

Name of measure: Failure to Rescue 30-Day Mortality

MEASURE SPECIFICATIONS (last updated August 2015)	
NAME OF MEASURE	Failure to Rescue 30-Day Mortality
NUMERATOR/DENOMINATOR	<p>Numerator: patients who died with a complication + patients who died without documented complications. Death is defined as death within 30 days from admission.</p> <p>Denominator: General Surgery, Orthopedic and Vascular patients with complications + patients who died without documented complications within 30 days of admission.</p>
INCLUSIONS/EXCLUSIONS	<p>Inclusions: Adult patients admitted for one of the procedures in the General Surgery, Orthopedic or Vascular DRGs (see Appendix A).</p> <p>Exclusions: Patients over age 90, under age 18.</p>
DATA SOURCES	Patients' linked hospitalization claims records, such as MEDPAR; can also use unlinked data if linked files are not available to identify comorbidities and develop definitions of severity and other risk measurement.
DATA ELEMENT DEFINITION AND ALLOWABLE VALUES	<p>Death is defined as death within 30 days from admission.</p> <p>Complicated patient has at least one of the complications defined in Appendix B. Complications are defined using the secondary ICD9 diagnosis and procedure codes and the DRG code of the current admission.[†] ICD10 codes are provided Appendix D.</p> <p>Comorbidities are defined in Appendix C using secondary ICD9 diagnosis codes of the current admission and primary or secondary ICD9 diagnosis and procedure codes of previous admissions or encounters within 90 days of the admission date of the current admission.[†] ICD10 codes are provided in Appendix E.</p>
DATA ANALYSIS LOGIC AND METHOD	<p>Failure-to-rescue is defined as the probability of death following a complication. To understand FTR, it helps to display the definition of the probability of death as the sum of two quantities shown below :</p> $P(d) = P(d c)*P(c) + P(d no c)*P(no c)$

[†] When Current Procedural Terminology (CPT) codes are available, the definition of complications and comorbidities are augmented to include CPT codes.

	<p>The probability of dying is equal to the probability of dying given a complication multiplied by the probability of a complication plus the probability of dying without a complication multiplied by the probability of not developing a complication. In the case of most surgical procedures, one can envision that the second term approaches zero because one is unlikely to die without some complication, given that the surgery was performed. Hence, we can think of the probability of death as equal to the probability of dying given a complication multiplied by the probability of developing a complication. The probability of dying given a complication is defined as failure-to-rescue.</p> <p>To conduct a failure-to-rescue analysis a set of complications available in the dataset must be defined, with the intent of having as many deaths as possible in the dataset preceded by a complication. To construct an FTR analysis we start by constructing a 2-by-2 table to display the rates of in-hospital death, complication and failure-to-rescue. To account for the deaths occurring without a documented complication, the FTR recodes all patients who died without a complication as if they died with an undocumented complication. If the list of complications is comprehensive, the number of deaths with undocumented complications is low, and the recoding of failures needed to include these undocumented complications is minimal.</p>
<p>RISK-ADJUSTMENT METHOD <u>AND</u> ASSOCIATED DATA ELEMENTS</p>	<p>Risk Adjustment: Model was developed using logistic regression analysis.^{1,2}</p> <p>Associated data elements: age in years, sex, race, comorbidities, DRGs (combined with and without complications) and procedure codes within DRGs,[‡] emergency admission status, and transfer-in status.</p>
<p>COHORT DEFINITION AND SAMPLING METHOD</p>	<p>All surgical patients between ages 18 and 90 admitted to an acute care hospital.</p>
<p>HOW LONG HAS THE MEASURE BEEN IN USE AND FOR WHAT PURPOSE (quality improvement, accountability, surveillance)?</p>	<p>Since 1992 to assess quality of care of acute care hospitals, to identify hospital and provider characteristics associated with higher quality of care, to assess the impact of changes in policy on hospital quality of care.³⁻⁸ Numerous researchers have studied the measure across varied clinical domains.⁹⁻³²</p>
<p>DESCRIBE RELIABILITY TESTS AND RELEVANT</p>	<p>Split half sample reliability was 0.30, similar to 30 day</p>

[‡] Detailed list of DRGs and ICD9 procedure codes available from the investigator upon request.

CITATIONS	mortality (0.29).
DESCRIBE VALIDITY TESTS AND RELEVANT CITATIONS	<p>a) Marginal and partial coefficients in logit models using detailed patient characteristics and hospital characteristics shown to be associated with better outcomes in previous studies.^{2, 7} The marginal results use one hospital characteristic at a time along with all patient characteristics. “Partial” regression results, using all hospital and patient variables simultaneously have the disadvantage that correlation between hospital characteristics can cause difficulty in interpreting the effects of individual hospital variables. The following hospital characteristics have been shown to be associated with better outcomes (1) teaching hospital status (member of the American Council of Teaching Hospitals); (2) high technology status (does the hospital perform open heart surgery or perform organ transplantation); (3) hospital size greater than 200/250 beds; (4) bed-to-nurse ratio (where nurses are the sum of RN plus LPN FTE positions); and (5) nursing skill mix (the ratio of RN/(RN+LPN)).²⁻⁸</p> <p>b) The relative contribution of patient-to-hospital characteristics that predicted each outcome of interest, as provided by the omega statistic.^{2, 33} The omega statistic computes a ratio of the squared sum of the log odds for model patient variables divided by a similar quantity calculated for the model hospital variables. All else being equal, outcome measures that have lower omega ratios may be more desirable quality indicators, since the lower the omega, the greater the hospital’s impact on outcome relative to the patient’s impact. This is especially important if modeling patient severity is difficult (as with claims data) so that the lower the omega suggests the higher relative influence of hospital characteristics as compared to patient characteristics.</p>
METHODOLOGY FOR UPDATING MEASURES	Periodic review of DRG codes, ICD9/ICD10 diagnosis codes, ICD9/ICD10 procedure codes, and CPT codes.
ADDITIONAL REFERENCES	N/A

Note 1: FTR is adjusted using a logistic regression model where y is a failure and the total N is composed of patients who develop a complication and patients who died without a documented complication.

Note 2: FTR can be defined with either 30-day mortality or in hospital mortality (see references 1 and 2). Generally, we have seen very similar results using either death definition.

Note 3: The model adjustment variables can vary. We have found that FTR results are fairly stable, even with little adjustment (see references 1, 6, 8, and 10) since all patients in an FTR analysis have developed a complication or died without a documented complication, (by definition), they are a more homogenous group of patients than the entire population. Hence severity adjustment plays somewhat less of a role than in other outcome measures.

REFERENCES

1. Silber JH, Williams SV, Krakauer H, Schwartz JS. Hospital and patient characteristics associated with death after surgery: A study of adverse occurrence and failure to rescue. *Med Care* 1992; 30:615-629.
2. Silber JH, Romano PS, Rosen AK, Wang Y, Ross RN, Even-Shoshan O, Volpp K. Failure-to-rescue: Comparing definitions to measure quality of care. *Med Care* 2007; 45:918-925.
3. Silber JH, Rosenbaum PR, Schwartz JS, Ross RN, Williams SV. Evaluation of the complication rate as a measure of quality of care in coronary artery bypass graft surgery. *JAMA* 1995; 274:317-323.
4. Silber JH, Rosenbaum PR, Williams SV, Ross RN, Schwartz JS. The relationship between choice of outcome measure and hospital rank in general surgical procedures: Implications for quality assessment. *Int J Qual Health Care* 1997; 9:193-200.
5. Silber JH, Kennedy SK, Even-Shoshan O, Chen W, Koziol LF, Showan AM, Longnecker DE. Anesthesiologist direction and patient outcomes. *Anesthesiology* 2000; 93:152-163.
6. Silber JH, Kennedy SK, Even-Shoshan O, Chen W, Mosher RE, M. SA, Longnecker DE. Anesthesiologist board certification and patient outcomes. *Anesthesiology* 2002; 96:1044-1052.
7. Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA* 2002; 288:1987-1993.
8. Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational levels of hospital nurses and surgical patient mortality. *JAMA* 2003; 290:1617-1623. PMC3077115.
9. Silber JH, Rosenbaum PR, Trudeau ME, Chen W, Zhang X, Kelz RR, Mosher RE, Even-Shoshan O. Changes in prognosis after the first postoperative complication. *Med Care* 2005; 43:122-131.
10. Silber JH, Rosenbaum PR, Romano PS, Rosen AK, Wang Y, Teng Y, Halenar MJ, Even-Shoshan O, Volpp KG. Hospital teaching intensity, patient race, and surgical outcomes. *Arch Surg* 2009; 144:113-121. PMC2814447.
11. Friese CR, Earle CC, Silber JH, Aiken LH. Hospital characteristics, clinical severity, and outcomes for surgical oncology patients. *Surgery* 2010; 147:602-609. PMC2858347.
12. Ghaferi AA, Birkmeyer JD, Dimick JB. Variation in hospital mortality associated with inpatient surgery. *N Engl J Med* 2009; 361:1368-1375.
13. Glance LG, Dick AW, Meredith JW, Mukamel DB. Variation in hospital complication rates and failure-to-rescue for trauma patients. *Ann Surg* 2011; 253:811-816.
14. Kendall-Gallagher D, Aiken LH, Sloane DM, Cimiotti JP. Nurse specialty certification, inpatient mortality, and failure to rescue. *J Nurs Scholarsh* 2011; 43:188-194. PMC3201820.
15. Wright JD, Herzog TJ, Siddiq Z, Arend R, Neugut AI, Burke WM, Lewin SN, Ananth CV, Hershman DL. Failure to rescue as a source of variation in hospital mortality for ovarian cancer. *J Clin Oncol* 2012; 30:3976-3982.
16. Gonzalez AA, Dimick JB, Birkmeyer JD, Ghaferi AA. Understanding the volume-outcome effect in cardiovascular surgery: the role of failure to rescue. *JAMA Surg* 2014; 149:119-123. PMC4016988.

17. Reddy HG, Shih T, Englesbe MJ, Shannon FL, Theurer PF, Herbert MA, Paone G, Bell GF, Prager RL. Analyzing "failure to rescue": is this an opportunity for outcome improvement in cardiac surgery? *Ann Thorac Surg* 2013; 95:1976-1981; discussion 1981. PMC4398337.
18. Sheetz KH, Krell RW, Englesbe MJ, Birkmeyer JD, Campbell DA, Jr., Ghaferi AA. The importance of the first complication: understanding failure to rescue after emergent surgery in the elderly. *J Am Coll Surg* 2014; 219:365-370. PMC4143447.
19. Aiken LH, Shang J, Xue Y, Sloane DM. Hospital use of agency-employed supplemental nurses and patient mortality and failure to rescue. *Health Serv Res* 2013; 48:931-948. PMC3651800.
20. Aiken LH, Cimiotti JP, Sloane DM, Smith HL, Flynn L, Neff DF. Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. *Med Care* 2011; 49:1047-1053. PMC3217062.
21. Carthon JM, Kutney-Lee A, Jarrin O, Sloane D, Aiken LH. Nurse staffing and postsurgical outcomes in black adults. *J Am Geriatr Soc* 2012; 60:1078-1084. PMC3376011.
22. Kutney-Lee A, Sloane DM, Aiken LH. An increase in the number of nurses with baccalaureate degrees is linked to lower rates of postsurgery mortality. *Health Aff (Millwood)* 2013; 32:579-586. PMC3711087.
23. Kutney-Lee A, Stimpfel AW, Sloane DM, Cimiotti JP, Quinn LW, Aiken LH. Changes in Patient and Nurse Outcomes Associated With Magnet Hospital Recognition. *Med Care* 2015.
24. Ma C, McHugh MD, Aiken LH. Organization of Hospital Nursing and 30-Day Readmissions in Medicare Patients Undergoing Surgery. *Med Care* 2015; 53:65-70. PMC4262665.
25. McHugh MD, Kelly LA, Smith HL, Wu ES, Vanak JM, Aiken LH. Lower mortality in magnet hospitals. *Med Care* 2013; 51:382-388. PMC3568449.
26. McHugh MD, Stimpfel AW. Nurse reported quality of care: A measure of hospital quality. *Res Nurs Health* 2012; 35:566-575. PMC3596809.
27. Neff DF, Cimiotti J, Sloane DM, Aiken LH. Utilization of non-US educated nurses in US hospitals: implications for hospital mortality. *Int J Qual Health Care* 2013; 25:366-372. PMC3723304.
28. Silber JH, Kaestner R, Even-Shoshan O, Wang Y, Bressler LJ. Aggressive treatment style and surgical outcomes. *Health Serv Res* 2010; 45:1872-1892. PMC3029844.
29. Kaestner R, Silber JH. Evidence on the efficacy of inpatient spending on Medicare patients. *Milbank Q* 2010; 88:560-594. PMC3037176.
30. Silber JH, Rosenbaum PR, Ross RN, Ludwig JM, Wang W, Niknam BA, Mukherjee N, Saynisch PA, Even-Shoshan O, Kelz RR, Fleisher LA. Template matching for auditing hospital cost and quality. *Health Serv Res* 2014; 49:1446-1474.
31. Silber JH, Rosenbaum PR, Ross RN, Ludwig JM, Wang W, Niknam BA, Saynisch PA, Even-Shoshan O, Kelz RR, Fleisher LA. A hospital-specific template for benchmarking its cost and quality. *Health Serv Res* 2014; 49:1475-1497.
32. Silber JH, Rosenbaum PR, Kelz RR, Gaskin DJ, Ludwig JM, Ross RN, Niknam BA, Hill A, Wang M, Shoshan O, Fleisher LA. Examining causes of racial disparities in general surgical mortality: Hospital quality versus patient risk. *Med Care* 2015; 53(7): 619-629.
33. Silber JH, Rosenbaum PR, Ross RN. Comparing the contributions of groups of predictors: Which outcomes vary with hospital rather than patient characteristics? *J Am Stat Assoc* 1995; 90:7-18.

APPENDICES

Appendix A: List of DRGs

Appendix B: List of Complications and their definitions (ICD-9)

Appendix C: List of Comorbidities and their definitions (ICD-9)

Appendix D: List of Complications and their definitions (ICD-10)

Appendix E: List of Comorbidities and their definitions (ICD-10)

APPENDIX A: DRGs for which the Failure to Rescue measure has been developed at the Center for Outcomes Research

General Surgical DRGs

MDC 6 – Digestive System

- 332 Rectal resection w MCC
- 333 Rectal resection w CC
- 334 Rectal resection w/o CC/MCC
- 329 Major small & large bowel procedures w MCC
- 330 Major small & large bowel procedures w CC
- 331 Major small & large bowel procedures w/o CC/MCC
- 335 Peritoneal adhesiolysis w MCC
- 336 Peritoneal adhesiolysis w CC
- 337 Peritoneal adhesiolysis w/o CC/MCC
- 344 Minor small & large bowel procedures w MCC
- 345 Minor small & large bowel procedures w CC
- 346 Minor small & large bowel procedures w/o CC/MCC
- 326 Stomach, esophageal & duodenal proc w MCC
- 327 Stomach, esophageal & duodenal proc w CC
- 328 Stomach, esophageal & duodenal proc w/o CC/MCC
- 347 Anal & stomal procedures w MCC
- 348 Anal & stomal procedures w CC
- 349 Anal & stomal procedures w/o CC/MCC
- 353 Hernia procedures except inguinal & femoral w MCC
- 354 Hernia procedures except inguinal & femoral w CC
- 355 Hernia procedures except inguinal & femoral w/o CC/MCC
- 350 Inguinal & femoral hernia procedures w MCC
- 351 Inguinal & femoral hernia procedures w CC
- 352 Inguinal & femoral hernia procedures w/o CC/MCC
- 338 Appendectomy w complicated principal diag w MCC
- 339 Appendectomy w complicated principal diag w CC
- 340 Appendectomy w complicated principal diag w/o CC/MCC
- 341 Appendectomy w/o complicated principal diag w MCC
- 342 Appendectomy w/o complicated principal diag w CC
- 343 Appendectomy w/o complicated principal diag w/o CC/MCC
- 356 Other digestive system O.R. procedures w MCC
- 357 Other digestive system O.R. procedures w CC
- 358 Other digestive system O.R. procedures w/o CC/MCC

MDC 7 – Hepatobiliary

- 405 Pancreas, liver & shunt procedures w MCC
- 406 Pancreas, liver & shunt procedures w CC
- 407 Pancreas, liver & shunt procedures w/o CC/MCC
- 408 Biliary tract proc except only cholecyst w or w/o CDE w MCC
- 409 Biliary tract proc except only cholecyst w or w/o CDE w CC
- 410 Biliary tract proc except only cholecyst w or w/o CDE w/o CC/MCC
- 411 Cholecystectomy w CDE w MCC

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- 412 Cholecystectomy w CDE w CC
- 413 Cholecystectomy w CDE w/o CC/MCC
- 414 Cholecystectomy except by laparoscope w/o CDE w MCC
- 415 Cholecystectomy except by laparoscope w/o CDE w CC
- 416 Cholecystectomy except by laparoscope w/o CDE w/o CC/MCC
- 417 Laparoscopic cholecystectomy w/o CDE w MCC
- 418 Laparoscopic cholecystectomy w/o CDE w CC
- 419 Laparoscopic cholecystectomy w/o CDE w/o CC/MCC
- 420 Hepatobiliary diagnostic procedures w MCC
- 421 Hepatobiliary diagnostic procedures w CC
- 422 Hepatobiliary diagnostic procedures w/o CC/MCC
- 423 Other Hepatobiliary or pancreas O.R. procedures w MCC
- 424 Other Hepatobiliary or pancreas O.R. procedures w CC
- 425 Other Hepatobiliary or pancreas O.R. procedures w/o MCC/CC

MDC 9 – Skin, subcutaneous tissue, breast

- 573 Skin graft &/or debrid for skin ulcer or cellulitis w MCC
- 574 Skin graft &/or debrid for skin ulcer or cellulitis w CC
- 575 Skin graft &/or debrid for skin ulcer or cellulitis w/o MCC/CC
- 576 Skin graft &/or debrid except for skin ulcer or cellulitis w MCC
- 577 Skin graft &/or debrid except for skin ulcer or cellulitis w CC
- 578 Skin graft &/or debrid except for skin ulcer or cellulitis w/o MCC/CC
- 579 Other skin, subcutaneous tissue & breast plastic procedures w MCC
- 580 Other skin, subcutaneous tissue & breast plastic procedures w CC
- 581 Other skin, subcutaneous tissue & breast plastic procedures w/o MCC/CC
- 582 Mastectomy for malignancy w CC/MCC
- 583 Mastectomy for malignancy w/o CC/MCC
- 584 Breast biopsy, local excision & other breast procedures w CC/MCC
- 585 Breast biopsy, local excision & other breast procedures w/o CC/MCC

MDC 10 – Endocrine, nutritional, metabolic

- 614 Adrenal & pituitary procedures w CC/MCC
- 615 Adrenal & pituitary procedures w CC/MCC
- 622 Skin grafts & wound debrid for endoc, nutrit & metab dis w MCC
- 623 Skin grafts & wound debrid for endoc, nutrit & metab dis w CC
- 624 Skin grafts & wound debrid for endoc, nutrit & metab dis w/o CC/MCC
- 619 O.R. procedures for obesity w MCC
- 620 O.R. procedures for obesity w CC
- 621 O.R. procedures for obesity w/o CC/MCC
- 625 Thyroid, parathyroid & thyroglossal procedures w MCC
- 626 Thyroid, parathyroid & thyroglossal procedures w CC
- 627 Thyroid, parathyroid & thyroglossal procedures w/o CC/MCC
- 628 Other endocrine, nutrit & metab O.R. proc w MCC
- 629 Other endocrine, nutrit & metab O.R. proc w CC
- 630 Other endocrine, nutrit & metab O.R. proc w/o CC/MCC

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Orthopedic DRGs

MDC 8 – Musculoskeletal and connective tissue

- 469 Major joint replacement or reattachment of lower extremity w MCC
- 470 Major joint replacement or reattachment of lower extremity w/o MCC
- 480 Hip & femur procedures except major joint w MCC
- 481 Hip & femur procedures except major joint w CC
- 482 Hip & femur procedures except major joint w/o CC/MCC
- 474 Amputation for musculoskeletal sys & conn tissue dis w MCC
- 475 Amputation for musculoskeletal sys & conn tissue dis w CC
- 476 Amputation for musculoskeletal sys & conn tissue dis w/o CC/MCC
- 477 Biopsies of musculoskeletal system & connective tissue w MCC
- 478 Biopsies of musculoskeletal system & connective tissue w CC
- 479 Biopsies of musculoskeletal system & connective tissue w/o CC/MCC
- 463 Wnd debrid & skn grft exc hand, for musculo-conn tiss dis w MCC
- 464 Wnd debrid & skn grft exc hand, for musculo-conn tiss dis w CC
- 465 Wnd debrid & skn grft exc hand, for musculo-conn tiss dis w/o CC/MCC
- 492 Lower extrem & humer proc except hip,foot,femur w MCC
- 493 Lower extrem & humer proc except hip,foot,femur w CC
- 494 Lower extrem & humer proc except hip,foot,femur w/o CC/MCC
- 507 Major shoulder or elbow joint procedures w CC/MCC
- 508 Major shoulder or elbow joint procedures w/o CC/MCC
- 512 Shoulder,elbow or forearm proc,exc major joint proc w/o CC/MCC
- 483 Major joint & limb reattachment proc of upper extremity w CC/MCC
- 484 Major joint & limb reattachment proc of upper extremity w/o CC/MCC
- 503 Foot procedures w MCC
- 504 Foot procedures w CC
- 505 Foot procedures w/o CC/MCC
- 500 Soft tissue procedures w MCC
- 501 Soft tissue procedures w CC
- 502 Soft tissue procedures w/o CC/MCC
- 506 Major thumb or joint procedures
- 514 Hand or wrist proc, except major thumb or joint proc w/o CC/MCC
- 498 Local excision & removal int fix devices of hip & femur w CC/MCC
- 499 Local excision & removal int fix devices of hip & femur w/o CC/MCC
- 495 Local excision & removal int fix devices exc hip & femur w MCC
- 496 Local excision & removal int fix devices exc hip & femur w CC
- 497 Local excision & removal int fix devices exc hip & femur w/o CC/MCC
- 509 Arthroscopy
- 515 Other musculoskelet sys & conn tiss O.R. proc w MCC
- 516 Other musculoskelet sys & conn tiss O.R. proc w CC
- 517 Other musculoskelet sys & conn tiss O.R. proc w/o CC/MCC
- 461 Bilateral or multiple major joint procs of lower extremity w MCC
- 462 Bilateral or multiple major joint procs of lower extremity w/o MCC
- 453 Combined anterior/posterior spinal fusion w MCC
- 454 Combined anterior/posterior spinal fusion w CC

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- 455 Combined anterior/posterior spinal fusion w/o CC/MCC
- 456 Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w MCC
- 457 Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w CC
- 459 Spinal fusion except cervical w MCC
- 458 Spinal fus exc cerv w spinal curv/malig/infec or 9+ fus w/o CC/MCC
- 460 Spinal fusion except cervical w/o MCC
- 490 Back & neck proc exc spinal fusion w CC/MCC or disc device/neurostim
- 491 Back & neck proc exc spinal fusion w/o CC/MCC
- 485 Knee procedures w pdx of infection w MCC
- 486 Knee procedures w pdx of infection w CC
- 487 Knee procedures w pdx of infection w/o CC/MCC
- 488 Knee procedures w/o pdx of infection w CC/MCC
- 489 Knee procedures w/o pdx of infection w/o CC/MCC

Vascular Surgery DRGs

- 237 Major cardiovasc procedures w MCC or thoracic aortic aneurysm repair
- 238 Major cardiovasc procedures w/o MCC
- 246 Perc cardiovasc proc w drug-eluting stent w MCC or 4+ vessels/stents
- 247 Perc cardiovasc proc w drug-eluting stent w/o MCC
- 248 Perc cardiovasc proc w non-drug-eluting stent w MCC or 4+ ves/stents
- 249 Perc cardiovasc proc w non-drug-eluting stent w/o MCC
- 250 Perc cardiovasc proc w/o coronary artery stent w MCC
- 251 Perc cardiovasc proc w/o coronary artery stent w/o MCC
- 239 Amputation for circ sys disorders exc upper limb & toe w MCC
- 240 Amputation for circ sys disorders exc upper limb & toe w CC
- 241 Amputation for circ sys disorders exc upper limb & toe w/o CC/MCC
- 255 Upper limb & toe amputation for circ system disorders w MCC
- 256 Upper limb & toe amputation for circ system disorders w CC
- 257 Upper limb & toe amputation for circ system disorders w/o CC/MCC
- 263 Vein ligation & stripping
- 264 Other circulatory system O.R. procedures

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
General Structure	1) General, orthopedic, and vascular surgery 2) Secondary diagnosis code and/or procedure code as specified below	Exclusion noted for each complication of care as specified in each row below
1. Cardiac Event ^a	Secondary diagnosis codes: 41189, 99601 or (9971 and any of (42612, 42613, 42682, 42689, 42731, 42781, 42789, 7943, 79431)) Secondary procedure codes: 3606, 3607, 3609, 3778, 3780, 3781, 3782, 3783 CPT procedure codes: 33206, 33207, 33208, 33210, 33211, 33212, 33213, 33214, 33216, 33217, 33240, 33249, 92953	
2. Cardiac Emergency ^a	Secondary diagnosis codes: 4100, 41001, 4101, 41011, 4102, 41021, 4103, 41031, 4104, 41041, 4105, 41051, 4106, 41061, 4107, 41071, 4108, 41081, 4109, 41091, 4271, 42741, 4275, 7855, 78550, 78551 Secondary procedure codes: (3761, 3791, 996, 9960, 9961, 9962, 9963, 9964, 9969 and exclusion) CPT procedure codes: (92950, 92960, 92970, 92971, 92997, 92998 and exclusion)	Principal diagnosis codes: 4275, 7855, 78550, 78551, 78559, 7991 Principal procedure codes: 9393, 996, 9963
3. CHF	Secondary diagnosis codes: 42821, 42823, 42831, 42833, 42841, 42843, 5184, or (9971 and any of (428, 4280, 4281, 42820, 42830, 42840, 4289)) or (428, 4280, 4281, 42820, 42830, 42840, 4289, and exclusion)	History of CHF defined as any of the following diagnoses during a look back period [‡] : 39891, 40201, 40211, 40291, 40401, 40403, 40411, 40413, 40491, 40493, 428, 4280, 4281, 42820, 42821, 42822, 42823, 42830, 42831, 42832, 42833, 42840, 42841, 42842, 42843, 4289, 5184

† When ICD or CPT procedure codes are used to define a complication then there will be either a superscript (a) that indicates the complication occurring if secondary or CPT procedure code is equal to or later than the date of surgery or a superscript (b) that indicates the complication occurring if secondary or CPT procedure code is later than the day of surgery

‡ Depending on the study, the look back period may differ between 90 or 180 days

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	Inclusion criteria	Exclusion criteria as indicated next to inclusion
4. Hypotension/Shock/ Hypovolemia	Secondary diagnosis codes: 2765, 27650, 27651, 27652, 4589, 78550, 78551, 78552, 78559, 7963, 9950, 9954, 99800, 99801, 99802, 99809	
5. Pulmonary embolus ^a	Secondary diagnosis codes: 4151, 41511, 41512, 41513, 4539, 9581 (CPT procedure codes: 75741, 75743, 78579, 78580, 78582, 78599 with Secondary procedure code: 387) OR CPT procedure codes: 75894, 75896	
6. Deep Vein Thrombosis ^b	Secondary diagnosis codes: 4534, 45340, 45341, 45342, 45350, 45351, 45352, 4536, 45371, 45372, 45373, 45374, 45375, 45376, 45377, 45379, 4538, 45381, 45382, 45383, 45384, 45385, 45386, 45387, 45389 Secondary procedure codes: 387	
7. Phlebitis ^b	Secondary diagnosis codes: 4510, 4511, 45111, 45119, 4512, 4518, 45181, 45182, 45184, 45189, 4519	
8. Cerebrovascular Accident (CVA)/Stroke ^a	Secondary diagnosis codes: (431, 432, 43301, 43311, 43321, 43331, 43381, 43391, 434, 4340, 43401, 4341, 43411, 4349, 43491, 436, 99702 and exclusion)	History of CVA/stroke defined as any of the following diagnoses during a look back period: 431, 432, 43301, 43311, 43321, 43331, 43381, 43391, 434, 4340, 43401, 4341, 43411, 4349, 43491, 436, 438, 4380, 4381, 43810, 43811, 43812, 43813, 43814, 43819, 4382, 43820, 43821, 43822, 4383, 43830, 43831, 43832, 4384, 43840, 43841, 43842, 4385, 43850, 43851, 43852, 43853, 4386, 4387, 4388, 43881, 43882, 43883, 43884, 43885, 43889, 4389, 99702, V1253, V1254, V1259
9. Transient Ischemic Attack (TIA)	Secondary diagnosis codes: 4350, 4351, 4352, 4353, 4358, 4359	
10. Coma	Secondary diagnosis codes: 3481, 5722, 7800, 78001, 78009	
11. Seizure ^b	Secondary diagnosis codes: (7803, 78031, 78033, 78039 and exclusion)	History of seizure defined as any of the following diagnoses during a look back period: 345, 3450, 34500, 34501, 3451, 34510, 34511, 3452, 3453, 3454, 34540, 34541, 3455, 34550, 34551, 3456, 34560, 34561, 3457, 34570, 34571, 3458, 34580, 34581, 3459, 34590, 34591, 7803

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
12. Psychosis	Secondary diagnosis codes: 292, 2920, 2921, 29211, 29212, 2922, 2928, 29281, 29282, 29283, 29284, 29285, 29289, 2929, 2930, 2939, 29420, 29421, 2948, 2949	
13. Nervous System Complications ^a	Secondary diagnosis codes: 9970, 99700, 99701, 99709 Secondary procedure codes: 0331, 8914, 8919	
14. Pneumonia-Aspiration	Secondary diagnosis codes: 5070, 5071, 5078 or (9973, 99731, 99732, 99739 and any of 4829, 485, or 486)	
15. Pneumonia, other	Secondary diagnosis codes: 481, 4820, 4821, 4822, 4823, 48230, 48231, 48232, 48239, 4824, 48240, 48241, 48242, 48249, 4828, 48281, 48282, 48283, 48284, 48289, 4829, 485, 486 or (514, 9973, 99731, 99732, 99739 and exclusion)	DRG DRG=475(2004-2006)75-102(2004-2007) 565, 566 (2007) 163-208 (2008-2009) Any diagnosis codes: <i>1) Viral Pneumonia/SARS</i> 4800, 4801, 4802, 4803, 4808, 4809, 483, 4830, 4831, 4838, 4841, 4843, 4845, 4846, 4847, 4848, 4870, 4871, 4878, 48801, 48811, 48881 <i>2) Immunocompromised State</i> 042, 1363, 27900, 27901, 27902, 27903, 27904, 27905, 27906, 27909, 27910, 27911, 27912, 27913, 27919, 2792, 2793, 2794, 27941, 27949, 2798, 2799
16. Pneumothorax/Effusion ^b	Secondary diagnosis codes: 5120 or (512, 5121, 5122, 5128, 51281, 51282, 51283, 51284, 51289, 5180 and exclusion) Secondary procedure codes: (3404, 3406, 3491 and exclusion)	
17. Respiratory Compromise ^b	DRG = 483(2002- Sept 2004) 541, 542 (Oct 2004-2009) Secondary diagnosis codes: 5185, 51851, 51852, 51853, 51881, 51889, 7991 Secondary procedure codes: 311, 312, 3121, 3129, 9604, 9672 CPT procedure codes: 31500, 31603, 31605, 31610	
18. Bronchospasm	Secondary diagnosis codes: 5191, 51911	
19. Internal Organ Damage ^b	Secondary diagnosis codes: 34931, 34939, 9981, 99811, 99812, 99813,	

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>9982</p> <p>Secondary procedure codes: (3941, 5412, 5419 and exclusion)</p> <p>CPT procedure codes: (35800, 35820, 35840, 35860 and exclusion)</p>	
20. Perforation	Secondary diagnosis codes: 34931, 34939, 5304, 56983, 9982	
21. Peritonitis ^b	Secondary diagnosis codes: 5670, 5671, 5672, 56721, 56722, 56723, 56729, 5673, 56738, 56739, 5678, 5679, 5695, 7894	Comorbidity of liver disease/dysfunction defined in Appendix C, as diagnosis in the index admission or in the look back period
22. GI Bleed and Blood Loss ^b	<p>Secondary diagnosis codes: [2851 or (5780, 5781, 5789 and principal procedure exclusion), or (5307 and DRG exclusion 1) or any of (4560, 45620, 53082, 53100, 53101, 53120, 53121, 53130, 53131, 53190, 53191, 53200, 53201, 53210, 53211, 53220, 53221, 53230, 53231, 53290, 53291, 53300, 53301, 53310, 53311, 53320, 53321, 53330, 53331, 53390, 53391, 53400, 53401, 53410, 53411, 53420, 53421, 53430, 53431, 53490, 53491, 53501, 53511, 53540, 53541, 53551, 53561, 53570, 53571, 53784, 56212, 56213, 5693, 56985, 5789 and DRG exclusion 2)] and exclusion of Trauma defined by DRG or by principal diagnosis or History of alcoholism</p> <p>CPT procedure codes: (43227, 43255, 44366, 44391, 45317, 45334, 75726 and principal procedure exclusion)</p>	<p>Trauma defined by DRG or principal diagnosis or History of alcoholism</p> <p><i>Trauma as defined by principal diagnoses(include all fourth and fifth digit sub-classifications for the following codes)</i> 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 817, 818, 819, 820, 821, 822, 823, 824, 825, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 850, 851, 852, 853, 854, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 884, 887, 890, 891, 892, 894, 896, 897, 900, 901, 902, 903, 904, 925, 926, 927, 928, 929, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 952, 953, 958</p> <p><i>Trauma DRGs</i> 002, 027, 028, 029, 031, 032, 072, 083, 084, 235, 236, 237, 440, 441, 442, 443, 444, 445, 446, 456, 457, 458, 459, 460, 484, 485, 486, 487, 491, 504, 505, 506, 507, 508, 509, 510, 511(2004-2007) 027, 082, 083, 084, 085, 086, 087, 088, 089, 090, 154, 155, 156, 183, 184, 185, 483, 484, 533, 534, 535, 536, 537, 538, 901, 902, 903, 906, 907, 908, 909, 913, 914, 927, 928, 929, 933, 934, 935, 955, 956, 957, 958, 959, 963, 964, 965(2008-2009)</p> <p><i>History of alcoholism in look back period defined as secondary diagnosis</i> 2910, 2911, 2912, 2913, 2914, 2915, 29181, 29182, 29189, 2919, 30300, 30301, 30302, 30303, 30390, 30391, 30392, 30500, 30501, 30502, 30503</p> <p>Principal procedure codes: 444, 4440, 4441, 4442 if secondary</p>

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
		diagnosis 5780, 5781, 5789 DRG 1) DRG = 146-171(2004-2007) 332-358(2008-2009) if secondary diagnosis = 5307 2) DRG = 146-167, 170-184, 188-208(2004-2007) 326-358, 374-395, 405-446(2008-2009) if any of the secondary diagnoses in the inclusion are in the set of diagnoses 4560-5789
23. Sepsis	Secondary diagnosis codes: 0380, 0381, 03810, 03811, 03812, 03819, 0382, 0383, 0384, 03840, 03841, 03842, 03843, 03844, 03849, 0388, 0389, 449, 78552, 7907	
24. Deep Wound Infection/ Wound Complication ^b	Secondary diagnosis codes: 9983, 99830, 99831, 99832, 99833, 9985, 99859, 9986, 99883 Secondary procedure codes: (5461, 8604, 8622, 8659, 8670, 8674 and exclusion) CPT procedure codes: (10180, 11040, 11041, 11042, 11043, 11044, 11045, 11046, 11047 and exclusion)	Any diagnosis code of Decubitus Ulcer: 7070, 70700, 70701, 70702, 70703, 70704, 70705, 70706, 70707, 70709, 70720, 70721, 70722, 70723, 70724, 70725
25. Renal Dysfunction ^b	Secondary diagnosis codes: (5845, 5846, 5847, 5848, 5849, 7885, 7925, 99668, 99673, V451, V4511, V56, V560, V561, V562, V563, V5631, V5632, V568, E8702, E8712, E8722, E8742, E8791) and exclusion Secondary procedure codes: (3895, 3927, 3943, 5494, 5498 and exclusion) CPT procedure codes (90935, 90937, 90945, 90947, 90970, 90997, 90999, 4054F, 4055F and exclusion)	Evidence of dialysis during look back period Principal or secondary procedure codes: 3895, 3927, 3942, 3943, 3995, 5494, 5498 Diagnosis/Status codes: 7925, 99668, 99673, V451, V4511, V56, V560, V561, V562, V563, V5631, V5632, V568, E8702, E8712, E8722, E8742, E8791 If Part B Medicare files are available use CPT codes: 36833, 90935, 90937, 90940, 90945, 90947, 90966, 90970, 90989, 90999, 99512, 99601, 4051F, 4052F, 4053F, 4054F, 4055F
26. Gangrene/Amputation ^b	Secondary diagnosis codes: 72886, 7854 Secondary procedure codes: (840, 8400, 8401, 8402, 8403, 8404, 8405, 8406, 8407, 8408, 8409, 841, 8410, 8411, 8412, 8413, 8414, 8415, 8416, 8417, 8418, 8419 and exclusion) CPT procedure codes: (23900, 23920, 24900, 24920, 24930,	Principal procedure codes: 840, 8400, 8401, 8402, 8403, 8404, 8405, 8406, 8407, 8408, 8409, 841, 8410, 8411, 8412, 8413, 8414, 8415, 8416, 8417, 8418, 8419

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	24931, 24940, 25900, 25905, 25909, 25920, 25924, 25927, 25931, 26910, 26951, 26952, 27290, 27295, 27590, 27591, 27592, 27596, 27598, 27880, 27881, 27882, 27886, 27888, 27889, 28800, 28805, 28810, 28820, 28825, and exclusion)	
27. Intestinal Obstruction	Secondary diagnosis codes: (5570, 56081, 5609, 9974, 99741, 99749 and exclusion)	DRG DRG = 148-153(2004-2007) 329-331, 335-337, 344-346(2008-2009) Principal diagnosis codes: 5570, 56081, 5609
28. Return to Surgery ^a	Secondary diagnosis codes: 9984, 9987 Secondary procedure codes: 3403, 3409, 5411, 5412, 5492 CPT procedure codes: 32110, 32120, 32150, 49002	
29. Decubitus Ulcer ^b	Secondary diagnosis codes: 7070, 70700, 70701, 70702, 70703, 70704, 70705, 70706, 70707, 70709, 70720, 70721, 70722, 70723, 70724, 70725	
30. Orthopedic Complication ^b	Secondary diagnosis codes: (9964, 99640, 99641, 99642, 99643, 99644, 99645, 99646, 99647, 99649, 99666, 9967, 99677, 99678 and exclusion) Secondary procedure codes: 7971, 7975, 7976, or (7860, 7869 and exclusion)	Principal procedure codes: 0070, 0071, 0072, 0073, 0074, 0075, 0076, 0077, 0080, 0081, 0082, 0083, 0084, 8153, 8155, 8159, 8183, 8185
31. Compartment Syndrome ^b	(Secondary diagnosis codes: 9588, 99889 with Secondary procedure code: 8314) OR CPT procedure codes: 27025, 27305, 27496, 27497, 27498, 27499, 27600, 27601, 27602, 27892, 27893, 27894, 28008, 29893	
32. Hepatitis/Jaundice	Secondary diagnosis codes: 570, 5733	
33. Pancreatitis	Secondary diagnosis codes: 5770	
34. Necrosis of the Bone- Thermal or Aseptic	Secondary diagnosis codes: 73340, 73341, 73342, 73343, 73344, 73345, 73349	
35. Osteomyelitis ^b	Secondary diagnosis codes: (7300, 73000, 73001, 73002, 73003, 73004, 73005, 73006, 73007, 73008, 73009, 7302, 73020, 73021, 73022, 73023, 73024, 73025, 73026, 73027, 73028, 73029, 99667 and	Primary diagnosis codes: 7300, 73000, 73001, 73002, 73003, 73004, 73005, 73006, 73007, 73008, 73009, 7302, 73020, 73021, 73022, 73023, 73024, 73025, 73026, 73027, 73028, 73029, 99667

APPENDIX B: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (*) (Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-9)

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	exclusion) CPT procedure codes: 23035, 23170, 23172, 23174, 23180, 23182, 23184, 24134, 24136, 24138, 24140, 24145, 24147, 26992, 27070, 27071, 27303, 27360, 27607, 27640, 27641, 28005, 28120, 28122, 28124	
36. Disseminated Intravascular Coagulopathy (DIC)	Secondary diagnosis codes: 2866	
37. Pyelonephritis	Secondary diagnosis codes: 5901, 59010, 59011, 5902, 5903, 5908, 59080, 59081, 5909	
38. Post-Surgical Complication	Secondary diagnosis codes: 99700, 99701, 9972, 9975, 99851, 99852, 9988, 99881, 99882, 99889, 9989, 9990, 9991, 9992, 9993, 99931, 99932, 99933, 99934, 99939, 9994, 99941, 99942, 99949, 9995, 99951, 99952, 99959, 9996, 99960, 99961, 99962, 99963, 99969, 9997, 99970, 99971, 99972, 99973, 99974, 99975, 99976, 99977, 99978, 99979, 9998, 99980, 99981, 99982, 99983, 99984, 99985, 99988, 99989, 9999	

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Heart Failure

Look-back Period

39891, 40201, 40211, 40291, 40401, 40403, 40411, 40413, 40491, 40493, 428, 4280, 4281, 42820, 42821, 42822, 42823, 42830, 42831, 42832, 42833, 42840, 42841, 42842, 42843, 4289, 5184

Current Admission

428, 4280, 4281, 42820, 42821, 42830, 42831, 4289, 5184 (only if secondary ICD-9 code does not equal 9971)
42822, 42823, 42832, 42833, 42842, 42843

Stroke

Look-back Period

431, 432, 43301, 43311, 43321, 43331, 43381, 43391, 434, 4340, 43401, 4341, 43411, 4349, 43491, 436, 99702, 438, 4380, 4381, 43810, 43811, 43812, 43813, 43814, 43819, 4382, 43820, 43821, 43822, 4383, 43830, 43831, 43832, 4384, 43840, 43841, 43842, 4385, 43850, 43851, 43852, 43853, 4386, 4387, 4388, 43881, 43882, 43883, 43884, 43885, 43889, 4389, V1253, V1254, V1259

Current Admission

438, 4380, 43810, 43811, 43812, 43813, 43814, 43819, 43820, 43821, 43822, 43830, 43831, 43832, 43840, 43841, 43842, 43850, 43851, 43852, 43853, 4388, 43881, 43882, 43889, 4389, V1253, V1254, V1259

Seizures

Look-back Period

345, 3450, 34500, 34501, 3451, 34510, 34511, 3452, 3453, 3454, 34540, 34541, 3455, 34550, 34551, 3457, 34570, 34571, 3458, 34580, 34581, 3459, 34590, 34591, 7803

Current Admission

345, 3450, 34500, 34501, 3451, 34510, 34511, 3452, 3453, 3454, 34540, 34541, 3455, 34550, 34551, 3457, 34570, 34571, 3458, 34580, 34581, 3459, 34590, 34591

Dementias

Look-back Period or Current Admission

290, 2900, 2901, 29010, 29011, 29012, 29013, 2902, 29020, 29021, 2903, 2904, 29040, 29041, 29042, 29043, 2908, 2909, 294, 2940, 2941, 29410, 29411, 29420, 29421, 2948, 2949, 3100, 3101, 3310, 3311, 33111, 33119, 3312, 3316, 3317, 33182, 33189, 3319, 3330, 797

Alcoholism

Look-back Period or Current Admission

291, 2910, 2911, 2912, 2914, 2915, 2918, 29181, 29182, 29189, 2919, 30300, 30301, 30302, 30303, 30390, 30391, 30392, 30393, 30500, 30501, 30502, 30503

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Drug Abuse

Look-back Period or Current Admission

2920, 29282, 29283, 29284, 29285, 29289, 2929, 30400, 30401, 30402, 30403, 30410, 30411, 30412, 30413, 30420, 30421, 30422, 30423, 30430, 30431, 30432, 30433, 30440, 30441, 30442, 30443, 30450, 30451, 30452, 30453, 30460, 30461, 30462, 30463, 30470, 30471, 30472, 30473, 30480, 30481, 30482, 30483, 30490, 30491, 30492, 30493, 30520, 30521, 30522, 30523, 30530, 30531, 30532, 30533, 30540, 30541, 30542, 30543, 30550, 30551, 30552, 30553, 30560, 30561, 30562, 30563, 30570, 30571, 30572, 30573, 30580, 30581, 30582, 30583, 30590, 30591, 30592, 30593, 64830, 64831, 64832, 64833, 64834

Past MI

Look-back Period

410, 4100, 41000, 41001, 41002, 4101, 41010, 41011, 41012, 4102, 41020, 41021, 41022, 4103, 41030, 41031, 41032, 4104, 41040, 41041, 41042, 4105, 41050, 41051, 41052, 4106, 41060, 41061, 41062, 4107, 41070, 41071, 41072, 4108, 41080, 41081, 41082, 4109, 41090, 41091, 41092, 412

Current Admission

41002, 41012, 41022, 41032, 41042, 41052, 41062, 41072, 41082, 41092, 412

Past Arrhythmia

Look-back Period

427, 4270, 4271, 4272, 4273, 42731, 42732, 4274, 42741, 42742, 4275, 4276, 42760, 42761, 42769, 4278, 42781, 42789, 4279

Current Admission

4273, 42781, 42789 (only if secondary ICD-9 procedure code does NOT equal 9971)

Unstable Angina

Look-back Period or Current Admission

4111

Angina

Look-back Period or Current Admission

4130, 4131, 4139

Hypertension

Look-back Period or Current Admission

4010, 4011, 4019, 402, 4020, 40200, 40201, 4021, 40210, 40211, 4029, 40290, 40291, 403, 4030, 40300, 4031, 40310, 4039, 40390, 404, 4040, 40400, 40401, 4041, 40410, 40411, 4049, 40490, 40491, 405, 4050, 40501, 40509, 4051, 40511, 40519, 4059, 40591, 40599, 64200, 64201, 64202, 64203, 64204, 64210, 64211, 64212, 64213, 64214, 64220, 64221, 64222, 64223, 64224, 64270, 64271, 64272, 64273, 64274, 64290, 64291, 64292, 64293, 64294

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Valvular Disease

Look-back Period or Current Admission

0932, 09320, 09321, 09322, 09323, 09324, 3940, 3941, 3942, 3949, 3950, 3951, 3952, 3959, 3960, 3961, 3962, 3963, 3968, 3969, 3970, 3971, 3979, 4240, 4241, 4242, 4243, 4249, 7463, 7464, 7465, 7466, V422, V433

COPD/Chronic Pulmonary Disease

Look-back Period or Current Admission

490, 491, 4910, 4911, 4912, 49120, 49121, 49122, 4918, 4919, 492, 4920, 4928, 4940, 4941, 4950, 4951, 4952, 4953, 4954, 4955, 4956, 4957, 4958, 4959, 496, 500, 501, 502, 503, 504, 505, 5064

Asthma

Look-back Period or Current Admission

493, 4930, 49300, 49301, 49302, 4931, 49310, 49311, 49312, 4932, 49320, 49321, 49322, 4939, 49390, 49391, 49392

Liver Disease/Dysfunction

Look-back Period or Current Admission

07022, 07023, 07032, 07033, 07044, 07054, 4560, 4561, 45620, 45621, 570, 571, 5710, 5711, 5712, 5713, 5714, 57140, 57141, 57142, 57149, 5715, 5716, 5718, 5719, 572, 5720, 5721, 5722, 5723, 5724, 5728, 573, 5730, 5731, 5732, 5733, 5734, 5735, 5738, 5739, V427

Renal Dysfunction

Look-back Period

40300, 40310, 40390, 40400, 40401, 40410, 40411, 40490, 40491, 581, 5810, 5811, 5812, 5813, 5818, 58181, 58189, 5819, 582, 5820, 5821, 5822, 5824, 5828, 58281, 58289, 5829, 583, 5830, 5831, 5832, 5834, 5836, 5837, 5838, 58381, 58389, 5839, 585, 5851, 5852, 5853, 5854, 5859, 588, 5880, 5881, 5888, 58881, 58889, 5889

Current Admission

584, 5845, 5846, 5847, 5848, 5849

Renal Failure

Look-back Period

40301, 40311, 40391, 40402, 40403, 40412, 40413, 40492, 40493, 5855, 5856, 586, 7925, 99673, 99676, 9968, V420, V451, V4511, V56, V560, V561, V562, V563, V5631, V5632, V568, E8702, E8712, E8722, E8742, E8791

ICD-9 Procedure codes: 3895, 3927, 3942, 3943, 3995, 5498

CPT codes: 36833, 90966, 90970, 90989, 90999, 90935, 90937, 90940, 90945, 90947, 99512, 99601, 99602, 4051F, 4052F, 4053F, 4054F, 4055F

Current Admission

40301, 40311, 40391, 40402, 40403, 40412, 40413, 40492, 40493, 5855, 5856, V420

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Diabetes

Look-back Period or Current Admission

24900, 24901, 24910, 24911, 24920, 24921, 24930, 24931, 24940, 24941, 24950, 24951, 24960, 24961, 24970, 24971, 24980, 24981, 24990, 24991, 25000, 25001, 25002, 25003, 2501, 25010, 25011, 25013, 25012, 2502, 25020, 25021, 25022, 25023, 2503, 25030, 25031, 25032, 25033, 2504, 25040, 25041, 25042, 25043, 2505, 25050, 25051, 25052, 25053, 2506, 25060, 25061, 25062, 25063, 2507, 25070, 25071, 25072, 25073, 2508, 25080, 25081, 25082, 25083, 2509, 25090, 25091, 25092, 25093, 6480, 64800, 64801, 64802, 64803, 64804, 6488, 64880, 64881, 64882, 64883, 64884, 7751

Paraplegia

Look-back Period

342, 3420, 34200, 34201, 34202, 3421, 34210, 34211, 34212, 3428, 34280, 34281, 34282, 3429, 34290, 34291, 34292, 3430, 3431, 3432, 3433, 3434, 3438, 3439, 344, 3440, 34400, 34401, 34402, 34403, 34404, 34409, 3441, 3442, 3443, 34430, 34431, 34432, 3444, 34440, 34441, 34442, 3445, 3446, 34460, 34461, 3448, 34481, 34489, 3449, 4382, 43820, 43821, 43822, 4383, 43830, 43831, 43832, 4384, 43840, 43841, 43842, 4385, 43850, 43851, 43852, 43853, 78072

Current Admission

3430, 3431, 3432, 3433, 3434, 3438, 3439, 43820, 43821, 43822, 43830, 43831, 43832, 43840, 43841, 43842, 43850, 43851, 43852, 43853

Collagen Vascular Disease

Look-back Period or Current Admission

7010, 7100, 7101, 7102, 7103, 7104, 7105, 7108, 7109, 7140, 7141, 7142, 7143, 71430, 71431, 71432, 71433, 7144, 7148, 71481, 71479, 7149, 7200, 7201, 7202, 7208, 72081, 72089, 7209, 725

Coagulopathy

Look-back Period or Current Admission

2870, 2871, 2872, 2878, 2879

Thrombocytopenia

Look-back Period

2873, 28730, 28731, 28732, 28733, 2874, 28741, 28749, 2875, 28984

Current Admission

2873, 28730, 28731, 28732, 28733

Hemophilia/Congenital Coagulopathy

Look-back Period or Current Admission

2860, 2861, 2862, 2863, 2864, 2865, 28652, 28653, 28659, 2866, 2867, 2869

Smoking History

Look-back Period or Current Admission

V1582

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Post Inflammatory Pulmonary Fibrosis

Look-back Period or Current Admission

515, 51631, 51632, 51633, 51634

Cushing's Disease (*)

Look-back Period or Current Admission

2550

Graves' Disease

Look-back Period or Current Admission

2420, 24200, 24201

Cancer

Look-back Period or Current Admission

140, 1400, 1401, 1403, 1404, 1405, 1406, 1408, 1409, 141, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1418, 1419, 142, 1420, 1421, 1422, 1428, 1429, 143, 1430, 1431, 1438, 1439, 144, 1440, 1441, 1448, 1449, 145, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1458, 1459, 146, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 147, 1470, 1471, 1472, 1473, 1478, 1479, 148, 1480, 1481, 1482, 1483, 1488, 1489, 149, 1490, 1491, 1498, 1499, 150, 1500, 1501, 1502, 1503, 1504, 1505, 1508, 1509, 151, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1518, 1519, 152, 1520, 1521, 1522, 1523, 1528, 1529, 153, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 154, 1540, 1541, 1542, 1543, 1548, 155, 1550, 1551, 1552, 156, 1560, 1561, 1562, 1568, 1569, 157, 1570, 1571, 1572, 1573, 1574, 1578, 1579, 158, 1580, 1588, 1589, 159, 1590, 1591, 1598, 1599, 160, 1600, 1601, 1602, 1603, 1604, 1605, 1608, 1609, 161, 1610, 1611, 1612, 1613, 1618, 1619, 162, 1620, 1622, 1623, 1624, 1625, 1628, 1629, 163, 1630, 1631, 1638, 1639, 164, 1640, 1641, 1642, 1643, 1648, 1649, 165, 1650, 1658, 1659, 170, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 171, 1710, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 172, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 173, 1730, 17300, 17301, 17309, 1731, 17310, 17311, 17312, 17319, 1732, 17320, 17321, 17322, 17329, 1733, 17330, 17331, 17332, 17339, 1734, 17340, 17341, 17342, 17349, 1735, 17350, 17351, 17352, 17359, 1736, 17360, 17361, 17362, 17369, 1737, 17370, 17371, 17372, 17379, 1738, 17380, 17381, 17382, 17389, 1739, 17390, 17391, 17392, 17399, 174, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1748, 1749, 175, 1750, 1759, 176, 1760, 1761, 1762, 1763, 1764, 1765, 1768, 1769, 179, 180, 1800, 1801, 1808, 1809, 181, 182, 1820, 1821, 1828, 183, 1830, 1832, 1833, 1834, 1835, 1838, 1839, 184, 1840, 1841, 1842, 1843, 1844, 1848, 1849, 185, 186, 1860, 1869, 187, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 188, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 189, 1890, 1891, 1892, 1893, 1894, 1898, 1899, 190, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 191, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 192, 1920, 1921, 1922, 1923, 1928, 1929, 193, 194, 1940, 1941, 1943, 1944, 1945, 1946, 1948, 1949, 195, 1950, 1951, 1952, 1953, 1954, 1955, 1958, 196, 1960, 1961, 1962, 1963, 1965, 1966, 1968, 1969, 197, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 198, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 19881, 19882, 19889, 199, 1990, 1991, 1992, 200, 2000, 20000, 20001, 20002, 20003, 20004, 20005, 20006, 20007, 20008, 2001, 20010, 20011, 20012, 20013, 20014, 20015, 20016, 20017, 20018, 2002, 20020, 20021, 20022, 20023, 20024, 20025, 20026, 20027, 20028, 20030, 20031, 20032, 20033, 20034, 20035, 20036, 20037, 20038,

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

20040, 20041, 20042, 20043, 20044, 20045, 20046, 20047, 20048, 20050, 20051, 20052, 20053, 20054, 20055, 20056, 20057, 20058, 20060, 20061, 20062, 20063, 20064, 20065, 20066, 20067, 20068, 20070, 20071, 20072, 20073, 20074, 20075, 20076, 20077, 20078, 2008, 20080, 20081, 20082, 20083, 20084, 20085, 20086, 20087, 20088, 201, 2010, 20100, 20101, 20102, 20103, 20104, 20105, 20106, 20107, 20108, 2011, 20110, 20111, 20112, 20113, 20114, 20115, 20116, 20117, 20118, 2012, 20120, 20121, 20122, 20123, 20124, 20125, 20126, 20127, 20128, 2014, 20140, 20141, 20142, 20143, 20144, 20145, 20146, 20147, 20148, 2015, 20150, 20151, 20152, 20153, 20154, 20155, 20156, 20157, 20158, 2016, 20160, 20161, 20162, 20163, 20164, 20165, 20166, 20167, 20168, 2017, 20170, 20171, 20172, 20173, 20174, 20175, 20176, 20177, 20178, 2019, 20190, 20191, 20192, 20193, 20194, 20195, 20196, 20197, 20198, 202, 2020, 20200, 20201, 20202, 20203, 20204, 20205, 20206, 20207, 20208, 2021, 20210, 20211, 20212, 20213, 20214, 20215, 20216, 20217, 20218, 2022, 20220, 20221, 20222, 20223, 20224, 20225, 20226, 20227, 20228, 2023, 20230, 20231, 20232, 20233, 20234, 20235, 20236, 20237, 20238, 2024, 20240, 20241, 20242, 20243, 20244, 20245, 20246, 20247, 20248, 2025, 20250, 20251, 20252, 20253, 20254, 20255, 20256, 20257, 20258, 2026, 20260, 20261, 20262, 20263, 20264, 20265, 20266, 20267, 20268, 2027, 20270, 20271, 20272, 20273, 20274, 20275, 20276, 20277, 20278, 2028, 20280, 20281, 20282, 20283, 20284, 20285, 20286, 20287, 20288, 2029, 20290, 20291, 20292, 20293, 20294, 20295, 20296, 20297, 20298, 203, 2030, 20300, 20301, 20302, 2031, 20310, 20311, 20312, 2038, 20380, 20381, 20382, 204, 2040, 20400, 20401, 20402, 2041, 20410, 20411, 20412, 2042, 20420, 20421, 20422, 2048, 20480, 20481, 20482, 2049, 20490, 20491, 20492, 205, 2050, 20500, 20501, 20502, 2051, 20510, 20511, 20512, 2052, 20520, 20521, 20522, 2053, 20530, 20531, 20532, 2058, 20580, 20581, 20582, 2059, 20590, 20591, 20592, 206, 2060, 20600, 20601, 20602, 2061, 20610, 20611, 20612, 2062, 20620, 20621, 20622, 2068, 20680, 20681, 20682, 2069, 20690, 20691, 20692, 207, 2070, 20700, 20701, 20702, 2071, 20710, 20711, 20712, 2072, 20720, 20721, 20722, 2078, 20780, 20781, 20782, 208, 2080, 20800, 20801, 20802, 2081, 20810, 20811, 20812, 2082, 20820, 20821, 20822, 2088, 20880, 20881, 20882, 2089, 20891, 20892, 20900, 20901, 20902, 20903, 20910, 20911, 20912, 20913, 20914, 20915, 20916, 20917, 20920, 20921, 20922, 20923, 20924, 20925, 20926, 20927, 20929, 20930, 20931, 20932, 20933, 20934, 20935, 20936, 20970, 20971, 20972, 20973, 20974, 20975, 20979, 2386, 2733, V10, V100, V1000, V1001, V1002, V1003, V1004, V1005, V1006, V1007, V1009, V101, V1011, V1012, V102, V1020, V1021, V1022, V1029, V103, V104, V1040, V1041, V1042, V1043, V1044, V1045, V1046, V1047, V1048, V1049, V105, V1050, V1051, V1052, V1053, V1059, V106, V1060, V1061, V1062, V1063, V1069, V107, V1071, V1072, V1079, V108, V1081, V1082, V1083, V1084, V1085, V1086, V1087, V1088, V1089, V109, V1090, V1091, V5811, V5812

Specific Abdominal Cancer

Look-back Period or Current Admission

155, 1550, 1551, 1552, 156, 1560, 1561, 1562, 1568, 1569, 157, 1570, 1571, 1572, 1573, 1574, 1578, 1579, 158, 1580, 1588, 1589, 159, 1590, 1591, 1598, 1599

Hypothyroidism

Look back period or Current Admission

243, 2440, 2441, 2442, 2448, 2449

APPENDIX C: Definitions of comorbidities (unless otherwise specified, all ICD-9 diagnosis codes)

Chronic Peptic Ulcer Disease

Look-back Period

53141, 53151, 53161, 53170, 53171, 53191

Current Admission

53141, 53151, 53161, 53170, 53171

HIV and AIDS (*)

Look-back Period or Current Admission

042

Weight Loss

Look-back Period or Current Admission

260, 261, 262, 263, 2630, 2631, 2632, 2638, 2639, 2690, 2691, 2692, 2693, 2698, 2699, 78321, 78322

Sickle Cell Anemia (*)

Look-back Period or Current Admission

2826, 28260, 28261, 28262, 28263, 28264, 28268, 28269

(*) These comorbidities have been too rare in the Medicare population, but they should be considered for inclusion in any given data set.

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
General Structure	1) General, orthopedic, and vascular surgery 2) Secondary diagnosis code and/or procedure code as specified below	Exclusion noted for each complication of care as specified in each row below
1. Cardiac Event ^a	<p>Secondary diagnosis codes: I248, I249, T82110A, T82111A, T82118A, T82119A, T82120A, T82121A, T82128A, T82129A, T82190A, T82191A, T82198A, T82199A or ((I97120, I97121, I97190, I97191, I97710, I97711, I97790, I97791, I9788, I9789) and any of (I441, I4581, I4589, I480, I4891, I495, I498, R001, R9431))</p> <p>Secondary procedure codes: 0270046, 027004Z, 02700D6, 02700DZ, 02700T6, 02700TZ, 0270346, 027034Z, 02703D6, 02703DZ, 02703T6, 02703TZ, 0270446, 027044Z, 02704D6, 02704DZ, 02704T6, 02704TZ, 0271046, 027104Z, 02710D6, 02710DZ, 02710T6, 02710TZ, 0271346, 027134Z, 02713D6, 02713DZ, 02713T6, 02713TZ, 0271446, 027144Z, 02714D6, 02714DZ, 02714T6, 02714TZ, 0272046, 027204Z, 02720D6, 02720DZ, 02720T6, 02720TZ, 0272346, 027234Z, 02723D6, 02723DZ, 02723T6, 02723TZ, 0272446, 027244Z, 02724D6, 02724DZ, 02724T6, 02724TZ, 0273046, 027304Z, 02730D6, 02730DZ, 02730T6, 02730TZ, 0273346, 027334Z, 02733D6, 02733DZ, 02733T6, 02733TZ, 0273446, 027344Z, 02734D6, 02734DZ, 02734T6, 02734TZ, 02C03ZZ, 02C04ZZ, 02C13ZZ, 02C14ZZ, 02C23ZZ, 02C24ZZ, 02C33ZZ, 02C34ZZ, 0JH604Z, 0JH605Z, 0JH606Z, 0JH60PZ, 0JH634Z, 0JH635Z, 0JH636Z, 0JH63PZ, 0JH804Z, 0JH805Z, 0JH806Z, 0JH80PZ, 0JH834Z, 0JH835Z, 0JH836Z, 0JH83PZ, 0JPT0PZ, 0JPT3PZ, 5A1213Z, 5A1223Z</p> <p>CPT procedure codes: 33206, 33207, 33208, 33210, 33211, 33212, 33213, 33214, 33216, 33217, 33240, 33249, 92953</p>	

† When ICD or CPT procedure codes are used to define a complication then there will be either a superscript (a) that indicates the complication occurring if secondary or CPT procedure code is equal to or later than the date of surgery or a superscript (b) that indicates the complication occurring if secondary or CPT procedure code is later than the day of surgery

‡ Depending on the study, the look back period may differ between 90 or 180 days

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
2. Cardiac Emergency ^a	<p>Secondary diagnosis codes: I2101, I2102, I2109, I2111, I2119, I2121, I2129, I213, I214, I220, I221, I222, I228, I229, I462, I468, I469, I470, I472, I4901, R570, R579</p> <p>Secondary procedure codes: (02QA0ZZ, 5A02110, 5A02210, 5A12012, 5A2204Z and exclusion)</p> <p>CPT procedure codes: (92950, 92960, 92970, 9297192997, 92998 and exclusion)</p>	<p>Principal diagnosis codes: I462, I468, I469, R092, R570, R571, R578, R579</p> <p>Principal procedure codes: 5A12012, 5A19054</p>
3. CHF	<p>Secondary diagnosis codes: I5021, I5023, I5031, I5033, I5041, I5043, J810 or ((I97110, I97111, I97120, I97121, I97130, I97131, I97190, I97191, I97710, I97711, I97790, I97791, I9788, I9789) and any of (I501, I5020, I5021, I5023, I5030, I5031, I5033, I5040, I5041, I5043, I509)) or (any of (I501, I5020, I5021, I5023, I5030, I5031, I5033, I5040, I5041, I5043, I509) and exclusion)</p>	<p>History of CHF defined as any of the following diagnoses during a look back period[‡]: I0981, I110, I130, I132, I501, I5020, I5021, I5022, I5023, I5030, I5031, I5032, I5033, I5040, I5041, I5042, I5043, I509, J810</p>
4. Hypotension/Shock/ Hypovolemia	<p>Secondary diagnosis codes: E860, E861, E869, I959, R031, R570, R571, R578, R579, R6521, T782XXA, T8110XA, T8111XA, T8112XA, T8119XA, T882XXA, T886XXA</p>	
5. Pulmonary embolus ^a	<p>Secondary diagnosis codes: I2601, I2602, I2690, I2692, I2699, T791XXA, T800XXA, T82817A, T82818A</p> <p>(CPT procedure codes: 75741, 75743, 78579, 78580, 78582, 78599 with Secondary procedure codes: 02HV02Z, 02HV0DZ, 02HV32Z, 02HV3DZ, 02HV42Z, 02HV4DZ, 02LV0CZ, 02LV0DZ, 02LV0ZZ, 02LV3CZ, 02LV3DZ, 02LV3ZZ, 02LV4CZ, 02LV4DZ, 02LV4ZZ, 02VV0CZ, 02VV0DZ, 02VV0ZZ, 02VV3CZ, 02VV3DZ, 02VV3ZZ, 02VV4CZ, 02VV4DZ, 02VV4ZZ, 06H00DZ, 06H03DZ, 06H04DZ, 06L00CZ, 06L00DZ, 06L00ZZ, 06L03CZ, 06L03DZ, 06L03ZZ, 06L04CZ, 06L04DZ, 06L04ZZ, 06V00CZ, 06V00DZ, 06V00ZZ, 06V03CZ, 06V03DZ, 06V03ZZ, 06V04CZ, 06V04DZ, 06V04ZZ) OR CPT procedure codes: 75894, 75896</p>	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
6. Deep Vein Thrombosis ^b	<p>Secondary diagnosis codes: I82210, I82211, I82290, I82291, I82401, I82402, I82403, I82409, I82411, I82412, I82413, I82419, I82421, I82422, I82423, I82429, I82431, I82432, I82433, I82439, I82441, I82442, I82443, I82449, I82491, I82492, I82493, I82499, I824Y1, I824Y2, I824Y3, I824Y9, I824Z1, I824Z2, I824Z3, I824Z9, I82501, I82502, I82503, I82509, I82511, I82512, I82513, I82519, I82521, I82522, I82523, I82529, I82531, I82532, I82533, I82539, I82541, I82542, I82543, I82549, I82591, I82592, I82593, I82599, I825Y1, I825Y2, I825Y3, I825Y9, I825Z1, I825Z2, I825Z3, I825Z9, I82601, I82602, I82603, I82609, I82611, I82612, I82613, I82619, I82621, I82622, I82623, I82629, I82701, I82702, I82703, I82709, I82711, I82712, I82713, I82719, I82721, I82722, I82723, I82729, I82811, I82812, I82813, I82819, I82890, I82891, I8290, I8291, I82A11, I82A12, I82A13, I82A19, I82A21, I82A22, I82A23, I82A29, I82B11, I82B12, I82B13, I82B19, I82B21, I82B22, I82B23, I82B29, I82C11, I82C12, I82C13, I82C19, I82C21, I82C22, I82C23, I82C29</p> <p>Secondary procedure codes: 02HV02Z, 02HV0DZ, 02HV32Z, 02HV3DZ, 02HV42Z, 02HV4DZ, 02LV0CZ, 02LV0DZ, 02LV0ZZ, 02LV3CZ, 02LV3DZ, 02LV3ZZ, 02LV4CZ, 02LV4DZ, 02LV4ZZ, 02VV0CZ, 02VV0DZ, 02VV0ZZ, 02VV3CZ, 02VV3DZ, 02VV3ZZ, 02VV4CZ, 02VV4DZ, 02VV4ZZ, 06H00DZ, 06H03DZ, 06H04DZ, 06L00CZ, 06L00DZ, 06L00ZZ, 06L03CZ, 06L03DZ, 06L03ZZ, 06L04CZ, 06L04DZ, 06L04ZZ, 06V00CZ, 06V00DZ, 06V00ZZ, 06V03CZ, 06V03DZ, 06V03ZZ, 06V04CZ, 06V04DZ, 06V04ZZ</p>	
7. Phlebitis ^b	<p>Secondary diagnosis codes: I8000, I8001, I8002, I8003, I8010, I8011, I8012, I8013, I80201, I80202, I80203, I80209, I80211, I80212, I80213, I80219, I80221, I80222, I80223, I80229, I80231, I80232, I80233, I80239, I80291, I80292, I80293, I80299, I803, I808, I809</p>	
8. Cerebrovascular Accident (CVA)/Stroke ^a	<p>Secondary diagnosis codes: (G9731, G9732, I610, I611, I612, I613, I614, I615, I616, I618, I619, I6300, I63011,</p>	History of CVA/stroke defined as any of the following diagnoses during a look back period:

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	I63012, I63019, I6302, I63031, I63032, I63039, I6309, I6310, I63111, I63112, I63119, I6312, I63131, I63132, I63139, I6319, I6320, I63211, I63212, I63219, I6322, I63231, I63232, I63239, I6329, I6330, I63311, I63312, I63319, I63321, I63322, I63329, I63331, I63332, I63339, I63341, I63342, I63349, I6339, I6340, I63411, I63412, I63419, I63421, I63422, I63429, I63431, I63432, I63439, I63441, I63442, I63449, I6349, I6350, I63511, I63512, I63519, I63521, I63522, I63529, I63531, I63532, I63539, I63541, I63542, I63549, I6359, I636, I638, I639, I6789, I97810, I97811, I97820, I97821 and exclusion)	G9731, G9732, I610, I611, I612, I613, I614, I615, I616, I618, I619, I6300, I63011, I63012, I63019, I6302, I63031, I63032, I63039, I6309, I6310, I63111, I63112, I63119, I6312, I63131, I63132, I63139, I6319, I6320, I63211, I63212, I63219, I6322, I63231, I63232, I63239, I6329, I6330, I63311, I63312, I63319, I63321, I63322, I63329, I63331, I63332, I63339, I63341, I63342, I63349, I6339, I6340, I63411, I63412, I63419, I63421, I63422, I63429, I63431, I63432, I63439, I63441, I63442, I63449, I6349, I6350, I63511, I63512, I63519, I63521, I63522, I63529, I63531, I63532, I63539, I63541, I63542, I63549, I6359, I636, I638, I639, I6789, I6900, I6901, I69020, I69021, I69022, I69023, I69028, I69031, I69032, I69033, I69034, I69039, I69041, I69042, I69043, I69044, I69049, I69051, I69052, I69053, I69054, I69059, I69061, I69062, I69063, I69064, I69065, I69069, I69090, I69091, I69092, I69093, I69098, I6910, I6911, I69120, I69121, I69122, I69123, I69128, I69131, I69132, I69133, I69134, I69139, I69141, I69142, I69143, I69144, I69149, I69151, I69152, I69153, I69154, I69159, I69161, I69162, I69163, I69164, I69165, I69169, I69190, I69191, I69192, I69193, I69198, I6920, I6921, I69220, I69221, I69222, I69223, I69228, I69231, I69232, I69233, I69234, I69239, I69241, I69242, I69243, I69244, I69249, I69251, I69252, I69253, I69254, I69259, I69261, I69262, I69263, I69264, I69265, I69269, I69290, I69291, I69292, I69293, I69298, I6930, I6931, I69320, I69321, I69322, I69323, I69328, I69331, I69332, I69333, I69334, I69339, I69341, I69342, I69343, I69344, I69349, I69351, I69352, I69353, I69354, I69359, I69361, I69362, I69363, I69364, I69365, I69369, I69390, I69391, I69392, I69393, I69398, I6980, I6981, I69820, I69821, I69822, I69823, I69828, I69831, I69832, I69833, I69834, I69839, I69841, I69842, I69843, I69844, I69849, I69851, I69852, I69853, I69854, I69859, I69861, I69862, I69863, I69864, I69865, I69869, I69890, I69891, I69892, I69893, I69898, I6990, I6991, I69920, I69921, I69922, I69923, I69928, I69931, I69932, I69933, I69934, I69939, I69941, I69942, I69943, I69944, I69949, I69951, I69952, I69953,

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
		I69954, I69959, I69961, I69962, I69963, I69964, I69965, I69969, I69990, I69991, I69992, I69993, I69998, I97810, I97811, I97820, I97821, Z8673, Z8674, Z8679
9. Transient Ischemic Attack (TIA)	Secondary diagnosis codes: G450, G451, G452, G458, G459, G460, G461, G462, I67841, I67848	
10. Coma	Secondary diagnosis codes: E035, G931, K7111, K7201, K7211, K7291, R4020, R402110, R402114, R402120, R402124, R402210, R402214, R402220, R402224, R402310, R402314, R402320, R402324, R402340, R402344	
11. Seizure ^b	Secondary diagnosis codes: (R5600, R561, R569 and exclusion)	History of seizure defined as any of the following diagnoses during a look back period: G40001, G40009, G40011, G40019, G40101, G40109, G40111, G40119, G40201, G40209, G40211, G40219, G40301, G40309, G40311, G40319, G40401, G40409, G40411, G40419, G40501, G40509, G40801, G40802, G40803, G40804, G40811, G40812, G40813, G40814, G40821, G40822, G40823, G40824, G4089, G40901, G40909, G40911, G40919, G40A01, G40A09, G40A11, G40A19, G40B01, G40B09, G40B11, G40B19
12. Psychosis	Secondary diagnosis codes: F0390, F0391, F05, F060, F061, F068, F11121, F11122, F1114, F11150, F11151, F11159, F11181, F11182, F11188, F1119, F11220, F11221, F11222, F11229, F1123, F1124, F11250, F11251, F11259, F11281, F11282, F11288, F1129, F11920, F11921, F11922, F11929, F1193, F1194, F11950, F11951, F11959, F11981, F11982, F11988, F1199, F13121, F13129, F1314, F13150, F13151, F13159, F13180, F13181, F13182, F13188, F1319, F13220, F13221, F13229, F13230, F13231, F13232, F13239, F1324, F13250, F13251, F13259, F1326, F1327, F13280, F13281, F13282, F13288, F1329, F13920, F13921, F13929, F13930, F13931, F13932, F13939, F1394, F13950, F13951, F13959, F1396, F1397, F13980, F13981, F13982, F13988, F1399, F1423, F15121, F15221, F1523, F15921, F1593, F17203, F17213, F17223, F17293, F19121, F19122, F19129, F1914, F19150, F19151, F19159, F1916, F1917, F19180, F19181, F19182, F19188, F1919, F1921, F19220, F19221, F19222, F19229, F19230, F19231, F19232,	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	F19239, F1924, F19250, F19251, F19259, F1926, F1927, F19280, F19281, F19282, F19288, F1929, F19920, F19921, F19922, F19929, F19930, F19931, F19932, F19939, F1994, F19950, F19951, F19959, F1996, F1997, F19980, F19981, F19982, F19988, F1999	
13. Nervous System Complications ^a	Secondary diagnosis codes: G038, G970, G972, G9781, G9782 Secondary procedure codes: 009U30Z, 009U3ZZ, 009U40Z, 009U4ZZ, 4A0004Z, 4A0034Z, 4A00X4Z, 4A0104Z, 4A0134Z, 4A01X4Z, 4A1004Z, 4A1034Z, 4A10X4Z, 4A1104Z, 4A1134Z, 4A11X4Z	
14. Pneumonia-Aspiration	Secondary diagnosis codes: J690, J691, J698 or ((J954, J95851, J95859, J9588, J9589) and any of (J159, J180, J188, J189))	
15. Pneumonia, other	Secondary diagnosis codes: A481, J13, J14, J150, J151, J1520, J15211, J15212, J1529, J153, J154, J155, J156, J158, J159, J180, J181, J188, J189 or (J182, J954, J95851, J95859, J9588, J9589 and exclusion)	DRG DRG=475(2004-2006)75-102(2004-2007) 565, 566 (2007) 163-208 (2008-2009) Any diagnosis codes: <i>1) Viral Pneumonia/SARS</i> A221, A3701, A3711, A3781, A3791, B250, B440, B7781, J09X1, J1000, J1001, J1008, J101, J1089, J1100, J1108, J111, J1189, J120, J121, J122, J123, J1281, J1289, J129, J157, J160, J168, J17 <i>2) Immunocompromised State</i> B20, B59, D800, D801, D802, D803, D804, D805, D806, D807, D808, D809, D810, D811, D812, D814, D816, D817, D8189, D819, D820, D821, D822, D823, D824, D828, D829, D830, D831, D832, D838, D839, D840, D841, D848, D849, D893, D8982, D8989, D899, M359
16. Pneumothorax/Effusion ^b	Secondary diagnosis codes: J930 or (J9311, J9312, J9381, J9382, J9383, J939, J95811, J95812, J9811 and exclusion) Secondary procedure codes: (0B9N3ZZ, 0B9N40Z, 0B9N4ZZ, 0B9P3ZZ, 0B9P40Z, 0B9P4ZZ, 0W9930Z, 0W993ZZ, 0W9940Z, 0W9B30Z, 0W9B3ZZ, 0W9B40Z and exclusion)	In the OBSOS Thoracotomy Procedure Category
17. Respiratory Compromise ^b	DRG = 483(2002- Sept 2004) 541, 542 (Oct 2004-2009) Secondary diagnosis codes:	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>J951, J952, J953, J95821, J95822, J9600, J9601, J9602, J9620, J9621, J9622, J9690, J9691, J9692, J984, R092</p> <p>Secondary procedure codes: 0B110F4, 0B110Z4, 0B113F4, 0B113Z4, 0B114F4, 0B114Z4, 0BH13EZ, 0BH17EZ, 0BH18EZ, 5A1955Z</p> <p>CPT procedure codes: 31500, 31603, 31605, 31610</p>	
18. Bronchospasm	<p>Secondary diagnosis codes: J9801</p>	
19. Internal Organ Damage ^b	<p>Secondary diagnosis codes: D7801, D7802, D7811, D7812, D7821, D7822, E3601, E3602, E3611, E3612, G9611, G9731, G9732, G9741, G9751, G9752, I97410, I97411, I97418, I9742, I9751, I9752, I97610, I97611, I97618, I9762, J9561, J9562, J9571, J9572, J95830, J95831, K9161, K9162, K9171, K9172, K91840, K91841, M96810, M96811, M96820, M96821, M96830, M96831, N9961, N9962, N9971, N9972, N99820, N99821, T888XXA</p> <p>Secondary procedure codes: (0D9S00Z, 0D9S0ZZ, 0D9T00Z, 0D9T0ZZ, 0D9V00Z, 0D9V0ZZ, 0D9W00Z, 0D9W0ZZ, 0W300ZZ, 0W303ZZ, 0W304ZZ, 0W310ZZ, 0W313ZZ, 0W314ZZ, 0W320ZZ, 0W323ZZ, 0W324ZZ, 0W330ZZ, 0W333ZZ, 0W334ZZ, 0W337ZZ, 0W338ZZ, 0W33XZZ, 0W360ZZ, 0W363ZZ, 0W364ZZ, 0W390ZZ, 0W393ZZ, 0W394ZZ, 0W3B0ZZ, 0W3B3ZZ, 0W3B4ZZ, 0W3C0ZZ, 0W3C3ZZ, 0W3C4ZZ, 0W3G0ZZ, 0W3H0ZZ, 0W3K0ZZ, 0W3K3ZZ, 0W3K4ZZ, 0W3L0ZZ, 0W3L3ZZ, 0W3L4ZZ, 0W3P0ZZ, 0W3Q3ZZ, 0W3Q4ZZ, 0W3Q7ZZ, 0W9G00Z, 0W9G0ZZ, 0WCJ0ZZ, 0WCP0ZZ, 0WCR0ZZ, 0WJG0ZZ, 0WJH0ZZ, 0WJJ0ZZ and exclusion)</p> <p>CPT procedure codes: (35800, 35820, 35840, 35860 and exclusion)</p>	
20. Perforation	<p>Secondary diagnosis codes: D7811, D7812, E3611, E3612, G9611, G9741, G9748, G9749, H59219, H59229,</p>	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	I9751, I9752, J9571, J9572, K223, K631, K9171, K9172, M96820, M96821, N9971, N9972, T888XXA	
21. Peritonitis ^b	<p>Secondary diagnosis codes: K630, K650, K651, K652, K658, K659, K67, K6819, K689</p> <p>Secondary procedure codes: (0D9S30Z, 0D9S3ZZ, 0D9S40Z, 0D9S4ZZ, 0D9T30Z, 0D9T3ZZ, 0D9T40Z, 0D9T4ZZ, 0D9V30Z, 0D9V3ZZ, 0D9V40Z, 0D9V4ZZ, 0D9W30Z, 0D9W3ZZ, 0D9W40Z, 0D9W4ZZ, 0W9F30Z, 0W9F3ZZ, 0W9F40Z, 0W9F4ZZ, 0W9G30Z, 0W9G3ZZ, 0W9G40Z, 0W9G4ZZ, 0W9J30Z, 0W9J3ZZ and exclusion)</p>	Comorbidity of liver disease/dysfunction defined in Appendix C, as diagnosis in the index admission or in the look back period
22. GI Bleed and Blood Loss ^b	<p>Secondary diagnosis codes: [D62 or ((K920, K921, K922) and principal procedure exclusion), or ((K226) and DRG exclusion 1) or any of ((I8501, I8511, K228, K250, K252, K253, K259, K260, K261, K262, K263, K269, K270, K271, K272, K273, K279, K280, K281, K282, K283, K289, K2901, K2960, K2961, K2971, K2981, K2991, K3182, K5281, K5521, K5721, K5731, K5733, K5741, K5751, K5753, K5781, K5791, K5793, K625, K922) and DRG exclusion 2)] and exclusion of Trauma defined by DRG or by principal diagnosis or History of alcoholism</p> <p>CPT procedure codes: (43227, 43255, 44366, 44391, 45317, 45334, 75726 and principal procedure exclusion)</p>	<p>Trauma defined by DRG or principal diagnosis or History of alcoholism <i>Trauma as defined by principal diagnoses (lowercase letter x's denote a wildcard character; for seven-digit codes, final letter must be A, B, or C):</i> M991x, S01xxxx, S02xxxx, S030xxx-S032xxx, S052xxx-S059xxx, S06xxxx, S07xxxx, S08xxxx, S090xxx, S0912xx, S092xxx-S099xxx, S11xxxx, S12xxxx, S130xxx-S132xxx, S140xxx-S143xxx, S15xxxx, S162xxx, S17xxxx, S21xxxx, S22xxxx, S230xxx-S232xxx, S240xxx-S242xxx, S25xxxx, S26xxxx, S27xxxx, S28xxxx, S2902xx, S31xxxx, S32xxxx, S330xxx-S333xxx, S340xxx-S344xxx, S35xxxx, S36xxxx, S37xxxx, S38xxxx, S3902xx, S41xxxx, S42xxxx, S430xxx-S433xxx, S45xxxx, S46x2xx, S47xxxx, S48xxxx, S490xxx-S491xxx, S51xxxx, S52xxxx, S530xxx-S531xxx, S55xxxx, S56x2xx, S57xxxx, S58xxxx, S590xxx-S592xxx, S61009A, S61209A, S614xxx-S615xxx, S620xxx-S623xxx, S6290xx, S630xxx-S632xxx, S65xxxx, S66x2xx, S67xxxx, S684xxx, S687xxx, S71xxxx, S72xxxx, S730xxx, S75xxxx, S76x2xx, S77xxxx, S78xxxx, S790xxx-S791xxx, S81xxxx, S82xxxx, S830xxx-S833xxx, S85xxxx, S86x2xx, S87xxxx, S88xxxx, S890xxx-S893xxx, S910xxx, S913xxx, S920xxx-S923xxx, S9290xx, S930xxx-S933xxx, S95xxxx, S96x2xx, S97xxxx, S980xxx, S983xxx, S989xxx, T20xxxx, T21xxxx, T22xxxx, T23xxxx, T24xxxx, T25xxxx, T26xxxx, T27xxxx, T28xxxx,</p>

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
		<p>T300, T304, T30xxxx, T310, T31xx, T31xxxx, T32xx, T32xxxx, T79xxxx</p> <p><i>Trauma DRGs</i> 002, 027, 028, 029, 031, 032, 072, 083, 084, 235, 236, 237, 440, 441, 442, 443, 444, 445, 446, 456, 457, 458, 459, 460, 484, 485, 486, 487, 491, 504, 505, 506, 507, 508, 509, 510, 511(2004-2007)</p> <p>027, 082, 083, 084, 085, 086, 087, 088, 089, 090, 154, 155, 156, 183, 184, 185, 483, 484, 533, 534, 535, 536, 537, 538, 901, 902, 903, 906, 907, 908, 909, 913, 914, 927, 928, 929, 933, 934, 935, 955, 956, 957, 958, 959, 963, 964, 965(2008-2009)</p> <p><i>History of alcoholism in look back period defined as secondary diagnosis</i> F1010, F10120, F10121, F10129, F1014, F10150, F10151, F10159, F10180, F10181, F10182, F10188, F1019, F1020, F10220, F10221, F10229, F10230, F10231, F10232, F10239, F1024, F10250, F10251, F10259, F1026, F1027, F10280, F10281, F10282, F10288, F1029, F10920, F10921, F10929, F1094, F10950, F10951, F10959, F1096, F1097, F10980, F10981, F10982, F10988, F1099</p> <p>Principal procedure codes: 0DQ60ZZ, 0DQ63ZZ, 0DQ64ZZ, 0DQ67ZZ, 0DQ68ZZ, 0DQ90ZZ, 0DQ93ZZ, 0DQ94ZZ, 0DQ97ZZ, 0DQ98ZZ if secondary diagnosis in (K920, K921, K922)</p> <p>DRG 1) <i>DRG</i> = 146-171(2004-2007) 332-358(2008-2009) if secondary diagnosis = K226</p> <p>2) <i>DRG</i> = 146-167, 170-184, 188-208 (2004-2007); 326-358, 374-395, 405-446 (2008-2009) if any of the secondary diagnoses in the inclusion are in the set of diagnoses (I8501, I8511, K228, K250, K252, K253, K259, K260, K261, K262, K263, K269, K270, K271, K272, K273, K279, K280, K281, K282, K283, K289, K2901, K2960, K2961, K2971, K2981, K2991, K3182, K5281, K5521, K5721, K5731, K5733, K5741, K5751, K5753, K5781, K5791, K5793, K625, K922)</p>
23. Sepsis	Secondary diagnosis codes:	

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(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	A400, A401, A403, A408, A409, A4101, A4102, A411, A412, A413, A414, A4150, A4151, A4152, A4153, A4159, A4181, A4189, A419, A427, I76, R6521, R7881	
24. Deep Wound Infection/ Wound Complication ^b	<p>Secondary diagnosis codes: K6811, T8130XA, T8131XA, T8132XA, T8133XA, T814XXA, T8183XA</p> <p>Secondary procedure codes: (0H90X0Z, 0H90XZZ, 0H91X0Z, 0H91XZZ, 0H94X0Z, 0H94XZZ, 0H95X0Z, 0H95XZZ, 0H96X0Z, 0H96XZZ, 0H97X0Z, 0H97XZZ, 0H98X0Z, 0H98XZZ, 0H9AX0Z, 0H9AXZZ, 0H9BX0Z, 0H9BXZZ, 0H9CX0Z, 0H9CXZZ, 0H9DX0Z, 0H9DXZZ, 0H9EX0Z, 0H9EXZZ, 0H9FX0Z, 0H9FXZZ, 0H9GX0Z, 0H9GXZZ, 0H9HX0Z, 0H9HXZZ, 0H9JX0Z, 0H9JXZZ, 0H9KX0Z, 0H9KXZZ, 0H9LX0Z, 0H9LXZZ, 0H9MX0Z, 0H9MXZZ, 0H9NX0Z, 0H9NXZZ, 0HB0XZZ, 0HB1XZZ, 0HB4XZZ, 0HB5XZZ, 0HB6XZZ, 0HB7XZZ, 0HB8XZZ, 0HBAXZZ, 0HBBXZZ, 0HBCXZZ, 0HBDXZZ, 0HBEXZZ, 0HBFXZZ, 0HBGXZZ, 0HBHXZZ, 0HBJXZZ, 0HBKXZZ, 0HBLXZZ, 0HBMXZZ, 0HBNXZZ, 0HQ0XZZ, 0HQ1XZZ, 0HQ2XZZ, 0HQ3XZZ, 0HQ4XZZ, 0HQ5XZZ, 0HQ6XZZ, 0HQ7XZZ, 0HQ8XZZ, 0HQ9XZZ, 0HQAXZZ, 0HQBXXZ, 0HQCXZZ, 0HQDXZZ, 0HQEXZZ, 0HQFXZZ, 0HQGXZZ, 0HQHXZZ, 0HQJXZZ, 0HQKXZZ, 0HQLXZZ, 0HQMXXZ, 0HQNXZZ, 0HQTXXZ, 0HQUXZZ, 0HQVXXZ, 0HX0XZZ, 0HX1XZZ, 0HX4XZZ, 0HX5XZZ, 0HX6XZZ, 0HX7XZZ, 0HX8XZZ, 0HXAXZZ, 0HXBXXZ, 0HXCXXZ, 0HXDXZZ, 0HXEXZZ, 0HFXXXZ, 0HXGXZZ, 0HXHXZZ, 0HXJXXZ, 0HXKXXZ, 0HXLXXZ, 0HXMXXZ, 0HXNXZZ, 0J9000Z, 0J9400Z, 0J940ZZ, 0J9500Z, 0J950ZZ, 0J9600Z, 0J960ZZ, 0J9700Z, 0J970ZZ, 0J9800Z, 0J980ZZ, 0J9900Z, 0J990ZZ, 0J9B00Z, 0J9B0ZZ, 0J9C00Z, 0J9C0ZZ, 0J9D00Z, 0J9D0ZZ, 0J9F00Z, 0J9F0ZZ, 0J9G00Z, 0J9G0ZZ, 0J9H00Z, 0J9H0ZZ, 0J9J00Z, 0J9J0ZZ, 0J9K00Z, 0J9K0ZZ, 0J9L00Z, 0J9L0ZZ, 0J9M00Z, 0J9M0ZZ, 0J9N00Z, 0J9N0ZZ,</p>	<p>Any diagnosis code of Decubitus Ulcer: L89000, L89001, L89002, L89003, L89004, L89009, L89010, L89011, L89012, L89013, L89014, L89019, L89020, L89021, L89022, L89023, L89024, L89029, L89100, L89101, L89102, L89103, L89104, L89109, L89110, L89111, L89112, L89113, L89114, L89119, L89120, L89121, L89122, L89123, L89124, L89129, L89130, L89131, L89132, L89133, L89134, L89139, L89140, L89141, L89142, L89143, L89144, L89149, L89150, L89151, L89152, L89153, L89154, L89159, L89200, L89201, L89202, L89203, L89204, L89209, L89210, L89211, L89212, L89213, L89214, L89219, L89220, L89221, L89222, L89223, L89224, L89229, L89300, L89301, L89302, L89303, L89304, L89309, L89310, L89311, L89312, L89313, L89314, L89319, L89320, L89321, L89322, L89323, L89324, L89329, L8940, L8941, L8942, L8943, L8944, L8945, L89500, L89501, L89502, L89503, L89504, L89509, L89510, L89511, L89512, L89513, L89514, L89519, L89520, L89521, L89522, L89523, L89524, L89529, L89600, L89601, L89602, L89603, L89604, L89609, L89610, L89611, L89612, L89613, L89614, L89619, L89620, L89621, L89622, L89623, L89624, L89629, L89810, L89811, L89812, L89813, L89814, L89819, L89890, L89891, L89892, L89893, L89894, L89899, L8990, L8991, L8992, L8993, L8994, L8995</p>

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(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>0J9P00Z, 0J9P0ZZ, 0J9Q00Z, 0J9Q0ZZ, 0J9R00Z, 0J9R0ZZ, 0JB00ZZ, 0JB10ZZ, 0JB40ZZ, 0JB50ZZ, 0JB60ZZ, 0JB70ZZ, 0JB80ZZ, 0JB90ZZ, 0JBB0ZZ, 0JBC0ZZ, 0JBD0ZZ, 0JBF0ZZ, 0JBG0ZZ, 0JBH0ZZ, 0JBL0ZZ, 0JBM0ZZ, 0JBN0ZZ, 0JBP0ZZ, 0JBQ0ZZ, 0JBR0ZZ, 0JQ10ZZ, 0JQ13ZZ, 0JQ40ZZ, 0JQ43ZZ, 0JQ50ZZ, 0JQ53ZZ, 0JQ60ZZ, 0JQ63ZZ, 0JQ70ZZ, 0JQ73ZZ, 0JQ80ZZ, 0JQ83ZZ, 0JQ90ZZ, 0JQ93ZZ, 0JQB0ZZ, 0JQB3ZZ, 0JQC0ZZ, 0JQC3ZZ, 0JQD0ZZ, 0JQD3ZZ, 0JQF0ZZ, 0JQF3ZZ, 0JQG0ZZ, 0JQG3ZZ, 0JQH0ZZ, 0JQH3ZZ, 0JQJ0ZZ, 0JQJ3ZZ, 0JQK0ZZ, 0JQK3ZZ, 0JQL0ZZ, 0JQL3ZZ, 0JQM0ZZ, 0JQM3ZZ, 0JQN0ZZ, 0JQN3ZZ, 0JQP0ZZ, 0JQP3ZZ, 0JQQ0ZZ, 0JQQ3ZZ, 0JQR0ZZ, 0JQR3ZZ, 0JX00ZB, 0JX00ZC, 0JX03ZB, 0JX03ZC, 0JX10ZB, 0JX10ZC, 0JX13ZB, 0JX13ZC, 0JX40ZB, 0JX40ZC, 0JX43ZB, 0JX43ZC, 0JX50ZB, 0JX50ZC, 0JX53ZB, 0JX53ZC, 0JX60ZB, 0JX60ZC, 0JX63ZB, 0JX63ZC, 0JX70ZB, 0JX70ZC, 0JX73ZB, 0JX73ZC, 0JX80ZB, 0JX80ZC, 0JX83ZB, 0JX83ZC, 0JX90ZB, 0JX90ZC, 0JX93ZB, 0JX93ZC, 0JXB0ZB, 0JXB0ZC, 0JXB3ZB, 0JXB3ZC, 0JXC0ZB, 0JXC0ZC, 0JXC3ZB, 0JXC3ZC, 0JXD0ZB, 0JXD0ZC, 0JXD3ZB, 0JXD3ZC, 0JXF0ZB, 0JXF0ZC, 0JXF3ZB, 0JXF3ZC, 0JXG0ZB, 0JXG0ZC, 0JXG3ZB, 0JXG3ZC, 0JXH0ZB, 0JXH0ZC, 0JXH3ZB, 0JXH3ZC, 0JXL0ZB, 0JXL0ZC, 0JXL3ZB, 0JXL3ZC, 0JXM0ZB, 0JXM0ZC, 0JXM3ZB, 0JXM3ZC, 0JXN0ZB, 0JXN0ZC, 0JXN3ZB, 0JXN3ZC, 0JXP0ZB, 0JXP0ZC, 0JXP3ZB, 0JXP3ZC, 0JXQ0ZB, 0JXQ0ZC, 0JXQ3ZB, 0JXQ3ZC, 0JXR0ZB, 0JXR0ZC, 0JXR3ZB, 0JXR3ZC, 0W9000Z, 0W900ZZ, 0W9030Z, 0W9040Z, 0W904ZZ, 0W9K00Z, 0W9K0ZZ, 0W9K30Z, 0W9K40Z, 0W9K4ZZ, 0W9L00Z, 0W9L0ZZ, 0W9L30Z, 0W9L40Z, 0W9L4ZZ, 0W9M00Z, 0W9M0ZZ, 0W9M30Z, 0W9M40Z, 0W9M4ZZ, 0WQFXZZ, 0X9200Z, 0X920ZZ, 0X9230Z, 0X923ZZ, 0X9240Z, 0X924ZZ, 0X9300Z, 0X930ZZ, 0X9330Z, 0X933ZZ, 0X9340Z, 0X934ZZ, 0X9400Z, 0X940ZZ, 0X9430Z, 0X943ZZ, 0X9440Z, 0X944ZZ, 0X9500Z, 0X950ZZ,</p>	

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(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>0X9530Z, 0X953ZZ, 0X9540Z, 0X954ZZ, 0X9600Z, 0X960ZZ, 0X9630Z, 0X963ZZ, 0X9640Z, 0X964ZZ, 0X9700Z, 0X970ZZ, 0X9730Z, 0X973ZZ, 0X9740Z, 0X974ZZ, 0X9800Z, 0X980ZZ, 0X9830Z, 0X983ZZ, 0X9840Z, 0X984ZZ, 0X9900Z, 0X990ZZ, 0X9930Z, 0X993ZZ, 0X9940Z, 0X994ZZ, 0X9B00Z, 0X9B0ZZ, 0X9B30Z, 0X9B3ZZ, 0X9B40Z, 0X9B4ZZ, 0X9C00Z, 0X9C0ZZ, 0X9C30Z, 0X9C3ZZ, 0X9C40Z, 0X9C4ZZ, 0X9D00Z, 0X9D0ZZ, 0X9D30Z, 0X9D3ZZ, 0X9D40Z, 0X9D4ZZ, 0X9F00Z, 0X9F0ZZ, 0X9F30Z, 0X9F3ZZ, 0X9F40Z, 0X9F4ZZ, 0X9G00Z, 0X9G0ZZ, 0X9G30Z, 0X9G3ZZ, 0X9G40Z, 0X9G4ZZ, 0X9H00Z, 0X9H0ZZ, 0X9H30Z, 0X9H3ZZ, 0X9H40Z, 0X9H4ZZ, 0Y9000Z, 0Y900ZZ, 0Y9030Z, 0Y903ZZ, 0Y9040Z, 0Y904ZZ, 0Y9100Z, 0Y910ZZ, 0Y9130Z, 0Y913ZZ, 0Y9140Z, 0Y914ZZ, 0Y9700Z, 0Y970ZZ, 0Y9730Z, 0Y973ZZ, 0Y9740Z, 0Y974ZZ, 0Y9800Z, 0Y980ZZ, 0Y9830Z, 0Y983ZZ, 0Y9840Z, 0Y984ZZ, 0Y9900Z, 0Y990ZZ, 0Y9930Z, 0Y993ZZ, 0Y9940Z, 0Y994ZZ, 0Y9B00Z, 0Y9B0ZZ, 0Y9B30Z, 0Y9B3ZZ, 0Y9B40Z, 0Y9B4ZZ, 0Y9C00Z, 0Y9C0ZZ, 0Y9C30Z, 0Y9C3ZZ, 0Y9C40Z, 0Y9C4ZZ, 0Y9D00Z, 0Y9D0ZZ, 0Y9D30Z, 0Y9D3ZZ, 0Y9D40Z, 0Y9D4ZZ, 0Y9F00Z, 0Y9F0ZZ, 0Y9F30Z, 0Y9F3ZZ, 0Y9F40Z, 0Y9F4ZZ, 0Y9G00Z, 0Y9G0ZZ, 0Y9G30Z, 0Y9G3ZZ, 0Y9G40Z, 0Y9G4ZZ, 0Y9H00Z, 0Y9H0ZZ, 0Y9H30Z, 0Y9H3ZZ, 0Y9H40Z, 0Y9H4ZZ, 0Y9J00Z, 0Y9J0ZZ, 0Y9J30Z, 0Y9J3ZZ, 0Y9J40Z, 0Y9J4ZZ, 0Y9K00Z, 0Y9K0ZZ, 0Y9K30Z, 0Y9K3ZZ, 0Y9K40Z, 0Y9K4ZZ, 0Y9L00Z, 0Y9L0ZZ, 0Y9L30Z, 0Y9L3ZZ, 0Y9L40Z, 0Y9L4ZZ, 0Y9M00Z, 0Y9M0ZZ, 0Y9M30Z, 0Y9M3ZZ, 0Y9M40Z, 0Y9M4ZZ, 0Y9N00Z, 0Y9N0ZZ, 0Y9N30Z, 0Y9N3ZZ, 0Y9N40Z, 0Y9N4ZZ and exclusion)</p> <p>CPT procedure codes: (10180, 11040, 11041, 11042, 11043, 11044, 11045, 11046, 11047 and exclusion)</p>	
25. Renal Dysfunction ^b	<p>Secondary diagnosis codes: (N170, N171, N172, N178, N179, R34,</p>	Evidence of dialysis during look back period

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>R880, T8571XA, Y622, Y841, Z4901, Z4902, Z4931, Z4932, Z992) and exclusion</p> <p>Secondary procedure codes: (03130ZD, 03140ZD, 03150ZD, 03160ZD, 03170ZD, 03180ZD, 03190ZF, 031A0ZF, 031B0ZF, 031C0ZF, 03PY07Z, 03PY0JZ, 03PY0KZ, 03PY37Z, 03PY3JZ, 03PY3KZ, 03PY47Z, 03PY4JZ, 03PY4KZ, 05HY33Z, 06HY33Z, 0W1G0JY, 0W1G4JY, 3E1M39Z and exclusion)</p> <p>CPT procedure codes (90935, 90937, 90945, 90947, 90970, 90997, 90999, 4054F, 4055F and exclusion)</p>	<p>Principal or secondary procedure codes:</p> <p>Diagnosis/Status codes: I052, R880, T82818A, T82828A, T82838A, T82848A, T82858A, T82868A, T82898A, T8571XA, Y622, Y841, Z4901, Z4902, Z4931, Z4932, Z992</p> <p>If Part B Medicare files are available use CPT codes: 36833, 90935, 90937, 90940, 90945, 90947, 90966, 90970, 90989, 90999, 99512, 99601, 4051F, 4052F, 4053F, 4054F, 4055F</p>
26. Gangrene/Amputation ^b	<p>Secondary diagnosis codes: E0852, E0952, E1052, E1152, E1352, I70361, I70362, I70363, I70368, I70369, I70461, I70462, I70463, I70468, I70469, I70561, I70562, I70563, I70568, I70569, I70661, I70662, I70663, I70668, I70669, I70761, I70762, I70763, I70768, I70769, I7301, I96, M726</p> <p>Secondary procedure codes: (0X600ZZ, 0X610ZZ, 0X620ZZ, 0X630ZZ, 0X680Z1, 0X680Z2, 0X680Z3, 0X690Z1, 0X690Z2, 0X690Z3, 0X6B0ZZ, 0X6C0ZZ, 0X6D0Z1, 0X6D0Z2, 0X6D0Z3, 0X6F0Z1, 0X6F0Z2, 0X6F0Z3, 0X6J0Z0, 0X6J0Z4, 0X6J0Z5, 0X6J0Z6, 0X6J0Z7, 0X6J0Z8, 0X6J0Z9, 0X6J0ZB, 0X6J0ZC, 0X6J0ZD, 0X6J0ZF, 0X6K0Z0, 0X6K0Z4, 0X6K0Z5, 0X6K0Z6, 0X6K0Z7, 0X6K0Z8, 0X6K0Z9, 0X6K0ZB, 0X6K0ZC, 0X6K0ZD, 0X6K0ZF, 0X6L0Z0, 0X6L0Z1, 0X6L0Z2, 0X6L0Z3, 0X6M0Z0, 0X6M0Z1, 0X6M0Z2, 0X6M0Z3, 0X6N0Z0, 0X6N0Z1, 0X6N0Z2, 0X6N0Z3, 0X6P0Z0, 0X6P0Z1, 0X6P0Z2, 0X6P0Z3, 0X6Q0Z0, 0X6Q0Z1, 0X6Q0Z2, 0X6Q0Z3, 0X6R0Z0, 0X6R0Z1, 0X6R0Z2, 0X6R0Z3, 0X6S0Z0, 0X6S0Z1, 0X6S0Z2, 0X6S0Z3, 0X6T0Z0, 0X6T0Z1, 0X6T0Z2, 0X6T0Z3, 0X6V0Z0, 0X6V0Z1, 0X6V0Z2, 0X6V0Z3, 0X6W0Z0, 0X6W0Z1, 0X6W0Z2, 0X6W0Z3, 0Y620ZZ, 0Y630ZZ, 0Y640ZZ, 0Y670ZZ, 0Y680ZZ, 0Y6C0Z1, 0Y6C0Z2, 0Y6C0Z3, 0Y6D0Z1, 0Y6D0Z2, 0Y6D0Z3, 0Y6F0ZZ, 0Y6G0ZZ, 0Y6H0Z1, 0Y6H0Z2, 0Y6H0Z3, 0Y6J0Z1, 0Y6J0Z2, 0Y6J0Z3, 0Y6M0Z0, 0Y6M0Z4, 0Y6M0Z5, 0Y6M0Z6, 0Y6M0Z7, 0Y6M0Z8, 0Y6M0Z9, 0Y6M0ZB, 0Y6M0ZC, 0Y6M0ZD, 0Y6M0ZF, 0Y6N0Z0, 0Y6N0Z4, 0Y6N0Z5, 0Y6N0Z6, 0Y6N0Z7, 0Y6N0Z8, 0Y6N0Z9, 0Y6N0ZB, 0Y6N0ZC, 0Y6N0ZD, 0Y6N0ZF, 0Y6P0Z0, 0Y6P0Z1, 0Y6P0Z2, 0Y6P0Z3, 0Y6Q0Z0, 0Y6Q0Z1, 0Y6Q0Z2, 0Y6Q0Z3,</p>	<p>Principal procedure codes: 0X600ZZ, 0X610ZZ, 0X620ZZ, 0X630ZZ, 0X680Z1, 0X680Z2, 0X680Z3, 0X690Z1, 0X690Z2, 0X690Z3, 0X6B0ZZ, 0X6C0ZZ, 0X6D0Z1, 0X6D0Z2, 0X6D0Z3, 0X6F0Z1, 0X6F0Z2, 0X6F0Z3, 0X6J0Z0, 0X6J0Z4, 0X6J0Z5, 0X6J0Z6, 0X6J0Z7, 0X6J0Z8, 0X6J0Z9, 0X6J0ZB, 0X6J0ZC, 0X6J0ZD, 0X6J0ZF, 0X6K0Z0, 0X6K0Z4, 0X6K0Z5, 0X6K0Z6, 0X6K0Z7, 0X6K0Z8, 0X6K0Z9, 0X6K0ZB, 0X6K0ZC, 0X6K0ZD, 0X6K0ZF, 0X6L0Z0, 0X6L0Z1, 0X6L0Z2, 0X6L0Z3, 0X6M0Z0, 0X6M0Z1, 0X6M0Z2, 0X6M0Z3, 0X6N0Z0, 0X6N0Z1, 0X6N0Z2, 0X6N0Z3, 0X6P0Z0, 0X6P0Z1, 0X6P0Z2, 0X6P0Z3, 0X6Q0Z0, 0X6Q0Z1, 0X6Q0Z2, 0X6Q0Z3, 0X6R0Z0, 0X6R0Z1, 0X6R0Z2, 0X6R0Z3, 0X6S0Z0, 0X6S0Z1, 0X6S0Z2, 0X6S0Z3, 0X6T0Z0, 0X6T0Z1, 0X6T0Z2, 0X6T0Z3, 0X6V0Z0, 0X6V0Z1, 0X6V0Z2, 0X6V0Z3, 0X6W0Z0, 0X6W0Z1, 0X6W0Z2, 0X6W0Z3, 0Y620ZZ, 0Y630ZZ, 0Y640ZZ, 0Y670ZZ, 0Y680ZZ, 0Y6C0Z1, 0Y6C0Z2, 0Y6C0Z3, 0Y6D0Z1, 0Y6D0Z2, 0Y6D0Z3, 0Y6F0ZZ, 0Y6G0ZZ, 0Y6H0Z1, 0Y6H0Z2, 0Y6H0Z3, 0Y6J0Z1, 0Y6J0Z2, 0Y6J0Z3, 0Y6M0Z0, 0Y6M0Z4, 0Y6M0Z5, 0Y6M0Z6, 0Y6M0Z7, 0Y6M0Z8, 0Y6M0Z9, 0Y6M0ZB, 0Y6M0ZC, 0Y6M0ZD, 0Y6M0ZF, 0Y6N0Z0, 0Y6N0Z4, 0Y6N0Z5, 0Y6N0Z6, 0Y6N0Z7, 0Y6N0Z8, 0Y6N0Z9, 0Y6N0ZB, 0Y6N0ZC, 0Y6N0ZD, 0Y6N0ZF, 0Y6P0Z0, 0Y6P0Z1, 0Y6P0Z2, 0Y6P0Z3, 0Y6Q0Z0, 0Y6Q0Z1, 0Y6Q0Z2, 0Y6Q0Z3,</p>

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>0Y6M0Z0, 0Y6M0Z4, 0Y6M0Z5, 0Y6M0Z6, 0Y6M0Z7, 0Y6M0Z8, 0Y6M0Z9, 0Y6M0ZB, 0Y6M0ZC, 0Y6M0ZD, 0Y6M0ZF, 0Y6N0Z0, 0Y6N0Z4, 0Y6N0Z5, 0Y6N0Z6, 0Y6N0Z7, 0Y6N0Z8, 0Y6N0Z9, 0Y6N0ZB, 0Y6N0ZC, 0Y6N0ZD, 0Y6N0ZF, 0Y6P0Z0, 0Y6P0Z1, 0Y6P0Z2, 0Y6P0Z3, 0Y6Q0Z0, 0Y6Q0Z1, 0Y6Q0Z2, 0Y6Q0Z3, 0Y6R0Z0, 0Y6R0Z1, 0Y6R0Z2, 0Y6R0Z3, 0Y6S0Z0, 0Y6S0Z1, 0Y6S0Z2, 0Y6S0Z3, 0Y6T0Z0, 0Y6T0Z1, 0Y6T0Z2, 0Y6T0Z3, 0Y6U0Z0, 0Y6U0Z1, 0Y6U0Z2, 0Y6U0Z3, 0Y6V0Z0, 0Y6V0Z1, 0Y6V0Z2, 0Y6V0Z3, 0Y6W0Z0, 0Y6W0Z1, 0Y6W0Z2, 0Y6W0Z3, 0Y6X0Z0, 0Y6X0Z1, 0Y6X0Z2, 0Y6X0Z3, 0Y6Y0Z0, 0Y6Y0Z1, 0Y6Y0Z2, 0Y6Y0Z3 and exclusion)</p> <p>CPT procedure codes: (23900, 23920, 24900, 24920, 24930, 24931, 24940, 25900, 25905, 25909, 25920, 25924, 25927, 25931, 26910, 26951, 26952, 27290, 27295, 27590, 27591, 27592, 27596, 27598, 27880, 27881, 27882, 27886, 27888, 27889, 28800, 28805, 28810, 28820, 28825, and exclusion)</p>	<p>0Y6R0Z0, 0Y6R0Z1, 0Y6R0Z2, 0Y6R0Z3, 0Y6S0Z0, 0Y6S0Z1, 0Y6S0Z2, 0Y6S0Z3, 0Y6T0Z0, 0Y6T0Z1, 0Y6T0Z2, 0Y6T0Z3, 0Y6U0Z0, 0Y6U0Z1, 0Y6U0Z2, 0Y6U0Z3, 0Y6V0Z0, 0Y6V0Z1, 0Y6V0Z2, 0Y6V0Z3, 0Y6W0Z0, 0Y6W0Z1, 0Y6W0Z2, 0Y6W0Z3, 0Y6X0Z0, 0Y6X0Z1, 0Y6X0Z2, 0Y6X0Z3, 0Y6Y0Z0, 0Y6Y0Z1, 0Y6Y0Z2, 0Y6Y0Z3</p>
27. Intestinal Obstruction	<p>Secondary diagnosis codes: (K550, K565, K5660, K913, K9181, K9186, K9189 and exclusion)</p>	<p>DRG DRG = 148-153(2004-2007) 329-331, 335-337, 344-346(2008-2009)</p> <p>Principal diagnosis codes: K50012, K50112, K50812, K50912, K550, K565, K5660</p>
28. Return to Surgery ^a	<p>Secondary diagnosis codes: T81500A, T81501A, T81502A, T81503A, T81504A, T81505A, T81506A, T81507A, T81508A, T81509A, T81510A, T81511A, T81512A, T81513A, T81514A, T81515A, T81516A, T81517A, T81518A, T81519A, T81520A, T81521A, T81522A, T81523A, T81524A, T81525A, T81526A, T81527A, T81528A, T81529A, T81530A, T81531A, T81532A, T81533A, T81534A, T81535A, T81536A, T81537A, T81538A, T81539A, T81590A, T81591A, T81592A, T81593A, T81594A, T81595A, T81596A, T81597A, T81598A, T81599A, T8160XA, T8161XA, T8169XA</p> <p>Secondary procedure codes:</p>	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	07JP0ZZ, 0B9N00Z, 0B9N0ZZ, 0B9N30Z, 0B9P00Z, 0B9P0ZZ, 0B9P30Z, 0BCN0ZZ, 0BCN3ZZ, 0BCN4ZZ, 0BCP0ZZ, 0BCP3ZZ, 0BCP4ZZ, 0BPQ00Z, 0BPQ01Z, 0BPQ02Z, 0BPQ30Z, 0BPQ31Z, 0BPQ32Z, 0BPQ40Z, 0BPQ41Z, 0BPQ42Z, 0BPQ70Z, 0BPQ71Z, 0BPQ72Z, 0BPQ80Z, 0BPQ81Z, 0BPQ82Z, 0BWQ00Z, 0BWQ02Z, 0BWQ30Z, 0BWQ32Z, 0BWQ40Z, 0BWQ42Z, 0BWQ70Z, 0BWQ72Z, 0BWQ80Z, 0BWQ82Z, 0DCS0ZZ, 0DCS3ZZ, 0DCS4ZZ, 0DCT0ZZ, 0DCT3ZZ, 0DCT4ZZ, 0DCV0ZZ, 0DCV3ZZ, 0DCV4ZZ, 0DCW0ZZ, 0DCW3ZZ, 0DCW4ZZ, 0DJ00ZZ, 0DJ60ZZ, 0DJD0ZZ, 0DJU0ZZ, 0DJV0ZZ, 0DJW0ZZ, 0FJ00ZZ, 0W190J4, 0W190JY, 0W193J4, 0W194J4, 0W194JY, 0W1B0J4, 0W1B0JY, 0W1B3J4, 0W1B4J4, 0W1B4JY, 0W390ZZ, 0W3B0ZZ, 0W3D0ZZ, 0W3G0ZZ, 0W3H0ZZ, 0W3P0ZZ, 0W3Q0ZZ, 0W9900Z, 0W990ZZ, 0W994ZZ, 0W9B00Z, 0W9B0ZZ, 0W9B4ZZ, 0WC90ZZ, 0WC93ZZ, 0WC94ZZ, 0WCB0ZZ, 0WCB3ZZ, 0WCB4ZZ, 0WCG0ZZ, 0WCG3ZZ, 0WCG4ZZ, 0WCQ0ZZ, 0WCQ3ZZ, 0WCQ4ZZ, 0WH903Z, 0WH90YZ, 0WH933Z, 0WH93YZ, 0WH943Z, 0WH94YZ, 0WHB03Z, 0WHB0YZ, 0WHB33Z, 0WHB3YZ, 0WHB43Z, 0WHB4YZ, 0WHQ03Z, 0WHQ0YZ, 0WJG0ZZ, 0WJH0ZZ, 0WJJ0ZZ, 0WJP0ZZ, 0WJR0ZZ, 0WP900Z, 0WP901Z, 0WP903Z, 0WP90JZ, 0WP90YZ, 0WP930Z, 0WP931Z, 0WP933Z, 0WP93JZ, 0WP93YZ, 0WP940Z, 0WP941Z, 0WP943Z, 0WP94JZ, 0WP94YZ, 0WPB00Z, 0WPB01Z, 0WPB03Z, 0WPB0JZ, 0WPB0YZ, 0WPB30Z, 0WPB31Z, 0WPB33Z, 0WPB3JZ, 0WPB3YZ, 0WPB40Z, 0WPB41Z, 0WPB43Z, 0WPB4JZ, 0WPB4YZ, 0WPQ01Z, 0WPQ03Z, 0WPQ0YZ, 0WW900Z, 0WW901Z, 0WW903Z, 0WW90JZ, 0WW90YZ, 0WW930Z, 0WW931Z, 0WW933Z, 0WW93JZ, 0WW93YZ, 0WW940Z, 0WW941Z, 0WW943Z, 0WW94JZ, 0WW94YZ, 0WWB00Z, 0WWB01Z, 0WWB03Z, 0WWB0JZ, 0WWB0YZ,	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>0WWB30Z, 0WWB31Z, 0WWB33Z, 0WWB3JZ, 0WWB3YZ, 0WWB40Z, 0WWB41Z, 0WWB43Z, 0WWB4JZ, 0WWB4YZ, 0WWQ01Z, 0WWQ03Z, 0WWQ0YZ</p> <p>CPT procedure codes: 32110, 32120, 32150, 49002</p>	
29. Decubitus Ulcer ^b	<p>Secondary diagnosis codes: L89000, L89001, L89002, L89003, L89004, L89009, L89010, L89011, L89012, L89013, L89014, L89019, L89020, L89021, L89022, L89023, L89024, L89029, L89100, L89101, L89102, L89103, L89104, L89109, L89110, L89111, L89112, L89113, L89114, L89119, L89120, L89121, L89122, L89123, L89124, L89129, L89130, L89131, L89132, L89133, L89134, L89139, L89140, L89141, L89142, L89143, L89144, L89149, L89150, L89151, L89152, L89153, L89154, L89159, L89200, L89201, L89202, L89203, L89204, L89209, L89210, L89211, L89212, L89213, L89214, L89219, L89220, L89221, L89222, L89223, L89224, L89229, L89300, L89301, L89302, L89303, L89304, L89309, L89310, L89311, L89312, L89313, L89314, L89319, L89320, L89321, L89322, L89323, L89324, L89329, L8940, L8941, L8942, L8943, L8944, L8945, L89500, L89501, L89502, L89503, L89504, L89509, L89510, L89511, L89512, L89513, L89514, L89519, L89520, L89521, L89522, L89523, L89524, L89529, L89600, L89601, L89602, L89603, L89604, L89609, L89610, L89611, L89612, L89613, L89614, L89619, L89620, L89621, L89622, L89623, L89624, L89629, L89810, L89811, L89812, L89813, L89814, L89819, L89890, L89891, L89892, L89893, L89894, L89899, L8990, L8991, L8992, L8993, L8994, L8995</p>	
30. Orthopedic Complication ^b	<p>Secondary diagnosis codes: (M96621, M96622, M96629, M96631, M96632, M96639, M9665, M96661, M96662, M96669, M96671, M96672, M96679, M9669, T84010A, T84011A, T84012A, T84013A, T84018A, T84019A, T84020A, T84021A, T84022A, T84023A, T84028A, T84029A, T84030A, T84031A, T84032A, T84033A, T84038A, T84039A, T84040A, T84041A, T84042A, T84043A, T84048A, T84049A, T84050A, T84051A, T84052A, T84053A, T84058A, T84059A, T84060A, T84061A, T84062A, T84063A, T84068A, T84069A, T84090A, T84091A,</p>	<p>Principal procedure codes: 0QPD0JZ, 0QPD3JZ, 0QPD4JZ, 0QPF0JZ, 0QPF3JZ, 0QPF4JZ, 0QRD0JZ, 0QRD3JZ, 0QRD4JZ, 0QRF0JZ, 0QRF3JZ, 0QRF4JZ, 0QUD0JZ, 0QUD3JZ, 0QUD4JZ, 0QUF0JZ, 0QUF3JZ, 0QUF4JZ, 0RQE0ZZ, 0RQE3ZZ, 0RQE4ZZ, 0RQEXZZ, 0RQF0ZZ, 0RQF3ZZ, 0RQF4ZZ, 0RQFXZZ, 0RQG0ZZ, 0RQG3ZZ, 0RQG4ZZ, 0RQGXXZ, 0RQH0ZZ, 0RQH3ZZ, 0RQH4ZZ, 0RQHXXZ, 0RQJ0ZZ, 0RQJ3ZZ, 0RQJ4ZZ, 0RQJXXZ, 0RQK0ZZ, 0RQK3ZZ, 0RQK4ZZ, 0RQKXXZ,</p>

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	<p>T84092A, T84093A, T84098A, T84099A, T84110A, T84111A, T84112A, T84113A, T84114A, T84115A, T84116A, T84117A, T84119A, T84120A, T84121A, T84122A, T84123A, T84124A, T84125A, T84126A, T84127A, T84129A, T84190A, T84191A, T84192A, T84193A, T84194A, T84195A, T84196A, T84197A, T84199A, T84210A, T84213A, T84216A, T84218A, T84220A, T84223A, T84226A, T84228A, T84290A, T84293A, T84296A, T84298A, T84310A, T84318A, T84320A, T84328A, T84390A, T84398A, T84410A, T84418A, T84420A, T84428A, T84490A, T84498A, T8450XA, T8451XA, T8452XA, T8453XA, T8454XA, T8459XA, T8481XA, T8482XA, T8483XA, T8484XA, T8485XA, T8486XA, T8489XA, T849XXA and exclusion)</p> <p>Secondary procedure codes: (ORSE34Z, ORSE3ZZ, ORSE44Z, ORSE4ZZ, ORSEX4Z, ORSEXZZ, ORSF34Z, ORSF3ZZ, ORSF44Z, ORSF4ZZ, ORSFX4Z, ORSFXZZ, ORSG34Z, ORSG3ZZ, ORSG44Z, ORSG4ZZ, ORSGX4Z, ORSGXZZ, ORSH34Z, ORSH3ZZ, ORSH44Z, ORSH4ZZ, ORSHX4Z, ORSHXZZ, ORSJ34Z, ORSJ3ZZ, ORSJ44Z, ORSJ4ZZ, ORSJX4Z, ORSJXZZ, ORSK34Z, ORSK3ZZ, ORSK44Z, ORSK4ZZ, ORSKX4Z, ORSKXZZ, OSS934Z, OSS935Z, OSS93ZZ, OSS944Z, OSS945Z, OSS94ZZ, OSS9X4Z, OSS9X5Z, OSS9XZZ, OSSB34Z, OSSB35Z, OSSB3ZZ, OSSB44Z, OSSB45Z, OSSB4ZZ, OSSBX4Z, OSSBX5Z, OSSBXZZ, OSSC34Z, OSSC35Z, OSSC3ZZ, OSSC44Z, OSSC45Z, OSSC4ZZ, OSSCX4Z, OSSCX5Z, OSSCXZZ, OSSD34Z, OSSD35Z, OSSD3ZZ, OSSD44Z, OSSD45Z, OSSD4ZZ, OSSDX4Z, OSSDX5Z, OSSDXZZ) or (OPP004Z, OPP034Z, OPP044Z, OPP104Z, OPP134Z, OPP144Z, OPP204Z, OPP234Z, OPP244Z, OPP304Z, OPP307Z, OPP30JZ, OPP30KZ, OPP334Z, OPP337Z, OPP33JZ, OPP33KZ, OPP344Z, OPP347Z, OPP34JZ, OPP34KZ, OPP404Z, OPP407Z, OPP40JZ, OPP40KZ, OPP434Z, OPP437Z, OPP43JZ, OPP43KZ, OPP444Z, OPP447Z, OPP44JZ, OPP44KZ, OPP504Z, OPP534Z, OPP544Z, OPP604Z, OPP634Z, OPP644Z, OPP904Z, OPP934Z, OPP944Z,</p>	<p>ORQL0ZZ, ORQL3ZZ, ORQL4ZZ, ORQLXZZ, ORQM0ZZ, ORQM3ZZ, ORQM4ZZ, ORQMXZZ, ORUE07Z, ORUE0JZ, ORUE0KZ, ORUE37Z, ORUE3JZ, ORUE3KZ, ORUE47Z, ORUE4JZ, ORUE4KZ, ORUF07Z, ORUF0JZ, ORUF0KZ, ORUF37Z, ORUF3JZ, ORUF3KZ, ORUF47Z, ORUF4JZ, ORUF4KZ, ORUG07Z, ORUG0JZ, ORUG0KZ, ORUG37Z, ORUG3JZ, ORUG3KZ, ORUG47Z, ORUG4JZ, ORUG4KZ, ORUH07Z, ORUH0JZ, ORUH0KZ, ORUH37Z, ORUH3JZ, ORUH3KZ, ORUH47Z, ORUH4JZ, ORUH4KZ, ORUJ07Z, ORUJ0JZ, ORUJ0KZ, ORUJ37Z, ORUJ3JZ, ORUJ3KZ, ORUJ47Z, ORUJ4JZ, ORUJ4KZ, ORUK07Z, ORUK0JZ, ORUK0KZ, ORUK37Z, ORUK3JZ, ORUK3KZ, ORUK47Z, ORUK4JZ, ORUK4KZ, ORUL07Z, ORUL0JZ, ORUL0KZ, ORUL37Z, ORUL3JZ, ORUL3KZ, ORUL47Z, ORUL4JZ, ORUL4KZ, ORUM07Z, ORUM0JZ, ORUM0KZ, ORUM37Z, ORUM3JZ, ORUM3KZ, ORUM47Z, ORUM4JZ, ORUM4KZ, OSP909Z, OSP90JZ, OSPB09Z, OSPB0JZ, OSPC09Z, OSPC0JZ, OSPC4JZ, OSPD09Z, OSPD0JZ, OSPD4JZ, OSR9019, OSR901A, OSR901Z, OSR9029, OSR902A, OSR902Z, OSR9039, OSR903A, OSR903Z, OSR9049, OSR904A, OSR904Z, OSR90J9, OSR90JA, OSR90JZ, OSRA009, OSRA00A, OSRA00Z, OSRA019, OSRA01A, OSRA01Z, OSRA039, OSRA03A, OSRA03Z, OSRA0J9, OSRA0JA, OSRA0JZ, OSRB019, OSRB01A, OSRB01Z, OSRB029, OSRB02A, OSRB02Z, OSRB039, OSRB03A, OSRB03Z, OSRB049, OSRB04A, OSRB04Z, OSRB0J9, OSRB0JA, OSRB0JZ, OSRC0JZ, OSRD0JZ, OSRE009, OSRE00A, OSRE00Z, OSRE019, OSRE01A, OSRE01Z, OSRE039, OSRE03A, OSRE03Z, OSRE0J9, OSRE0JA, OSRE0JZ, OSRR019, OSRR01A, OSRR01Z, OSRR039, OSRR03A, OSRR03Z, OSRR0J9, OSRR0JA, OSRR0JZ, OSRS019, OSRS01A, OSRS01Z, OSRS039, OSRS03A, OSRS03Z, OSRS0J9, OSRS0JA, OSRS0JZ, OSRTOJZ, OSRU0JZ, OSRV0JZ, OSRW0JZ, OSU909Z, OSUA09Z, OSUB09Z, OSUC09C, OSUC0JZ, OSUC4JZ, OSUD09C, OSUD0JZ, OSUD4JZ, OSUE09Z, OSUR09Z, OSUS09Z, OSUT09Z, OSUU09Z, OSUV09Z,</p>

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	0PPB04Z, 0PPB34Z, 0PPB44Z, 0PPC04Z, 0PPC05Z, 0PPC34Z, 0PPC35Z, 0PPC44Z, 0PPC45Z, 0PPD04Z, 0PPD05Z, 0PPD34Z, 0PPD35Z, 0PPD44Z, 0PPD45Z, 0PPF04Z, 0PPF05Z, 0PPF34Z, 0PPF35Z, 0PPF44Z, 0PPF45Z, 0PPG04Z, 0PPG05Z, 0PPG34Z, 0PPG35Z, 0PPG44Z, 0PPG45Z, 0PPH04Z, 0PPH05Z, 0PPH34Z, 0PPH35Z, 0PPH44Z, 0PPH45Z, 0PPJ04Z, 0PPJ05Z, 0PPJ34Z, 0PPJ35Z, 0PPJ44Z, 0PPJ45Z, 0PPK04Z, 0PPK05Z, 0PPK34Z, 0PPK35Z, 0PPK44Z, 0PPK45Z, 0PPL04Z, 0PPL05Z, 0PPL34Z, 0PPL35Z, 0PPL44Z, 0PPL45Z, 0PPM04Z, 0PPM05Z, 0PPM34Z, 0PPM35Z, 0PPM44Z, 0PPM45Z, 0PPN04Z, 0PPN05Z, 0PPN34Z, 0PPN35Z, 0PPN44Z, 0PPN45Z, 0PPP04Z, 0PPP05Z, 0PPP34Z, 0PPP35Z, 0PPP44Z, 0PPP45Z, 0PPQ04Z, 0PPQ05Z, 0PPQ34Z, 0PPQ35Z, 0PPQ44Z, 0PPQ45Z, 0PPR04Z, 0PPR05Z, 0PPR07Z, 0PPR0JZ, 0PPR0KZ, 0PPR34Z, 0PPR35Z, 0PPR37Z, 0PPR3JZ, 0PPR3KZ, 0PPR44Z, 0PPR45Z, 0PPR47Z, 0PPR4JZ, 0PPR4KZ, 0PPS04Z, 0PPS05Z, 0PPS07Z, 0PPS0JZ, 0PPS0KZ, 0PPS34Z, 0PPS35Z, 0PPS37Z, 0PPS3JZ, 0PPS3KZ, 0PPS44Z, 0PPS45Z, 0PPS47Z, 0PPS4JZ, 0PPS4KZ, 0PPT04Z, 0PPT05Z, 0PPT07Z, 0PPT0JZ, 0PPT0KZ, 0PPT34Z, 0PPT35Z, 0PPT37Z, 0PPT3JZ, 0PPT3KZ, 0PPT44Z, 0PPT45Z, 0PPT47Z, 0PPT4JZ, 0PPT4KZ, 0PPV04Z, 0PPV05Z, 0PPV07Z, 0PPV0JZ, 0PPV0KZ, 0PPV34Z, 0PPV35Z, 0PPV37Z, 0PPV3JZ, 0PPV3KZ, 0PPV44Z, 0PPV45Z, 0PPV47Z, 0PPV4JZ, 0PPV4KZ, 0PPY00Z, 0PPY0MZ, 0PPY30Z, 0PPY3MZ, 0PPY40Z, 0PPY4MZ, 0QP004Z, 0QP007Z, 0QP00JZ, 0QP00KZ, 0QP034Z, 0QP037Z, 0QP03JZ, 0QP03KZ, 0QP044Z, 0QP047Z, 0QP04JZ, 0QP04KZ, 0QP104Z, 0QP107Z, 0QP10JZ, 0QP10KZ, 0QP134Z, 0QP137Z, 0QP13JZ, 0QP13KZ, 0QP144Z, 0QP147Z, 0QP14JZ, 0QP14KZ, 0QP204Z, 0QP205Z, 0QP207Z, 0QP20JZ, 0QP20KZ, 0QP234Z, 0QP235Z, 0QP237Z, 0QP23JZ, 0QP23KZ, 0QP244Z, 0QP245Z, 0QP247Z, 0QP24JZ, 0QP24KZ, 0QP304Z, 0QP305Z, 0QP307Z, 0QP30JZ, 0QP30KZ, 0QP334Z, 0QP335Z, 0QP337Z, 0QP33JZ, 0QP33KZ, 0QP344Z, 0QP345Z, 0QP347Z, 0QP34JZ, 0QP34KZ, 0QP404Z, 0QP407Z, 0QP40JZ, 0QP40KZ, 0QP434Z, 0QP437Z, 0QP43JZ, 0QP43KZ, 0QP444Z, 0QP447Z, 0QP44JZ, 0QP44KZ, 0QP504Z,	0SUW09Z, 0SW90JZ, 0SW93JZ, 0SW94JZ, 0SWB0JZ, 0SWB3JZ, 0SWB4JZ, 0SWC0JZ, 0SWC3JZ, 0SWC4JZ, 0SWD0JZ, 0SWD3JZ, 0SWD4JZ, 0SWF0JZ, 0SWF3JZ, 0SWF4JZ, 0SWG0JZ, 0SWG3JZ, 0SWG4JZ, 0SWH0JZ, 0SWH3JZ, 0SWH4JZ, 0SWJ0JZ, 0SWJ3JZ, 0SWJ4JZ, 0SWK0JZ, 0SWK3JZ, 0SWK4JZ, 0SWL0JZ, 0SWL3JZ, 0SWL4JZ, 0SWM0JZ, 0SWM3JZ, 0SWM4JZ, 0SWN0JZ, 0SWN3JZ, 0SWN4JZ, 0SWP0JZ, 0SWP3JZ, 0SWP4JZ, 0SWQ0JZ, 0SWQ3JZ, 0SWQ4JZ

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	0QP507Z, 0QP50JZ, 0QP50KZ, 0QP534Z, 0QP537Z, 0QP53JZ, 0QP53KZ, 0QP544Z, 0QP547Z, 0QP54JZ, 0QP54KZ, 0QP604Z, 0QP605Z, 0QP634Z, 0QP635Z, 0QP644Z, 0QP645Z, 0QP704Z, 0QP705Z, 0QP734Z, 0QP735Z, 0QP744Z, 0QP745Z, 0QP804Z, 0QP805Z, 0QP834Z, 0QP835Z, 0QP844Z, 0QP845Z, 0QP904Z, 0QP905Z, 0QP934Z, 0QP935Z, 0QP944Z, 0QP945Z, 0QPB04Z, 0QPB05Z, 0QPB34Z, 0QPB35Z, 0QPB44Z, 0QPB45Z, 0QPC04Z, 0QPC05Z, 0QPC34Z, 0QPC35Z, 0QPC44Z, 0QPC45Z, 0QPD04Z, 0QPD05Z, 0QPD34Z, 0QPD35Z, 0QPD44Z, 0QPD45Z, 0QPF04Z, 0QPF05Z, 0QPF34Z, 0QPF35Z, 0QPF44Z, 0QPF45Z, 0QPG04Z, 0QPG05Z, 0QPG34Z, 0QPG35Z, 0QPG44Z, 0QPG45Z, 0QPH04Z, 0QPH05Z, 0QPH34Z, 0QPH35Z, 0QPH44Z, 0QPH45Z, 0QPJ04Z, 0QPJ05Z, 0QPJ34Z, 0QPJ35Z, 0QPJ44Z, 0QPJ45Z, 0QPK04Z, 0QPK05Z, 0QPK34Z, 0QPK35Z, 0QPK44Z, 0QPK45Z, 0QPL04Z, 0QPL05Z, 0QPL34Z, 0QPL35Z, 0QPL44Z, 0QPL45Z, 0QPM04Z, 0QPM05Z, 0QPM34Z, 0QPM35Z, 0QPM44Z, 0QPM45Z, 0QPN04Z, 0QPN05Z, 0QPN34Z, 0QPN35Z, 0QPN44Z, 0QPN45Z, 0QPP04Z, 0QPP05Z, 0QPP34Z, 0QPP35Z, 0QPP44Z, 0QPP45Z, 0QPQ04Z, 0QPQ05Z, 0QPQ07Z, 0QPQ0JZ, 0QPQ0KZ, 0QPQ34Z, 0QPQ35Z, 0QPQ37Z, 0QPQ3JZ, 0QPQ3KZ, 0QPQ44Z, 0QPQ45Z, 0QPQ47Z, 0QPQ4JZ, 0QPQ4KZ, 0QPR04Z, 0QPR05Z, 0QPR07Z, 0QPR0JZ, 0QPR0KZ, 0QPR34Z, 0QPR35Z, 0QPR37Z, 0QPR3JZ, 0QPR3KZ, 0QPR44Z, 0QPR45Z, 0QPR47Z, 0QPR4JZ, 0QPR4KZ, 0QPS04Z, 0QPS07Z, 0QPS0JZ, 0QPS0KZ, 0QPS34Z, 0QPS37Z, 0QPS3JZ, 0QPS3KZ, 0QPS44Z, 0QPS47Z, 0QPS4JZ, 0QPS4KZ, 0QPY00Z, 0QPY0MZ, 0QPY30Z, 0QPY3MZ, 0QPY40Z, 0QPY4MZ and exclusion)	
31. Compartment Syndrome ^b	Secondary diagnosis codes: M622, T796 CPT procedure codes: 27025, 27305, 27496, 27497, 27498, 27499, 27600, 27601, 27602, 27892, 27893, 27894, 28008, 29893	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
32. Hepatitis/Jaundice	Secondary diagnosis codes: K710, K7110, K7111, K712, K713, K714, K7150, K7151, K716, K717, K718, K719, K7200, K7201, K752, K753, K7581, K7589, K759, K762, K764	
33. Pancreatitis	Secondary diagnosis codes: B252, K850, K851, K853, K858, K859	
34. Necrosis of the Bone- Thermal or Aseptic	Secondary diagnosis codes: M8700, M87011, M87012, M87019, M87021, M87022, M87029, M87031, M87032, M87033, M87034, M87035, M87036, M87037, M87038, M87039, M87041, M87042, M87043, M87044, M87045, M87046, M87050, M87051, M87052, M87059, M87061, M87062, M87063, M87064, M87065, M87066, M87071, M87072, M87073, M87074, M87075, M87076, M87077, M87078, M87079, M8708, M8709, M8710, M87111, M87112, M87119, M87121, M87122, M87129, M87131, M87132, M87133, M87134, M87135, M87136, M87137, M87138, M87139, M87141, M87142, M87143, M87144, M87145, M87146, M87150, M87151, M87152, M87159, M87161, M87162, M87163, M87164, M87165, M87166, M87171, M87172, M87173, M87174, M87175, M87176, M87177, M87178, M87179, M87180, M87188, M8719, M8720, M87221, M87222, M87229, M87251, M87252, M87256, M87274, M87275, M87276, M8730, M87311, M87312, M87319, M87321, M87322, M87329, M87331, M87332, M87333, M87334, M87335, M87336, M87337, M87338, M87339, M87341, M87342, M87343, M87344, M87345, M87346, M87350, M87351, M87352, M87353, M87361, M87362, M87363, M87364, M87365, M87366, M87371, M87372, M87373, M87374, M87375, M87376, M87377, M87378, M87379, M8738, M8739, M8780, M87811, M87812, M87819, M87821, M87822, M87829, M87831, M87832, M87833, M87834, M87835, M87836, M87837, M87838, M87839, M87841, M87842, M87843, M87844, M87845, M87849, M87850, M87851, M87852, M87859, M87861, M87862, M87863, M87864, M87865, M87869, M87871, M87872, M87873, M87874, M87875, M87876, M87877, M87878, M87879, M8788,	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	M8789, M879, M9050, M90511, M90512, M90519, M90521, M90522, M90529, M90531, M90532, M90539, M90541, M90542, M90549, M90551, M90552, M90559, M90561, M90562, M90569, M90571, M90572, M90579, M9058, M9059	
35. Osteomyelitis ^b	<p>Secondary diagnosis codes: (M4620, M4621, M4622, M4623, M4624, M4625, M4626, M4627, M4628, M8600, M86011, M86012, M86019, M86021, M86022, M86029, M86031, M86032, M86039, M86041, M86042, M86049, M86051, M86052, M86059, M86061, M86062, M86069, M86071, M86072, M86079, M8608, M8609, M8610, M86111, M86112, M86119, M86121, M86122, M86129, M86131, M86132, M86139, M86141, M86142, M86149, M86151, M86152, M86159, M86161, M86162, M86169, M86171, M86172, M86179, M8618, M8619, M8620, M86211, M86212, M86219, M86221, M86222, M86229, M86231, M86232, M86239, M86241, M86242, M86249, M86251, M86252, M86259, M86261, M86262, M86269, M86271, M86272, M86279, M8628, M8629, M869, T8460XA, T84610A, T84611A, T84612A, T84613A, T84614A, T84615A, T84619A, T84620A, T84621A, T84622A, T84623A, T84624A, T84625A, T84629A, T8463XA, T8469XA, T847XXA and exclusion)</p> <p>CPT procedure codes: 23035, 23170, 23172, 23174, 23180, 23182, 23184, 24134, 24136, 24138, 24140, 24145, 24147, 26992, 27070, 27071, 27303, 27360, 27607, 27640, 27641, 28005, 28120, 28122, 28124</p>	<p>Primary diagnosis codes: M4620, M4621, M4622, M4623, M4624, M4625, M4626, M4627, M4628, M8600, M86011, M86012, M86019, M86021, M86022, M86029, M86031, M86032, M86039, M86041, M86042, M86049, M86051, M86052, M86059, M86061, M86062, M86069, M86071, M86072, M86079, M8608, M8609, M8610, M86111, M86112, M86119, M86121, M86122, M86129, M86131, M86132, M86139, M86141, M86142, M86149, M86151, M86152, M86159, M86161, M86162, M86169, M86171, M86172, M86179, M8618, M8619, M8620, M86211, M86212, M86219, M86221, M86222, M86229, M86231, M86232, M86239, M86241, M86242, M86249, M86251, M86252, M86259, M86261, M86262, M86269, M86271, M86272, M86279, M8628, M8629, M869, T8460XA, T84610A, T84611A, T84612A, T84613A, T84614A, T84615A, T84619A, T84620A, T84621A, T84622A, T84623A, T84624A, T84625A, T84629A, T8463XA, T8469XA, T847XXA</p>
36. Disseminated Intravascular Coagulopathy (DIC)	Secondary diagnosis codes: D65	
37. Pyelonephritis	Secondary diagnosis codes: N10, N12, N136, N151, N159, N16, N2884, N2885, N2886	
38. Post-Surgical Complication	Secondary diagnosis codes: E368, G972, G9781, G9782, H59021, H59022, H59023, H59029, J955, L7681, L7682, M02211, M02212, M02219, M02221, M02222, M02229, M02231, M02232, M02239, M02241, M02242, M02249, M02251, M02252, M02259,	

**APPENDIX D: Definitions of complications used to create the Failure-to-Rescue (FTR) measure (†)
(Unless otherwise specified, all diagnosis and procedure codes are secondary codes) (ICD-10)**

	Inclusion criteria	Exclusion criteria as indicated next to inclusion
	M02261, M02262, M02269, M02271, M02272, M02279, M0228, M0229, N980, N990, N99520, N99521, N99522, N99528, N99530, N99531, N99532, N99538, N9981, N9989, T800XXA, T801XXA, T80211A, T80212A, T80218A, T80219A, T8022XA, T8029XA, T8030XA, T80310A, T80311A, T80319A, T8039XA, T8040XA, T80410A, T80411A, T80419A, T8049XA, T8051XA, T8052XA, T8059XA, T8061XA, T8062XA, T8069XA, T80810A, T80818A, T8089XA, T8090XA, T80910A, T80911A, T80919A, T8092XA, T80A0XA, T80A10A, T80A11A, T80A19A, T80A9XA, T814XXA, T81718A, T81719A, T8172XA, T8181XA, T8182XA, T8189XA, T819XXA, T880XXA, T881XXA, T884XXA, T887XXA, T888XXA, T889XXA	

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

Heart Failure

Look-back Period

I0981, I110, I130, I132, I501, I5020, I5021, I5022, I5023, I5030, I5031, I5032, I5033, I5040, I5041, I5042, I5043, I509, J810

Current Admission

I501, I5020, I5021, I5022, I5023, I5030, I5031, I5032, I5033, I5040, I5041, I5042, I5043, I509, J810

Stroke

Look-back Period

G9731, G9732, I610, I611, I612, I613, I614, I615, I616, I618, I619, I6300, I63011, I63012, I63019, I6302, I63031, I63032, I63039, I6309, I6310, I63111, I63112, I63119, I6312, I63131, I63132, I63139, I6319, I6320, I63211, I63212, I63219, I6322, I63231, I63232, I63239, I6329, I6330, I63311, I63312, I63319, I63321, I63322, I63329, I63331, I63332, I63339, I63341, I63342, I63349, I6339, I6340, I63411, I63412, I63419, I63421, I63422, I63429, I63431, I63432, I63439, I63441, I63442, I63449, I6349, I6350, I63511, I63512, I63519, I63521, I63522, I63529, I63531, I63532, I63539, I63541, I63542, I63549, I6359, I636, I638, I639, I6789, I6900, I6901, I69020, I69021, I69022, I69023, I69028, I69031, I69032, I69033, I69034, I69039, I69041, I69042, I69043, I69044, I69049, I69051, I69052, I69053, I69054, I69059, I69061, I69062, I69063, I69064, I69065, I69069, I69090, I69091, I69092, I69093, I69098, I6910, I6911, I69120, I69121, I69122, I69123, I69128, I69131, I69132, I69133, I69134, I69139, I69141, I69142, I69143, I69144, I69149, I69151, I69152, I69153, I69154, I69159, I69161, I69162, I69163, I69164, I69165, I69169, I69190, I69191, I69192, I69193, I69198, I6920, I6921, I69220, I69221, I69222, I69223, I69228, I69231, I69232, I69233, I69234, I69239, I69241, I69242, I69243, I69244, I69249, I69251, I69252, I69253, I69254, I69259, I69261, I69262, I69263, I69264, I69265, I69269, I69290, I69291, I69292, I69293, I69298, I6930, I6931, I69320, I69321, I69322, I69323, I69328, I69331, I69332, I69333, I69334, I69339, I69341, I69342, I69343, I69344, I69349, I69351, I69352, I69353, I69354, I69359, I69361, I69362, I69363, I69364, I69365, I69369, I69390, I69391, I69392, I69393, I69398, I6980, I6981, I69820, I69821, I69822, I69823, I69828, I69831, I69832, I69833, I69834, I69839, I69841, I69842, I69843, I69844, I69849, I69851, I69852, I69853, I69854, I69859, I69861, I69862, I69863, I69864, I69865, I69869, I69890, I69891, I69892, I69893, I69898, I6990, I6991, I69920, I69921, I69922, I69923, I69928, I69931, I69932, I69933, I69934, I69939, I69941, I69942, I69943, I69944, I69949, I69951, I69952, I69953, I69954, I69959, I69961, I69962, I69963, I69964, I69965, I69969, I69990, I69991, I69992, I69993, I69998, I97810, I97811, I97820, I97821, Z8673, Z8674, Z8679

Current Admission

I6900, I6901, I69020, I69021, I69022, I69023, I69028, I69031, I69032, I69033, I69034, I69039, I69041, I69042, I69043, I69044, I69049, I69051, I69052, I69053, I69054, I69059, I69061, I69062, I69063, I69064, I69065, I69069, I69090, I69091, I69098, I6910, I6911, I69120, I69121, I69122, I69123, I69128, I69131, I69132, I69133, I69134, I69139, I69141, I69142, I69143, I69144, I69149, I69151, I69152, I69153, I69154, I69159, I69161, I69162, I69163, I69164, I69165, I69169, I69190, I69191, I69198, I6920, I6921, I69220, I69221, I69222, I69223, I69228, I69231, I69232, I69233, I69234, I69239, I69241, I69242, I69243, I69244, I69249, I69251, I69252, I69253, I69254, I69259, I69261, I69262, I69263, I69264, I69265, I69269, I69290,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

I69291, I69298, I6930, I6931, I69320, I69321, I69322, I69323, I69328, I69331, I69332, I69333, I69334, I69339, I69341, I69342, I69343, I69344, I69349, I69351, I69352, I69353, I69354, I69359, I69361, I69362, I69363, I69364, I69365, I69369, I69390, I69391, I69398, I6980, I6981, I69820, I69821, I69822, I69823, I69828, I69831, I69832, I69833, I69834, I69839, I69841, I69842, I69843, I69844, I69849, I69851, I69852, I69853, I69854, I69859, I69861, I69862, I69863, I69864, I69865, I69869, I69890, I69891, I69898, I6990, I6991, I69920, I69921, I69922, I69923, I69928, I69931, I69932, I69933, I69934, I69939, I69941, I69942, I69943, I69944, I69949, I69951, I69952, I69953, I69954, I69959, I69961, I69962, I69963, I69964, I69965, I69969, I69990, I69991, I69998, Z8673, Z8674, Z8679

Seizures

Look-back Period

G40001, G40009, G40011, G40019, G40101, G40109, G40111, G40119, G40201, G40209, G40211, G40219, G40301, G40309, G40311, G40319, G40401, G40409, G40411, G40419, G40501, G40509, G40801, G40802, G40803, G40804, G40811, G40812, G40813, G40814, G4089, G40901, G40909, G40911, G40919, G40A01, G40A09, G40A11, G40A19, G40B01, G40B09, G40B11, G40B19

Current Admission

G40001, G40009, G40011, G40019, G40101, G40109, G40111, G40119, G40201, G40209, G40211, G40219, G40301, G40309, G40311, G40319, G40401, G40409, G40411, G40419, G40501, G40509, G40801, G40802, G40803, G40804, G40811, G40812, G40813, G40814, G4089, G40901, G40909, G40911, G40919, G40A01, G40A09, G40A11, G40A19, G40B01, G40B09, G40B11, G40B19

Dementias

Look-back Period or Current Admission

F0150, F0151, F0280, F0281, F0390, F0391, F04, F05, F060, F061, F068, F070, G132, G138, G230, G231, G232, G238, G239, G300, G301, G308, G309, G3101, G3109, G311, G312, G3183, G3185, G3189, G319, G903, G914, G94, R4181, R54

Alcoholism

Look-back Period or Current Admission

F1010, F10120, F10121, F10129, F1014, F10150, F10159, F10180, F10181, F10182, F10188, F1019, F1020, F1021, F10220, F10221, F10229, F10230, F10231, F10232, F10239, F1024, F10250, F10259, F1026, F1027, F10280, F10281, F10282, F10288, F1029, F10920, F10921, F10929, F1094, F10950, F10959, F1096, F1097, F10980, F10981, F10982, F10988, F1099

Drug Abuse

Look-back Period or Current Admission

F1110, F11120, F11122, F11129, F1114, F11159, F11181, F11182, F11188, F1119, F1120, F1121, F11220, F11221, F11222, F11229, F1123, F1124, F11250, F11251, F11259, F11281, F11282, F11288, F1129, F1190, F11922, F1193, F1194, F11959, F11981, F11982, F11988, F1199, F1210, F12122, F12159, F12180, F12188, F1219, F1220, F1221, F12220, F12221, F12222, F12229, F12250, F12251, F12259, F12280, F12288, F1229, F1290, F12922, F12959, F12980, F12988, F1299, F1310, F13120, F1314, F13159, F13180, F13181, F13182, F13188,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

F1319, F1320, F1321, F13220, F13221, F13229, F13230, F13231, F13232, F13239, F1324, F13250, F13251, F13259, F1326, F1327, F13280, F13281, F13282, F13288, F1329, F1390, F13930, F13931, F13932, F13939, F1394, F13959, F1396, F1397, F13980, F13981, F13982, F13988, F1399, F1410, F14120, F14122, F1414, F14159, F14180, F14181, F14182, F14188, F1419, F1420, F1421, F14220, F14221, F14222, F14229, F1423, F1424, F14250, F14251, F14259, F14280, F14281, F14282, F14288, F1429, F1490, F14922, F1494, F14959, F14980, F14981, F14982, F14988, F1499, F1510, F15120, F15122, F1514, F15159, F15180, F15181, F15182, F15188, F1519, F1520, F1521, F15220, F15221, F15222, F15229, F1523, F1524, F15250, F15251, F15259, F15280, F15281, F15282, F15288, F1529, F1590, F15922, F1593, F1594, F15959, F15980, F15981, F15982, F15988, F1599, F1610, F16120, F16122, F1614, F16159, F16180, F16183, F16188, F1619, F1620, F1621, F16220, F16221, F16229, F1624, F16250, F16251, F16259, F16280, F16283, F16288, F1629, F1690, F1694, F16959, F16980, F16983, F16988, F1699, F17203, F17208, F17209, F17213, F17218, F17219, F17223, F17228, F17229, F17293, F17298, F17299, F1810, F18120, F1814, F18159, F1817, F18180, F18188, F1819, F1820, F1821, F18220, F18221, F18229, F1824, F18250, F18251, F18259, F1827, F18280, F18288, F1829, F1890, F1894, F18959, F1897, F18980, F18988, F1899, F1910, F19120, F19122, F1914, F19159, F1916, F1917, F19180, F19181, F19182, F19188, F1919, F1920, F1921, F19220, F19221, F19222, F19229, F19230, F19231, F19232, F19239, F1924, F19250, F19251, F19259, F1926, F1927, F19280, F19281, F19282, F19288, F1929, F1990, F19922, F19930, F19931, F19932, F19939, F1994, F19959, F1996, F1997, F19980, F19981, F19982, F19988, F1999, F550, F551, F552, F553, F554, F558, O99320, O99321, O99322, O99323, O99324, O99325

Past MI

Look-back Period

I2101, I2102, I2109, I2111, I2119, I2121, I2129, I213, I214, I220, I221, I222, I228, I229, I252

Current Admission

I2109, I2111, I2119, I2129, I213, I214, I252

Past Arrhythmia

Look-back Period

I462, I468, I469, I470, I471, I472, I479, I480, I481, I482, I483, I484, I4891, I4892, I4901, I4902, I491, I492, I493, I4940, I4949, I495, I498, I499, R001

Current Admission

I495, I498, R001

Unstable Angina

Look-back Period or Current Admission

I200, I25110, I25700, I25710, I25720, I25730, I25750, I25760, I25790

Angina

Look-back Period or Current Admission

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

I201, I208, I209, I25111, I25118, I25119, I25701, I25708, I25709, I25711, I25718, I25719, I25721, I25728, I25729, I25731, I25738, I25739, I25751, I25758, I25759, I25761, I25768, I25769, I25791, I25798, I25799

Hypertension

Look-back Period or Current Admission

I10, I110, I119, I129, I130, I1310, I150, I151, I152, I158, I159, N262, O10011, O10012, O10013, O10019, O1002, O1003, O10111, O10112, O10113, O10119, O1012, O1013, O10211, O10212, O10213, O10219, O1022, O1023, O10311, O10312, O10313, O10319, O1032, O1033, O10411, O10412, O10413, O10419, O1042, O1043, O10911, O10912, O10913, O10919, O1092, O1093, O111, O112, O113, O119, O152, O161, O162, O163, O169

Valvular Disease

Look-back Period or Current Admission

A5203, I050, I051, I052, I058, I059, I060, I061, I062, I068, I069, I070, I071, I072, I078, I079, I080, I081, I082, I083, I088, I089, I091, I0989, I340, I341, I342, I348, I349, I350, I351, I352, I358, I359, I360, I361, I362, I368, I369, I370, I371, I372, I378, I379, Q230, Q231, Q232, Q233, Z952, Z953, Z954

COPD/Chronic Pulmonary Disease

Look-back Period or Current Admission

J40, J410, J411, J418, J42, J430, J431, J432, J438, J439, J440, J441, J449, J470, J471, J479, J60, J61, J620, J628, J630, J631, J632, J633, J634, J635, J636, J64, J65, J660, J661, J662, J668, J670, J671, J672, J673, J674, J675, J676, J677, J678, J679, J684

Asthma

Look-back Period or Current Admission

J440, J441, J449, J4520, J4521, J4522, J4530, J4531, J4532, J4540, J4541, J4542, J4550, J4551, J4552, J45901, J45902, J45909, J45998

Liver Disease/Dysfunction

Look-back Period or Current Admission

B180, B181, B182, B251, I8500, I8501, I8510, I8511, K700, K7010, K7011, K702, K7030, K7031, K7040, K7041, K709, K710, K7110, K7111, K712, K713, K714, K7150, K7151, K716, K717, K718, K719, K7200, K7201, K7210, K7211, K7290, K7291, K730, K731, K732, K738, K739, K740, K741, K742, K743, K744, K745, K7460, K7469, K750, K751, K752, K753, K754, K7581, K7589, K759, K760, K761, K762, K763, K764, K765, K766, K767, K7681, K7689, K769, K77, Z4823, Z944

Renal Dysfunction

Look-back Period

B520, E0821, E0822, E0829, E0921, E0922, E0929, I129, I130, I1310, M3214, M3215, M3504, N020, N021, N022, N023, N024, N025, N026, N027, N028, N029, N030, N031, N032, N033, N034, N035, N036, N037, N038, N039, N040, N041, N042, N043, N044, N045, N046, N047, N048, N049, N050, N051, N052, N053, N054, N055, N056, N057, N058, N059, N060, N061, N062, N063, N064, N065, N066, N067, N068, N069, N070, N071, N072, N073, N074, N075,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

N076, N077, N078, N079, N08, N140, N141, N142, N143, N144, N150, N158, N159, N16, N181, N182, N183, N184, N189, N250, N251, N2581, N2589, N259

Current Admission

N170, N178, N179

Renal Failure

Look-back Period

I120, I1311, I132, N171, N172, N185, N186, N19, R880, Y622, Y841, Z4822, Z4901, Z4902, Z4931, Z4932, Z940, Z992

Current Admission

I120, I1311, I132, N171, N172, N185, N186, Z4822, Z940

Diabetes

Look-back Period or Current Admission

E0800, E0801, E0810, E0811, E0821, E0822, E0829, E08311, E08319, E08321, E08329, E08331, E08339, E08341, E08349, E08351, E08359, E0836, E0839, E0840, E0841, E0842, E0843, E0844, E0849, E0851, E0852, E0859, E08610, E08618, E08620, E08621, E08622, E08628, E08630, E08638, E08641, E08649, E0865, E0869, E088, E089, E0900, E0901, E0910, E0911, E0921, E0922, E0929, E09311, E09319, E09321, E09329, E09331, E09339, E09341, E09349, E09351, E09359, E0936, E0939, E0940, E0941, E0942, E0943, E0944, E0949, E0951, E0952, E0959, E09610, E09618, E09620, E09621, E09622, E09628, E09630, E09638, E09641, E09649, E0965, E0969, E098, E099, E1010, E1011, E1021, E1022, E1029, E10311, E10319, E10321, E10329, E10331, E10339, E10341, E10349, E10351, E10359, E1036, E1039, E1040, E1041, E1042, E1043, E1044, E1049, E1051, E1052, E1059, E10610, E10618, E10620, E10621, E10622, E10628, E10630, E10638, E10641, E10649, E1065, E1069, E108, E109, E1100, E1101, E1121, E1122, E1129, E11311, E11319, E11321, E11329, E11331, E11339, E11341, E11349, E11351, E11359, E1136, E1139, E1140, E1141, E1142, E1143, E1144, E1149, E1151, E1152, E1159, E11610, E11618, E11620, E11621, E11622, E11628, E11630, E11638, E11641, E11649, E1165, E1169, E118, E119, E1300, E1301, E1310, E1311, E1321, E1322, E1329, E13311, E13319, E13321, E13329, E13331, E13339, E13341, E13349, E13351, E13359, E1336, E1339, E1340, E1341, E1342, E1343, E1344, E1349, E1351, E1352, E1359, E13610, E13618, E13620, E13621, E13622, E13628, E13630, E13638, E13641, E13649, E1365, E1369, E138, E139, O24011, O24012, O24013, O24019, O2402, O2403, O24111, O24112, O24113, O24119, O2412, O2413, O24311, O24312, O24313, O24319, O2432, O2433, O24410, O24414, O24419, O24420, O24424, O24429, O24430, O24434, O24439, O24811, O24812, O24813, O24819, O2482, O2483, O24911, O24912, O24913, O24919, O2492, O2493, O99810, O99814, O99815, P702

Paraplegia

Look-back Period

G041, G800, G801, G802, G804, G808, G809, G8100, G8101, G8102, G8103, G8104, G8110, G8111, G8112, G8113, G8114, G8190, G8191, G8192, G8193, G8194, G8220, G8221, G8222, G8250, G8251, G8252, G8253, G8254, G830, G8310, G8311, G8312, G8313, G8314, G8320, G8321, G8322, G8323, G8324, G8330, G8331, G8332, G8333, G8334, G834, G835, G8381,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

G8382, G8383, G8384, G8389, G839, I69031, I69032, I69033, I69034, I69039, I69041, I69042, I69043, I69044, I69049, I69051, I69052, I69053, I69054, I69059, I69061, I69062, I69063, I69064, I69065, I69069, I69131, I69132, I69133, I69134, I69139, I69141, I69142, I69143, I69144, I69149, I69151, I69152, I69153, I69154, I69159, I69161, I69162, I69163, I69164, I69165, I69169, I69231, I69232, I69233, I69234, I69239, I69241, I69242, I69243, I69244, I69249, I69251, I69252, I69253, I69254, I69259, I69261, I69262, I69263, I69264, I69265, I69269, I69331, I69332, I69333, I69334, I69339, I69341, I69342, I69343, I69344, I69349, I69351, I69352, I69353, I69354, I69359, I69361, I69362, I69363, I69364, I69365, I69369, I69831, I69832, I69833, I69834, I69839, I69841, I69842, I69843, I69844, I69849, I69851, I69852, I69853, I69854, I69859, I69861, I69862, I69863, I69864, I69865, I69869, I69931, I69932, I69933, I69934, I69939, I69941, I69942, I69943, I69944, I69949, I69951, I69952, I69953, I69954, I69959, I69961, I69962, I69963, I69964, I69965, I69969, R532

Current Admission

G800, G801, G802, G804, G808, G809, I69031, I69032, I69033, I69034, I69039, I69041, I69042, I69043, I69044, I69049, I69051, I69052, I69053, I69054, I69059, I69061, I69062, I69063, I69064, I69065, I69069, I69131, I69132, I69133, I69134, I69139, I69141, I69142, I69143, I69144, I69149, I69151, I69152, I69153, I69154, I69159, I69161, I69162, I69163, I69164, I69165, I69169, I69231, I69232, I69233, I69234, I69239, I69241, I69242, I69243, I69244, I69249, I69251, I69252, I69253, I69254, I69259, I69261, I69262, I69263, I69264, I69265, I69269, I69331, I69332, I69333, I69334, I69339, I69341, I69342, I69343, I69344, I69349, I69351, I69352, I69353, I69354, I69359, I69361, I69362, I69363, I69364, I69365, I69369, I69831, I69832, I69833, I69834, I69839, I69841, I69842, I69843, I69844, I69849, I69851, I69852, I69853, I69854, I69859, I69861, I69862, I69863, I69864, I69865, I69869, I69931, I69932, I69933, I69934, I69939, I69941, I69942, I69943, I69944, I69949, I69951, I69952, I69953, I69954, I69959, I69961, I69962, I69963, I69964, I69965, I69969

Collagen Vascular Disease

Look-back Period or Current Admission

A1801, L900, L940, L941, L943, M0500, M05011, M05012, M05019, M05021, M05022, M05029, M05031, M05032, M05039, M05041, M05042, M05049, M05051, M05052, M05059, M05061, M05062, M05069, M05071, M05072, M05079, M0509, M0510, M05111, M05112, M05119, M05121, M05122, M05129, M05131, M05132, M05139, M05141, M05142, M05149, M05151, M05152, M05159, M05161, M05162, M05169, M05171, M05172, M05179, M0519, M0520, M05211, M05212, M05219, M05221, M05222, M05229, M05231, M05232, M05239, M05241, M05242, M05249, M05251, M05252, M05259, M05261, M05262, M05269, M05271, M05272, M05279, M0529, M0530, M05311, M05312, M05319, M05321, M05322, M05329, M05331, M05332, M05339, M05341, M05342, M05349, M05351, M05352, M05359, M05361, M05362, M05369, M05371, M05372, M05379, M0539, M0540, M05411, M05412, M05419, M05421, M05422, M05429, M05431, M05432, M05439, M05441, M05442, M05449, M05451, M05452, M05459, M05461, M05462, M05469, M05471, M05472, M05479, M0549, M0550, M05511, M05512, M05519, M05521, M05522, M05529, M05531, M05532, M05539, M05541, M05542, M05549, M05551, M05552, M05559, M05561, M05562, M05569, M05571, M05572, M05579, M0559, M0560, M05611, M05612, M05619, M05621, M05622, M05629, M05631, M05632, M05639, M05641, M05642, M05649, M05651, M05652, M05659, M05661, M05662, M05669, M05671, M05672, M05679, M0569, M0570, M05711, M05712, M05719, M05721,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

M05722, M05729, M05731, M05732, M05739, M05741, M05742, M05749, M05751, M05752, M05759, M05761, M05762, M05769, M05771, M05772, M05779, M0579, M0580, M05811, M05812, M05819, M05821, M05822, M05829, M05831, M05832, M05839, M05841, M05842, M05849, M05851, M05852, M05859, M05861, M05862, M05869, M05871, M05872, M05879, M0589, M059, M0600, M06011, M06012, M06019, M06021, M06022, M06029, M06031, M06032, M06039, M06041, M06042, M06049, M06051, M06052, M06059, M06061, M06062, M06069, M06071, M06072, M06079, M0608, M0609, M061, M0620, M06211, M06212, M06219, M06221, M06222, M06229, M06231, M06232, M06239, M06241, M06242, M06249, M06251, M06252, M06259, M06261, M06262, M06269, M06271, M06272, M06279, M0628, M0629, M0630, M06311, M06312, M06319, M06321, M06322, M06329, M06331, M06332, M06339, M06341, M06342, M06349, M06351, M06352, M06359, M06361, M06362, M06369, M06371, M06372, M06379, M0638, M0639, M064, M0680, M06811, M06812, M06819, M06821, M06822, M06829, M06831, M06832, M06839, M06841, M06842, M06849, M06851, M06852, M06859, M06861, M06862, M06869, M06871, M06872, M06879, M0688, M0689, M069, M0800, M08011, M08012, M08019, M08021, M08022, M08029, M08031, M08032, M08039, M08041, M08042, M08049, M08051, M08052, M08059, M08061, M08062, M08069, M08071, M08072, M08079, M0808, M0809, M081, M0820, M08211, M08212, M08219, M08221, M08222, M08229, M08231, M08232, M08239, M08241, M08242, M08249, M08251, M08252, M08259, M08261, M08262, M08269, M08271, M08272, M08279, M0828, M0829, M083, M0840, M08411, M08412, M08419, M08421, M08422, M08429, M08431, M08432, M08439, M08441, M08442, M08449, M08451, M08452, M08459, M08461, M08462, M08469, M08471, M08472, M08479, M0848, M0880, M08811, M08812, M08819, M08821, M08822, M08829, M08831, M08832, M08839, M08841, M08842, M08849, M08851, M08852, M08859, M08861, M08862, M08869, M08871, M08872, M08879, M0888, M0889, M0890, M08911, M08912, M08919, M08921, M08922, M08929, M08931, M08932, M08939, M08941, M08942, M08949, M08951, M08952, M08959, M08961, M08962, M08969, M08971, M08972, M08979, M0898, M0899, M1200, M12011, M12012, M12019, M12021, M12022, M12029, M12031, M12032, M12039, M12041, M12042, M12049, M12051, M12052, M12059, M12061, M12062, M12069, M12071, M12072, M12079, M1208, M1209, M320, M3210, M3211, M3212, M3213, M3214, M3215, M3219, M328, M329, M3300, M3301, M3302, M3309, M3310, M3311, M3312, M3319, M3320, M3321, M3322, M3329, M3390, M3391, M3392, M3399, M340, M341, M342, M3481, M3482, M3483, M3489, M349, M3500, M3501, M3502, M3503, M3504, M3509, M351, M353, M355, M358, M359, M360, M368, M450, M451, M452, M453, M454, M455, M456, M457, M458, M459, M4600, M4601, M4602, M4603, M4604, M4605, M4606, M4607, M4608, M4609, M461, M4650, M4651, M4652, M4653, M4654, M4655, M4656, M4657, M4658, M4659, M4680, M4681, M4682, M4683, M4684, M4685, M4686, M4687, M4688, M4689, M4690, M4691, M4692, M4693, M4694, M4695, M4696, M4697, M4698, M4699, M488X1, M488X2, M488X3, M488X4, M488X5, M488X6, M488X7, M488X8, M488X9, M4980, M4981, M4982, M4983, M4984, M4985, M4986, M4987, M4988, M4989

Coagulopathy

Look-back Period or Current Admission

D690, D691, D692, D698, D699

Thrombocytopenia

Look-back Period

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

D693, D6941, D6942, D6949, D6951, D6959, D696, D7582

Current Admission

D693, D6941, D6942, D6949

Hemophilia/Congenital Coagulopathy

Look-back Period or Current Admission

D65, D66, D67, D680, D681, D682, D68311, D68312, D68318, D6832, D684, D688, D689

Smoking History

Look-back Period or Current Admission

Z87891

Post Inflammatory Pulmonary Fibrosis

Look-back Period or Current Admission

J8410, J84112, J84113, J84114, J84115, J8417, J8489

Cushing's Disease (*)

Look-back Period or Current Admission

E240, E242, E243, E244, E248, E249

Graves' Disease

Look-back Period or Current Admission

E0500, E0501

Cancer

Look-back Period or Current Admission

C000, C001, C002, C003, C004, C005, C006, C008, C009, C01, C020, C021, C022, C023, C024, C028, C029, C030, C031, C039, C040, C041, C048, C049, C050, C051, C052, C058, C059, C060, C061, C062, C0680, C0689, C069, C07, C080, C081, C089, C090, C091, C098, C099, C100, C101, C102, C103, C104, C108, C109, C110, C111, C112, C113, C118, C119, C12, C130, C131, C132, C138, C139, C140, C142, C148, C153, C154, C155, C158, C159, C160, C161, C162, C163, C164, C165, C166, C168, C169, C170, C171, C172, C173, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C19, C20, C210, C211, C212, C218, C220, C221, C222, C223, C224, C227, C228, C229, C23, C240, C241, C248, C249, C250, C251, C252, C253, C254, C257, C258, C259, C260, C261, C269, C300, C301, C310, C311, C312, C313, C318, C319, C320, C321, C322, C323, C328, C329, C33, C3400, C3401, C3402, C3410, C3411, C3412, C342, C3430, C3431, C3432, C3480, C3481, C3482, C3490, C3491, C3492, C37, C380, C381, C382, C383, C384, C388, C390, C399, C4000, C4001, C4002, C4010, C4011, C4012, C4020, C4021, C4022, C4030, C4031, C4032, C4080, C4081, C4082, C4090, C4091, C4092, C410, C411, C412, C413, C414, C419, C430, C4310, C4311, C4312, C4320, C4321, C4322, C4330, C4331, C4339, C434, C4351, C4352, C4359, C4360, C4361, C4362, C4370, C4371, C4372, C438, C439, C4400, C4401, C4409, C44101, C44102, C44109, C44111, C44112, C44119, C44121, C44122, C44129, C44191, C44192, C44199, C44201, C44202, C44209, C44211, C44212, C44219, C44221, C44222, C44229, C44291, C44292, C44299, C44300, C44301, C44309, C44310, C44311, C44319, C44320,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

C44321, C44329, C44390, C44391, C44399, C4440, C4441, C4442, C4449, C44500, C44501, C44509, C44510, C44511, C44519, C44520, C44521, C44529, C44590, C44591, C44599, C44601, C44602, C44609, C44611, C44612, C44619, C44621, C44622, C44629, C44691, C44692, C44699, C44701, C44702, C44709, C44711, C44712, C44719, C44721, C44722, C44729, C44791, C44792, C44799, C4480, C4481, C4482, C4489, C4490, C4491, C4492, C4499, C450, C451, C452, C457, C459, C460, C461, C462, C463, C464, C4650, C4651, C4652, C467, C469, C470, C4710, C4711, C4712, C4720, C4721, C4722, C473, C474, C475, C476, C478, C479, C480, C481, C482, C488, C490, C4910, C4911, C4912, C4920, C4921, C4922, C493, C494, C495, C496, C498, C499, C4A0, C4A10, C4A11, C4A12, C4A20, C4A21, C4A22, C4A30, C4A31, C4A39, C4A4, C4A51, C4A52, C4A59, C4A60, C4A61, C4A62, C4A70, C4A71, C4A72, C4A8, C4A9, C50011, C50012, C50019, C50021, C50022, C50029, C50111, C50112, C50119, C50121, C50122, C50129, C50211, C50212, C50219, C50221, C50222, C50229, C50311, C50312, C50319, C50321, C50322, C50329, C50411, C50412, C50419, C50421, C50422, C50429, C50511, C50512, C50519, C50521, C50522, C50529, C50611, C50612, C50619, C50621, C50622, C50629, C50811, C50812, C50819, C50821, C50822, C50829, C50911, C50912, C50919, C50921, C50922, C50929, C510, C511, C512, C518, C519, C52, C530, C531, C538, C539, C540, C541, C542, C543, C548, C549, C55, C561, C562, C569, C5700, C5701, C5702, C5710, C5711, C5712, C5720, C5721, C5722, C573, C574, C577, C578, C579, C58, C600, C601, C602, C608, C609, C61, C6200, C6201, C6202, C6210, C6211, C6212, C6290, C6291, C6292, C6300, C6301, C6302, C6310, C6311, C6312, C632, C637, C638, C639, C641, C642, C649, C651, C652, C659, C661, C662, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C688, C689, C6900, C6901, C6902, C6910, C6911, C6912, C6920, C6921, C6922, C6930, C6931, C6932, C6940, C6941, C6942, C6950, C6951, C6952, C6960, C6961, C6962, C6980, C6981, C6982, C6990, C6991, C6992, C700, C701, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C7220, C7221, C7222, C7230, C7231, C7232, C7240, C7241, C7242, C7250, C7259, C729, C73, C7400, C7401, C7402, C7410, C7411, C7412, C7490, C7491, C7492, C750, C751, C752, C753, C754, C755, C758, C759, C760, C761, C762, C763, C7640, C7641, C7642, C7650, C7651, C7652, C768, C770, C771, C772, C773, C774, C775, C778, C779, C7800, C7801, C7802, C781, C782, C7830, C7839, C784, C785, C786, C787, C7880, C7889, C7900, C7901, C7902, C7910, C7911, C7919, C792, C7931, C7932, C7940, C7949, C7951, C7952, C7960, C7961, C7962, C7970, C7971, C7972, C7981, C7982, C7989, C799, C7A00, C7A010, C7A011, C7A012, C7A019, C7A020, C7A021, C7A022, C7A023, C7A024, C7A025, C7A026, C7A029, C7A090, C7A091, C7A092, C7A093, C7A094, C7A095, C7A096, C7A098, C7A1, C7A8, C7B00, C7B01, C7B02, C7B03, C7B04, C7B09, C7B1, C7B8, C800, C801, C802, C8100, C8101, C8102, C8103, C8104, C8105, C8106, C8107, C8108, C8109, C8110, C8111, C8112, C8113, C8114, C8115, C8116, C8117, C8118, C8119, C8120, C8121, C8122, C8123, C8124, C8125, C8126, C8127, C8128, C8129, C8130, C8131, C8132, C8133, C8134, C8135, C8136, C8137, C8138, C8139, C8140, C8141, C8142, C8143, C8144, C8145, C8146, C8147, C8148, C8149, C8170, C8171, C8172, C8173, C8174, C8175, C8176, C8177, C8178, C8179, C8190, C8191, C8192, C8193, C8194, C8195, C8196, C8197, C8198, C8199, C8200, C8201, C8202, C8203, C8204, C8205, C8206, C8207, C8208, C8209, C8210, C8211, C8212, C8213, C8214, C8215, C8216, C8217, C8218, C8219, C8220, C8221, C8222, C8223, C8224, C8225, C8226, C8227, C8228, C8229, C8230, C8231, C8232, C8233, C8234, C8235, C8236, C8237, C8238, C8239, C8240, C8241, C8242, C8243, C8244, C8245, C8246, C8247, C8248, C8249, C8250, C8251, C8252, C8253, C8254, C8255, C8256, C8257, C8258, C8259, C8260, C8261,

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

C8262, C8263, C8264, C8265, C8266, C8267, C8268, C8269, C8280, C8281, C8282, C8283, C8284, C8285, C8286, C8287, C8288, C8289, C8290, C8291, C8292, C8293, C8294, C8295, C8296, C8297, C8298, C8299, C8300, C8301, C8302, C8303, C8304, C8305, C8306, C8307, C8308, C8309, C8310, C8311, C8312, C8313, C8314, C8315, C8316, C8317, C8318, C8319, C8330, C8331, C8332, C8333, C8334, C8335, C8336, C8337, C8338, C8339, C8350, C8351, C8352, C8353, C8354, C8355, C8356, C8357, C8358, C8359, C8370, C8371, C8372, C8373, C8374, C8375, C8376, C8377, C8378, C8379, C8380, C8381, C8382, C8383, C8384, C8385, C8386, C8387, C8388, C8389, C8390, C8391, C8392, C8393, C8394, C8395, C8396, C8397, C8398, C8399, C8400, C8401, C8402, C8403, C8404, C8405, C8406, C8407, C8408, C8409, C8410, C8411, C8412, C8413, C8414, C8415, C8416, C8417, C8418, C8419, C8440, C8441, C8442, C8443, C8444, C8445, C8446, C8447, C8448, C8449, C8460, C8461, C8462, C8463, C8464, C8465, C8466, C8467, C8468, C8469, C8470, C8471, C8472, C8473, C8474, C8475, C8476, C8477, C8478, C8479, C8490, C8491, C8492, C8493, C8494, C8495, C8496, C8497, C8498, C8499, C84A0, C84A1, C84A2, C84A3, C84A4, C84A5, C84A6, C84A7, C84A8, C84A9, C84Z0, C84Z1, C84Z2, C84Z3, C84Z4, C84Z5, C84Z6, C84Z7, C84Z8, C84Z9, C8510, C8511, C8512, C8513, C8514, C8515, C8516, C8517, C8518, C8519, C8520, C8521, C8522, C8523, C8524, C8525, C8526, C8527, C8528, C8529, C8580, C8581, C8582, C8583, C8584, C8585, C8586, C8587, C8588, C8589, C8590, C8591, C8592, C8593, C8594, C8595, C8596, C8597, C8598, C8599, C860, C861, C862, C863, C864, C865, C866, C880, C884, C888, C889, C9000, C9001, C9002, C9010, C9011, C9012, C9020, C9021, C9022, C9030, C9031, C9032, C9100, C9101, C9102, C9110, C9111, C9112, C9130, C9131, C9132, C9140, C9141, C9142, C9150, C9151, C9152, C9160, C9161, C9162, C9190, C9191, C9192, C91A0, C91A1, C91A2, C91Z0, C91Z1, C91Z2, C9200, C9201, C9202, C9210, C9211, C9212, C9220, C9221, C9222, C9230, C9231, C9232, C9240, C9241, C9242, C9250, C9251, C9252, C9260, C9261, C9262, C9290, C9291, C9292, C92A0, C92A1, C92A2, C92Z0, C92Z1, C92Z2, C9300, C9301, C9302, C9310, C9311, C9312, C9330, C9331, C9332, C9390, C9391, C9392, C93Z0, C93Z1, C93Z2, C9400, C9401, C9402, C9420, C9421, C9422, C9430, C9431, C9432, C9480, C9481, C9482, C9500, C9501, C9502, C9510, C9511, C9512, C9590, C9591, C9592, C960, C962, C964, C969, C96A, C96Z, D030, D0310, D0311, D0312, D0320, D0321, D0322, D0330, D0339, D034, D0351, D0352, D0359, D0360, D0361, D0362, D0370, D0371, D0372, D038, D039, D45, D47Z9, Z5111, Z5112, Z8500, Z8501, Z85020, Z85028, Z85030, Z85038, Z85040, Z85048, Z8505, Z85060, Z85068, Z8507, Z8509, Z85110, Z85118, Z8512, Z8520, Z8521, Z8522, Z85230, Z85238, Z8529, Z853, Z8540, Z8541, Z8542, Z8543, Z8544, Z8545, Z8546, Z8547, Z8548, Z8549, Z8550, Z8551, Z85520, Z85528, Z8553, Z8554, Z8559, Z856, Z8571, Z8572, Z8579, Z85810, Z85818, Z85819, Z85820, Z85821, Z85828, Z85830, Z85831, Z85840, Z85841, Z85848, Z85850, Z85858, Z8589, Z859

Specific Abdominal Cancer

Look-back Period or Current Admission

C220, C221, C222, C223, C224, C227, C228, C229, C23, C240, C241, C248, C249, C250, C251, C252, C253, C254, C257, C258, C259, C260, C261, C269, C451, C480, C481, C482, C488

Hypothyroidism

Look back period or Current Admission

E000, E001, E002, E009, E018, E02, E030, E031, E032, E033, E038, E039, E890

APPENDIX E: Definitions of comorbidities (unless otherwise specified, all ICD-10 diagnosis codes)

Chronic Peptic Ulcer Disease

Look-back Period

K254, K255, K256, K257, K259

Current Admission

K254, K255, K256, K257

HIV and AIDS (*)

Look-back Period or Current Admission

B20

Weight Loss

Look-back Period or Current Admission

E40, E41, E42, E43, E440, E441, E45, E46, E560, E561, E568, E569, E58, E59, E60, E610, E611, E612, E613, E614, E615, E616, E617, E618, E619, E630, E631, E638, E639, E640, E648, E649, R634, R636

Sickle Cell Anemia (*)

Look-back Period or Current Admission

D5700, D5701, D5702, D571, D5720, D57211, D57212, D57219, D5780, D57811, D57812, D57819

(*) These comorbidities have been too rare in the Medicare population, but they should be considered for inclusion in any given data set.