



HCUP Edit Check #	Data Element	Criteria	Action	# Affected
EDX01	Principal Diagnosis	Missing	For tabulation	-NA-
EDX02	Diagnosis	Invalid	Set diagnosis to missing	0
EDX03	Diagnosis	Inconsistent with sex <sup>a</sup>	Set diagnosis to missing Set Sex to missing	3
EDX04	Principal Diagnosis/ DRG	Principle Diagnosis invalid as discharge diagnosis (DRG=469)	Set Dx to missing	0
EPR02	Procedure	Invalid	Set procedure to missing	0
EPR03	Procedure	Inconsistent with sex <sup>b</sup>	Set procedure to missing Set sex to missing	9
EDXPR01	Diagnosis/ Procedure	Both neonatal and maternal diagnoses/procedures in discharge record	For tabulation	-NA-
EDXPR02	Procedure/ DRG	Procedure unrelated to principle diagnosis (DRG=468, 476, or 477) <sup>c</sup>	For tabulation	-NA-
EDXPR03	Un-groupable	DRG=470	For tabulation	-NA-
EAGE01	Date of Birth	Previous to 1881 <sup>d</sup> or missing	For tabulation	-NA-
EAGE02	Date of Birth	After admission date	Set DOB to missing Set Age to missing	0
EAGE03	Age in years	Greater than 124	Set Age to missing	0
EAGE04	Age in years	Greater than zero for neonatal diagnosis <sup>e</sup>	Set Dx to missing	0
EAGE05	Age in years	Less than 10 or greater than 55 for maternal diagnosis and procedures <sup>f</sup>	Set Dx/Procedure to missing	3
ELOS01	Admission Date	Missing	For tabulation	-NA-
ELOS02	Discharge Date	Missing	For tabulation	-NA-
ELOS03	Admission Date	Admission Date after Discharge Date	Set Admission Date and LOS to missing	0
ELOS04	Length of Stay	Greater than 365 days	Set LOS to missing	0
EPRDAY01	Procedure Date	Not during stay (more than 4 days prior to admit date or more than 3 days after discharge date)	Set Procedure Date to missing	2
ETCH01	Total charges	Less than \$25	Set total charge to missing	0
ETCH02	Total charges	More than \$1,000,000 <sup>g</sup>	-Not performed-	-NA-

(a) See below for list of female and male procedures

(b) See below for list of female and male diagnoses

(c) DRG 468-Extensive OR procedure unrelated to principle diagnosis. DRG 476-Prostatic OR procedure unrelated to principle diagnosis. DRG 477-Non-extensive OR procedure unrelated to principle diagnosis

(d) Based on HCUP's maximum age of 124 years

(e) See below for list of neonatal diagnoses

(f) See below for list of maternal diagnoses and procedures

(g) Upon inspection, all 17 charges over \$1 million appeared to be legitimate, so no edits were performed

Diagnoses and procedures are defined by HCUP as follows: <sup>3</sup>

#### Female Diagnoses and Procedures

Diagnoses - 01660 to 01676, 05411 to 05412, 09815 to 09817, 09835 to 09837, 1121, 13101, 1740 to 1749, 179 to 1849, 1986, 2180 to 2219, 2331 to 2333, 2360 to 2363, 2560 to 2569, 30273, 30276, 30651 to 30652, 4566, 6115 to 6116, 6140 to 677, 71630 to 71639, 7520 to 75249, 7923, 7950, 79500-79509\*, 7965, 8674 to 8675, 8784 to 8787, 90255 to 90256, 90281 to 90282, 9391 to 9392, 9474, 99632, V074, V1040 to V1044, V131, V132\*, V220 to V2501, V251, V253, V2541 to V2543, V255, V261, V2651, V270 to V289, V4551-V4552, V4981, V5042, V524, V6701, V723 to V724, V762, V7646-V7647, V8402\*. V8404\*

Procedures - 6501 to 7599, 8781 to 8789, 8846, 8878, 8926, 9141 to 9149, 9217, 9614 to 9618, 9644, 9724, 9726, 9771 to 9775, 9816 to 9817, 9823, 9998

#### Male Diagnoses and Procedures

Diagnoses - 01640 to 01656, 05413, 0720, 09812 to 09814, 09832 to 09834, 13103, 1750 to 1759, 185 to 1879, 2144, 2220 to 2229, 2334 to 2336, 2364 to 2366, 2570 to 2579, 30274 to 30275, 4564, 600 to 6089, 75251 to 75252; 75263 to 75269, 7587, 78832, 79093, 7922, 8780 to 8783, 9393, V1045 to V1049, V1361, V2652, V502, V7644-V7645, V8403\*

Procedures - 600 to 6499, 8791 to 8799, 9824, 9994 to 9996.

#### Maternal Diagnoses and Procedures

Diagnoses - 630 to 677; 7965; V220 to V242; V270 to V279; V2381 to V2389  
Procedures - 720 to 7599

#### Neonatal Diagnoses

27701; 7620 to 7706; 7708 to 7785; 7787 to 7799; V290-V299; and V300-V392

\*Not included on HCUP edit check specifications, but included as new ICD-9-CM codes designated as the specified type of diagnosis/procedure by current ICD-9-CM reference guide.

**Exclusions.** Discharge records meeting the following criteria were excluded from analysis:

- x From hospitals located outside the State of Oregon
- x Zero or missing charges, with the exception of Kaiser hospitals, which do not report charge data.<sup>4</sup>
- x Missing discharge date
- x Missing sex code

## **2) APR-DRG Calculations**

3M's All-Patient Refined Diagnosis-Related Groups (APR-DRG) software calculates the severity and risk of mortality scores integrated into the risk-adjustment methods used in the AHRQ IQI calculations. APR-DRG's provide greater comparability between patient populations by adjusting for patient severity and risk of mortality. While no risk-adjustment method is perfect, APR-DRG is widely used and accepted by hospitals,

<sup>3</sup> Agency for Health Research and Quality, HCUP Quality Control Procedures; 05/22/03.  
<http://www.hcup-us.ahrq.gov/db/quality.pdf> <accessed 05.20.2005>

<sup>4</sup> Discharge records with zero or blank charges, or missing discharge date were excluded in order to remove duplicate and/or invalid records. Due to the annual nature of the data set, there were no records with missing discharge date.

has been used for high-profile hospital-rating projects, and undergoes continuing validation by the large body of researchers who use the tool.

APR-DRG version 20.0 was available at the time this report was produced, but AHRQ's IQI software was developed based on APR-DRG version 15.0. Therefore, APR-DRG version 15.0 was used for this report.

### 3) Standardization of Data Format and Coding

The AHRQ IQI Software is based on data with standard formats and coding established for the H-CUP project. Therefore, some fields and codes are included in the specifications but not used by the IQI software. These standard formats and codes, in addition to Oregon-specific issues, are described in the following table.<sup>5</sup>

Variable Name	Description	Format	Codes	Oregon-Specific Data
KEY	Unique case identifier	Numeric	-none-	
AGE	Age in years at admission	Numeric	-none-	
AGEDAY	Age in days (for AGE<1)	Numeric	-none-	
RACE	Race of patient	Numeric	-null-	Not available [dummy variable]
SEX	Sex of patient	Numeric	1=Male 2=Female	
PAY1	Expected primary payer	Numeric	1=Medicare 2=Medicaid 3=Private (incl HMO) 4=Self-Pay 5=No charge 6=Other	See below for mapping to AHRQ codes
HOSPTCO	Geographic area of hospital <sup>a</sup>	Numeric	County FIPS Code	
HOSPID	Unique hospital identifier	Numeric	-available upon request-	CompData hospital identifier
DISP	Disposition of patient	Numeric	1=Routine 2=Short Term Hospital 3=Skilled Nursing Facility 4=Intermediate Care 5=Another type of facility 6=Home health care 7=Against medical advice 20=Died in hospital	See below for mapping to AHRQ codes
ATYPE	Admission type [not used by IQI program]	Numeric	1=Emergency 2=Urgent 3=Elective 4=Newborn 5=Trauma Center 6=Other	See below for mapping to AHRQ codes

<sup>5</sup> Adapted from AHRQ IQI documentation, with additions regarding Oregon-specific coding.

Variable Name	Description	Format	Codes	Oregon-Specific Data
ASOURCE	Admission source	Numeric	1=ER 2=Another hospital 3=Another facility (incl LTC) 4=Court/law enforcement 5=Routine/birth/other	See below for mapping to AHRQ codes
LOS	Length of stay [not used by IQI program]	Numeric	-none-	
APR_DRG	APR-DRG category <sup>b</sup>	Numeric	APR-DRG from 3M Software	
SEVERITY	APR-DRG severity score <sup>b</sup>	Numeric	1=minor 2=moderate 3=major 4=extreme	
RISKMORT	APR-DRG risk of mortality score <sup>b</sup>	Numeric	1=minor 2=moderate 3=major 4=extreme	
DRG	Diagnosis Related Group	Numeric	DRG code	
MDC	Major Diagnostic Category	Numeric	MDC code	
DX1-DX9	ICD-9-CM diagnosis codes <sup>d</sup>	String; Length 5	ICD-9-CM diagnosis codes	
NDX	Count of diagnoses	Numeric	-none-	[calculated variable]
PR1-PR6	ICD-9-CM procedure <sup>d</sup>	String; Length 4	ICD-9-CM procedure codes	
NPR	Count of procedures	Numeric	-none-	[calculated variable]
PRDAY1-PRDAY6	Days from admission to procedure	Numeric	-none-	[calculated variable]
YEAR	Year of discharge <sup>e</sup>	Numeric	-none-	[calculated variable]
DQTR	Quarter of discharge <sup>e</sup>	Numeric	-none-	[calculated variable]

- (a) Geographic area can be defined based on hospital location or patient residence; OHPR defined based on hospital location.
- (b) 3M APR-DRG Core Grouper, Version 15.0
- (c) IQI software accommodates up to thirty diagnosis codes; nine diagnosis codes are provided in Oregon's Inpatient Data.
- (d) IQI software accommodates up to thirty procedure codes; six diagnosis codes are provided in Oregon's Inpatient Data.
- (e) Year and quarter of discharge was added to the AHRQ IQI data to accommodate changes in coding guidelines for ICD-9-CM diagnosis code 436 (acute but ill-defined cerebrovascular disease) effective 9/30/2004; prior to 9/30/2004, this code was included in the IQI 17 (stroke mortality) denominators, but should not be after 9/30/2004.

Some variables required mapping of Oregon-specific codes into the coding scheme specified by AHRQ. Mapping was performed as follows:

### Primary Payer<sup>a</sup>

Oregon Payer	AHRQ IQI Category
Medicare	Medicare
Medicaid	Medicaid
Title V	Medicaid
HMO/Oregon Health Plan (Medicaid)	Medicaid
HMO/Managed Care	Private
Commercial Insurance	Private
Blue Cross/Blue Shield	Private
Kaiser Permanente	Private
PPO	Private
Self-Insured	Private
Self Pay	Self-pay
Medically Indigent/Free Research	No Charge
CHAMPUS	Other
Managed Assistance	Other
Other	Other
Workers Compensation	Other
Division Of Health Services	Other
County Or State	Other

(a) Used for stratification purposes only. Medicare, Medicaid, Private, and Self-Pay are used directly in the IQI software; all others are mapped to "Other"

### Discharge Status<sup>a</sup>

Oregon Discharge Status	AHRQ IQI Category
Routine discharge (to home or self care)	Routine
Still patient - no longer covered by Medicaid	Routine
Discharged - no longer covered by Medicaid	Routine
Still patient or expected to return for outpatient services	Routine
Expired at home (Medicare claims for hospice care)	Routine
Expired in medical facility (Medicare claims for hospice care)	Routine
Expired - place unknown (Medicare claims for hospice care)	Routine
Admitted as an inpatient to this hospital (Medicare only)	Short term
Discharge/transferred to another short-term hospital	Short-term
Discharge/transferred to skilled nursing facility (SNF)	SNF
Discharge/transferred to intermediate care facility (ICF)	Intermediate Care
Discharge/transferred to another type institution	Another type
Discharged – transferred to another category of service	Another type
Hospice - home	Another type
Discharge/transfer/ref to inst for outpatient services by discharge plan	Another type
Discharge/trans to nursing facility certified under Medicaid – not Medicare	Another type
Discharge/transfer to long-term care hospital	Another type
Discharge/transfer to rehab facility or hospital unit	Another type
Discharge/transfer within inst to hosp based Medicare swing bed	Another type
Hospice – medical facility	Another type

<b>Oregon Discharge Status</b>	<b>AHRQ IQI Category</b>
Discharge/transfer /ref to another inst for outpatient services by discharge plan	Another type
Discharge/transferred to home health care service	Home health
Discharge/transferred to home under care of a home IV provider	Home health
Left against medical advice	Against med advice
Expired (or did not recover-Christian Scientist patient)	Died in hospital
Expired - not covered by Medicaid on date of death <sup>b</sup>	Died in hospital
Missing/invalid/unknown	[blank]

(a) Used to identify transfers to another short-term hospital and patients to died in the hospital; only "died in hospital" and "short-term" are used directly by the IQI software.

(b) One hospital had 9 discharges with this discharge code; work is in progress to determine the most appropriate mapping for this code.

### **Admission Type<sup>a</sup>**

<b>Oregon Admission Type</b>	<b>AHRQ IQI Category</b>
Emergency	Emergency
Urgent	Urgent
Elective	Elective
Newborn	Newborn
Information Not Available	[Blank]
Home Health	Other
Others	Other

(a) Not used by the IQI program

### **Admission Source<sup>a</sup>**

<b>Oregon Admission Source</b>	<b>AHRQ IQI Category</b>
Transfer From A Skilled Nursing Facility	Another facility
Transfer From Another Health Care Facility	Another facility
Transfer From A Hospital	Another hospital
Court/Law Enforcement	Court/Law enforcement
Emergency Room	ER
Physician Referral	Routine/birth/other
Clinic Referral	Routine/birth/other
HMO Referral	Routine/birth/other
Normal Delivery	Routine/birth/other
Premature Delivery	Routine/birth/other
Sick Baby	Routine/birth/other
Extramural Birth	Routine/birth/other
INFORMATION NOT AVAILABLE (Code 19)	[blank]
INFORMATION NOT AVAILABLE (Code 09)	[blank]

(a) Not used by the IQI program

#### 4) Calculation of Inpatient Quality Indicators

Five SPSS programs collectively generate volumes as well as raw, risk-adjusted, and smoothed mortality and utilization rates.

The IQI programs provide some flexibility and require specification of a few parameters. Required parameters in the programs are specified in the following table. Please refer to the AHRQ Technical Documentation for a detailed description of the definition and purpose of each parameter.

<b>Program</b>	<b>Parameter Specification</b>	<b>Notes</b>
IQISPS1.sps	MSALEVL=No	Specifies definition of geographic area: Yes specifies MSA for urban areas and county for rural areas; No specifies county for urban and rural areas
IQISPS1.sps	!MAXDX=9	Specifies a maximum of 9 diagnosis codes
IQISPS1.sps	!MAXPR=6	Specifies a maximum of 6 procedure codes
IQISPS1.sps	!YEARQTR='yes'	Indicates that the program should incorporate the year/quarter field in the treatment of ICD-9-CM code 436.
IQISPS2.sps	!STRLEVS= '0 16'	Specifies statewide and provider-specific stratification levels
IQISPS3.sps	!STRLEVS= '0 16'	Specifies statewide and provider-specific stratification levels
IQISPS3.sps	!apr=APR_DRG	Indicates that the APR-DRG code, risk of mortality, and severity of illness fields are available.
IQISPS3.sps	!SEVER=SEVERITY	Specifies the field to that contains the APR-DRG severity of illness score
IQISPS3.sps	!MORT=RISKMORT	Specifies the field to that contains the APR-DRG risk of mortality score