NATIONAL QUALITY FORUM

Measure Evaluation 4.1
December 2009

This form contains the measure information submitted by stewards. Blank fields indicate no information was provided. Attachments also may have been submitted and are provided to reviewers. The subcriteria and most of the footnotes from the evaluation criteria are provided in Word comments within the form and will appear if your cursor is over the highlighted area. Hyperlinks to the evaluation criteria and ratings are provided in each section.

TAP/Workgroup (if utilized)**:** Complete all yellow highlighted areas of the form. Evaluate the extent to which each subcriterion is met. Based on your evaluation, summarize the strengths and weaknesses in each section.

Note: *If there is no TAP or workgroup, the SC also evaluates the subcriteria (yellow highlighted areas).*

Steering Committee: Complete all pink highlighted areas of the form. Review the workgroup/TAP assessment of the subcriteria, noting any areas of disagreement; then evaluate the extent to which each major criterion is met; and finally, indicate your recommendation for the endorsement. Provide the rationale for your ratings.

Evaluation ratings of the extent to which the criteria are met
C = Completely (unquestionably demonstrated to meet the criterion)
P = Partially (demonstrated to partially meet the criterion)
M = Minimally (addressed BUT demonstrated to only minimally meet the criterion)
N = Not at all (NOT addressed; OR incorrectly addressed; OR demonstrated to NOT meet the criterion)
NA = Not applicable (only an option for a few subcriteria as indicated)

(for NQF staff use) **NQF Review #:** 0364 **NQF Project:** Surgery Endorsement Maintenance 2010
MEASURE DESCRIPTIVE INFORMATION
De.1 **Measure Title:** Incidental Appendectomy in the Elderly Rate (IQI 24)
De.2 **Brief description of measure:** Percent of elderly cases with intra-abdominal procedure with an incidental appendectomy.
1.1-2 **Type of Measure:** Process De.3 **If included in a composite or paired with another measure, please identify composite or paired measure** Not applicable
De.4 **National Priority Partners Priority Area:** Population health, Safety, Overuse De.5 **IOM Quality Domain**: Effectiveness, Efficiency, Safety De.6 **Consumer Care Need:** Getting better

CONDITIONS FOR CONSIDERATION BY NQF	
Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards:	**NQF Staff**
A. The measure is in the public domain or an intellectual property (measure steward agreement) is signed. *Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.* A.1 **Do you attest that the measure steward holds intellectual property rights to the measure and the right to use aspects of the measure owned by another entity (e.g., risk model, code set)?** Yes A.2 **Indicate if Proprietary Measure** (*as defined in measure steward agreement*)**:** A.3 **Measure Steward Agreement:** Government entity and in the public domain - no agreement necessary A.4 **Measure Steward Agreement attached:**	**A** Y☒ N☐
B. The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least	**B** Y☒

every 3 years. Yes, information provided in contact section	N☐
C. The intended use of the measure includes both public reporting and quality improvement. ►**Purpose:** Public reporting, Internal quality improvement	**C** Y☒ N☐
D. The requested measure submission information is complete. Generally, measures should be fully developed and tested so that all the evaluation criteria have been addressed and information needed to evaluate the measure is provided. Measures that have not been tested are only potentially eligible for a time-limited endorsement and in that case, measure owners must verify that testing will be completed within 12 months of endorsement. D.1**Testing:** Yes, fully developed and tested D.2 **Have NQF-endorsed measures been reviewed to identify if there are similar or related measures?** Yes	**D** Y☒ N☐
(for NQF staff use) **Have all conditions for consideration been met?** **Staff Notes to Steward** (*if submission returned*)**:**	**Met** Y☒ N☐
Staff Notes to Reviewers (*issues or questions regarding any criteria*)**:** 1c.8 Citations for Evidence: Updated citations will be presented at the in-person meeting.	
Staff Reviewer Name(s): Alexis Forman	

TAP/Workgroup Reviewer Name:	
Steering Committee Reviewer Name:	
1. IMPORTANCE TO MEASURE AND REPORT	
Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in or overall poor performance. ***Measures must be judged to be important to measure and report*** *in order to be evaluated against the remaining criteria.* (evaluation criteria) **1a. High Impact**	Eval Rating
(for NQF staff use) **Specific NPP goal**: Not related to a specific NPP goal	
1a.1 **Demonstrated High Impact Aspect of Healthcare:** Patient/societal consequences of poor quality 1a.2 1a.3 **Summary of Evidence of High Impact:** Andrew and Roty showed that incidental appendectomy was associated with a higher risk of wound infection (5.9% versus 0.9%) among cholecystectomy patients who were at least 50 years of age, but not among younger patients.189 Based on this finding and the findings of Warren and colleagues, the risk of incidental appendectomy is believed to outweigh the benefits for elderly patients. [1] [2] [3] [4] [5] 1a.4 **Citations for Evidence of High Impact:** Updated citations will be presented in the May Steering Committee meeting [1] Warren JL, Penberthy LT, Addiss DG, et al. Appendectomy incidental to cholecystectomy among elderly Medicare beneficiaries. Surg Gynecol Obstet 1993;177(3):288-94. [2] Fisher KS, Ross DS. Guidelines for therapeutic decision in incidental appendectomy. Surg Gynecol Obstet 1990;171(1):95-8. [3] Synder TE, Selanders JR. Incidental appendectomy—yes or no? A retrospective case study and review of the literature. Infect Dis Obstet Gynecol 1998;6(1)30-7. [4] Wolff BG. Current status of incidental surgery. Dis Colon Rectum 1995;38(4):435-41. [5] Nockerts SR, Detmer DE, Fryback, DG. Incidental appendectomy in the elderly? No. Surgery 1980;88(2):301-6.	**1a** C☐ P☐ M☐ N☐

1b. Opportunity for Improvement

1b.1 Benefits (improvements in quality) envisioned by use of this measure: Removal of the appendix incidental to other abdominal surgery—such as urological, gynecological, or gastrointestinal surgeries—is intended to eliminate the risk of future appendicitis and to simplify any future differential diagnoses of abdominal pain. Incidental appendectomy among the elderly is contraindicated. As such, lower rates represent better quality.

1b.2 Summary of data demonstrating performance gap (variation or overall poor performance) across providers:
Adjusted per 1,000 rates by patient and hospital characteristics, 2007

Mean	Standard error	Location	P-value: Relative to Northeast
14.511	0.512	Northeast	1.000
21.482	0.474	Midwest	0.000
20.145	0.393	South	0.000
21.716	0.534	West	0.000

1b.3 Citations for data on performance gap:
See the following report for a complete treatment of the methodology: "Methods: Applying AHRQ Quality Indicators to Healthcare Cost and Utilization Project (HCUP) Data for the National Healthcare Quality Report" [URL: http://hcupnet.ahrq.gov/QI%20Methods.pdf?JS=Y]

1b.4 Summary of Data on disparities by population group:
Adjusted per 1,000 rates by patient/hospital characteristics, 2007

Estimate	Standard error	Age: for conditions affecting elderly
22.788	0.501	65-69
21.897	0.501	70-74
18.630	0.497	75-79
16.791	0.546	80-84
15.218	0.579	85 and over

Estimate	Standard error	Gender
23.991	0.454	Male
17.531	0.270	Female

Estimate	Standard error	Median income of patient´s ZIP code
20.383	0.472	First quartile (lowest income)
20.801	0.460	Second quartile
19.020	0.471	Third quartile
18.142	0.468	Fourth quartile (highest income)

Estimate	Standard error	Location of patient residence (NCHS)
18.608	0.457	Large central metropolitan
17.801	0.476	Large fringe metropolitan
18.848	0.525	Medium metropolitan
23.178	0.734	Small metropolitan
20.819	0.678	Micropolitan
23.873	0.840	Not metropolitan or micropolitan

Estimate	Standard error	Expected payment source
20.582	0.721	Private insurance
19.384	0.250	Medicare
26.535	2.421	Medicaid
21.177	2.811	Other insurance

1b
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20.580	3.200	Uninsured / self-pay / no charge
Estimate	Standard error	Hospital Ownership/control
18.867	0.268	Private, not-for-profit
22.948	0.684	Private, for-profit
20.994	0.682	Public
Estimate	Standard error	Teaching status
15.686	0.396	Teaching
21.699	0.290	Nonteaching
Estimate	Standard error	Location of hospital
19.750	0.402	Large central metropolitan
15.924	0.535	Large fringe metropolitan
18.790	0.500	Medium metropolitan
20.089	0.671	Small metropolitan
24.711	0.728	Micropolitan
28.949	1.467	Not metropolitan or micropolitan
Estimate	Standard error	Bed size of hospital
21.239	0.730	Less than 100
20.602	0.373	100 - 299
18.849	0.425	300 - 499
17.902	0.523	500 or more

1b.5 Citations for data on Disparities:
See the following report for a complete treatment of the methodology: "Methods: Applying AHRQ Quality Indicators to Healthcare Cost and Utilization Project (HCUP) Data for the National Healthcare Quality Report" [URL: http://hcupnet.ahrq.gov/QI%20Methods.pdf?JS=Y]

1c. Outcome or Evidence to Support Measure Focus

1c.1 Relationship to Outcomes (*For non-outcome measures, briefly describe the relationship to desired outcome. For outcomes, describe why it is relevant to the target population*)**:** Andrew and Roty showed that incidental appendectomy was associated with a higher risk of wound infection (5.9% versus 0.9%) among cholecystectomy patients who were at least 50 years of age, but not among younger patients.189 Based on this finding and the findings of Warren and colleagues, the risk of incidental appendectomy is believed to outweigh the benefits for elderly patients. [1] [2] [3] [4] [5]

References:
[1] Warren JL, Penberthy LT, Addiss DG, et al. Appendectomy incidental to cholecystectomy among elderly Medicare beneficiaries. Surg Gynecol Obstet 1993;177(3):288-94.
[2] Fisher KS, Ross DS. Guidelines for therapeutic decision in incidental appendectomy. Surg Gynecol Obstet 1990;171(1):95-8.
[3] Synder TE, Selanders JR. Incidental appendectomy—yes or no? A retrospective case study and review of the literature. Infect Dis Obstet Gynecol 1998;6(1)30-7.
[4] Wolff BG. Current status of incidental surgery. Dis Colon Rectum 1995;38(4):435-41.
[5] Nockerts SR, Detmer DE, Fryback, DG. Incidental appendectomy in the elderly? No. Surgery 1980;88(2):301-6.

1c.2-3. Type of Evidence: Expert opinion, Systematic synthesis of research

1c.4 Summary of Evidence (*as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome*)**:**
Andrew and Roty showed that incidental appendectomy was associated with a higher risk of wound infection

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(5.9% versus 0.9%) among cholecystectomy patients who were at least 50 years of age, but not among younger patients.189 Based on this finding and the findings of Warren and colleagues, the risk of incidental appendectomy is believed to outweigh the benefits for elderly patients. [1] [2] [3] [4] [5]

References:
[1] Warren JL, Penberthy LT, Addiss DG, et al. Appendectomy incidental to cholecystectomy among elderly Medicare beneficiaries. Surg Gynecol Obstet 1993;177(3):288-94.
[2] Fisher KS, Ross DS. Guidelines for therapeutic decision in incidental appendectomy. Surg Gynecol Obstet 1990;171(1):95-8.
[3] Synder TE, Selanders JR. Incidental appendectomy—yes or no? A retrospective case study and review of the literature. Infect Dis Obstet Gynecol 1998;6(1)30-7.
[4] Wolff BG. Current status of incidental surgery. Dis Colon Rectum 1995;38(4):435-41.
[5] Nockerts SR, Detmer DE, Fryback, DG. Incidental appendectomy in the elderly? No. Surgery 1980;88(2):301-6.

1c.5 **Rating of strength/quality of evidence (***also provide narrative description of the rating and by whom***):** 13 Smoothing recommended Testing, rating, and review were conducted by the project team. A full report on the literature review and empirical evaluation can be found in Refinement of the HCUP Quality Indicators by the UCSF-Stanford EPC, Detailed coding information for each QI is provided in the document Prevention Quality Indicators Technical Specifications. Rating of performance on empirical evaluations, ranged from 0 to 26. The scores were intended as a guide for summarizing the performance of each indicator on four empirical tests of precision (signal variance, area-level share, signal ratio, and R-squared) and five tests of minimum bias (rank correlation, top and bottom decile movement, absolute change, and change over two deciles), as described in the previous section.

1c.6 **Method for rating evidence:** The project team conducted extensive empirical testing of all potential indicators using the 1995-97 HCUP State Inpatient Databases (SID) and Nationwide Inpatient Sample (NIS) to determine precision, bias, and construct validity. The 1997 SID contains uniform data on inpatient stays in community hospitals for 22 States covering approximately 60% of all U.S. hospital discharges. The NIS is designed to approximate a 20% of U.S. community hospitals and includes all stays in the sampled hospitals. Each year of the NIS contains between 6 million and 7 million records from about 1,000 hospitals. The NIS combines a subset of the SID data, hospital-level variables, and hospital and discharge weights for producing national estimates. The project team conducted tests to examine three things: precision, bias, and construct validity.
Precision. The first step in the analysis involved precision tests to determine the reliability of the indicator for distinguishing real differences in provider performance. For indicators that may be used for quality improvement, it is important to know with what precision, or surety, a measure can be attributed to an actual construct rather than random variation.
For each indicator, the variance can be broken down into three components: variation within a provider (actual differences in performance due to differing patient characteristics), variation among providers (actual differences in performance among providers), and random variation. An ideal indicator would have a substantial amount of the variance explained by between-provider variance, possibly resulting from differences in quality of care, and a minimum amount of random variation. The project team performed four tests of precision to estimate the magnitude of between-provider variance on each indicator:
• Signal standard deviation was used to measure the extent to which performance of the QI varies systematically across hospitals or areas.
• Provider/area variation share was used to calculate the percentage of signal (or true) variance relative to the total variance of the QI.
• Signal-to-noise ratio was used to measure the percentage of the apparent variation in QIs across providers that is truly related to systematic differences across providers and not random variations (noise) from year to year.
• In-sample R-squared was used to identify the incremental benefit of applying multivariate signal extraction methods for identifying additional signal on top of the signal-to-noise ratio.
In general, random variation is most problematic when there are relatively few observations per provider, when adverse outcome rates are relatively low, and when providers have little control over patient outcomes or variation in important processes of care is minimal. If a large number of patient factors that are difficult to observe influence whether or not a patient has an adverse outcome, it may be difficult to separate the "quality signal" from the surrounding noise. Two signal extraction techniques were applied to improve the

precision of an indicator:
• Univariate methods were used to estimate the "true" quality signal of an indicator based on information from the specific indicator and 1 year of data.
• Multivariate signal extraction (MSX) methods were used to estimate the "true" quality signal based on information from a set of indicators and multiple years of data. In most cases, MSX methods extracted additional signal, which provided much more precise estimates of true hospital or area quality.
Bias. To determine the sensitivity of potential QIs to bias from differences in patient severity, unadjusted performance measures for specific hospitals were compared with performance measures that had been adjusted for age and gender. All of the PQIs and some of the Inpatient Quality Indicators (IQIs) could only be risk-adjusted for age and sex. The 3M™ APR-DRG System Version 12 with Severity of Illness and Risk of Mortality subclasses was used for risk adjustment of the utilization indicators and the in-hospital mortality indicators, respectively. Five empirical tests were performed to investigate the degree of bias in an indicator:
• Rank correlation coefficient of the area or hospital with (and without) risk adjustment—gives the overall impact of risk adjustment on relative provider or area performance.
• Average absolute value of change relative to mean—highlights the amount of absolute change in performance, without reference to other providers' performance.
• Percentage of highly ranked hospitals that remain in high decile—reports the percentage of hospitals or areas that are in the highest deciles without risk adjustment that remain there after risk adjustment is performed.
• Percentage of lowly ranked hospitals that remain in low decile—reports the percentage of hospitals or areas that are in the lowest deciles without risk adjustment that remain there after risk adjustment is performed.
• Percentage that change more than two deciles—identifies the percentage of hospitals whose relative rank changes by a substantial percentage (more than 20%) with and without risk adjustment.
Construct validity. Construct validity analyses provided information regarding the relatedness or independence of the indicators. If quality indicators do indeed measure quality, then two measures of the same construct would be expected to yield similar results. The team used factor analysis to reveal underlying patterns among large numbers of variables—in this case, to measure the degree of relatedness between indicators. In addition, they analyzed correlation matrices for indicators.

1c.7 Summary of Controversy/Contradictory Evidence: See the following for a complete treatment of the topic:
http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_v31.pdf
Note: The Literature Review Caveats column summarizes evidence specific to each potential concern on the link between the PQIs and quality of care, as described in step 3 above. A question mark (?) indicates that the concern is theoretical or suggested, but no specific evidence was found in the literature. A check mark indicates that the concern has been demonstrated in the literature.

1c.8 Citations for Evidence (*other than guidelines*): Updated citations will be presented in the May Steering Committee meeting

http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_v31.pdf

1c.9 Quote the Specific guideline recommendation (*including guideline number and/or page number*):
Not Applicable.

1c.10 Clinical Practice Guideline Citation: Not Applicable.
1c.11 National Guideline Clearinghouse or other URL: Not Applicable.

1c.12 Rating of strength of recommendation (*also provide narrative description of the rating and by whom*):
Not Applicable.

1c.13 Method for rating strength of recommendation (*If different from USPSTF system, also describe rating and how it relates to USPSTF)*:
Not Applicable.

1c.14 Rationale for using this guideline over others:
Not Applicable.

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Importance to*	**1**

Measure and Report?	
Steering Committee: Was the threshold criterion, *Importance to Measure and Report*, met? **Rationale:**	**1** **Y☐** **N☐**
2. SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES	
Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. (evaluation criteria)	**Eval Rating**
2a. MEASURE SPECIFICATIONS	
S.1 Do you have a web page where current detailed measure specifications can be obtained? **S.2 If yes, provide web page URL:** **2a. Precisely Specified**	
2a.1 Numerator Statement (*Brief, text description of the numerator - what is being measured about the target population, e.g. target condition, event, or outcome***):** Number of incidental appendectomy procedures among cases meeting the inclusion and exclusion rules for the denominator.	
2a.2 Numerator Time Window (*The time period in which cases are eligible for inclusion in the numerator***):** Time period is user defined. Users of the measure typically use a 12 month time period.	
2a.3 Numerator Details (*All information required to collect/calculate the numerator, including all codes, logic, and definitions***):** Number of incidental appendectomy procedures among cases meeting the inclusion and exclusion rules for the denominator. ICD-9-CM incidental appendectomy procedure codes: 471 INCIDENTAL APPENDECTOMY OCT96- 4711 LAPAROSCOP INCID APPEND OCT96- 4719 OTH INCID APPEND OCT96-	
2a.4 Denominator Statement (*Brief, text description of the denominator - target population being measured***):** All discharges, age 65 years and older, with ICD-9-CM codes for abdominal and pelvic surgery. **2a.5 Target population gender:** Female, Male **2a.6 Target population age range:** 65 and older **2a.7 Denominator Time Window (***The time period in which cases are eligible for inclusion in the denominator***):** Time period is user defined. Users of the measure typically use a 12 month time period. **2a.8 Denominator Details (***All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions***):** 1711 LAPAROSCOPIC REPAIR OF DIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08- 1712 LAPAROSCOPIC REPAIR OF INDIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08- 1713 LAPAROSCOPIC REPAIR OF INGUINAL HERNIA WITH GRAFT OR PROSTHESIS, NOS OCT08- 1721	**2a-specs** **C☐** **P☐** **M☐** **N☐**

LAPAROSCOPIC BILATERAL REPAIR OF DIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
1722
LAPAROSCOPIC BILATERAL REPAIR OF INDIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
1723
LAPAROSCOPIC BILATERAL REPAIR OF INGUINAL HERNIA, ONE DIRECT AND ONE INDIRECT, WITH GRAFT OR PROSTHESIS OCT08-
1724
LAPAROSCOPIC BILATERAL REPAIR OF INGUINAL HERNIA WITH GRAFT OR PROSTHESIS, NOS OCT08-
412
SPLENOTOMY
4133
OPEN BIOPSY OF SPLEEN
4141
MARSUPIALIZATION OF SPLENIC CYST
4142
EXCISION OF LESION OR TISSUE OF SPLEEN
4143
PARTIAL SPLENECTOMY
415
TOTAL SPLENECTOMY
4193
EXCISION OF ACCESSORY SPLEEN
4194
TRANSPLANTATION OF SPLEEN
4195
REPAIR AND PLASTIC OPERATIONS ON SPLEEN
4199
OTHER OPERATIONS ON SPLEEN
4240
ESOPHAGECTOMY, NOS
4241
PARTIAL ESOPHAGECTOMY (HAS 1 CASE_
4242
TOTAL ESOPHAGECTOMY (HASE 1 CASE)
4253
INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL
4254
OTHER INTRATHORACIC ESOPHAGOENTEROSTOMY
4255
INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON
4256
OTHER INTRATHORACIC ESOPHAGOCOLOSTOMY
4263
ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL
4264
OTHER ANTESTERNAL ESOPHAGOENTEROSTOMY
4265
ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON
1711
LAPAROSCOPIC REPAIR OF DIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
1712
LAPAROSCOPIC REPAIR OF INDIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
1713
LAPAROSCOPIC REPAIR OF INGUINAL HERNIA WITH GRAFT OR PROSTHESIS, NOS OCT08-
1721
LAPAROSCOPIC BILATERAL REPAIR OF DIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
1722
LAPAROSCOPIC BILATERAL REPAIR OF INDIRECT INGUINAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-

1723
LAPAROSCOPIC BILATERAL REPAIR OF INGUINAL HERNIA, ONE DIRECT AND ONE INDIRECT, WITH GRAFT OR PROSTHESIS OCT08-
1724
LAPAROSCOPIC BILATERAL REPAIR OF INGUINAL HERNIA WITH GRAFT OR PROSTHESIS, NOS OCT08-
412
SPLENOTOMY
4133
OPEN BIOPSY OF SPLEEN
4141
MARSUPIALIZATION OF SPLENIC CYST
4142
EXCISION OF LESION OR TISSUE OF SPLEEN
4143
PARTIAL SPLENECTOMY
415
TOTAL SPLENECTOMY
4193
EXCISION OF ACCESSORY SPLEEN
4194
TRANSPLANTATION OF SPLEEN
4195
REPAIR AND PLASTIC OPERATIONS ON SPLEEN
4199
OTHER OPERATIONS ON SPLEEN
4240
ESOPHAGECTOMY, NOS
4241
PARTIAL ESOPHAGECTOMY (HAS 1 CASE_
4242
TOTAL ESOPHAGECTOMY (HASE 1 CASE)
4253
INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL
4254
OTHER INTRATHORACIC ESOPHAGOENTEROSTOMY
4255
INTRATHORACIC ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON
4256
OTHER INTRATHORACIC ESOPHAGOCOLOSTOMY
4263
ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF SMALL BOWEL
4264
OTHER ANTESTERNAL ESOPHAGOENTEROSTOMY
4265
ANTESTERNAL ESOPHAGEAL ANASTOMOSIS W/ INTERPOSITION OF COLON
4266
OTHER ANTESTERNAL ESOPHAGOCOLOSTOMY
4291
LIGATION OF ESOPHAGEAL VARICES
430
GASTROTOMY
433
PYLOROMYOTOMY
4342
LOCAL EXCISION OF OTHER LESION OR TISSUE OF STOMACH (HAS 10 CASES)
4349
OTHER DESTRUCTION OF LESION OR TISSUE OF STOMACH (HAS 1 CASE)
435

PARTIAL GASTRECTOMY W/ ANASTOMOSIS TO ESOPHAGUS
436
PARTIAL GASTRECTOMY W/ ANASTOMOSIS TO DUODENUM
437
PARTIAL GASTRECTOMY W/ ANASTOMOSIS TO JEJUNUM
4381
PARTIAL GASTRECTOMY W/ JEJUNA TRANSPOSITION
4389
OTHER PARTIAL GASTRECTOMY
4391
TOTAL GASTRECTOMY W/ INTESTINAL INTERPOSITION
4399
OTHER TOTAL GASTRECTOMY
4400
VAGOTOMY, NOS
4401
TRUNCAL VAGOTOMY (HAS ONE CASE)
4402
HIGHLY SELECTIVE VAGOTOMY
4403
OTHER SELECTIVE VAGOTOMY
4411
TRANSABDOMINAL GASTROSCOPY
4415
OPEN BIOPSY OF STOMACH (HAS ONE CASE)
4421
DILATION OF PYLORUS BY INCISION
4429
OTHER PYLOROPLASTY HAS 6 CASES
4431
HIGH GASTRIC BYPASS HAS 1 CASE
4438
LAPAROSCOPIC GASTROENTEROSTOMY
4439
OTHER GASTROENTEROSTOMY
4440
SUTURE OF PEPTIC ULCER, NOS
4441
SUTURE OF GASTRIC ULCER SITE
4442
SUTURE OF DUODENAL ULCER SITE
445
REVISION OF GASTRIC ANASTOMOSIS
4461
SUTURE OF LACERATION OF STOMACH
4463
CLOSURE OF OTHER GASTRIC FISTULA HAS 14 CASES
4464
GASTROPEXY
4465
ESOPHAGOGASTROPLASTY
4466
OTHER PROCEDURES FOR CREATION OF ESOPHAGOGASTRIC SPHINCTERIC COMPETENCE
4467
LAPAROSCOPIC PROCEDURES FOR CREATION OF ESOPHAGOGASTRIC SPHINCTERIC COMPETENCE
4468
LAPAROSCOPIC GASTROPLASTY
4469

OTHER REPAIR OF STOMACH
4491
LIGATION OF GASTRIC VARICES
4492
INTRAOPERATIVE MANIPULATION OF STOMACH
4495
LAPAROSCOPIC GASTRIC RESTRICTIVE PROCEDURE
4496
LAPAROSCOPIC REVISION OF GASTRIC RESTRICTIVE PROCEDURE
4497
LAPAROSCOPIC REVISION OF GASTRIC RESTRICTIVE DEVICES
4499
GASTRIC OPERATION NEC (OCT 04)
4500
INCISION OF INTESTINE, NOS
4501
INCISION OF DUODENUM
4502
OTHER INCISION OF SMALL INTESTINE
4503
INCISION OF LARGE INTESTINE
4511
TRANSABDOMINAL ENDOSCOPY
4515
OPEN BIOPSY OF SMALL INTESTINE
4521
TRANSABDOMINAL ENDOSCOPY OF LARGE INTESTINE
4526
OPEN BIOPSY OF LARGE INTESTINE
4531
OTHER LOCAL EXCISION OF LESION OF DUODENUM
4532
OTHER DESTRUCTION OF LESION OF DUODENUM
4533
LOCAL EXCISION OF LESION OR TISSUE OF SMALL INTESTINE, EXCEPT DUODENUM
4534
OTHER DESTRUCTION OF LESION OF SMALL INTESTINE, EXCEPT DUODENUM
4541
EXCISION OF LESION OR TISSUE OF LARGE INTESTINE
4549
OTHER DESTRUCTION OF LESION OF LARGE INTESTINE
4550
ISOLATION OF INTESTINAL SEGMENT, NOS
4551
ISOLATION OF SEGMENT OF SMALL INTESTINE
4552
ISOLATION OF SEGMENT OF LARGE INTESTINE
4561
MULTIPLE SEGMENTAL RESECTION OF SMALL INTESTINE
4562
OTHER PARTIAL RESECTION OF SMALL INTESTINE
4563
TOTAL REMOVAL OF SMALL INTESTINE
458
TOTAL INTRA-ABDOMINAL COLECTOMY
4590
INTESTINAL ANASTOMOSIS, NOS
4591

SMALL-TO-SMALL INTESTINAL ANASTOMOSIS
4592
ANASTOMOSIS OF SMALL INTESTINE TO RECTAL STUMP
4593
OTHER SMALL-TO-LARGE INTESTINAL ANASTOMOSIS
4594
LARGE-TO-LARGE INTESTINAL ANASTOMOSIS
4595
ANASTOMOSIS TO ANUS
4601
EXTERIORIZATION OF SMALL INTESTINE
4603
EXTERIORIZATION OF LARGE INTESTINE
4610
COLOSTOMY, NOS
4611
TEMPORARY COLOSTOMY
4613
PERMANENT COLOSTOMY
4614
DELAYED OPENING OF COLOSTOMY
4620
ILEOSTOMY, NOS
4621
TEMPORARY ILESOSTOMY
4622
CONTINENT ILEOSTOMY
4623
OTHER PERMANENT ILEOSTOMY
4640
REVISION OF INTESTINA STOMA, NOS
4641
REVISION OF STOMA OF SMALL INTESTINE
4642
REPAIR OF PERICOLOSTOMY HERNIA
4643
OTHER REVISION OF STOMA OF LARGE INTESTINE
4650
CLOSURE OF INTESTINAL STOMA, NOT OTHERWISE SPECIFIED
4651
CLOSURE OF STOMA OF SMALL INTESTINE
4652
CLOSURE OF STOMA OF LARGE INTESTINE
4660
FIXATION OF INTESTINE, NOS
4661
FIXATION OF SMALL INTESTINE TO ABDOMINAL WALL
4662
OTHER FIXATION OF SMALL INTESTINE
4663
FIXATION OF LARGE INTESTINE TO ABDOMINAL WALL
4664
OTHER FIXATION OF LARGE INTESTINE
4672
CLOSURE OF FISTULA OF DUODENUM
4673
SUTURE OF LACERATION OF SMALL INTESTINE, EXCEPT DUODENUM
4674

CLOSURE OF FISTULA OF SMALL INTESTINE, EXCEPT DUODENUM
4675
SUTURE OF LACERATION OF LARGE INTESTINE
4676
CLOSURE OF FISTULA OF LARGE INTESTINE
4679
OTHER REPAIR OF INTESTINE
4680
INTRA-ABDOMINAL MANIPULATION OF INTESTINE, NOS
4681
INTRA-ABDOMINAL MANIPULATION OF SMALL INTESTINE
4682
INTRA-ABDOMINAL MANIPULATION OF LARGE INTESTINE
4691
MYOTOMY OF SIGMOID COLON
4692
MYOTOMY OF OTHER PARTS OF COLON
4693
REVISION OF ANASTOMOSIS OF SMALL INTESTINE
4694
REVISION OF ANASTOMOSIS OF LARGE INTESTINE
4697
TRANSPLANT OF INTESTINE
4699
OTHER OPERATIONS ON INTESTINES
4821
TRANSABDOMINAL PROCTOSIGMOIDOSCOPY
4825
OPEN BIOPSY OF RECTUM
4840
PULL THROUGH RESECTION OF RECTUM, NOS OCT08-
4841
SUBMUCOSAL RESECTION OF RECTUM
4842
LAP PULL-THROUGH RESECTION OF RECTUM OCT08-
4843
OPEN PULL-THROUGH RESECTION OF RECTUM OCT08-
4849
OTHER PULL-THROUGH RESECTION OF RECTUM 485
ABDOMINOPERINEAL RESECTION OF RECTUM
4850
ABDOMINOPERINEAL RESECTION OF RECTUM, NOS OCT08-
4851
LAPAROSCOPIC ABDOMINOPERINEAL RESECTION OF RECTUM OCT08-
4852
OPEN ABDOMINOPERINEAL RESECTION OF RECTUM OCT08-
4859
OTHER ABDOMINOPERINEAL RESECTION OF RECTUM OCT08-
4871
SUTURE OF LACERATION OF RECTUM
4874
RECTORECTOSTOMY
4875
ABDOMINAL PROCTOPEXY
500
HEPATOTOMY
5012
OPEN BIOPSY OF LIVER

5014
LAPAROPSCOPIC LIVER BIOPSY
5019
OTHER DIAGNOSTIC PROCEDURES ON LIVER
5021
MARSUPIALIZATION OF LESION OF LIVER
5022
PARTIAL HEPATECTOMY HAS 3 CASES
5023
OPN ABLTN LIVER LES/TISS OCT06-
5025
LAPAROPSCOPIC ABLATION OF LIVER LESION OR TISSUE
5026
ABLTN LIVER LES/TISS NEC OCT06-
5029
OTHER DESTRUCTION OF LESION OF LIVER HAS 2 CASES
503
LOBECTOMY OF LIVER
504
TOTAL HEPATECTOMY
5051
AUXILIARY LIVER TRANSPLANT
5059
OTHER TRANSPLANT OF LIVER
5061
CLOSURE OF LACERATION OF LIVER
5069
OTHER REPAIR OF LIVER
5102
TROCAR CHOLECYSTOSTOMY
5103
OTHER CHOLECYSTOSTOMY
5104
OTHER CHOLECYSTOTOMY
5113
OPEN BIOPSY OF GALLBLADDER OR BILE DUCTS
5119
OTHER DIAGNOSTIC PROCEDURES ON BILIARY TRACT
5121
OTHER PARTIAL CHOLECYSTECTOMY
5122
CHOLECYSTECTOMY
5123
LAPAROSCOPIC CHOLECYSTECTOMY SE 5122 WITH 116 CASES, THIS ONE HAS 7 CASES
5124
LAPAROSCOPIC PARTIAL CHOLECYSTECTOMY
5131
ANASTOMOSIS OF GALLBLADDER TO HEPATIC DUCTS
5132
ANASTOMOSIS OF GALLBLADDER TO INTESTINE
5133
ANASTOMOSIS OF GALLBLADDER TO PANCREAS
5134
ANASTOMOSIS OF GALLBLADDER TO STOMACH
5135
OTHER GALLBLADDER ANASTOMOSIS
5136
CHOLEDOCHOENTEROSTOMY

5137
ANASTOMOSIS OF HEPATIC DUCT TO GASTROINTESTINAL TRACT
5139
OTHER BILE DUCT ANASTOMOSIS
5141
COMMON DUCT EXPLORATION FOR REMOVAL OF CALCULUS
5142
COMMON DUCT EXPLORATION FOR RELIEF OF OTHER OBSTRUCTION
5143
INSERTION OF CHOLEDOCHOHEPATIC TUBE FOR DECOMPRESSION
5149
INCISION OF OTHER BILE DUCTS FOR RELIEF OF OBSTRUCTION
5151
EXPLORATION OF COMMON DUCT
5159
INCISION OF OTHER BILE DUCT
5161
EXCISION OF CYSTIC DUCT REMNANT
5162
EXCISION OF AMPULLA OF VATER (WITH REIMPLANTATION OF COMMON DUCT)
5163
OTHER EXCISION OF COMMON DUCT
5169
EXCISION OF OTHER BILE DUCT
5171
SIMPLE SUTURE OF COMMON BILE DUCT
5172
CHOLEDOCHOPLASTY
5179
REPAIR OF OTHER BILE DUCTS
5181
DILATION OF SPHINCTER OF ODDI
5182
PANCREATIC SPHINCTEROTOMY
5183
PANCREATIC SPHINCTEROPLASTY
5189
OTHER OPERATIONS ON SPHINCTER OF ODDI
5191
REPAIR OF LACERATION OF GALLBLADDER
5192
CLOSURE OF CHOLECYSTOSTOMY
5193
CLOSURE OF OTHER BILIARY FISTULA
5194
REVISION OF ANASTOMOSIS OF BILIARY TRACT
5195
REMOVAL OF PROSTHETIC DEVICE FROM BILE DUCT
5199
OTHER OPERATIONS ON BILIARY TRACT
5201
DRAINAGE OF PANCREATIC CYST BY CATHETER
5209
OTHER PANCREATOTOMY
5212
OPEN BIOPSY OF PANCREAS
5219
OTHER DIAGNOSTIC PROCEDURES ON PANCREAS

5222
OTHER EXCISION OR DESTRUCT OF LESION OR TISSUE OF PANCREAS OR PANC DUCT
523
MARSUPIALIZATION OF PANCREATIC CYST
524
INTERNAL DRAINAGE OF PANCREATIC CYST
5251
PROXIMAL PANCREATECTOMY
5252
DISTAL PANCREATECTOMY
5253
RADICAL SUBTOTAL PANCREATECTOMY
5259
OTHER PARTIAL PANCREATECTOMY (HAS 1 CASE)
526
TOTAL PANCREATECTOMY
527
RADICAL PANCREATICODUODENECTOMY
5280
PANCREATIC TRANSPLANT, NOS
5281
REIMPLANTATION
5282
HOMOTRANSPLANT OF PANCREAS
5283
HETEROTRANSPLANT OF PANCREAS
5292
CANNULATION OF PANCREATIC DUCT
5295
OTHER REPAIR OF PANCREAS
5296
ANASTOMOSIS OF PANCREAS (HAS 1 CASE)
5299
OTHER OPERATIONS ON PANCREAS
5300
UNILATERAL REPAIR OF INGUINAL HERNIA, NOS
5301
REPAIR OF DIRECT INGUINAL HERNIA HAS 2 CASES
5302
REPAIR OF INDIRECT INGUINAL HERNIA HAS 2 CASES
5303
REPAIR OF DIRECT INGUINAL HERNIA W/ GRAFT OR PROSTHESIS HAS 1 CASE
5304
REPAIR OF INDIRECT INGUINAL HERNIA W/ GRAFT OR PROSTHESIS
5305
REPAIR OF INGUINAL HERNIA W/ GRAFT OR PROSTHESIS, NOS
5310
BILATERAL REPAIR OF INGUINAL HERNIA, NOS
5311
BILATERAL REPAIR OF DIRECT INGUINAL HERNIA HAS 1 CASE
5312
BILATERAL REPAIR OF INDIRECT INGUINAL HERNIA
5313
BILATERAL REPAIR OF INGUINAL HERNIA, ONE DIRECT AND ONE INDIRECT
5314
BILATERAL REPAIR OF DIRECT INGUINAL HERNIA W/ GRAFT OR PROSTHESIS
5315
BILATERAL REPAIR OF INDIRECT INGUINAL HERNIA W/ GRAFT OR PROSTHESIS

5316
BILATERAL REPAIR OF INGUIN HERNIA, 1 DIRECT 1 INDIRECT, W/ GRAFT OR PROS
5317
BILATERAL INGUINAL HERNIA REPAIR W/ GRAFT OR PROSTHESIS, NOS
5321
UNILATERAL REPAIR OF FEMORAL HERNIA
5329
OTHER UNILATERAL FEMORAL HERNIORRHAPHY HAS 1 CASE
5331
BILATERAL REPAIR OF FEMORAL HERNIA W/ GRAFT OR PROSTHESIS
5339
OTHER BILATERAL FEMORAL HERNIORRHAPHY
5341
REPAIR OF UMBILICAL HERNIA W/ PROSTHESIS
5342
LAPAROPSCOPIC REPAIR OF UMBILICAL HERNIA WITH GRAFT OR PROSTHESIS OCT08-
5343
OTHER LAPAROSCOPIC UMBILICAL HERIORRHAPHY OCT08-
5349
OTHER UMBILICAL HERNIORRHAPHY HAS 2 CASES
5351
INCISIONAL HERNIA REPAIR HAS 2 CASES
5359
REPAIR OF OTHER HERNIA OF ANTERIOR ABDOMINAL WALL (HAS 5 CASES)
5361
INCISIONAL HERNIA REPAIR W/ PROSTHESIS (HAS 6 CASES)
5362
LAPAROPSCOPIC INCISIONAL HERNIA REPAIR WITH GRAFT OR PROSTHESIS OCT08-
5363
OTHER LAPAROSCOPIC REPAIR OF OTHER HERNIA OF ANTERIOR ABDOMINAL WALL WITH GRAFT OR PROSTHESIS OCT08-
5369
REPAIR OF OTHER HERNIA OF ANTERIOR ABDOMINAL WALL W/ PROSTHESIS HAS 1 CASE
537
REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH
5371
LAP REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH OCT08-
5372
OTHER AND OPEN REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH OCT08-
5375
REPAIR OF DIAPHRAGMATIC HERNIA, ABDOMINAL APPROACH, NOS OCT08-
540
INCISION OF ABDOMINAL WALL
5411
EXPLORATORY LAPAROTOMY
5412
REOPENING OF RECENT LAPAROTOMY SITE
5419
OTHER LAPAROTOMY
5421
LAPAROSCOPY
5422
BIOPSY OF ABDOMINAL WALL OR UMBILICUS
5423
BIOPSY OF ABDOMINAL WALL OR UMBILICUS (HAS 2 CASES)
5429
OTHER DIAGNOSTIC PROCEDURES ON ABDOMINAL REGION
543

EXCISION OR DESTRUCTION OF LESION OR TISSUE OF ABDOMINAL WALL OR UMBILICUS
544
EXCISION OR DESTRUCTION OF PERITONEAL TISSUE
5451
LAPAROSCOPIC LYSIS OF PERITONEAL ADHESIONS
5459
OTHER LYSIS OF PERITONEAL ADHESIONS HAS 463 CASES
5461
RECLOSURE OF POSTOPERATIVE DISRUPTION OF ABDOMINAL WALL
6829
OTHER EXCISION OR DESTRUCTION OF LESION OF UTERUS
683
SUBTOTAL ABDOMINAL HYSTERECTOMY
6831
LAPAROSCOPIC SUPRACERVICAL HYSTERECTOMY [LSH]
6839
OTHER SUBTOTAL ABDOMINAL HYSTERECTOMY
684
TOTAL ABDOMINAL HYSTERECTOMY
6841
LAP TOTAL ABDOMINAL HYST OCT06-
6849
TOTAL ABD HYST NEC/NOS OCT06-
686
RADICAL ABDOMINAL HYSTERECTOMY
6861
LAP RADICAL ABDOMNL HYST OCT06-
6869
RADICAL ABD HYST NEC/NOS OCT06-
688
PELVIC EVISCERATION
689
OTHER AND UNSPECIFIED HYSTERECTOMY
6919
OTHER EXCISION OR DESTRUCTION OF UTERUS AND SUPPORTING STRUCTURES
6921
INTERPOSITION OPERATION
6922
OTHER UTERINE SUSPENSION
6923
VAGINAL REPAIR OF CHRONIC INVERSION OF UTERUS
6929
OTHER REPAIR OF UTERUS AND SUPPORTING STRUCTURES
693
PARACERVICAL UTERINE DENERVATION
6941
SUTURE OF LACERATION OF UTERUS
6942
CLOSURE OF FISTULA OF UTERUS
6949
OTHER REPAIR OF UTERUS
6998
OTHER OPERATIONS ON SUPPORTING STRUCTURES OF UTERUS

2a.9 Denominator Exclusions (*Brief text description of exclusions from the target population***):** Exclude:
- MDC 14 (pregnancy, childbirth, and puerperium)
- cases with a code for surgical removal of the colon (colectomy) or pelvic evisceration
- cases with any diagnosis of cancer involving or adjacent to the appendix

2a.10 Denominator Exclusion Details (*All information required to collect exclusions to the denominator, including all codes, logic, and definitions***):**

ICD-9-CM surgical removal of the colon (colectomy) or pelvic evisceration procedure codes:
1731
LAPAROSCOPIC MULTIPLE SEGMENTAL RESECTION OF LARGE INTESTINE
1732
LAPAROSCOPIC CECECTOMY
1733
LAPAROSCOPIC RIGHT HEMICOLECTOMY
1734
LAPAROSCOPIC RESECTION OF TRANSVERSE COLON
1735
LAPAROSCOPIC LEFT HEMICOLECTOMY
1736
LAPAROSCOPIC SIGMOIDECTOMY
1739
OTHER LAPAROSCOPIC PARTIAL EXCISION OF LARGE INTESTINE
4571
OPN MUL SEG LG INTES NEC
4572
OPEN CECECTOMY NEC
4573
OPN RT HEMICOLECTOMY NEC
4574
OPN TRANSV COLON RES NEC
4575
OPN LFT HEMICOLECTMY NEC
4576
OPEN SIGMOIDECTOMY NEC
4579
PRT LG INTES EXC NEC/NOS
458
TOT ABD COLECTMY
4581
LAP TOT INTR-AB COLECTMY
4582
OP TOT INTR-ABD COLECTMY
4583
TOT ABD COLECTMY NEC/NOS
688
PELVIC EVISCERATION
ICD-9-CM Cancer Involving or Adjacent to the Appendix diagnosis codes
1534
MALIGNANT NEOPLASM OF COLON, CECUM
1535
MALIGNANT NEOPLASM OF COLON, APPENDIX
1536
MALIGNANT NEOPLASM OF COLON, ASCENDING COLON
1538
MALIGNANT NEOPLASM OF COLON, OTHER SPECIFIED SITES OF LARGE INTESTINE
1539
MALIGNANT NEOPLASM OF COLON, NOS
1588
MALIGNANT NEOPLASM OF RETROPERITONEUM AND PERITONEUM, SPECIFIED PARTS OF PERITONEUM
1589
MALIGNANT NEOPLASM OF RETROPERITONEUM AND PERITONEUM, PERITONEUM, UNSPECIFIED
1590
MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE DIGESTIVE ORGANS AND PERITONEUM,

INTESTINAL TRACT, PART UNSPECIFIED
1598
MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE DIGESTIVE ORGANS AND PERITONEUM, OTHER SITES OF DIGESTIVE SYSTEM AND INTRA-ABDOMINAL ORGANS
1599
MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE DIGESTIVE ORGANS AND PERITONEUM, ILL-DEFINED
1952
MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES, ABDOMEN
1975
SECONDARY MALIGNANT NEOPLASM OF RESPIRATORY AND DIGESTIVE SYSTEMS, LARGE INTESTINE AND RECTUM
1976
SECONDARY MALIGNANT NEOPLASM OF RESPIRATORY AND DIGESTIVE SYSTEMS, RETROPERITONEUM AND PERITONEUM
20974
SECONDARY NEUROENDOCRINE TUMOR OF PERITONEUM

2a.11 **Stratification Details/Variables (***All information required to stratify the measure including the stratification variables, all codes, logic, and definitions***):**
User has the option to stratify by gender, age (5-year age groups), race / ethnicity, primary payer, or use custom stratifiers.

2a.12-13 **Risk Adjustment Type:** No risk adjustment necessary

2a.14 **Risk Adjustment Methodology/Variables (***List risk adjustment variables and describe conceptual models, statistical models, or other aspects of model or method***):**
Not applicable

2a.15-17 **Detailed risk model available Web page URL or attachment:**

2a.18-19 **Type of Score:** Rate/proportion
2a.20 **Interpretation of Score:** Better quality = Lower score
2a.21 **Calculation Algorithm (***Describe the calculation of the measure as a flowchart or series of steps***):**
The indicator is expressed as a rate, is defined as outcome of interest / population at risk or numerator / denominator. The AHRQ Quality Indicators (AHRQ QI) software performs five steps to produce the rates. 1) Discharge-level data is used to mark inpatient records containing the outcome of interest and 2) the population at risk. For provider indicators, the population at risk is also derived from hospital discharge records; for area indicators, the population at risk is derived from U.S. Census data. 3) Calculate observed rates. Using output from steps 1 and 2, rates are calculated for user-specified combinations of stratifiers. 4) Calculate expected rates. For indicators that are not risk-adjusted, use the reference population rate. 5) Calculate risk-adjusted rate. Use the indirect standardization to account for case-mix. For indicators that are not risk-adjusted, this is the same as the observed rate 6) Calculate smoothed rate. A Univariate shrinkage factor is applied to the risk-adjusted rates. The shrinkage estimate reflects a reliability adjustment unique to each indicator. Full information on calculation algorithms and specifications can be found at http://qualityindicators.ahrq.gov/IQI_download.htm

2a.22 **Describe the method for discriminating performance** *(e.g., significance testing)***:**
Significance testing is not prescribed by the software. Users may define their methods of discriminating performance according to their application. Although all cases are measured, the rate is considered a sample in time, given the variations in case mix over time. Confidence intervals can be calculated, but again are not prescribed.

2a.23 **Sampling (Survey) Methodology** *If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate)*:
Not applicable

2a.24 **Data Source (***Check the source(s) for which the measure is specified and tested)*
Electronic administrative data/claims

2a.25 **Data source/data collection instrument (***Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.***):**

The data source is hospital discharge data such as the HCUP State Inpatient Databases (SID) or equivalent using UB-04 coding standards. The data collection instrument is public-use AHRQ QI software available in SAS or Windows versions.

2a.26-28 **Data source/data collection instrument reference web page URL or attachment:** URL None
http://www.qualityindicators.ahrq.gov/software.htm

2a.29-31 **Data dictionary/code table web page URL or attachment:** URL None
http://www.qualityindicators.ahrq.gov/downloads/winqi/AHRQ_QI_Windows_Software_Documentation_V41a.pdf

2a.32-35 **Level of Measurement/Analysis** (*Check the level(s) for which the measure is specified and tested)*
Facility/Agency

2a.36-37 **Care Settings (***Check the setting(s) for which the measure is specified and tested)*
Hospital

2a.38-41 **Clinical Services** (*Healthcare services being measured, check all that apply*)
Clinicians: Physicians (MD/DO)

TESTING/ANALYSIS

2b. Reliability testing

2b.1 **Data/sample** *(description of data/sample and size)*: AHRQ 2007 State Inpatient Databases (SID) with 4,000 hospitals and 30 million adult discharges

2b.2 **Analytic Method** *(type of reliability & rationale, method for testing)*:
Literature summary, expert panels and empirical analysis

2b.3 **Testing Results** *(reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:
Fewer than one-third of surgery departments routinely perform incidental appendectomies, and rates may be difficult to estimate with precision at the majority of hospitals where it is not a routine procedure.195 Based on empirical evidence, this indicator is precise, with a raw provider level mean of 2.7% and a standard deviation of 3.5%.196 Relative to other indicators, a higher percentage of the variation occurs at the discharge level than for some indicators. The signal ratio (i.e., the proportion of the total variation across providers that is truly related to systematic differences in provider performance rather than random variation) is moderate, at 55.4%, indicating that some of the observed differences in provider performance do not represent true differences.

2b C☐ P☐ M☐ N☐

2c. Validity testing

2c.1 **Data/sample** *(description of data/sample and size)*: AHRQ 2007 State Inpatient Databases (SID) with 4,000 hospitals and 30 million adult discharges

2c.2 **Analytic Method** *(type of validity & rationale, method for testing)*:
Literature summary, expert panels and empirical analysis

2c.3 **Testing Results** *(statistical results, assessment of adequacy in the context of norms for the test conducted)*:
Most of the available evidence appears to contraindicate incidental appendectomy in the elderly, and performance of the procedure is subject to patient and surgeon preference. Therefore, incidental appendectomy rates may correlate poorly with other measures of hospital performance.

2c C☐ P☐ M☐ N☐

2d. Exclusions Justified

2d.1 **Summary of Evidence supporting exclusion(s):**
Exclusions remove cases where the outcome of interest may be indicated

2d C☐ P☐ M☐ N☐

2d.2 Citations for Evidence:
Updated citations will be presented in the May Steering Committee meeting

Refinement of the HCUP Quality Indicators (Technical Review), May 2001
http://qualityindicators.ahrq.gov/downloads/technical/qi_technical_review.zip

2d.3 Data/sample *(description of data/sample and size)*: AHRQ 2007 State Inpatient Databases (SID) with 4,000 hospitals and 30 million adult discharges

2d.4 Analytic Method *(type analysis & rationale)*:
Expert panel and descriptive analyses stratified by exclusion categories

2d.5 Testing Results *(e.g., frequency, variability, sensitivity analyses)*:
Refinement of the HCUP Quality Indicators (Technical Review), May 2001
http://qualityindicators.ahrq.gov/downloads/technical/qi_technical_review.zip

NA ☐

2e. Risk Adjustment for Outcomes/ Resource Use Measures

2e.1 Data/sample *(description of data/sample and size)*: Not applicable

2e.2 Analytic Method *(type of risk adjustment, analysis, & rationale)*:
Not applicable

2e.3 Testing Results *(risk model performance metrics)*:
Not applicable

2e.4 If outcome or resource use measure is not risk adjusted, provide rationale: Process measures; non-appropriate cases are excluded

2e C☐ P☐ M☐ N☐ **NA** ☐

2f. Identification of Meaningful Differences in Performance

2f.1 Data/sample from Testing or Current Use *(description of data/sample and size)*: AHRQ 2007 State Inpatient Databases (SID) with 4,000 hospitals and 30 million adult discharges

2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance *(type of analysis & rationale)*:
Posterior probability distribution parameterized using the Gamma distribution

2f.3 Provide Measure Scores from Testing or Current Use *(description of scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)*:

5th	25th	Median	75th	95th
0.002606	0.007769	0.014193	0.023527	0.042807

2f C☐ P☐ M☐ N☐

2g. Comparability of Multiple Data Sources/Methods

2g.1 Data/sample *(description of data/sample and size)*: Not applicable

2g.2 Analytic Method *(type of analysis & rationale)*:
Not applicable

2g.3 Testing Results *(e.g., correlation statistics, comparison of rankings)*:
Not applicable

2g C☐ P☐ M☐ N☐ **NA** ☐

2h. Disparities in Care

2h.1 If measure is stratified, provide stratified results *(scores by stratified categories/cohorts)*: Median income of patient´s ZIP code:
1) Estimate 2) Standard error 3) P-value: Relative to marked group-c 4) P-value:
2007 relative to 2006

2h C☐ P☐ M☐ N☐ **NA**

First quartile (lowest income) 20.383 0.472 0.001 0.000 Second quartile 20.801 0.460 0.000 0.038 Third quartile 19.020 0.471 0.187 0.028 Fourth quartile (highest income)c 18.142 0.468 0.178 **2h.2 If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans:** Users may stratify based on gender and race/ethnicity	☐
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Scientific Acceptability of Measure Properties?*	**2**
Steering Committee: Overall, to what extent was the criterion, *Scientific Acceptability of Measure Properties*, met? **Rationale:**	***2*** **C** ☐ **P** ☐ **M** ☐ **N** ☐
3. USABILITY	
Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (evaluation criteria)	Eval Rating
3a. Meaningful, Understandable, and Useful Information **3a.1 Current Use:** In use **3a.2 Use in a public reporting initiative (disclosure of performance results to the public at large)** (*If used in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). If not publicly reported, state the plans to achieve public reporting within 3 years*)**:** Illinois (state) Illinois Hospital Report Card and Consumer Guide to Health Care http://www.healthcarereportcard.illinois.gov/ Iowa (Iowa Healthcare Collaborative) Iowa Healthcare Collaborative http://www.ihconline.org/aspx/publicreporting/iowareport.aspx Kentucky (Norton Healthcare, a hospital system) Norton Healthcare Quality Report http://www.nortonhealthcare.com/body.cfm?id=157 Kentucky (state hospital association) Kentucky Hospital Association Quality Data http://info.kyha.com/QualityData/IQISite/ Kentucky (state) Health Care Information Center http://chfs.ky.gov/ohp/healthdata Maine (state) Maine Health Data Organization http://gateway.maine.gov/mhdo2008Monahrq/home.html New Jersey (state) Find and Compare Quality Care in NJ Hospitals http://www.nj.gov/health/healthcarequality/	**3a** **C** ☐ **P** ☐ **M** ☐ **N** ☐

New York (health care coalition)
New York State Hospital Report Card
http://www.myhealthfinder.com/

Texas (state)
Reports on Hospital Performance
http://www.dshs.state.tx.us/thcic/

Washington (health care coalition)
Washington State Hospital Report Card
http://www.myhealthfinder.com/wa09/index.php

The measure is also reported on HCUPnet:
http://hcupnet.ahrq.gov/HCUPnet.jsp?Id=EB57801381F71C41&Form=MAINSEL&JS=Y&Action=%3E%3ENext%3E%3E&_MAINSEL=AHRQ%20Quality%20Indicators

This measure is used in the MONAHRQ system that is provided for public reporting and quality improvement throughout the United States: http://monahrq.ahrq.gov/

3a.3 **If used in other programs/initiatives (***If used in quality improvement or other programs/initiatives, name of initiative(s), locations, Web page URL(s). If not used for QI, state the plans to achieve use for QI within 3 years***):**
University Healthcare Consortium - An alliance of 103 academic medical centers and 219 of their affiliated hospitals. Reporting the AHRQ QIs to their member hospitals. (see www.uhc.edu. Note: measure results reported to hospitals; not reported on site).

Dallas Fort Worth Hospital Council – Reporting on measure results to over 70 hospitals in Texas (see www.dfwhc.ord. Note: measure results reported to hospitals; not reported on site).

Norton Healthcare - a multi-hospital system in Kentucky (see http://www.nortonhealthcare.com/about/Our_Performance/index.aspx)
Ministry Health Care - a multi-hospital system in Wisconsin (see http://ministryhealth.org/display/router.aspx. Note: measure results reported to hospitals; not reported on site).

Minnesota Hospital Association
http://www.mnhospitals.org/ Note: measure used in quality improvement. Not reported publicly by the association)

This measure is used in the MONAHRQ system that is provided for public reporting and quality improvement throughout the United States: http://monahrq.ahrq.gov/

Testing of Interpretability (*Testing that demonstrates the results are understood by the potential users for public reporting and quality improvement*)
3a.4 **Data/sample** *(description of data/sample and size)***:** AHRQ 2007 State Inpatient Databases (SID) with 4,000 hospitals and 30 million adult discharges

3a.5 **Methods** *(e.g., focus group, survey, QI project)***:**
A research team from the School of Public Affairs, Baruch College, under contracts with the Department of Public Health, Weill Medical College and Battelle, Inc., has developed a pair of Hospital Quality Model Reports at the request of the Agency for Healthcare Research & Quality (AHRQ). These reports are designed specifically to report comparative information on hospital performance based on the AHRQ Quality Indicators (QIs). The work was done in close collaboration with AHRQ staff and the AHRQ Quality Indicators team.
The Model Reports (discussed immediately above) are based on:
• Extensive search and analysis of the literature on hospital quality measurement and reporting, as well as public reporting on health care quality more broadly;
• Interviews with quality measurement and reporting experts, purchasers, staff of purchasing coalitions, and

executives of integrated health care delivery systems who are responsible for quality in their facilities; • Two focus groups with chief medical officers of hospitals and/or systems and two focus groups with quality managers from a broad mix of hospitals; • Four focus groups with members of the public who had recently experienced a hospital admission; and • Four rounds of cognitive interviews (a total of 62 interviews) to test draft versions of the two Model Reports with members of the public with recent hospital experience, basic computer literacy but widely varying levels of education. 3a.6 **Results** *(qualitative and/or quantitative results and conclusions)*: Given the above review of the literature and original research that was conducted, a Model report was the result that could help sponsors use the best evidence on public reports so they are most likely to have the desired effects on quality.	
3b/3c. Relation to other NQF-endorsed measures 3b.1 **NQF # and Title of similar or related measures:**	
(for NQF staff use) **Notes on similar/related endorsed or submitted measures:** No similar/related endorsed or submitted measures.	
3b. Harmonization If this measure is related to measure(s) already endorsed by NQF (e.g., same topic, but different target population/setting/data source or different topic but same target population): 3b.2 **Are the measure specifications harmonized? If not, why?**	**3b** C☐ P☐ M☐ N☐ NA ☐
3c. Distinctive or Additive Value 3c.1 **Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures:** 5.1 **If this measure is similar to measure(s) already endorsed by NQF (i.e., on the same topic and the same target population), Describe why it is a more valid or efficient way to measure quality:** No competing measures found.	**3c** C☐ P☐ M☐ N☐ NA ☐
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Usability?*	**3**
Steering Committee: Overall, to what extent was the criterion, *Usability*, met? **Rationale:**	**3** C☐ P☐ M☐ N☐
4. FEASIBILITY	
Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)	Eval Rating
4a. Data Generated as a Byproduct of Care Processes 4a.1-2 **How are the data elements that are needed to compute measure scores generated?** Coding/abstraction performed by someone other than person obtaining original information (E.g., DRG, ICD-9 codes on claims, chart abstraction for quality measure or registry)	**4a** C☐ P☐ M☐ N☐
4b. Electronic Sources 4b.1 **Are all the data elements available electronically?** (*elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims*) Yes	**4b** C☐ P☐ M☐ N☐

4b.2 If not, specify the near-term path to achieve electronic capture by most providers.	
4c. Exclusions **4c.1 Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?** No **4c.2 If yes, provide justification.**	**4c** C☐ P☐ M☐ N☐ NA ☐
4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences **4d.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results.** Coding professionals follow detail guidelines, are subject to training and credentialing requirements, peer review and audit. Incidental appendectomy does not generally affect hospital payment; therefore, widespread use of this indicator may lead to less frequent coding of the procedure when it is performed. A reduction in the rate of incidental appendectomy may lead to a subsequent increase in the incidence of acute appendicitis, although this risk is expected to be small for the elderly population.	**4d** C☐ P☐ M☐ N☐
4e. Data Collection Strategy/Implementation **4e.1 Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing/frequency of data collection, patient confidentiality, time/cost of data collection, other feasibility/ implementation issues:** None **4e.2 Costs to implement the measure** (*costs of data collection, fees associated with proprietary measures*)**:** All data necessary to calculate this measure are routinely collected for hospital administrative purposes. The software for calculating the measure is available for free at: http://www.qualityindicators.ahrq.gov/software.htm **4e.3 Evidence for costs:** All data necessary to calculate this measure are routinely collected for hospital administrative purposes. The software for calculating the measure is available for free at: http://www.qualityindicators.ahrq.gov/software.htm **4e.4 Business case documentation:** All data necessary to calculate this measure are routinely collected for hospital administrative purposes. The software for calculating the measure is available for free at: http://www.qualityindicators.ahrq.gov/software.htm	**4e** C☐ P☐ M☐ N☐
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Feasibility?*	**4**
Steering Committee: Overall, to what extent was the criterion, *Feasibility*, met? **Rationale:**	**4** C☐ P☐ M☐ N☐
RECOMMENDATION	
(for NQF staff use) **Check if measure is untested and only eligible for time-limited endorsement.**	**Time-limited** ☐
Steering Committee: Do you recommend for endorsement?	**Y**☐

Comments:	N☐ A☐

CONTACT INFORMATION

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Co.5 Submitter If different from Measure Steward POC
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Co.6 Additional organizations that sponsored/participated in measure development
UC Davis,
Stanford University,
Battelle Memorial Institute

ADDITIONAL INFORMATION

Workgroup/Expert Panel involved in measure development
Ad.1 Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.
None

Ad.2 If adapted, provide name of original measure: None
Ad.3-5 If adapted, provide original specifications URL or attachment

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.6 Year the measure was first released: 2001
Ad.7 Month and Year of most recent revision: 10, 2010
Ad.8 What is your frequency for review/update of this measure? Annual
Ad.9 When is the next scheduled review/update for this measure? 05, 2011

Ad.10 Copyright statement/disclaimers: The AHRQ QI software is publicly available; no copyright disclaimers.

Ad.11 -13 Additional Information web page URL or attachment:

Date of Submission (*MM/DD/YY*)**:** 04/05/2011