually and shows no aberrant behavior
        - Urine drug testing is performed at least once per year and is appropriate
- Prescribing criteria
    - Initial functional improvement has been documented of at least 30%, and function is maintained throughout the prescribing period
    - When prescribed with nonpharmacologic treatment options for managing pain
    - Careful reassessment of the evidence of individual benefits and risks should be undertaken for dosages > 50 MED. Dosages >90 MED should be avoided or carefully justified. When dosages > 50 MED are prescribed, naloxone should also be prescribed to the patient.
    - Patient and provider have assessed the relative risks and benefits of therapy and agree benefits outweigh risks, and have completed a material risk notice https://www.oregon.gov/omb/OMBForms1/material-risk-notice.pdf
    - No additional opioids are prescribed for flares of the chronic pain condition, although opioids may be prescribed separately for other acute injuries or surgeries as clinically appropriate
    - Comorbid mental health disorders are appropriately addressed
    - ~~No concurrent prescribing of benzodiazepines without extenuating circumstances~~ [strike from previous CPTF recommendation as this is included in the Oregon Opioid Prescribing Guideline]
- ~~Prescriber criteria~~
    - ~~Prescriber has updated opioid prescribing CME and ideally has completed the Oregon Pain Management Commission (OPMC) pain module~~
    - ~~[strike this language from previous recommendation as it would not be implementable]~~

~~Opioid tapering for fibromyalgia and patients failing to meet the opioid prescribing criteria above:~~
Opioid therapy is not included on this line for the following conditions/situations due to the evidence for harm:

- When prescribed for fibromyalgia
- For patients who fail to meet the guideline requirements regarding opioids above who have chronic pain syndrome, chronic pain due to trauma, other chronic postprocedural pain, and other chronic pain conditions included on this line

If a patient is already receiving long-term opioid therapy for these conditions/situations, then tapering is indicated. Opioid tapering should be done on an individualized basis which includes a taper goal of zero. Tapering should be unidirectional with a shared goal set by the patient and provider, generally with a 5-10% decrease monthly, and can be paused or slowed if the prescriber believes this is medically appropriate based on the patient's overall status. Taper plans should include nonpharmacological

treatment strategies for managing the patient's pain. During the taper, behavioral health conditions need to be regularly assessed and appropriately managed. In some situations (e.g., in the setting of active substance use disorder, history of opioid overdose, aberrant behavior), more rapid tapering or transition to medication assisted treatment may be appropriate and should be directed by the prescribing provider. If a patient has developed opioid use disorder, treatment is included on Line 4 SUBSTANCE USE DISORDER**.**

Line Scoring if Reprioritized

	Line 401	Line XXX	Line 528
Category (Non-Fatal Condition)	7	7	7
Healthy Life (0-10)	5	TBD	4
Suffering (0-5)	3	TBD	3
Population effects (0-5)	0	0	0
Vulnerable population (0-5)	0	0	0
Tertiary prevention (0-5)	2	TBD	0
Effectiveness (0-5)	3	TBD	1
Need for service (0-1)	0.8	TBD	0.8
Net cost	2	2	2
Score	432	TBD	112
Approximate line	401	TBD	528

Line 401 CONDITIONS OF THE BACK AND SPINE
Line XXX FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS [proposed]
Line 528 FIBROMYALGIA, CHRONIC FATIGUE SYNDROME, AND RELATED DISORDERS [current]

Scoring comparators

Healthy Life (0-10)

- Score = 5
    - 356 RHEUMATOID ARTHRITIS, OSTEOARTHRITIS AND ASEPTIC NECROSIS OF BONE/JOINT REPLACEMENT
    - 361 SCOLIOSIS
    - 395 ENDOMETRIOSIS AND ADENOMYOSIS
    - 401 CONDITIONS OF THE BACK AND SPINE/MEDICAL THERAPY
    - 526 DISORDERS OF FUNCTION OF STOMACH AND OTHER FUNCTIONAL DIGESTIVE DISORDERS
- Score = 4
    - 409 MIGRAINE HEADACHES
    - 421 LYMPHEDEMA
    - 431 PERSISTENT DEPRESSIVE DISORDER
    - 527 CONDITIONS OF THE BACK AND SPINE WITHOUT URGENT SURGICAL INDICATIONS/SURGERY
    - 529 CHRONIC PELVIC INFLAMMATORY DISEASE, PELVIC PAIN SYNDROME, DYSPAREUNIA

Tertiary prevention (0-5)

- Score = 2
    - 368 STREPTOCOCCAL SORE THROAT AND SCARLET FEVER; VINCENT'S DISEASE; ULCER OF TONSIL; UNILATERAL HYPERTROPHY OF TONSIL
    - 387 ANOGENITAL VIRAL WARTS
    - 395 ENDOMETRIOSIS AND ADENOMYOSIS
    - 401 CONDITIONS OF THE BACK AND SPINE/MEDICAL THERAPY
    - 420 MENSTRUAL BLEEDING DISORDERS
    - 421 LYMPHEDEMA
- Score = 1
    - 376 DISRUPTIONS OF THE LIGAMENTS AND TENDONS OF THE ARMS AND LEGS, EXCLUDING THE KNEE, RESULTING IN SIGNIFICANT INJURY/IMPAIRMENT
    - 413 OVERANXIOUS DISORDER; GENERALIZED ANXIETY DISORDER; ANXIETY DISORDER, UNSPECIFIED
    - 431 PERSISTENT DEPRESSIVE DISORDER
    - 510 VERTIGINOUS SYNDROMES AND OTHER DISORDERS OF VESTIBULAR SYSTEM
    - 534 PERIPHERAL NERVE DISORDERS/SURGERY
- Score = 0
    - 356 RHEUMATOID ARTHRITIS, OSTEOARTHRITIS AND ASEPTIC NECROSIS OF BONE/JOINT REPLACEMENT (surgical line)
    - 409 MIGRAINE HEADACHES
    - 461 OSTEOARTHRITIS AND ALLIED DISORDERS
    - 507 PERIPHERAL NERVE DISORDERS
    - 522 UNCOMPLICATED HERNIA AND VENTRAL HERNIA (OTHER THAN INGUINAL HERNIA IN CHILDREN AGE 18 AND UNDER OR DIAPHRAGMATIC HERNIA)
    - 538 TENSION HEADACHES

Effectiveness (0-5)

- Score = 3
    - 395 ENDOMETRIOSIS AND ADENOMYOSIS
    - 401 CONDITIONS OF THE BACK AND SPINE/MEDICAL THERAPY
    - 413 OVERANXIOUS DISORDER; GENERALIZED ANXIETY DISORDER; ANXIETY DISORDER, UNSPECIFIED
    - 461 OSTEOARTHRITIS AND ALLIED DISORDERS
    - 494 RAYNAUD'S SYNDROME
    - 538 TENSION HEADACHES
    - 549 SOMATIC SYMPTOMS AND RELATED DISORDERS
- Score = 2
    - 431 PERSISTENT DEPRESSIVE DISORDER
    - 507 PERIPHERAL NERVE DISORDERS
    - 510 VERTIGINOUS SYNDROMES AND OTHER DISORDERS OF VESTIBULAR SYSTEM
    - 513 CHRONIC PROSTATITIS, OTHER DISORDERS OF PROSTATE
- Score = 1
    - 489 SPASTIC DIPLEGIA/RHIZOTOMY
    - 529 CHRONIC PELVIC INFLAMMATORY DISEASE, PELVIC PAIN SYNDROME, DYSPAREUNIA

- 534 PERIPHERAL NERVE DISORDERS/SURGERY
- 550 OTHER NONINFECTIOUS GASTROENTERITIS AND COLITIS

Rescoring remainder of line 528

Line: 528
Condition: ~~FIBROMYALGIA,~~ CHRONIC FATIGUE SYNDROME~~, AND RELATED DISORDERS~~ (See Guideline Notes 64,65~~,135~~)
Treatment: MEDICAL THERAPY
ICD-10: ~~G89.21,G89.28-G89.29,G89.4,M79.7,~~R53.82
CPT: 90785,90832-90840,90846-90853,93792,93793,98966-98969,99051,99060,99070,99078, 99201-99215,99281-99285,99341-99378,99381-99404,99408-99449,99487-99490,99495-99498,99605-99607
HCPCS: G0248-G0250,G0396,G0397,G0463-G0467,G0490,G0511,G0513,G0514

Maintain the 2014 prioritization for Chronic Fatigue Syndrome line as shown below

	Current Line 528	Chronic Fatigue Syndrome
Category (Non-Fatal Condition)	7	7
Healthy Life Years (0-10)	4	4
Suffering (0-5)	3	3
Population effects (0-5)	0	0
Vulnerable population (0-5)	0	0
Tertiary prevention (0-5)	0	0
Effectiveness (0-5)	1	1
Need for service (0-1)	0.8	0.8
Net cost	2	2
Score	112	112
Approximate line	528	528

Accompanying guideline note changes

GUIDELINE NOTE 56, NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE

Lines 361,401

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 these lines:

- Office evaluation and education,
- Up to four total visits, consisting of the following treatments: OMT/CMT, acupuncture, and PT/OT. Massage, if available, may be provided as part of these four total visits.
- 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 60 OPIOIDS 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, as well as patients undergoing opioid tapers as in Guideline Note 60 OPIOIDS FOR CONDITIONS OF THE BACK AND SPINE, the following treatments are included on these lines:

- Office evaluation, consultation and education
- Cognitive behavioral therapy (CBT). The necessity for CBT 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.
- Prescription and over-the-counter medications; opioid medications subject to the limitations on coverage of opioids in Guideline Note 60 OPIOIDS FOR CONDITIONS OF THE BACK AND SPINE. ~~See evidence table.~~
- The following evidence-based therapies, when available, may be provided: yoga, massage, supervised exercise therapy, intensive interdisciplinary rehabilitation. HCPCS S9451 is only included on Line 401 for the provision of yoga or supervised exercise therapy.
- 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 included on these lines 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). <u>These 30 visits count toward the visit totals in GUIDELINE NOTE XXX TREATMENT OF FIBROMYALGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS if the patient has one or more of these comorbid chronic pain conditions.</u>
    3) Rehabilitative therapy (physical and/or occupational therapy), if provided according to Guideline Note 6 REHABILITATIVE AND HABILITATIVE THERAPIES. Rehabilitation services provided under this guideline also count towards visit totals in Guideline Note 6. CPT 97124 is included in this category.
    4) Chiropractic or osteopathic manipulation
    5) Acupuncture

Mechanical traction (CPT 97012) is not included on these lines, due to evidence of lack of effectiveness for treatment of back and neck conditions.

The development of this guideline note was informed by HERC coverage guidances on Low Back Pain Non-Pharmacologic, Non-Invasive Intervention, Low Back Pain, Pharmacological and Herbal Therapies. See http://www.oregon.gov/oha/HPA/CSI-HERC/Pages/Evidence-based-Reports.aspx.

[delete the table below]

~~**Evidence Table of Effective Treatments for the Management of Low Back Pain**~~

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 (Carefully consider risks/harms)	Acetaminophen	•	•
	NSAIDs	•(▲)	•(▲)
	Skeletal muscle relaxants	•	
	Antidepressants (TCA)		•
	*Benzodiazepines***	•(▲)	•(▲)
	*Tramadol, opioids***	•(▲)	•(▲)
Interdisciplinary therapy	Intensive interdisciplinary rehabilitation		•

- 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).

▲ *Carries greater risk of harms than other agents in table.*

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.

Reprioritization of Certain Chronic Pain Conditions
March 2019

GUIDELINE NOTE 60, OPIOIDS FOR CONDITIONS OF THE BACK AND SPINE

Lines 346,361,401,527

Opioid medications are only included on these lines under the following criteria:

For acute injury, ~~acute flare of chronic pain,~~ or after surgery:

1) During the first 6 weeks opioid treatment is included on these lines ONLY:
   a) When each prescription is limited to 7 days of treatment, AND
   b) For short acting opioids only, AND
   c) When one or more alternative first line pharmacologic therapies such as NSAIDs, acetaminophen, and muscle relaxers have been tried and found not effective or are contraindicated, AND
   d) When prescribed with a plan to keep active (home or prescribed exercise regime) and with consideration of additional therapies such as spinal manipulation, physical therapy, yoga, or acupuncture, AND
   e) There is documented verification that the patient is not high risk for opioid misuse or abuse.
2) Treatment with opioids after 6 weeks, up to 90 days after the initial injury/~~flare/~~surgery is included on these lines ONLY:
   a) With documented evidence of improvement of function of at least thirty percent as compared to baseline based on a validated tools (e.g. Pain average, interference with Enjoyment of life, and interference with General activity" (PEG) Assessment Scale, Oswestry, Neck Disability Index, SF-MPQ, and MSPQ).
   b) When prescribed in conjunction with therapies such as spinal manipulation, physical therapy, yoga, or acupuncture.
   c) With verification that the patient is not high risk for opioid misuse or abuse. Such verification may involve
      i) Documented verification from the state's prescription monitoring program database that the controlled substance history is consistent with the prescribing record
      ii) Use of a validated screening instrument to verify the absence of a current substance use disorder (excluding nicotine) or a history of prior opioid misuse or abuse
      iii) Administration of a baseline urine drug test to verify the absence of illicit drugs and non-prescribed opioids.
   d) Each prescription must be limited to 7 days of treatment and for short acting opioids only
3) Long-term opioid treatment (>90 days) after the initial injury~~/flare/~~surgery is not included on these lines except for the taper process described below.

Transitional coverage for patients on long-term opioid therapy ~~as of July 1, 2016~~:
For patients ~~on covered chronic~~ receiving long-term opioid therapy (>90 days) for conditions of the back and spine ~~as of July 1, 2016, opioid medication is included on these lines only from July 1, 2016 to December 31, 2016. During the period from January 1, 2017 to December 31, 2017~~, continued coverage of opioid medications requires an individual treatment plan which includes a taper plan ~~developed by January 1, 2017 which includes a taper with an end to opioid therapy no later than January 1, 2018~~. Opioid tapering should be done on an individualized basis and include a taper goal to zero. Tapering should be unidirectional with a shared goal set by the patient and provider, generally with a 5-10% decrease monthly and can be paused or slowed if the prescriber believes this is medically appropriate based on the patient's overall status. Taper plans ~~must~~ should include nonpharmacological treatment

strategies for managing the patient's pain ~~based on Guideline Note 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE~~. During the taper, behavioral health conditions need to be regularly assessed and appropriately managed. In some situations (e.g., in the setting of active substance use disorder, history of opioid overdose, aberrant behavior), more rapid tapering or transition to medication assisted treatment may be appropriate and should be directed by the prescribing provider. If a patient has developed ~~dependence and/or addiction related to their opioids~~ opioid use disorder, treatment is ~~available~~ included on Line 4 SUBSTANCE USE DISORDER**.**

New language (without showing changes from previous version)

Transitional coverage for patients on long-term opioid therapy:
For patients receiving long-term opioid therapy (>90 days) for conditions of the back and spine, continued coverage of opioid medications requires an individual treatment plan which includes a taper plan. Opioid tapering should be done on an individualized basis and include a taper goal to zero. Tapering should be unidirectional with a shared goal set by the patient and provider, generally with a 5-10% decrease monthly and can be paused or slowed if the prescriber believes this is medically appropriate based on the patient's overall status. Taper plans should include nonpharmacological treatment strategies for managing the patient's pain. During the taper, behavioral health conditions need to be regularly assessed and appropriately managed. In some situations (e.g., in the setting of active substance use disorder, history of opioid overdose, aberrant behavior), more rapid tapering or transition to medication assisted treatment may be appropriate and should be directed by the prescribing provider. If a patient has developed opioid use disorder, treatment is included on Line 4 SUBSTANCE USE DISORDER.

GUIDELINE NOTE 92, ACUPUNCTURE

Lines 1,5,202,361,401,409,461,538

Inclusion of acupuncture (CPT 97810-97814) on the Prioritized List has the following limitations:

Line 1 PREGNANCY

Acupuncture pairs on Line 1 for the following conditions and codes.

Hyperemesis gravidarum

ICD-10-CM: O21.0, O21.1

Acupuncture pairs with hyperemesis gravidarum when a diagnosis is made by the maternity care provider and referred for acupuncture treatment for up to 12 sessions of acupressure/acupuncture per pregnancy.

Breech presentation

ICD-10-CM: O32.1

Acupuncture (and moxibustion) is paired with breech presentation when a referral with a diagnosis of breech presentation is made by the maternity care provider, the patient is between 33 and 38 weeks gestation, for up to 6 sessions per pregnancy.

Back and pelvic pain of pregnancy

ICD-10-CM: O99.89

Acupuncture is paired with back and pelvic pain of pregnancy when referred by maternity care provider/primary care provider for up to 12 sessions per pregnancy.

Line 5 TOBACCO DEPENDENCE

Acupuncture is included on this line for a maximum of 12 sessions per quit attempt up to two quit attempts per year; additional sessions may be authorized if medically appropriate.

Line 202 CHRONIC ORGANIC MENTAL DISORDERS INCLUDING DEMENTIAS

Acupuncture is paired with the treatment of post-stroke depression only. Treatments may be billed to a maximum of 30 minutes face-to-face time and limited to 12 total sessions per year, with documentation of meaningful improvement; patients may have additional visits authorized beyond these limits if medically appropriate.

Line 361 SCOLIOSIS

Acupuncture is included on this line with visit limitations as in Guideline Note 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE.

Line 401 CONDITIONS OF THE BACK AND SPINE

Acupuncture is included on this line with visit limitations as in Guideline Note 56 NON-INTERVENTIONAL TREATMENTS FOR CONDITIONS OF THE BACK AND SPINE.

Line 409 MIGRAINE HEADACHES

Acupuncture pairs on Line 409 for migraine (ICD-10-CM G43.0, G43.1, G43.5, G43.7, G43.8, G43.9), for up to 12 sessions per year.

Line XXX FIBROMYAGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS

Acupuncture is included on this line with visit limitations as in Guideline Note XXX TREATMENT OF FIBROMYAGIA, CHRONIC PAIN SYNDROME AND RELATED CONDITIONS

Line 461 OSTEOARTHRITIS AND ALLIED DISORDERS

Acupuncture pairs on Line 461 for osteoarthritis of the knee only (ICD-10-CM M17), for up to 12 sessions per year.

*Line 538 TENSION HEADACHES

Acupuncture is included on Line 538 for treatment of tension headaches (ICD-10-CM G44.2), for up to 12 sessions per year.

The development of this guideline note was informed by a HERC coverage guidance. See http://www.oregon.gov/oha/HPA/CSI-HERC/Pages/Evidence-based-Reports.aspx.

*Below the current funding line

~~**GUIDELINE NOTE 135, FIBROMYALGIA**~~

~~*Line 528*~~

~~Fibromyalgia (ICD-10-CM M79.7) treatment should consist of a multi-modal approach, which should include two of more of the following:~~

~~A) medications other than opioids~~
~~B) exercise advice/programs~~
~~C) cognitive behavioral therapy.~~

~~Care should be provided in the primary care setting. Referrals to specialists are generally not required. Use of opioids should be avoided due to evidence of harm in this condition~~

Update on proposed changes to coverage of treatments for certain chronic pain conditions for the Oregon Health Plan

The Oregon Health Authority (OHA) is committed to transforming health care to improve the health of Oregonians. The Health Evidence Review Commission (HERC), a volunteer panel of health leaders and experts, plays a critical role in fulfilling this mission by prioritizing health services covered by the Oregon Health Plan. In recent months, OHA staff has been working in collaboration with the advisory Chronic Pain Task Force, to prepare a proposal for the HERC's consideration to expand treatment options for certain chronic pain conditions and protect against overprescribing of opioid painkillers.

The CPTF and OHA staff completed the development of a proposal in December 2018 to enhance coverage of treatments for fibromyalgia and four other diagnoses related to chronic pain. The goal of this proposal is to expand treatment options for patients with chronic pain conditions that are currently not covered in the Oregon Health Plan, with the goal of improving patient health and safety. At its March 14, 2019 meeting, the HERC and its Value-based Benefits Subcommittee (VbBS) must consider this proposal as it relates to the entire benefit package for the Oregon Health Plan.

This proposed benefit expansion includes a menu of pharmacologic and non-pharmacologic pain treatment services that are currently not covered for these conditions. If adopted, it would take effect January 1, 2020. Additional options will be considered by the HERC, including not adopting the proposal. HERC will use its prioritization methodology to weigh the potential options based on the evidence of benefit, cost impact and public input.

Questions and answers

I've just learned of this proposal. How did we get to this point? The Chronic Pain Task Force met seven times between September, 2017 and December, 2018. The task force's recommendations were initially presented to the VbBS in August, 2018. The VbBS began reviewing a revised proposal based on additional evidence, public testimony and implementation concerns on January 17, 2019. Meeting materials and minutes are available on our Meeting Archives page. All meetings were public, and members of the task force received extensive written and oral public input on the proposal, including testimony from national experts on pain management and opioid tapering.

What is the current proposal? The proposal to be considered March 14, 2019 will be similar to what was considered at VbBS and HERC on January 17, 2019. The HERC will also consider an option not to adopt the proposal.

The critical component of the modified CPTF proposal is to reprioritize five chronic pain diagnosis codes to their own line on the Prioritized List. In addition, there are proposed additions to related guidelines. The new line would include:

- Fibromyalgia and four broad chronic pain diagnoses (G89.21 Chronic pain due to trauma, G89.28 Other chronic postprocedural pain, G89.29 Other chronic pain, and G89.4 Chronic pain syndrome) moved to the funded region.

- Nonpharmacologic treatments including exercise therapy, acupuncture, tai chi, acupuncture, physical therapy and cognitive behavioral therapy.
- Non-opioid medications, with a requirement the patient also be treated with active therapy or continuing self-maintenance of strategies learned in active therapy.
- Opioid medications for all these conditions except fibromyalgia (which would continue to be excluded from coverage by the Prioritized List). For the other conditions, the proposal contains some requirements for safe and effective prescribing in alignment with the Oregon Opioid Prescribing Guidelines. For patients currently receiving opioids for fibromyalgia through an exception to the Prioritized List, and for other patients receiving prescriptions for opioids which do not align with the prescribing guidelines, the proposal includes coverage of opioids during an individualized taper plan. The plan must include a goal of achieving cessation of opioids, though the taper plan may be slowed or paused if appropriate. The plan does not include a duration or deadline for completion of the taper.

There is also an option to not make any changes to the current prioritization of fibromyalgia and certain other chronic pain conditions due to the low level of effectiveness for various therapies and due to the other consequences of reprioritizing these diagnoses in the funded region, such as an increase in coverage for opioid medications.

Would the proposal take away all opioids for all chronic pain patients? No. At no time has the proposal affected opioids being prescribed for other funded conditions under the Oregon Health Plan (e.g. arthritis, cancer, end-of-life care, etc).

The HERC has had a long-term guideline that opioids are not intended to be covered for fibromyalgia due to their lack of effectiveness and risk of harm. For patients who are currently receiving opioids for fibromyalgia despite this guideline, the new coverage proposal may result in them being required to begin an individualized taper plan.

Patients receiving opioids for the other four chronic pain conditions under consideration could be required to taper as part of Oregon Health Plan coverage, but only if their current prescriptions do not align (or cannot be adjusted to align) with safe and effective prescribing as outlined in the Oregon Opioid Prescribing Guidelines. Decisions about the pace of any taper plan would be made by prescribers, not health plans, and taper plans could be paused if needed. As has always been the case, providers may refuse to prescribe opioids, or decide to initiate a taper plan based on their clinical judgement.

If the HERC chooses not to change the prioritization of fibromyalgia and certain other chronic pain conditions, then these conditions will continue to be “below the line” and will continue to not be eligible for opioid prescriptions if the patient’s CCO has prescription controls on opioids.

How many people could this proposal impact? During calendar year 2017, OHA’s Actuarial Services Unit (ASU) found approximately 90,000 OHP recipients had a claim including one of the diagnoses affected by the proposal. Of these, approximately 63,000 also had a diagnosis of back or spine pain, meaning they would already be eligible for a package of services similar to those proposed under the CPTF proposal. This leaves about 27,000 recipients who might be eligible for the new nonpharmacologic benefits, though some of these might already have access to certain benefits such as physical therapy because of other orthopedic conditions. Of the 90,000 recipients, about 40,000 had at least one opioid prescription during the time period and 13,000 had at least 120 days supply of opioids during that year.

What will it cost? OHA's Actuarial Service Unit (ASU) estimates the cost of the nonpharmacologic therapies to be $10.8 to $16.8 million for all of the Oregon Health Plan in 2020. These cost adjustments assume no significant impact on pharmaceutical costs, as most of the patients receiving opioids would already be eligible to receive them due to a comorbid funded diagnosis. They assume no significant cost from increased access to pregabalin as it will be available in generic form in 2019.

What factors will the Commission consider as it prioritizes these treatments? The Commission's legislative mandate is to rank services "by priority, from the most important to the least important, representing the comparative benefits of each service to the population to be served." The Commission will use its Prioritization Methodology, which includes consideration of several factors including the effectiveness of the treatments, the proportion of affected patients who need the services, pain and suffering caused by the condition, the overall effect of the condition on a person's healthy life and the ability of the treatment to prevent acute exacerbations of the chronically painful condition. These are used to determine a score which ranks the line under consideration relative to other lines on the Prioritized List.

What options does the Commission have in addressing the proposal? The Commission could choose to accept the proposal as presented or to adopt a modified version. Alternately, it could decide not to create a new line for the reprioritization of these services at all.

Whether or not the Commission creates the new line, the Commission will consider modifying Guideline Note 60, Opioids for Conditions of the Back and Spine, to remove the existing reference to an end date for tapering that has already passed (January 1, 2018) and to update language related to tapering in light of the work of the Chronic Pain Task Force.

Why are back and spine pain guidelines being addressed as part of this work?

HERC reviewed the evidence for a variety of nonpharmacologic and pharmacologic interventions for back pain starting in 2013. They decided to reprioritize back pain to the funded region of the Prioritized List which allowed access to evidence-based treatments, but also restricted opioid coverage because of a lack of evidence of benefit, and concerns given the opioid epidemic. This back pain policy went into effect July 1, 2016 and is not a new HERC policy. The new suggested changes to the back and spine guidelines are to remove references to dates that have passed and to consider adding language allowing for a more individualized taper plan.

How can I participate or get updates on HERC's activities?
You can subscribe at the HERC website at https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/ to receive notifications of future meetings and look at materials being discussed. Materials for the March 14th meetings will be posted on Thursday, March 7th at https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Meetings-Public.aspx. You can attend the meetings, which are open to the public, and speak during time set aside for public comment. You can listen to the meetings by dialing 1-888-204-5984, participant code 801373 and also register for the meeting webinar at https://attendee.gotowebinar.com/rt/4563145172385374211. You can also send written comment of up to 1,000 words to HERC.Info@state.or.us by 12:00 PM PDT, Tuesday, March 12th. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Policy-Comment-Current-Topics.aspx for further details on HERC's policies for providing verbal or written comments.

Everyone has a right to know about and use Oregon Health Authority (OHA) programs and services. OHA provides free help. Some examples of the free help OHA can provide are:

- Sign language and spoken language interpreters
- Written materials in other languages
- Braille
- Large print
- Audio and other formats

If you need help or have questions, please contact Daphne Peck at 503-373-1985, 711 TTY or herc.info@state.or.us at least 48 hours before the meeting.

Section 5.0

Previously Discussed Items

Pulmonary Rehabilitation

Question: Should a guideline limiting pulmonary rehabilitation be added to the Prioritized List?

Question source: VbBS

Issue: Pulmonary rehabilitation was discussed at the January 2019 VbBS meeting. Based on a review of the evidence and expert guidelines, the VbBS agreed with the staff recommendation to add a new pulmonary rehabilitation guideline, but requested further staff research into 1) the indications for repeat pulmonary rehabilitation (such as lung reduction surgery or lung transplant), and 2) whether a total number of sessions per week or total number of hours allowed should be added to the guideline based on other expert guidelines.

Pulmonary rehabilitation is currently is on multiple lines on the Prioritized List with no limitations on coverage. Pulmonary rehabilitation is a broad program that helps improve the well-being of people who have chronic respiratory conditions such as COPD (chronic obstructive pulmonary disease), sarcoidosis, idiopathic pulmonary fibrosis, or cystic fibrosis. Pulmonary rehabilitation is a multi-disciplinary treatment that might include exercise training, nutritional counseling, education, breathing strategies, psychological counseling, etc. Pulmonary rehabilitation is normally an outpatient therapy, but may be provided in a patient's home.

Current Prioritized List status:

HCPCS code	**Code Description**	**Current Placement**
G0237	Therapeutic procedures to increase strength or endurance of respiratory muscles, face to face, one on one, each 15 minutes	Ancillary Procedures File
G0238	Therapeutic procedures to improve respiratory function, other than described by G0237, one on one, face to face, per 15 minutes	Ancillary Procedures File
G0239	Therapeutic procedures to improve respiratory function or increase strength or endurance of respiratory muscles, two or more individuals	Ancillary Procedures File
G0424	Pulmonary rehabilitation, including exercise (includes monitoring), one hour, per session	9,58,223,234,241,283
S9473	Pulmonary rehabilitation program, non-physician provider, per diem	Ancillary Procedures File

Pulmonary Rehabilitation

Expert guidelines on length of pulmonary rehabilitation

1) ACCP/AACVPR 2007: a minimum of 6 to 12 weeks. Longer pulmonary rehabilitation programs (beyond 12 weeks) produce greater sustained benefits than shorter programs. (GRADE: 2C)
2) British Thoracic Society 2013: Pulmonary rehabilitation programmes of 6–12 weeks are recommended.
3) Canadian Thoracic Society 2010: it is recommended that longer PR programs, beyond six to eight weeks duration, be provided for COPD patients. (GRADE: 2B)
4) NICE 2016: at least 6 weeks in duration and include a minimum of twice-weekly supervised sessions

Other payer guidelines on number of sessions/hours of pulmonary rehab

1) CMS 2010: Medicare will pay for up to two (2) one-hour sessions per day, for up to 36 lifetime sessions (in some cases, up to 72 lifetime sessions) of PR [pulmonary rehabilitation]
2) Aetna 2019: typical course of pulmonary rehabilitation extends for up to 6 weeks or 36 hours of therapy

Expert guidelines on repeat pulmonary rehabilitation

1) ACCP/AACVPR 2007: although repeated pulmonary rehabilitation interventions spaced 1 year apart led to significant short-term gains similar to those seen following an initial 8-week outpatient program, no additive, long-term physiologic benefits were noted in one study
1) British Thoracic Society 2013: Repeat pulmonary rehabilitation should be considered in patients who have completed a course of pulmonary rehabilitation more than 1 year previously.

Other payer guidelines on repeat pulmonary rehabilitation

1) Aetna 2019: Aetna considers repeat pulmonary rehabilitation programs not medically necessary. However, exceptions may be made for patients undergoing a repeat pulmonary rehabilitation program in connection with lung transplantation or lung volume reduction surgery.

<u>HERC staff summary</u>

The consensus among experts and other payers is that 36 hours of pulmonary rehabilitation is a standard recommendation, although additional clinical benefit may be gained from longer rehabilitation programs. There is no evidence that repeat pulmonary rehabilitation leads to significant additional long-term benefits. Other payers allow repeat pulmonary rehabilitation in extraordinary circumstances such as lung transplantation or lung volume reduction surgery.

Pulmonary Rehabilitation

HERC staff recommendations

1) Add pulmonary rehabilitation HCPCS codes to lines with chronic pulmonary disease diagnoses
    a. HCPCS codes:
        i. G0237 (Therapeutic procedures to increase strength or endurance of respiratory muscles, face to face, one on one, each 15 minutes (includes monitoring))
        ii. G0238 (Therapeutic procedures to improve respiratory function, other than described by G0237, one on one, face to face, per 15 minutes (includes monitoring))
        iii. G0239 (Therapeutic procedures to improve respiratory function or increase strength or endurance of respiratory muscles, two or more individuals (includes monitoring))
        iv. S9473 (Pulmonary rehabilitation program, non-physician provider, per diem)
        v. Note: G0424 is already on the lines below
    b. Lines:
        i. 9 ASTHMA
        ii. 58 BRONCHIECTASIS
        iii. 223 OCCUPATIONAL LUNG DISEASES
        iv. 234 ADULT RESPIRATORY DISTRESS SYNDROME; ACUTE RESPIRATORY FAILURE; RESPIRATORY CONDITIONS DUE TO PHYSICAL AND CHEMICAL AGENTS
        v. 241 CONDITIONS REQUIRING HEART-LUNG AND LUNG TRANSPLANTATION
        vi. 283 CHRONIC OBSTRUCTIVE PULMONARY DISEASE; CHRONIC RESPIRATORY FAILURE
2) Add a new guideline for pulmonary rehabilitation as shown below

GUIDELINE NOTE XXX, PULMONARY REHABILITATION

Lines 9,58,223,234,241,283

Pulmonary rehabilitation is included on these lines only for patients with all of the following (1-4):

1) Moderate to severe chronic pulmonary disease with dyspnea with exertion that reduces their ability to perform activities of daily living despite appropriate medical management
2) Moderate to severe pulmonary disability defined as either
    a. A maximal pulmonary exercise stress test under optimal bronchodilatory treatment which demonstrates a respiratory limitation to exercise with a maximal oxygen uptake (VO2max) equal to or less than 20 ml/kg/min, or about 5 metabolic equivalents (METS); *or*
    b. Pulmonary function tests showing that either the forced expiratory volume in one second (FEV1), forced vital capacity (FVC), FEV1/FVC ratio, or diffusion capacity for carbon monoxide (DlCO) is less than 60 % of that predicted
3) Physically able, motivated and willing to participate in the pulmonary rehabilitation program and be a candidate for self-care post program
4) No contraindications to pulmonary rehabilitation, including unstable cardiac disease, locomotor or neurological difficulties precluding exercise, significant cognitive or psychiatric impairment, or housebound due to the severity of disease.

Pulmonary rehabilitation is only covered for:

1) A multidisciplinary program with includes supervised exercise therapy, patient education, and smoking cessation (if applicable).
2) Up to 36 total sessions.

Repeat pulmonary rehabilitation programs should be limited to those patients who have had a subsequent lung reduction surgery or lung transplantation.

Section 6.0

New Discussion Items

Non-invasive Testing for Liver Fibrosis Guideline Update

Question: How should the guideline on non-invasive testing for liver fibrosis be updated given the change in coverage of hepatitis C treatments, regardless of level of liver fibrosis?

Question source: HERC Staff, P&T Staff

Issue: As of March 1, 2019, FFS is modifying its coverage criteria for direct acting antivirals (DAAs) to cover treatment regardless of fibrosis level. Because of the hepatitis C risk corridor, this will impact the entire OHP population.

There is a HERC Coverage Guidance and Guideline Note on appropriate diagnostic testing for liver fibrosis to guide treatment for hepatitis C. Given that specific levels of fibrosis will no longer be necessary to determine treatment, elements of this guideline are no longer necessary.

Clinically, now that F2 and F3 are no longer important criteria for a change in management, the major criteria that would change management is when a person develops F4 level disease, as this can change the length of indicated treatment for hepatitis C, or can change monitoring (such as screening for hepatocellular carcinoma). Ultrasound and serum biomarkers are commonly used for identification of cirrhosis and routinely guide this change in management. Other common conditions that can lead to cirrhosis include nonalcoholic fatty liver disease and nonalcoholic fatty liver steatohepatitis (NASH) and do not necessarily have an effective treatment beyond weight loss and avoidance of hepatotoxins. Intensive serial monitoring of liver fibrosis in these situations is therefore unlikely to yield significant improvements in health.

MR elastography is an expensive test that was only to be used in case of indeterminant results and unavailability of other tests. Access to this test no longer seems as necessary given that the critical impact to the patient (access to DAA treatment) would no longer be dependent on specific fibrosis scores. The cost-benefit of this test is likely significantly lowered.

Additional drugs will be on the market in the next few years for other causes of liver fibrosis/cirrhosis, for which distinguishing levels of fibrosis may still be important, making elements of this guideline possibly still useful. Some medical directors have expressed ongoing interest in having relevant components of the guideline remain in place, just modified given the DAA changes.

Excerpts from email conversation with Dr. Atif Zaman

> For F3 disease and receives DAA, consider monitoring fibrosis in 1 to 2 years to verify fibrosis has not progressed to F4.
>
> What about with non-hep C disease, like NASH? How often would you follow up to monitor progression to F4? No one knows the answer to this unfortunately. Typically is

a NASH patient (or other etiology) with F1/2 and no follow up imaging is done unless there are signs of ongoing inflammation (ie liver enzymes rise of platelet count starts dropping). But this really can't be codified, since there is no evidence yet.

From Dr. Barry Schlanksy (email conversations)

Regarding HCV, I agree with Atif that F3 patients with SVR should undergo some sort of post-treatment monitoring, though there is no clear evidence-based approach to this. There is evidence that such patients have an HCC risk, albeit lower than HCV patients with F4/cirrhosis, and some centers perform biannual ultrasound-based liver cancer screening in this group. Another approach would be to perform a FibroScan 1-2 years after SVR as Atif suggested. Cat, I agree with your suggestion to permit annual noninvasive testing (especially VCTE) in F3 patients with HCV (including those who achieved SVR already).

The second question is the utility of noninvasive fibrosis testing in non-HCV chronic liver disease. The largest subgroup is NASH, but noninvasive fibrosis testing is frequently used for other chronic liver diseases as well. The most evidence for the various testing modalities is in NAFLD/NASH and hepatitis B. I disagree with the statement in the guideline that there is no recommendation for fibrosis assessment in NAFLD/NASH because there are no effective treatments at this time (there are effective treatments that are not pharmacologic, including lifestyle and risk factor modification/weight loss, bariatric surgery, etc). There is likely significant practice variation in how such fibrosis staging tests are used, but a common approach is to surveil patients with no or early fibrosis infrequently (or not at all), whereas those with F3/advanced fibrosis (but not yet cirrhosis) might be surveilled more often (e.g. q1-2 years, not just a single time as for HCV after SVR, because the disease process remains active and has not been 'cured'). Would it be possible to retain the coverage of noninvasive fibrosis testing no more than every 3 years for those who are <F3, along with the up to annual testing for F3?

Regarding repeat FibroScan for patients with <F3, I agree that there are no data to support subsequent fibrosis staging. Especially for patients who have developed moderate fibrosis (F2), it is common practice to repeat a FibroScan testing at some interval as the underlying disease process (NASH) has no cure and progression is therefore expected. Some providers may feel that such testing is not necessary and follow things like the liver tests or platelet count instead, however there is abundant evidence that elevation or normalization of liver tests do not correlate with liver fibrosis in NASH, and the platelet count only falls once the liver disease is very advanced. I believe a prudent strategy is to allow repeat FibroScan but at a less frequent interval than for F3 (e.g. q3 or q5 years). Regarding whether such a practice would change management - stability or progression in fibrosis after such a longer interval can

provide useful information about the disease trajectory (for example, patients who remain F2 after 3-5 years may be offered more reassurance, whereas an F2 patient who progresses to F3 may be advised to pursue more aggressive NASH treatment, whether a more concerted effort at weight loss or referral for bariatric surgery or a clinical trial for pharmacologic therapy). I appreciate that there may be a difference of opinion here, and support whatever the HERC committee decides for this subgroup.

Finally, regarding MRE, the ultrasound based elastography techniques (VCTE, SWE) have a significant failure rate, especially in more obese patients (many of whom have NAFLD/NASH), and MRE does not. If a VCTE/SWE failure occurs and one suspects a patient may have aggressive disease/advanced fibrosis (in NAFLD, this assessment is based on risk factors such as older age, DM2, obesity, and high FIB-4, APRI, or NAFLD Fibrosis Score), and cirrhosis is not identified on routine imaging (ultrasound/CT/MRI), the only options to stage fibrosis are liver biopsy or MRE. The cost of liver biopsy (the procedure and pathology fees) is likely similar or higher than MRE, and biopsy is invasive. I believe that MRE still has an important role for staging such patients and would avoid a significant number of liver biopsies and associated (rare) procedural complications

For MRE, I agree that it has little benefit over other non-invasive fibrosis testing in NASH and it is not justified as a first-line test as an alternative to ultrasound-based elastography. It should be reserved for patients in whom ultrasound-based elastography fails as an alternative to liver biopsy. I agree that if the MRE shows fibrosis, it brings up the question of whether there is a role for subsequent MRE to monitor disease progression. MRE is a considerably more expensive and resource intensive test relative to FibroScan - although there are no data, I do not think MRE should be used for subsequent monitoring of fibrosis. Although the serum tests, including liver tests and platelet count, are less accurate than elastography in assessing (and monitoring) fibrosis progression, in this subgroup who cannot undergo FibroScan, lab monitoring and standard imaging (e.g. ultrasound) should be used despite their acknowledged deficiencies. I agree with and support your proposed MRE guideline.

<u>Clinical background (from Coverage Guidance):</u>
Traditionally, staging of chronic hepatitis C infection was done by examining histologic specimens from liver biopsies of the liver for evidence of fibrosis. The METAVIR fibrosis stage is the most commonly used measure for assessing the histologic degree of hepatic fibrosis:

- F0 = No fibrosis
- F1 = Portal fibrosis without septa
- F2 = Portal fibrosis with few septa

- F3 = Portal fibrosis with numerous septa without cirrhosis
- F4 = Cirrhosis

Progression from fibrosis to cirrhosis is associated with complications of end-stage liver disease including portal hypertension, portosystemic encephalopathy, and hepatocellular carcinoma.

Current Prioritized List Status

GUIDELINE NOTE 76, DIAGNOSTIC TESTING FOR LIVER FIBROSIS TO GUIDE TREATMENT OF HEPATITIS C IN NON-CIRRHOTIC PATIENTS

Line 199

Given that a fibrosis score of ≥F2 is the threshold for antiviral treatment of Hepatitis C, the following are included on this line:

Imaging tests:
- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI) (Virtual Touch™ tissue quantification, ElastPQ)
- Shear wave elastography (SWE) (Aixplorer®)

Blood tests (only if imaging tests are unavailable):
- Enhanced Liver Fibrosis (ELF™)
- Fibrometer™
- FIBROSpect® II
- FibroSure® (FibroTest®) or ActiTest®

If a fibrosis score of ≥F3 is the threshold for antiviral treatment of Hepatitis C, one or more of the following are included on this line:

Imaging tests:
- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI)
- Shear wave elastography (SWE)

Magnetic resonance elastography is included on this line for ≥F2 or ≥F3 only when at least one imaging test (FibroScan, ARFI, and SWE) has resulted in indeterminant results, a second one is similarly indeterminant, contraindicated or unavailable, and MRE is readily available.

The following tests are not included on this line (or any other line):
- Real time tissue elastography
- Hepascore (FibroScore)

Noninvasive tests are covered no more often than once per year.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

Updated discussion of MR elastography at the November 2018 VbBS/HERC meeting.

1) Magnetic resonance elastography
    a. CPT codes
        i. **76391** Magnetic resonance (eg, vibration) elastography
    b. Definition: Magnetic resonance elastography is a phase-contrast-based magnetic resonance imaging (MRI) technique that can directly visualize and quantitatively measure propagating acoustic strain waves in tissue subjected to harmonic mechanical excitation. The data acquired allows the calculation of local quantitative values of shear modulus and the generation of images that depict tissue elasticity or stiffness. MR elastography has mostly been studied in liver disease, although sporadic reports of evaluation of other conditions were found in the literature.
    c. Similar code CPT 91200 (Liver elastography, mechanically induced shear wave (eg, vibration), without imaging, with interpretation and report) is on line 199 CHRONIC HEPATITIS; VIRAL HEPATITIS
    d. Evidence
        i. **Singh 2017, https://www.gastrojournal.org/article/S0016-5085(17)30325-6/pdf** technical review of elastography for evaluation of liver disease
            1. MR elastography (MRE) vs vibration-controlled transient elastography (VCTE)
                a. Key Question 11. In adults with chronic HCV, is the overall diagnostic performance of MRE superior to VCTE for detection of cirrhosis?
                    i. Key message. In adults with HCV, MRE has little to no increased diagnostic accuracy in identifying cirrhosis in patients who truly have cirrhosis over VCTE, but has lower diagnostic accuracy in ruling out cirrhosis in patients who do not have cirrhosis, over VCTE (Very low quality of evidence).
                b. Question 12. In adults with non-alcoholic fatty liver disease (NAFLD), is the overall diagnostic performance of MRE superior to VCTE for detection of cirrhosis?
                    i. Key message. In adults with NAFLD, MRE has little to no increased diagnostic accuracy in identifying cirrhosis in patients who truly have cirrhosis over VCTE, but has considerably higher diagnostic accuracy in

ruling out cirrhosis in patients who do not have cirrhosis, over VCTE (Very low quality of evidence).

ii. The technical report notes that there is limited consensus on when fibrosis assessment (regardless of modality) should be performed in patients suspected of having NAFLD, as there are very limited treatment options available to favorably modify the natural history of patients with NAFLD.

ii. **Singh 2015**, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4333001/pdf/nihms638933.pdf systematic review and meta analysis of MR elastography for staging liver fibrosis

1. N=12 retrospective studies (607 patients)
2. Mean AUROC values (and 95% confidence intervals) for diagnosis of any (≥stage 1), significant (≥stage 2), or advanced fibrosis (≥stage 3), and cirrhosis, were 0.84 (0.76–0.92), 0.88 (0.84–0.91), 0.93 (0.90–0.95), and 0.92 (0.90–0.94), respectively. Similar diagnostic performance was observed in stratified analysis based on sex, obesity, and etiology of CLD. The overall rate of failure of MRE was 4.3%.
3. Conclusion—Based on pooled analysis of data from individual participants, MRE has high accuracy for diagnosis of significant or advanced fibrosis and cirrhosis, independent of BMI and etiology of CLD. Prospective studies are warranted to better understand the diagnostic performance of MRE.

e. HERC staff summary: MR elastography does not add to the accuracy of standard liver elastography for the detection of cirrhosis in patients with hepatitis C. Based on very low quality of evidence, MR elastography may be superior to standard liver elastography for ruling out cirrhosis in non-alcoholic fatty liver disease, but there is no standard recommendation to conduct a fibrosis assessment in NAFLD as there is no effective treatment for that condition at this time. However, GN76, based on the hepatitis C coverage guidance, includes limited coverage for MR elastography of the liver.

Evidence excerpts for distinguishing F4, from HERC Coverage Guidance

Table 2: Diagnostic Operating Characteristics of MRE

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Any: ≥F1	0.84 (0.76 - 0.92)	0.73	0.79	3.48	0.34
Significant: ≥F2	0.88 (0.84 - 0.91)	0.79	0.81	4.16	0.26
Advanced: ≥F3	0.93 (0.90 - 0.95)	0.85	0.85	5.67	0.18
Cirrhosis: F4	0.92 (0.90 - 0.94)	0.91	0.81	4.79	0.11

Table 3: Diagnostic Operating Characteristics of Transient Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Significant: ≥F2	0.89 (0.86 - 0.91)	0.76	0.86	5.43	0.28
Advanced: ≥F3	0.92 (0.89 - 0.94)	0.88	0.91	9.7	0.13
Cirrhosis: F4	0.94 (0.92 - 0.96)	0.85	0.91	9.4	0.16

Table 4: AUROC of Acoustic Radiation Force Impulse (ARFI) Imaging Tests

Fibrosis Stage	AUROC – HCV only studies (95% CI)	AUROC – Mixed studies (95% CI)
Significant: ≥F2	0.88 (0.81 - 0.96)	0.83 (0.80 - 0.86)
Advanced: ≥F3	0.93 (0.89 - 0.97)	0.87 (0.85 - 0.90)
Cirrhosis: F4	0.92 (0.85 - 0.99)	0.91 (0.89 - 0.93)

Table 8. Diagnostic Operating Characteristics for Shear Wave Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Significant: ≥F2	0.88 (0.85 - 0.91)	0.85	0.81	4.47	0.18
Advanced: ≥F3	0.94 (0.92 - 0.96)	0.90	0.81	4.73	0.12
Cirrhosis: F4	0.92 (0.89 - 0.94)	0.87	0.88	7.25	0.15

Table 9. Diagnostic Operating Characteristics for Real-Time Tissue Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)	Positive LR (95% CI)	Negative LR (95% CI)
Significant: ≥F2	0.69 (NR)	0.79 (0.75 - 0.83)	0.76 (0.68 - 0.82)	3.29 (NR)	0.27 (NR)
Advanced: ≥F3	0.86 (NR)	0.82 (0.75 - 0.88)	0.81 0.72 - 0.88)	4.31 (NR)	0.22 (NR)
Cirrhosis: F4	0.72 (NR)	0.74 (0.63 - 0.82)	0.84 0.79 - 0.88)	4.6 (NR)	0.30 (NR)

Table 6: Studies of Blood Tests for Liver Fibrosis

Test	Number of studies	Strength of evidence	Fibrosis (≥F2) AUROC median (range)	Cirrhosis AUROC median (range)
Platelet count	18	Moderate	0.71 (0.38 - 0.94)	0.89 (0.64 - 0.99)
Hyaluronic acid	8	Moderate	0.75 (0.65 - 0.88)	0.90 (0.80 - 0.97)
Age-platelet index	11	Moderate	0.74 (0.64 - 0.79)	0.86 (0.64 - 0.91)
AST-platelet ratio index	7	High	0.77 (0.58 - 0.95)	0.84 (0.54 - 0.97)
AST-ALT ratio	32	High	0.59 (0.50- 0.82)	0.72 (0.52 - 0.91)
Bonacini index	12	Moderate	0.66 (0.58 - 0.71)	0.74 (0.61 - 0.91)
ELF™	8	Moderate	0.81 (0.72 - 0.87)	0.88 (0.78 - 0.91)
FIB-4	19	Moderate	0.74 (0.61 - 0.81)	0.87 (0.83 - 0.92)
FibroIndex	9	Moderate	0.76 (0.58 - 0.86)	0.86 (0.78 - 0.92)
Fibrometer™	8	Moderate	0.82 (0.78 - 0.85)	0.91 (0.89 - 0.94)
FIBROSpect® II	7	Low	0.86 (0.77 - 0.90)	NR
FibroTest®	32	High	0.79 (0.70 - 0.89)	0.86 (0.71 - 0.92)
Forns index	22	High	0.76 (0.60 - 0.86)	0.87 (0.85 - 0.91)
GUCI	5	Low	NR	0.82 (0.78 - 0.86)
Hepascore®	12	High	0.79 (0.69 - 0.82)	0.89 (0.88 - 0.94)
Lok index	10	Moderate	NR	0.80 (0.61 - 0.91)
Pohl index	12	Low	0.52 (0.52 - 0.53)	0.65 (0.64 - 0.66)

Guidelines from others

AASLD, 2018
https://www.aasld.org/sites/default/files/NAFLD%20Guidance%202018.pdf

- The Diagnosis and Management of Nonalcoholic Fatty Liver Disease: Practice Guidance From the American Association for the Study of Liver Diseases
- NAFLD is diagnosed by imaging findings
- The most important histological feature of NAFLD associated with long-term mortality is fibrosis; specifically, zone 3 sinusoidal fibrosis plus periportal fibrosis (stage 2) to advanced (bridging fibrosis [stage 3] or cirrhosis [stage 4]).
- In the recent meta-analysis, HF progression in patients with histological NASH at baseline showed a mean annual fibrosis progression rate of 0.09 (95% CI, 0.06-0.12).
- Incidentally discovered hepatic steatosis.. "the natural history and optimal diagnostic and management strategies for this patient population have not been investigated."
- The utility of noninvasively quantifying HS in patients with NAFLD in routine clinical care is limited.
- The commonly investigated noninvasive tools for the presence of advanced fibrosis in NAFLD include clinical decision aids (e.g., NAFLD fibrosis score, FIB-4 index, aspartate aminotransferase [AST] to platelet ratio index [APRI]), serum biomarkers (Enhanced Liver Fibrosis [ELF] panel, Fibrometer, FibroTest, and Hepascore), or imaging (eg, TE, MR elastography [MRE], acoustic radiation force impulse imaging, and supersonic shear wave elastography)
- Guidance statements (selected)
    - 4. Routine Screening for NAFLD in high-risk groups attending primary care, diabetes, or obesity clinics is not advised at this time because of uncertainties surrounding diagnostic tests and treatment options, along with lack of knowledge related to long-term benefits and cost-effectiveness of screening.
    - 5. There should be a high index of suspicion for NAFLD and NASH in patients with type 2 diabetes. Clinical decision aids such as NFS or fibrosis-4 index (FIB-4) or vibration controlled transient elastography (VCTE) can be used to identify those at low or high risk for advanced fibrosis (bridging fibrosis or cirrhosis).
    - 11. In patients with NAFLD, MetS [metabolic syndrome] predicts the presence of SH, and its presence can be used to target patients for a liver biopsy.
    - 12. NFS (age, BMI, hyperglycemia, platelet count, albumin, and AST/ALT ratio) or FIB-4 index are clinically useful tools for identifying NAFLD patients with higher likelihood of having bridging fibrosis (stage 3) or cirrhosis (stage 4).
    - 13. Vibration controlled transient elastography (VCTE) or MRE are clinically useful tools for identifying advanced fibrosis in patients with NAFLD.

- 14. Liver biopsy should be considered in patients with NAFLD who are at increased risk of having SH and/or advanced fibrosis.
- 15. The presence of MetS, NFS or FIB-4, or liver stiffness measured by VCTE or MRE may be used for identifying patients who are at risk for SH and/or advanced fibrosis.
- 16. Liver biopsy should be considered in patients with suspected NAFLD in whom competing etiologies for HS and the presence and/or severity of coexisting CLDs cannot be excluded without a liver biopsy.
- 19. Pharmacological treatments aimed primarily at improving liver disease should generally be limited to those with biopsy-proven NASH and fibrosis.
- 40. Patients with NASH cirrhosis should be screened for gastroesophageal varices according to the AASLD and ACG practice guidelines.(262)
- 41. Patients with cirrhosis suspected because of NAFLD should be considered for HCC screening according to the AASLD practice guidelines.(263)
- 42. Current evidence does not support routine screening and surveillance for HCC in patients with noncirrhotic NASH.

Washington Medicaid
https://www.hca.wa.gov/assets/billers-and-providers/WA-Apple-Health-HepatitisC-Clinical-Policy.pdf

HCA-accepted diagnostic tests and scores to stage liver fibrosis

Metavir Score	Biopsy	Fibroscan	Elastography (ARFI/PSWE)	FibroSure	APRI	Other Imaging
F4	F4	≥ 12.5 kPa	≥ 2.34 m/s	≥ 0.75	≥ 2.0	Cirrhosis
F3	F3	9.6 – 12.4 kPa	2.01 – 2.33 m/s	0.58 – 0.74	1.5 – 1.9	
F2	F2	7.1 – 9.5 kPa	1.38 – 2.0 m/s	0.49 – 0.57	1.0 – 1.4	
F1	F1	≤ 7.0 kPa	≤ 1.37 m/s	0.23 - 0.48	≤ 0.9	
F0	F0			≤ 0.22		

HERC Staff Summary

The guideline on noninvasive diagnostic testing for liver fibrosis needs to be updated given that it specifically addresses treatment with DAAs based on a specific fibrosis level, which is no longer applicable for the OHP population. However, the guideline still has value in understanding which tests are most effective at distinguishing different levels of fibrosis, particularly for F4, which may lead to changes in a variety of chronic liver disease populations.

The following imaging tests have reasonable ability (sensitivity and specificity ≥ 0.8) to distinguish F4 (sensitivity, specificity):

- MR elastography (0.91, 0.81)
- Transient elastography (0.85, 0.91)
- Acoustic radiation force impulse (ARFI) (0.92, 0.91)
- Shear wave elastography (0.87, 0.88)

The following test is not as good for identifying F4:

- Real-time tissue elastography (0.74, 0.84)

The following blood tests have reasonable AUROC for distinguishing cirrhosis (*proprietary):

- Platelet count (0.89)
- Hyaluronic acid (0.90)
- Age-platelet index (0.86)
- AST-platelet ratio (0.84)
- ELF* (0.88)
- FIB-4 (0.87)
- FibroIndex (0.86)
- Fibrometer* (0.91)
- FibroTest* (0.86)
- Forns index (0.87)

- GUCI (0.82)
- Hepascore* (0.89)
- Lok index (0.80)

The following blood tests have poor AUROC for distinguishing cirrhosis:

- AST-ALT ratio (0.72)
- Bonacini index (0.74)
- FIBROSpect II* (unavailable)
- Pohl index (0.65)

Given that there are a variety of good quality non-proprietary blood tests, additional expense associated with proprietary blood tests is not warranted.

MRE is currently allowed in limited circumstances; however, with the changes in coverage to hepatitis C treatment, MRE does not offer additional benefit and has a markedly increased cost compared to alternatives.

HERC Staff Recommendations:

1) **Retire the Coverage Guidance** *Noninvasive liver testing for liver fibrosis in patients with hepatitis C.*

2) **Modify guideline note 76 as follows:**

~~GUIDELINE NOTE 76, DIAGNOSTIC TESTING FOR LIVER FIBROSIS TO GUIDE TREATMENT OF HEPATITIS C IN NON-CIRRHOTIC PATIENTS~~

~~Line 199~~

~~Given that a fibrosis score of ≥F2 is the threshold for antiviral treatment of Hepatitis C, the following are included on this line:~~

~~Imaging tests:~~

- ~~Transient elastography (FibroScan®)~~
- ~~Acoustic radiation force impulse imaging (ARFI) (Virtual Touch™ tissue quantification, ElastPQ)~~
- ~~Shear wave elastography (SWE) (Aixplorer®)~~

~~Blood tests (only if imaging tests are unavailable):~~

- ~~Enhanced Liver Fibrosis (ELF™)~~
- ~~Fibrometer™~~
- ~~FIBROSpect® II~~
- ~~FibroSure® (FibroTest®) or ActiTest®~~

~~If a fibrosis score of ≥F3 is the threshold for antiviral treatment of Hepatitis C, one or more of the following are included on this line:~~

~~Imaging tests:~~

- ~~Transient elastography (FibroScan®)~~
- ~~Acoustic radiation force impulse imaging (ARFI)~~
- ~~Shear wave elastography (SWE)~~

~~Magnetic resonance elastography is included on this line for ≥F2 or ≥F3 only when at least one imaging test (FibroScan, ARFI, and SWE) has resulted in indeterminant results, a second one is similarly indeterminant, contraindicated or unavailable, and MRE is readily available.~~

~~The following tests are not included on this line (or any other line):~~

- ~~Real time tissue elastography~~
- ~~Hepascore (FibroScore)~~

~~Noninvasive tests are covered no more often than once per year.~~

~~The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.~~

GUIDELINE NOTE 76, DIAGNOSTIC TESTING FOR LIVER FIBROSIS TO GUIDE MANAGEMENT IN CHRONIC LIVER DISEASE

Line 199

The following tests are included on this line because of their ability to effectively distinguish F4 from lower levels of fibrosis:

Non-proprietary blood tests

Imaging tests:

- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI) (Virtual Touch™ tissue quantification, ElastPQ)
- Shear wave elastography (SWE) (Aixplorer®)

The following tests are not included on this line (or any other line):

- Real time tissue elastography
- Proprietary blood tests

Noninvasive tests for liver fibrosis are only indicated for initial assessment or when monitoring progression from F3 to F4, no more than annually.

3) **Consider 2 options for MR elastography**

OPTION 1: Move MR elastography to Line 500 CONDITIONS FOR WHICH INTERVENTIONS RESULT IN MARGINAL CLINICAL BENEFIT OR LOW COST-EFFECTIVENESS

a. While MR elastography was added as a 2nd or 3rd line test in the Coverage Guidance and current Prioritized List guideline, this was based on the significant impact of potentially receiving DAAs compared to not receiving DAAs for which this test may be the final arbiter. However, current decisions about exact liver fibrosis levels are no longer quite as critical since the DAA decision is no longer applicable. Given that, having this test available when multiple other cheaper and equally effective imaging and blood tests are available, or requiring delay or repetition of a test at a one year follow up is much less consequential, and it is not clear that the benefits outweigh the considerable cost of MR elastography.

GUIDELINE NOTE 172, INTERVENTIONS WITH MARGINAL CLINICAL BENEFIT OR LOW COST-EFFECTIVENESS FOR CERTAIN CONDITIONS

Line 500

Procedure Code	Intervention Description	Rationale	Last Review
76391	Magnetic resonance (eg, vibration) elastography	Less expensive alternatives are available	March, 2019

OPTION 2 Add coverage for MR elastography to Guideline Note 76 above to allow coverage in limited circumstances

Magnetic resonance elastography is included on this line for patients when ALL of the following apply:

- In whom at least one imaging test (FibroScan, ARFI, and SWE) has resulted in indeterminant results, a second one is similarly indeterminant, contraindicated or unavailable
- The patient is suspected to have aggressive disease/advanced fibrosis (e.g. in NAFLD based on older age, diabetes, obesity, high FIB-4, or APRI)
- Cirrhosis is not identified on routine imaging (ultrasound, CT)
- A liver biopsy is indicated, but MRE would be an appropriate alternative

Repeat MR elastography is not indicated.

Hepatitis C Direct-Acting Antivirals (Effective March 1, 2019)

Goals:

Approve use of cost-effective treatments supported by the medical evidence.
Provide consistent patient evaluations across all hepatitis C treatments.
Ensure appropriate patient regimen based on disease severity, genotype, and patient comorbidities.

Length of Authorization:

- 8-16 weeks

Requires PA:

All direct-acting antivirals for treatment of Hepatitis C

Approval Criteria		
1. What diagnosis is being treated?	Record ICD10 code.	
2. Is the request for treatment of chronic Hepatitis C infection (B18.2)?	**Yes:** Go to #3	**No:** Pass to RPh. Deny; medical appropriateness.
3. Is expected survival from non-HCV-associated morbidities more than 1 year?	**Yes:** Go to #4	**No:** Pass to RPh. Deny; medical appropriateness.

Approval Criteria		
4. Has <u>all</u> of the following pre-treatment testing been documented: a. Genotype testing in past 3 years is required if the patient has cirrhosis, <u>any</u> prior treatment experience, and if prescribed a regimen which is not pan-genotypic; b. Baseline HCV RNA level in past 6 months; c. Current HBV status of patient d. Pregnancy test in past 30 days for a woman of child-bearing age; <u>and</u> e. History of previous HCV treatment and outcome f. Presence or absence of cirrhosis as clinically determined (e.g., clinical, laboratory, or radiologic evidence)? Note: Direct-acting antiviral agents can re-activate hepatitis B in some patients. Patients with history of HBV should be monitored carefully during and after treatment for flare-up of hepatitis. Prior to treatment with a DAA, all patients should be tested for HBsAG, HBsAb, and HBcAB status. HIV testing is also recommended, and modification of HIV or HCV treatment regimens may be necessary if there are significant drug-drug interactions.	**Yes:** Record results of each test and go to #5 Note: If the patient has HIV or HBV co-infection, it is highly recommended that a specialist be consulted prior to treatment. Currently treatment is not recommended during pregnancy due to lack of safety and efficacy data	**No**: Pass to RPh. Request updated testing.
5. Which regimen is requested?	Document and go to #6	
6. Does the patient have clinical, radiologic or laboratory evidence of complications of cirrhosis (ascites, portal hypertension, hepatic encephalopathy, hepatocellular carcinoma, esophageal varices)?	**Yes:** Go to #7 .	**No:** Go to #8
7. Is the regimen prescribed by, OR is the patient in the process of establishing care with or in consultation with a hepatologist, gastroenterologist, or infectious disease specialist?	**Yes:** Go to #8	**No:** Pass to RPh. Deny; medical appropriateness. Recommend prescriber document referral to a specialist prior to initiating treatment.

Approval Criteria		
8. Is there attestation that the patient and provider will comply with case management to promote the best possible outcome for the patient and adhere to monitoring requirements required by the Oregon Health Authority, including measuring and reporting of a post-treatment viral load? Case management includes assessment of treatment barriers and offer of patient support to mitigate potential barriers to regimen adherence as well as facilitation of SVR12 evaluation to assess treatment success.	**Yes**: Go to #9	**No:** Pass to RPh. Deny; medical appropriateness.
9. Is the prescribed drug: a) Elbasvir/grazoprevir for GT 1a infection; or b) Daclatasvir + sofosbuvir for GT 3 infection?	**Yes**: Go to #10	**No:** Go to #11
10. Has the patient had a baseline NS5a resistance test that documents a resistant variant to one of the agents in #16? Note: Baseline NS5A resistance testing is required.	**Yes:** Pass to RPh; deny for appropriateness	**No:** Go to #11 Document test and result.
11. Does the prescribed regimen include a NS3/4a protease inhibitor (elbasvir, glecaprevir, simeprevir, paritaprevir, voxilaprevir)?	**Yes:** Go to #12	**No:** Go to #13
12. Does the patient have moderate-severe hepatic impairment (Child-Pugh B or Child-Pugh C)?	**Yes:** Pass to RPh; deny for appropriateness	**No:** Go to #13
13. Is the prescribed regimen for the retreatment after failure of a DAA due to noncompliance or loss of follow-up?	**Yes:** Pass to RPh; Deny and refer to medical director for review	**No:** Go to #14

Approval Criteria		
14. Is the prescribed drug regimen a recommended regimen based on the patient's genotype, treatment status (retreatment or treatment naïve) and cirrhosis status (see **Table 1**)?	**Yes:** Approve for 8-16 weeks based on duration of treatment indicated for approved regimen	**No:** Pass to RPh. Deny; medical appropriateness.

Table 1: Recommended Treatment Regimens for Chronic Hepatitis C.

Treatment History	Cirrhosis Status	Recommended Regimen
Genotype 1		
DAA-Treatment naive	Non-cirrhotic	EBV/GZR x 12 weeks** SOF/VEL x 12 weeks G/P x 8 weeks
	Compensated Cirrhosis	EBV/GZR x 12 weeks** SOF/VEL x 12 weeks G/P x 12 weeks
	Decompensated Cirrhosis	SOF/VEL + RBV x 12 week
Treatment experienced (Prior PEG/RBV)	Non-cirrhotic	EBV/GZR x 12 weeks** SOF/VEL x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	EBV/GRZ 12weeks** SOF/VEL x 12 weeks G/P x 12 weeks
Treatment Experienced (Prior sofosbuvir)	Non-cirrhotic or compensated cirrhosis	SOF/VEL x 12 weeks G/P x 12 weeks
Treatment Experienced (Prior NS3A/4A inhibitor)	Non-cirrhotic or compensated cirrhosis	SOF/VEL x 12 weeks EBV/GZR + RBV x 12 weeks** G/P x 12 weeks
Treatment Experienced (prior NS5A-containing regimen)	Non-cirrhotic or compensated cirrhosis	G/P x 16 weeks
Genotype 2		
Naïve	Non-cirrhotic	SOF/VEL x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL x 12 weeks G/P x 12 weeks
	Decompensated	SOF/VEL + RBV x 12 weeks
Treatment Experienced (prior PEG/RBV)	Non-cirrhotic	SOF/VEL x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL x 12 weeks

		G/P x 12 weeks
Treatment Experienced (SOF + RBV)	Non-cirrhotic or compensated cirrhosis	SOF/VEL x 12 weeks G/P x 12 weeks
Treatment Experienced (prior NS5A-containing regimen)	Non-cirrhotic or compensated cirrhosis	SOF/VEL/VOX x 12 weeks
Genotype 3		
Naïve	Non-cirrhotic	SOF/VEL X 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL + RBV x 12 weeks G/P x 12 weeks
	Decompensated Cirrhosis	SOF/VEL + RBV x 12 weeks
Treatment Experienced (prior PEG/RBV only)	Non-cirrhotic or compensated cirrhosis	SOF/VEL x 12 weeks G/P x 16 weeks
Treatment Experienced (SOF + RBV)	Non-cirrhotic or compensated cirrhosis	G/P x 16 weeks
Experienced (prior NS5A-containing regimen)	Non-cirrhotic or compensated cirrhosis	SOF/VEL/VOX x 12 weeks
Genotype 4		
Treatment Naïve	Non-cirrhotic	SOF/VEL x 12 weeks EBV/GZR x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL x 12 weeks EBV/GZR x 12 weeks G/P x 12 weeks
	Decompensated Cirrhosis	SOF/VEL + RBV x 12 week
Treatment Experienced (prior PEG/RBV only)	Non-cirrhotic	SOF/VEL x 12 weeks EBV/GZR x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL x 12 weeks EBV/GZR x 12 weeks G/P x 12 weeks
Treatment Experienced (prior NS5A-containing regimen OR sofosbuvir)	Non-cirrhotic or compensated cirrhosis	SOF/VEL/VOX x 12 weeks
Genotype 5/6		
Treatment Naïve or Experienced (prior PEG-IFN/RBV only)	Non-cirrhotic	SOF/VEL x 12 weeks G/P x 8 weeks
	Compensated cirrhosis	SOF/VEL x 12 weeks G/P x 12 weeks
	Decompensated cirrhosis	SOF/VEL + RBV x 12 weeks
Experienced (prior NS5A-containing regimen OR sofosbuvir)	Non-cirrhotic or compensated cirrhosis	SOF/VEL/VOX x 12 weeks

Abbreviations: CTP = Child-Turcotte-Pugh; DAA = direct acting antiviral; EBV/GZR = elbasvir/grazoprevir; G/P = glecaprevir and pibrentasvir; PEG = pegylated interferon; RAV = resistance-associated variant; RBV = ribavirin; SOF = sofosbuvir; SOF/VEL = sofosbuvir/velpatasvir; SOF/VEL/VOX = sofosbuvir/velpatasvir/voxilaprevir **No baseline NS5A RAVs. For genotype 1a patients with baseline NAS5A RAVs, extend duration to 16 weeks. ±Evidence is insufficient if the addition of RBV may benefit subjects with GT3 and cirrhosis. If RBV is not used with regimen, then baseline RAV testing should be done prior to treatment to rule out the Y93 polymorphism.
^ Rarely, genotyping assays may indicate the presence of a mixed infection (e.g., genotypes 1a and 2). Treatment data for mixed genotypes with direct-acting antivirals are limited. However, in these cases, a pangenotypic regimen is appropriate.
Ribavirin-containing regimens are absolutely contraindicated in pregnant women and in the male partners of women who are pregnant. Documented use of two forms of birth control in patients and sex partners for whom a ribavirin containing regimen is chosen is required.
Regimens other than glecaprevir/pibrentasvir (G/P;) and elbasvir/grazoprevir (EBV/GZR) should not be used in patients with severe renal impairment (GRF < 30 mL/min) or end stage renal disease requiring dialysis.
All regimens containing a protease inhibitor (elbasvir, glecaprevir, simeprevir, paritaprevir, voxilaprevir) should not be used in patients with moderate to severe hepatic impairment (CTP B and C).
There is limited data supporting DAA regimens in treatment- experienced patients with decompensated cirrhosis. These patients should be handled on a case by case basis with the patient, prescriber, and CCO or FFS medical director.

P&T Review: *11/18; 9/18 (MH); 1/18; 9/17; 9/16; 1/16; 5/15; 3/15; 1/15; 9/14; 1/14*
Implementation: *TBD; 1/1/2019; 3/1/2018; 1/1/2018; 2/12/16; 4/15; 1/15*

HEALTH EVIDENCE REVIEW COMMISSION (HERC)

COVERAGE GUIDANCE: NONINVASIVE TESTING FOR LIVER FIBROSIS IN PATIENTS WITH CHRONIC HEPATITIS C

Approved 10/6/2016

HERC Coverage Guidance

If a fibrosis score of ≥F2 is the threshold for antiviral treatment of hepatitis C, the following are recommended for coverage *(weak recommendation)*:

Imaging tests:

- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI) (Virtual Touch™ tissue quantification, ElastPQ)
- Shear wave elastography (SWE) (Aixplorer®)

Blood tests (only if imaging tests are unavailable):

- Enhanced Liver Fibrosis (ELF™)
- Fibrometer™
- FIBROSpect® II

If a fibrosis score of ≥F3 is the threshold for antiviral treatment of hepatitis C, one or more of the following are recommended for coverage *(strong recommendation*):f

Imaging tests:

- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI)
- Shear wave elastography (SWE)

Magnetic resonance elastography is recommended for coverage for ≥F2 or ≥F3 only when at least one imaging test (FibroScan, ARFI, and SWE) has resulted in indeterminant results, a second one is similarly indeterminant, contraindicated or unavailable, and MRE is readily available *(weak recommendation).*

Noninvasive tests should be performed no more often than once per year *(weak recommendation).*

The following tests are not recommended for coverage for the detection of liver fibrosis to guide treatment decisions with antivirals in chronic hepatitis C *(strong recommendation):*

Imaging tests

- Real time tissue elastography

Blood tests (proprietary):

- Hepascore® (FibroScore®)
- FibroSure® (FibroTest®)

Blood tests (non-proprietary):

- Age-platelet index
- AST-platelet ratio index (APRI)
- AST-ALT ratio
- Cirrhosis discriminant score (Bonacini index)
- FIB-4
- Fibro-α score
- FibroIndex
- Fibronectin discriminant score
- FibroQ
- Fibrosis–cirrhosis index
- Fibrosis index
- Fibrosis probability index (Sud index)
- Fibrosis–protein index
- Fibrosis Routine Test
- Forns index
- Globulin–albumin ratio
- Göteborg University Cirrhosis Index (GUCI)
- HALT-C model (Hepatitis C Antiviral Long-Term Treatment Against Cirrhosis)
- King's score
- Lok index
- MP3 score
- Pohl index
- Sabadell NIHCED index (Non-Invasive Hepatitis-C–Related Cirrhosis Early Detection)
- Significant fibrosis index
- Zeng index

Note: Definitions for strength of recommendation are provided in Appendix A *GRADE Informed Framework Element Description*.

RATIONALE FOR DEVELOPMENT OF COVERAGE GUIDANCES AND MULTISECTOR INTERVENTION REPORTS

Coverage guidances are developed to inform coverage recommendations for public and private health plans in Oregon as they seek to improve patient experience of care, population health and the cost-effectiveness of health care. In the era of the Affordable Care Act and health system transformation, reaching these goals may require a focus on population-based health interventions from a variety of sectors as well as individually-focused clinical care. Multisector intervention reports will be developed to address these population-based health interventions or other types of interventions that happen outside of the typical clinical setting.

HERC selects topics for its reports to guide public and private payers based on the following principles:

- Represents a significant burden of disease or health problem
- Represents important uncertainty with regard to effectiveness or harms
- Represents important variation or controversy in implementation or practice
- Represents high costs or significant economic impact
- Topic is of high public interest

Our reports are based on a review of the relevant research applicable to the intervention(s) in question. For coverage guidances, which focus on clinical interventions and modes of care, evidence is evaluated using an adaptation of the GRADE methodology. For more information on coverage guidance methodology, see Appendix A.

Multisector interventions can be effective ways to prevent, treat or manage disease at a population level. For some conditions, the HERC has reviewed evidence and identified effective interventions, but has not made coverage recommendations, as many of these policies are implemented in settings beyond traditional healthcare delivery systems.

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 several 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. Estimates of effect are derived from the evidence presented in this document. The level of confidence in the estimate is determined by the Commission based on assessment of two independent reviewers from the Center for Evidence-based Policy. Unless otherwise noted, estimated resource allocation, values and preferences, and other considerations are assessments of the Commission.

Coverage question: Should noninvasive testing for liver fibrosis for chronic hepatitis C be recommended for coverage?				
Outcomes	**Estimate of Effect for Outcome/ *Confidence in Estimate***	**Resource allocation**	**Values and Preferences**	**Other considerations**
Hepatitis-related morbidity/ progression *(Critical outcome)*	Diagnostic strategies have not been directly compared to assess the effect on hepatitis-related morbidity or progression.	Non-invasive imaging tests are generally less costly than liver biopsy, but more costly than serum tests. Given that both serum and noninvasive tests are less invasive that biopsy, it is likely that more patients will be referred for, and receive treatment with noninvasive testing. Some	Most patients would strongly prefer to have a noninvasive test over a liver biopsy in order to avoid the procedural risks associated with the biopsy. Policy makers will need to balance the value of this greater access to less	Guidelines are mixed in their recommendations about the use of serum biomarker testing as an adjunct or alternative to imaging. Many of the serum biomarkers are commonly obtained and inexpensive.
Need for liver biopsy *(Critical outcome)*	No studies directly addressed whether the use of noninvasive tests reduce the need for liver biopsy. However, in clinical practice, these tests are used to replace liver biopsy. Therefore, their diagnostic operating characteristics, in comparison to liver biopsy, are reported here as AUROC for ≥F2, and tests with adequate diagnostic performance may be indirectly assumed to reduce the use of liver biopsy: Magnetic Resonance Elastography AUROC 0.88 (95%CI 0.84 to 0.91)			

Coverage question: Should noninvasive testing for liver fibrosis for chronic hepatitis C be recommended for coverage?				
Outcomes	**Estimate of Effect for Outcome/ *Confidence in Estimate***	**Resource allocation**	**Values and Preferences**	**Other considerations**
	●●●○ *(Moderate confidence)* Transient Elastography AUROC 0.89 (95% CI 0.86 to 0.91) ●●●○ *(Moderate confidence)* Acoustic Radiation Force Impulse Imaging AUROC 0.88 (95% CI 0.81 to 0.96) ●●○○ *(Low confidence)* Shear Wave Elastography AUROC 0.88 (95% CI 0.85 to 0.91) ●●○○ *(Low confidence)* Real-time Tissue Elastography AUROC 0.69 (95% CI NR) ●○○○ *(Very low confidence)* Platelet count Median AUROC 0.71 (range 0.38 to 0.94) ●○○○ *(Very low confidence)* Platelet count Median AUROC 0.71 (range 0.38 to 0.94) ●○○○ *(Very low confidence)*	patients who have noninvasive tests may also still require additional testing if findings are inconclusive. In cases where treatment decisions are based on the results of these tests, false positives may lead to high treatment costs; false negatives may lead to undertreatment or delayed treatment. MRE is much more expensive than the other imaging tests.	sensitive/specific tests with the potential undertreatment or overtreatment that could occur as a result of the inferior accuracy of these tests compared to liver biopsy.	Many institutions may only have one type of imaging modality available. It could be equally appropriate to do a second imaging test versus going straight to liver biopsy depending on the institution and availability of nearby alternatives.

Coverage question: Should noninvasive testing for liver fibrosis for chronic hepatitis C be recommended for coverage?				
Outcomes	**Estimate of Effect for Outcome/ *Confidence in Estimate***	**Resource allocation**	**Values and Preferences**	**Other considerations**
	Hyaluronic acid Median AUROC 0.75 (range 0.65 to 0.88) ●○○○ *(Very low confidence)* Age-platelet index Median AUROC 0.74 (range 0.64 to 0.79) ●●○○ *(Low confidence)* APRI Median AUROC 0.77 (range 0.58 to 0.95) ●○○○ *(Very low confidence)* AST-ALT ratio Median AUROC 0.59 (range 0.50 to 0.82) ●○○○ *(Very low confidence)* Bonacini index Median AUROC 0.66 (range 0.58 to 0.71) ●●○○ *(Low confidence)* ELF™ Median AUROC 0.81 (range 0.72 to 0.87) ●○○○ *(Very low confidence)*			

Coverage question: Should noninvasive testing for liver fibrosis for chronic hepatitis C be recommended for coverage?				
Outcomes	**Estimate of Effect for Outcome/ *Confidence in Estimate***	**Resource allocation**	**Values and Preferences**	**Other considerations**
	FIB-4 Median AUROC 0.74 (range 0.61 to 0.81) ●○○○ *(Very low confidence)* FibroIndex Median AUROC 0.76 (0.58 to 0.86) ●○○○ *(Very low confidence)* FibroMeter™ Median AUROC 0.82 (range 0.78 to 0.85) ●○○○ *(Very low confidence)* FIBROSpect® II Median AUROC 0.86 (range 0.77 to 0.95) ●○○○ *(Very low confidence)* FibroTest® Median AUROC 0.79 (range 0.70 to 0.89) ●○○○ *(Very low confidence)* Forns index Median AUROC 0.76 (0.60 to 0.86) ●○○○ *(Very low confidence)*			

Coverage question: Should noninvasive testing for liver fibrosis for chronic hepatitis C be recommended for coverage?				
Outcomes	**Estimate of Effect for Outcome/ *Confidence in Estimate***	**Resource allocation**	**Values and Preferences**	**Other considerations**
	Hepascore® Median AUROC 0.79 (range 0.69 to 0.82) ●○○○ *(Very low confidence)* Pohl index Median AUROC 0.52 (range 0.52 to 0.53) ●●○○ *(Low confidence)*			
Quality of life *(Critical outcome)*	No data identified			
Testing-related adverse events *(Important outcome)*	No data identified			
Change in treatment plan *(Important outcome)*	No data identified			
Balance of benefits and harms: Given the good (F2) and excellent (F3) performance of the recommended imaging tests and the potential harms of liver biopsy, the balance is strongly in favor of offering these tests as an option for patients for whom hepatitis C direct-acting antiviral therapy is being considered. Because these tests sometimes return inconclusive results, additional testing including liver biopsy may still be required for some patients. Though they are inferior to the recommended imaging tests, blood tests also have a good performance at the F2 threshold and have a favorable balance when imaging tests are unavailable and biopsy is not required.				

Rationale: The diagnostic operating characteristic of the recommended imaging tests are good to excellent (defined as an AUROC ≥0.8). Patient-oriented health outcomes are not available. However, given the characteristics of the tests, the strong values and preferences for noninvasive tests when results are comparable, and the improved individual-level resource allocation, these tests are recommended for coverage. The strong recommendation for imaging tests when the cutoff is F3 is due to the excellent performance at this level of cutoff (defined as an AUROC ≥0.9) and the other factors in favor of their use. The weak recommendation at the F2 cutoff is based on "good" but not "excellent" performance, and the high societal cost of treating patients at levels of fibrosis who are not at short-term risk.

The diagnostic operating characteristics of the blood tests are variable. Though tests recommended at the F2 threshold can accurately assess the fibrosis stage F2 or higher, they are inferior to the imaging tests at this level, and expert input suggests less clinically reliable, and so are recommended only when imaging tests are unavailable. No existing blood test can accurately distinguish between F2 and F3. Therefore, blood tests cannot be recommended (alone or in combination with noninvasive imaging tests) when the treatment planning revolves around an accurate diagnosis of F3. Many of the non-recommended blood tests have fair to poor operating characteristics regardless of the treatment threshold.

MRE is much more expensive than the other imaging tests and thus is only recommended when available after two other imaging tests fail to return useful results.

Recommendation:

If a fibrosis score of ≥F2 is the threshold for antiviral treatment of hepatitis C, the following are recommended for coverage *(weak recommendation)*:

Imaging tests:

- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI) (Virtual Touch™ tissue quantification, ElastPQ)
- Shear wave elastography (SWE) (Aixplorer®)

Blood tests (only if imaging tests are unavailable):

- Enhanced Liver Fibrosis (ELF™)
- Fibrometer™

- FIBROSpect® II

If a fibrosis score of ≥F3 is the threshold for antiviral treatment of hepatitis C, one or more of the following are recommended for coverage *(strong recommendation*):

Imaging tests:

- Transient elastography (FibroScan®)
- Acoustic radiation force impulse imaging (ARFI)
- Shear wave elastography (SWE)

Magnetic resonance elastography is recommended for coverage for ≥F2 or ≥F3 only when at least one imaging test (FibroScan, ARFI, and SWE) has resulted in indeterminant results, a second one is similarly indeterminant, contraindicated or unavailable, and MRE is readily available *(weak recommendation).*

Noninvasive tests should be performed no more often than once per year *(weak recommendation).*

Other imaging and blood tests are not recommended for coverage *(strong recommendation).*

*The Quality of Evidence rating was assigned using information from the editing sources and judgments made by CEbP staff based on direction from the subcommittee.

Note: GRADE framework elements are described in Appendix A. A GRADE Evidence Profile is provided in Appendix B.

EVIDENCE OVERVIEW

Clinical background

Hepatitis C virus (HCV) is a major cause of liver disease in the United States, and chronic hepatitis C infection is the leading indication for liver transplantation (Centers for Disease Control and Prevention [CDC], 2016). The CDC estimates that 3.5 million people in the United States are currently infected with HCV, though the precise number is not known. One study cited by the CDC estimated that around 15,000 deaths were attributable to HCV in 2007. Well established modes of transmission for HCV infection include injection drug use and receipt of blood products prior to 1992. According to the CDC, the prevalence of HCV infection among injection drug users ranges from about 30% for younger users (aged 18 to 30) to 70-90% for older injection drug users.

The natural history of HCV infection is variable, and 15-25% of people will clear the infection and not develop chronic hepatitis C. Between 5% and 20% of those with HCV infection will develop cirrhosis, generally over the course of 20 to 30 years, and between 1% and 5% will die from HCV-related liver disease (CDC, 2016). There are no highly accurate tools to predict which individuals with chronic hepatitis C will go on to develop cirrhosis.

The United States Preventive Services Task Force recommends birth-cohort screening for hepatitis C for anyone born between 1945 and 1965. HCV testing is also recommended for those in high risk groups included people with a history of injection drug use, those who received blood products before 1992, those with HIV infection, and those born to HCV-positive mothers (CDC, 2016).

Before 2013, treatment for chronic hepatitis C relied on interferon and ribavirin, sometimes with the addition of a protease inhibitor in the case of genotype 1 infections. These treatments were long (24 to 48 weeks), entailed a high burden of adverse effects, and response rates were highly variable. The advent of direct-acting antiviral treatments (i.e. sofosbuvir, simeprevir, and others) appears to have improved the success rates (as measured by the surrogate marker of sustained virologic response at 12 weeks) and acceptability of treatment, though at considerable cost.

Traditionally, staging of chronic hepatitis C infection was done by examining histologic specimens from liver biopsies of the liver for evidence of fibrosis. The METAVIR fibrosis stage is the most commonly used measure for assessing the histologic degree of hepatic fibrosis:

- F0 = No fibrosis
- F1 = Portal fibrosis without septa
- F2 = Portal fibrosis with few septa
- F3 = Portal fibrosis with numerous septa without cirrhosis
- F4 = Cirrhosis

Progression from fibrosis to cirrhosis is associated with complications of end-stage liver disease including portal hypertension, portosystemic encephalopathy, and hepatocellular carcinoma.

Noninvasive tests of liver fibrosis and cirrhosis have developed as an alternative to biopsy for staging chronic hepatitis C infection.

Indications

In patients with chronic hepatitis C infection, the likelihood of progression is closely correlated with the presence and severity of liver fibrosis (Chou et al., 2013). Thus, tests to diagnose the presence and ascertain the degree of fibrosis are indicated in the staging of patients with chronic hepatitis C, particularly when that information is relevant to decisions about HCV treatment. For instance, accurate determination of fibrosis stage is essential when treatment eligibility decisions are made on the basis of fibrosis severity. Beyond decisions about HCV treatment, tests to determine the presence of cirrhosis may be indicated in order to ensure appropriate supportive care and screening for complications of cirrhosis for these patients.

Until recently, the only options for staging fibrosis in hepatitis C patients was histological examination of the liver by percutaneous, transjugular, transfemoral, or laparoscopic surgical biopsy. However, biopsy entails procedural risks (including bleeding, infection, and pain), and the results are prone to sampling and interpretation errors. Despite these drawbacks, liver biopsy remains the "gold standard" for the diagnosis of fibrosis and cirrhosis (Chou et al., 2013).

The accuracy of noninvasive tests of liver fibrosis are measured against the reference standard of the results from a liver biopsy, using these definitions:

- **Sensitivity** refers to the proportion of patients who actually have the condition in question who have a positive test result.
- **Specificity** refers to the proportion of patients who really do not have the condition in question who have a negative test result.
- **Positive likelihood ratio** is the ratio of the probability of a positive test result in a patient with the condition to the probability of a positive test result in a patient without the condition. Likelihood ratios are most useful when the pre-test probability of the condition is known and the post-test probability at which treatment would be recommended is well established.
- **Negative likelihood ratio** is the ratio of the probability of a negative test in a patient with the condition to the probability of a negative test in a patient without the condition.
- The receiver operating curve **(ROC)** is a graphical illustration of the trade-off between sensitivity and specificity for an index diagnostic test (specifically for a test that has continuous rather than binary, or yes/no results) compared to a reference standard. The "index" test refers to the test that we are looking at to see how good it is. The reference standard has sometimes been referred to as the "gold standard," but given that some reference standards are not themselves perfectly accurate the terminology has shifted to "reference standard."

- The area under the receiver operating curve **(AUROC)** is an overall measure of how well the index test compares to the reference standard across a range of possible cutoffs. An index test that has cutoff value that allows perfect sensitivity and specificity (i.e. perfect classification of those with and without the condition) would have an AUROC of 1.0, while an AUROC of 0.5 represents a useless test (no better than a coin flip, on average). A test with an AUROC of 0.80-0.89 is generally regarded as a good test, while tests with an AUROC >0.90 are regarded as excellent tests. These distinctions are conventional, but arbitrary.

Technology description

Noninvasive techniques for staging liver fibrosis include imaging and blood tests. Five types of imaging tests are available: transient elastography (TE), acoustic radiation force impulse imaging (ARFI), shear wave elastography (SWE), magnetic resonance elastography (MRE), and real-time tissue elastography (RTE).

Transient Elastography (FibroScan®) measures the velocity of a low-frequency (50 Hz) elastic shear wave propagating through the liver. The velocity of the wave indicates the tissue stiffness, with the stiffer the tissue, the faster the shear wave propagates. The patient lies supine during the procedure, which takes less than five minutes.

Acoustic radiation force impulse imaging (Virtual Touch™ tissue quantification, ElastPQ) measures the speed of short-duration acoustic pulses that propagate shear waves and generate localized displacements in liver tissue. Commercial ultrasound machines can be easily modified to implement ARFI.

Shear wave elastography (Aixplorer® Supersonic Imagine) creates ultrasonic beams that are focused on liver tissues, and a very high frame rate ultrasound imaging sequences monitors the transient propagation of the shear waves in real time. This procedure can be implemented on commercial ultrasound machines.

Magnetic resonance elastography images the propagation characteristics of a shear wave in the liver using a modified phase-contrast method. Almost the entire liver can be analyzed with MRE, and it can be used effectively in patients with obesity or ascites. This procedure is more costly and more time consuming than the other imaging techniques.

Real-time tissue elastography constructs elasticity images of the liver by measuring the tissue strain induced by compression from a high-frequency ultrasound scanner. Tissue compression produces strain in the tissue, where the strain is smaller in harder tissue than in softer tissue.

Five proprietary blood testing protocols are available in the U.S., which use a combination of biochemical markers and patented algorithms to determine fibrosis stage. There are 25 additional blood tests that are not proprietary. The components of these blood tests are shown in Table 1 below. The most common components of the blood tests are platelet count, aspartate aminotransferase (AST), and alanine aminotransferase (ALT). About half of the tests include patient's age in the algorithm.

Table 1: Blood Tests for Measuring Liver Fibrosis in Patients with Hepatitis C

Blood tests	Components of test/algorithm
Proprietary tests	
ELF™ Test (Enhanced Liver Fibrosis)	Hyaluronic acid, tissue inhibitor of metalloproteinase 1, and procollagen III amino terminal peptide
FibroMeter™	Alanine aminotransferase (ALT), α_2-macroglobulin, gamma-glutamyl transpeptidase (GGT), aspartate aminotransferase (AST), platelet count, prothrombin index, urea, and patient's age and gender
FIBROSpect® II	Hyaluronic acid, tissue inhibitor of metalloproteinase, and α_2-macroglobulin
FibroSure® (FibroTest®)	α2-macroglobulin, haptoglobin, apolipoprotein A1, total bilirubin and gamma-glutamyl transpeptidase (GGT), and patient's age and gender ActiTest® is similar, with the addition of alanine aminotransferase (ALT)
Hepascore® (FibroScore®)	α_2-macroglobulin, hyaluronic acid, gamma-glutamyl transferase (GGT), bilirubin, and patient's age and gender
Non-proprietary tests	
Age–platelet index	Platelet count and patient's age
AST–platelet ratio index (APRI)	Platelet count and aspartate aminotransferase (AST)
AST–ALT ratio	Aspartate aminotransferase (AST) and alanine aminotransferase (ALT)
Cirrhosis discriminant score (Bonacini index)	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), prothrombin index, presence of ascites, and presence of spider angiomata
FIB-4	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and patient's age
Fibro-α score	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and α-Fetoprotein
FibroIndex	Platelet count, aspartate aminotransferase (AST), and gamma globulin
Fibronectin discriminant score	Platelet count, aspartate aminotransferase (AST), albumin, and fibronectin
FibroQ	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), prothrombin index, and patient's age
Fibrosis–cirrhosis index	Platelet count, Alkaline phosphatase, bilirubin, and albumin

Blood tests	Components of test/algorithm
Fibrosis index	Platelet count and albumin
Fibrosis probability index (Sud index)	Aspartate aminotransferase (AST), total cholesterol, insulin resistance, alcohol intake, and patient's age
Fibrosis–protein index	α_2-macroglobulin and hemopexin
Fibrosis Routine Test	Platelet count, aspartate aminotransferase (AST), α-Fetoprotein, albumin, and patient's age
Forns index	Platelet count, gamma-glutamyl transpeptidase (GGT), cholesterol, and patient's age
Globulin–albumin ratio	Globulin and albumin
Göteborg University Cirrhosis Index (GUCI)	Platelet count, aspartate aminotransferase (AST), and prothrombin index
HALT-C model (Hepatitis C Antiviral Long-Term Treatment Against Cirrhosis)	Platelet count, tissue metalloproteinase inhibitor 1 (TIMP-1), and hyaluronic acid
King's score	Platelet count, aspartate aminotransferase (AST), international normalized ratio (INR), and patient's age
Lok index	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and international normalized ratio (INR)
MP3 score	Matrix metalloproteinase-1 (MMP-1) and procollagen III propeptide
Pohl index	Platelet count, aspartate aminotransferase (AST), and alanine aminotransferase (ALT)
Sabadell NIHCED index (Noninvasive Hepatitis-C–Related Cirrhosis Early Detection)	Platelet count, aspartate aminotransferase (AST), alanine aminotransferase (ALT), prothrombin time, right hepatic lobe atrophy, splenomegaly, caudate lobe hypertrophy, and patient's age
Significant fibrosis index	Haptoglobin, α_2-macroglobulin, tissue metalloproteinase inhibitor 1 (TIMP-1), matrix metalloproteinase-2 (MMP-2), and gamma-glutamyl transpeptidase (GGT)
Zeng index	α_2-macroglobulin, gamma-glutamyl transpeptidase (GGT), hyaluronic acid, and patient's age

Adapted from Chou & Wasson (2013)

Key Questions and Outcomes

The following key questions (KQ) guided the evidence search and review described below. For additional details about the review scope and methods please see Appendix C.

1. What is the comparative effectiveness of noninvasive tests for the diagnosis and management of hepatic fibrosis in patients with chronic hepatitis C?
2. Does the comparative effectiveness of noninvasive tests of liver fibrosis in patients with chronic hepatitis C vary based on:
    a. Duration of infection
    b. Fibrosis score
    c. Body habitus
    d. Operator/interpreter training or experience
    e. Co-existence of other etiologies of liver disease (e.g., non-alcoholic steatohepatitis)
3. What are the comparative diagnostic operating characteristics of tests of liver fibrosis?
4. What is the evidence for the timing of the initial testing for fibrosis and intervals for subsequent reassessment of fibrosis?

Critical outcomes selected for inclusion in the GRADE table were hepatitis-related morbidity/progression, need for liver biopsy, and quality of life. Important outcomes selected for inclusion in the GRADE table were testing-related adverse events and change in treatment plan (especially a decision to begin antiviral therapy).

Evidence Review

We identified no randomized controlled evidence on the use of noninvasive tests of liver fibrosis compared to liver biopsy with respect to clinical outcomes in hepatitis C infection.

We identified a poor quality systematic review and meta-analysis of six studies reporting on the relative prognostic value of liver biopsy, FibroTest®, FIB-4, and APRI for predicting overall survival. All of the tests offered statistically significant prognostic value for overall survival with AUROCs of 0.58 for APRI (95% CI 0.53 to 0.63), 0.68 for FIB-4 (95% CI 0.58 to 0.78), 0.77 for biopsy (95% CI 0.62 to 0.93), and 0.80 for FibroTest® (95% CI 0.76 to 0.95). The authors did not describe the methodologic rigor of the included studies. There was significant heterogeneity in the included studies (for example, in one study of APRI and FIB-4 in HCV patients, 68% of the patients had HIV co-infection). Lastly, the review was authored by the inventor of the FibroTest® and two employees of the company that market the test.

A more recent study (Vergniol et al., 2014) examined the prognostic value of evolving measurements of liver stiffness. In this study, about 1,025 people with chronic hepatitis C and two recorded measurements of liver stiffness (separated by >1,000 but <1,500 days) recorded between 2004 and 2008 were included. The average age of included patients was 52 years, half were men, the average BMI was 25 kg/m^2, and about 12% reported excessive alcohol consumption. During the mean follow-up period of three years (after the second measurement of liver stiffness), 16% of patients achieved sustained

virologic response from HCV treatment. Survival data was available for 95% of patients; of those, 35 patients had died and 7 had undergone liver transplantation. Twenty-one of the deaths were from liver-related causes. In the univariate analysis, several factors were associated with statistically significantly increased hazard ratios for death: age (HR 1.03, 95% CI 1.01 to 1.06), male sex (HR 2.25, 95% CI 1.17 to 4.43), baseline liver stiffness measurement (HR 4.27, 95% CI 2.94 to 6.22), follow-up liver stiffness measurement (HR 5.47, 95% CI 3.82 to 7.84), and change in liver stiffness measurement (HR 1.25, 95% CI 1.16 to 1.36). Unusually, alcohol abuse appeared to have a protective effect in this study (HR 0.42, 95% CI 0.18 to 0.97). In the multivariate analysis, baseline liver stiffness measurement (HR 5.76, 95% CI 3.74 to 8.87), change in liver stiffness measurement (HR 1.19, 95% CI 1.11 to 1.28), and achievement of SVR (HR 0.19, 95% CI 0.05 to 0.80) were statistically significant independent predictors of death. Overall, the authors concluded that patients with low-baseline liver stiffness measurements, those who achieve SVR, and those with non-cirrhotic baseline liver stiffness measurements and stable or decreasing measurements at follow-up all have an excellent prognosis. Conversely, patients with cirrhotic baseline liver stiffness measurement or those with advancing significant fibrosis have a poorer prognosis.

Cross-sectional data has correlated liver stiffness measurements by TE with the presence of portal hypertension (Kim et al., 2013), but TE has not been demonstrated in prospective studies to predict clinical outcomes related to portal hypertension in hepatitis C patients. A prospective cohort study of nearly 900 Japanese patients with HCV investigated the correlation between liver stiffness measurements by TE and the development of hepatocellular carcinoma (HCC) over a mean follow-up of 3 years (Masuzaki et al., 2009). Compared to a reference value of less than 10 kilopascals (kPa), various cut-offs of liver stiffness were associated with relative risk of HCC ranging from 16 to 45.

The remainder of the identified systematic reviews summarized diagnostic accuracy studies of various tests compared to a reference standard of liver biopsy. Most of these studies report diagnostic performance by way of sensitivity, specificity, and AUROC. A test that perfectly matches the diagnoses assigned by the reference test would have an AUROC of 1. Conventionally, tests with an AUROC of 0.9 to 1 are considered excellent, 0.8-0.89 are good, 0.7-0.79 are fair, and below 0.7 are poor, and though widely used, these distinctions are arbitrary.

Magnetic Resonance Elastography

Singh et al., 2015

This is a good quality systematic review and meta-analysis of patient-level data to determine the diagnostic performance of magnetic resonance elastography (MRE) compared to liver biopsy as the reference standard. The use of patient-level data in the meta-analysis allowed them to perform stratified analyses to determine if the diagnostic performance of MRE varied based on sex, obesity, or the etiology of the liver disease, and also allowed the authors to reduce the risk of spectrum bias and standardize diagnostic cut-offs for various fibrosis stages. The authors included 12 studies that met inclusion criteria and for which they were able to obtain the individual participant data (n=697). Overall, the included studies were judged to be at low to moderate risk of bias. Three of the studies did not adequately report on blinding procedures, raising the possibility of review bias.

Among the included patients, the average age was 55 years old, the majority were males (60%), and the average BMI was 27. Nearly half of the participants had HCV-related liver disease (47%), with smaller numbers of patients with HBV, NAFLD, ALD, AIH, or other miscellaneous etiologies. The distribution of fibrosis level on biopsy was 19.5% F0, 19.4% F1, 15.5% F2, 15.9% F3, and 29.7% F4.

The diagnostic operating characteristics of MRE from the meta-analysis, including both positive and negative likelihood ratios, are reported in Table 2 below.

Table 2: Diagnostic Operating Characteristics of MRE

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Any: ≥F1	0.84 (0.76 - 0.92)	0.73	0.79	3.48	0.34
Significant: ≥F2	0.88 (0.84 - 0.91)	0.79	0.81	4.16	0.26
Advanced: ≥F3	0.93 (0.90 - 0.95)	0.85	0.85	5.67	0.18
Cirrhosis: F4	0.92 (0.90 - 0.94)	0.91	0.81	4.79	0.11

In the subgroup and sensitivity analysis, the diagnostic performance of MRE did not significantly vary based on sex, presence of obesity, or etiology of liver disease. In this review, MRE had a failure rate of about 4%, and this was most commonly due to interference from hepatic iron overload.

Overall, the authors concluded that MRE was highly accurate for diagnosing fibrosis and cirrhosis regardless of BMI or the etiology of chronic liver disease.

Transient Elastography

Steadman et al., 2013

This is a good-quality, comprehensive technology assessment of transient elastography (TE) for the diagnosis of significant fibrosis in adults with chronic liver disease. Overall, 57 studies reporting diagnostic performance of TE compared with liver biopsy were included. The results were stratified by the etiology of liver disease, and 13 of the included studies were in patients with HCV. The included studies were methodologically rigorous with the authors rating nearly 80% of them as high quality.

The diagnostic operating characteristics of TE (in HCV patients only) from the meta-analysis are reported in Table 3 below.

Table 3: Diagnostic Operating Characteristics of Transient Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Significant: ≥F2	0.89 (0.86 - 0.91)	0.76	0.86	5.43	0.28
Advanced: ≥F3	0.92 (0.89 - 0.94)	0.88	0.91	9.7	0.13
Cirrhosis: F4	0.94 (0.92 - 0.96)	0.85	0.91	9.4	0.16

The authors also performed a basic economic analysis to calculate the incremental cost per correct diagnosis gained by liver biopsy over TE. In the subgroup of patients with HCV, the incremental cost per correct diagnosis using biopsy ranged from $1,861 for patients with F2 disease to $3,260 for patients with F3 disease. The authors were careful to note that their economic modeling does not account for the practice of monitoring progression of liver fibrosis and observe that the common practice in Alberta, Canada is yearly TE and biopsy every 3-5 years.

Overall, the authors concluded that TE was an accurate method for diagnosing fibrosis or cirrhosis and was less costly than liver biopsy.

Acoustic Radiation Force Impulse Imaging

Nierhoff et al., 2013

This is a good-quality systematic review and meta-analysis of the diagnostic operating characteristics of ARFI in patients with chronic liver disease using liver biopsy as the reference standard. The authors included 36 studies (both published manuscripts and abstracts) of nearly 4,000 patients. Among the included studies, 7 examined only patients with HCV as the etiology of their liver disease while another 18 studies reported on populations with mixed etiologies of chronic liver disease, including HCV. The methodologic quality of the included studies was mixed, and about half of the studies had potential flaws related to spectrum bias (bias introduced because the range and distribution of disease severity in the study is not representative of the overall population of people with the condition) and review bias (bias introduce when the interpreter of the index test is already aware of the result of the reference test, or vice-versa). The main reported measure of diagnostic performance was AUROC. The results of the meta-analysis of the HCV only and mixed etiology studies are reported in Table 4 below.

Table 4: AUROC of Acoustic Radiation Force Impulse (ARFI) Imaging Tests

Fibrosis Stage	AUROC – HCV only studies (95% CI)	AUROC – Mixed studies (95% CI)
Significant: ≥F2	0.88 (0.81 - 0.96)	0.83 (0.80 - 0.86)
Advanced: ≥F3	0.93 (0.89 - 0.97)	0.87 (0.85 - 0.90)
Cirrhosis: F4	0.92 (0.85 - 0.99)	0.91 (0.89 - 0.93)

One possible explanation for the poorer diagnostic performance in the mixed studies is the finding in subgroup analysis that higher BMI is associated with reduced diagnostic accuracy and a higher failure rate for testing.

Overall, the authors concluded that the diagnostic performance of ARFI is good to excellent for detecting fibrosis and cirrhosis. The authors also note that their findings are consistent with those of an earlier, smaller meta-analysis of ARFI using individual participant data.

Acoustic Radiation Force Impulse (ARFI) vs. Transient Elastography (TE)

Bota et al., 2013

This is a good-quality systematic review and meta-analysis of studies comparing ARFI and TE to a reference standard of liver biopsy for the evaluation of fibrosis. The authors included 13 trials; 10 of the trials reported diagnostic accuracy of ARFI and TE for the diagnosis of significant fibrosis (≥F2), and all the trials reported diagnostic accuracy for cirrhosis (F4). The etiology of liver disease in each study was variable, and all but one study included patients with chronic hepatitis C. The authors observed that failure rates (i.e. inability to obtain any valid measurements) were higher for TE (6.6%) than ARFI (2.1%), and five of the trials only included patients with valid ARFI and TE. The authors' risk of bias assessment for most studies was low. The results of the meta-analysis are reported in Table 5 below.

Table 5: Diagnostic Operating Characteristics of ARFI and TE

Test and Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
ARFI: ≥F2	0.85 (0.82 - 0.88)	0.74	0.83	4.29	0.31
TE: ≥F2	0.87 (0.83 - 0.89)	0.78	0.84	4.79	0.26
ARFI: F4	0.93 (0.91 - 0.95)	0.87	0.87	6.48	0.15
TE: F4	0.93 (0.91 - 0.95)	0.89	0.87	6.79	0.13

Overall, the authors concluded that there were no significant differences in the diagnostic accuracy of ARFI and TE. They note that while the higher failure rate for TE is concerning, new and more sensitive probes may mitigate this limitation.

Blood Tests

Dozens of blood tests and related interpretive indices or scores have been proposed for the diagnosis of fibrosis or cirrhosis in patients with HCV. The components of these tests are discussed in detail in the technology description section of this report.

Chou & Wasson, 2013

This is a good-quality systematic review of blood tests for the diagnosis of fibrosis and cirrhosis in patients with HCV. The authors did not perform a meta-analysis but present results for measures of diagnostic accuracy as medians and ranges. The number of studies for each test and the authors' GRADE assessment of the strength of evidence are provided in Table 6 below.

The results of the review of these tests are also summarized in Table 6. Because of the large number of tests as well as the various cut-offs used for each test, only the AUROC (median and range) are presented in this table.

Table 6: Studies of Blood Tests for Liver Fibrosis

Test	Number of studies	Strength of evidence	Fibrosis (≥F2) AUROC median (range)	Cirrhosis AUROC median (range)
Platelet count	18	Moderate	0.71 (0.38 - 0.94)	0.89 (0.64 - 0.99)
Hyaluronic acid	8	Moderate	0.75 (0.65 - 0.88)	0.90 (0.80 - 0.97)
Age-platelet index	11	Moderate	0.74 (0.64 - 0.79)	0.86 (0.64 - 0.91)
AST-platelet ratio index	7	High	0.77 (0.58 - 0.95)	0.84 (0.54 - 0.97)
AST-ALT ratio	32	High	0.59 (0.50- 0.82)	0.72 (0.52 - 0.91)
Bonacini index	12	Moderate	0.66 (0.58 - 0.71)	0.74 (0.61 - 0.91)
ELF™	8	Moderate	0.81 (0.72 - 0.87)	0.88 (0.78 - 0.91)
FIB-4	19	Moderate	0.74 (0.61 - 0.81)	0.87 (0.83 - 0.92)
FibroIndex	9	Moderate	0.76 (0.58 - 0.86)	0.86 (0.78 - 0.92)
Fibrometer™	8	Moderate	0.82 (0.78 - 0.85)	0.91 (0.89 - 0.94)
FIBROSpect® II	7	Low	0.86 (0.77 - 0.90)	NR
FibroTest®	32	High	0.79 (0.70 - 0.89)	0.86 (0.71 - 0.92)
Forns index	22	High	0.76 (0.60 - 0.86)	0.87 (0.85 - 0.91)
GUCI	5	Low	NR	0.82 (0.78 - 0.86)
Hepascore®	12	High	0.79 (0.69 - 0.82)	0.89 (0.88 - 0.94)
Lok index	10	Moderate	NR	0.80 (0.61 - 0.91)
Pohl index	12	Low	0.52 (0.52 - 0.53)	0.65 (0.64 - 0.66)

The Chou & Wasson review also summarized the results of trials making direct comparisons between APRI or FibroTest® and various other blood tests. Very few of these direct comparisons showed substantial differences in the median AUROC for fibrosis, but median differences in excess of 0.05 are reported in Table 7 below. Only one of the direct comparisons (APRI vs. AST-ALT ratio) for the diagnosis of cirrhosis exceed a median difference in AUROC of greater than 0.05; in those studies APRI was more accurate than the AST-ALT ratio.

Table 7. Studies of Direct Comparisons between Two Blood Tests

Number of studies	Test A AUROC median	Test B AUROC median	Median difference (range)
13	APRI 0.76	AST-ALT ratio 0.58	0.17 (-0.06 to 0.23)
4	APRI 0.74	Bonacini index 0.66	0.08 (0.07 to 0.09)
8	APRI 0.79	Fibrometer™ 0.84	-0.06 (-0.07 to -0.02)
8	APRI 0.76	Platelet count 0.67	0.08 (-0.06 to 0.53)
3	APRI 0.69	Pohl index 0.52	0.17 (0.13 to 0.23)
3	FibroTest® 0.78	FibroIndex 0.72	0.08 (0.02 to 0.10)

The authors also include 9 studies that report on the use of combinations of blood tests or indices. Four studies reported on diagnostic performance of the Sequential Algorithm for Fibrosis Evaluation that combines results from APRI and FibroTest®. In two studies of patients with fibrosis (≥F2), the algorithm had an AUROC of 0.90 and 0.94. In 3 studies of cirrhosis, the algorithm had a median AUROC of 0.87. The remaining combinations of tests or indices were only studied in single trials.

The authors point out several limitations of the review, the most important of which is the binary interpretation of presence or absence of clinically significant fibrosis. As they note, "Measures that incorporate the accuracy of tests at each fibrosis stage would therefore be more informative than estimates based on dichotomized classifications." Additionally, because nearly all the included studies grouped patients with both lesser stages of fibrosis and cirrhosis, it was not possible to ascertain the diagnostic performance of blood tests for less severe fibrosis independent from the diagnostic accuracy of the full spectrum of significant fibrosis, and distinguishing between F2 and F3 is not possible. Overall, the authors conclude that a variety of blood tests are moderately useful for the identification of clinically significant fibrosis in patients with HCV.

Shear Wave Elastography

Li et al., 2016

This is a good-quality systematic review and meta-analysis of diagnostic accuracy studies of real-time shear wave elastography (SWE) for staging liver fibrosis. The authors identified eight studies with a total of 934 patients comparing SWE to a reference standard of liver biopsy. Most patients in the included studies had chronic viral hepatitis, but the precise breakdown was not provided. The included studies were generally at low risk of bias, though three were judged to be susceptible to disease progression

bias because of the time difference between the two tests. The diagnostic operating characteristics from the meta-analysis are reported in Table 8 below.

Table 8. Diagnostic Operating Characteristics for Shear Wave Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity	Specificity	Positive LR	Negative LR
Significant: ≥F2	0.88 (0.85 - 0.91)	0.85	0.81	4.47	0.18
Advanced: ≥F3	0.94 (0.92 - 0.96)	0.90	0.81	4.73	0.12
Cirrhosis: F4	0.92 (0.89 - 0.94)	0.87	0.88	7.25	0.15

The authors note that the primary limitations of their review include the small number of studies and the inability to perform subgroup analysis by etiology of chronic liver disease.

The authors observe that compared with reported diagnostic accuracy of other modalities, SWE is comparable to TE and ARFI for diagnosis of cirrhosis, and comparable to ARFI but better than TE for the diagnosis of significant fibrosis (≥F2). Overall, the authors conclude that the diagnostic accuracy of SWE for fibrosis staging is good.

Real-Time Tissue Elastography

Kobayashi et al., 2014

This is a good-quality systematic review and meta-analysis of diagnostic accuracy studies of real-time tissue elastography (RT-TE) compared to a reference standard of liver biopsy. The authors identified 15 trials including over 1,600 patients. Ten of 15 studies included patients with HCV. The authors expressed concerns over the risk of bias in several included studies related to patient selection bias and the absence of pre-specified cut-off values for the index tests. They also identified possible publication bias in their funnel plots. The meta-analytic results for sensitivity and specificity are reported in Table 9 below.

Table 9. Diagnostic Operating Characteristics for Real-Time Tissue Elastography

Fibrosis Stage	AUROC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)	Positive LR (95% CI)	Negative LR (95% CI)
Significant: ≥F2	0.69 (NR)	0.79 (0.75 - 0.83)	0.76 (0.68 - 0.82)	3.29 (NR)	0.27 (NR)
Advanced: ≥F3	0.86 (NR)	0.82 (0.75 - 0.88)	0.81 0.72 - 0.88)	4.31 (NR)	0.22 (NR)
Cirrhosis: F4	0.72 (NR)	0.74 (0.63 - 0.82)	0.84 0.79 - 0.88)	4.6 (NR)	0.30 (NR)

Overall, the authors conclude that, "RTE is not highly accurate for any cut-off stage of fibrosis."

Direct Comparisons of FibroTest®, FIB-4, APRI, and TE

Houot et al., 2016

This is a poor-quality systematic review and meta-analysis of trials making direct comparisons between FibroTest®, APRI, FIB-4, and TE compared to a reference standard of liver biopsy. The authors identified 71 trials, of which 37 included only patients with HCV. The main purpose of the review was to determine whether there were differences between the AUROC of these tests for the diagnosis of advanced fibrosis (defined here as ≥F2) or cirrhosis. The review did not provide information on the methodologic quality of the included studies. The authors applied three meta-analytic methods to ascertain whether the differences in test performance were statistically significant: an indirect pooled AUROC difference, a standard pooled AUROC difference, and a Bayesian pooled AUROC difference. Among the HCV-only studies, the differences in AUROC for most comparisons were generally small (<0.05). In the indirect pooled analysis, only one comparison showed a statistically significant difference in favor of TE over APRI for diagnosis of cirrhosis. In the standard pooled analysis FibroTest® was favored over TE and APRI for diagnosis of fibrosis; TE and FIB-4 were favored over APRI for the diagnosis of cirrhosis. In the Bayesian pooled analysis, FibroTest® was favored over APRI for the diagnosis of fibrosis and TE and FIB-4 were favored over APRI for the diagnosis of cirrhosis. This review is subject to potential conflict of interest as the senior author is the inventor of FibroTest® and the study was funded in part by BioPredictive, the company that markets FibroTest®.

Factors Influencing Accuracy of TE

Perazzo et al., 2015

This is a narrative review article that summarizes research on various factors that influence the accuracy and interpretation of transient elastography. The authors identify four factors that are associated with overestimation of fibrosis by TE: heightened necroinflammatory activity as denoted by alanine transaminases greater than 10 times the upper limit of normal, extrahepatic cholestasis and hepatic

congestion, non-fasting status, and the presence of severe steatosis. The authors also note that the reliability of TE measurements is modified by operator experience and propose a definition of an experienced operator as greater than 100 examinations. Similarly, large ranges of inter-observer variability are reported in the literature and discrepancies between assessments of adjacent fibrosis stages are more common. The authors suggest that longitudinal follow-up and examination by the same experienced operator may prove most accurate.

We did not identify any evidence that addresses the question of initial timing of staging or the appropriate intervals for re-staging using non-invasive tests. The systematic review of TE did observe that the common practice in Alberta, Canada is to perform non-invasive tests to assess fibrosis stage every 3 to 5 years.

EVIDENCE SUMMARY

Although an imperfect test itself, liver biopsy remains the reference standard by which noninvasive tests of liver fibrosis and cirrhosis are judged. There is no direct comparative evidence that examines the effects of different diagnostic strategies on the predetermined clinical outcomes:

- Hepatitis-related morbidity/progression
- Need for liver biopsy
- Quality of life
- Testing-related adverse events
- Change in treatment plan

Furthermore, there is only sparse evidence on the value and reliability of prognostic information obtained from noninvasive tests. However, there are a large number of studies comparing the diagnostic accuracy of noninvasive tests of liver fibrosis to the reference standard of liver biopsy. Many of these studies (see Appendix D) demonstrated good or excellent performance of non-invasive tests for the detection of various levels of fibrosis; in general, imaging studies appear to have greater ability to distinguish between intermediate stages of fibrosis (i.e. between F2 and F3), while blood tests appear to be suitable for establishing the presence of significant fibrosis (≥F2) or cirrhosis (F4).

OTHER DECISION FACTORS

Resource Allocation

The price of noninvasive tests is generally significantly less than liver biopsy and avoids the costs associated with harms from liver biopsy. However, noninvasive testing is likely to be done at a higher frequency than liver biopsy and the increased number of total procedures may somewhat reduce the cost-savings associated with avoiding liver biopsy. The more significant cost driver is the impact noninvasive testing may have on determining the eligible population for treatment with hepatitis C. Health plans have prioritized treatment of hepatitis C patients with the newer expensive medications both because of the high cost of these medications and the prevalence of chronic hepatitis C infection in

the general population. The cutoff point for some plans in Oregon include only treating persons with a score of F3 or above. This requires testing that can accurately distinguish between the cutoff points for treatment. If a test has a high false positive rate, that would lead more people into a hepatitis C treatment pathway (increasing overall costs of the population in the near term). If a test has a high false negative rate, then people with more advanced fibrosis who may particularly benefit from treatment would not qualify for treatment (decreasing health system costs, but at the expense of fewer eligible people receiving appropriate treatment).

Values and preferences

Patients would highly value avoiding an invasive procedure as long as the information provided by a noninvasive test was comparable. There would be minimal variability in this preference. From a population perspective, it would be very important that these tests can accurately distinguish between those persons who would benefit the most from the very expensive treatment versus others who may be able to delay or avoid treatment altogether.

POLICY LANDSCAPE

Quality measures

No quality measures were identified when searching the National Quality Measures Clearinghouse.

Payer coverage policies

The Oregon Medicaid fee-for-service Approval Criteria for Hepatitis C Direct-Acting Antivirals requires liver fibrosis staging by either:

- A biopsy, transient elastography (FibroScan®), or serum test (FibroSure®) to indicate advanced fibrosis (METAVIR F3) or cirrhosis (METAVIR F4)
- Radiologic, laboratory (APRI score >1.5 or FIB-4 score >3.25), or clinical evidence (ascites, portal hypertension) of cirrhosis

The Washington Health Care Authority outlines the treatment policy for patients with HCV, with the accepted diagnostic tests for liver damage including imaging procedures (FibroScan®, ARFI, SWE) and blood tests (FibroSure®, APRI). The Table 10 below shows the allowed tests and cutoffs used to stage liver fibrosis to determine hepatitis C treatments.

Table 10: Washington Health Care Authority Accepted Diagnostic Tests and Procedures to Stage Liver Damage in Patients with Chronic HCV Infection

METAVIR Score	Biopsy	FibroScan®	Elastography (ARFI/PSWE)	FibroSure®	APRI	Other Imaging
F4	F4	≥ 12.5 kPa	≥ 2.34 m/s	≥ 0.75	≥ 2.0	Cirrhosis
F3	F3	9.6 - 12.4 kPa	2.01 - 2.33 m/s	0.58 - 0.74	1.5 - 1.9	
F2	F2	7.1 - 9.5 kPa	1.38 - 2.0 m/s	0.49 - 0.57	1.0 - 1.4	
F1/0	F1/0	≤ 7.0 kPa	≤ 1.37 m/s	≤ 0.48	≤ 0.9	

On May 27, 2016, a United States District Court issued a preliminary injunction requiring the Washington Medicaid program to cover direct-acting antiviral medications for Medicaid clients with hepatitis C, regardless of the extent of liver fibrosis.

Coverage policies for noninvasive tests of liver fibrosis were searched for four commercial payers: Aetna, Cigna, Moda, and Regence. Transient elastography (FibroScan®) is covered by three of these payers: Aetna, Cigna, and Moda. MRE for staging liver fibrosis is covered by only Moda. None of the other imaging tests are covered by these payers. Three of the four payers do not cover the blood tests for staging liver fibrosis. Moda Health covers the blood tests FibroSure®, FIBROSpect®, APRI, ActiTest®, and Hepascore®.

Aetna's precertification criteria for direct-acting antivirals require the staging of liver disease by liver biopsy, METAVIR scores, FibroScan® score, APRI score, radiological imaging consistent with cirrhosis (i.e., evidence of portal hypertension), or physical findings or clinical evidence consistent with cirrhosis as attested by the prescribing physician. The Regence Medical Policy Manual states that, "Liver biopsy is typically recommended prior to the initiation of antiviral therapy." Coverage policies for direct-acting antivirals for Cigna and Moda do not indicate specific methods for staging of liver fibrosis.

For Medicare, no National Coverage Determinations or Local Coverage Determinations related to noninvasive tests for liver fibrosis were identified.

Professional society guidelines

American Association for the Study of Liver Disease (AASLD) and Infectious Disease Society of America (IDSA) Guideline, 2016

The AASLD and IDSA guideline endorses the use of biopsy, imaging, and/or noninvasive markers to evaluate advanced fibrosis in HCV patients for treatment planning and to ascertain whether additional screening and management of cirrhosis is needed (Class I, Level A). It also endorses the continued monitoring of liver disease in those who defer treatment, but does not specify the use of noninvasive tests or provide an optimal interval for re-assessment.

Regarding noninvasive tests, the AASLD and IDSA guideline makes the following statements:

- “No single method is recognized to have high accuracy alone and each test must be interpreted carefully. A recent publication of the Agency for Healthcare Research and Quality found evidence in support of a number of blood tests; however, at best, they are only moderately useful for identifying clinically significant fibrosis or cirrhosis.”
- “Vibration-controlled transient liver elastography is a noninvasive way to measure liver stiffness and correlates well with measurement of substantial fibrosis or cirrhosis in patients with chronic HCV infection. The measurement range does overlap between stages.”
- “The most efficient approach to fibrosis assessment is to combine direct biomarkers and vibration-controlled transient liver elastography. A biopsy should be considered for any patient who has discordant results between the 2 modalities that would affect clinical decision making. For example, one shows cirrhosis and the other does not. The need for liver biopsy with this approach is markedly reduced.”
- “Alternatively, if direct biomarkers or vibration-controlled transient liver elastography are not available, the AST-to-platelet ratio index (APRI) or FIB-4 index score can help, although neither test is sensitive enough to rule out substantial fibrosis. Biopsy should be considered in those in whom more accurate fibrosis staging would impact treatment decisions. Individuals with clinically evident cirrhosis do not require additional staging (biopsy or noninvasive assessment).”

European Association for the Study of the Liver (EASL) and Asociación Latinoamericano para el Estudio del Hígado (ALEH), 2015

This is a comprehensive clinical practice guideline on the use of noninvasive tests for evaluating liver disease across a variety of etiologies. In general, EASL/ALEH endorse the use of noninvasive tests of liver fibrosis. Specific recommendations and statements include:

- "Non-invasive tests should always be interpreted by specialists in liver disease, according to the clinical context, considering the results of other tests (biochemical, radiological and endoscopic) and taking into account the recommended quality criteria for each test and its possible pitfalls (A1)."
- "TE is a fast, simple, safe and easy to learn procedure that is widely available. Its main limitation is the impossibility of obtaining results in case of ascites or morbid obesity and its limited applicability in case of obesity and limited operator experience (A1)."
- "TE should be performed by an experienced operator (>100 examinations) following a standardized protocol with the patient, fasting for at least 2 hours, in the supine position, right arm in full abduction, on the midaxillary line with the probe-tip placed in the 9th to 11th intercostal space with a minimum of 10 shots (A1)."
- "Although alternative techniques, such as pSWE/ARFI or 2D-SWE seem to overcome limitations of TE, their quality criteria for correct interpretation are not yet well defined (A1)."
- "MR elastography is currently too costly and time consuming for routine clinical practice use and seems more suited for research purposes (A1)."
- "When compared in HCV patients, the different patented tests have similar levels of performance in diagnosing significant fibrosis and cirrhosis (A1). Although non-patented tests might have lower diagnostic accuracy than patented tests, they are not associated with additional costs, are easy to calculate, and are widely available (A2)."
- "Among the different available strategies, algorithms combining TE and serum biomarkers appear to be the most attractive and validated one (A2). In patients with viral hepatitis C, when TE and serum biomarkers results are in accordance, the diagnostic accuracy is increased for detecting significant fibrosis but not for cirrhosis. In cases of unexplained discordance, a liver biopsy should be performed if the results would change the patient management (A1)."

The EASL/ALEH guideline includes the following proposed algorithm for noninvasive testing in HCV patients.

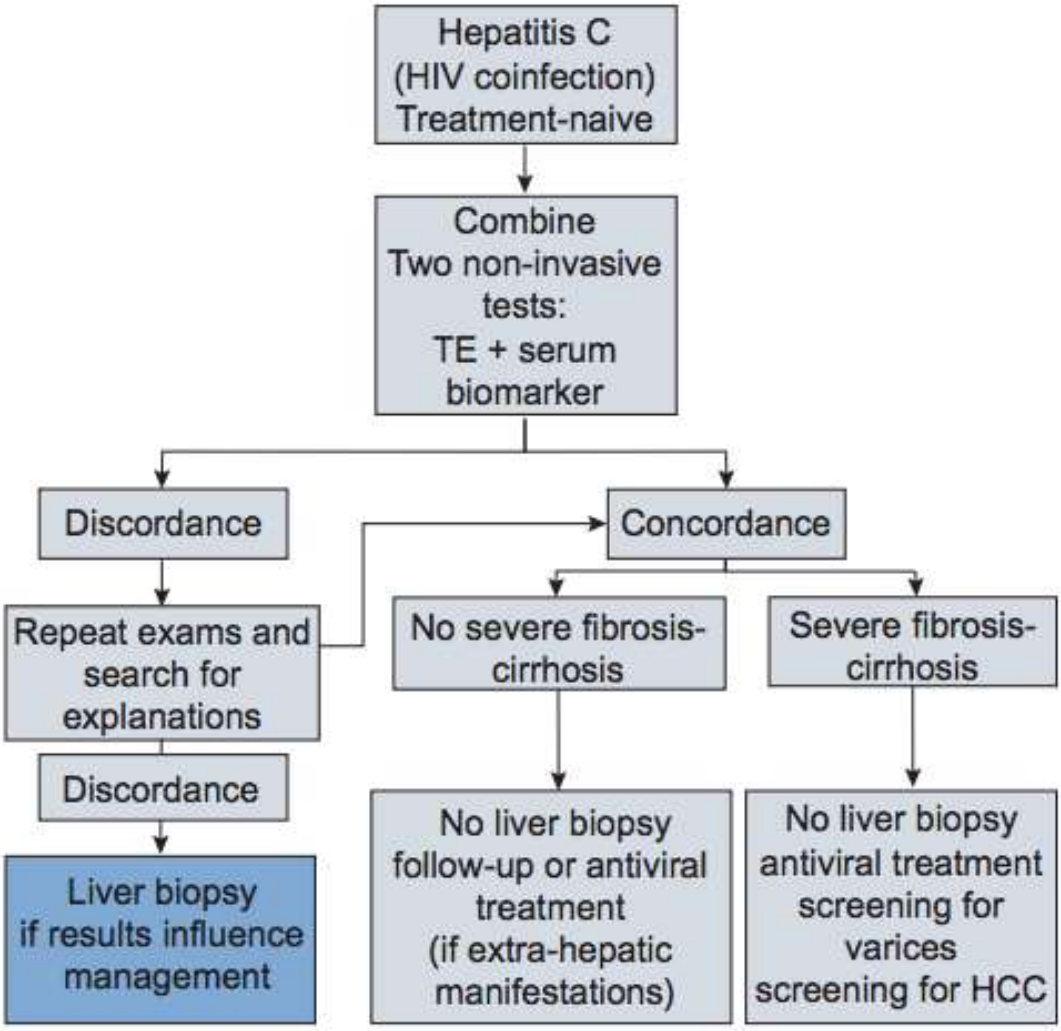

Fig. 1. Proposed algorithm for the use of non-invasive tests in treatment-naive patients with Hepatitis C with or without HIV coinfection.

National Institute for Health and Care Excellence (NICE), 2015

NICE issued medical technology guidance on the use of Virtual Touch™ Quantification (VTq, a proprietary system for performing ARFI) for diagnosing and monitoring liver fibrosis in chronic hepatitis B and C. The panel endorsed the use of VTq as an option for assessing liver fibrosis in chronic hepatitis B or C. They concluded that VTq is as accurate as transient elastography and cost modelling suggested that VTq would likely to be cost saving compared to transient elastography and liver biopsy.

Scottish Intercollegiate Guidelines Network (SIGN), 2013

SIGN published a comprehensive guideline on the management of hepatitis C in 2013 including recommendations regarding the use of noninvasive tests for diagnosing fibrosis and cirrhosis. The SIGN guideline states that while biochemical markers may be able to distinguish cirrhosis from less degrees of fibrosis, "intermediate stages are not distinguishable." Thus, SIGN recommends that biochemical markers should not be considered an alternative to biopsy for staging intermediate levels of fibrosis, but may be used in place of biopsy to diagnose cirrhosis (B recommendations, 2++ evidence). The guideline does offer that measurement of liver stiffness by noninvasive testing may be considered a "recommended best practice based on the clinical experience of the guideline development group."

Society of Radiologists in Ultrasound Consensus Conference Statement, 2015

This consensus conference statement (Barr et al., 2015) asserts that elastography (using either ultrasound or magnetic resonance techniques) can be used to diagnose liver fibrosis in patients "without overt decompensated cirrhosis." The panel stated that elastography should be used to group patients into three categories: those with minimal fibrosis (F0 or F1), those with a high likelihood of cirrhosis (F4), and those with values in between suggesting moderate to severe fibrosis (F2 and F3). The panel also proposed consensus diagnostic thresholds which are reproduced in Table 11.

Table 11: Consensus of Suggested Thresholds in Patients with Hepatitis C

Device	No Clinically Significant Fibrosis: METAVIR Stage < F2, Unlikely to Need Follow-up	Advanced Fibrosis and/or Cirrhosis: METAVIR Stage of F4 and Some Stages of F3 – Clinically Significant Fibrosis
TE FibroScan® (Echosens)	<7 kPa (1.5 m/sec)	>15 kPa (2.2 m/sec)
Siemens pSWE	1.2 m/sec (Siemens suggests <1.34 m/sec, <5.6 kPa)	>2.2 m/sec (>15 kPa)
Philips pSWE	<5.7 kPa (1.37 m/sec)	>2.2 m/sec (>15 kPa)
2D SWE (SuperSonic Imagine)	<7 kPa (1.5 m/sec)	>2.2 m/sec (>15 kPa)
MR elastography (GE, Siemens, Philips)	<3.0 kPa* (27–30)	>5.0 kPa*

*MR elastography is reported as shear modulus, while U.S. elastography techniques are reported in Young modulus. The Young modulus is three times the shear modulus.

World Health Organization, 2014

The WHO released a comprehensive guideline in 2014 focused on management of hepatitis C in resource limited settings. In general, the guideline states that noninvasive tests should be favored over liver biopsy and "in resource-limited settings, it is suggested that aminotransferase/platelet ratio index (APRI) or FIB4 be used for the assessment of hepatic fibrosis rather than other noninvasive tests that

require more resources such as elastography or Fibrotest." (Conditional recommendation, low quality evidence)

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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.

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APPENDIX A. GRADE INFORMED FRAMEWORK – 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
Other considerations	Other considerations include issue about the implementation and operationalization of the technology or intervention in health systems and practices within Oregon.

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/outcome[1]

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

[1] Includes risk of bias, precision, directness, consistency and publication bias

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.

APPENDIX B. GRADE EVIDENCE PROFILE

Quality Assessment for MRE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
12	Diagnostic accuracy studies (cross-sectional or cohort designs)	Low	Not serious	Serious	Not serious		Moderate confidence ●●●○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for TE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
2	Prospective prognostic studies	Moderate to high	Not serious	Serious	Serious		Very low confidence ●○○○
Need for liver biopsy (Critical outcome)							
57	Diagnostic accuracy studies (cross-sectional or	Low	Not serious	Serious	Not serious		Moderate confidence ●●●○

Quality Assessment for TE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
	cohort designs)						
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for ARFI (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
36	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Not serious		Low confidence ●●○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for SWE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
8	Diagnostic accuracy studies (cross-sectional or cohort designs)	Low to Moderate	Not serious	Serious	Not serious		Low confidence ●●○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for RT-TE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
15	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Unclear	Possible publication bias	Very low confidence ●○○○
Quality of life (Critical outcome)							

Quality Assessment for RT-TE (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Platelet count (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
18	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Hyaluronic acid (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
8	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Age-platelet index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
11	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Not Serious		Low confidence ●●○○
Quality of life (Critical outcome)							
0							Insufficient

Quality Assessment for Age-platelet index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for APRI (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
6	Retrospective prognostic studies	High	Not serious	Serious	Not serious		Very low confidence ●○○○
Need for liver biopsy (Critical outcome)							
7	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for AST-ALT ratio (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
32	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Bonacini index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
12	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Not serious		Low confidence ●●○○
Quality of life (Critical outcome)							

Quality Assessment for Bonacini index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for ELF™ (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
8	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for FIB-4 (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
6	Retrospective prognostic studies	High	Not serious	Serious	Not serious		Very low confidence ●○○○
Need for liver biopsy (Critical outcome)							
19	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for FibroIndex (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
9	Diagnostic accuracy studies (cross-sectional	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○

Quality Assessment for FibroIndex (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
	or cohort designs)						
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for FibroMeter™ (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
8	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for FIBROSpect® II (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
7	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for FibroTest® (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
6	Retrospective prognostic studies	High	No serious	Serious	Serious		Very low confidence ●○○○
Need for liver biopsy (Critical outcome)							
32	Diagnostic accuracy studies (cross-sectional or	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○

Quality Assessment for FibroTest® (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
	cohort designs)						
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Forns index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
7	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Hepascore® (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
12	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Serious		Very low confidence ●○○○
Quality of life (Critical outcome)							
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

Quality Assessment for Pohl index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Hepatitis related morbidity/progression (Critical outcome)							
0							Insufficient
Need for liver biopsy (Critical outcome)							
12	Diagnostic accuracy studies (cross-sectional or cohort designs)	Moderate	Not serious	Serious	Not serious		Low confidence ●●○○
Quality of life (Critical outcome)							

Quality Assessment for Pohl index (Confidence in Estimate of Effect)							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
0							Insufficient
Testing related adverse events (Important outcome)							
0							Insufficient
Change in treatment plan (Important outcome)							
0							Insufficient

APPENDIX C. METHODS

Scope Statement

Populations

Adults and children with chronic hepatitis C infection

Population scoping notes: *None*

Interventions

Noninvasive tests of liver fibrosis (e.g., acoustic radiation force impulse imaging, transient elastography, magnetic resonance elastography, biochemical tests with predictive algorithms)

Intervention exclusions: *None*

Comparators

Liver biopsy, other interventions listed above

Outcomes

Critical: Hepatitis-related morbidity/progression, need for liver biopsy, quality of life

Important**:** Testing-related adverse events, change in treatment plan (especially decision to begin antiviral therapy)

Considered but not selected for the GRADE table: *None*

Key Questions

1. What is the comparative effectiveness of noninvasive tests for the diagnosis and management of hepatic fibrosis in patients with chronic hepatitis C?

2. Does the comparative effectiveness of noninvasive tests of liver fibrosis in patients with chronic hepatitis C vary based on:
   a. Duration of infection
   b. Fibrosis score
   c. Body habitus
   d. Operator/interpreter training or experience
   e. Co-existence of other etiologies of liver disease (e.g., non-alcoholic steatohepatitis)

3. What are the comparative diagnostic operating characteristics of tests of liver fibrosis?

4. What is the evidence for the timing of the initial testing for fibrosis and intervals for subsequent reassessment of fibrosis?

Search Strategy

A full search of the core sources was conducted to identify systematic reviews, meta-analyses, technology assessments, and clinical practice guidelines using terms for each of the studied interventions. Searches of core sources were limited to citations published after 2010.

The core sources searched included:

Agency for Healthcare Research and Quality (AHRQ)
Blue Cross/Blue Shield Health Technology Assessment (HTA) program
BMJ Clinical Evidence
Canadian Agency for Drugs and Technologies in Health (CADTH)
Cochrane Library (Wiley Interscience)
Hayes, Inc.
Institute for Clinical and Economic Review (ICER)
Medicaid Evidence-based Decisions Project (MED)
National Institute for Health and Care Excellence (NICE)
Tufts Cost-effectiveness Analysis Registry
Veterans Administration Evidence-based Synthesis Program (ESP)
Washington State Health Technology Assessment Program

A MEDLINE search was then conducted to identify randomized control trials, systematic reviews, meta-analyses, and technology assessments published after the end search date of the most recent SR for each studied intervention.

Searches for clinical practice guidelines were limited to those published since 2010. A search for relevant clinical practice guidelines was also conducted, using the following sources:

Australian Government National Health and Medical Research Council (NHMRC)
Centers for Disease Control and Prevention (CDC) – Community Preventive Services
Choosing Wisely
Institute for Clinical Systems Improvement (ICSI)
National Guidelines Clearinghouse
New Zealand Guidelines Group
NICE
Scottish Intercollegiate Guidelines Network (SIGN)
United States Preventive Services Task Force (USPSTF)
Veterans Administration/Department of Defense (VA/DOD)

Inclusion/Exclusion Criteria

Studies were excluded if they were not published in English or did not address the scope statement.

APPENDIX D: TEST CHARACTERISTICS

Noninvasive Tests with Good or Excellent Accuracy by Pooled or Median AUROC

Test	Pooled/Median AUROC ≥F2 (95% CI/Range)	Pooled/Median AUROC ≥F3 (95% CI/Range)
MRE	0.88 (0.84 - 0.91)	0.93 (0.90 - 0.95)
TE	0.89 (0.86 - 0.91)	0.92 (0.89 - 0.94)
ARFI	0.88 (0.81 - 0.96)	0.93 (0.89 - 0.97)
SWE	0.88 (0.85 - 0.91)	0.94 (0.92 - 0.96)
RT-TE		0.86 (NR)
ELF™	0.81 (median) (Range 0.72 - 0.87)	
Fibrometer™	0.82 (median) (Range 0.78 - 0.85)	
FIBROSpect® II	0.86 (median) (Range 0.77 - 0.90)	

Noninvasive Tests with Fair or Poor Accuracy by Median AUROC

Test	Median AUROC ≥F2 (Range)
Platelet count	0.71 (0.38 - 0.94)
Hyaluronic acid	0.75 (0.65 - 0.88)
Age-platelet index	0.74 (0.64 - 0.79)
APRI	0.77 (0.58 - 0.95)
AST-ALT ratio	0.59 (0.50 - 0.82)
Bonacini index	0.66 (0.58 - 0.71)
FIB-4	0.74 (0.61 - 0.81)
FibroIndex	0.76 (0.58 - 0.86)
FibroTest®	0.79 (0.70 - 0.89)
Forns index	0.76 (0.60 - 0.86)
Hepascore®	0.79 (0.69 - 0.82)
Pohl index	0.52 (0.52 - 0.53)

Illustrative Effects of Reported Cut-Offs on Sensitivity and Specificity

MRE (Singh et al., 2015)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	3.66 kPa	0.79	0.81
≥F3	4.11 kPa	0.85	0.85

TE (Steadman et al., 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	7.4 (SD ±1.5) kPa	0.80	0.81
≥F3	9.9 (SD ±2.4) kPa	0.84	0.87

ARFI (selected individual studies included in Nierhoff et al., 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	1.22 m/s	1.0	0.71
	1.37 m/s	0.69	0.92
	1.63 m/s	0.59	1.0
≥F3	1.71 m/s	1.0	0.73
	1.73 m/s	0.93	0.85

SWE (selected individual studies included in Li et al., 2016)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	7.2 kPa	0.86	0.86
	8.6 kPa	0.78	0.93
≥F3	9.1 kPa	0.92	0.85
	10.46 kPa	0.89	0.80

APRI (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	≥0.5 to >0.55	0.81	0.55
	≥1.5	0.37	0.95
F4	≥1.0	0.77	0.75
	≥2.0	0.48	0.94

ELF™ (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	>8.75	0.86	0.62
	>9.78	0.84	0.80

FIB-4 (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	≥1.45	0.64	0.68
	≥3.25	0.5	0.79
F4	≥1.45	0.90	0.58
	≥3.25	0.55	0.92

Fibrometer™ (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	>0.419 to >0.59	0.69	0.81

FIBROSpect® II (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	>0.36	0.95	0.66
	≥0.42	0.67	0.74

FibroTest® (Chou & Wasson, 2013)

Fibrosis Stage	Cut-off	Sensitivity	Specificity
≥F2	>0.10 to >0.22	0.92	0.38
	>0.70 to >0.80	0.22	0.96
F4	>0.56	0.85	0.77
	>0.73 to >0.862	0.56	0.81

APPENDIX E. APPLICABLE CODES

CODES	DESCRIPTION
ICD-10 Diagnosis Codes	
B18.2	Chronic viral hepatitis C
CPT Codes	
0346T	Ultrasound elastography (with diagnosis code)
91200	Liver elastography, mechanically induced shear wave (e.g. vibration), without imaging, with interpretation and report
91299	Other diagnostic gastroenterology procedures
0001M	Infectious disease, HCV, six biochemical assays (ALT, A2-macroglobulin, apolipoprotein A-1, total bilirubin, GGT, and haptoglobin) utilizing serum, prognostic algorithm reported as scores of fibrosis and necroinflammatory activity in liver
81599	Unlisted multianalyte assay with algorithm
82172	Apolipoprotein
82246	Bilirubin
82977	Glutamiltransferase, gamma (GGT)
83010	Hepatoglobin; quantitative
83519	Immunoassay, analyte quantitative by radiopharmaceutical technique
83520	Immunoassay NOS
83883	Nephelometry, each analyte not elsewhere specified
84450	Transferase; aspartate amino (AST) (SGOT)
84460	Transferase; alanine amino (ALT) (SGPT)

Note: Inclusion on this list does not guarantee coverage

Hysterectomy Guidelines Review

Questions:

1) Should the requirement for laboratory confirmed anemia be removed from several of the hysterectomy guidelines for all procedures? If not, should it be removed for endometrial ablation procedures (see #3 below)?
2) Should the menstrual bleeding disorders guideline be clarified as to whether it applies to post-menopausal bleeding?
3) Should the guideline around endometrial ablation be changed to make it easier to qualify for this procedure as it is less invasive than hysterectomy?

Question sources:

1) Various CCOs and hearings cases
2) CCO hearings case
3) Dr. Michael Adler, OB/Gyn and HERC member

Issues:

The hysterectomy guidelines were reviewed as part of the 2012 ICD-10 OB/Gyn review, and various modifications were made. Since that review, there have been several additional changes made to these guidelines as described below. Various questions have been raised recently regarding these guidelines, and HERC staff felt that they should best be reviewed en masse.

1) The hysterectomy guidelines require proof of anemia as a qualification for hysterectomy. Originally, this requirement was a hemoglobin level of <10. This was modified a few years ago to allow a hemoglobin level of <11 if the patient was taking iron. However, many CCOs and HSD review providers have told HERC staff that it is difficult to obtain documentation of the hemoglobin level, and that many providers do not allow their patients to drop to a low hemoglobin level before instituting various therapies such as oral iron. Many CCOs and HSD reconsiderations allow hysterectomies for patients without documented anemia when they otherwise qualify under the guidelines. The question has been raised from several sources about whether this criteria should be removed due to the difficulty in its administration.
2) The guideline on menstrual bleeding states that "Endometrial ablation or hysterectomy for abnormal uterine bleeding in premenopausal women may be indicated…" Recently, a case came to hearings in which a patient had post-menopausal bleeding and the question was whether GN44 MENSTUAL BLEEDING DISORDERS should apply. The previous intent of the commission was that postmenopausal bleeding should have a diagnostic work up for the cause, and then treated based on that cause. The rationale was that postmenopausal bleeding by definition could not be significant enough to cause anemia, and was always considered pathologic until proven otherwise.
3) GN44 MENSTUAL BLEEDING DISORDERS currently requires the same criteria for a patient to qualify for a hysterectomy as for endometrial ablation. Endometrial ablation is a procedure in which the lining of the uterus is treated in such a way (heat, cryotherapy, etc.) as to minimize the ability of the lining to bleed. It is considered less invasive than a hysterectomy.
    a. From Dr. Adler: As a practicing OBGYN and Commissioner of the HERC, I feel the restrictions for an OHP patient to obtain an endometrial ablation are onerous and not in the best health interests of the patient. To my knowledge, this decision regarding endometrial ablation restrictions was based upon a review of published data over 6 years ago. To that end, I would request that the Value Based Benefits Subcommittee of the HERC review the current cost and health benefits of an endometrial ablation vs. less effective medical therapy. As a practicing OBG, I find it easier to have a hysterectomy

authorized for menorrhagia than an endometrial ablation; and to me, this is counter intuitive and potentially harmful to a patient.

In addition, I think Line 5 should be stricken re: sonohysteroscopy, hysteroscopy, and hysterosalpingography. These are expensive unnecessary procedures and a hysteroscopy is routinely performed at the time of endometrial ablation procedure. I think it is reasonable to substitute the above procedures with a pelvic ultrasound as part of the preoperative work up. Additionally, with the hysteroscopy at the time of the endometrial ablation, minor endometrial pathologies will be cured with the accompanying endometrial curettage and the destruction of endometrium occurring from the ablation.

b. HSC/HERC history: endometrial ablation was added to the menstrual bleeding disorders line in 1998. Endometrial cryoablation was added to this line as a new CPT code in 2004.

<u>Other payer policies</u>

1) **Regence BCBS 2018**, endometrial ablation
    a. Endometrial ablation, with or without hysteroscopic guidance, may be considered **medically necessary** when the clinical records document all of the following criteria (i-iv) are met:
        i. There is a diagnosis of abnormally heavy uterine bleeding in a patient who is not post-menopausal; *and*
        ii. Hysteroscopy, sonohysterography (SIS), or pelvic ultrasound has been performed and report is provided; and
        iii. Clinical documentation confirms counseling regarding hormonal treatment options has been addressed (see Policy Guidelines); *and*
        iv. Endometrial sampling or dilation and curettage (D&C) has been performed or is planned according to any of the following:
            1. Endometrial sampling or D&C has been performed and report is provided. The histopathology report is provided showing absence of endometrial hyperplasia or uterine cancer; or
            2. Endometrial sampling or D&C has been performed and report is provided. The histopathology report is provided, but inadequate tissue was obtained for diagnosis; or
            3. Cervical stenosis precludes endometrial sampling, and D&C is planned concomitantly with ablation
2) **Aetna 2018**, endometrial ablation policy
    a. Aetna considers endometrial ablation medically necessary for women who meet *all* of the following selection criteria:
        i. Menorrhagia unresponsive to (or with a contraindication to) *either*:
            1. Dilation and curettage; *or*
            2. Hormonal therapy or other pharmacotherapy;

        (Note: The degree of severity and persistence of the menorrhagia and the failure of prior treatment should be such that the member would otherwise be a candidate for a hysterectomy; these alternative less invasive approaches should have been attempted in the past year or to stop residual menstrual bleeding

after androgen treatment in a female to male transgender person who meet criteria for gonadectomy in CPB 0615 - Gender Reassignment Surgery)

and

b. Endometrial sampling or D&C has been performed within the year prior to the procedure to exclude cancer, pre-cancer or hyperplasia, and the results of the histopathological report have been reviewed before the ablation procedure is scheduled (should be done in the past year); *and*
c. Structural abnormalities (fibroids, polyps) that require surgery or represent a contraindication to an ablation procedure have been excluded (this is almost always done by ultrasound in the past year); *and*
d. Pap smear and gynecologic examination have excluded significant cervical disease. (Note: The Pap smear should be up to date so not necessarily within the past year).

CCO feedback:

There was near unanimous support for continuing to include a hemoglobin level as a criterion for hysterectomy. Most CCOs reported having no difficulty in obtaining the lab results from their providers.

The CCO medical directors were in favor of removing hemoglobin level as a criteria for endometrial ablation as this procedure does not require hospitalization, is less invasive, and is frequently used as a way of avoiding hysterectomy.

HERC staff summary

1) Hemoglobin documentation requirement: review of other payer policies finds that this is not a requirement. However, the CCOs are in favor of continuing this requirement.
2) Applicability of GN44 to postmenopausal bleeding
    a. Postmenopausal bleeding is by definition abnormal. Postmenopausal women by definition should not meet the criteria for profuse bleeding lasting more than 7 days or occurring at less than 21 day intervals. Hysterectomy should be done if indicated by the underlying pathology or through the exceptions review process.
3) Requirements for endometrial ablation: review of other payer policies finds that they generally have the same requirements as in GN44. CCO medical directors are in favor of removing the hemoglobin criteria for this procedure.

HERC staff recommendations:

1) Modify GN44 as shown below
    a. Removes the requirement for documented hemoglobin level for endometrial ablation
    b. Discuss other changes to the hemoglobin requirement such as increasing the hemoglobin level required
2) Make no changes to the other hysterectomy guidelines (see Appendix A)

GUIDELINE NOTE 44, MENSTRUAL BLEEDING DISORDERS

Line 420

Endometrial ablation or hysterectomy for abnormal uterine bleeding in premenopausal women may be indicated when all of the following are documented (A-C):

A) Patient history of (1, 2, 3, 4, and 5):
    1) Excessive uterine bleeding evidence by (a, b and c):
        a) Profuse bleeding lasting more than 7 days or repetitive periods at less than 21-day intervals
        b) Anemia due to acute or chronic blood loss (hemoglobin less than 10 or hemoglobin less than 11 g/dL if use of iron is documented) for hysterectomy. No documented hemoglobin level is required for endometrial ablation procedures.
        c) Bleeding causes major impairment or interferes with quality of life
    2) Failure of hormonal treatment for a six-month trial period or contraindication to hormone use (oral contraceptive pills or patches, progesterone-containing IUDs, injectable hormone therapy, or similar)
    3) No current medication use that may cause bleeding, or contraindication to stopping those medications
    4) Endometrial sampling performed
    5) For hysterectomy, no evidence of treatable intrauterine conditions or lesions by (a, b or c):
        a) Sonohysterography
        b) Hysteroscopy
        c) Hysterosalpingography

        For endometrial ablation, a pre-operative ultrasound should be performed
B) Negative preoperative pregnancy test result unless patient has been previously sterilized
C) Nonmalignant cervical cytology, if cervix is present

Appendix A: Current guidelines

GUIDELINE NOTE 39, ENDOMETRIOSIS AND ADENOMYOSIS

Lines 1,395

B) 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, progesteronecontaining 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

C) Hysterectomy, with or without adnexectomy, for adenomyosis may be appropriate when all of the following are documented (1-5):
   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, progesteronecontaining 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
   5) Negative preoperative pregnancy test unless patient is postmenopausal or has been previously sterilized

GUIDELINE NOTE 40, UTERINE LEIOMYOMA

Line 403

Hysterectomy, myomectomy, or uterine artery embolization for leiomyomata may be indicated when all of the following are documented (A-D):

A) One of the following (1 or 2):
   1) Patient history of 2 out of 3 of the following (a, b and c):
      a. Leiomyomata enlarging the uterus to a size of 12 weeks or greater gestation
      b. Pelvic discomfort cause by myomata (i or ii or iii):
         i) Chronic lower abdominal, pelvic or low backpressure

ii) Bladder dysfunction not due to urinary tract disorder or disease
iii) Rectal pressure and bowel dysfunction not related to bowel disorder or disease
c. Rapid enlargement causing concern for sarcomatous changes of malignancy

2) Leiomyomata as probable cause of excessive uterine bleeding evidenced by (a, b, c and d):
a. Profuse bleeding lasting more than 7 days or repetitive periods at less than 21-day intervals
b. Anemia due to acute or chronic blood loss (hemoglobin less than 10 or hemoglobin less than 11 g/dL if use of iron is documented)
c. Documentation of mass by sonography
d. Bleeding causes major impairment or interferes with quality of life

B) Nonmalignant cervical cytology, if cervix is present
C) Assessment for absence of endometrial malignancy in the presence of abnormal bleeding
D) Negative preoperative pregnancy test result unless patient is postmenopausal or has been previously sterilized

GUIDELINE NOTE 44, MENSTRUAL BLEEDING DISORDERS

Line 420

Endometrial ablation or hysterectomy for abnormal uterine bleeding in Premenopausal women may be indicated when all of the following are documented (A-C):

D) Patient history of (1, 2, 3, 4, and 5):
1) Excessive uterine bleeding evidence by (a, b and c):
a) Profuse bleeding lasting more than 7 days or repetitive periods at less than 21-day intervals
b) Anemia due to acute or chronic blood loss (hemoglobin less than 10 g/dL or hemoglobin less than 11 g/dL if use of iron is documented)
c) Bleeding causes major impairment or interferes with quality of life
2) Failure of hormonal treatment for a six-month trial period or contraindication to hormone use (oral contraceptive pills or patches, progesterone-containing IUDs, injectable hormone therapy, or similar)
3) No current medication use that may cause bleeding, or contraindication to stopping those medications
4) Endometrial sampling performed
5) No evidence of treatable intrauterine conditions or lesions by (a, b or c):
a) Sonohysterography
b) Hysteroscopy
c) Hysterosalpingography

E) Negative preoperative pregnancy test result unless patient has been previously sterilized
F) Nonmalignant cervical cytology, if cervix is present

GUIDELINE NOTE 50, PELVIC ORGAN PROLAPSE SURGERY

Line 464

Hysterectomy, cystocele repair, and/or other surgery for pelvic organ prolapse may be indicated when all of the following are documented (A-E):

A) Patient history of symptoms of pelvic prolapse such as:
1) Complaints of the pelvic organs prolapsing at least to the introitus, and one or more of the following:
a) Low back discomfort or pelvic pressure, or
b) Difficulty in defecating, or

c) Difficulty in voiding

B) For hysterectomy
   1) Nonmalignant cervical cytology, if cervix is present, and
   2) Assessment for absence of endometrial malignancy in the presence of abnormal bleeding

C) Physical examination is consistent with patient's symptoms of pelvic support defects indicating either symptomatic prolapse of the cervix, enterocele, cystocele, rectocele or prolapse of the vaginal vault

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

E) Patient required to have 3 months of alternative therapy (e.g., pessaries or physical therapy, including bladder training, pelvic floor exercises and/or biofeedback, as available). If limited coverage of physical therapy is available, patients should be taught pelvic floor exercises by their treating provider, physical therapist or trained staff, and have documented consistent practice of these techniques over the 3 month period.

GUIDELINE NOTE 55, PELVIC PAIN SYNDROME

Line 529

D) Diagnostic MRI may be indicated for evaluation of pelvic pain to assess for Adenomyosis and to assist in the management of these challenging patients when all of the following are documented:
   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) An endovaginal ultrasound within the past 12 months that shows no other suspected gynecological pathology if diagnostic MRI shows > 12mm thickening of the junctional zone, the presumptive diagnosis of adenomyosis is fulfilled. See Guideline Note 39.

B) Hysterectomy for chronic pelvic pain in the absence of significant pathology may be Indicated when all of the following are documented (1-7):
   1) Patient history of:
      a) No treatable conditions or lesions found on laparoscopic examination
      b) Pain for more than 6 months with negative effect on patient's 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) Evaluation of the following systems as possible sources of pelvic pain:
      a) Urinary
      b) Gastrointestinal
      c) Musculoskeletal

4) Evaluation of the patient's psychologic and psychosexual status for nonsomatic cause of symptoms
5) Nonmalignant cervical cytology, if cervix is present
6) Assessment for absence of endometrial malignancy in the presence of abnormal bleeding
7) Negative preoperative pregnancy test unless patient is postmenopausal or as been previously sterilized

GUIDELINE NOTE 59, DYSMENORRHEA

Line 555

Hysterectomy for dysmenorrhea may be indicated when all of the following are documented (A-G):

A) Patient history of:
   1) No treatable conditions or lesions found on laparoscopic examination
   2) Pain for more than 6 months with negative effect on patient's quality of life
B) Failure of a six-month therapeutic trial with both of the following (1 and 2), unless there are contraindications to use:
   1) Hormonal therapy (a or b):
      a) Oral contraceptive pills or patches, progesterone-containing IUDs, injectable hormone therapy, or similar
      b) Agents for inducing amenorrhea (e.g., GnRH analogs or danazol)
   2) Nonsteroidal anti-inflammatory drugs
C) Evaluation of the following systems as possible sources of pelvic pain:
   1) Urinary
   2) Gastrointestinal
   3) Musculoskeletal
D) Evaluation of the patient's psychologic and psychosexual status for nonsomatic cause of symptoms
E) Nonmalignant cervical cytology, if cervix is present
F) Assessment for absence of endometrial malignancy in the presence of abnormal bleeding

Posterior Urethral Valves

Question: Should posterior urethral valves be paired with surgical correction when not causing hydronephrosis?

Question source: Dr. Daniel Hirselj at NW Urology

Issue: Posterior urethral valves are congenital obstructive membranes that develop in the urethra in males. The valve can cause obstruction which can lead to hydronephrosis and kidney damage. In less severe cases, the valves can cause urinary tract infections, urinary incontinence, and difficulty with urination. In more severe cases, they cause hydronephrosis and even renal failure.

Currently the treatment for posterior urethral valves (CPT 52400 Cystourethroscopy with incision, fulguration, or resection of congenital posterior urethral valves, or congenital obstructive hypertrophic mucosal folds) is on three lines: 49 CONGENITAL HYDRONEPHROSIS, 327 FUNCTIONAL AND MECHANICAL DISORDERS OF THE GENITOURINARY SYSTEM INCLUDING BLADDER OUTLET OBSTRUCTION, and 329 CANCER OF PROSTATE GLAND.

Dr. Hirselj is requesting that CPT 52400 pair with ICD-10 Q64.2 (Congenital posterior urethral valves) which is on line 87 CONGENITAL ANOMALIES OF GENITOURINARY SYSTEM.

On review of the literature, it appears that very mild cases of posterior urethral valves do not require specific therapy. However, generally the diagnosis of posterior urethral valves is made after a child has symptoms that require a voiding cystourethrogram or other diagnostic testing. There has been no previous HSC/HERC review of this topic identified in a search of the minutes. Currently, if the posterior urethral valves cause hydronephrosis, then the surgery would be covered using diagnosis code ICD10 Q62.0 (Congenital hydronephrosis) on line 49.

HERC staff recommendation

1) Add CPT 52400 (Cystourethroscopy with incision, fulguration, or resection of congenital posterior urethral valves, or congenital obstructive hypertrophic mucosal folds)) to line 87 CONGENITAL ANOMALIES OF GENITOURINARY SYSTEM

Breast MRI for Breast Cancer Screening in Breast Cancer Survivors

Question: How should diagnostic guideline D6 and GN26 be modified to internally agree with each other regarding when a woman with a personal history of breast cancer should have breast MRI covered for screening for future breast cancers?

Question source: HSD claims reconsideration

Issue: GN26 BREAST CANCER SURVEILLANCE specifies the follow up testing for women with a history of breast cancer, which does not include breast MRI. When GN26 was written, Diagnostic Guideline D6 BREAST CANCER SCREENING IN ABOVE-AVERAGE RISK WOMEN simply stated that breast MRI was not covered for breast cancer screening. At that point, the two guidelines were internally consistent and based on NCCN guidelines. Diagnostic Guideline D6 was subsequently modified in 2017 based on a coverage guidance, allowing breast MRI screening for women with >20% lifetime risk of breast cancer and for women with both a personal history of breast cancer and a family history of breast cancer.

HSD recently had a case of a women with a personal history of breast cancer and a paternal aunt with breast cancer. Their question was whether the breast MRI was covered according to the clause in Diagnostic Guideline D6 or whether it was not covered according to the GN26 specification that no testing other than mammography was covered.

Kevin Olson from the HERC and an oncologist was consulted. He felt that surveillance and screening are two separate entities and that the two guidelines should continue to have their current requirements.

NCCN 2018, breast cancer screening

1) Recommend annual breast MRI recommended for women with a lifetime risk of 20% or greater
2) Insufficient evidence to recommend for or against MRI for women with a personal history of breast cancer, including DCIS

HERC staff recommendations:

1) Modify diagnostic Guideline D6 as shown below
2) Modify GN26 as shown below
    a. Clarifies that breast MRI is covered with a lifetime risk of >20%

DIAGNOSTIC GUIDELINE D6, BREAST CANCER SCREENING IN ABOVE-AVERAGE RISK WOMEN

Annual screening mammography and annual screening MRI without computer-aided detection (CAD) are covered only for women at above-average risk of breast cancer. This coverage, beginning at 30 years of age, includes women who have one or more of the following:

- Greater than 20% lifetime risk of breast cancer
- BRCA1 or BRCA2 gene mutation, or who have not been tested for BRCA but have a first-degree relative who is a BRCA carrier
- A personal history or a first-degree relative diagnosed with Bannayan-Riley-Ruvalcaba syndrome, Cowden syndrome, or Li-Fraumeni syndrome
- Other germline gene mutations known to confer a greater than 20% lifetime risk of breast cancer

For women with a history of high dose chest radiation (≥ 20 Gray) before the age of 30, annual screening MRI without computer-aided detection (CAD) and annual screening mammography are covered beginning 8 years after radiation exposure or at age 25, whichever is later.

For women with both a personal history and a family history of breast cancer which give a greater than 20% lifetime risk of breast cancer, annual mammography, annual breast MRI without computer-aided detection (CAD) and annual breast ultrasound are covered.

For women with increased breast density, supplemental screening with breast ultrasound, MRI, or digital breast tomosynthesis is not covered.

Breast PET-CT scanning and breast-specific gamma imaging are not covered for breast cancer screening.

For surveillance for a treated breast cancer, see Guideline Note 26 BREAST CANCER SURVEILLANCE.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

GUIDELINE NOTE 26, BREAST CANCER SURVEILLANCE

Line 191

A) History and physical exam is indicated every 3 to 6 months for the first three years after primary therapy, then every 6-12 months for the next 2 years, then annually thereafter.
B) Mammography is indicated annually, and patients treated with breast conserving therapy, initial mammogram of the affected breast should be 6 months after completion of radiotherapy.
C) No other surveillance testing is indicated

For ongoing screening for a new breast cancer, see Diagnostic Guideline D6 BREAST CANCER SCREENING IN ABOVE-AVERAGE RISK WOMEN.

Tonsillectomy Guideline March 2019

Question: should the tonsillectomy guideline be modified to match the 2019 American Academy of Otolaryngology-Head and Neck Surgery guideline?

Question source: HERC staff

Issue: The AAO-HNS has just published an updated set of recommendations regarding when tonsillectomy should be performed for recurrent strep tonsillitis. The revised AAO-HNS guidelines are stricter that the current Prioritized List guideline.

AAO-HNS 2019 Clinical Practice Guideline: Tonsillectomy in Children (Update)
https://journals.sagepub.com/doi/pdf/10.1177/0194599818801757

1) Strong recommendation based on systematic reviews of randomized controlled trials with limitations and observational studies with a preponderance of benefit over harm: (1) Clinicians should recommend watchful waiting for recurrent throat infection if there have been <7 episodes in the past year, <5 episodes per year in the past 2 years, or <3 episodes per year in the past 3 years.
2) Recommendation based on randomized controlled trials and observational studies with a preponderance of benefit over harm: tonsillectomy be considered for children with >1 peritonsillar abscess (previous guideline recommended tonsillectomy with a "history of peritonsillar abscess")
    a. The role of tonsillectomy in managing peritonsillar abscess remains controversial, but the threshold for surgery is lowered when a child with recurrent throat infection develops or has a history of peritonsillar abscess. When peritonsillar abscess is treated with needle aspiration or incision and drainage, the need for subsequent tonsillectomy is about 10% to 20%. This rate may not merit routine tonsillectomy unless a patient also has a history of frequent prior throat infections, especially when culture positive for GABHS. Some authors advocate ''quinsy'' tonsillectomy, which is performed in the setting of an active peritonsillar abscess, especially if general anesthesia is required for drainage (eg, uncooperative child) and there is a history of tonsil disease

HERC staff recommendation:

1) Modify GN36 as shown below

GUIDELINE NOTE 36, ADENOTONSILLECTOMY FOR INDICATIONS OTHER THAN OBSTRUCTIVE SLEEP APNEA

Lines 42,47,368,548

Tonsillectomy/adenotonsillectomy is an appropriate treatment for patients with:

A) ~~Five~~ Seven documented attacks of strep tonsillitis in a year or ~~3~~ 5 documented attacks of strep tonsillitis in each of two consecutive years or 3 documented attacks of strep tonsillitis per year in each of the three consecutive years where an attack is considered a positive culture/screen and where an appropriate course of antibiotic therapy has been completed;
B) ~~Peritonsillar abscess requiring surgical drainage~~ A history of two or more peritonsillar abscesses OR when general anesthesia is required for the surgical drainage of a peritonsillar abscess and tonsillectomy is performed at the time of the surgical drainage; or,
C) Unilateral tonsillar hypertrophy in adults; unilateral tonsillar hypertrophy in children with other symptoms suggestive of malignancy.

ICD-10-CM J35.1 and J35.3 are included on Line 368 only for 1) unilateral tonsillar hypertrophy in adults and 2) unilateral tonsillar hypertrophy in children with other symptoms suggestive of malignancy. Bilateral tonsillar hypertrophy and unilateral tonsillar hypertrophy in children without other symptoms suggestive of malignancy are included only on Line 548.

See Guideline Note 118 for diagnosis and treatment of obstructive sleep apnea in children.

Embolization of Vascular Malformations

Question: When should embolization of venous and arteriovenous malformations (AVMs) be covered?

Question source: Nina Lara, Primary Health

Issue: There are two CPT codes for embolization of arteriovenous and venous malformations that are currently only on unfunded lines. The ICD-10 code for AVMs is on a different, covered line. There was a case brought to Primary Health requesting pairing of embolization with a venous malformation.

An AVM is an abnormal connection (or usually multiple small connections) between an artery and vein. They are classified in four stages:

Schobinger Classification	
Type 1	Quiescent - stable
Type 2	Growing
Type 3	Symptomatic: pain, bleeding or functional problems
Type 4	Decompensating, high output cardiac failure

A venous malformation is an abnormally developed blood vessel with varying degrees of communication with normal veins. They typically cause pain and swelling. Some types of venous malformations are varicose veins or varices; there are very rare cases of large malformations that might cause functional issues.

Current Prioritized List status

CPT Code	**Code Description**	**Current Lines**
37241	Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (eg, congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)	545 SUBLINGUAL, SCROTAL, AND PELVIC VARICES 625 BENIGN NEOPLASMS OF SKIN AND OTHER SOFT TISSUES
37242	… arterial, other than hemorrhage or tumor (eg, congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)	545, 625
ICD-10 Code		
Q27.3X	Arteriovenous malformation of vessel (does not include intracranial AVMs)	305 DISORDERS OF ARTERIES, OTHER THAN CAROTID OR CORONARY
Q27.8	Other specified congenital malformations of peripheral vascular system	305

HERC staff recommendations:

1) Do not add CPT 37241 (Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (eg, congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)) to any additional lines as venous malformations typically only cause pain and swelling rather than functional issues. The rare venous malformation that causes functional issues can be reviewed as an exception.
2) Add CPT 37242 (Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; arterial, other than hemorrhage or tumor (eg, congenital or acquired arterial malformations, arteriovenous malformations, arteriovenous fistulas, aneurysms, pseudoaneurysms)) to line 305 DISORDERS OF ARTERIES, OTHER THAN CAROTID OR CORONARY
3) Add the new guideline below to line 305

GUIDELINE NOTE XXX, EMBOLIZATION OF ARTERIAL MALFORMATIONS

Line 305

Vascular embolization or occlusion of arterial or arteriovenous malformations is included on this line only for Schobinger Class 3 or 4 lesions.

Injections for Plantar Fasciitis

Question: Should procedure codes for injections into the plantar fascia be paired with plantar fasciitis?

Question source: Hearings Division

Issue: Plantar fasciitis (ICD-10 M72.2 Plantar fascial fibromatosis) is currently on line 537 LESION OF PLANTAR NERVE; PLANTAR FASCIAL FIBROMATOSIS, and does not pair with the procedure code for injections into the plantar fascia (CPT 20550 Injection(s); single tendon sheath, or ligament, aponeurosis (eg, plantar "fascia")). CPT 20550 appears on multiple funded lines. There was a recent case that went to the Hearings Division regarding the pairing of these codes. No previous review of this topic was found in old minutes.

Various treatments involving injections into the plantar fascia are currently utilized in practice. The most common injection is corticosteroids, but platelet rich plasma and dehydrated amniotic membrane are also injected in some practices.

Evidence

1) **David 2017**, Cochrane review of corticosteroid injections for plantar heel pain https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD009348.pub2/epdf/full
    a. N=39 studies (2492 patients)
        i. Most studies were small (median=59 patients)
        ii. Follow up ranged from 1 month to 2 years
        iii. With one exception, trials were assessed at high risk of bias in one or more domains, mostly relating to lack of blinding,
    b. N=8 trials (724 patients)) compared steroid injection versus placebo or no treatment.
        i. Steroid injection may lead to lower heel pain visual analogue scores (VAS) (0 to 100; higher scores = worse pain) in the short-term (< 1 month) (MD -6.38, 95% CI -11.13 to - 1.64; 350 participants; 5 studies; I^2 = 65%; low quality evidence). Based on a minimal clinically significant difference (MCID) of 8 for average heel pain, the 95% CI includes a marginal clinical benefit. This potential benefit was diminished when data were restricted to three placebo-controlled trials. Steroid injection made no difference to average heel pain in the medium-term (1 to 6 months follow-up) (MD -3.47, 95% CI -8.43 to 1.48; 382 participants; 6 studies; I^2 = 40%; low quality evidence). There was very low quality evidence for no effect on function in the medium-term and for an absence of serious adverse events (219 participants, 4 studies). No studies reported on other adverse events, such as post-injection pain, and on return to previous activity.
    c. The available evidence for other comparisons was rated as very low quality. We are therefore very uncertain of the estimates for the relative effects on people with heel pain of steroids compared with other interventions (tibial nerve block, orthoses, oral NSAIDs, intensive PT, laser therapy, radiation therapy, locally injectable NSAID, platelet-rick plasma injections, botulinum toxin injections, cryopreserved human amniotic membrane injection
    d. We are also uncertain about the estimates from trials testing different techniques of local steroid injection: ultrasonography-guided versus palpation-guided (5 trials); and scintigraphy-guided versus palpation-guided (1 trial).

e. An exploratory analysis involving pooling data from 21 trials reporting on adverse events revealed two ruptures of plantar fascia (reported in 1 trial) and three injection site infections (reported in 2 trials) in 699 participants allocated to steroid injection study arms. Five trials reported a total of 27 participants with less serious short-term adverse events in the 699 participants allocated steroid injection study arms.

f. **Authors' conclusions** We found low quality evidence that local steroid injections compared with placebo or no treatment may slightly reduce heel pain up to one month but not subsequently. The available evidence for other outcomes of this comparison was very low quality. Where available, the evidence from comparisons of steroid injections with other interventions used to treat heel pain and of different methods of guiding the injection was also very low quality. Although serious adverse events relating to steroid injection were rare, these were under-reported and a higher risk cannot be ruled out.

Expert guidelines

1) **American College of Foot and Ankle Surgeons 2018**: Clinical Consensus Statement Diagnosis and Treatment of Adult Acquired Infracalcaneal Heel Pain
    a. The panel determined that the following statements are appropriate
        i. Corticosteroid injections are safe and effective in the treatment of plantar fasciitis.
            1. In a recent Cochrane review and meta-analysis of 3 RCTs, David et al concluded that local steroid injections compared with placebo or no treatment might slightly reduce heel pain for ≤1 month but not subsequently. The panel was of the same opinion and admitted to using injectable steroids for the acute relief of symptoms, recognizing that these are not disease modifying and have little lasting effect beyond the first 4 weeks.
    b. The panel determined that the following statements were uncertain—neither appropriate nor inappropriate.
        i. Other injection techniques (e.g., amniotic tissue, platelet-rich plasma, botulinum toxin, needling, and prolotherapy) are safe and effective in the treatment of plantar fasciitis.
            1. Although other injection techniques are emerging for the treatment of plantar fasciitis, they have been supported only by low quality studies consisting of case series, retrospective comparative studies, or small trials, lacking long-term follow-up data. Rather than speculate on the value of these injection therapies, the panel thought that further investigation is needed to assess how these will compare with the more conventional treatment protocols.

Injections for Plantar Fasciitis

HERC staff summary:
Based on low quality evidence, corticosteroid injections for plantar fasciitis have a non-clinically significant impact on short term (<1 month) pain, but not on function. There are limited adverse events reports. Other injections (amniotic tissue, platelet-rich plasma, botulinum toxin, etc.) have very low quality of evidence which does not allow determination of their effectiveness and are not recommended by experts.

HERC staff recommendation:

1) Add CPT 20550 to line 537, with the coding specification below
    a. "CPT 20550 only appears on this line for corticosteroid injections."
    b. The treatment is appropriate to the condition, but has limited evidence of effectiveness

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ACFAS Clinical Consensus Statement

American College of Foot and Ankle Surgeons Clinical Consensus Statement: Diagnosis and Treatment of Adult Acquired Infracalcaneal Heel Pain

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ABSTRACT

Adult acquired inferior calcaneal heel pain is a common pathology seen in a foot and ankle practice. A literature review and expert panel discussion of the most common findings and treatment options are presented. Various diagnostic and treatment modalities are available to the practitioner. It is prudent to combine appropriate history and physical examination findings with patient-specific treatment modalities for optimum success. We present the most common diagnostic tools and treatment options, followed by a discussion of the appropriateness of each based on the published data and experience of the expert panel.

Executive Summary

The following document represents the findings of the adult acquired infracalcaneal heel pain consensus panel sponsored by the American College of Foot and Ankle Surgeons. The 6-member panel used a modified Delphi method to reach a clinical consensus regarding the diagnostic and treatment methods based on the best available evidence in the literature, combined with clinical experience and best patient practice.

The panel determined that the following statements are appropriate:

1. Plantar fasciitis is diagnosed, in most cases, by the history and physical examination findings alone.
2. Routine use of radiographs is not necessary for the diagnosis of nontraumatic plantar fasciitis.
3. The presence of a calcaneal spur will not generally alter the treatment course.
4. Advanced imaging, such as magnetic resonance imaging and ultrasonography, is not necessary for the diagnosis or guidance of treatment of nontraumatic plantar fasciitis.
5. In most cases, infracalcaneal heel pain is a soft tissue-based disorder and calcaneal spurring is most likely not a causative factor.
6. Appropriate treatment of plantar fasciitis requires sufficient understanding of the patient's chronicity of symptoms.
7. Biomechanical support is safe and effective in the treatment of plantar fasciitis.

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8. Stretching is safe and effective in the treatment of plantar fasciitis.
9. Corticosteroid injections are safe and effective in the treatment of plantar fasciitis.
10. Extracorporeal shockwave therapy (ESWT) is safe and effective in the treatment of plantar fasciitis.
11. Plantar fasciotomy (opened and endoscopic) is a safe and effective option for chronic, refractory plantar fasciitis.
12. Gastrocnemius release is a safe and effective option for chronic, refractory plantar fasciitis when clinically significant equinus is present.

The panel determined that the following statements were uncertain—neither appropriate nor inappropriate.

1. Nonsteroidal antiinflammatory drugs (NSAIDs) are safe and effective in the treatment of the pain associated with acute plantar fasciitis.
2. Diagnostic ultrasonography is an important adjuvant tool in the diagnosis and treatment of nontraumatic plantar fasciitis.
3. Other injection techniques (e.g., amniotic tissue, platelet-rich plasma, botulinum toxin, needling, and prolotherapy) are safe and effective in the treatment of plantar fasciitis.
4. Other surgical techniques (e.g., ultrasonic debridement using a microtip device, cryosurgery, and bipolar radiofrequency ablation) are safe and effective options for chronic, refractory plantar fasciitis.

This document was created to serve as a clinical consensus statement (CCS) from the American College of Foot and Ankle Surgeons (ACFAS) and serves as an update to the ACFAS's 2010 Heel Pain Clinical Practice Guideline (1). It is important to appreciate that consensus statements do not represent "clinical practice guidelines," "formal evidence reviews," "recommendations," or "evidence-based guidelines." Rather, a CCS reflects information synthesized by an organized group of content experts from the best available evidence. It can also contain opinions, uncertainties, and minority viewpoints. In contrast to clinical practice guidelines, which are based primarily on high-level evidence, clinical consensus statements are more applicable to situations where evidence is limited or lacking, yet there are still opportunities to reduce uncertainty and improve quality of care. A CCS should open the door to discussion on a topic, in contrast to attempting to provide definitive answers. Adherence to consensus statements will not ensure successful treatment in every clinical situation, and the physician should make the ultimate decision using all available clinical information and circumstances with respect to the appropriate treatment of an individual patient. Given the inevitable changes in the state of scientific information and technology, periodic review and revision will be necessary.

Anatomy of the Plantar Fascia

The plantar fascia is synonymous with the plantar aponeurosis of the foot and provides a mechanical linkage between the calcaneus and the toes. It is composed of densely compacted collagen fibers that are mainly oriented in a longitudinal direction, although some fibers run in a transverse and oblique direction (2). The plantar fascia arises mainly from the medial calcaneal tuberosity and attaches distally, through several slips, to the plantar forefoot and the medial and lateral intermuscular septa. Anatomically, it can be divided into the medial, lateral, and central components (3).

The medial band is anatomically thin and virtually nonexistent at its proximal level. Similarly, the lateral band varies in its structure from relatively thick to nonexistent in 12% of individuals (4,5). When present, the lateral band provides a partial origin for the abductor digiti minimi muscle. The lateral band then bifurcates into the medial and lateral crura at the cuboid level. The stronger lateral crux inserts into the base of the fifth metatarsal. The medial crux merges distally with the central band of the plantar fascia before coursing deep and inserting into the plantar plate of either the third, fourth, or fifth metatarsophalangeal joint (3).

The central band is triangular in shape and originates from the plantar medial process of the calcaneal tuberosity. The central band serves as the partial origin of the flexor digitorum brevis as it conforms to the plantar surface of the calcaneus. Ranging from 12 to 29 mm wide at its origin, the central plantar fascial band separates at the midmetatarsal level into 5 longitudinal bands (6). Each band then divides distally to the metatarsal heads to form deep and superficial tracts. The central superficial tracts insert onto the skin and contribute to the formation of the mooring and natatory ligaments (5). The 5 deep tracts separate to form medial and lateral sagittal septa, which contribute to the medial and lateral digital flexor, flexor tendon sheath, interosseous fascia, fascia of the transverse head of the adductor hallucis, deep transverse metatarsal ligament, and base of the proximal phalanges by way of the plantar plate and collateral ligaments (3).

The plantar calcaneal spur is a bony outgrowth of the calcaneal tuberosity that occurs, with some regularity, even in the general population (7). The association of the plantar calcaneal spur and plantar fascia is highly variable. The plantar calcaneal spur can be joined with all, part, or none of the plantar fascia. Tanz (8) first showed that the plantar calcaneal spur many times arises from the intrinsic muscles rather than from the plantar fascia itself. This finding was later corroborated by Forman and Green (9) and others. The plantar calcaneal spur is covered with a fibrous connective tissue layer, which is highly innervated and vascularized (7,10,11).

Histologic Properties of the Plantar Fascia

The plantar fascia is histologically different from both tendon and ligament and is typically described as a dense connective tissue (12). Similar to tendons and ligaments, the plantar fascia is composed primarily of elongated fibrocytes. These fibrocytes are responsible for the production of collagen and are arranged in longitudinal rows. They have short cell processes that surround the collagen fibers and form gap junctions with other fibrocytes from adjacent rows (3). Because of this gap junction network, Benjamin (13) proposed that fibrocytes form a 3-dimensional communicating network that might be capable of sensing and responding to load changes in the plantar fascia by modifying the shape of the cytoskeleton. Because the plantar fascia has more fibroblasts than do tendons, it is believed to have an even greater sensory capacity than tendon and might act as an active sensory structure by changing its composition to passively transmit force (3).

Rather than having an indirect periosteal attachment, the proximal attachment of the plantar fascia on the calcaneus is distinctly fibrocartilaginous (14). Histologically, fibrocartilaginous entheses have 4 zones of tissue: first is dense fibrous tissue of the collagenous midsubstance, which is replaced successively by uncalcified fibrocartilage, calcified fibrocartilage, and, finally, bone. The extent of calcification within the fibrocartilaginous region and the degree of osseous interdigitation is important in resisting shear forces and might reflect the tensile strength of the entheses. With calcified and uncalcified fibrocartilaginous zones, direct attachments can help to dissipate stress evenly and provide a gradual transition from hard to soft tissue (3). Similar to the plantar fascial insertion, fibrocartilage appears to be located specifically at sites subjected to bending, shear, or compressive forces, or a combination thereof. High concentrations of proteoglycans and glycosaminoglycans within fibrocartilage

entheses suggest an important role in the redistribution of compressive or bending forces (3). Therefore, the material properties, or modulus of elasticity, of the plantar fascia and its insertion fall between those of tendon and ligament (3,15).

Immunohistochemical analysis has shown that almost all the tissue of the plantar fascia is formed of type I collagen (15). The plantar fascia is also well innervated, with both free and encapsulated nerve endings, such as Pacini and Ruffini corpuscles (13,15). These nerve endings are particularly abundant where the plantar fascia joins with the fasciae of the abductor hallucis and abductor digiti minimi muscles and where the flexor muscles insert. These abundant innervations suggest that the plantar fascia plays a role in proprioception, aiding in the stability and control of foot movements (13,15).

Some Definitions: Fasciitis, Fasciosis, and Fasciopathy

Considerable variation is present in the published data surrounding the use of "fasciitis" versus "fasciosis" (similar to tendonitis versus tendinosis). Fasciitis is a term generally used to describe acute inflammation in and around the plantar fascia. In contrast, fasciosis is generally used to describe the noninflammatory degradation or degeneration of the plantar fascia, usually late in the disease process. Finally, fasciopathy has historically been used as a general term that includes both short-term inflammation (fasciitis) and long-term degeneration (fasciosis). In an attempt to simplify the terminology for the purposes of the present CCS, only the term "fasciitis" has been used in this document.

Epidemiology of Plantar Fasciitis

Plantar fasciitis is one of the most common conditions encountered by foot and ankle surgeons and accounts for >1 million outpatient visits annually (16–21). It has been estimated that ~10% of the population in the United States will develop plantar fasciitis in their lifetime (22,23), and >2 million Americans experience symptoms of plantar fasciitis at any one time (19,24–26). Active individuals appear to develop plantar fasciitis at an even greater rate than the general population, with incidence rates ranging from 8% to 21% among athletes and runners (27–31). Each year, ~11% to 15% of professional healthcare visits to foot and ankle specialists are attributed to heel pain (17,32–36). Therefore, it is well recognized that the cost of diagnosing and treating plantar fasciitis creates a considerable economic burden on the U.S. healthcare system (37).

The incidence of plantar fasciitis typically peaks between 40 and 60 years of age in the general population but has been reported in patients aged 7 to 85 years (19,31,34,35). Although some data have suggested that advanced age is associated with the occurrence of plantar fasciitis, age probably has only a modest effect on its development. In a large retrospective cohort study, Matheson et al (38) examined overuse injuries in 1407 older and younger athletes and found that 71.4% of the patients presenting with plantar fasciitis were >50 years old. Similar studies using the general population also favored a slightly increased risk with advanced age (39).

Plantar fasciitis probably demonstrates a slight male predilection (30,31,40–42); however, the association between gender and plantar fasciitis has varied in the published data (24,34,43). Larger studies involving runners have typically found that males were slightly more likely to be affected than females (e.g., Taunton et al [30], 54% versus 46%; Taunton et al [31], 59% versus 41% [combined n = 2269]). In contrast, some smaller studies have reported a female predominance (e.g., Riddle et al [24], 66% versus 34%; Davis et al [43], 70% versus 30% [combined n = 182]). Because no clear explanation exists as to why gender would impart additional risk, it might be a matter of function rather than gender.

Etiology of Plantar Fasciitis

Plantar fasciitis has traditionally been considered an overuse injury, with repetitive microtrauma and damage to the plantar fascia occurring at a rate that exceeds the body's capacity to heal (12,20,36,44). Biomechanical abnormalities, increased body mass index (BMI), athletic and sedentary lifestyles, and a host of external (environmental) factors are believed to contribute.

Numerous studies have demonstrated a relationship between plantar fasciitis and an increased BMI or body weight (24,27,33,39,45,46). Although this correlation has been described in both athletic and nonathletic populations, a high BMI appears to confer the greatest risk in nonathletic individuals (46). In a recent meta-analysis by van Leeuwen et al (46), the BMI measurements from 21 studies of plantar fasciitis were included and summarized. They concluded that probably a modest increase exists in the risk of developing plantar fasciitis at a higher BMI (46). However, it is still not certain whether the BMI exhibits a threshold effect for plantar fasciitis or the risk continues to increase at higher BMI categories (i.e., a dose–response effect).

Both high levels of activity and high levels of inactivity appear to be associated with the development of plantar fasciitis. The association of plantar heel pain with athletes and, in particular, runners has been discussed extensively in reported studies (18,25,28,30,31,39,47). Plantar fasciitis is also a common cause of heel pain in the active military (48). Riddle et al (24) found that undertaking no regular exercise conferred a 3 to 4 times greater risk of plantar fasciitis (odds ratio 3.6, 95% confidence interval 1.6 to 8.2). In contrast, Rano et al (39) found that physical activity 3 times a week for >20 minutes was associated with a decreased risk of plantar fasciitis (odds ratio 0.33, 95% confidence interval 0.14 to 0.74).

Multiple other "extrinsic" or environmental risk factors have been proposed as a cause of plantar fasciitis. These include wearing improper or excessively worn shoes, running on unyielding surfaces and other training errors, increases or changes in activity (3,27,32,33,36,45), increased standing times on hard surfaces, spending most of the workday on the feet (24,49), an increased percentage of time spent walking at work, and the number of truck entrances and exits (33,49).

Biomechanics of Plantar Fasciitis

Plantar fasciitis is primarily believed to result from mechanical overload and excessive strain within the plantar aponeurosis. It is also widely believed that biomechanical abnormalities are responsible for the excessive tensile strain that can occur within the fascia during static stance and gait (3). During the stance phase of gait, tension within the fascia gradually increases and is believed to reach peak values at the start of push-off (80% of stance) (50–54). The plantar fascia is particularly susceptible to high tensile loads during stance because it works to resist arch elongation (55). Also, as the heel begins to rise and during early push-off, the fascia is again subjected to increased tension, at least partially by Hicks' windlass mechanism—with dorsiflexion of the toes, the plantar fascia becomes increasingly wound around the metatarsal heads, thus shortening its effective length and increasing the tension in the fascia (56–58). Elevation of the heel in the late stance also produces loading of the Achilles tendon, which increases the bending moments at the midfoot and increases tension in the fascia as it works to resist collapse of the arch (55).

The biomechanical factors that can adversely affect the fascia work either by increasing its tension or by disrupting energy dissipation in the heel. An excessively pronated foot that places greater tensile loads on the fascia would be an example of the former and a high arched foot with decreased shock absorption an example of the latter.

Although biomechanical anomalies and mechanical overload remain the clinical doctrine that most providers adhere to, surprisingly little consistency was found in reported studies regarding which anomalies are most closely associated with plantar fasciitis. The clinical risk factors that have the greatest support are an increased BMI and restricted ankle joint dorsiflexion range of motion, in particular, in the nonathletic population (46). An increased mechanical load due to a higher BMI seems a very plausible source of increased plantar fascial stress (46), and the association between the BMI and musculoskeletal symptoms in general is widely recognized (59). A tight or contracted Achilles tendon is also thought to produce greater tensile loads in the fascia through direct transmission of tension through the calcaneal trabecular system, as proposed by Arandes and Viladot (60) and/or by increasing its passive mechanical longitudinal tension as a method of counteracting the arch flattening effect of ankle dorsiflexion stiffness (61,62).

Perhaps the greatest reason investigators have failed to identify a common set of biomechanical risk factors across all studies is that 2 distinct patient populations appears to be affected by plantar fasciitis: (1) athletes/runners and (2) more sedentary individuals with a higher BMI. In athletic individuals, high arched feet and varus knee alignment (variables that limit shock absorption) appear to be more closely linked to the development of plantar fasciitis symptoms (63). In contrast, in sedentary populations, a higher BMI, pronated feet, and ankle equinus appear to result in a greater risk (24,33,46,64). Hamstring tightness (64,65) and both lower heel pad energy dissipation properties and lower maximum heel pad stiffness also appear to contribute to the development of plantar fasciitis (28,49,66,67).

Because most of our understanding of the biomechanical and clinical observations found in patients with plantar fasciitis have derived from case-control and cross-sectional studies, it is unclear whether these observations are causative or, rather, the result of plantar fasciitis. It is important that we strive to better understand the biomechanical factors contributing to plantar fasciitis, because this will help to improve our understanding of the etiology and help to move toward a consensus regarding the treatment options for plantar fasciitis.

Materials and Methods

Creation of the Panel

Members of the ACFAS have suggested that CCSs would be useful. Therefore, the ACFAS enacted an initiative to create such documents for foot and ankle surgeons. This initiative was originally conceived to report on a variety of topics and take the place of previous clinical practice guidelines. To move forward with this initiative, a formal consensus method process was undertaken. Experts in the field of foot and ankle surgery were sent an invitation by the ACFAS to participate on a panel to develop a CCS on the diagnosis and treatment of plantar heel pain. Care was taken to ensure that the panel members included an appropriate mix of practice experience, academic rank, and practice location and type. The 6-member panel completed disclosure forms and was tasked with providing opinions and suggestions on the diagnosis and treatment of proximal plantar fasciitis. The panel was led by 1 chairperson (H.P.S.) and assisted by ACFAS members and staff. Over several months, the panel members participated in e-mail dialogue, several conference calls, and a face-to-face meeting. The panel's stated goal was to examine the current data relating to the diagnosis and treatment of adult acquired, proximally based, plantar fasciitis. A literature search was undertaken to identify published studies. In addition, the panel reached a consensus on a series of questions relating to the diagnosis and treatment of plantar fasciitis.

Formal Literature Review

Comprehensive reviews of the published data were then performed by the panel members and included searches of Medline, EMBASE, the Cochrane Database of Systematic Reviews, PubMed, Ovid, Google Scholar, Scopus, and manual searches of the references of the included articles. Although this was not a formal systematic review, each panel member conducted thorough literature searches using these databases in an attempt to answer specific questions on each topic. The data searches included at least all prospective clinical trials, retrospective clinical cohort analyses, and retrospective case series specifically involving the diagnosis and treatment of proximal plantar fasciitis and associated topics.

Consensus

A modified Delphi method was used to attain consensus on several pertinent clinical questions by the members of the panel. A series of statement questions was developed by the panel chairperson (H.P.S.). These were sent to the rest of the panel to determine their relevancy, inclusion, and categorization. Once the questions were finalized, they were sent to all panel members to review and answer. The answers were based on the appropriateness of the statement question and were graded from 1 (extremely inappropriate) to 9 (extremely appropriate) using a Likert scale. Each panel member answered the questions anonymously, and the results were sent to the panel chair (H.P.S.) (Fig.). The answers were reviewed and, in the cases for which agreement was reached, the results were grouped from 1 to 3 (inappropriate), 4 to 6 (uncertain), or 7 to 9 (appropriate). For those questions for which agreement was not reached (i.e., more than one of the panelists' ratings were outside the 3-point region [1 to 3, 4 to 6, or 7 to 9] containing the median), the results were summarized, kept anonymous, and distributed back to the panel members, with the reasons for the varying judgments included. These items were left for review. At the face-to-face meeting, the questions were administered again in light of the explanations provided by the other panel members. The panel members were able to change the ratings based on group discussions. An attempt was made to reach consensus for all questions, although this was not a requirement. All panel members participated in creation of the CCS manuscript. The final draft was submitted to the ACFAS leadership for adoption.

Discussion

Diagnosis of Plantar Fasciitis

Consensus Statement: The panel reached consensus that the statement "Plantar fasciitis is diagnosed, in most cases, by history and physical examination findings alone" was appropriate.

One very typical complaint of patients with plantar fasciitis and inferior calcaneal bursitis is pain on the first few steps in the morning and after periods of inactivity. Generally, the pain from plantar fasciitis subsides to some degree with ambulation and mobilization. During standing and other activities of daily living, a progressive worsening of symptoms often occurs, with increased complaints of pain at the end of the day. Periodically, the pain will also be noted at rest owing to the tissue inflammation that results from repetitive tissue stress during daily activities. The severity of symptoms is often related to the hours of standing during daily activities and is many times altered by shoe gear. The most common location of pain for plantar fascia-originated symptoms is located at the plantar medial tubercle of the calcaneus at the plantar fascial insertion. Symptoms can extend along the course of the plantar fascia into the central arch; however, this has been a less prevalent finding. Also, lateral band and plantar lateral heel pain can be present but has been more variable. Generally, minimal clinical signs of inflammation such as swelling and erythema will be present. Pain with midfoot, hindfoot, and ankle range of motion is generally absent. Additionally, pain with medial lateral compression of the body of the calcaneus is not a component of plantar fascia-based symptoms and, if present, indicates the possibility of a stress fracture or other primarily bone pathology.

Consensus Statement: The panel reached consensus that the statements "Routine use of radiographs is not necessary for the diagnosis of nontraumatic plantar fasciitis" and "The presence of a calcaneal spur does not generally alter the treatment course" were both appropriate.

These 2 statements are particularly true in cases in which the history and physical examination findings are highly suggestive of plantar fasciitis. Radiographs can help rule out other causes of pain and should be ordered if a question of trauma, pain out of the ordinary, or recalcitrant pain that is not responding to appropriate conservative treatment is present. The role of imaging for the diagnosis of plantar

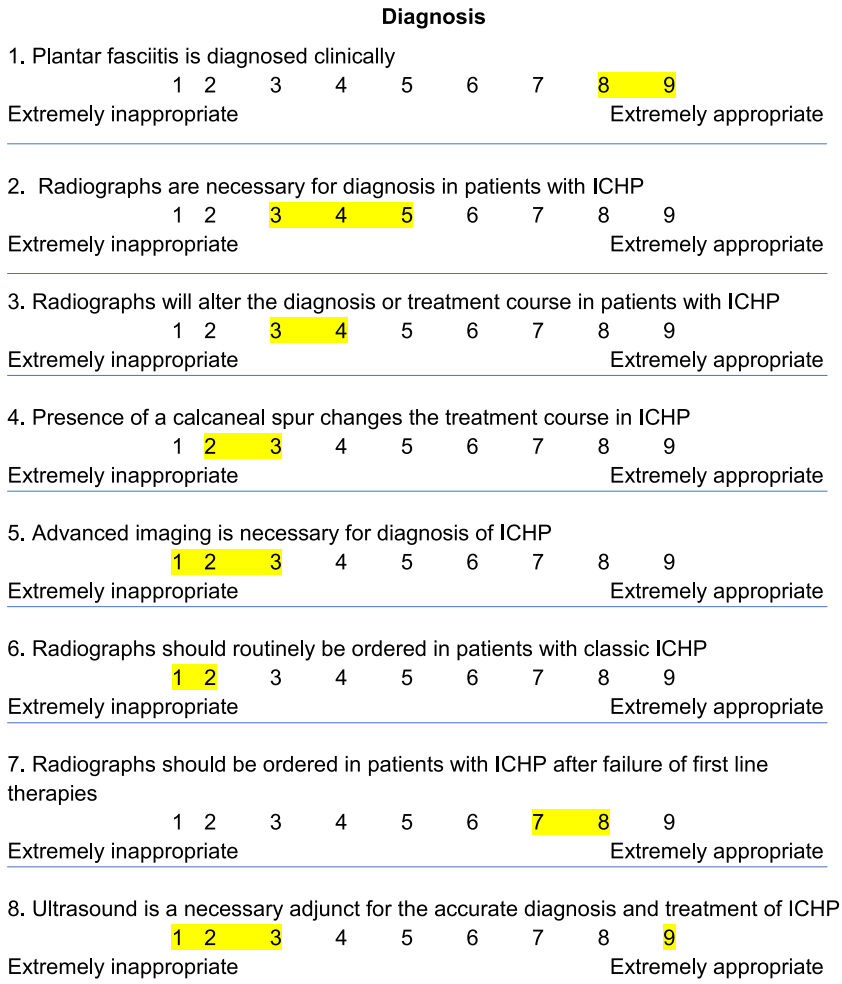

Fig. The questionnaire with the range of answers indicated by the consensus panel highlighted in yellow. ICHP, infracalcaneal heel pain.

heel pain has been variably recommended, and the value of plain film radiography has not been universally accepted. The question of whether imaging studies are necessary for the proper diagnosis and treatment lies in the significance of whether both soft tissue and bone changes are causative of the condition or simply associated findings. Levy et al (68) suggested that radiography was of limited value in the diagnosis and treatment of acute plantar fasciitis. In their review, they identified plantar calcaneal spurs in 59.5% of symptomatic patients and Achilles spurs in 46.5%. However, the identification of these findings led to changes in diagnosis and/or treatment in only 2% of the group (68). Reports of plantar spurs in asymptomatic heels include those by Rubin and Witten (69), Tanz (8), and Barrett et al (70), with rates of 27% of 461 16%, and 21%, respectively. Although plantar spurs can be identified in a variable percentage of patients with plantar heel pain, their significance is not clear. Rogers et al (71) studied the association of enthesophytes (bone formation at a ligament attachment) and osteophytes (bone formation at the edge of a joint) and found that these 2 conditions present together when present and also occur at multiple sites, indicating that patients with spurs might be “bone formers.” This idea of bone formers was corroborated by Menz et al (72), who noted that patients with plantar calcaneal spurs were more likely to have Achilles spurs. They also showed a positive association with spurs in patients with obesity, increased age, and osteoarthritis. Bassiouni (73) also showed a high incidence of calcaneal spurs in patients with both osteoarthritis and rheumatoid arthritis. The calcaneal enthesophyte incidence has also been reported by Mahto and Ohmar (74) (22% of 100 cadaveric specimens), Kullar et al (75) (26.5% of 200 specimens), Toumi et al (76) (38% combined plantar and posterior spurs), and Williams et al (77) (75% in painful heels and 63% in contralateral nonpainful heels). That both plantar and Achilles spurs have been identified in some, but not all, patients and the association with bone formation at multiple sites would support the argument that the spur might not be causative but simply a finding suggestive of an arthritic condition or a trait leading to multiple-site bone formation.

Further confusing the issue regarding the significance of spurs and the diagnosis of heel pain is the referral bias present in most studies. Johal and Milner (16) highlighted this in a review of 19 patients with heel pain (89% incidence of plantar spur) and 19 age-matched controls (32% incidence of plantar spurs). Despite the identification of an increased incidence, causation could not be established. That referrals from primary care providers to a specialist are more likely when radiographs show a spur introduces bias into the assessment. Ahmad et al (78) reported on the size and shape of plantar calcaneal spurs in a group of patients referred for plantar heel pain. They found no correlation between the size or shape of the spur with symptoms (i.e., small spurs were likely to have worse symptoms than large spurs) (78). They concluded that the spur is not the source of inflammation and pain but an incidental finding. Moroney et al (79) evaluated the clinical symptoms and lateral radiographs of 1103 patients with and without calcaneal spurs. Their findings were similar to others reporting more overall foot pain in patients with spurs and an increase incidence of spurs with obesity, increased age, diabetes, and osteoarthritis.

Open ended questions

1. What is the primary diagnostic modality for inferior calcaneal heel pain?
2. What are the primary treatment modalities for interior calcaneal heel pain?
3. What are the secondary treatment modalities if primary treatment modalities fail?
4. What are the tertiary conservative treatment modalities if secondary treatment modalities fail?
5. How many steroid injections will you give?
6. Do you need ultrasound guidance for steroid injections?
7. How important is biomechanical support (ie orthotics)?
8. How do you determine OTC vs. custom orthotics?
9. How important is BMI in development/treatment of BMI?
10. Do you apply strapping/taping?
11. What is your differential diagnosis if conservative treatment fails?
12. How do you differentiate between plantar fasciitis and inferior calcaneal bursitis?
13. How do you differentiate between plantar fasciitis and Baxter's neuritis?
14. How do you differentiate between plantar fasciitis and tarsal tunnel syndrome?
15. At what point is advanced imaging considered?
16. Is equinus important in treatment of plantar fasciitis?
17. At what point do you refer to physical therapy?
18. How long do you wait before considering surgical intervention for plantar fasciitis?
19. Do you ever operate on inferior calcaneal bursitis?
20. Does the literature support use of:
    a. PRP?
    b. Botox?
    c. Needling?
    d. Topaz® coblation?
    e. Neurotherm® radiofrequency ablation?
    f. EWST?
21. For surgical intervention, are there better outcomes for one type of procedure– in step, percutaneous, EPF, medial open.
22. Any other thoughts/questions for us to consider?

Fig. (*continued*)

They concluded that the presence of calcaneal spurs might be an indicator of foot pain, independent of plantar fasciitis, and that spurs themselves do not cause the pain but might be indicators of associated conditions (79).

When studying the radiographic data on plantar calcaneal spurs, another interesting finding emerged. It has been widely held that plantar calcaneal enthesophytes are caused by excessive traction on the plantar fascia from biomechanical causes. However, multiple studies have shown that the "spur" is not often located in the plantar fascia but is consistently present superior to the fascia in the intrinsic muscles (10,70,80). This has led some to postulate that the cause of the spur is related to vertical compression rather than longitudinal traction (10,72).

Consensus Statement: The panel reached consensus that the statement "Advanced imaging, such as magnetic resonance imaging and ultrasonography, is not necessary for diagnosis or guidance of treatment in nontraumatic plantar fasciitis" was appropriate.

The panel believed that advanced imaging will have its greatest utility for those patients in whom conservative treatment has failed

and when historical or clinical symptoms are present that suggest another plausible etiology. When studying advanced imaging studies of patients with plantar heel pain, one consistent imaging finding in plantar heel pain is thickening of the plantar fascia and associated soft tissue structures. However, these structural changes are not always consistent with symptoms and are not generally required for the diagnosis or to indicate specific treatments. Ehrmann et al (81) studied magnetic resonance images from 77 asymptomatic volunteers. The mean plantar fascia thickness was 0.6 mm medially, 4.0 mm centrally, and 2.3 mm within the lateral fascicle. The T_1-weighted sequence signal intensity was increased in the fascia of 16 of 77 volunteers (21%) and in only 7.8% using T_2-weighted images. Only 6.5% (5 volunteers) had soft tissue edema notable deep to the fascia, and 21% had edema superficial to the fascia. Calcaneal spurs were detected in 19% (15 of 77) volunteers, and 5.2% demonstrated calcaneal bone marrow edema. Physicians should be mindful that patients can be asymptomatic even with images demonstrating signs of pathology. Signal changes at the plantar fascia and the presence of superficial fascial edema and calcaneal spurs might not be consistent with a plantar fasciitis diagnosis. Magnetic resonance imaging findings that were previously thought to represent plantar fasciitis can also be found in asymptomatic volunteers. Overuse of imaging could lead to overdiagnosis, with no benefit. Fleischer et al (82) used both quantitative and qualitative ultrasound findings of plantar fascia thickness and biconvexity of the proximal plantar fascia to predict patients' response to treatment. They determined that patients found to have biconvexity (qualitative appearance) tended to have lower responses to mechanical therapy over 3 months but that thickness (quantitative appearance) was not associated with treatment failure (82). Radwan et al (83) performed a systematic review of the effectiveness of ultrasonography for the diagnosis of plantar fasciitis and found it was an effective tool for assessing structural changes in the fascia. Although advanced imaging is clearly capable of assessing the structural morphology and integrity of the fascia, its necessity for determining the diagnosis and utility in predicting the treatment course remains unclear.

Consensus Statement: The panel reached consensus that the statement "Diagnostic ultrasonography is an important adjuvant tool in the diagnosis and treatment of nontraumatic plantar fasciitis" was unclear—neither appropriate nor inappropriate.

The answer for this statement varied widely according to experience and practice location and type. Those in favor used ultrasonography to help, not only to guide the injection, but also to measure the thickness of the plantar fascia for injection and at the follow-up appointments in the office. Other practitioners in the panel do not use ultrasonography at all. The panel agreed that the actual significance of the ultrasound findings is empirical and that the benefit of its use to guide treatment is not entirely clear when considering the available scientific data. However, for those with access, it does make sense that ultrasonography would allow more accurate targeting of injection therapy and the practitioner to measure the thickness of the fascia and to assess for qualitative changes during the treatment regimen.

Consensus Statement: The panel reached consensus that the statement "In most cases, infracalcaneal heel pain is a soft tissue-based disorder and calcaneal spurring is most likely not a causative factor" was appropriate.

Our conclusion was determined by the variable incidence and location of the spur and the data regarding soft tissue thickening and structural changes. This notion has been bolstered by the finding that patients with plantar calcaneal spurs tend to have osteophytes and enthesophytes at multiple anatomic locations, possibly because of phenotypic characteristics rather than from local mechanical or traumatic causes, which is often cited with heel spurs. The question that requires consideration, however, is the need to see these soft tissue and bone changes to either make the diagnosis or choose the proper treatment for a patient with the typical clinical presentation of acute plantar heel pain. Parallel with the question of necessity is the cost of the imaging studies. If the identification of a spur does not help the clinician with the diagnosis or to refine the treatment recommendation, the cost of the imaging study is wasteful. However, if the clinical presentation is atypical, suggests the presence of a stress fracture (calcaneal body pain), or the initial appropriate therapy fails, imaging is a useful modality.

Treatment of Plantar Fasciitis

Nonsurgical treatment methods for plantar fasciitis will be successful in most individuals. Unlike the previous 2010 heel pain clinical practice guideline (1), the panel thought that less emphasis should be placed on a prescriptive protocol, or treatment ladder, that details when in the treatment course various modalities should be introduced. Instead, we believed it was more important for providers to attempt to tailor treatments to fit their patient's activity and lifestyle/employment requirements, with consideration of the patient's chronicity and severity of symptoms.

Consensus Statement: The panel reached consensus that the statement "Appropriate treatment of plantar fasciitis requires sufficient understanding of the patient's chronicity of symptoms" was appropriate.

It is important for providers to select treatments that will have the greatest effect within each stage of plantar fasciitis. Generally, the duration of symptoms helps to define the 3 phases of plantar fasciitis: acute, subacute, and chronic. Acute plantar fasciitis refers to the initial 4 to 6 weeks after onset. It can be either traumatic in etiology or due to mechanical overload. Subacute plantar fasciitis is usually present for approximately 6 to 12 weeks, and chronic plantar fasciitis is present for >3 months. A subdivision of chronic is refractory/recalcitrant. Refractory plantar fasciitis is best defined as chronic plantar fasciitis that has not improved with appropriate intervention for >6 months and is much more difficult to successfully treat.

Nonsurgical Treatment

Consensus Statement: The panel reached consensus that the statement "Nonsteroidal antiinflammatory drugs (NSAIDs) are safe and effective in the treatment of the pain associated with plantar fasciitis" was unclear—neither appropriate nor inappropriate.

Although it makes sense to treat the acute phase of plantar fasciitis with antiinflammatory agent, no published data support its use. Only Donley et al (84) reviewed the use of oral NSAIDs in a randomized, prospective, placebo-controlled study. Patients were given a treatment regimen that included either celecoxib or placebo. Both patient groups improved, with no statistically significant differences between the placebo and NSAID groups at 1, 2, or 6 months. Therefore, based on expert opinion and the sparse data, the panel does not recommend the routine use of NSAIDs in treating plantar fasciitis.

Consensus Statement: The panel reached consensus that the statement "Biomechanical support is safe and effective in the treatment of plantar fasciitis" was appropriate.

Because the primary cause of plantar fasciitis is mechanical overload and increased tension in the fascia, it is important to address any biomechanical factors that might be contributing. This includes taping or strapping, over-the-counter insoles, custom foot orthoses, and BMI counseling to prevent recurrence (39). Patients in all stages of plantar fasciitis are advised to avoid nonsupportive shoes, including flip-flops and ballet slippers. It is important to support the medial longitudinal arch to reduce stress on the plantar fascia. In 2014, Escalona-Marfil et al (85) evaluated whether a sandal that incorporates the arch profile of an in-shoe foot orthosis raises the medial

longitudinal arch. They concluded that medial longitudinal arch height is elevated by contoured sandals and approximates the subtalar joint neutral position of the foot, similar to that achieved by an orthosis (85).

Foot taping and strapping are particularly beneficial in the acute phase of plantar fasciitis to help support the medial longitudinal arch. Numerous studies (86–91) have evaluated the efficacy of taping and shown that in the short term, this remains a viable option to help reduce acute pain by supporting the plantar fascia.

A meta-analysis by Lee et al (92) showed that the use of foot orthoses in patients with plantar fasciitis appears to be associated with reduced pain and increased function. Chia et al (93) evaluated the foot pressure patterns for different types of orthotics and compared them with bone spur pads and flat insoles in patients with chronic plantar fasciitis. They concluded that prefabricated orthotics and custom orthotics reduced rearfoot peak forces and are useful in distributing pressure uniformly over the rear foot region (93). Additionally, Landorf et al (94), in a randomized trial, evaluated the short- and long-term effectiveness of foot orthosis in the treatment of plantar fasciitis. They followed up 135 participants for 12 months (94). They compared a sham orthotic, prefabricated orthotic, and a custom orthotic. At 3 months, pain relief and function favored the prefabricated custom orthotics. However, at the 12-month review, no significant changes were found in the primary outcome (94). A prospective randomized trial by Pfeffer et al (35), studied 236 patients from 15 centers with a symptom duration of ≤6 months. They combined stretching and shoe devices, including a silicone heel pad, a felt pad, a rubber heel cup, and custom orthotic device. All patients improved; however, they found that the patient improvement rates were greatest for the patients who performed stretching exercises and wore a prefabricated shoe insert (35). Stuber and Kristmason (95), in a narrative review of randomized controlled trials (RCTs), demonstrated several studies that showed custom-made orthotics were more beneficial than over-the-counter devices. In a double-blind, prospective, randomized clinical trial, Wrobel et al (96) compared custom foot orthoses, prefabricated foot orthoses, and a sham insole. Seventy-seven patients were included, and all the patients had had symptoms for <1 year. Patients in the custom foot orthosis group were 5 times more active, despite having performed 50% less Achilles tendon stretching, compared with the prefabricated insole and sham groups. All 3 groups in the study improved with respect to post-static dyskinesia on rising in the morning with the use of supportive shoe gear, stretching, and ice. Based on findings from all the studies, it is imperative to discuss appropriate biomechanical support with patients with plantar fasciitis. Medical treatment without patient involvement will lessen the success rates of nonsurgical treatment options. Appropriate and supportive shoe gear is important to support the medial longitudinal arch. Taping has been successful in published studies; however, most of the panel does not perform taping of patients on a regular basis. Taping can be used to support the arch and rest the plantar fascia in the short term. It can also be used as a test to determine whether the patient would do well with a more controlling insole or custom orthotic. The panel agreed that the decision to use a custom orthotic (versus an over-the-counter insole) depends primarily on the patient's magnitude of foot deformity, activity level, and whether the patient had a previous failed response with an over-the-counter insole.

Consensus Statement: The panel reached consensus that the statement "Stretching is safe and effective in the treatment of plantar fasciitis" was appropriate.

Tight hamstrings and equinus are common in patients with plantar fasciitis (64). Treatment of equinus is important for all stages of plantar fasciitis. A prospective, randomized study by DiGiovanni et al (97), investigated patient outcomes with chronic heel pain. The 101 patients with chronic plantar fasciitis were divided into a plantar fascia tissue stretching program or an Achilles tendon stretching program. Of the 101 patients, 82 returned for a follow-up examination after 8 weeks. They found that patients performing plantar fascia-specific stretching exercises had superior results in reducing the pain with their first step in the morning and their highest level of pain. Kamonseki et al (98) compared the effects of stretching with and without muscle strengthening of the foot alone or foot and hip on pain and function in patients with plantar fasciitis. At 8 weeks, they found that all patients experienced improvement in function and stability (98). Equinus is quite common in patients with plantar fasciitis; therefore, a strict stretching exercise program will be beneficial.

In 2006, Roos et al (99) compared the effects of foot orthosis and night splints, alone or combined, in a prospective, randomized trial with 1-year follow-up data. Forty-three patients were randomized to receive foot orthoses, foot orthoses and night splints, or night splints alone. At 12 weeks, pain reduction of 30% to 50% was seen in all groups. At 52 weeks, the pain reduction was 62% in the 2 groups using foot orthoses compared with 40% in the night splint-only group. At 12 months, 19 of the 23 patients available for follow-up examinations were still using the foot orthosis compared with only 1 of 28 still using the night splint. Their study showed that stretching with a night splint is beneficial but that patient compliance is not as high as that for orthotics. Lee et al (100) evaluated the effectiveness of adjustable dorsiflexion night splints alone and combined with accommodative foot orthosis in the treatment of plantar fasciitis. Their study of 28 patients demonstrated that the addition of dorsiflexion night splints to the use of foot orthoses was more effective than the use of foot orthoses alone. Finally, Barry et al (101) in 2002 compared the effectiveness of standing gastrocnemius soleus stretching to the use of a prefabricated night splint sock. They concluded that the night splint treatment group had a significantly shorter recovery time, fewer follow-up visits before recovery, and fewer total additional interventions compared with the stretching group (101).

Physical therapy is also a beneficial adjunct for those who have difficulty stretching at home. In addition to stretching, physical therapy offers other modalities, including iontophoresis, soft tissue mobilization (102), and myofascial release (103,104).

The consensus of the panel is that stretching is extremely important in the treatment of plantar fasciitis. The type of stretching protocol (home stretching, night splint, or physical therapy) will vary according to the severity of the equinus and patient preference. No consensus was reached regarding the type of stretching needed. However, the panel agreed that more aggressive stretching would be preferred.

Consensus Statement: The panel reached consensus that the statement "Corticosteroid injections are safe and effective in the treatment of plantar fasciitis" was appropriate.

In a recent Cochrane review and meta-analysis of 3 RCTs, David et al (105) concluded that local steroid injections compared with placebo or no treatment might slightly reduce heel pain for ≤1 month but not subsequently. The panel was of the same opinion and admitted to using injectable steroids for the acute relief of symptoms, recognizing that these are not disease modifying and have little lasting effect beyond the first 4 weeks. These findings clearly underscore the importance of not offering corticosteroid injections as monotherapy for plantar fasciitis.

A systematic review by Uden et al (106) evaluated experimental studies in English from 1998 to 2010. Six RCTs met their selection criteria and were included. They concluded that both customized foot orthosis and corticosteroid injections can lead to a reduction in the pain associated with plantar fasciitis. They commented that steroid injections can have side effects (especially pain as a result of the injection), which could limit their acceptability (106). In a comparison between ultrasound and palpation guidance of local steroid injections, Tsai et al (107) concluded that ultrasound guidance is associated

with a lower recurrence of heel pain owing to the ability to appropriately inject in the area of maximal tenderness. Tatli and Kapasi (108) evaluated the "real risks" of steroid injections. They showed significant improvement in the short term. Combined with stretching, corticosteroid injections can provide efficacious pain relief. However, they recommended performing the injection with ultrasound monitoring to reduce the risk of potential complications (108). A RCT by McMillan et al (109) compared 82 patients with a clinical and ultrasound diagnosis of plantar fasciitis unrelated to systemic inflammatory disease. They found a single ultrasound-guided dexamethasone injection was safe and effective; however, significant pain relief did not continue beyond 4 weeks. In a recent meta-analysis comparing ultrasound- versus palpation-guided corticosteroid injections, Li et al (110) examined 5 RCTs with 149 patients and concluded that ultrasound-guided injection was superior with regard to the visual analog scale score for pain, response rate, and plantar fascia appearance on ultrasound scans. However, no statistically significant difference was found between the 2 groups for heel pain tenderness.

It appears that ultrasound guidance can be helpful for more anatomic precision. However, the panel was unable to reach a conclusion regarding whether it is required for corticosteroid injections.

Because very little guidance is available from the published data regarding the proper placement of injections, steroid strength, and/or injection frequency, the panel members were also asked to comment individually on their preferred technique. The members of the panel were comfortable giving 2 to 3 injections maximum within a 12-month period, citing the risk of rupture and/or fat pad atrophy as the primary concerns with continued use. The dose and type of corticosteroid injected varied widely among members. However, all agreed that caution should be exercised when injecting steroids to prevent fat pad and tissue atrophy with multiple injections or from using too high of a steroid dose. The members agreed that providers must also exercise good clinical judgment and not continue to offer corticosteroids to patients without improvement or a positive response. Finally, the panel members varied considerably regarding their preferred location of steroid placement for patients with plantar fasciitis (e.g., above, below, or within the fascia itself). However, for patients with classic proximally based plantar fasciitis, the panel agreed that attempts should be made to place the injection in close proximity to the insertion of the plantar fascia into the calcaneus.

Consensus Statement: The panel reached consensus that the statement "Other injection techniques (e.g., amniotic tissue, platelet-rich plasma, botulinum toxin, needling, and prolotherapy) are safe and effective in the treatment of plantar fasciitis" was uncertain—neither appropriate nor inappropriate.

Although other injection techniques are emerging for the treatment of plantar fasciitis, they have been supported only by low-quality studies consisting of case series, retrospective comparative studies, or small trials, lacking long-term follow-up data. Rather than speculate on the value of these injection therapies, the panel thought that further investigation is needed to assess how these will compare with the more conventional treatment protocols.

Consensus Statement: The panel reached consensus that the statement "Extracorporeal shockwave therapy (ESWT) is safe and effective in the treatment of plantar fasciitis" was appropriate.

Most ESWT protocols are designed to be administered in the office, once a week for 3 to 5 sessions total (high- or low-dose/energy delivered either by radial or focused shock waves). In these instances, anesthesia (e.g., nerve block) is not indicated and, when used, likely reduces the efficacy of the treatment (111,112). In contrast, high-energy, focused ESWT, which is extremely painful, can also be administered in 1 session under intravenous sedation in the operating room. The published data suggest that both are efficacious for subacute and chronic heel pain. At the time of the present CCS, we found 6 systematic reviews (112–117), which identified 20 RCTs among them. The reviews included different RCTs in individual meta-analysis and presented data for different outcomes. All reviews suggested a net beneficial effect of ESWT compared with placebo, especially with respect to heel pain at 12 weeks, but also in activity, function, and quality of life (112–117). A general observation across all studies was that approximately 70% of patients with chronic or subacute plantar fasciitis who underwent ESWT had experienced meaningful improvement in their heel pain at 12 weeks. ESWT, however, does not appear to be an effective first-line option for patients with acute plantar fasciitis. Rompe et al (118) found that a program of manual stretching was superior to low-energy radial ESWT in their RCT of 102 patients with symptoms for <6 weeks. Because ESWT has few negative consequences and the recovery time is short, with patients typically walking and returning to full activities within a few days, the panel thought that ESWT is a valuable option for providers treating heel pain. However, because it is still not widely available in the United States owing to the cost of treatments and the lack of health insurance coverage, most members of the panel were not using ESWT routinely in their practice.

Surgical Treatment

Despite the tremendous progress in the conservative management of plantar fasciitis, a subset of patients continue to need surgical intervention to resume their normal daily lifestyle. Surgical intervention should be reserved for chronic, refractory cases that have failed appropriate conservative treatment for ≥6 months (35,48,119–121). Surgery for plantar fasciitis has 2 common and accepted types of procedures, and both work by releasing the tension from the plantar fascia. The panel reached a consensus that the reduction of plantar fascial tension is an integral part of surgical intervention for plantar fasciitis. The first treatment modality is plantar fasciotomy, which involves cutting a portion of the plantar fascia directly to decrease the tension on the fascial band. The second modality is gastrocnemius recession to decrease the tension indirectly.

Consensus Statement: The panel reached consensus that the statement "Plantar fasciotomy (open and endoscopic) is a safe and effective option for chronic, refractory plantar fasciitis" was appropriate.

Partial or complete release of the plantar fascia has been performed for many years, whether as an isolated procedure or combined with excision of the plantar calcaneal spur or gastrocnemius recession. In 1995, Tomczak and Haverstock (122) performed a retrospective comparison of endoscopic plantar fasciotomies (EPFs) to open plantar fasciotomy with heel spur resection. They reported that both groups were asymptomatic at 9 months but that the EPF group had returned to work and full activities 55 days earlier (122). The largest review of EPF was 652 cases treated by 25 surgeons reported by Barrett et al (70) in 1995. In their series, all surgeons released the medial one third of the band and demonstrated success and reproducibility. However, the patients were only followed up for 3 weeks postoperatively (70). O'Malley et al (123) in 2000 reviewed 20 feet treated by EPF and found that all patients with unilateral heel pain had complete relief and that the 1 patient with bilateral heel pain reported no improvement in pain. Morton et al (48) in 2013 performed a retrospective review of 105 consecutive EPF procedures on U.S. army soldiers and reviewed the outcomes stratified by the BMI. Of those patients with a BMI of ≤25.53 kg/m^2, 96.35% had a postoperative pain level of 0, but only 44% of those with a BMI of ≥29.8 kg/m^2 had a postoperative pain score of 0. Hill et al (124) in 1989 performed a study on increased body weight and heel pain in consecutive plantar heel pain patients. They found a statistically significant correlation between heel pain and increased body weight. This positive correlation was also reported by Riddle et al (24) in 2003 and Rano et al (39) in 2001. Fishco

et al (125) reported the findings from a retrospective study of instep plantar fasciotomy on 83 patients. The main complication was scarring in 9.6% of the patients (125). Surgery was deemed successful 93.6% of the time, and 95.7% of the patients would recommend the procedure to someone with the same condition (125). Woelffer et al (12) in 2000 reported the 5-year results for patients who had undergone instep plantar fasciotomy. The satisfaction rate was ≥90% in 30 of the 33 feet, although 3 patients did complain of pain at the surgical site at times. The consensus of the panel was that release of the plantar fascia by any method is a valid surgical procedure in the treatment of chronic plantar fasciitis.

Consensus Statement: The panel reached consensus that the statement "Gastrocnemius release is a safe and effective option for chronic, refractory plantar fasciitis when clinically significant equinus is present" was appropriate.

Achilles tendon tension and plantar fascia loading are closely related. Patients with posterior group tightness and gastrocnemius contracture are known to exhibit decreased ankle joint range of motion and are at increased risk of developing plantar fasciitis (46). Cychosz et al (126) in 2015 performed a systematic review on the effectiveness of gastrocnemius recession in overuse pathologies in the foot and ankle. Although infracalcaneal heel pain was not studied specifically, they concluded that gastrocnemius release remains an underrepresented treatment for overload pathologies in the foot and ankle. They also found clear efficacy for gastrocnemius release and relief of midfoot and forefoot pain (126). In 2012, Schroeder (127) demonstrated that clinically significant improvement in ankle joint range of motion can be obtained with gastrocnemius recession. To date, 3 studies have examined gastrocnemius release in patients with plantar fasciitis, 2 using proximal release of the medial head in the popliteal fossa (128, 129) and 1 using a distal release at the myotendinous junction (130). Abbassian et al (128) studied proximal medial gastrocnemius release (PMGR) in 21 heels (17 patients) with ≥1 year of follow-up data. They found that 81% of the patients in the study reported total or significant pain relief at the final follow-up examination with fast recovery and low overall morbidity (128). Two patients related subjective weakness (12%) and 3 (17%) had some evidence of objective weakness at the final follow-up visit; however, this did not affect their outcome or satisfaction with the procedure (128). In the case series by Maskill et al (130), 25 limbs underwent gastrocnemius recession for painful plantar fasciitis. The mean visual analog scale pain scores had improved from 8.1 preoperatively to 1.9 at the final follow-up examination. Finally, in a retrospective comparative study, Monteagudo et al (129) compared the results of open plantar fasciotomy (n = 30) with PMGR (n = 30) in the treatment of chronic recalcitrant plantar fasciitis. They found that gastrocnemius release was superior to open fasciotomy for all outcomes (129). Patient satisfaction in the PMGR group reached 95% (compared with only 60% in the fasciotomy group). Additionally, patients in the PMGR group had returned to work and sports at 3 weeks postoperatively on average, and the functional and pain scores were considerably better in the PMGR group (129). Although no high level evidence is available yet to support of gastrocnemius release/recession, the panel still unanimously agreed that this represents a safe and effective treatment option (in isolation and in combination) for patients with gastrocnemius contracture and chronic refractory infracalcaneal heel pain.

Consensus Statement: The panel reached consensus that the statement "Other surgical techniques (e.g., ultrasonic debridement with a microtip device, cryosurgery, and bipolar radiofrequency ablation) are safe and effective options for chronic, refractory plantar fasciitis" was uncertain—neither appropriate nor inappropriate.

These treatment options have very little long-term data or peer-reviewed studies. Further research is needed to determine their effectiveness. Cryosurgery is a minimally invasive percutaneous procedure for plantar fasciitis that has been described by both Allen et al (131) and Cavazos et al (121). Cryosurgery has very limited usage or clinical research to recommend its use. One retrospective study by Cavazos et al (121) demonstrated a 77.4% success rate in a sampling of 137 feet. Ultrasonic debridement with a microtip is new and does not yet have appropriate peer-reviewed studies for this panel to give a recommendation. This technology has been touted to remove only the degenerated tissue; however, outcome studies are needed. Bipolar radiofrequency ablation for recalcitrant plantar fasciitis has only been investigated and reported once by Sorensen et al (132) and provided only a 33.3% satisfactory pain relief at 4 weeks. The rate of good results did improve to 85.72% when rated subjectively.

In conclusion, in considering a treatment protocol for the diagnosis and treatment of plantar fasciitis, it is important to understand that each patient presentation will vary and no "cookie cutter" design will fit all patients. Appropriate diagnosis is mandatory to rule out other causes of heel pain. Treatment modalities will differ according to the chronicity and severity of the patient's pain. Instead of giving a specific algorithm, the panel believed it would be more appropriate to review the published data and comment on the efficacy of the most common modalities used for diagnosis and treatment. Efforts should be made to tailor a treatment plan to each individual patient according to their specific expectations and physical requirements. In addition, it is important to remain cost conscious and responsible to the healthcare system. Not all patients present equally; therefore, not every treatment regimen can be standardized. Is important to continue to monitor patients and their response to treatment for appropriate and timely improvement in their disease state.

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Screening for Eye Complications for Patients on High Risk Medications

Question: How can screening for eye complications for patients on high risk medications be represented on the Prioritized List?

Question source: Oregon Eye Specialists, PC; HERC staff

Issue: Many medications have possible eye injury or disease as a complication. Oregon Eye Specialists contacted OHA about their inability to get screening eye exams and tests covered for patients on Plaquenil for rheumatoid arthritis or lupus. It was noted during the 2019 CPT code review that eye tests to look for complications of other types of drug induced retinopathy were similarly not being covered due to lack of pairing.

During the 2019 CPT code review, one issue that was found was that there is no specific ICD-10 code for eye complications due to medications. One code commonly used to order various tests to monitor high-risk medications, ICD-10 Z79.899 (Other long term (current) drug therapy), is on the Diagnostic Workup File whereas all of the ophthalmology visit and testing codes are on lines. HERC staff has identified one ICD-10 code being allowed by private insurers for such testing, H36 (Retinal disorders in diseases classified elsewhere). H36 is currently on line 652 SENSORY ORGAN CONDITIONS WITH NO OR MINIMALLY EFFECTIVE TREATMENTS OR NO TREATMENT NECESSARY.

The specific tests being requested by Oregon Eye Associates [CPT 92134 (retinal spectral domain optical coherence tomography (SD-OCT)); CPT 92082-3 (Humphrey visual fields); and CPT 92250 (fundus autofluorescence)] are on a variety of ophthalmology lines.

HERC staff recommendations:

1) Add ICD-10 H36 (Retinal disorders in diseases classified elsewhere) to line 360 CHORIORETINAL INFLAMMATION
    a. All appropriate CPT codes are on this line
2) Adopt a new guideline note for line 360 as shown below

GUIDELINE NOTE XXX, SCREENING FOR OPHTHALMOLOGIC COMPLICATIONS OF HIGH-RISK MEDICATIONS

Lines 360, 632

ICD-10 H36 (Retinal disorders in diseases classified elsewhere) is included on Line 360 only for ophthalmologic examinations and testing to screen for complications of high-risk medications. ICD-10 H36 is included on Line 632 for all other indications.

Shoulder Arthroplasty for Rotator Cuff Disease

Question: Should shoulder arthroplasty no longer be paired with various non-traumatic rotator cuff conditions?

Question source: Doug Carr, CCO medical director

Issue: A recent evidence-based guideline strongly recommended against shoulder arthroplasty for shoulder impingement syndrome, also known as rotator cuff disease, based on a lack of evidence of benefit and an evidence of possible harm. This surgery is currently paired with a variety of rotator cuff conditions on line 417 DISORDERS OF SHOULDER, INCLUDING SPRAINS/STRAINS GRADE 4 THROUGH 6.

Patients who have subacromial pain for more than 3 months without a history of trauma usually receive a diagnosis of subacromial pain syndrome (SAPS), shoulder impingement, or rotator cuff disease. Each of these labels describe similar clinical presentations, but there is inconsistency about how they are defined and overlap between these diagnoses. These conditions are generally coded with ICD-10 M75.4 (Impingement syndrome of shoulder). This diagnosis does not include adhesive capsulitis ("frozen shoulder") or glenohumeral osteoarthritis.

First line treatment options for SAPS include simple analgesia such as Tylenol, non-steroidal anti-inflammatory drugs (NSAIDs), glucocorticoid injections, and exercise therapy. Subacromial decompression surgery is a second line treatment option for patients with more longstanding symptoms. Such surgery includes removal of the subacromial bursa (bursectomy) and removal of bone from the under surface of the acromion (acromioplasty), which is usually done laparoscopically.

Current Prioritized List status:

Code	**Code description**	**Placement**
CPT 29826	Arthroscopy, shoulder, surgical; decompression of subacromial space with partial acromioplasty, with coracoacromial ligament (ie, arch) release, when performed Note: this is an add-on code	356 RHEUMATOID ARTHRITIS, OSTEOARTHRITIS, OSTEOCHONDRITIS DISSECANS, AND ASEPTIC NECROSIS OF BONE 417 DISORDERS OF SHOULDER, INCLUDING SPRAINS/STRAINS GRADE 4 THROUGH 6 441 MALUNION AND NONUNION OF FRACTURE
M75.0	Adhesive capsulitis of shoulder	417
M75.1	Rotator cuff tear or rupture	417
M75.4	Impingement syndrome of shoulder	417
M75.5	Bursitis of shoulder	417
M75.6	Shoulder lesion, unspecified	417

Evidence

1) **Vandvik 2019**, systematic review and expert guideline on surgical decompression for subacromial pain syndrome
    a. Two trials included placebo surgery and were at low risk of bias. At one year after treatment, they showed that surgery did not have meaningful benefit over placebo surgery:
        i. High certainty evidence for little or no effect on
            1. Pain (mean difference −0.26 (95% confidence interval −0.84 to 0.33), MID 1.5) [MID=mean clinically important difference]
            2. Function (mean difference 2.8 (−1.4 to 6.9), MID 8.3)
            3. Health related quality of life (mean difference −0.03 points (−0.11 to 0.06), MID 0.07)
        ii. Moderate certainty evidence for little or no global perceived effect (risk ratio 1.10 (0.94 to 1.30))
        iii. Low certainty evidence for little or no effect on return to work (risk ratio 1.05 (0.89 to 1.23))
        iv. Similar results were seen at six months, two years, and at five year follow-up, with the latter supported by low certainty evidence due to imprecise estimates from unblinded trials
    b. Harms:
        i. There were around 12 more frozen shoulders per 1000 patients undergoing subacromial decompression surgery, based on the two placebo controlled trials (low certainty evidence).
        ii. Based on one large prospective cohort registry study from the United States: the risk of serious harms after mixed shoulder arthroscopic procedures was 0.5% (95% confidence interval 0.4% to 0.7%) during years 2006-11 and 0.6% (0.5% to 0.7%) during 2011-13. Reported harms included events such as major bleeding, deep infections, serious anesthetic complications, venous thromboembolism, and peripheral nerve injury.
    c. **Recommendation** The guideline panel makes a strong recommendation against surgery.

Expert input

Susan Williams, MD, orthopedic surgeon

29826 is an add-on code which means it cannot be used by itself. It cannot be the only reason a patient is having a surgery. The reason it was changed to an add-on code (from a stand-alone code) was because of the studies that show that decompression for impingement syndrome alone was not effective. 29826 is used as an add-on code in addition to arthroscopic rotator cuff repair. In order to perform a rotator cuff repair, and if the area of tear is from a bone spur, then subacromial decompression is indicated.

Shoulder Arthroplasty for Rotator Cuff Disease

HERC staff summary:
A new evidence-based, GRADE informed guideline strongly recommends against decompressive surgery for non-traumatic rotator cuff conditions. A variety of laparoscopic shoulder surgeries appear on line 417, paired with these types of conditions. Other shoulder conditions, such as traumatic rotator cuff tears and shoulder arthritis, also appear on line 417 and are not included in the recommendation against surgery. Expert input confirms that decompressive surgery is not indicated for non-traumatic rotator cuff conditions, but is used as part of rotator cuff surgery.

HERC staff recommendations:

1) Add the new guideline below to lines containing CPT 29826 (Arthroscopy, shoulder, surgical; decompression of subacromial space with partial acromioplasty, with coracoacromial ligament (ie, arch) release, when performed)
    a. Lines 356 RHEUMATOID ARTHRITIS, OSTEOARTHRITIS, OSTEOCHONDRITIS DISSECANS, AND ASEPTIC NECROSIS OF BONE, 417 DISORDERS OF SHOULDER, INCLUDING SPRAINS/STRAINS GRADE 4 THROUGH 6, and 441 MALUNION AND NONUNION OF FRACTURE

GUIDELINE NOTE XXX, SHOULDER DECOMPRESSION SURGERY

Lines 356,417,441

CPT 29826 is only included on these lines as a component of rotator cuff repair surgery. CPT 29826 is not included on this line for pairing with shoulder impingement syndrome or adhesive capsulitis of shoulder.

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RAPID RECOMMENDATIONS

Subacromial decompression surgery for adults with shoulder pain: a clinical practice guideline

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This *BMJ* Rapid Recommendation article is one of a series that provides clinicians with trustworthy recommendations for potentially practice changing evidence. *BMJ* Rapid Recommendations represent a collaborative effort between the MAGIC group (http://magicproject.org/) and *The BMJ*. A summary is offered here and the full version including decision aids is on the MAGICapp (https://app.magicapp.org), for all devices in multilayered formats. Those reading and using these recommendations should consider individual patient circumstances, and their values and preferences and may want to use consultation decision aids in MAGICapp to facilitate shared decision making with patients. We encourage adaptation and contextualisation of our recommendations to local or other contexts. Those considering use or adaptation of content may go to MAGICapp to link or extract its content or contact *The BMJ* for permission to reuse content in this article.

ABSTRACT

Clinical question Do adults with atraumatic shoulder pain for more than 3 months diagnosed as subacromial pain syndrome (SAPS), also labelled as rotator cuff disease, benefit from subacromial decompression surgery? This guideline builds on to two recent high quality trials of shoulder surgery.

Current practice SAPS is the common diagnosis for shoulder pain with several first line treatment options, including analgesia, exercises, and injections. Surgeons frequently perform arthroscopic subacromial decompression for prolonged symptoms, with guidelines providing conflicting recommendations.

Recommendation The guideline panel makes a strong recommendation against surgery.

How this guideline was created A guideline panel including patients, clinicians, and methodologists produced this recommendation in adherence with standards for trustworthy guidelines and the GRADE system. The recommendation is based on two linked systematic reviews on (*a*) the benefits and harms of subacromial decompression surgery and (*b*) the minimally important differences for patient reported outcome measures. Recommendations are made actionable for clinicians and their patients through visual overviews. These provide the relative and absolute benefits and harms of surgery in multilayered evidence summaries and decision aids available in MAGIC (www.magicapp.org) to support shared decisions and adaptation.

The evidence Surgery did not provide important improvements in pain, function, or quality of life compared with placebo surgery or other options. Frozen shoulder may be more common with surgery.

Understanding the recommendation The panel concluded that almost all informed patients would choose to avoid surgery because there is no benefit but there are harms and it is burdensome. Subacromial decompression surgery should not be offered to patients with SAPS. However, there is substantial uncertainty in what alternative treatment is best.

Visual summary of recommendation

Population

Including:

- Subacromial pain syndrome (SAPS)
- Rotator cuff disease (RCD)

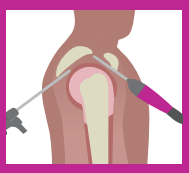
Does not apply to patients with:

- Traumatic shoulder pain
- Other differential diagnoses

Interventions compared

Subacromial decompression surgery

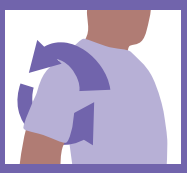
Arthroscopic subacromial decompression plus nonoperative management



or

Nonoperative management only

Including guided physical therapy, exercise programmes, NSAIDs, and steroid injections



Recommendation

Strong | Weak | Weak | Strong

We recommend against subacromial decompression surgery

Comparison of benefits and harms

Favours surgery | No important difference | Favours nonoperative management

After 1 year					**Evidence quality**
		Visual analogue scale (0–10)			
Pain (Mean)	2.6	No important difference	2.9	★★★★	High
		Constant score scale (0–100)			
Function (Mean)	72	No important difference	69	★★★★	High
		EQ-5D scale (-0.59–1)			
Quality of life (Mean)	0.70	No important difference	0.73	★★★★	High
		Events per 1000 people			
Global perceived effect	699	No important difference	635	★★★☆	Moderate
At work	859	No important difference	818	★★☆☆	Low
Within 30 days		**Events per 1000 people**			
Serious harms	6	6 fewer	0	★★★☆	Moderate

Key practical issues

Surgery	Nonoperative management
Recovery time varies from months to years and may include sick leave	
Day surgery with general anaesthesia and/or nerve block	
After surgery, 2 weeks off work are typically needed	
Avoid heavy lifting for one to three weeks, overhead activities for 3 months	

Values and preferences

The panel believes that all or almost all patients would place a high value on avoiding even minimal risk of complications and burden from surgery, if it is not helpful.

Up to a quarter of adults have experienced shoulder pain over the past year, and it represents the third most common musculoskeletal problem.[1 2] About half of those affected will recover completely within six months.[3] Pain beyond three months is associated with poorer recovery, disability, and reduced ability to work.[3]

Subacromial pain is the most common form (up to 70%) of shoulder pain, and it can impair the ability to work or do household tasks.[4-6] Most patients presenting with subacromial pain, without a history of trauma, receive a diagnosis of subacromial pain syndrome (SAPS), shoulder impingement, or rotator cuff disease. Each of these labels describe similar clinical presentations, but there is inconsistency about how they are defined and overlap between these diagnoses. Here, we use the term SAPS (see box 1 for details of its presentation). This recommendation addresses the role of surgery for adults with symptoms lasting more than three months, who approach health professionals for treatment.

This *BMJ* Rapid Recommendation is in response to two recent trials[12 13] which found that subacromial decompression surgery provided no benefit over placebo surgery. The recommendation is based on two linked systematic reviews on benefits and harms of subacromial decompression surgery and minimally important differences in patient reported outcome measures for shoulder pain, function and quality of life.[14 15] The main infographic provides an overview of the relative and absolute benefits and harms of surgery in standard GRADE format. Box 2 shows all of the articles and evidence linked in this Rapid Recommendation package. Table 2 below shows evidence that has emerged since the publication of this article.

Current practice

First line treatment options for SAPS include simple analgesia such as paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), glucocorticoid injections, and exercise therapy.[8] Subacromial acromial decompression surgery is a second line treatment option for patients with more longstanding symptoms. Current guidelines provide inconsistent recommendations (table 1). Such surgery includes removal of the subacromial bursa (bursectomy) and removal of bone from the under surface of the acromion (acromioplasty).[8] Surgeons initially performed subacromial decompression surgery as an open procedure. It evolved to less invasive keyhole surgery: arthroscopy.

Despite trials dating back to 1993[18] and systematic reviews failing to demonstrate benefit from surgery,[19] the number of arthroscopies performed has risen dramatically, although there is substantial geographical variation.[20 21] There were 21 000 procedures performed in NHS hospitals in 2010, which cost approximately £50 million.[21]

Box 1 | Details of subacromial pain syndrome (SAPS)

Common symptoms—Pain at the upper outer arm when lifting the arm (classically a painful arc through shoulder abduction), difficulty moving the arm (especially with forward flexion, external rotation, and abduction), reduced strength in the arm, and sleep problems due to pain[7 8]

Key differential diagnoses—Adhesive capsulitis ("frozen shoulder") and glenohumeral osteoarthritis[8 9]

Imaging—Patients with SAPS can have degeneration and partial thickness rotator cuff tears or abnormalities in the subacromial bursa on imaging. These imaging findings are also common in people without symptoms[10]

Pathophysiology—Remains poorly understood. Cadaver studies suggested that pain might occur from rotator cuff tendons being caught ("impinging") between the acromion or coracoacromial ligament and the humerus.[11] These studies provided the initial rationale for subacromial decompression surgery

Box 2 | Linked articles in this *BMJ* Rapid Recommendation cluster

- Vandvik PO, Lähdeoja T, Ardern C, et al. Subacromial decompression surgery for adults with shoulder pain: a clinical practice guideline. *BMJ* 2019;364:l294
  - Summary of the results from the Rapid Recommendation process
- Hao Q, Devji T, Zeraatkar D, et al. Minimal important differences for improvement in shoulder condition patient-reported outcomes: a systematic review to inform a BMJ Rapid Recommendation. *BMJ Open* 2019; doi:10.1136/bmjopen-2018-028777[14]
  - Review of minimally important differences in outcomes from shoulder conditions
- Lähdeoja T, Karjalainen T, Jokihaara J, et al. Subacromial decompression surgery versus conservative management in patients with shoulder pain: a systematic review with meta-analysis. *Br J Sports Med* 2019; doi:10.1136/bjsports-2018-100486[15]
  - Review and meta-analysis of all available randomised trials that assessed effects of surgery for SAPS
- Karjalainen TV, Jain NB, Page CM, et al. Subacromial decompression surgery for rotator cuff disease. *Cochrane Database Syst Rev* 2019;(1):CD005619. doi:10.1002/14651858.CD005619.pub3[16]
  - Updated Cochrane systematic review on subacromial decompression surgery for rotator cuff disease
- MAGICapp (www.magicapp.org/public/guideline/nBMa0L)
  - Expanded version of the results with multilayered recommendations, evidence summaries, and decision aids for use on all devices (see appendix 3 on bmj.com)

Table 1 | Major guideline recommendations on subacromial decompression surgery for subacromial pain syndrome (SAPS)*

Organisation	Recommendation
European Society for Surgery of the Shoulder and the Elbow	No recommendation for or against subacromial surgery
British Elbow and Shoulder Society/British Orthopaedic Association 2015. Statement of upcoming update 2018†	Recommended in the absence of a rotator cuff tear if impingement symptoms fail to resolve with nonoperative treatment
Dutch Orthopaedic Association 2014[17]	Not recommended
American Academy of Orthopaedic Surgeons, 2010 (AOA guidelines)	No recommendation for or against subacromial surgery, suggests initial nonoperative management
Australian Orthopaedic Association 2017 (AOA Statement 2017)	Recommended for significant and persistent symptoms unresponsive to nonoperative management (including injections and physiotherapy)
Canadian Medical Association and Canadian Orthopaedic Association-Arthroscopy Association of Canada	No recommendation for or against subacromial decompression surgery

*These guidelines have not included new evidence captured in our Rapid Recommendation.
†Accredited by National Institute of Clinical Excellence (NICE). A guideline update, based on the CSAW trial, has been announced.[13]

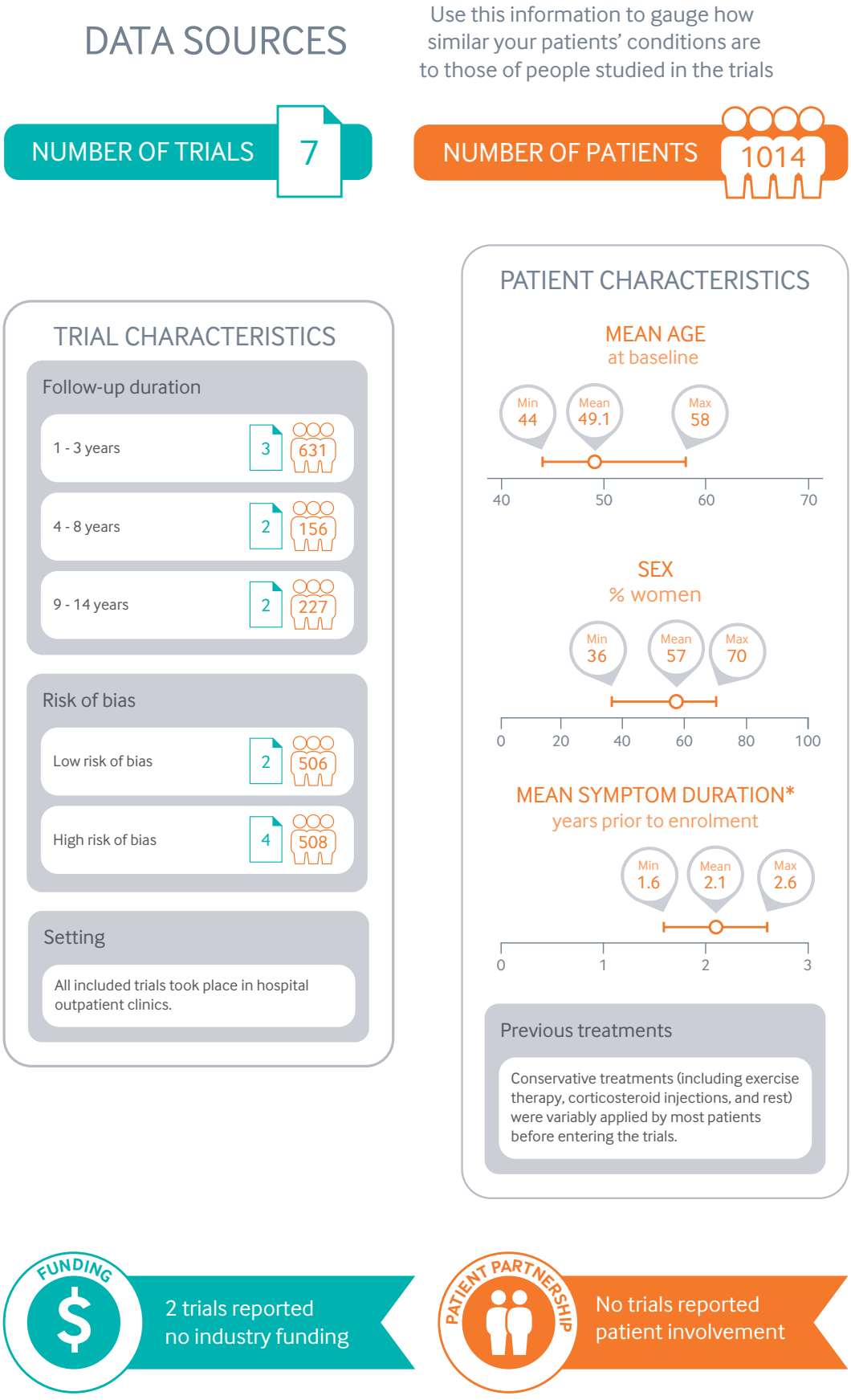


Fig 2| Characteristics of participants and trials included in the systematic review of the effects of surgery for subacromial pain syndrome (SAPS)

HOW THIS RECOMMENDATION WAS CREATED

Our international panel included patients with lived experience of shoulder pain and surgery, orthopaedic surgeons, physiotherapists, a rheumatologist, general internists, a general practitioner, epidemiologists, and methodologists. No person had financial conflicts of interest; intellectual and professional conflicts were minimised and managed (see appendix 1 on bmj.com for details of panel members and their competing interests). The panel initially decided on the scope of the recommendation and the outcomes that are most important to patients.

The panel identified the following important outcomes: pain, patient global perceived effect, physical function, participation in work and recreation activities, health related quality of life, development of full-thickness rotator cuff tears, and potential harms from surgery (such as frozen shoulder, death, infection, venous thromboembolism, and anaesthesia related events). This selection was also informed by the Outcome Measures in Rheumatology (OMERACT) preliminary shoulder trial core domain outcome set.[28]

To inform the recommendation the panel members requested two systematic reviews addressing the following questions:

1 What is the smallest change in pain, function and quality of life that patients with shoulder conditions such as SAPS consider important—the minimally important difference—to make surgery worthwhile? Such patient-reported outcomes measures (PROMs) were measured with a variety of instruments in the trials and are challenging to interpret.
2 What are the benefits and harms of subacromial decompression surgery in patients with SAPS, as compared to placebo and nonoperative management strategies?

Parallel teams conducted these systematic reviews.[14 15] Another team updated a Cochrane systematic review synchronised with this *BMJ* Rapid Recommendation.[16] The panel asked the review team to explore potential subgroup effects for risk of bias in trials and different types of comparisons to surgery, such as exercise therapy.

The panel used this evidence and followed *BMJ* Rapid Recommendations procedures for creating a trustworthy recommendation. This includes the GRADE approach. The panel met by videoconference to discuss the evidence and formulate a recommendation (see appendix 2 on bmj.com).[29 30] The panel considered the balance of benefits, harms, and burdens of surgery versus placebo surgery and nonoperative treatments, the certainty of the evidence for each outcome, typical and expected variations in patient values and preferences, as well as feasibility and acceptability (practical issues).[23] Recommendations using GRADE can be strong or weak, for or against a course of action.[30] The panel made the recommendation from an individual patient's perspective assuming that all options were available and affordable to the patient. It does not take a public health, societal, or health payer perspective. Healthcare systems can adapt these recommendations by including costs and other key issues of relevance, contextualised to national and local circumstances.[23]

The evidence

What is the minimum difference in symptoms and function important to patients?

The systematic review of minimally important differences (MIDs) identified 22 original studies of 5562 patients. They reported results for 74 MID estimates judged to be of variable and mostly low credibility.[14] The most credible MID estimates were used to help interpret the results of the systematic review, as shown in the infographic.

The panel were, due to credible estimates, confident that patients valued

- A difference in pain of at least 1.5 units as important (visual analogue scale 0-10)
- A difference in function of at least 8.3 units as important (constant score 0-100)

The panel were less confident in the difference in health related quality of life reported by patients to be important (EQ 5-D, MID 0.07 units, low credibility median estimate).

What are the benefits and harms of subacromial decompression surgery?

The linked systematic review and meta-analysis pooled data from seven randomised controlled trials with 1014 participants diagnosed with SAPS.[15] In general, the patients included in the trials are representative of patients with SAPS presenting to primary care centres and outpatient clinics (fig 2). Participants were around 49 years (median) and had had symptoms for around two years (median).

Planned evaluation of trials at lower risk of bias

The panel planned to focus on evidence at lower risk of bias. Two trials included placebo surgery and were at low risk of bias.[12 13] At one year after treatment, they showed that surgery did not have meaningful benefit over placebo surgery:

- High certainty evidence for little or no effect on
  - Pain (mean difference −0.26 (95% confidence interval −0.84 to 0.33), MID 1.5)
  - Function (mean difference 2.8 (−1.4 to 6.9), MID 8.3)
  - Health related quality of life (mean difference −0.03 points (−0.11 to 0.06), MID 0.07)
- Moderate certainty evidence for little or no global perceived effect (risk ratio 1.10 (0.94 to 1.30))
- Low certainty evidence for little or no effect on return to work (risk ratio 1.05 (0.89 to 1.23)).

Similar results were seen at six months, two years, and at five year follow-up, with the latter supported by low certainty evidence due to imprecise estimates from unblinded trials.[15]

Planned evaluation of surgery compared with exercise therapy

This analysis compared subacromial decompression surgery (including postoperative exercise therapy) with exercise therapy alone. Six trials reported such comparisons, and all were at high risk of bias due to lack of blinding. Some had imprecise estimates of effect. Compared with exercise therapy, there was no important benefit of surgery on pain, function, quality of life, global perceived effect, and return to work.[15]

About a third (32%) of all participants included in the trials continued to have more than minor symptoms (such as mild to moderate pain) at one year, irrespective of treatment. The average pain scores in the trials at two years were 1.6 to 3.0 units (0-10 scale), reflecting mild to moderate pain.

Harms

Potential harms from surgery were incompletely reported in the trials. The trials were also underpowered to detect rare events. There were around 12 more frozen shoulders per 1000 patients undergoing subacromial decompression surgery, based on the two placebo controlled trials (low certainty evidence).

Because harms data from randomised trials were anticipated to be so limited, the guideline panel requested the systematic review to include observational studies designed to evaluate harms after subacromial decompression surgery.[15] The systematic review assessed 140 publications in full text, of which four reported results from a large prospective cohort study from the United States considered to represent best current evidence on serious harms.[10-22] This registry study investigated 30-day complications resulting in readmission to hospitals after mixed arthroscopic procedures including subacromial decompression surgery from 2006 to 2013.[9 23]

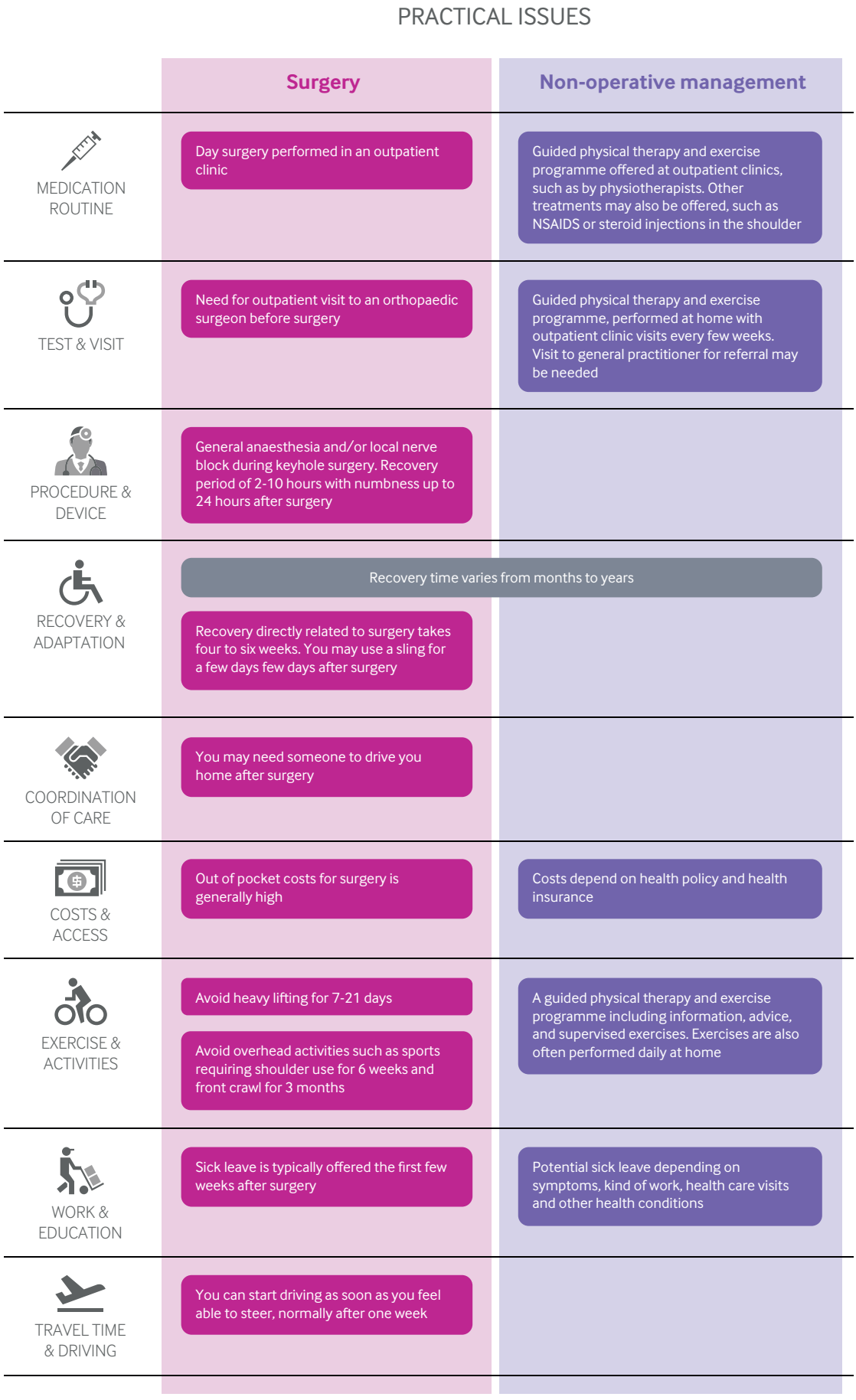


Fig 3| Practical issues for surgery and nonoperative management of subacromial pain syndrome (SAPS)

EDUCATION INTO PRACTICE

- What would be your approach to managing subacromial pain syndrome (SAPS), based on the information you have read in this article?
- How can this article help you explain the new evidence to patients considering surgery for their shoulder pain? How should you respond if patients ask about surgery?
- What would you tell your colleagues about best practice for managing SAPS?

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Four people with lived experience of subacromial pain syndrome and shoulder surgery were full panel members. These panel members identified important outcomes and participated in the teleconferences and email discussions on the evidence and the recommendation. They contributed to the identification of practical issues related to the decision to have surgery and met all authorship criteria for the present article. We thank them for their time and contribution.

The risk of serious harms after mixed shoulder arthroscopic procedures was 0.5% (95% confidence interval 0.4% to 0.7%) during years 2006-11 and 0.6% (0.5% to 0.7%) during 2011-13. Reported harms included events such as major bleeding, deep infections, serious anaesthetic complications, venous thromboembolism, and peripheral nerve injury. The indirectness caused by inclusion of mixed arthroscopic shoulder procedures in the registry study results in moderate certainty evidence for estimated harms.

Understanding the recommendation

The panel concluded that almost all well informed patients would decline surgery and therefore made a strong recommendation against subacromial decompression surgery. The panel was confident that surgery provides no important benefit on pain, function, quality of life, and global perceived effect informed by moderate to high certainty evidence in a one year timeframe. Surgery also comes with burdens and the risk of harm (see main infographic).

Clinicians should not offer patients subacromial decompression surgery unprompted, and clinicians, public healthcare providers, and others should make efforts to educate the public regarding the ineffectiveness of surgery. Although we did not take costs and resources into account beyond direct costs to patients (such as out-of-pocket costs), surgery cannot be cost effective given the lack of important benefit, potential for harm, and associated costs.

Figure 3 includes the practical issues linked to surgery, compared with physical therapy because this was the key comparison in the trials and a relevant treatment option. This would differ for other treatment options such as analgesia or injection.

Uncertainty

Clinicians and patients might question what other therapies could be offered to patients diagnosed with SAPS or rotator cuff disease and whether any therapy is effective. Here we recognise the limitation of our *BMJ* Rapid Recommendations, made to provide guidance on new evidence that might change practice. For guidance on treatment alternatives beyond surgery, we point readers to a clinically focused overview article and to guidelines with a broader scope (table 1).[8]

The whole area of best management of SAPS is uncertain, as reflected in the following brief summary on available treatment options:

- Glucocorticoid injections and NSAIDs may provide moderate to small short term benefits on shoulder pain compared with placebo.[8 24]
- Exercise, manual therapy, and electrotherapies are of uncertain benefit to patients compared with watchful waiting, and guidelines vary in their recommendations.[25 26]
- A holistic approach to care, with appropriate communication including reassurance and education, is likely to benefit patients but is poorly studied.[27]

Key research questions to inform decision makers and future guidelines include:

- What are the best strategies to de-implement inefficient and potentially harmful subacromial decompression surgery for SAPS?
- How can we educate patients and clinicians to understand and adopt evidence, particularly when it goes against accepted beliefs?

Table 2 | New evidence which has emerged after initial publication

Date	New evidence	Citation	Findings	Implications for recommendation(s)
There are currently no updates to the article.				

Updates to this article

Table 2 shows evidence that has emerged since the publication of this article. As new evidence is published, a group will assess the new evidence and make a judgement on the extent it is expected to alter the recommendation.

Competing interests: All authors have completed the *BMJ* Rapid Recommendations interest disclosure form and a detailed, contextualised description of all disclosures is reported in appendix 1 on bmj.com. As with all *BMJ* Rapid Recommendations, the executive team and *The BMJ* judged that no panel member had any financial conflict of interest. Professional and academic interests are minimised as much as possible, while maintaining necessary expertise on the panel to make fully informed decisions.

Funding: The Dutch Orthopaedic Society has provided the MAGIC Foundation with €35 000 to support development of two rapid recommendations for orthopaedic surgery. The society had no role in the guideline development process for this *BMJ* Rapid Recommendation. The recommendation on shoulder surgery will be adapted into an updated recommendation in their guidelines.

Transparency: R Poolman and P O Vandvik affirm that the manuscript is an honest, accurate, and transparent account of the recommendation being reported; that no important aspects of the recommendation have been omitted; and that any discrepancies from the recommendation as planned (and, if relevant, registered) have been explained.

Provenance and peer review: Commissioned; externally peer reviewed

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Guideline Note 172 and 173 Modifications

Question: Should Guideline Notes 172 and 173 have certain entries clarified?

Question source: Several CCOs

Issue: A CCO has reviewed GN172 and GN173 and found numerous instances in which the codes in these guidelines also appear on covered lines, which is causing issues with their claims processing systems. GN172 and GN173 are the guidelines for non-cost effective or non-effective interventions. In several cases, the GN172/GN173 entry has wording added to clarify that the codes are there for certain uses, and the codes appear on covered lines for other uses. However, HERC staff agree with the CCO reviewer that in several cases, the code duplication is confusing or unnecessary and the clarification on coverage could better be handled in alternative ways.

There were also several mistakes found in these guidelines that required correction.

Specific questions/issues:

1) When Yttrium 90 was reviewed and added to the liver cancer line in November 2018, the CPT and HCPCS codes for Y90 were left in GN173 to represent use in cancers other than hepatocellular carcinoma or colorectal cancer metastatic to the liver. Wording was added to the code description to try to make this distinction clear. HERC staff recommend removing the GN173 entry for Y90 and just leave the codes on the liver cancer line. They will not pair with other types of cancer, and this will reduce confusion and issues with claims processing.
2) Continuous blood glucose monitoring was reviewed in August 2017, at which time it was added to line 8 with a guideline. The CPT codes for continuous blood glucose monitoring (CPT 95250-95251) are also used for retrospective professional glucose monitoring, which was found to have limited evidence of clinical utility. This indication was added to GN172, with wording to indicate that it was there for retrospective monitoring. Again, this is confusing for CCOs. There is already a coding specification on line 8 which makes this distinction clear: "CPT 95250 and 95251 are included on this line for services related to real-time continuous glucose monitoring but not retrospective (professional) continuous glucose monitoring." HERC staff recommend removing this entry from GN172.
3) CPT 64568 (Incision for implantation of cranial nerve (eg, vagus nerve) neurostimulator electrode array and pulse generator) is on 2 covered lines (174 GENERALIZED CONVULSIVE OR PARTIAL EPILEPSY WITHOUT MENTION OF IMPAIRMENT OF CONSCIOUSNESS and 440 TRIGEMINAL AND OTHER NERVE DISORDERS) and on line 660. The line 660 entry has wording to reflect that this code is in GN173 for "hypoglossal nerve stimulation for treatment of obstructive sleep apnea." There is a guideline note attached to the sleep apnea line where this restriction can be placed to limit confusion. HERC staff recommend moving the restriction to GN27 and removing from GN173.
4) CPT 81246 mistakenly appears in GN173.
5) CPT 88120 and 88121 (Cytopathology, in situ hybridization (eg, FISH), urinary tract specimen with morphometric analysis, 3-5 molecular probes) appear on line 271 CANCER OF BLADDER AND URETER when they are used for Uravysion testing which is clearly not included on line 271 in GUIDELINE NOTE 148, BIOMARKER TESTS OF CANCER TISSUE: "For bladder cancer, Urovysion testing is included on Line 660." HERC staff recommend removing these CPT codes from line 271.
6) CPT 90869 (Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment; subsequent motor threshold re-determination with delivery and management) was mistakenly

not removed from GN173 when it was reviewed and added to line 7 MAJOR DEPRESSION, RECURRENT; MAJOR DEPRESSION, SINGLE EPISODE, SEVERE with a specific guideline as below.

GUIDELINE NOTE 102, REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION

Line 7

Repetitive transcranial magnetic stimulation (CPT 90867-90868) is covered only after failure of at least two antidepressants.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

7) CPT 95012 (Nitric oxide expired gas determination) was added to line 9 in March 2018, but the entry to GN173 was not removed.

HERC staff recommendations:

1) Remove CPT 88120 and 88121 (Cytopathology, in situ hybridization (eg, FISH), urinary tract specimen with morphometric analysis, 3-5 molecular probes) from line 271 CANCER OF BLADDER AND URETER
2) Modify GN 27 as shown below

GUIDELINE NOTE 27, SLEEP APNEA

Line 203

CPAP is covered initially when all of the following conditions are met:

- 12 week 'trial' period to determine benefit. This period is covered if apnea-hypopnea index (AHI) or respiratory disturbance index (RDI) is greater than or equal to 15 events per hour; or if between 5 and 14 events with additional symptoms including one or more of the following:
  - excessive daytime sleepiness defined as either an Epworth Sleepiness Scale score>10 or daytime sleepiness interfering with ADLs that is not attributable to another modifiable sedating condition (e.g. narcotic dependence), or
  - documented hypertension, or
  - ischemic heart disease, or
  - history of stroke;
- Providers must provide education to patients and caregivers prior to use of CPAP machine to ensure proper use; and
- Positive diagnosis through polysomnogram (PSG) or Home Sleep Test (HST).

CPAP coverage subsequent to the initial 12 weeks is based on documented patient tolerance, compliance, and clinical benefit. Compliance (adherence to therapy) is defined as use of CPAP for at least four hours per night on 70% of the nights during a consecutive 30-day period.

Mandibular advancement devices (oral appliances) are covered for those for whom CPAP fails or is contraindicated.

Surgery for sleep apnea in adults is not included on this line (due to lack of evidence of efficacy). Surgical codes are included on this line only for children who meet criteria according to Guideline Note 118 OBSTRUCTIVE SLEEP APNEA DIAGNOSIS AND TREATMENT FOR CHILDREN.

Hypoglossal nerve stimulation for treatment of obstructive sleep apnea is not included on this line due to insufficient evidence of effectiveness and evidence of harm.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

3) Modify GN 172 as shown below

GUIDELINE NOTE 172, INTERVENTIONS WITH MARGINAL CLINICAL BENEFIT OR LOW COST-EFFECTIVENESS FOR CERTAIN CONDITIONS

Line 500

The following interventions are prioritized on Line 500 CONDITIONS FOR WHICH INTERVENTIONS RESULT IN MARGINAL CLINICAL BENEFIT OR LOW COST-EFFECTIVENESS:

Procedure Code	Intervention Description	Rationale	Last Review
~~95250 95251~~	~~Retrospective (professional) continuous glucose monitoring~~	~~Limited evidence of clinical utility~~	~~August, 2017~~

4) Modify GN173 as shown below

GUIDELINE NOTE 173, INTERVENTIONS THAT ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS FOR CERTAIN CONDITIONS

Line 660

The following Interventions are prioritized on Line 660 CONDITIONS FOR WHICH CERTAIN INTERVENTIONS ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS:

Procedure Code	Intervention Description	Rationale	Last Review
~~64568~~	~~Incision for implantation of cranial nerve (eg, vagus nerve) neurostimulator electrode array and pulse generator for hypoglossal nerve stimulation for treatment of obstructive sleep apnea~~	~~Insufficient evidence of effectiveness and evidence of harm~~	~~May, 2018~~
~~79445~~	~~Radiopharmaceutical therapy, by intra-arterial particulate administration for use in treating cancers other than primary hepatocellular carcinoma or colorectal cancer metastatic to the liver~~	~~No evidence of effectiveness~~	~~March, 2018~~

~~C2616~~ ~~S2095~~	~~Brachytherapy source, non-stranded, yttrium-90, per source in treating cancers other than primary hepatocellular carcinoma or colorectal cancer metastatic to the liver.~~ ~~Transcatheter occlusion or embolization for tumor destruction, percutaneous, any method, using yttrium-90 microspheres, in treating cancers other than primary hepatocellular carcinoma or colorectal cancer metastatic to the liver~~		
81232~~, 81246~~	5-fluorouracil/5-FU and capecitabine drug metabolism	Insufficient evidence of effectiveness	November, 2017
~~90869~~	~~Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment~~	~~No evidence of effectiveness~~	~~December, 2012~~
~~95012~~	~~Nitric oxide expired gas determination~~		~~August 2015~~

Section 7.0

Coverage Guidances

Newer Interventions for Osteoarthritis of the Knee

Draft Coverage Guidance for VbBS/HERC Consideration

March 14, 2019

Oregon Health Authority

Oregon Health & Science University

Center For Evidence-based Policy

Background

- Osteoarthritis treatments aim to reduce symptoms and improve function; most treatments do not modify the natural history or progression of the disease
- Knee osteoarthritis is often treated with multiple therapies:
  - Physical activity
  - Recommendation to lose weight
  - Medications, prescription drugs, and over-the-counter pain relievers
  - Physical therapy
  - Alternative therapies (e.g., massage, acupuncture)
  - Corticosteroid injections
  - Surgery

Background

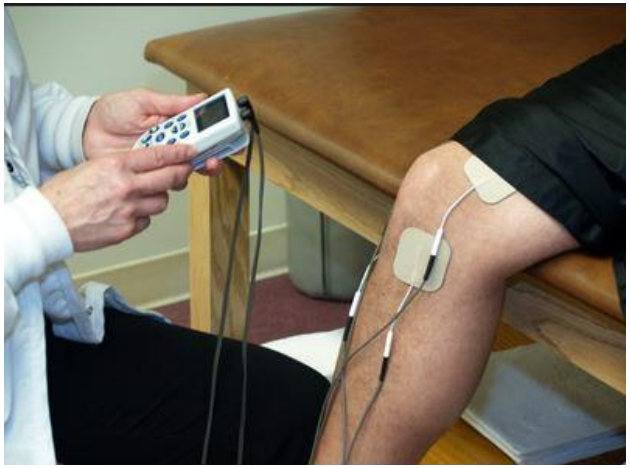
- Common pain scales
  - Visual analog scale (VAS)
    - A straight line with the endpoints defining extreme limits such as “no pain at all” and “pain as bad as it could be”
    - Patients indicate pain intensity on the line between the 2 endpoints
    - Can be a 10-point or 100-point scale
  - Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)
    - Often used to evaluate patients with lower limb osteoarthritis
    - Composite measure that includes pain, stiffness, and functional limitations
    - Scores range from zero to 68

Background

- Whole body vibration
  Placing a person on a vibrating platform to perform exercises

Source: Amazon.com

- Transcutaneous electrical nerve stimulation (TENS)
  Application of electrical current through electrodes placed on the skin for pain control, applied with varying frequencies from low (< 10 Hz) to high (> 50 Hz)


Source: Bethlehem Rehabilitation Specialists

Background

- Glucosamine and chondroitin
  - Glucosamine and chondroitin are produced naturally in the body and are structural components of cartilage
  - Glucosamine and chondroitin are available as dietary supplements
- Intra-articular injections of platelet-rich plasma
  - To prepare platelet-rich plasma, autologous blood is put through a centrifuge, yielding a higher concentration of platelets

Scope Statement

- Populations
  - Adults with osteoarthritis of the knee
- Interventions
  - Whole-body vibration, TENS, glucosamine-chondroitin, platelet-rich plasma
- Comparators
  - Effective nonsurgical care (e.g., oral analgesics, exercise therapy)

Scope Statement

- Critical Outcomes
  - Long-term pain
  - Long-term function
- Important Outcomes
  - Intermediate-term function
  - Intermediate-term pain
  - Harms

Scope Statement

Key Questions

1. What is the comparative effectiveness of newer interventions for the treatment of osteoarthritis of the knees?
2. Does the comparative effectiveness of newer interventions for the treatment of osteoarthritis of the knees vary by:
    a. Patient characteristics (age, gender, socioeconomic status, baseline weight)
    b. Baseline severity
    c. Disease subtype
    d. Comorbidities
    e. Prior treatments
3. What are the harms of newer interventions for the treatment of osteoarthritis of the knees?

Evidence Sources

- Main evidence source:
  AHRQ systematic review – Treatment of Osteoarthritis of the Knee: An Update Review (Newberry et al., 2017)
  - Good-quality systematic review and health technology assessment of selected nonsurgical treatments of knee osteoarthritis
  - For efficacy outcomes, only RCTs were eligible for inclusion
  - For outcomes related to adverse events, prospective observational studies and case reports were included
  - Outcomes: pain, function, and quality of life in the short term (4-12 weeks)

GRADE Table: Whole Body Vibration

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	Insufficient evidence
Long-term function (Critical outcome)	Insufficient evidence
Intermediate-term pain (Important outcome)	No significant difference between exercise programs with whole body vibration and exercise and strength training programs alone SMD -0.20 (95% CI -1.12 to 0.71) ●●○○ (Low confidence, based on 4 RCTs, n = 180)

GRADE Table: Whole Body Vibration

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Intermediate-term function (Important outcome)	Improved in exercise programs with whole body vibration compared to exercise and strength-training programs alone SMD -0.26 (95% CI -0.45 to -0.06) ●●○○ (Low confidence, based on 4 RCTs, n = 180)
Harms (Important outcome)	Adverse events were rare and did not differ significantly between active and control groups ●●○○ (Low confidence, based on 4 studies, n = 180)

Payer Policies: Whole Body Vibration

- Washington State Medicaid Program:
  - No Washington Medicaid policy was identified for whole body vibration
- Medicare:
  - No Medicare National Coverage Determination (NCD) or Local Coverage Determination (LCD) was identified for whole body vibration
- Private Payers:
  - Aetna does not provide coverage for whole body vibration
  - Coverage policies for whole body vibration were not identified for Cigna, Moda, or Regence

Guidelines

- None of the 5 identified guidelines included recommendations on whole body vibration
  - U.S. Department of Veterans Affairs and Department of Defense guideline on nonsurgical management of hip and knee osteoarthritis (VA/DoD, 2014)
  - American Academy of Orthopaedic Surgeons (AAOS) guideline on knee osteoarthritis (Jevsevar, 2013)
  - American College of Rheumatology (ACR) recommendations for osteoarthritis of the hand, hip, and knee (Hochberg et al., 2012). Note: publication of an update to these guidelines is anticipated in 2018 (ACR, 2018)
  - European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) guidelines for knee osteoarthritis (Bruyere et al., 2014)
  - Osteoarthritis Research Society International (OARSI) guidelines on nonsurgical management of knee osteoarthritis (McAlindon et al., 2014)

Discussion: Whole Body Vibration

Values and Preferences

Patients would likely prefer noninvasive interventions. Whole body vibration appears to be popular based on its widespread availability for home purchase, but the physical experience of doing this intervention might not be universally appealing (e.g., for older adults who are unsteady on their feet). We would expect moderate variability in values and preferences.

Resource Allocation

The machines for home use range from $100 to $250 to thousands of dollars. Clinic-based treatments would be low to moderate expense depending on what is charged and the frequency of treatments.

Discussion: Whole Body Vibration

Other Considerations

The improvement in intermediate-term function did not meet the threshold of minimal clinically important difference.

Balance of Benefits and Harms

We have low confidence that whole body vibration improves intermediate-term function but not to a clinically significant degree, and it is similar to exercise and strength-training programs in terms of pain. There appear to be few adverse events.

Discussion: Whole Body Vibration

Rationale

We recommend against coverage because of the low evidence for a lack of clinically significant improvement in outcomes, moderate cost, and moderate variability in values and preferences. It is a strong recommendation because there is no evidence of clinically significant improvement, and there are alternative treatments for this condition. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.

Whole body vibration is not recommended for coverage *(strong recommendation)*.

GRADE Table: TENS

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	Insufficient evidence
Long-term function (Critical outcome)	Insufficient evidence
Intermediate-term pain (Important outcome)	No significant difference between TENS and sham control Pooled estimates not provided ●●○○ (Low confidence, based on 2 RCTs, n = 650)
Intermediate-term function (Important outcome)	No significant difference between TENS and sham control Pooled estimates not provided ●●○○ (Low confidence, based on 2 RCTs, n = 650)
Harms (Important outcome)	Adverse events were rare and did not differ significantly between active and sham control groups ●●○○ (Low confidence, based on 2 studies, n = 650)

Payer Policies: TENS

- Washington State Medicaid Program:
  - TENS is not covered
- Medicare:
  - 2006 NCD: TENS is to be used on a trial basis (1 month) while its effectiveness in modulating pain is monitored
  - 2017 LCD: does not provide coverage for TENS
- Private Payers:
  - Aetna and Moda provide coverage for TENS under certain conditions
  - Cigna covers TENS only for conventional postoperative pain management within 30 days of surgery
  - Regence does not cover TENS

Guidelines: TENS

- ACR and ESCEO include TENS as a treatment option
- AAOS is unable to recommend for or against TENS
- OARSI considers TENS a treatment of uncertain appropriateness
- VA/DoD guidelines do not mention TENS

Discussion: TENS

Values and Preferences

Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. Some patients have preferences for or against nonallopathic treatments, which leads to moderate variability in values and preferences.

Resource Allocation

TENS is generally an inexpensive intervention (although very expensive models are available). If it were effective, its low price would make it very appealing.

Discussion: TENS

Balance of Benefits and Harms

We have low confidence that TENS appears to have no benefits in terms of intermediate-term pain and function, has no harms, and has insufficient evidence for long-term outcomes.

Discussion: TENS

Rationale

Given that there is evidence that TENS is ineffective, even though it is inexpensive and patients may be willing to try it, coverage is not recommended. It is a strong recommendation because available evidence supports inefficacy rather than clinical benefit. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate quality evidence of benefit in order to recommend coverage

TENS is not recommended for coverage *(strong recommendation)*.

GRADE Table: Glucosamine Alone

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	No significant difference between glucosamine and placebo control SMD -0.05 (95% CI -0.22 to 0.12) ●●●○ (Moderate confidence, based on 3 RCTs, n = 1,007)
Long-term function (Critical outcome)	No significant difference between glucosamine and placebo control Pooled estimates not provided ●●○○ (Low confidence, based on 3 RCTs, n = 1,007)

GRADE Table: Glucosamine Alone

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Intermediate-term pain (Important outcome)	Insufficient evidence
Intermediate-term function (Important outcome)	Insufficient evidence
Harms (Important outcome)	Adverse effects were rare and did not differ significantly between active and placebo control groups ●●●◌ (Moderate confidence, based on 6 studies, n = 4,195)

GRADE Table: Chondroitin Alone

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	No significant difference between chondroitin and control Pooled estimates not provided ●●●○ (Moderate confidence, based on 3 RCTs, n = 1,889)
Long-term function (Critical outcome)	No significant difference between chondroitin and control Pooled estimates not provided ●●○○ (Low confidence, based on 2 RCTs, n = 1,267)

GRADE Table: Chondroitin Alone

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Intermediate-term pain (Important outcome)	Improved with chondroitin compared to control Pooled estimates not provided ●●○○ (Low confidence, based on 2 RCTs, n = 974)
Intermediate-term function (Important outcome)	Insufficient evidence
Harms (Important outcome)	Adverse effects were rare and did not differ significantly between active and control groups ●●●○ (Moderate confidence, based on 6 studies, n = 4,195)

GRADE Table: Glucosamine-Chondroitin

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	No significant difference between glucosamine-chondroitin and placebo control SMD -0.73 (95% CI -4.03 to 2.57) ●●●◌ (Moderate confidence, based on 3 RCTs, n = 466)
Long-term function (Critical outcome)	No significant difference between glucosamine-chondroitin and placebo control SMD -0.45 (95% CI -2.75 to 1.84) ●●●◌ (Moderate confidence, based on 3 RCTs, n = 466)

GRADE Table: Glucosamine-Chondroitin

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Intermediate-term pain (Important outcome)	Improved with glucosamine-chondroitin compared to placebo control Pooled estimates not provided ●●○○ (Low confidence, based on 3 RCTs, n = 881)
Intermediate-term function (Important outcome)	Improved with glucosamine-chondroitin compared to placebo control Pooled estimates not provided ●●○○ (Low confidence, based on 3 RCTs, n = 881)
Harms (Important outcome)	Adverse effects were rare and did not differ significantly between active and control groups ●●●○ (Moderate confidence, based on 6 studies, n = 4,195)

Payer Policies

- Washington State Medicaid Program:
  - No policy identified for glucosamine or chondroitin
- Medicare:
  - No national or local coverage determinations were identified for glucosamine or chondroitin
- Private Payers:
  - Glucosamine: Aetna and Cigna do not provide coverage; no policy was found for Moda or Regence
  - Chondroitin: no policy found for Aetna, Cigna, Moda, or Regence

Guidelines

- Glucosamine and chondroitin sulfate are not recommended in the VA/DoD and AAOS guidelines
- ACR conditionally recommends that patients should not use glucosamine and chondroitin sulfate
- OARSI considers glucosamine and chondroitin sulfate as treatments of uncertain appropriateness
- ESCEO recommends the use of glucosamine and chondroitin
  - ESCEO advocates the use of prescription patented crystalline glucosamine sulfate as a first-line slow-acting drug for medium- to long-term control of knee osteoarthritis symptoms

Discussion: Glucosamine, Chondroitin, and in Combination

Values and Preferences

Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. A daily supplement would likely be acceptable to many patients, so we would expect low variability of values and preferences.

Resource Allocation

Glucosamine and chondroitin are inexpensive daily supplements. Their low cost would increase favorability.

Discussion: Glucosamine, Chondroitin, and in Combination

Other Considerations

A separate systematic review with serious limitations raised questions about whether the individual components were more effective than the combination. Individual patient data meta-analysis showed that glucosamine alone has no effect. Because these are over-the-counter supplements, product quality may vary significantly.

Balance of Benefits and Harms

We have low to moderate confidence that glucosamine, chondroitin, or the combination has no effect on long-term pain or function. We have low confidence that chondroitin or the combination with glucosamine may improve intermediate-term pain and function. There appear to be no significant adverse effects.

Discussion: Glucosamine, Chondroitin, and in Combination

Rationale

These are low-cost, apparently safe, and acceptable interventions, although none have a long-term effect. We make a weak recommendation against coverage for chondroitin and glucosamine-chondroitin because evidence supports intermediate-term improvements in pain and function. Evidence suggests glucosamine alone is an ineffective intervention, so we make a strong recommendation against coverage.

Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.

Discussion: Glucosamine, Chondroitin, and in Combination

Glucosamine alone is not recommended for coverage *(strong recommendation)*.

Chondroitin alone is not recommended for coverage *(weak recommendation)*.

Glucosamine-chondroitin is not recommended for coverage *(weak recommendation)*.

GRADE Table: Platelet-Rich Plasma

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Long-term pain (Critical outcome)	Improved with platelet-rich plasma compared to control MD 6.0 on WOMAC pain score (95% CI not provided, $p < 0.05$) ●●○○ (Low confidence, based on 1 RCT, n = 30)
Long-term function (Critical outcome)	Improved with platelet-rich plasma compared to control MD 24.0 on WOMAC function score (95% CI not provided, $p < 0.05$) ●●○○ (Low confidence, based on 1 RCT, n = 30)

GRADE Table: Platelet-Rich Plasma

Outcomes	Estimate of Effect for Outcome/ Confidence in Estimate
Intermediate-term pain (Important outcome)	Improved with platelet-rich plasma compared to controls Pooled estimates not provided ●●○○ (Low confidence, based on 5 RCTs, n = 439)
Intermediate-term function (Important outcome)	Insufficient evidence
Harms (Important outcome)	Adverse events were rare and did not differ significantly between active and control groups ●●○○ (Low confidence, based on 3 studies, n = 215)

Payer Policies: Platelet-Rich Plasma

- Washington State Medicaid Program:
  - 2016 coverage decision: autologous blood/platelet-rich plasma injections are not covered
- Medicare:
  - No NCD or LCD identified for platelet-rich plasma for knee osteoarthritis
- Private Payers:
  - Platelet-rich plasma is not covered by Aetna, Cigna, Moda, or Regence

Guidelines: Platelet-Rich Plasma

- AAOS guidelines are unable to recommend for or against platelet-rich plasma
- No recommendation on platelet-rich plasma in the other 4 guidelines

Discussion: Platelet-Rich Plasma

Values and Preferences

Patients would generally prefer noninvasive interventions. However, a single minimally invasive intervention would likely be appealing if it offered long-term relief and had few risks. We would expect low variability in patient preferences.

Resource Allocation

Platelet-rich plasma injections are relatively expensive, ranging from hundreds to thousands of dollars.

Discussion: Platelet-Rich Plasma

Other Considerations

The one study evaluating long-term pain and function was industry-funded but well designed.

Balance of Benefits and Harms

There is low confidence that platelet-rich plasma injections yield improvements in intermediate-term pain and long-term pain and function with no increased risk of adverse effects.

Discussion: Platelet-Rich Plasma

Rationale

We do not recommend coverage for platelet-rich plasma for osteoarthritis of the knee because the data supporting long-term efficacy are based on a single, small, industry-funded trial, and there is low confidence in intermediate-term improvements in pain (however, this assessment appears to be based on studies with mixed results), and moderate resource allocation. For such a common condition, which is relatively straightforward to research, further research is necessary to support use of platelet-rich plasma prior to covering it. The recommendation is weak because there would likely be low variability in patient values and preferences and further evidence could change the recommendation. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.

Platelet-rich plasma is not recommended for coverage *(weak recommendation)*

Discussion

Whole body vibration is not recommended for coverage (*strong recommendation*).

TENS is not recommended for coverage (*strong recommendation*).

Glucosamine/chondroitin is not recommended for coverage (*weak recommendation*).
Glucosamine alone is not recommended for coverage (*strong recommendation*).
Chondroitin alone is not recommended for coverage (*weak recommendation*).

Platelet-rich plasma is not recommended for coverage (*weak recommendation*)

Health Evidence Review Commission (HERC)

Coverage Guidance: Newer Interventions for Osteoarthritis of the Knee

DRAFT for VbBS/HERC meeting materials 3/14/2019

HERC Coverage Guidance

Whole body vibration

Whole body vibration is not recommended for coverage (*strong recommendation*).

TENS

TENS is not recommended for coverage (*strong recommendation*).

Glucosamine-chondroitin

Glucosamine-chondroitin is not recommended for coverage (*weak recommendation*).

Glucosamine alone is not recommended for coverage (*strong recommendation*).

Chondroitin alone is not recommended for coverage (*weak recommendation*).

Platelet-rich plasma

Platelet-rich plasma is not recommended for coverage (*weak recommendation*)

Note: Definitions for strength of recommendation are in Appendix A. *GRADE Table Element Descriptions*.

Rationales for each recommendation appear below in the GRADE table.

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Rationale for development of coverage guidances and multisector intervention reports

Coverage guidances are developed to inform coverage recommendations for public and private health plans in Oregon as plan administrators seek to improve patients' experience of care, population health, and the cost-effectiveness of health care. In the era of public and private sector health system transformation, reaching these goals requires a focus on maximizing the benefits and minimizing the harms and costs of health interventions.

HERC uses the following principles in selecting topics for its reports to guide public and private payers:

- Represents a significant burden of disease or health problem
- Represents important uncertainty with regard to effectiveness or harms
- Represents important variation or controversy in implementation or practice
- Represents high costs or significant economic impact
- Topic is of high public interest

HERC bases its reports on a review of the best available research applicable to the intervention(s) in question. For coverage guidances, which focus on diagnostic and clinical interventions, evidence is evaluated using an adaptation of the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) methodology. For more information on coverage guidance methodology, see Appendix A.

Multisector interventions can be effective ways to prevent, treat, or manage disease at a population level. In some cases, HERC has reviewed evidence and identified effective interventions, but has not made formal coverage recommendations when these policies are implemented in settings other than traditional health care delivery systems because effectiveness could depend on the environment in which the intervention is implemented.

GRADE Table

HERC develops recommendations by using the concepts of the GRADE system. GRADE is a transparent and structured process for developing and presenting evidence and for performing the steps involved in developing recommendations. The table below lists the elements that determine the strength of a recommendation. HERC reviews the evidence and assesses each element, which in turn is used to develop the recommendations presented in the coverage guidance box. Estimates of effect are derived from the evidence presented in this document. Assessments of confidence are from the published systematic reviews and meta-analyses, where available and judged to be reliable.

In some cases, no systematic reviews or meta-analyses encompass the most current literature. In those cases, HERC may describe the additional evidence or alter the assessments of confidence in light of all available information. Such assessments are informed by clinical epidemiologists from the Center for Evidence-based Policy. Unless otherwise noted, statements regarding resource allocation, values and preferences and other considerations are the assessments of HERC, as informed by the evidence reviewed, public testimony, and subcommittee discussion.

Recommendations for coverage are based on the balance of benefit and harms, resource allocation, values and preferences, and other considerations. See Appendix A for more details about the factors that constitute the GRADE table.

GRADE Table

Should whole body vibration be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	Insufficient evidence	The machines for home use range from $100 to $250 to thousands of dollars. Clinic-based treatments would be low to moderate expense depending on what is charged and the frequency of treatments.	Patients would likely prefer noninvasive interventions. Whole body vibration appears to be popular based on its widespread availability for home purchase, but the physical experience of doing this intervention might not be universally appealing (e.g., for older adults who are unsteady on their feet). We would expect moderate variability in values and preferences.	The improvement in intermediate-term function did not meet the threshold of minimal clinically important difference.
Long-term function *(Critical outcome)*	Insufficient evidence			
Intermediate-term pain *(Important outcome)*	No significant difference between exercise programs with whole body vibration and exercise and strength-training programs alone SMD -0.20 (95% CI -1.12 to 0.71) ●●○○ *(Low confidence, based on 4 RCTs, n = 180)*			
Intermediate-term function *(Important outcome)*	Improved in exercise programs with whole body vibration compared to exercise and strength-training programs alone SMD -0.26 (95% CI -0.45 to -0.06) ●●○○ *(Low confidence, based on 4 RCTs, n = 180)*			
Harms *(Important outcome)*	Adverse events were rare and did not differ significantly between active and control groups ●●○○ *(Low confidence, based on 4 studies, n = 180)*			

Balance of benefits and harms: We have low confidence that whole body vibration improves intermediate-term function but not to a clinically significant degree, and it is similar to exercise and strength-training programs in terms of pain. There appear to be few adverse events.
Rationale: We recommend against coverage because of the low evidence for a lack of clinically significant improvement in outcomes, moderate cost, and moderate variability in values and preferences. It is a strong recommendation because there is no evidence of clinically significant improvement, and there are alternative treatments for this condition. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.

Recommendation: Whole body vibration is not recommended for coverage (*strong recommendation*).

Should transcutaneous electrical nerve stimulation (TENS) be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	Insufficient evidence	TENS is generally an inexpensive intervention (although very expensive models are available). If it were effective, its low price would make it very appealing.	Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. Some patients have preferences for or against nonallopathic treatments, which leads to moderate variability in values and preferences.	
Long-term function *(Critical outcome)*	Insufficient evidence			
Intermediate-term pain *(Important outcome)*	No significant difference between TENS and sham control Pooled estimates not provided ●●○○ *(Low confidence, based on 2 RCTs, n = 650)*			
Intermediate-term function *(Important outcome)*	No significant difference between TENS and sham control Pooled estimates not provided ●●○○ *(Low confidence, based on 2 RCTs, n = 650)*			
Harms *(Important outcome)*	Adverse events were rare and did not differ significantly between active and sham control groups ●●○○ *(Low confidence, based on 2 studies, n = 650*			

Balance of benefits and harms: We have low confidence that TENS appears to have no benefits in terms of intermediate-term pain and function, has no harms, and insufficient evidence for long-term outcomes.

Rationale: Given that there is evidence that TENS is ineffective, even though it is inexpensive and patients may be willing to try it, coverage is not recommended. It is a strong recommendation because available evidence supports inefficacy rather than clinical benefit. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.

Recommendation: TENS is not recommended for coverage for osteoarthritis of the knee (*strong recommendation*).

Should glucosamine-chondroitin be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	No significant difference between glucosamine-chondroitin and placebo control SMD -0.73 (95% CI -4.03 to 2.57) ●●●○ *(Moderate confidence, based on 3 RCTs, n = 466)*	Glucosamine-chondroitin is an inexpensive daily supplement. Its low cost would increase its favorability.	Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. A daily supplement would likely be acceptable to many patients, so we would expect low variability of values and preferences.	A separate systematic review with serious limitations raised questions about whether the individual components were more effective than the combination. Individual patient data meta-analysis showed that glucosamine alone has no effect. Because this is an over-the-counter supplement, product quality may vary significantly.
Long-term function *(Critical outcome)*	No significant difference between glucosamine-chondroitin and placebo control SMD -0.45 (95% CI -2.75 to 1.84) ●●●○ *(Moderate confidence, based on 3 RCTs, n = 466)*			
Intermediate-term pain *(Important outcome)*	Improved with glucosamine-chondroitin compared to placebo control Pooled estimates not provided ●●○○ *(Low confidence, based on 3 RCTs, n = 881)*			
Intermediate-term function *(Important outcome)*	Improved with glucosamine-chondroitin compared to placebo control Pooled estimates not provided ●●○○ *(Low confidence, based on 3 RCTs, n = 881)*			
Harms *(Important outcome)*	Adverse effects were rare and did not differ significantly between active and control groups ●●●○ *(Moderate confidence, based on 6 studies, n = 4,195)*			

Balance of benefits and harms: We have moderate confidence that glucosamine-chondroitin has no effect on long-term pain or function, but have low confidence that it improves intermediate-term pain and function (although the estimates include mixed effect sizes with regards to clinical significance). There appear to be no harms.

Rationale: We recommend against coverage because of moderate-quality evidence of no benefit in long-term pain and function, and it is unclear that the intermediate-term benefit is clinically significant given the mixed effect sizes. The low cost and low variability in patient preferences temper the recommendation against, and the combination of these factors and the possible clinically significant intermediate effect lead to a weak recommendation against coverage. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.
Recommendation: Glucosamine-chondroitin is not recommended for coverage (*weak recommendation*).

Should glucosamine alone be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	No significant difference between glucosamine and placebo control SMD -0.05 (95% CI -0.22 to 0.12) ●●●○ *(Moderate confidence, based on 3 RCTs, n = 1,007)*	Glucosamine alone is a very inexpensive daily supplement. Its low cost would increase its favorability.	Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. A daily supplement would likely be acceptable to many patients, so we would expect low variability of values and preferences.	Because this is an over-the-counter supplement, product quality may vary significantly.
Long-term function *(Critical outcome)*	No significant difference between glucosamine and placebo control Pooled estimates not provided ●●○○ *(Low confidence, based on 3 RCTs, n = 1,007)*			
Intermediate-term pain *(Important outcome)*	Insufficient evidence			
Intermediate-term function *(Important outcome)*	Insufficient evidence			
Harms *(Important outcome)*	Adverse effects were rare and did not differ significantly between active and placebo control groups ●●●○ *(Moderate confidence, based on 6 studies, n = 4,195)*			

Balance of benefits and harms: We have low to moderate confidence that glucosamine alone is ineffective for long-term pain and function; there is insufficient evidence for other outcomes. There appear to be no significant adverse effects.
Rationale: Despite patients' willingness to take a supplement and the supplement being low cost and not harmful, the available evidence suggests glucosamine alone is an ineffective intervention. Therefore, we make a strong recommendation against coverage. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.
Recommendation: Glucosamine alone is not recommended for coverage (*strong recommendation*).

Should chondroitin alone be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	No significant difference between chondroitin and control Pooled estimates not provided ●●●○ *(Moderate confidence, based on 3 RCTs, n = 1,889)*	Chondroitin alone is a very inexpensive daily supplement. Its low cost would increase its favorability.	Patients would prefer simple, inexpensive, noninvasive treatments for knee osteoarthritis that improve pain and function. A daily supplement would likely be acceptable to many patients, so we would expect low variability of values and preferences.	Because this is an over-the-counter supplement, product quality may vary significantly.
Long-term function *(Critical outcome)*	No significant difference between chondroitin and control Pooled estimates not provided ●●○○ *(Low confidence, based on 2 RCTs, n = 1,267)*			
Intermediate-term pain *(Important outcome)*	Improved with chondroitin compared to control Pooled estimates not provided ●●○○ *(Low confidence, based on 2 RCTs, n = 974)*			
Intermediate-term function *(Important outcome)*	Insufficient evidence			
Harms *(Important outcome)*	Adverse effects were rare and did not differ significantly between active and control groups ●●●○ *(Moderate confidence, based on 6 studies, n = 4,195)*			

Balance of benefits and harms: Chondroitin alone has no benefit for long-term pain or function, but we have low confidence that it improves intermediate-term pain. There do not appear to be significant adverse effects.
Rationale: This is a low-cost, apparently safe, and acceptable intervention that improves intermediate-term pain but has no long-term impact. There is less evidence to support it than glucosamine and chondroitin in combination. Therefore, we make a recommendation against coverage; it is a weak recommendation because further evidence could support intermediate-term improvements in pain and function. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.
Recommendation: Chondroitin alone is not recommended for coverage (*weak recommendation*).

Should platelet-rich plasma be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Long-term pain *(Critical outcome)*	Improved with platelet-rich plasma compared to control MD 6.0 on WOMAC pain score (95% CI not provided, p < 0.05) ●●○○ *(Low confidence, based on 1 RCT, n = 30)*	Platelet-rich plasma injections are relatively expensive, ranging from hundreds to thousands of dollars.	Patients would generally prefer noninvasive interventions. However, a single minimally invasive intervention would likely be appealing if it offered long-term relief and had few risks. We would expect low variability in patient preferences.	The one study evaluating long-term pain and function was industry-funded but well designed.
Long-term function *(Critical outcome)*	Improved with platelet-rich plasma compared to control MD 24.0 on WOMAC function score (95% CI not provided, p < 0.05) ●●○○ *(Low confidence, based on 1 RCT, n = 30)*			
Intermediate-term pain *(Important outcome)*	Improved with platelet-rich plasma compared to controls Pooled estimates not provided ●●○○ *(Low confidence, based on 5 RCTs, n = 439)*			
Intermediate-term function *(Important outcome)*	Insufficient evidence			

Should platelet-rich plasma be recommended for coverage for osteoarthritis of the knee?

Outcomes	Estimate of Effect for Outcome/ *Confidence in Estimate*	Resource Allocation	Values and Preferences	Other Considerations
Harms *(Important outcome)*	Adverse events were rare and did not differ significantly between active and control groups ●●○○ *(Low confidence, based on 3 studies, n = 215)*			

Balance of benefits and harms: There is low confidence that platelet-rich plasma injections yield improvements in intermediate-term pain and long-term pain and function with no increased risk of adverse effects.
Rationale: We do not recommend coverage for platelet-rich plasma for osteoarthritis of the knee because the data supporting long-term efficacy are based on a single, small, industry-funded trial and there is low confidence in intermediate-term improvements on pain (however, this assessment appears to be based on studies with mixed results), and also moderate resource allocation. For such a common condition, which is relatively straightforward to research, further research is necessary to support use of platelet-rich plasma prior to covering it. The recommendation is weak because there would likely be low variability in patient values and preferences and further evidence could change the recommendation. Because of the prevalence of this condition and the ease of studying this intervention, we would require at least moderate-quality evidence of benefit in order to recommend coverage.
Recommendation: Platelet-rich plasma is not recommended for coverage (*weak recommendation*)

Note: GRADE table elements are described in Appendix A. A GRADE Evidence Profile is in Appendix B.

Background

Osteoarthritis is a common cause of pain in the limbs, and it frequently occurs in the knees; the risk of osteoarthritis increases with age (Centers for Disease Control and Prevention, 2017). Knee osteoarthritis is the progressive destruction of the cartilage that lines the knee joints, the subchondral bone surfaces, and synovium, which can cause pain, immobility, muscle weakness, and reduction in function (Newberry et al., 2017). Osteoarthritis is usually the result of progressive joint cartilage destruction over time, but can also be caused by trauma, inactivity, excess weight, or disease processes such as rheumatoid arthritis (Newberry et al., 2017). The aging of the population and the increasing prevalence of obesity have led to an increase in the incidence of knee osteoarthritis (Newberry et al., 2017).

Osteoarthritis is usually treated with a combination of therapies, including physical activity, weight loss, medications (prescription drugs and over-the-counter pain relievers), physical therapy, alternative therapies (e.g., massage, acupuncture), corticosteroid injections, and surgery (National Institute of Arthritis and Musculoskeletal and Skin Disease, 2014). Treatments for osteoarthritis aim to reduce symptoms and improve function, and most treatments do not modify the natural history or progression of the disease (Newberry et al., 2017).

The visual analog scale (VAS) is a common way to measure pain, consisting of a straight line with the endpoints defining extreme limits such as “no pain at all” and “pain as bad as it could be.” The patient is asked to indicate the pain intensity on the line between the two endpoints. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) is one of the most commonly used measures to evaluate patients with lower limb osteoarthritis (Walker et al, 2018). WOMAC is a composite measure that includes pain, stiffness, and functional limitations, with scores ranging from zero to 68. Appendix E shows the minimal clinically important difference (MCID) for these scales as defined by a representative sample of studies in a review by Newberry et al. (2017) for the Agency for Healthcare Research and Quality (AHRQ).

Indications

The clinical diagnosis of knee osteoarthritis is usually based on presentation, including gradual onset of weight-bearing knee pain that is exacerbated by use of the joint and tends to worsen over the course of the day (Newberry et al., 2017). Radiographs may be used to diagnose osteoarthritis, but radiographic osteoarthritis scales do not correlate well with symptoms (Newberry et al., 2017).

Technology Description

This coverage guidance reviews four treatments for knee osteoarthritis: whole body vibration, TENS, glucosamine and/or chondroitin, and platelet-rich plasma. Whole body vibration involves placing a person on a vibrating platform (Wang et al., 2016). TENS is the application of electrical current through electrodes placed on the skin for pain control, applied with varying frequencies, from low (< 10 Hz) to high (> 50 Hz) (DeSantana et al., 2008).

Glucosamine is one of the most abundant monosaccharides in the human body and is an amino sugar precursor in the synthesis of glycosylated proteins and lipids. The proposed mechanism of action for glucosamine is based on its supposed anti-inflammatory activity, stimulation of proteoglycan synthesis, and inhibition of proteolytic enzyme synthesis (Simental-Mendia et al., 2018).

In the past decade, there has been growing interest in the use of autologous growth factors for the treatment of knee osteoarthritis, such as intra-articular injections of platelet-rich plasma. To prepare platelet-rich plasma, autologous blood is put through a centrifuge, yielding a higher concentration of platelets than baseline values. The regenerative effect and anti-inflammatory potential of platelet-rich plasma in the tissue healing process have led to investigation of platelet-rich plasma as a treatment for musculoskeletal indications, including osteoarthritis (Shen et al., 2018).

Evidence Review

Whole Body Vibration

Newberry et al., 2017

This is a good-quality systematic review and health technology assessment of selected nonsurgical treatments of osteoarthritis of the knee conducted for the AHRQ. The interventions included in this report are glucosamine and chondroitin, cell-based therapies, exercise therapies, balneotherapy, electrical stimulation, whole body vibration, heat, ultrasound, orthoses, weight loss diets, and home-based or self-management programs. The report updates earlier systematic reviews of the included interventions that had previously been conducted for AHRQ. The authors used standard AHRQ methods for conducting this updated review, and the final searches were conducted in September 2016. For efficacy outcomes, only randomized controlled trials (RCTs) were eligible for inclusion, with the exception that prospective cohort studies of weight loss could also be included. Because of the large amount of data available for glucosamine-chondroitin, small trials (those with fewer than 50 participants per arm) were excluded. For outcomes related to adverse events, prospective observational studies and case reports were included. The report analyzed outcomes of pain, function, and quality of life in the short term (4-12 weeks), medium term (12-26 weeks), and long term (> 26 weeks). Studies with less than four weeks of follow-up were excluded. The authors applied an adapted GRADE methodology to rate the strength of evidence.

The authors identified four RCTs (n = 180) assessing the effects of whole body vibration on medium-term pain and function. Treatment was provided three to five times per week in a 30-minute session. A random effects meta-analysis of these studies found no statistically significant difference in medium-term WOMAC pain scores between whole body vibration and controls (exercise and strength-training programs) (SMD -0.20, 95% CI -1.12 to 0.71, I^2 = 74.2%), and a small but statistically significant improvement in medium-term WOMAC function with whole body vibration (SMD -0.26, 95% CI -0.45 to -0.06, I^2 = 0%). This improvement did not meet the threshold for a minimal clinically important difference (defined as a SMD of -0.37). With regard to adverse effects, the authors observed that there were no significant differences in adverse events between whole body vibration and control groups, although one patient who received whole body vibration reported minor back pain. Overall, the authors concluded that there was low strength of evidence of no effect of whole body vibration on medium-term pain, but low strength of evidence that whole body vibration resulted in small but statistically significant improvements in medium-term function.

Transcutaneous Electrical Nerve Stimulation

Newberry et al., 2017

This review is described above. The authors identified two RCTs (n = 650) that reported on medium-term pain and function. One of the studies compared TENS to sham TENS, and the second study compared TENS plus exercise to sham TENS plus exercise or exercise alone. With respect to medium-term pain and function, neither study showed significant between-group differences for TENS and sham TENS at six months. The latter study showed no statistically significant difference for any outcome between the TENS plus exercise and exercise-alone groups. With regard to adverse events, there was no significant difference between TENS and control groups in adverse events. Overall, the authors concluded that although there was moderate strength of evidence that TENS produced small improvements in short-term pain, there was low-strength evidence of no effect of TENS on short-term function, medium-term pain, and medium-term function.

Glucosamine and Chondroitin

Newberry et al., 2017

This review is described above. For the combination of glucosamine and chondroitin, the authors identified three RCTs (n = 881) that addressed medium-term pain and function. One study comparing glucosamine-chondroitin to celecoxib showed similar clinically significant reductions in pain. The WOMAC function score showed similar clinically significant declines in function in both groups in a six-month period (45.5% for glucosamine chondroitin and 46.4% for celecoxib, RR 1.02, 95% CI 0.86 to 1.21). The second RCT, an open-label study that compared glucosamine-chondroitin plus a low-calorie weight loss diet to diet alone found that the glucosamine-chondroitin group had greater improvement in WOMAC pain scores (MD -1.59, 95% CI -2.31 to -0.87) and VAS pain scores (MD -2.08, 95% CI -2.40 to -1.76). The glucosamine-chondroitin group also had significant improvements in WOMAC function compared to diet alone (MD -3.86, 95% CI -6.16 to -1.56). A third trial comparing glucosamine-chondroitin to a placebo found greater improvement in pain scores in the placebo arm, and no difference in WOMAC function between the two arms.

For the combination of glucosamine and chondroitin, the authors identified three RCTs (n = 466) that addressed long-term pain and function. A random effects meta-analysis of these studies found no statistically significant difference in long-term WOMAC pain scores between glucosamine-chondroitin and controls (SMD -0.73, 95% CI -4.03 to 2.57, I^2 = 96.8%). Similarly, a random effects meta-analysis of these studies found no statistically significant difference in long-term WOMAC function scores between glucosamine-chondroitin and controls (SMD -0.45, 95% CI -2.75 to 1.84, I^2 = 94.5%).

Overall, the authors concluded that there was low strength of evidence that glucosamine-chondroitin improved medium-term pain and function, and moderate strength of evidence that glucosamine-chondroitin had no effect on long-term pain and function.

For glucosamine alone, the authors identified three studies (two RCTs and one post-hoc analysis of two additional RCTs) (n = 1,007) assessing long-term pain. A random effects meta-analysis of these studies found no statistically significant difference in long-term WOMAC pain scores between glucosamine and controls (SMD -0.05, 95% CI -0.22 to 0.12, I^2 = 0%). In two of the three trials, there were no significant differences between glucosamine and placebos in long-term WOMAC function, whereas the third study

found that glucosamine improved function compared to a placebo in a three-year period as measured by the Lequesne index. A pooled analysis of long-term functional outcomes was not performed.

Overall, the authors concluded that there was moderate strength of evidence that glucosamine alone had no effect on long-term pain and low strength of evidence of no effect on long-term function.

For chondroitin alone, two RCTs (n = 974) assessed medium-term pain and function. In the first RCT, both chondroitin dosing regimens (1,200 mg once daily or 400 mg thrice daily), performed better than a placebo with respect to VAS pain scores (MD -7.70, 95% CI -14.43 to -0.97 for once daily dosing and MD -8.30, 95% CI -15.20 to -1.40 for thrice daily dosing). This trial also found improved medium-term function in the chondroitin arm compared to a placebo as measured by the Lequesne index (MD -2.2, 95% CI -3.37 to -1.03 for once daily dosing and MD -1.90, 95% CI -3.11 to -0.69 for thrice daily dosing). The second RCT compared chondroitin to a placebo and reported three categorical pain response outcomes: 40 mm and 60 mm decreases in VAS were achieved more often in the chondroitin group (RR 0.68, 95% CI 0.51 to 0.91 and RR 0.44, 95% CI 0.23 to 0.85, respectively), but there was no statistically significant difference in the achievement of a 40% reduction in WOMAC pain score (RR 0.83, 95% CI 0.68 to 1.02). In this study, there was no difference between chondroitin and a placebo in WOMAC function scores at six months.

For chondroitin alone, three RCTs (n = 1,889) assessed long-term pain and two RCTs (n = 1,267) assessed long-term function. Among the three RCTs assessing WOMAC pain scores at one to two years, none found statistically significant differences between chondroitin and a placebo. Similarly, the two RCTs reporting on WOMAC function scores at one to two years found no statistically significant differences between chondroitin and placebo.

Overall, the authors concluded that there was low strength of evidence that chondroitin alone improved medium-term pain, but insufficient evidence on medium-term function. There was moderate strength evidence of no effect on long-term pain and low strength of evidence of no effect on long-term function.

With regard to adverse effects, the authors observed that serious adverse events were rare in all studies. In particular, glucosamine and chondroitin did not appear to result in greater rates of gastrointestinal side effects or hyperglycemia compared to placebos. However, in one study comparing chondroitin to a placebo, there was a higher rate of withdrawal due to adverse effects in the chondroitin group, but the specific effects were not described.

Simental-Mendia et al., 2018

This is a fair-quality systematic review and meta-analysis of randomized placebo-controlled trials of glucosamine, chondroitin, or their combination for treatment of osteoarthritis of the knee. Studies were eligible for inclusion if they were designed as parallel arm or crossover placebo-controlled randomized trials with a treatment duration of at least one month and that reported on VAS or WOMAC pain scores. Overall, the authors identified 29 trials with a total of 6,120 participants. Compared to the AHRQ review, many of the trials included in this review were older, reported only short-term outcomes, and had fewer than 50 participants in each arm. Additionally, many of the studies had methodological limitations: six failed to report random sequence generation, 13 trials failed to report adequate methods of allocation concealment, and 16 trials had insufficient information about blinding. The meta-analytic results were not stratified by follow-up period and sensitivity analyses were not performed. A random-effects model was used for meta-analysis.

On the basis of six studies with 1,168 patients, glucosamine alone resulted in a small but statistically significant reduction in VAS pain score compared to a placebo (weighted mean difference [WMD] -7.41, 95% CI -14.31 to -0.51, I^2 = 78%). Based on 10 studies with 1,967 patients, glucosamine alone did not result in statistically significant improvement in the WOMAC pain score (WMD -0.76, 95% CI -1.93 to 0.40, I^2 = 91%), or in the WOMAC function score (WMD -1.57, 95% CI -3.81 to 0.68, I^2 = 78%).

On the basis of 16 studies with 3,462 patients, chondroitin alone resulted in a small but statistically significant reduction in VAS pain score compared to a placebo (WMD -8.35, 95% CI -11.84 to -4.85, I^2 = 80%). Based on two studies with 933 patients, chondroitin alone did not result in statistically significant improvement in the WOMAC pain score (WMD -0.13, 95% CI -0.65 to 0.40, I^2 = 0%). Based on one study with 631 patients, chondroitin alone did not result in statistically significant improvement in the WOMAC function score (WMD 0.30, 95% CI -0.02 to 0.62).

On the basis of three studies with 1,051 patients, glucosamine-chondroitin did not result in a statistically significant reduction in VAS pain score compared to a placebo (WMD -0.28, 95% CI -8.87 to 8.32, I^2 = 94%). Based on five studies with 1,236 patients, glucosamine-chondroitin did not result in statistically significant improvement in the WOMAC pain score (WMD 0.84, 95% CI -2.51 to 4.18, I^2 = 99%), or in the WOMAC function score (WMD -0.98, 95% CI -3.61 to 1.65, I^2 = 89%).

Overall, the authors concluded that glucosamine alone or chondroitin alone improved knee pain on the VAS, but did not result in statistically significant improvements in the WOMAC pain or function score. The combination of glucosamine and chondroitin did not result in statistically significant improvements in VAS pain score or the WOMAC pain or function scores. There was a moderate-to-high degree of heterogeneity in most of the analyses.

Runhaar et al., 2017

This is a good-quality individual patient data meta-analysis and subgroup analysis of the effectiveness of glucosamine alone for knee and hip osteoarthritis. The authors identified 21 eligible randomized placebo-controlled studies, but only six shared their data with the authors of this review. None of the six studies that shared data were industry funded. There were 1,625 patients in the included studies, which represented 55% of the total number of participants in the eligible placebo-controlled trials. Overall, two trials contributed to the estimate of short-term effects for knee osteoarthritis, two trials contributed to the estimates of long-term effects for knee osteoarthritis, and one trial contributed estimates of short- and long-term effects for hip osteoarthritis. In the overall meta-analysis, there were no differences in short-term WOMAC pain (SMD -0.03, 95% CI -0.15 to 0.09, I^2 = 0%), or long-term WOMAC pain (SMD -0.04, 95% CI -0.18 to 0.10, I^2 = 14%).

The use of individual patient data meta-analysis allows for subgroup analyses that are not generally possible with a traditional meta-analysis. For this review, the authors examined subgroups defined by baseline pain, body mass index, sex, radiographic arthritis grade, and evidence of inflammation. When considering only the four studies of knee osteoarthritis, there were no statistically significant treatment-subgroup interactions for any reported outcome (short- and long-term pain or function).

Overall, the body of evidence synthesis on the topic of glucosamine-chondroitin has found mixed results with generally high levels of heterogeneity. However, in the analyses that focus on summarizing large placebo-controlled trials and that report outcomes stratified by follow-up period, there may be a small benefit in medium-term pain and function, but no difference in long-term outcomes.

Platelet-Rich Plasma

Newberry et al., 2017

This review is described above. The authors identified five RCTs (n = 439) that assessed the effects of platelet-rich plasma on medium-term pain and two RCTs that assessed medium-term function.

In the first trial, participants were randomized to receive one platelet-rich plasma injection, two platelet-rich plasma injections, or a saline placebo injection. Both platelet-rich plasma groups showed significant reductions in VAS pain score at six months compared to the placebo (MD -2.45, 95% CI -2.92 to -1.98 for single injection and MD -2.07, 95% CI -2.59 to -1.55 for two injections). Similarly, at six months, WOMAC function scores were significantly better in the platelet-rich plasma groups than the placebo group (MD -19.38, 95% CI not reported for single injection and MD -17.06, 95% CI not reported for two injections).

In the second trial, participants were randomized to two injections of platelet-rich plasma separated by four weeks or to no treatment. At six months, there were no statistically significant differences in WOMAC pain scores between the groups (MD -0.96, 95% CI -2.88 to 0.96). Similarly, there was no significant difference between the groups with respect to WOMAC function score at six months.

In the third trial, participants were randomized to one platelet-rich plasma injection, three platelet-rich plasma injections, or saline placebo injection. Both platelet-rich plasma arms showed significant improvement over a placebo in EuroQol VAS pain scores at six months (MD -14.0, 95% CI -16.44 to -11.56 for one injection and MD -23.40, 95% CI -27.14 to -19.66 for three injections).

In the fourth trial, participants were randomized to two injections of platelet-rich plasma or to paracetamol (acetaminophen). At six months, the KOOS pain score was significantly lower in the platelet-rich plasma group than the paracetamol group (MD -6.90, 95% CI -18.29 to -4.49).

In the fifth trial, participants were randomized to three injections of platelet-rich plasma over six weeks or to acetaminophen. At six months, there were no significant differences between the groups with respect to VAS pain scores.

With regard to adverse events, the authors noted that one trial reported no serious adverse events, and the second trial reported that one participant had increased pain and stiffness after the platelet-rich plasma injection.

Overall, the authors concluded that there was low strength of evidence that platelet-rich plasma improved medium-term pain, and insufficient evidence to assess the effects of platelet-rich plasma on medium-term function.

Shen et al., 2017

This is a systematic review and meta-analysis of platelet-rich plasma injections. With the exception of one saline placebo-controlled study discussed separately below, the studies included in this review either used a variety of questionably effective active controls like hyaluronic acid or ozone injections, or were already included in the AHRQ review. In their meta-analysis, the authors did not separately consider studies using active and placebo controls. It is thus regarded as out of scope for this coverage guidance.

Smith, 2016

This is a small, single-center, but good-quality double-blind randomized placebo-controlled trial of autologous platelet-rich plasma injection for knee osteoarthritis. This study was not included in the Newberry review. In this study, 30 patients were randomized (1:1) to undergo three weekly injections with autologous platelet-rich plasma or with an equivalent amount of saline placebo control. Adequate allocation concealment and blinding measures are described. Participants were followed for 12 months with full retention of all study participants. However, the study likely did not enroll enough participants to attain optimal information size when assessing a continuous variable. The study author disclosed that he is a consultant for Arthrex Inc., which also funded the study (Arthrex Inc. makes a device to prepare autologous platelet-rich plasma for injection).

Eligible patients were between ages 30 and 80, had a documented diagnosis of osteoarthritis for at least six weeks, had Kellgren-Lawrence radiographic grade 2-3 knee osteoarthritis, and a WOMAC pain scale score of at least eight. There were multiple exclusions including clinically significant effusions, valgus or varus deformities, viscosupplementation or surgery on the target knee in the prior six months, anticoagulation, and the presence of osteoarthritis in the hips or contralateral knee. The groups were similar at baseline with respect to sex, BMI, and radiographic grade; the platelet-rich plasma group had a slightly older mean age than the saline control group.

At 12 months, the mean WOMAC pain score had improved from 10 to 2 (76% improvement) in the platelet-rich plasma group compared to 11 to 9 (19% improvement) in the saline control group. The mean WOMAC function score had improved from 32 to 7 (78% improvement) in the platelet-rich plasma group compared to 31 to 30 (3% improvement) in the control group. These between-group differences were statistically significant ($p < 0.05$). There were no serious adverse events in either group, although one patient in the placebo group reported increased pain in the target leg.

Evidence Summary

On the basis of a recently updated AHRQ review on selected nonsurgical interventions for osteoarthritis of the knee, there is low strength of evidence that glucosamine-chondroitin and platelet-rich plasma result in small improvements in medium-term pain and function. There was low strength of evidence that TENS has no significant effects on medium-term pain or function. Evidence for the long-term effectiveness of these interventions is generally lacking, although there is moderate strength of evidence that glucosamine-chondroitin has no significant long-term effects on pain or function. A small RCT of platelet-rich plasma that was not included in the AHRQ review concluded that there were statistically significant benefits for pain and function at 12 months; the AHRQ review itself only found low strength of evidence for improvement in medium-term pain. For all interventions, serious adverse events were rare and did not significantly differ between intervention and control groups.

Policy Landscape

Payer Coverage Policies

Medicaid

No Washington Medicaid policy was identified for whole body vibration, glucosamine, or chondroitin. A 2009 coverage decision for Washington Medicaid states that electrical neural stimulation, including

TENS, is a non-covered benefit. A 2016 coverage decision for Washington Medicaid states that autologous blood/platelet-rich plasma injections are not a covered benefit.

Medicare

No Medicare National Coverage Determination (NCD) or Local Coverage Determination (LCD) was identified for whole body vibration, glucosamine, chondroitin, or platelet-rich plasma for knee osteoarthritis.

An NCD for Assessing Patient's Suitability for Electrical Nerve Stimulation Therapy (effective: 6/19/2006) provides coverage for electrical nerve stimulation for assessing a patient's suitability for ongoing treatment with a transcutaneous or an implanted nerve stimulator. TENS is to be used on a trial basis while its effectiveness in modulating pain is monitored by a physician or physical therapist. In most cases, a determination of whether the patient is likely to derive a significant therapeutic benefit from continuous use of TENS can be made within a trial period of one month. LCD L34821 on Transcutaneous Electrical Joint Stimulation Devices (effective: 1/1/2017) does not provide coverage for TENS.

Private Payers

The Aetna policy on complementary and alternative medicine (last review 6/15/2018) does not provide coverage for whole body vibration. Coverage policies for whole body vibration were not identified for Cigna, Moda, or Regence.

Aetna and Moda provide coverage for the use of TENS for knee osteoarthritis under certain conditions. The Cigna policy on electrical stimulation therapy (effective 7/15/2017) covers TENS only for conventional postoperative pain management within 30 days of surgery. The Regence policy on electrical stimulation therapy (effective 8/1/2018) does not provide coverage for electrical stimulation or electromagnetic therapy for the treatment of osteoarthritis or rheumatoid arthritis.

The Aetna policy on electrical stimulation for pain (last review: 3/12/2018) does not provide coverage for acute pain (less than 3 months duration) except for postoperative pain. Aetna considers TENS medically necessary durable medical equipment for certain types of chronic, intractable pain not adequately responsive to other methods of treatment including physical therapy and pharmacotherapy. Aetna considers use of TENS medically necessary initially for a trial period of one to two months. After this trial period, coverage depends on the treatment significantly alleviating pain.

The Moda policy on electrical stimulation therapy (last review: 10/25/2017) covers TENS for chronic pain other than low back pain when all of the following criteria are met:

- Pain must have been present for at least three months
- Other appropriate treatment modalities must have been tried and failed (e.g., physical therapy, pharmacotherapy)
- Patients must have an in-person examination with their provider for the condition prescribed

The Aetna policy on complementary and alternative medicine (last review 6/15/2018) and the Cigna policy on complementary and alternative medicine (effective: 8/15/2018) do not provide coverage for glucosamine, and no policy on glucosamine was found for Moda or Regence. No policy on chondroitin was identified for any of the four private payers: Aetna, Cigna, Moda, or Regence.

Platelet-rich plasma is not covered in policies identified for Aetna (last review 4/3/2018), Cigna (effective: 10/15/2017), Moda (effective 12/6/2017), and Regence (effective: 11/1/2017).

Recommendations from Others

Five guidelines were identified that encompassed knee osteoarthritis or osteoarthritis more broadly:

- U.S. Department of Veterans Affairs (VA) and Department of Defense (DoD) guideline on nonsurgical management of hip and knee osteoarthritis (VA/DoD, 2014)
- American Academy of Orthopaedic Surgeons (AAOS) guideline on knee osteoarthritis (Jevsevar, 2013)
- American College of Rheumatology (ACR) recommendations for osteoarthritis of the hand, hip, and knee (Hochberg et al., 2012). Note: publication of an update to these guidelines is anticipated in 2018 (ACR, 2018)
- European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) guidelines for knee osteoarthritis (Bruyere et al., 2014)
- Osteoarthritis Research Society International (OARSI) guidelines on nonsurgical management of knee osteoarthritis (McAlindon et al., 2014)

None of the identified guidelines included recommendations on whole body vibration.

ACR and ESCEO include TENS as a treatment option. ACR conditionally recommends TENS only when the patient has chronic moderate to severe pain and is a candidate for total knee arthroplasty, but is unwilling to undergo the procedure, has comorbid medical conditions, or is taking concomitant medications that lead to a relative or absolute contraindication to surgery or a decision by the surgeon not to recommend the procedure. AAOS is unable to recommend for or against TENS, and OARSI considers TENS a treatment of uncertain appropriateness. TENS is not mentioned in the VA/DoD guidelines.

Glucosamine and chondroitin sulfate are not recommended in the VA/DoD and AAOS guidelines. ACR conditionally recommends that patients should not use glucosamine and chondroitin sulfate, and OARSI considers glucosamine and chondroitin sulfate as treatments of uncertain appropriateness. ESCEO recommends the use of glucosamine and chondroitin and provides updated recommendations on their use in a 2016 consensus statement (Bruyere et al., 2016). ESCEO advocates the use of prescription patented crystalline glucosamine sulfate as a first-line symptomatic slow-acting drug for medium-to long-term control of knee osteoarthritis symptoms.

Of the five identified guidelines, only AAOS includes a recommendation on platelet-rich plasma, and these guidelines are unable to recommend for or against platelet-rich plasma for knee osteoarthritis. The National Institute for Health and Care Excellence (NICE) published an interventional procedures guidance, which states that the evidence on efficacy is inadequate in quality and that there is no evidence of major safety concerns. Therefore, the guidance concludes that platelet-rich plasma should only be used with special arrangements for clinical governance, consent, and audit or research (NICE, 2014).

Quality Measures

No quality measures were identified when searching the National Quality Measures Clearinghouse for whole body vibration, transcutaneous electrical nerve stimulation, glucosamine, chondroitin, or platelet-rich plasma for osteoarthritis.

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Appendix A. GRADE Table Element Descriptions

Element	Description
Balance of benefits and harms	The larger the difference between the desirable and undesirable effects, the higher the likelihood that a strong recommendation is warranted. An estimate that is not statistically significant or has a confidence interval crossing a predetermined clinical decision threshold will be downgraded.
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 in the absence of likely cost offsets—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
Other considerations	Other considerations include issues about the implementation and operationalization of the technology or intervention in health systems and practices within Oregon.

Strong recommendation

In Favor: The subcommittee concludes that the desirable effects of adherence to a recommendation outweigh the undesirable effects, considering the balance of benefits and harms, resource allocation, values and preferences and other factors.

Against: The subcommittee concludes that the undesirable effects of adherence to a recommendation outweigh the desirable effects, considering the balance of benefits and harms, resource allocation, values and preferences and other factors.

Weak recommendation

In Favor: The subcommittee concludes that the desirable effects of adherence to a recommendation probably outweigh the undesirable effects, considering the balance of benefits and harms, resource allocation, values and preferences and other factors., but further research or additional information could lead to a different conclusion.

Against: The subcommittee concludes that the undesirable effects of adherence to a recommendation probably outweigh the desirable effects, considering the balance of benefits and harms, cost and resource allocation, and values and preferences, but further research or additional information could lead to a different conclusion.

Confidence in estimate rating across studies for the intervention/outcome

Assessment of confidence in estimate includes factors such as risk of bias, precision, directness, consistency and publication bias.

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 estimate of effect: 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 estimate of effect 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 estimate of effect: 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.

Appendix B. GRADE Evidence Profile

Quality Assessment (Confidence in Estimate of Effect) for Whole Body Vibration							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
0							Insufficient
Long-term function							
0							Insufficient
Intermediate-term pain							
4	RCTs	2 Low 1 moderate 1 unclear	Serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
4	RCTs	2 Low 1 moderate 1 unclear	Serious	Not serious	Not serious		Low ●●○○
Harms							
4	RCTs	N/A	N/A	N/A	N/A		Low ●●○○

Quality Assessment (Confidence in Estimate of Effect) for Transcutaneous Electrical Nerve Stimulation							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
0							Insufficient
Long-term function							
0							Insufficient
Intermediate-term pain							
2	RCTs	2 Low	Not serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
2	RCTs	2 Low	Not serious	Not serious	Not serious		Low ●●○○
Harms							
2	RCTs	N/A	N/A	N/A	N/A		Low ●●○○

Quality Assessment (Confidence in Estimate of Effect) for Glucosamine alone							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
3	RCTs	2 low 1 high	Serious	Not serious	Not serious		Low ●●○○
Long-term function							
3	RCTs	2 low 1 high	Serious	Not serious	Not serious		Low ●●○○
Intermediate-term pain							
0							Insufficient
Intermediate-term function							
0							Insufficient
Harms							
6	Mixed	N/A	N/A	N/A	N/A		Moderate ●●●○

Quality Assessment (Confidence in Estimate of Effect) for Glucosamine-Chondroitin							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
3	RCTs	2 low 1 high	Serious	Not serious	Not serious		Moderate ●●●○
Long-term function							
3	RCTs	2 low 1 high	Serious	Not serious	Not serious		Moderate ●●●○
Intermediate-term pain							
3	RCTs	2 low 1 high	Serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
3	RCTs	2 low 1 moderate	Serious	Not serious	Not serious		Low ●●○○
Harms							
6	Mixed	N/A	N/A	N/A	N/A		Moderate ●●●○

Quality Assessment (Confidence in Estimate of Effect) for Chondroitin alone							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
3	RCTs	3 low	Not serious	Not serious	Not serious		Moderate ●●●○
Long-term function							
2	RCTs	2 low	Not serious	Not serious	Not serious		Low ●●○○
Intermediate-term pain							
2	RCTs	2 Low	Not serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
2	RCTs	2 Low	Serious	Not serious	Not serious		Insufficient
Harms							
6	Mixed	N/A	N/A	N/A	N/A		Moderate ●●●○

Quality Assessment (Confidence in Estimate of Effect) for Platelet-Rich Plasma							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
1	RCT	Low	Not serious	Not serious	Serious	Sparse data Industry involvement	Very Low ●○○○
Long-term function							
1	RCT	Low	Not serious	Not serious	Serious	Sparse data Industry involvement	Very Low ●○○○
Intermediate-term pain							
5	RCTs	2 Low 1 moderate 2 high	Not serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
2	RCTs	2 moderate	N/A	Not serious	Not reported		Insufficient
Harms							
3	RCTs	N/A	N/A	N/A	N/A		Low ●●○○

Quality Assessment (Confidence in Estimate of Effect) for Transcutaneous Electrical Nerve Stimulation							
No. of Studies	**Study Design(s)**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other Factors**	**Quality**
Long-term pain							
0							Insufficient
Long-term function							
0							Insufficient
Intermediate-term pain							
2	RCTs	2 Low	Not serious	Not serious	Not serious		Low ●●○○
Intermediate-term function							
2	RCTs	2 Low	Not serious	Not serious	Not serious		Low ●●○○
Harms							
2	RCTs	N/A	N/A	N/A	N/A		Low ●●○○

Appendix C. Methods

Scope Statement

Populations

Adults with osteoarthritis of the knee(s)

Population scoping notes: None

Interventions

Whole body vibration, transcutaneous electrical nerve stimulation, glucosamine-chondroitin, platelet-rich plasma

Intervention exclusions: None

Comparators

Effective nonsurgical care (e.g., oral analgesics, exercise therapy)

Outcomes

Critical: Long-term pain, long-term function

Important: Intermediate-term function, intermediate-term pain, harms

Considered but not selected for the GRADE table: None

Key Questions

KQ1: What is the comparative effectiveness of newer interventions for the treatment of osteoarthritis of the knees?

KQ2: Does the comparative effectiveness of newer interventions for the treatment of osteoarthritis of the knees vary by:

a. Patient characteristics (age, gender, socioeconomic status, baseline weight)
b. Baseline severity
c. Disease subtype
d. Comorbidities
e. Prior treatments

KQ3: What are the harms of newer interventions for the treatment of osteoarthritis of the knees?

Search Strategy

A full search of the core sources was conducted to identify systematic reviews, meta-analyses, and technology assessments that meet the criteria for the scope described above. Searches of core sources were limited to citations published after 2013.

The following core sources were searched:

Agency for Healthcare Research and Quality (AHRQ)

Canadian Agency for Drugs and Technologies in Health (CADTH)

Cochrane Library (Wiley Online Library)
Institute for Clinical and Economic Review (ICER)
Medicaid Evidence-based Decisions Project (MED)
National Institute for Health and Care Excellence (NICE)
Tufts Cost-effectiveness Analysis Registry
Veterans Administration Evidence-based Synthesis Program (ESP)
Washington State Health Technology Assessment Program

A MEDLINE® search was also conducted to identify systematic reviews, meta-analyses, and technology assessments, using the search terms knee osteoarthritis and (whole body vibration or transcutaneous electrical nerve stimulation or glucosamine or chondroitin or platelet-rich plasma). The search was limited to publications in English published since 2013. In addition, a MEDLINE® search was conducted for randomized controlled trials published after the search dates of the most recent systematic review selected for each indication.

Searches for clinical practice guidelines were limited to those published since 2013. A search for relevant clinical practice guidelines was also conducted using MEDLINE® and the following sources:

Australian Government National Health and Medical Research Council (NHMRC)
Canadian Agency for Drugs and Technologies in Health (CADTH)
Centers for Disease Control and Prevention (CDC), Community Preventive Services
National Guidelines Clearinghouse
National Institute for Health and Care Excellence (NICE)
Scottish Intercollegiate Guidelines Network (SIGN)
United States Preventive Services Task Force (USPSTF)
Veterans Administration/Department of Defense (VA/DoD) Clinical Practice Guidelines

Inclusion/Exclusion Criteria

Studies were excluded if they were not published in English; did not address the scope statement; or were study designs other than systematic reviews, meta-analyses, technology assessments, randomized controlled trials, or clinical practice guidelines.

Appendix D. Applicable Codes

CODES	DESCRIPTION	
CPT Codes		**Intervention**
0232T	Injection(s), platelet rich plasma, any site, including image guidance, harvesting and preparation when performed	Platelet rich plasma
97110	Therapeutic procedure, 1 or more areas, each 15 minutes; therapeutic exercises to develop strength and endurance, range of motion and flexibility	Whole body vibration (as physical therapy service)
97112	Therapeutic procedure, 1 or more areas, each 15 minutes; neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities	Whole body vibration (as physical therapy service)
97530	Therapeutic activities, direct (one-on-one) patient contact (use of dynamic activities to improve functional performance), each 15 minutes	Whole body vibration (as physical therapy service)
64550	Application of surface (transcutaneous) neurostimulator (eg, TENS unit)	TENS
97014	Application of a modality to 1 or more areas; electrical stimulation (unattended)	TENS
97032	Application of a modality to 1 or more areas; electrical stimulation (manual), each 15 minutes	TENS
HCPCS Level II Codes		
A9270	Non-covered item or service	Whole body vibration therapy machine
E0720	Transcutaneous electrical nerve stimulation (tens) device, two lead, localized stimulation	TENS
E0730	Transcutaneous electrical nerve stimulation (tens) device, four or more leads, for multiple nerve stimulation	TENS
E0731	Form fitting conductive garment for delivery of tens or nmes (with conductive fibers separated from the patient's skin by layers of fabric)	TENS

Note: Inclusion on this list does not guarantee coverage.

Appendix E. MCID cutoffs developed or used in a representative sample of articles from the AHRQ review (Newberry et al., 2017)

Author, Year	Condition/Intervention/ Follow-up	Cutoffs	Notes
Eberle, 1999 PMID: 10489324	Knee OA hyaluronic acid injection, 6 month follow-up	VAS pain: 8.4mm on a 0-100 mm scale; 0.7 points on Lequesne 24-point scale	Anchor question: complaints reduced
Angst, 2001 PMID:11501727	Knee or hip OA Rehabilitation, 3 month follow-up	WOMAC pain: 0.75 (0-10 scale) WOMAC function and total: 0.67 SF-36 physical function: 3.3 (0-100 scale)	Anchor question: current subjective health much better, slightly better, no change, slightly worse. Converted all 5 WOMAC pain item scores to a 0-10 scale and took the average) Separate values for worsening and improvement
Salaffi, 2004 PMID: 15207508	Chronic musculoskeletal pain (OA knee, OA hip, AS, rheumatoid arthritis, OA hand) Not described	Numeric rating scale: 15% or 1 point decrease for minimum improvement, 33% or 2 points for much better (which they regarded as clinical improvement)	Anchor: Patient global impression of change
Tubach, 2005 PMID:15208174	Knee or hip OA nonsteroidal anti-inflammatory drugs, 4 weeks	Knee: VAS pain: −19.9mm (−40.8%) WOMAC function: −9.1 (−26%)	WOMAC 17 items, 5-point Likert scale, total score normalized to 0-100 scale MCII Initial severity affected MCII but age, disease duration, and sex did not
Wandel, 2010 PMID: 20847017	Knee or hip OA Glucosamine-chondroitin vs. placebo network meta-analysis	MCID 0.37 SD units, corresponding to 0.9cm (0-10cm VAS scale)	Median pooled SD of 2.5cm used to back transform effect sizes to 10cm VAS scale

OMERACT-OARSI responder criteria Pham 2003 PMID: 12858473	Knee or hip OA	Clinical response was defined as either 1. improvement of at least 50% in pain or function and an absolute change of at least 20 points on a scale of 0-100 in the WOMAC pain or function subscores, or 2. at least 2 of the following criteria: improvement of at least 20% and an absolute change greater than 10 points on a scale of 0-100 in the WOMAC pain score, improvement of at least 20% and an absolute change greater than 10 points (on a 0-100 scale) in the WOMAC function score, or improvement of at least 20% in the patient Global Assessment score and an absolute change >10 points on a scale of 0-100	WOMAC pain and function scales converted to single 0-100 scores.

Abbreviations: OA: osteoarthritis; VAS: visual analog scale; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index

CG - Newer Interventions for Osteoarthritis of the Knee

Question: How should the Coverage Guidance *Newer Interventions For Osteoarthritis Of The Knee* be applied to the Prioritized List?

Question source: Evidence-based Guideline Subcommittee

Issue: EbGS approved a draft Coverage Guidance on newer interventions for osteoarthritis of the knee. They recommended noncoverage of all interventions reviewed. There was no public comment received.

Coverage guidance box language:

Whole body vibration

Whole body vibration is not recommended for coverage (*strong recommendation*).

TENS

TENS is not recommended for coverage (*strong recommendation*).

Glucosamine/chondroitin

Glucosamine/chondroitin is not recommended for coverage (*weak recommendation*).

Glucosamine alone is not recommended for coverage (*strong recommendation*).

Chondroitin alone is not recommended for coverage (*weak recommendation*).

Platelet-rich plasma

Platelet-rich plasma is not recommended for coverage (*weak recommendation*)

Current Prioritized List Status

CODES	DESCRIPTION		
CPT Codes		**Intervention**	**Placement**
0232T	Injection(s), platelet rich plasma, any site, including image guidance, harvesting and preparation when performed	Platelet rich plasma	Not on Prioritized List, temporary code
97110	Therapeutic procedure, 1 or more areas, each 15 minutes; therapeutic exercises to develop strength and endurance, range of motion and flexibility	Whole body vibration (as physical therapy service)	On 64 lines

97112	Therapeutic procedure, 1 or more areas, each 15 minutes; neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities	Whole body vibration (as physical therapy service)	On 59 lines
97530	Therapeutic activities, direct (one-on-one) patient contact (use of dynamic activities to improve functional performance), each 15 minutes	Whole body vibration (as physical therapy service)	On 60 lines
64550	Application of surface (transcutaneous) neurostimulator (eg, TENS unit)	TENS	Code deleted in 2019 from CPT
97014	Application of a modality to 1 or more areas; electrical stimulation (unattended)	TENS	660 CONDITIONS FOR WHICH CERTAIN INTERVENTIONS ARE UNPROVEN, HAVE NO CLINICALLY IMPORTANT BENEFIT OR HAVE HARMS THAT OUTWEIGH BENEFITS
97032	Application of a modality to 1 or more areas; electrical stimulation (manual), each 15 minutes	TENS	660
HCPCS Level II Codes			
A9270	Non-covered item or service	Whole body vibration therapy machine	Ancillary
E0720	Transcutaneous electrical nerve stimulation (TENS) device, two lead, localized stimulation	TENS	660
E0730	Transcutaneous electrical nerve stimulation (TENS) device, four or more leads, for multiple nerve stimulation	TENS	660

E0731	Form fitting conductive garment for delivery of TENS or NMES (with conductive fibers separated from the patient's skin by layers of fabric)	TENS	Excluded File

Line: 356

Condition: RHEUMATOID ARTHRITIS, OSTEOARTHRITIS, OSTEOCHONDRITIS DISSECANS, AND ASEPTIC NECROSIS OF BONE (See Coding Specification Below) (See Guideline Notes 6,15,64,65,71,83,114,158)

Treatment: ARTHROPLASTY/RECONSTRUCTION

ICD-10: L40.50-L40.59,M02.10,M02.111-M02.19,M02.30,M02.311-M02.89,M05.611-M05.9, M06.00,M06.011-M06.29,M06.311-M06.39,M06.80,M06.811-M06.9,M08.00,M08.011-M08.48,M08.811-M08.99,M12.50,M12.511-M12.59,M13.871-M13.879,M16.0,M16.10-M16.9,M17.0,M17.10-M17.9,M18.0,M18.10-M18.9,M19.011-M19.93,M20.20-M20.22, M24.151-M24.176,M24.871-M24.872,M24.874-M24.875,M25.00,M25.011-M25.076, M25.151-M25.159,M25.851-M25.859,M25.871-M25.879,M76.20-M76.22,M87.00, M87.011-M87.9,M90.50,M90.511-M90.59,M93.20,M93.211-M93.29

CPT: 20610,20611,20690-20694,23120,23470-23474,23800,23802,24000,24006,24101,24102, 24130,24160,24164,24360-24371,24800,24802,25000,25101-25109,25115-25119,25210-25240,25270,25320,25337,25390-25393,25441-25492,25800,25810-25830,26320,26516-26536,26820-26863,26990-26992,27036,27090,27091,27122-27132,27187,27284,27286, 27358,27437-27454,27457,27580,27620-27626,27641,27700-27704,27870,27871,28090, 28104,28114,28116,28122,28289-28292,28446,28715,28725,28740,28750,29819-29826, 29834-29838,29843-29848,29861-29863,29871-29876,29884-29887,29891,29892,29894-29899,29904-29916,77014,77261-77290,77295,77300,77306,77307,77331-77336,77385-77387,77401-77423,77427,77470,93792,93793,97012,97018,97110-97124,97140,97150, 97161-97168,97530,97535,97542,97760-97763,98966-98969,99051,99060,99070,99078, 99184,99201-99239,99281-99285,99291-99404,99408-99449,99451,99452,99468-99480, 99487-99491,99495-99498,99605-99607

HCPCS: G0068,G0071,G0157-G0161,G0248-G0250,G0396,G0397,G0406-G0408,G0425-G0427, G0463-G0467,G0490,G0508-G0511,G0513,G0514,G2010-G6017,S2118,S2325

Knee arthroscopy (29871, 29873-29876, 29884-29887) is not included on this line when paired with osteoarthritis/osteoarthrosis of the knee (M17.0-M17.9).

Line: 430

Condition: INTERNAL DERANGEMENT OF KNEE AND LIGAMENTOUS DISRUPTIONS OF THE KNEE, RESULTING IN SIGNIFICANT INJURY/IMPAIRMENT (See Guideline Notes 6,64,65,98,104)

Treatment: REPAIR, MEDICAL THERAPY

ICD-10: M22.2X1-M22.3X9,M22.8X1-M22.8X9,M23.011-M23.205,M23.211-M23.305,M23.311-M23.8X9,M24.661-M24.669,M66.261-M66.269,S83.200A-S83.200D,S83.201A-S83.201D, S83.202A-S83.202D,S83.203A-S83.203D,S83.204A-S83.204D,S83.205A-S83.205D, S83.206A-S83.206D,S83.207A-S83.207D,S83.209A-S83.209D,S83.211A-S83.211D, S83.212A-S83.212D,S83.219A-S83.219D,S83.221A-S83.221D,S83.222A-S83.222D, S83.229A-S83.229D,S83.231A-S83.231D,S83.232A-S83.232D,S83.239A-S83.239D, S83.241A-S83.241D,S83.242A-S83.242D,S83.249A-S83.249D,S83.251A-S83.251D, S83.252A-S83.252D,S83.259A-S83.259D,S83.261A-S83.261D,S83.262A-S83.262D, S83.269A-S83.269D,S83.271A-S83.271D,S83.272A-S83.272D,S83.279A-S83.279D, S83.281A-S83.281D,S83.282A-S83.282D,S83.289A-S83.289D,S83.30XA-S83.30XD, S83.31XA-S83.31XD,S83.32XA-S83.32XD,S83.401A-S83.401D,S83.402A-S83.402D, S83.409A-S83.409D,S83.411A-S83.411D,S83.412A-S83.412D,S83.419A-S83.419D,

S83.421A-S83.421D,S83.422A-S83.422D,S83.429A-S83.429D,S83.501A-S83.501D, S83.502A-S83.502D,S83.509A-S83.509D,S83.511A-S83.511D,S83.512A-S83.512D, S83.519A-S83.519D,S83.521A-S83.521D,S83.522A-S83.522D,S83.529A-S83.529D, S83.60XA-S83.60XD,S83.61XA-S83.61XD,S83.62XA-S83.62XD,S83.8X1A-S83.8X1D, S83.8X2A-S83.8X2D,S83.8X9A-S83.8X9D,S83.90XA-S83.90XD,S83.91XA-S83.91XD, S83.92XA-S83.92XD

CPT: 20610,20611,27332-27335,27340,27350,27380,27381,27403-27416,27420-27430,27570, 29345-29445,29505,29530,29705,29871-29889,93792,93793,97012,97110-97124,97140, 97150,97161-97168,97530,97535,97542,97760-97763,98966-98969,99051,99060,99070, 99078,99184,99201-99239,99281-99285,99291-99404,99408-99449,99451,99452,99468-99480,99487-99491,99495-99498,99605-99607

HCPCS: G0068,G0071,G0157-G0161,G0248-G0250,G0396,G0397,G0406-G0408,G0425-G0427, G0463-G0467,G0490,G0508-G0511,G0513,G0514,G2010-G2012

Line: 461

Condition: OSTEOARTHRITIS AND ALLIED DISORDERS (See Guideline Notes 6,64,65,92,104)

Treatment: MEDICAL THERAPY, INJECTIONS

ICD-10: M12.10,M12.111-M12.19,M12.40,M12.411-M12.59,M13.80,M13.811-M13.89,M15.0-M15.9,M16.0,M16.10-M16.9,M17.0,M17.10-M17.9,M18.0,M18.10-M18.9,M19.011-M19.93,M20.20-M20.22,M24.171-M24.176,M24.671-M24.673,M24.871-M24.872, M24.874-M24.875,M25.871-M25.879

CPT: 11042,11045,20600-20611,25000,29075,93792,93793,96150-96155,97012,97018,97110-97124,97140,97150,97161-97168,97530,97535,97542,97760-97763,97810-98942,98966-98969,99051,99060,99070,99078,99184,99201-99239,99281-99285,99291-99404,99408-99449,99451,99452,99468-99480,99487-99491,99495-99498,99605-99607

HCPCS: G0068,G0071,G0157-G0161,G0248-G0250,G0396,G0397,G0406-G0408,G0425-G0427, G0463-G0467,G0490,G0508-G0511,G0513,G0514,G2010-G2012

GUIDELINE NOTE 104, VISCOSUPPLEMENTATION OF THE KNEE

Lines 430,461

CPT 20610 and 20611 are included on these lines only for interventions other than viscosupplementation for osteoarthritis of the knee.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

HERC Staff Summary

All the interventions reviewed were recommended for noncoverage. There are not specific usable CPT/HCPCS codes to indicate noncoverage for whole body vibration, glucosamine/chondroitin, or platelet rich plasma (temporary code only). Therefore, a guideline is necessary to clarify intent.

HERC Staff Recommendations:

1) **Modify guideline note 104 as follows**

GUIDELINE NOTE 104, ~~VISCOSUPPLEMENTATION~~ NEWER INTERVENTIONS FOR OSTEOARTHRITIS OF THE KNEE

Lines 430,461

The following treatments are not included on this line for osteoarthritis of the knee:

- Whole body vibration
- Glucosamine/chondroitin (alone, or in combination)
- Platelet rich plasma
- Viscosupplementation

CPT 20610 and 20611 are included on these lines only for interventions other than viscosupplementation for osteoarthritis of the knee.

The development of this guideline note was informed by a HERC coverage guidance. See https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Evidence-based-Reports.aspx.

2) **Advise HSD to move A9270 Non-covered item or service from Ancillary File to Excluded File**

HERC Coverage Guidance: Newer Interventions for Osteoarthritis of the Knee
Disposition of Public Comments

Table of Contents

Commenters

Identification	Stakeholder
	No comments submitted