

# Death Rate among Surgical Inpatients with Serious Treatable Complications

## Technical Specifications

### Patient Safety Indicators 04 (PSI 04)

AHRQ Quality Indicators™, Version 5.0

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Provider-Level Indicator

Type of Score: Rate

### Description

In-hospital deaths per 1,000 surgical discharges, among patients ages 18 through 89 years or obstetric patients, with serious treatable complications (deep vein thrombosis/ pulmonary embolism, pneumonia, , sepsis, shock/cardiac arrest or gastrointestinal hemorrhage/acute ulcer). Includes metrics for the number of discharges for each type of complication. Excludes cases transferred to an acute care facility.

*[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report in-hospital deaths per 1,000 hospital discharges.]*

### Numerator

#### Overall:

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

#### Stratum 04A: DEEP VEIN THROMBOSIS / PULMONARY EMBOLISM (DVT/PE)

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

#### Stratum 04B: PNEUMONIA

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

## **Stratum 04C: SEPSIS**

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

## **Stratum 04D: SHOCK / CARDIAC ARREST**

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

## **Stratum 04E: GASTROINTESTINAL (GI) HEMORRHAGE / ACUTE ULCER**

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

# **Denominator**

## **Overall:**

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- meet the inclusion and exclusion criteria for Stratum A (deep vein thrombosis or pulmonary embolism), Stratum B (pneumonia), , Stratum C (sepsis), Stratum D (shock or cardiac arrest), or Stratum E (gastrointestinal hemorrhage or acute ulcer) defined below.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

Exclude cases:

- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

To ensure that the strata are mutually exclusive within each indicator, the strata were prioritized in order of their relative prevalence in the reference population data. In the event that

a discharge record meets the denominator criteria for several strata, the software assigns the record to the one (and only one) candidate stratum whose outcome is most prevalent in the reference population. That is to say that if a record met the criteria to be in the denominator for strata C and D, and if the outcome in D were more prevalent than the one in C in the reference population dataset, then the software would only assign the record to stratum D, and would not assign it to C.

For PSI 04, prioritization to ensure mutual exclusivity for the strata is as follows:

STRATUM D: SHOCK/CARDIAC ARREST  
 STRATUM C: SEPSIS  
 STRATUM B: PNEUMONIA  
 STRATUM A: DVT/PE  
 STRATUM E: GI HEMORRHAGE/ACUTE ULCER

## **Stratum 04A: DEEP VEIN THROMBOSIS / PULMONARY EMBOLISM (DVT/PE)**

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for deep vein thrombosis or pulmonary embolism.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

### **ICD-9-CM Pulmonary embolism or deep vein thrombosis diagnosis codes:**

|       |                                    |       |   |
|-------|------------------------------------|-------|---|
| 4151  | PULMON EMBOLISM/INFARCT (end 1995) | 45181 | ILIAC THROMBOPHLEBITIS                                  |
| 41511 | IATROGEN PILM EMB/INFARC           | 4519  | THROMBOPHLEBITIS NOS (used with data prior to FY 2010)  |
| 41513 | SADDLE EMBOL PULMON ART            | 45340 | AC DVT/EMBL LOW EXT NOS                                 |
| 41519 | PULM EMBOL/INFARCT NEC             | 45341 | AC DVT/EMB PROX LOW EXT                                 |
| 45111 | FEMORAL VEIN PHLEBITIS             | 45342 | AC DVT/EMB DISTL LOW EXT                                |
| 45119 | DEEP PHLEBITIS-LEG NEC             | 4538  | VENOUS THROMBOSIS NEC (end 2009)                        |
| 4512  | THROMBOPHLEBITIS LEG NOS           | 4539  | VENOUS THROMBOSIS NOS (used with data prior to FY 2010) |

Exclude cases:

- with a principal ICD-9-CM diagnosis code for deep vein thrombosis or pulmonary embolism (see above)
- with a principal ICD-9-CM diagnosis code for abortion-related or postpartum obstetric pulmonary embolism
- transferred to an acute care facility (DISP = 2)

- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

**ICD-9-CM Abortion-related or postpartum obstetric pulmonary embolism diagnosis codes:**

|       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 63460 | SPON ABORT W EMBOL-UNSP  | 63761 | AB NOS W EMBOLISM-INC    |
| 63461 | SPON ABORT W EMBOL-INC   | 63762 | AB NOS W EMBOLISM-COMP   |
| 63462 | SPON ABOT W EMBOL-COMP   | 6386  | ATTEMP ABORT W EMBOLISM  |
| 63560 | LEGAL ABORT W EMBOL-UNSP | 6396  | POSTABORTION EMBOLISM    |
| 63561 | LEGAL ABORT W EMBOL-INC  | 67320 | OB PULM EMBOL NOS-UNSPEC |
| 63562 | LEGAL AMOT W EMBOL-COMP  | 67321 | PULM EMBOL NOS-DELIVERED |
| 63660 | ILLEG AB W EMBOLISM-UNSP | 67322 | PULM EMBOL NOS-DEL W P/P |
| 63661 | ILLEG AB W EMBOLISM-INC  | 67323 | PULM EMBOL NOS-ANTEPART  |
| 63662 | ILLEG AB W EMBOLISM-COMP | 67324 | PULM EMBOL NOS-POSTPART  |
| 63760 | AB NOS W EMBOLISM-UNSP   |       |                          |

## Stratum B: PNEUMONIA

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for pneumonia.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

**ICD-9-CM Pneumonia diagnosis codes:**

|       |                          |       |  |
|-------|--------------------------|-------|--|
| 4820  | K. PNEUMONIAE PNEUMONIA  | 48249 | STAPH PNEUMONIA NEC                    |
| 4821  | PSEUDOMONAL PNEUMONIA    | 4828  | BACTERIAL PNEUMONIA NEC                |
| 4822  | H.INFLUENZAE PNEUMONIA   | 48281 | PNEUMONIA ANAEROBES                    |
| 4823  | STREPTOCOCCAL PNEUMONIA  | 48282 | PNEUMONIA E COLI                       |
| 48230 | STREPTOCOCCAL PNEUMN NOS | 48283 | PNEUMO OTH GRM-NEG BACT                |
| 48231 | PNEUMONIA STRPTOCOCCUS A | 48284 | LEGIONNAIRES DISEASE                   |
| 48232 | PNEUMONIA STRPTOCOCCUS B | 48289 | PNEUMONIA OTH SPCF BACT                |
| 48239 | PNEUMONIA OTH STREP      | 4829  | BACTERIAL PNEUMONIA NOS                |
| 4824  | STAPHYLOCOCCAL PNEUMONIA | 485   | BRONCHOPNEUMONIA, ORGANISM UNSPECIFIED |
| 48240 | STAPHYLOCOCCAL PNEU NOS  | 486   | PNEUMONIA, ORGANISM UNSPECIFIED        |
| 48241 | METH SUS PNEUM D/T STAPH | 5070  | DUE TO INHALATION OF FOOD OR VOMITUS   |
| 48242 | METH RES PNEU D/T STAPH  | 514   | PULMONARY CONGESTION AND HYPOSTASIS    |

Exclude cases:

- with a principal ICD-9-CM diagnosis code for pneumonia (see above)
- with a principal ICD-9-CM diagnosis code for respiratory complications
- with any-listed ICD-9-CM diagnosis codes for viral pneumonia or influenza
- with any-listed ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for

immunocompromised state

- with any-listed ICD-9-CM procedure codes for lung cancer
- MDC 4 (diseases/disorders of respiratory system)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

See *Patient Safety Indicators Appendices*:

- Appendix I – Immunocompromised State Diagnosis and Procedure Codes

**ICD-9-CM Respiratory complications diagnosis codes:**

|       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 9973  | RESPIRATORY              | 99732 | POSTPROC ASPIRATION PNEU |
|       | COMPLICATIONS (end 2008) |       |                          |
| 99731 | VENTLTR ASSOC PNEUMONIA  | 99739 | RESPIRATORY COMP NEC     |

**ICD-9-CM Viral pneumonia or influenza diagnosis codes:**

|      |                                   |       |                                      |
|------|-----------------------------------|-------|--------------------------------------|
| 4800 | ADENOVIRAL PNEUMONIA              | 4870  | INFLUENZA W/ PNEUMONIA               |
| 4801 | RESP SYNCYT VIRAL PNEUM           | 4871  | FLU W RESP MANIFEST NEC              |
| 4802 | PARAINFLUENZA VIRAL PNEUM         | 4878  | FLU W MANIFESTATION NEC              |
| 4803 | PNEUMONIA DUE TO SARS             | 488   | FLU D/T AVIAN FLU VIRUS (end 2009)   |
| 4808 | VIRAL PNEUMONIA NEC               | 4880  | FLU D/T IDENTIF AVIAN FLU (end 2010) |
| 4809 | VIRAL PNEUMONIA NOS               | 48801 | FLU DT IDEN AVIAN W PNEU             |
| 481  | PNEUMOCOCCAL PNEUMONIA            | 48802 | FLU DT AVIAN W OTH RESP              |
| 483  | PNEUMONIA ORGANISM NEC (end 1992) | 48809 | FLU DT AVIAN MANIFEST NEC            |
| 4830 | PNEU MYCPLSM PNEUMONIAE           | 4881  | FLU DT NOVEL H1N1 FLU (end 2010)     |
| 4831 | PNEUMONIA D/T CHLAMYDIA           | 48811 | FLU DT 2009 H1N1 W PNEU              |
| 4838 | PNEUMON OTH SPEC ORGNSM           | 48812 | FLU-2009 H1N1 W OTH RESP             |
| 4841 | PNEUM W CYTOMEG INCL DIS          | 48819 | FLU-2009 H1N1 W OTH MAN              |
| 4843 | PNEUMONIA IN WHOOP COUGH          | 48881 | FLU DT NVL A VRS W PNEU              |
| 4845 | PNEUMONIA IN ANTHRAX              | 48882 | FLU DT NVL A W OTH RESP              |
| 4846 | PNEUMONIA IN ASPERGILLOSIS        | 48889 | FLU DT NOVEL A W OTH MAN             |
| 4847 | PNEUMONIA IN OTH SYS MYCOSES      |       |                                      |
| 4848 | PNEUMONIA IN INFECT DIS NEC       |       |                                      |

**ICD-9-CM Lung cancer procedure codes:**

|      |                         |      |                         |
|------|-------------------------|------|-------------------------|
| 3230 | THORACOSCOPIC SURGERY   | 3249 | LOBECTOMY OF LUNG NEC   |
| 3239 | OTH SEG LUNG RESECT NOS | 3250 | THORACOSCOPIC SURGERY   |
| 3241 | THORACOSCOPIC SURGERY   | 3259 | OTHER PNEUMONECTOMY NOS |

## Stratum 04C: SEPSIS

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for sepsis.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

### ICD-9-CM Sepsis diagnosis codes:

|       |                             |       |                                |
|-------|-----------------------------|-------|--------------------------------|
| 0380  | STREP SEPTICEMIA            | 03842 | ESCHERICHIA COLI               |
| 0381  | STAPH SEPTICEMIA            | 03843 | PSEUDOMONAS                    |
| 03810 | STAPH SEPTICEMIA, UNSPEC    | 03844 | SERRATIA                       |
| 03811 | METH SUSC STAPH AUR SEPT    | 03849 | SEPTICEM DT OTHER GRAM-NEG ORG |
| 03812 | MRSA SEPTICEMIA             | 0388  | OTHER SPECIFIED SEPTICEMIAS    |
| 03819 | OTHER STAPH SEPTICEMIA      | 0389  | UNSPECIFIED SEPTICEMIA         |
| 0382  | PNEUMOCOCL SEPTICEMIA       | 78552 | SEPTIC SHOCK                   |
| 0383  | SEPTICEMIA DUE TO ANAEROBES | 99591 | SIRS DT INFECT WO ORGAN DYSFUN |
| 03840 | GRAM-NEGATIVE ORG, UNSPEC   | 99592 | SIRS DT INFECT W ORGAN DYSFUN  |
| 03841 | HEMOPHILUS INFLUENZAE       | 99802 | POSTOPERATIVE SHOCK, SEPTIC    |

Exclude cases:

- with a principal ICD-9-CM diagnosis code for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection or pressure ulcer
- with any-listed ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for immunocompromised state
- with a length of stay of less than 4 days
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

See *Patient Safety Indicators Appendices*:

- Appendix F – Infection Diagnosis Codes
- Appendix I – Immunocompromised State Diagnosis and Procedure Codes

### ICD-9-CM pressure ulcer codes (for discharges prior to 2008)

|       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 7070  | DECUBITUS ULCER          | 70704 | PRESSURE ULCER, HIP      |
| 70700 | PRESSURE ULCER, SITE NOS | 70705 | PRESSURE ULCER, BUTTOCK  |
| 70701 | PRESSURE ULCER, ELBOW    | 70706 | PRESSURE ULCER, ANKLE    |
| 70702 | PRESSURE ULCER, UPR BACK | 70707 | PRESSURE ULCER, HEEL     |
| 70703 | PRESSURE ULCER, LOW BACK | 70709 | PRESSURE ULCER, SITE NEC |

## CARDIAC ARREST

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for shock or cardiac arrest.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs
- Appendix E – Surgical Discharge MS-DRGs

### ICD-9-CM Shock or cardiac arrest diagnosis codes<sup>1</sup>

|       |   |       |   |
|-------|---|-------|---|
| 4275  | CARDIAC ARREST  | 4275  | CARDIAC ARREST  |
| 63450 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 | 63450 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 |
| 63451 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 | 63451 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 |
| 63452 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 | 63452 | SPONTANEOUS ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK                 |
| 63550 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             | 63550 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             |
| 63551 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             | 63551 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             |
| 63552 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             | 63552 | LEGALLY INDUCED ABORTION<br>UNSPECIFIED COMPLICATED BY<br>SHOCK             |
| 63650 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        | 63650 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        |
| 63651 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        | 63651 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        |
| 63652 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        | 63652 | ILLEGAL ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK                        |
| 63750 | LEGALLY UNSPECIFIED TYPE OF<br>ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK | 63750 | LEGALLY UNSPECIFIED TYPE OF<br>ABORTION UNSPECIFIED<br>COMPLICATED BY SHOCK |

### ICD-9-CM Shock or cardiac arrest (resuscitation) procedure codes:

|      |                          |      |                          |
|------|--------------------------|------|--------------------------|
| 9393 | NONMECHAN RESUSCITATION  | 9963 | CLOSED CHEST CARD MASSAG |
| 9960 | CARDIOPULM RESUSCITA NOS |      |                          |

Exclude cases:

- with a principal ICD-9-CM diagnosis code for shock or cardiac arrest (see above)
- with a principal ICD-9-CM diagnosis code for trauma
- with a principal ICD-9-CM diagnosis code for hemorrhage
- with a principal ICD-9-CM diagnosis code for gastrointestinal hemorrhage
- with a principal ICD-9-CM diagnosis code for abortion-related shock
- with any-listed ICD-9-CM procedure codes for lung cancer resection
- MDC 4 (diseases/disorders of respiratory system)
- MDC 5 (diseases/disorders of circulatory system)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

See *Patient Safety Indicators Appendices*:

- Appendix G – Trauma Diagnosis Codes

**ICD-9-CM Hemorrhage diagnosis codes:**

|       |                         |       |                         |
|-------|-------------------------|-------|-------------------------|
| 2851  | AC POSTHEMORRHAG ANEMIA | 9582  | SECONDARY/RECUR HEMORR  |
| 4590  | HEMORRHAGE NOS          | 99811 | HEMORRHAGE COMPLIC PROC |
| 56881 | HEMOPERITONEUM          |       |                         |

**ICD-9-CM Gastrointestinal hemorrhage diagnosis codes:**

|       |  |       |  |
|-------|--|-------|--|
| 4560  | ESOPH VARICES W BLEED                                    | 53361 | PEPTIC ULC, SITE UNSPEC, CHR OR UNSPEC W HEM AND PERF W OBST   |
| 45620 | ESOPH VARICES IN DISEASES CLASSIFIED ELSEWHERE W BLEED   | 53400 | GASTROJEJ ULC, AC W HEM WO MENTION OF OBST                     |
| 5307  | GASTROESOPH LACERATION- HEM SYNDROME                     | 53401 | GASTROJEJ ULC, AC W HEM W OBST                                 |
| 53021 | ULC OF ESOPH W BLEED                                     | 53420 | GASTROJEJ ULC, AC W HEM AND PERF WO MENTION OF OBST            |
| 53082 | ESOPH HEM  | 53421 | GASTROJEJ ULC, AC W HEM AND PERF W OBST                        |
| 53100 | GAST ULC AC W HEM WO MENTION OF OBST                     | 53440 | GASTROJEJ ULC, CHR OR UNSPEC W HEM WO MENTION OF OBST          |
| 53101 | GAST ULC AC W HEM W OBST                                 | 53441 | GASTROJEJ ULC, CHR OR UNSPEC W HEM W OBST                      |
| 53120 | GAST ULC AC W HEM AND PERF WO MENTION OF OBST            | 53460 | GASTROJEJ ULC, CHR OR UNSPEC W HEM AND PERF WO MENTION OF OBST |
| 53121 | GAST ULC, AC W HEM AND PERF W OBST                       | 53461 | GASTROJEJ ULC, CHR OR UNSPEC W HEM AND PERF W OBST             |
| 53140 | GAST ULC CHR OR UNSPEC W HEM - WO MENTION OF OBST        | 53501 | GAST AND DUOD, AC GASTRITIS W HEM                              |
| 53141 | GAST ULC CHR OR UNSPEC W HEM W OBST                      | 53511 | GAST AND DUOD, ATROPHIC GASTRITIS W HEM                        |
| 53160 | GAST ULC CHR OR UNSPEC W HEM AND PERF WO MENTION OF OBST | 53521 | GAST AND DUOD, GAST MUCOSAL HYPERTROPHY, W HEM                 |
| 53161 | GAST ULC CHR OR UNSPEC W HEM AND PERF W OBST             | 53531 | GAST AND DUOD, ALCOHOLIC GASTRITIS, W HEM                      |
| 53200 | DUODENAL ULC AC W HEM WO MENTION OF OBST                 | 53541 | GAST AND DUOD, OTHER SPECIFIED GASTRITIS W HEM                 |
| 53201 | DUODENAL ULC AC W HEM W OBST                             | 53551 | GAST AND DUOD, UNSPEC GASTRITIS AND GASTDUODENITIS W HEM       |
| 53220 | DUODENAL ULC AC W HEM AND PERF WO MENTION OF OBST        | 53561 | GAST AND DUOD, DUODENITIS W HEM                                |



|       |   |       |   |
|-------|---|-------|---|
| 53221 | DUODENAL ULC AC W HEM AND PERF W OBST                                     | 53783 | OTH SPEC DIS STOM AND DUOD, ANGIODYSPLASIA W HEM  |
| 53240 | DUODENAL ULC CHR OR UNSPEC W HEM WO MENTION OF OBST                       | 53784 | DIEULAFOY LESION (HEMORR) OF STOMACH AND DUODENUM |
| 53241 | DUODENAL ULC CHR OR UNSPEC W HEM W OBST                                   | 56202 | DIVERTICULOSIS OF SMALL INTESTINE -W HEM          |
| 53260 | DUODENAL ULC CHR OR UNSPEC W HEM AND PERF WO MENTION OF OBST              | 56203 | DIVERTICULITIS OF SMALL INTESTINE - W HEM         |
| 53261 | DUODENAL ULC CHR OR UNSPEC W HEM AND PERF W OBST                          | 56212 | DIVERTICULOSIS OF COLON W HEM                     |
| 53300 | PEPTIC ULC, SITE UNSPEC AC W HEM WO MENTION OF OBST                       | 56213 | DIVERTICULITIS OF COLON W HEM                     |
| 53301 | PEPTIC ULC, SITE UNSPEC, AC W HEM W OBST                                  | 5693  | HEM OF RECTUM AND ANUS                            |
| 53320 | PEPTIC ULC, SITE UNSPEC, AC W HEM AND PERF WO MENTION OF OBST             | 56985 | ANGIODYSPLASIA OF INTESTINE W HEM                 |
| 53321 | PEPTIC ULC, SITE UNSPEC, AC W HEM AND PERF W OBST                         | 56986 | DIEULAFOY LESION (HEMORRHAGIC) OF INTESTINE       |
| 53340 | PEPTIC ULC, SITE UNSPEC CHR OR UNSPEC W HEM WO MENTION OF OBST            | 5780  | GI HEM, HEMATEMESIS                               |
| 53341 | PEPTIC ULC, SITE UNSPEC, CHR OR UNSPEC W HEM W OBST                       | 5781  | GI HEM, BLOOD IN STOOL                            |
| 53360 | PEPTIC ULC, SITE UNSPEC, CHR OR UNSPEC W HEM AND PERF -WO MENTION OF OBST | 5789  | GI HEM, HEM OF GI TRACT, UNSPEC                   |

**ICD-9-CM Abortion-related shock diagnosis codes:**

|       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 63450 | SPON ABORT W SHOCK-UNSP  | 63651 | ILLEG ABORT W SHOCK-INC  |
| 63451 | SPON ABORT W SHOCK-INC   | 63652 | ILLEG ABORT W SHOCK-COMP |
| 63452 | SPON ABORT W SHOCK-COMP  | 63750 | ABORT NOS W SHOCK-UNSO   |
| 63550 | LEGAL ABORT W SHOCK-UNSO | 63751 | ABORT NOS W SHOCK-INC    |
| 63551 | LEGAL ABORT W SHOCK-INC  | 63752 | ABORT NOS W SHOCK-COMP   |
| 63552 | LEGAL ABORT W SHOCK-COMP | 6385  | ATTEM ABORTION W SHOCK   |
| 63650 | ILLEG AB W SHOCK-UNSO    |       |                          |

**ICD-9-CM Lung cancer resection procedure codes:**

|      |                         |      |                         |
|------|-------------------------|------|-------------------------|
| 3239 | OTH SEG LUNG RESECT NOS | 3259 | OTHER PNEUMONECTOMY NOS |
| 3249 | LOBECTOMY OF LUNG NEC   |      |                         |

## **Stratum 04E: GASTROINTESTINAL (GI) HEMORRHAGE / ACUTE ULCER**

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for gastrointestinal hemorrhage or acute ulcer.

Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Patient Safety Indicators Appendices*:

- Appendix A – Operating Room Procedure Codes
- Appendix D – Surgical Discharge DRGs

- Appendix E – Surgical Discharge MS-DRGs

**ICD-9-CM Gastrointestinal hemorrhage or acute ulcer diagnosis codes:**

|       |  |       |   |
|-------|--|-------|---|
| 4560  | ESOPHAGEAL VARICES WITH BLEEDING   | 53390 | SITE UNSPECIFIED UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION |
| 45620 | ESOPHAGEAL VARICES IN DISEASES CLASSIFIED ELSEWHERE WITH BLEEDING  | 53391 | SITE UNSPECIFIED UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION               |
| 5307  | GASTROESOPHAGEAL LACERATION-HEMORRHAGE SYNDROME  | 53400 | ACUTE WITH HEMORRHAGE -WITHOUT MENTION OF OBSTRUCTION   |
| 53082 | ESOPHAGEAL HEMORRHAGE  | 53401 | ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION  |
| 53100 | ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION   | 53410 | ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION   |
| 53101 | ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION   | 53411 | ACUTE WITH PERFORATION - WITH OBSTRUCTION   |
| 53110 | ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION  | 53420 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION  |
| 53111 | ACUTE WITH PERFORATION - WITH OBSTRUCTION  | 53421 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION  |
| 53120 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION   | 53430 | ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION   |
| 53121 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION   | 53431 | ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION   |
| 53130 | ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION                            | 53490 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION                  |
| 53131 | ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION  | 53491 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION                                |
| 53190 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION | 53501 | ACUTE GASTRITIS - WITH HEMORRHAGE   |
| 53191 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION               | 53511 | ATROPHIC GASTRITIS - WITH HEMORRHAGE  |
| 53200 | ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION   | 53521 | GASTRIC MUCOSAL HYPERTROPHY - WITH HEMORRHAGE   |
| 53201 | ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION   | 53531 | ALCOHOLIC GASTRITIS - WITH HEMORRHAGE   |
| 53210 | ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION  | 53541 | OTHER SPECIFIED GASTRITIS - WITH HEMORRHAGE   |
| 53211 | ACUTE WITH PERFORATION - WITH OBSTRUCTION  | 53551 | UNSPECIFIED GASTRITIS AND GASTRODUODENITIS - WITH HEMORRHAGE  |
| 53220 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION   | 53561 | DUODENITIS - WITH HEMORRHAGE  |
| 53221 | ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION   | 53783 | ANGIODYSPLASIA OF STOMACH AND DUODENUM WITH HEMORRHAGE  |
| 53230 | ACUTE WITHOUT MENTION OF   | 53784 | DIEULAFOY LESION (HEMORRHAGIC)  |

|       |  |       |   |
|-------|--|-------|---|
|       | HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION   |       | OF STOMACH AND DUODENUM                           |
| 53231 | ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION  | 56202 | DIVERTICULOSIS OF SMALL INTESTINE WITH HEMORRHAGE |
| 53290 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION | 56203 | DIVERTICULITIS OF SMALL INTESTINE WITH HEMORRHAGE |
| 53291 | UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION               | 56212 | DIVERTICULOSIS OF COLON WITH HEMORRHAGE           |
| 53300 | SITE UNSPECIFIED ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION  | 56213 | DIVERICULITIS OF COLON WITH HEMORRHAGE            |
| 53301 | SITE UNSPECIFIED ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION  | 5693  | HEMORRHAGE OF RECTUM AND ANUS                     |
| 53310 | SITE UNSPECIFIED ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION                                       | 56985 | ANGIODYSPLASIA OF INTESTINE WITH HEMORRHAGE       |
| 53311 | SITE UNSPECIFIED ACUTE WITH - PERFORATION WITH OBSTRUCTION   | 56986 | DIEULAFOY LESION (HEMORRHAGIC) OF INTESTINE       |
| 53320 | SITE UNSPECIFIED ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION                        | 5780  | HEMATEMESIS                                       |
| 53321 | SITE UNSPECIFIED ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION                        | 5781  | BLOOD IN STOOL                                    |
| 53330 | SITE UNSPECIFIED ACUTE WITHOUT MENTION OF HEMORRHAGE AND PERFFORATION - WITHOUT MENTION OF OBSTRUCTION         | 5789  | HEMORRHAGE OF GASTROINTESTINAL TRACT, UNSPECIFIED |
| 53331 | SITE UNSPECIFIED ACUTE WITHOUT MENTION OF HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION                        |       |   |

Exclude cases:

- with a principal ICD-9-CM diagnosis code for gastrointestinal hemorrhage or acute ulcer (see above)
- with a principal ICD-9-CM diagnosis code for trauma
- with a principal ICD-9-CM diagnosis code for alcoholism
- with a principal ICD-9-CM diagnosis code for anemia
- MDC 6 (diseases and disorders of the digestive system)
- MDC 7 (diseases and disorders of the hepatobiliary system and pancreas)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

See *Patient Safety Indicators Appendices*:

- Appendix G – Trauma Diagnosis Codes

**ICD-9-CM Alcoholism diagnosis codes:**

|      |                          |       |                          |
|------|--------------------------|-------|--------------------------|
| 2910 | DELERIUM TREMENS         | 30392 | ALCOH DEP NEC/NOS-EPIBOD |
| 2911 | ALCOHOL AMNESTIC DISORDR | 30393 | ALCOH DEP NEC/NOS-REMISS |

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|       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 2912  | ALCOHOL PERSIST DEMENTIA | 30500 | ALCOHOL ABUSE-UNSPEC     |
| 2913  | ALCOH PSY DIS W HALLUCIN | 30501 | ALCOHOL ABUSE-CONTINUOUS |
| 2914  | PATHOLOGIC ALCOHOL INTOX | 30502 | ALCOHOL ABUSE-EPISODIC   |
| 2915  | ALCOH PSYCH DIS W DELUS  | 30503 | ALCOHOL ABUSE-IN REMISS  |
| 29181 | ALCOHOL WITHDRAWAL       | 4255  | ALCOHOLIC CARDIOMYOPATHY |
| 29182 | ALCOH INDUCE SLEEP DISOR | 53530 | ALCHL GASTRTIS W/O HMRHG |
| 29189 | ALCOHOL MENTAL DISOR NEC | 53531 | ALCHL GSTRITIS W HMRHG   |
| 2919  | ALCOHOL MENTAL DISOR NOS | 5710  | ALCOHOLIC FATTY LIVER    |
| 30300 | AC ALCOHOL INTOX-UNSPEC  | 5711  | AC ALCOHOLIC HEPATITIS   |
| 30301 | AC ALCOHOL INTOX-CONTIN  | 5712  | ALCOHOL CIRRHOSIS LIVER  |
| 30302 | AC ALCOHOL INTOX-EPISOD  | 5713  | ALCOHOL LIVER DAMAGE NOS |
| 30303 | AC ALCOHOL INTOX-REMISS  | 9800  | TOXIC EFF EHTYL ALCOHOL  |
| 30390 | ALCOH DEP NEX/NOS-UNSPEC | 9809  | TOXIC EFFECT ALCOHOL NOS |

**ICD-9-CM Anemia diagnosis codes:**

|      |                       |      |                         |
|------|-----------------------|------|-------------------------|
| 2800 | CHR BLOOD LOSS ANEMIA | 2851 | AC POSTHEMORRHAG ANEMIA |
|------|-----------------------|------|-------------------------|