

Death Rate among Surgical Inpatients with Serious Treatable Complications

Patient Safety Indicators #4 Technical Specifications

Provider-Level Indicator

AHRQ Quality Indicators, Version 4.4, March 2012

Numerator

All discharges with a disposition of “deceased” (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

Denominator

All surgical discharges age 18 years and older **or** MDC 14 (pregnancy, childbirth, and puerperium) defined by specific DRGs or MS-DRGs and an ICD-9-CM code for an operating room procedure, principal procedure within 2 days of admission **or** admission type of elective (ATYPE=3) with potential complications of care listed in Death among Surgical definition (e.g., pneumonia, DVT/PE, sepsis, shock/cardiac arrest, or GI hemorrhage/acute ulcer).

See *Patient Safety Indicators Appendices*:

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

- age 90 years and older
- 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)

NOTE: Additional exclusion criteria are specific to each diagnosis.

FTR 2 – DVT/PE

A diagnosis of pulmonary embolism or deep vein thrombosis in any secondary diagnosis field.

ICD-9-CM Pulmonary embolism and deep vein thrombosis diagnosis codes^{1,2}:

Pulmonary Embolism		45111	FEMORAL VEIN PHLEBITIS
<i>4151</i>	<i>PULMONARY EMBOLISM AND INFARCTION</i>	45119	DEEP PHLEBITIS-LEG NEC
		45181	ILIAC THROMBOPHLEBITIS
41511	IATROGEN PULM EMB/INFARC	45340	AC DVT/EMBL LOW EXT NOS
41513	SADDLE EMBOL PULMON ART	45341	AC DVT/EMB PROX LOW EXT
41519	PULM EMBOL/INFARCT NEC	45342	AC DVT/EMB DISTL LOW EXT
Deep Vein Thrombosis			

¹ Italicized codes are not active in the current fiscal year.

² Bolded codes are new to the current fiscal year.

Exclude cases:

- with a diagnosis of pulmonary embolism or deep vein thrombosis in the principal diagnosis field
- with a diagnosis of abortion-related or postpartum obstetric pulmonary embolism in the principal diagnosis field

ICD-9-CM Abortion-related and 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		

FTR 3 – Pneumonia

A diagnosis of pneumonia in any secondary diagnosis field.

ICD-9-CM Pneumonia diagnosis codes¹:

4820	K. PNEUMONIAE PNEUMONIA	48249	STAPH PNEUMONIA NEC
4821	PSEUDOMONAL PNEUMONIA	4828	<i>PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA</i>
4822	H. INFLUENZA PNEUMONIA		
<i>4823</i>	<i>PNEUMONIA DUE TO STREPTOCOCCUS</i>	48281	PNEUMONIA ANAEROBES
48230	STREPTOCOCCAL PNEUMM NOS	48282	PNEUMONIA E COLI
48231	PNEUMONIA STRPTOCOCCUS A	48283	PNEUMO OTH DRM-NEG BACT
48232	PNEUMONIA STRPTOCOCCUS B	48284	LEGIONNAIRES' DISEASE
48239	PNEUMONIA OTH STREP	48289	PNEUMONIA OTH SPCF BACT
<i>4824</i>	<i>PNEUMONIA DUE TO STAPHYLOCOCCUS</i>	4829	BACTERIAL PNEUMONIA NOS
		485	BRONCHOPNEUMONIA ORG NOS
48240	STAPHYLOCOCCAL PNEU NOS	486	PNEUMONIA, ORGANISM NOS
48241	METH SUS PNEU D/T STAPH	5070	FOOD/VOMIT PNEUMONITIS
48242	METH RES PNEU D/T STAPH	514	PULM CONGEST/HYPOSTASIS

¹ Italicized codes are not active in the current fiscal year.

Exclude cases:

- with a diagnosis of pneumonia or respiratory complications in the principal diagnosis field
- with any diagnosis code for viral pneumonia or influenza
- with any diagnosis of or procedure for immunocompromised state
- MDC 4 (diseases/disorders of respiratory system)
- with a lung cancer procedure

See *Patient Safety Indicators Appendices*:

- Appendix I – Immunocompromised State Diagnosis and Procedure Codes

ICD-9-CM Respiratory complications diagnosis code¹:

9973	<i>RESPIRATORY COMPLICATIONS</i>	99732	POSTPROC ASPIRATION PNEU
99731	VENTLTR ASSOC PNEUMONIA	99739	RESPIRATORY COMP NEC

¹ Italicized codes are not active in the current fiscal year.

ICD-9-CM Viral pneumonia and influenza diagnosis codes^{1,2}:

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

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ICD-9-CM Lung cancer procedure codes:

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

FTR 4 – Sepsis

A diagnosis of sepsis in any secondary diagnosis field.

ICD-9-CM Sepsis diagnosis codes¹:

0380	STREPTOCOCCAL SEPTICEMIA	03843	PSEUDOMONAS SEPTICEMIA
<i>0381</i>	<i>STAPHYLOCOCCAL SEPTICEMIA</i>	03844	SERRATIA SEPTICEMIA
03810	STAPHYLOCOCCAL SEPTICEM NOS	03849	GRAM-NEG SEPTICEMIA NEC
03811	METH SUSC STAPH AUR SEPT	0388	SEPTICEMIA NEC
03812	MRSA SEPTCEMIA	0389	SEPTICEMIA NOS
03819	STAPHYLOCOCC SEPTICEM NEC	78552	SEPTIC SHOCK
0382	PNEUMOCOCCAL SEPTICEMIA	<i>78559</i>	<i>SHOCK W/O TRAUMA NEC</i>
0383	ANAEROBIC SEPTICEMIA	99591	SEPSIS
03840	GRAM-NEG SEPTICEMIA NOS	99592	SEVERE SEPSIS
03841	H. INFLUENAE SEPTICEMIA	<i>9980</i>	<i>POSTOPERATIVE SHOCK</i>
03842	E. COLI SEPTICEMIA	99800	POSTOPERATIVE SHOCK, NOS

¹ Italicized codes are not active in the current fiscal year.

Exclude cases:

- with a diagnosis of sepsis in the principal diagnosis field
- with a principal diagnosis of infection
- with any diagnosis of or procedure for immunocompromised state
- with a length of stay of less than 4 days

See *Patient Safety Indicators Appendices*:

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

FTR 5 – Shock or Cardiac Arrest

A diagnosis of shock or cardiac arrest in any secondary field or procedure for shock or cardiac arrest.

ICD-9-CM Shock or cardiac arrest diagnosis codes^{1,2}:

4275	CARDIAC ARREST	7991	RESPIRATORY ARREST
6395	POSTABORTION SHOCK	9950	OTHER ANAPHYLACTIC SHOCK
66910	OBSTETRIC SHOCK-UNSPEC	9954	SHOCK DUE TO ANESTHESIA
66911	OBSTETRIC SHOCK-DELIVER	9980	POSTOPERATIVE SHOCK
66912	OBSTET SHOCK-DELIV W P/P	99800	POSTOPERATIVE SHOCK, NOS
66913	OBSTETRIC SHOCK-ANTEPAR	99801	POSTOP SHOCK, CARDIOGENIC
66914	OBSTETRIC SHOCK-POSTPART	99802	POSTOP SHOCK, SEPTIC
7855	<i>SHOCK NOS</i>	99809	POSTOP SHOCK, OTHER
78550	SHOCK NOS	9994	ANAPHYLACTIC SHOCK DUE TO SERUM
78551	CARDIOGENIC SHOCK	99941	ANAPHYL D/T ADM BLD/PROD
78552	SEPTIC SHOCK	99942	ANAPHYL REACT D/T VACCIN
78559	<i>SHOCK W/O TRAUMA NEC</i>	99949	ANAPH REACT D/T OT SERUM

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ICD-9-CM Shock or Cardiac Arrest procedure codes:

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

Exclude cases:

- with a principal diagnosis of shock or cardiac arrest
- with a principal diagnosis of trauma
- with a principal diagnosis of hemorrhage or GI hemorrhage
- with a principal diagnosis of abortion-related shock
- with a lung cancer procedure
- MDC 4 (diseases/disorders of respiratory system)
- MDC 5 (diseases/disorders of circulatory system)

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 GI Hemorrhage diagnosis codes:

4560	ESOPHAG VARICES W BLEED	53200	AC DUODENAL ULVER W HEM
45620	BLEED ESOPH VAR OTH DIS	53201	AC DUODEN ULC W HEM-OBST
5307	MALLORY-WEISS SYNDROME	53220	AC DUODEN ULC W HEM/PERF
53082	ESOPHAGEAL HEMORRHAGE	53221	AC DUOD ULC HEM/PERF-OBS
53100	AC STOMACH ULCER W HEM	53240	CHR DUODEN ULCER W HEM
53101	AC STOMAC ULC W HEM-OBST	53241	CHR DUODEN ULC HEM-OBSTR
53120	AC STOMAC ULC W HEM/PERF	53260	CHR DUODEN ULC HEM/PERF
53121	AC STOM ULC HEM/PERF-OBS	53261	CHR DIOD ULC HEM/PERF-OB
53140	CHR STOMACH ULC W HEM	53300	AC PEPTIC ULVER W HEMORR
53141	CHR STOM ULC W HEM-OBSTR	53301	AC PEPTIC ULCER W HEM-OBSTR
53160	CHR STOMACH ULC HEM/PERF	53320	AC PEPTIC ULC W HEM/PERF
53161	CHR STOM ULC HEM/PERF-OBST	53321	AC PEPT ULC HEM/PERF-OBS

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53340	CHR PEPTIC ULCER W HEM	53541	OTH SPF GASTRT W HMRHG
53341	CHR PEPTIC ULC W HEM-OBS	53551	GSTR/DDNTS NOS W H,RHG
53360	CHR PEPT ULC W HEM/PERF	53561	DUODENITIS W HMRHG
53361	CHR PEPT ULC HEM/PERF-OB	53783	ANGIO STM/DUDN W HMRHG
53400	AC MARGINAL ULCER W HEM	53784	DIEULAFOY LES,STOM&DUOD
53401	AC MARGIN ULC W HEM-OBST	56202	DVRTCLO SML INT W HMHRG
53420	AC MARGIN ULC W HEM/PERF	56203	DVRTCLI SML INT W HMRHG
53421	AC MARG ULC HEM/PERF-OBS	56212	DVRTCLI COLON W HMRHG
53440	CHR MARGINAL ULCER W HEM	56213	DVRTLCLI COLON W HMRG
53441	CHR MARGIN ULC W HEM-OBS	5693	RECTAL & ANAL HEMORRHAGE
53460	CHR MARGIN ULC HEM/PERF	56985	ANGIO INTES W HMRHG
53461	CHR MARG ULC HEM/PERF-OB	56986	DIEULAFOY LES, INTESTING
53501	ACUTE GASTRTIS W/O HMRHG	5780	HEMATEMESIS
53511	ATRPH GASTRITIS W HMRHG	5781	BLOOD IN STOOL
53521	GSTR MCSSL HYPRT W HMRG	5789	GASTROINTEST HEMORR NOS
53531	ALCHL GSTRITIS W/O HMRHG		

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 procedure codes:

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

FTR 6 – GI Hemorrhage/Acute Ulcer

A diagnosis of GI hemorrhage or acute ulcer in any secondary field.

ICD-9-CM GI Hemorrhage/acute ulcer diagnosis codes:

4560	ESOPHAG VARICES W BLEEDING	53331	AC PEPTIC ULCER NOS-OBST
45620	BLEED ESOPH VAR OTH DIS	53390	PEPTIC ULCER NOS
5307	MALLORY-WEISS SYNDROME	53391	PEPTIC ULCER NOS-OBSTRUCT
53082	ESOPHAGEAL HEMORRHAGE	<hr/>	
<u>Gastric ulcer</u>		<u>Gastrojejunal ulcer</u>	
53100	AC STOMACH ULCER W HEM	53400	AC MARGINAL ULCER W HEM
53101	AC STOMAC ULC W HEM-OBST	53401	AC MARIN ULC W HEM-OBST
53110	AC STOMACH ULCER W PERF	53410	AC MARGINAL ULCER W PERF
53111	AC STOM ULC W PERF-OBST	53411	AC MARGIN ULC W PERF-OBS
53120	AC STOMAC ULC W HEM/PERF	53420	AC MARGIN ULC W HEM/PERF
53121	AC STOM ULC HEM/PERF-OBS	53421	AC MARG ULC HEM/PERF-OBS
53130	ACUTE STOMACH ULCER NOS	53430	AC MARGINAL ULCER NOS
53131	AC STOMACH ULC NOS-OBSTR	53431	AC MARGINAL ULC NOS-OBST
53190	STOMACH ULCER NOS	53490	GASTROJEJUNAL ULCER NOS
53191	STOMACH ULCER NOS-OBSTR	53491	GASTROJEJUN ULC NOS-OBST
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<u>Duodenal ulcer</u>		<u>Gastritis and duodenitis:</u>	
53200	AC DUODENAL ULCER W HEM	53501	ACUTE GASTRTS W HMRHG
53201	AC DIODEN ULC W HEM-OBST	53511	ATRPH GASTRITIS W HMRHG
53210	AC DIODENAL ULCER W PERF	53521	GSTR MCSL HYPRT W HMRG
53211	AC DIODEN ULC PERF-OBSTR	53531	ALCHL GSTRITIS W HMRHG
53220	AC DIODEN ULC W HEM/PERF	53541	OTH SPF GASTRT W HMRHG
53221	AC DIOD ULC HEM/PERF-OBS	53551	GSTR/DDNTS NOS W HMRHG
53230	ACUTE DUODENAL ULCER NOS	53561	DUIDENITIS W HMRHG
53231	AC DIODENAL ULC NOS-OBST	53783	ANGIO STM/DUDN W HMRHG
53290	DUIDENAL ULCER NOS	53784	DIEULAFOY LES,STOM&DUOD
53291	DUODENAL ULCER NOS-OBSTR	56202	DVRTCLO SML INT W HMRHG
<hr/>		56203	DVRTCLI SML IN W HMRHG
<u>Peptic ulcer</u>		56212	DVRTCLO COLON W HMRHG
53300	AC PEPTIC ULCER W HEMORR	56213	DVRTCLI COLON W HMRHG
53301	AC EPTIC ULC W HEM-OBST	5693	RECTAL & ANAL HEMORRHAGE
53310	AC PEPTIC ULCER W PERFOR	56985	ANGIO INTES W HMRHG
53311	AC PEPTIC ULC W PERF-OBS	56986	DIEULAFOY LES, INTESTINE
53320	AC PEPTIC ULC W HEM/PERF	5780	HEMATEMESIS
53321	AC PEPT ULC HEM/PERF-OBS	5781	BLOOD IN STOOL
53330	ACUTE PEPTIC ULCER W HEM	5789	GASTROINTEST HEMORR NOS

Exclude cases:

- with a principal diagnosis of GI hemorrhage or acute ulcer
- with a principal diagnosis of trauma
- with a principal diagnosis of alcoholism
- with a principal diagnosis of anemia
- MDC 6 (diseases and disorders of the digestive system)
- MDC 7 (diseases and disorders of the hepatobiliary system and pancreas)

See *Patient Safety Indicators Appendices:*

- Appendix G – Trauma Diagnosis Codes

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ICD-9-CM Alcoholism diagnosis codes:

2910	DELERIUM TREMENS	30392	ALCOH DEP NEC/NOS-EPISOD
2911	ALCOHOL AMNESTIC DISORDR	30393	ALCOH DEP NEC/NOS-REMISS
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
30391	ALCOH DEP NEC/NOS-CONTIN		

ICD-9-CM Anemia diagnosis codes:

2800	CHR BLOOD LOSS ANEMIA	2851	AC POSTHEMORRHAG ANEMIA
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