

**Surgical Consensus Standards Endorsement Maintenance
NQF-Endorsed® Surgical Maintenance Standards (Phase II)**

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#0200: Death among surgical inpatients with treatable serious complications (failure to rescue) Agency for Healthcare Research and Quality
Description: Percentage of surgical inpatients with complications of care whose status is death
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Surgical inpatients with complications of care whose discharge status is death
Target Population (denominator): Major surgical discharges with complications of care: sepsis (ICD-9-CM codes 038, 790.7), pneumonia (ICD-9-CM codes 507.0, 997.3, 514, 482, 485, 486), GI bleeding (ICD-9-CM codes 531.00-531.31, 531.9, 532.00-532.31, 532.9, 533.00-533.31, 533.9, 534.00-534.31, 534.9, 535.01, 535.4, 578.9, 530.82), shock/cardiac arrest (ICD-9-CM codes 427.5, 785.5, 785.50, 785.51, 785.59, 799.1, 93.93, 99.60, 99.63), DVT/PE (ICD-9-CM codes 451.81, 451.11, 451.19, 415.11, 415.1, 453.8)
Target Population (denominator) Exclusions: Exclusions as noted for each complication of care : Sepsis excluding sepsis as a primary diagnosis, AIDS and immunocompromised states, LOS < 3 days, infection related admission Pneumonia excluding any primary diagnosis of pneumonia, any secondary diagnosis of ICD-9-CM 480, 481, 483, 484, 487, MDC4 (respiratory system), AIDS and immunocompromised states GI Bleeding excluding primary GI bleed as a primary diagnosis, MDC 6 (digestive tract), MDC 7 (hepatobiliary tract and pancreas), primary diagnosis of anemia due to blood loss, trauma, burn, alcoholism Shock/cardiac arrest excluding shock as primary diagnosis, MDC 4 (respiratory), MDC 5 (cardiac), hemorrhage or trauma as a primary diagnosis DVT/PE excluding DVT/PE as a primary diagnosis and pregnancy related PE
Methods/ Risk Adjustment: gender, age, drg, co-morbidity categories - the ahrq psi software includes risk-adjustment variables generated using regression coefficients from a baseline file representing a large proportion of the hospitalized u.s. population. the predicted value for each case is computed using standard logistic regression and covariates for gender, age (in 5-year age groups), modified cms drg, and the ahrq comorbidity category. the reference population used in the regression is the universe of discharges for states that participate in the hcup state inpatient data (sid) for the years 2001-2003 (combined), a database consisting of 38 states and approximately 90 million discharges. the expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). the risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Gender, age, DRG, co-morbidity categories - The AHRQ PSI software includes risk-adjustment variables generated using regression coefficients from a baseline file representing a large proportion of the hospitalized U.S. population. The predicted value for each case is computed using standard logistic regression and covariates for gender, age (in 5-year age groups), modified CMS DRG, and the AHRQ Comorbidity category. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2001-2003 (combined), a database consisting of 38 states and approximately 90 million discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate.
Target Population (denominator) Details:

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Target Population (denominator) Exclusion Details:
#0217: Surgery Patients with Recommended Venous Thromboembolism (VTE) Prophylaxis Ordered Centers for Medicare & Medicaid Services
Description: Percentage of surgery patients with recommended Venous Thromboembolism (VTE) Prophylaxis ordered during admission
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Paper medical record/flow-sheet; Electronic Health/Medical Record
Target Outcome (unadjusted numerator): Surgery patients with recommended VTE prophylaxis ordered during the admission
Target Population (denominator): All selected surgery patients
Target Population (denominator) Exclusions: Patients who are less than 18 years of age. Patients with procedures performed entirely by laparoscope. Patients whose total surgery time is less than or equal to 30 minutes Patients who stayed less than or equal to 24 hours postoperatively. Burn patients (refer to Specifications Manual, National Healthcare Quality Measures, Appendix A, Table 5.14 for ICD-9-CM codes). Patients who are on warfarin prior to admission. Patients with contraindications to both mechanical and pharmacological prophylaxis. Patients whose ICD-9-CM Principal Procedure occurred prior to the date of admission
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0218: Surgery Patients Who Received Appropriate Venous Thromboembolism (VTE) Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery End Time Centers for Medicare & Medicaid Services
Description: Percentage of surgery patients who received appropriate Venous Thromboembolism (VTE) Prophylaxis within 24 hours prior to surgery to 24 hours after surgery end time
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Paper medical record/flow-sheet; Electronic Health/Medical Record
Target Outcome (unadjusted numerator): Surgery patients who received appropriate VTE prophylaxis within 24 hours prior to Surgical Incision Time to 24 hours after Surgery End Time
Target Population (denominator): All selected surgery patients
Target Population (denominator) Exclusions: Patients who are less than 18 years of age. Patients with procedures performed entirely by laparoscope. Patients whose total surgery time is less than or equal to 30 minutes. Patients who stayed less than or equal to 24 hours postoperatively. Burn Patients (Refer to Specifications Manual, National Healthcare Quality Measures, Appendix A, Table 5.14 for ICD-9-CM codes) <ul style="list-style-type: none"> • Patients who are on warfarin prior to admission • Patients with contraindications to both mechanical and pharmacological prophylaxis • Patients whose ICD-9-CM Principal Procedure occurred prior to the date of admission
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0264: Prophylactic Intravenous (IV) Antibiotic Timing ASC Quality Collaboration
Description: Percentage of ASC patients who received IV antibiotics ordered for surgical site infection prophylaxis on time
Setting: Ambulatory Care: Amb Surgery Center Level of Analysis: Facility/Agency
Data Source: Paper medical record/flow-sheet
Target Outcome (unadjusted numerator): Number of ambulatory surgical center (ASC) admissions with a preoperative order for a prophylactic IV antibiotic for prevention of surgical site infection who received the prophylactic antibiotic on time
Target Population (denominator): All ASC admissions with a preoperative order for a prophylactic IV antibiotic for prevention of surgical site infection
Target Population (denominator) Exclusions: ASC admissions with a preoperative order for a prophylactic IV antibiotic for prevention of infections other than surgical site infections (e.g., bacterial endocarditis). ASC admissions with a preoperative order for a prophylactic antibiotic not administered by the intravenous route.
Methods/ Risk Adjustment: no risk adjustment necessary Not applicable
Target Population (denominator) Details: DEFINITIONS: Admission: completion of registration upon entry into the facility Prophylactic IV antibiotic for prevention of surgical site infection: an antibiotic prescribed with the intent of reducing the probability of an infection related to an invasive procedure; for purposes of this measures, the following are considered prophylactic for surgical site infection: ampicillin/sulbactam, aztreonam, cefazolin, cefmetazole, cefotetan, cefoxitin, cefuroxime, ciprofloxacin, clindamycin, ertapenem, erythromycin, gatifloxacin, gentamicin, levofloxacin, metronidazole, moxifloxacin, neomycin and vancomycin
Target Population (denominator) Exclusion Details:

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#0265: Hospital Transfer/Admission ASC Quality Collaboration
Description: Percentage of ASC admissions requiring a hospital transfer or hospital admission upon discharge from the ASC
Setting: Ambulatory Care: Amb Surgery Center Level of Analysis: Facility/Agency
Data Source: Paper medical record/flow-sheet
Target Outcome (unadjusted numerator): Ambulatory surgical center (ASC) admissions requiring a hospital transfer or hospital admission upon discharge from the ASC.
Target Population (denominator): All ASC admissions
Target Population (denominator) Exclusions: None
Methods/ Risk Adjustment: no risk adjustment necessary Not applicable
Target Population (denominator) Details: DEFINITIONS: Admission: completion of registration upon entry into the facility
Target Population (denominator) Exclusion Details: Not applicable
#0273: Perforated appendicitis (PQI 2) Agency for Healthcare Research and Quality
Description: This measure is used to assess the number of admissions for perforated appendix per 100 admissions for appendicitis within Metro Area or county. See Notes.
Setting: Hospital Level of Analysis: Population: counties or cities
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Discharges with ICD-9-CM diagnosis code for perforations or abscesses of appendix in any field.
Target Population (denominator): Number of discharges with diagnosis code for appendicitis in any field in MSA or county.
Target Population (denominator) Exclusions: Exclude cases: <ul style="list-style-type: none"> • Transfers from other institutions • MDC 14 (pregnancy, childbirth, and puerperium) • MDC 15 (newborns and other neonates).
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0284: Surgery patients on beta blocker therapy prior to admission who received a beta blocker during the perioperative period Centers for Medicare & Medicaid Services
Description: Percentage of patients on beta blocker therapy prior to admission who received a beta blocker during the perioperative period
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Surgery patients on beta blocker therapy prior to admission who receive a beta blocker during the perioperative period
Target Population (denominator): All surgery patients on beta blocker therapy prior to admission
Target Population (denominator) Exclusions: <ul style="list-style-type: none"> • Patients less than 18 years of age, • Patients who did not receive beta blockers due to contraindications as documented in the medical record, • Patients whose ICD-9-CM principal procedure occurred prior to the date of admission. • Patients whose ICD-9-CM principal procedure was performed entirely by laparoscope. • Patients who expired during the perioperative period. • Pregnant patients taking a beta-blocker prior to admission. • Patients involved
Methods/ Risk Adjustment:
Target Outcome (unadjusted numerator) Details:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0339: Pediatric Heart Surgery Mortality (PDI 6) (risk adjusted) Agency for Healthcare Research and Quality
Description: Number of in-hospital deaths in patients undergoing surgery for congenital heart disease per 1000 patients.
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Number of deaths, age under 18 years, with a code of pediatric heart surgery in any procedure field with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code of congenital heart disease in any field
Target Population (denominator): All discharges age under 18 years with ICD-9-CM procedure codes for congenital heart disease (1P) in any field or non-specific heart surgery (2P) in any field with ICD-9-CM diagnosis of congenital heart disease (2D) in any field
Target Population (denominator) Exclusions: Exclude patients with MDC 14 (Pregnancy, Childbirth, Puerperium); patients with transcatheter interventions as single cardiac procedures, performed without bypass but with catheterization; patients with septal defects as single cardiac procedures without bypass; heart transplant; premature infants with PDA closure as only cardiac procedure; age less than 30 days with PDA closure as only cardiac procedure; missing discharge disposition; transferring to another short-term hospital and newborns less than 500 grams
Methods/ Risk Adjustment: the predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, birthweight (500g groups), age in days (29-60, 61-90, 91+), age in years (in 5-year age groups), modified cms drg and ahrq ccs comorbidities. the reference population used in the regression is the universe of discharges for states that participate in the hcup state inpatient data (sid) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 20 million pediatric discharges. the expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). the risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. the model includes additional covariates for rachs-1 risk categories. required data elements: cms diagnosis related group (drg); cms major diagnostic category (mdc); age in days up to 364, then age years at admission; international classification of diseases, ninth revision, clinical modification (icd-9-cm) principal and secondary diagnosis codes. The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, birthweight (500g groups), age in days (29-60, 61-90, 91+), age in years (in 5-year age groups), modified CMS DRG and AHRQ CCS comorbidities. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 20 million pediatric discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. The model includes additional covariates for RACHS-1 risk categories. Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); age in days up to 364, then age years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0340: Pediatric Heart Surgery Volume (PDI 7) Agency for Healthcare Research and Quality
Description: Raw volume compared to annual thresholds (100 procedures)
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Discharges, age under 18 years, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code for either congenital heart disease (1P) in any field or non-specific heart surgery (2P) in any field with ICD-9-CM dia
Target Population (denominator): Not applicable
Target Population (denominator) Exclusions: Exclude patients with MDC 14 (Pregnancy, Childbirth, Puerperium); patients with transcatheter interventions as single cardiac procedures, performed without bypass but with catheterization; patients with septal defects as single cardiac procedures without bypass
Methods/ Risk Adjustment: none. None.
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0351: Death among surgical inpatients with serious, treatable complications (PSI 4) Agency for Healthcare Research and Quality
Description: Percent of in-hospital deaths for surgical discharges, age 18 years and older, with a principal procedure within 2 days of admission or elective, with enumerated complications of care listed in failure to rescue (FTR) definition (e.g., pneumonia, DVT/PE, s
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Number of in-hospital deaths.
Target Population (denominator): Surgical discharges defined by specific surgical Diagnosis Related Group (DRG) and an ICD-9-CM code for an operating room procedure, age 18 years and older, with a principal procedure within 2 days of admission or elective, with enumerated complications of care listed in failure to rescue (FTR) definition (e.g., pneumonia, DVT/PE, sepsis, shock/cardiac arrest, or GI hemorrhage/acute ulcer).
Target Population (denominator) Exclusions: Exclude patients age 90 years and older; patients in MDC 15 (newborns and neonates); patients transferred to an acute care facility; NOTE: Additional exclusion criteria are specific to each diagnosis. (For details on coding, see PSI Technical Specifications, p. 7)
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:
#0357: Abdominal Aortic Aneurysm Volume (AAA) (IQI 4) Agency for Healthcare Research and Quality
Description: Raw volume compared to annual thresholds (10 and 32 procedures).
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Discharges, age 18 years and older, with ICD-9-CM codes of 3834, 3844, 3864 or 3971 in any procedure field with a diagnosis of AAA in any field.
Target Population (denominator): Not applicable
Target Population (denominator) Exclusions: Numerator exclusions <ul style="list-style-type: none"> • MDC 14 (pregnancy, childbirth, and puerperium) • MDC 15 (newborns and other neonates)
Methods/ Risk Adjustment: none. None.
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0359: Abdominal Aortic Artery (AAA) Repair Mortality Rate (IQI 11) (risk adjusted) Agency for Healthcare Research and Quality
Description: Number of deaths per 100 AAA repairs (risk adjusted).
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.
Target Population (denominator): Discharges, age 18 years and older, with ICD-9-CM codes of 3834, 3844, 3864, or 3971 in any procedure field AND a diagnosis of AAA in any field.
Target Population (denominator) Exclusions: <ul style="list-style-type: none"> • missing discharge disposition (DISP=missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) • MDC 15 (newborns and other neonates)
<p>Methods/ Risk Adjustment: the risk adjustment and hierarchical modeling (rahm) workgroup recommended that the ahrq adopt a hierarchical modeling approach with the ahrq qi. the parameter file of risk adjustment covariates is computed using a hospital random-effect instead of a simple logistic model (http://www.qualityindicators.ahrq.gov/listserv_archive_2006.htm#oct13). the purpose of the qi statistical risk models is to provide parameter estimates for each quality indicator that are adjusted for age, gender, and all patient refined diagnosis related group (apr-drg). the apr-drg classification methodology was developed by 3m, and provides a basis to adjust the qis for the severity of illness or risk of mortality, and is explained elsewhere.</p> <p>risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ each age category*female adrg 1731 (other vascular procedures-minor) adrg 1732 (other vascular procedures-moderate) adrg 1733 (other vascular procedures-major) adrg 1734 (other vascular procedures-extreme) adrg 1691 (major thoracic and abdominal vascular procedures-minor) adrg 1692 (major thoracic and abdominal vascular procedures-moderate) adrg 1693 (major thoracic and abdominal vascular procedures-major) adrg 1694 (major thoracic and abdominal vascular procedures-extreme) adrg 9999 (other)</p> <p>The Risk Adjustment and Hierarchical Modeling (RAHM) Workgroup recommended that the AHRQ adopt a hierarchical modeling approach with the AHRQ QI. The parameter file of risk adjustment covariates is computed using a hospital random-effect instead of a simple logistic model (http://www.qualityindicators.ahrq.gov/listserv_archive_2006.htm#Oct13). The purpose of the QI statistical risk models is to provide parameter estimates for each quality indicator that are adjusted for age, gender, and all patient refined diagnosis related group (APR-DRG). The APR-DRG classification methodology was developed by 3M, and provides a basis to adjust the QIs for the severity of illness or risk of mortality, and is explained elsewhere.</p> <p>Risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ each age category*female ADRG 1731 (other vascular procedures-minor)</p>

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ADRG 1732 (other vascular procedures-moderate)
ADRG 1733 (other vascular procedures-major)
ADRG 1734 (other vascular procedures-extreme)
ADRG 1691 (major thoracic and abdominal vascular procedures-minor)
ADRG 1692 (major thoracic and abdominal vascular procedures-moderate)
ADRG 1693 (major thoracic and abdominal vascular procedures-major)
ADRG 1694 (major thoracic and abdominal vascular procedures-extreme)
ADRG 9999 (other)

Target Population (denominator) Details: ICD-9-CM AAA repair procedure codes:

3834 AORTA RESECTION & ANAST
3844 RESECT ABDM AORTA W REPL
3864 EXCISION OF AORTA
3971 ENDO IMPLANT OF GRAFT IN AORTA

ICD-9-CM AAA diagnosis codes:

4413 RUPT ABD AORTIC ANEURYSM
4414 ABDOM AORTIC ANEURYSM

Target Population (denominator) Exclusion Details:

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#0364: Incidental Appendectomy in the Elderly Rate (IQI 24) (risk adjusted) Agency for Healthcare Research and Quality
Description: Number of incidental appendectomies per 100 abdominal surgeries.
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Number of incidental appendectomies, 18 years and older, in any procedure field
Target Population (denominator): All discharges age 65 years and older with intrabdominal procedure based on DRGs
Target Population (denominator) Exclusions: Exclude patients with Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates)
Methods/ Risk Adjustment: risk adjustment: the predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), 3m apr-drg with severity-of-illness subclass. the reference population used in the regression is the universe of discharges for states that participate in the hcup state inpatient data (sid) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. the expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). the risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. required data elements: patient gender; age in years at admission; international classification of diseases, ninth revision, clinical modification (icd-9-cm) principal and secondary diagnosis codes. a limited license 3m apr-drg grouper is included with the ahrq qi software. Risk adjustment: The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), 3M APR-DRG with severity-of-illness subclass. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Required data elements: Patient gender; age in years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes. A limited license 3M APR-DRG grouper is included with the AHRQ QI Software.
Target Population (denominator) Details: DRG codes 146-155; 170-171; 191-198; 201; 354-359;365; 567-570
Target Population (denominator) Exclusion Details:

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<p>#0365: Pancreatic Resection Mortality Rate (IQI 9) (risk adjusted) Agency for Healthcare Research and Quality</p>
<p>Description: Number of deaths per 100 pancreatic resections for cancer (risk adjusted).</p>
<p>Setting: Hospital Level of Analysis: Facility/Agency</p>
<p>Data Source: Electronic administrative data/claims</p>
<p>Target Outcome (unadjusted numerator): Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.</p>
<p>Target Population (denominator): Discharges with ICD-9-CM codes of 526 or 527 in any procedure field AND a diagnosis code of pancreatic cancer in any field</p>
<p>Target Population (denominator) Exclusions:</p> <ul style="list-style-type: none"> • missing discharge disposition (DISP=missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) • MDC 15 (newborns and other neonates)
<p>Methods/ Risk Adjustment: the risk adjustment and hierarchical modeling (rahm) workgroup recommended that the ahrq adopt a hierarchical modeling approach with the ahrq qi. the parameter file of risk adjustment covariates is computed using a hospital random-effect instead of a simple logistic model (http://www.qualityindicators.ahrq.gov/listserv_archive_2006.htm#oct13). the purpose of the qi statistical risk models is to provide parameter estimates for each quality indicator that are adjusted for age, gender, and all patient refined diagnosis related group (apr-drg). the apr-drg classification methodology was developed by 3m, and provides a basis to adjust the qis for the severity of illness or risk of mortality, and is explained elsewhere.</p> <p>risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ each age category*female</p> <p>adrg 2201-major stomach, esophageal & duodenal procedures (minor) adrg 2202-major stomach, esophageal & duodenal procedures (moderate) adrg 2203-major stomach, esophageal & duodenal procedures (major) adrg 2204-major stomach, esophageal & duodenal procedures (extreme adrg 2601-pancreas, liver & shunt procedures (minor) adrg 2602-pancreas, liver & shunt procedures (moderate) adrg 2603-pancreas, liver & shunt procedures (major) adrg 2604-pancreas, liver & shunt procedures (extreme) adrg 9999 (other)</p> <p>The Risk Adjustment and Hierarchical Modeling (RAHM) Workgroup recommended that the AHRQ adopt a hierarchical modeling approach with the AHRQ QI. The parameter file of risk adjustment covariates is computed using a hospital random-effect instead of a simple logistic model (http://www.qualityindicators.ahrq.gov/listserv_archive_2006.htm#Oct13). The purpose of the QI statistical risk models is to provide parameter estimates for each quality indicator that are adjusted for age, gender, and all patient refined diagnosis related group (APR-DRG). The APR-DRG classification methodology was developed by 3M, and provides a basis to adjust the QIs for the severity of illness or risk of mortality, and is explained elsewhere.</p> <p>Risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ each age category*female</p>

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ADRG 2201-MAJOR STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES (MINOR)
ADRG 2202-MAJOR STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES (MODERATE)
ADRG 2203-MAJOR STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES (MAJOR)
ADRG 2204-MAJOR STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES (EXTREME)
ADRG 2601-PANCREAS, LIVER & SHUNT PROCEDURES (MINOR)
ADRG 2602-PANCREAS, LIVER & SHUNT PROCEDURES (MODERATE)
ADRG 2603-PANCREAS, LIVER & SHUNT PROCEDURES (MAJOR)
ADRG 2604-PANCREAS, LIVER & SHUNT PROCEDURES (EXTREME)
ADRG 9999 (OTHER)

Target Population (denominator) Details: ICD-9-CM pancreatic resection procedure codes:

526 TOTAL PANCREATECTOMY
527 RAD PANCREATICODUODENECT
ICD-9-CM pancreatic cancer diagnosis codes:
1520 MALIGNANT NEOPL DUODENUM
1561 MAL NEO EXTRAHEPAT DUCTS
1562 MAL NEO AMPULLA OF VATER 1574 MAL NEO ISLET LANGERHANS
1570 MAL NEO PANCREAS HEAD
1571 MAL NEO PANCREAS BODY
1572 MAL NEO PANCREAS TAIL
1573 MAL NEO PANCREATIC DUCT
1578 MALIG NEO PANCREAS NEC
1579 MALIG NEO PANCREAS NOS

Target Population (denominator) Exclusion Details:

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#0366: Pancreatic Resection Volume (IQI 2) Agency for Healthcare Research and Quality
Description: Raw volume compared to annual thresholds (10 and 11 procedures).
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Discharges, age 18 years and older, with ICD-9-CM codes of 526 or 527 in any procedure field
Target Population (denominator): not applicable
Target Population (denominator) Exclusions: <ul style="list-style-type: none"> • MDC 14 (pregnancy, childbirth, and puerperium) • MDC 15 (newborns and other neonates)
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:
#0367: Post operative Wound Dehiscence (PDI 11) (risk adjusted) Agency for Healthcare Research and Quality
Description: Cases of reclosure of postoperative disruption of abdominal wall per 1,000 cases of abdominopelvic surgery. Excludes obstetric admissions.
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Number of discharges, age under 18 years, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code of postoperative disruption of abdominal wall (54.61) in any procedure field
Target Population (denominator): All discharges age under 18 years of abdominopelvic surgery
Target Population (denominator) Exclusions: Exclude patients with MDC 14 (Pregnancy, Childbirth, Puerperium); where a procedure for reclosure of postoperative disruption of abdominal wall occurs before or on the same day as the first abdominopelvic surgery procedure; where the length of stay is less than two days; any diagnosis code for high and intermediate-risk immunocompromised states; with procedure codes for gastroschisis or umbilical hernia repair before reclosure and neonates less than 500 grams
Methods/ Risk Adjustment: the predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, birthweight (500g groups), age in days (29-60, 61-90, 91+), age in years (in 5-year age groups), modified cms drg and ahrq ccs comorbidities. the reference population used in the regression is the universe of discharges for states that participate in the hcup state inpatient data (sid) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 20 million pediatric discharges. the expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). the risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. required data elements: cms diagnosis related group (drg); cms major diagnostic category (mdc); age in days up to 364, then age years at admission; international classification of diseases, ninth revision, clinical modification (icd-9-cm) principal and secondary diagnosis codes.

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The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, birthweight (500g groups), age in days (29-60, 61-90, 91+), age in years (in 5-year age groups), modified CMS DRG and AHRQ CCS comorbidities. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 20 million pediatric discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate.

Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); age in days up to 364, then age years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.

Target Population (denominator) Details:

Target Population (denominator) Exclusion Details:

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#0368: Post operative Wound Dehiscence (PSI 14) (risk adjusted) Agency for Healthcare Research and Quality
Description: Cases of reclosure of postoperative disruption of abdominal wall per 1,000 cases of abdominopelvic surgery. Excludes obstetric admissions.
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Electronic administrative data/claims
Target Outcome (unadjusted numerator): Discharges with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code of postoperative disruption of abdominal wall (54.61) in any procedure field
Target Population (denominator): All abdominopelvic surgical discharges age 18 and older
Target Population (denominator) Exclusions: Exclude patients with MDC 14 (Pregnancy, Childbirth, Puerperium); where a procedure for reclosure of postoperative disruption of abdominal wall occurs before or on the same day as the first abdominopelvic surgery procedure; where the length of stay is less than two days; any diagnosis code for immunocompromised states
Methods/ Risk Adjustment: the predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), modified cms drg, and the ahrq comorbidity category. the reference population used in the regression is the universe of discharges for states that participate in the hcup state inpatient data (sid) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. the expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). the risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. required data elements: cms diagnosis related group (drg); cms major diagnostic category (mdc); patient gender; age in years at admission; international classification of diseases, ninth revision, clinical modification (icd-9-cm) principal and secondary diagnosis codes. The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), modified CMS DRG, and the AHRQ Comorbidity category. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); patient gender; age in years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:

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#0527: Prophylactic antibiotic received within 1 hour prior to surgical incision SCIP-Inf-1 Centers for Medicare & Medicaid Services
Description: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision. Patients who received vancomycin or a fluoroquinolone for prophylactic antibiotics should have the antibiotics initiated within two hours prior to surgic
Setting: Hospital Level of Analysis: Facility/Agency
Data Source: Paper medical record/flow-sheet; Electronic administrative data/claims
Target Outcome (unadjusted numerator): Surgical patients who received prophylactic antibiotics within 1 hour of surgical incision (2 hours if receiving vancomycin)
Target Population (denominator): Number of surgical patients with: CABG (ICD-9-CM procedure codes 36.10-36.14, 36.19, 36.15-36.17, 36.2), other cardiac surgery (35.0-35.95, 35.98, 35.99), colon surgery (45.00, 45.03, 45.41, 45.49, 45.50, 45.7-45.90, 45.92-45.95, 46.03, 46.04, 46.1-46.14, 46.52, 46.75, 45.76, 46.91, 46.92, 46.94, 48.5, 48.6-48.69), hip arthroplasty (81.51, 81.52), knee arthroplasty (81.54), abdominal hysterectomy (68.3, 68.4, 68.6), vaginal hysterectomy (68.5-68.59, 68.7), or vascular surgery (38.34, 38.36, 38.37, 38.44, 38.48, 38.49, 38.51, 38.52, 38.64, 38.14, 38.16, 38.18, 39.25, 39.26, 39.29)
Target Population (denominator) Exclusions: <ul style="list-style-type: none"> • Principal or admission diagnosis suggestive of pre-operative infectious disease <ul style="list-style-type: none"> o Infectious diseases (001.0-139.8) o Meningitis (320.0-326) o Ear infection (380.0-380.23; 382.0-382.20) o Endocarditis (421.0-422.99) o Respiratory (460-466.19; 472-476.1; 480-487.8; 490-491.9; 510-511.9; 513-513.1) o Digestive (540-542; 575.0) o Renal (590-590.9; 595.0) o Prostate (601.0-601.9) o Gynecologic (614-614.9; 616-616.4) o Skin (680-686.9) o Musculo-skeletal (711.9-711.99, 730-730.99) o Fever of unknown origin (780.6) o Septic shock (785.59) o Bacteremia (790.7) o Viremia (790.8) • Receiving antibiotics at the time of admission (except colon surgery patients taking oral prophylactic antibiotics) • Medical records do not include antibiotic start date/time or incision date/time • Receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics) • Colon surgery patients who received oral prophylactic antibiotics only
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details:
#0528: Prophylactic antibiotic selection for surgical patients Centers for Medicare & Medicaid Services
Description: Surgical patients who received prophylactic antibiotics consistent with current guidelines (specific to each type of surgical procedure).

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<p>Setting: Hospital Level of Analysis: Facility/Agency</p>
<p>Data Source: Paper medical record/flow-sheet; Electronic administrative data/claims</p>
<p>Target Outcome (unadjusted numerator): Surgical patients who received recommended prophylactic antibiotics for specific surgical procedures</p>
<p>Target Population (denominator): Number of surgical patients with: CABG (ICD-9-CM procedure codes 36.10-36.14, 36.19, 36.15-36.17, 36.2), other cardiac surgery (35.0-35.95, 35.98, 35.99), colon surgery (45.00, 45.03, 45.41, 45.49, 45.50, 45.7-45.90, 45.92-45.95, 46.03, 46.04, 46.1-46.14, 46.52, 46.75, 45.76, 46.91, 46.92, 46.94, 48.5, 48.6-48.69), hip arthroplasty (81.51, 81.52), knee arthroplasty (81.54), abdominal hysterectomy (68.3, 68.4, 68.6), vaginal hysterectomy (68.5-68.59, 68.7), or vascular surgery (38.34 38.36, 38.37, 38.44, 38.48, 38.49, 38.51, 38.52. 38.64, 38.14, 38.16, 38.18, 39.25, 39.26, 39.29)</p>
<p>Target Population (denominator) Exclusions: pre-operative infectious disease</p> <ul style="list-style-type: none"> o Infectious diseases (001.0-139.8) o Meningitis (320.0-326) o Ear infection (380.0-380.23; 382.0-382.20) o Endocarditis (421.0-422.99) o Respiratory (460-466.19; 472-476.1; 480-487.1; 490-491.9; 510-511.9; 513-413.1) o Digestive (540-542; 575.0) o Renal (590-590.9; 595.0) o Prostate (601.0-601.9) o Gynecologic (614-614.9; 616-616.4) o Skin (680-686.9) o Musculo-skeletal (711.9-711.99, 730.0-730.99) o Fever of unknown origin (780.6) o Septic shock (785.59) o Bacteremia (790.7) o Viremia (790.8) <ul style="list-style-type: none"> • Receiving antibiotics at the time of admission (except colon surgery patients taking oral prophylactic antibiotics) • Medical records do not include antibiotic start date/time or incision date/time, or surgery end date/time • Receiving antibiotics > 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics) • No antibiotics received before or during surgery, or within 24 hours after surgery end time (i.e., patient did not receive any prophylactic antibiotics) • No antibiotics received during the hospitalization
<p>Methods/ Risk Adjustment:</p>
<p>Target Population (denominator) Details:</p>
<p>Target Population (denominator) Exclusion Details:</p>
<p>#0529: Prophylactic antibiotics discontinued within 24 hours after surgery end time Centers for Medicare & Medicaid Services</p>
<p>Description: Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time. The Society of Thoracic Surgeons (STS) Practice Guideline for Antibiotic Prophylaxis in Cardiac Surgery (2006) indicates that there is no reason</p>
<p>Setting: Hospital Level of Analysis: Facility/Agency</p>

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Data Source: Paper medical record/flow-sheet; Electronic administrative data/claims
Target Outcome (unadjusted numerator): Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after surgery end time
Target Population (denominator): Number of surgical patients with: CABG (ICD-9-CM procedure codes 36.10-36.14, 36.19, 36.15-36.17, 36.2), other cardiac surgery (35.0-35.95, 35.98, 35.99), colon surgery (45.00, 45.03, 45.41, 45.49, 45.50, 45.7-45.90, 45.92-45.95, 46.03, 46.04, 46.1-46.14, 46.52, 46.75, 45.76, 46.91, 46.92, 46.94, 48.5, 48.6-48.69), hip arthroplasty (81.51, 81.52), knee arthroplasty (81.54), abdominal hysterectomy (68.3, 68.4, 68.6), vaginal hysterectomy (68.5-68.59, 68.7), or vascular surgery (38.34, 38.36, 38.37, 38.44, 38.48, 38.49, 38.51, 38.52, 38.64, 38.14, 38.16, 38.18, 39.25, 39.26, 39.29)
<p>Target Population (denominator) Exclusions:</p> <ul style="list-style-type: none"> • Principal or admission diagnosis suggestive of pre-operative infectious disease <ul style="list-style-type: none"> o Infectious diseases (001.0-139.8) o Meningitis (320.0-326) o Ear infection (380.0-380.23; 382.0-382.20) o Endocarditis (421.0-422.99) o Respiratory (460-466.19; 472-476.1; 480-487.1; 490-491.9; 510-511.9; 513-513.1) o Digestive (540-542; 575.0) o Renal (590-590.9; 595.0) o Prostate (601.0-601.9) o Gynecologic (614-614.9; 616-616.4) o Skin (680-686.9) o Musculo-skeletal (711.9; 711.99; 730.0-730.99) o Fever of unknown origin (780.6) o Septic shock (785.59) o Bacteremia (790.7) o Viremia (790.8) • Receiving antibiotics at the time of admission (except colon surgery patients taking oral prophylactic antibiotics); • Medical records do not include antibiotic start date/time, incision date/time, antibiotic end date/time, surgery end date/time; • Receiving antibiotics > 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics); • No antibiotics received before or during surgery, or within 24 hours after surgery end time (i.e., patient did not receive any prophylactic antibiotics); • Diagnosed with and treated for infections within two days after surgery date • No antibiotics received during hospitalization
Methods/ Risk Adjustment:
Target Population (denominator) Details:
Target Population (denominator) Exclusion Details: