

For the online version of the article, not to be included in the print version.

Appendix A: Groupings of principal diagnoses for readmission hospitalization.

Infection	
Post-op Wound Infection	56961 Infected colostomy/enterostomy 99762 Infection amputated stump 99851 Infected postoperative seroma 99859 Other postoperative infection
C. diff	00845 Clostridium difficile
Abscess	5130 Abscess of lung 5696 Intestinal abscess 5720 Abscess of liver
Cellulitis	68110 Cellulitis, toe NOS 6826 Leg cellulitis 6827 Cellulitis of foot
Septicemia	0380 Streptococcal septicemia 03819 Other staph septicemia 0383 Anaerobic septicemia 03842 E. coli septicemia 03843 Pseudomonas septicemia 03849 Gram-negative septicemia NEC 0389 Septicemia 7907 Bacteremia
Urinary infection	59010 Acute pyelonephritis, NOS 5990 Urinary tract infection
Other infection	9993 Infectious complication of medical care NEC
Gastrointestinal	
Ileus/obstruction/stenosis	5370 Acquired pyloric stenosis 55221 Obstruction incisional hernia 5528 Hernia, site NEC w/ obstruction 5601 Paralytic ileus 56081 Intestinal adhesions with obstruction 56089 Intestinal obstruction NEC 5609 Intestinal obstruction NOS 5692 Rectal & anal stenosis
Nausea/Vomiting/Diarrhea	5643 Vomiting post-GI surgery 78701 Nausea with vomiting 78791 Diarrhea
Stomach complications	5363 Gastroparesis 5589 Noninfectious gastroenteritis NEC
GI Perforation	53150 Chronic stomach ulcer with perforation 56983 Perforation of intestine
Diverticuli	56210 Diverticulosis of colon without hemorrhage

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	56211 Diverticulitis of colon without hemorrhage
Esophagitis	53010 Esophagitis, unspecified 53011 Reflux esophagitis 53019 Other esophagitis
Fistula	56981 Intestinal fistula 5961 Intestinovesical fistula 6191 Digestive-genital tract fistula, female 9986 Persistant postoperative fistula
Gallbladder/Pancreas Disease	57400 Cholelithiasis with acute cholecystitis 57410 Cholelithiasis with cholecystitis NEC 57450 Choledocholithiasis NOS 5750 Acute cholecystitis 57511 Chronic cholecystitis 5770 Pancreatitis
Liver	570 Acute necrosis of liver 5715 Cirrhosis of liver NOS 5738 Liver disorders NEC
Ulcer Disease	53130 Acute stomach ulcer NOS 53290 Duodenal ulcer NOS 53390 Peptic ulcer NOS 56982 Ulceration of intestine
Other gastrointestinal complications	4552 Internal hemorrhoid with complication NEC 53100 Acute appendicitis NOS 53540 Other specified gastritis 5570 Acute vascular insufficiency intestine 56039 Impaction intestine NEC 5641 Irritable colon 5644 Other postoperative functional disorders 56949 Rectal & anal disease NEC 9974 Surgical complication – gastrointestinal
Bleeding Complications	
Post-surgery	56881 Hemoperitoneum 99811 Hemorrhage complicating procedure 99812 Hematoma
Gastrointestinal	53082 Esophageal hemorrhage 53100 Acute stomach ulcer with hemorrhage 53140 Chronic stomach ulcer with hemorrhage 53240 Chronic duodenal ulcer with hemorrhage 53440 Chronic marginal ulcer with hemorrhage 53541 Other specified gastritis with hemorrhage 53783 Angiodysplasia of stomach and duodenum with hemorrhage 56212 Diverticulosis of colon with hemorrhage 5693 Rectal & anal hemorrhage 5781 Blood in stool 5789 Gastrointestinal hemorrhage

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Other bleeding	2851 Acute posthemorrhage anemia 2869 Coagulation defect NEC/NOS 2866 Defibrination syndrome
Neurologic	
Brain abnormalities	3313 Communicating hydrocephalus 3330 Degeneration basal ganglia NEC 3488 Brain conditions NEC 431 Intracerebral hemorrhage 4321 Subdural hemorrhage 43410 Cerebral embolism without infarct 43411 Cerebral embolism with infarct 43491 Cerebral artery occlusion NOS with infarction 4359 Transient cerebral ischemia NOS 436 Cerebrovascular accident 78039 Other convulsions 85302 Brain hemorrhage NEC – brief coma
Peripheral	3553 Lateral popliteal nerve lesion
Other neurologic	99709 Other nervous system complication 34982 Toxic encephalopathy 38630 Labyrinthitis NOS 38635 Viral labyrinthitis 7802 Syncope and collapse
Psychiatric	
Psychiatric	29281 Drug-induced delirium 29620 Depress psychosis - unspecified 2989 Psychosis NOS 30000 Anxiety state, NOS 3320 Paralysis agitans 7804 Dizziness and giddiness
Urinary	
Nephrolithiasis	5921 Calculus of ureter
Obstruction/hydronephrosis	591 Hydronephrosis 5934 Ureteric obstruction NEC 5996 Urinary obstruction NOS
Cystitis	5950 Acute cystitis 59582 Irradiation cystitis 5959 Cystitis NOS
Hematuria	5967 Bladder wall hemorrhage 5997 Hematuria
Other urinary	5845 Lower nephron nephrosis 6021 Prostatic congestion or hemorrhage 78820 Retention urine NOS 9975 Surgical complication – urinary tract
Pulmonary	

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Pneumonia	4820 Klebsiella pneumonia pneumonia 4821 Pseudomonal pneumonia 48239 Pneumonia other streptococcus 486 Pneumonia, organism NOS 5070 Food/vomit pneumonitis
Pneumothorax	5120 Spontaneous tension pneumothorax 5121 Pneumothorax, iatrogenic 5128 Pneumothorax, spontaneous
Pulmonary embolism	41511 Iatrogenic pulmonary embolism, infarct
Pleural effusion/empyema	5100 Empyema with fistula 5109 Empyema without fistula 5118 Pleural effusion NEC, not TB 5119 Pleural effusion NOS
Other pulmonary	49120 Obstructive chronic bronchitis without acute exacerbation 49121 Obstruction chronic bronchitis with acute exacerbation 500 Coal workers' pneumoconiosis 5100 Pleurisy without effusion or TB 514 Pulmonary congestion/hypostasis 515 Postinflammatory pulmonary fibrosis 5163 Idiopathic fibrosing alveolitis 5180 Pulmonary collapse 5181 Interstitial emphysema 5185 Post trauma pulmonary insufficiency 51881 Respiratory failure 51882 Other pulmonary insufficiency 51889 Other lung disease NEC 78609 Respiratory abnormality NEC 9973 Surgical complication, respiratory system 99881 Emphysema resulting from procedure
Cardiac	
Arrhythmias	42613 AV block – 2 nd degree NEC 4271 Paroxysmal ventricular tachycardia 42731 Atrial fibrillation 42761 Atrial premature beats 42769 Premature beats NEC 42781 Sinoatrial node dysfunction 42789 Cardiac dysrhythmia 42832 Atrial flutter 7850 Tachycardia NOS
Coronary artery disease/ myocardial infarction	4100 Post myocardial infarction syndrome 41031 Acute myocardial infarction inferopost, initial 41040 Acute myocardial infarction inferior wall, unspecified 41041 Acute myocardial infarction inferior wall,

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	initial 41071 Subendocardial infarction, initial 41072 Subendocardial infarct, subseq 41081 Acute myocardial infarction NEC, initial 41400 Coronary athrosclerosis unspecified vessel 41401 Coronary athrosclerosis native vessel
Congestive heart failure	39891 Rheumatic heart failure 40291 Hypertensive heart disease with congestive heart failure 4280 Congestive heart failure
Chest Pain	4139 Angina pectoris NEC/NOS 78650 Chest pain, NOS 78651 Precordial pain 78659 Chest pain
Hypotension	4580 Orthostatic hypotension 4588 Other specific hypotension 4589 Hypotension, NOS
Other cardiac	40290 Hypertensive heart disease NOS 4290 Myocarditis 44031 Aortic valve disorder 99672 Complications - other cardiac device
Vascular	
Peripheral vascular disease	44021 Atherosclerosis of the extremities with intermittent claudication 44024 Atherosclerosis of the extremities with gangrene 44031 Atherosclerosis of autologous vein bypass graft 4439 Peripheral vascular disease NOS
Embolism	4440 Abdominal aortic embolism 44421 Upper extremity embolism 4471 Stricture of artery 5579 Vascular insufficiency intestine NOS
Venous thrombosis	4538 Venous thrombosis NEC 4539 Venous thrombosis NOS
Phlebitis	4510 Superficial phlebitis – leg 45119 Deep phlebitis, leg NEC
Other vascular	43310 Occlusion of carotid artery without infarction 4413 Ruptured abdominal aortic aneurysm 9972 Surgical complication – peripheral vascular system
Pain	
Anal/rectal pain	56842 Anal/rectal pain 56942 Anal or rectal pain
Abdominal pain	78900 Abdominal pain unspecified site

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	78901 Abdominal pain right upper quadrant 78903 Abdominal pain right lower quadrant 78907 Abdominal pain generalized 78909 Abdominal pain other specified site
Joint/limb pain	71945 Joint pain, pelvis 71946 Joint pain, left leg 7295 Pain in limb 78652 Painful respiration
Electrolyte/renal abnormalities	
Acute renal failure	5848 Acute renal failure, NEC 5849 Acute renal failure, NOS
Potassium abnormality	2767 Hyperpotassemia 2768 Hypopotassemia
Other electrolyte/renal abnormalities	2761 Hyposmolality 2765 Hypovolemia 2766 Fluid overload 2769 Electrolyte/fluid disorder NEC
Orthopedic	
Osteoarthritis	71509 General osteoarthritis 71515 Osteoarthritis, localized, primary, pelvis 71516 Osteoarthritis, localized, primary, left leg 71535 Localized osteoarthritis NOS, pelvis 71536 Localized osteoarthritis NOS, L leg 71589 Osteoarthritis, multiple sites 71595 Osteoarthritis NOS, pelvis 71596 Osteoarthritis NOS, left leg
Arthritis	71106 Pyogenic arthritis, left leg 7140 Rheumatoid arthritis 71655 Polyarthritis NOS, pelvis 71656 Polyarthritis NOS, left leg 71659 Polyarthritis NOS, multiple sites
Fracture, vertebra	73313 Pathologic fracture of vertebrae 8052 Fracture dorsal vertebra – closed 8054 Fracture lumbar vertebra – closed
Fracture, other	73382 Nonunion of fracture 8082 Fracture of pubis – closed 81341 Colles' fracture – closed 82009 Fracture femur, other – closed 82020 Trochanteric fracture NOS - closed 82021 Intertrochanteric fracture – closed 8208 Fracture neck of femur – closed 82100 Fracture femur NOS – closed 82101 Fracture femur shaft – closed 82120 Fracture low end femur NOS - closed 82122 Fracture low femur epiphysis - closed

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	82123 Supracondylar fracture femur - closed
	8220 Fracture patella – closed
Device reaction	9964 Mechanical complication of internal orthopedic device, implant and graft 99666 Infection and inflammatory reaction due to internal joint prosthesis 99667 Infection and inflammatory reaction due to other internal orthopedic device, implant and graft 99677 Other complications of internal joint prosthesis
Other orthopedic	71616 Traumatic arthroplasty of lower leg 7176 Loose body in knee 71846 Joint contracture left leg 71906 Joint effusion, left leg 72252 Lumbar orlumbosacral intervetregral disc degeneration 72871 Plantar fascial fibromatosis 8448 Sprain of knee and leg NEC 92401 Contusion of hip
Other	
Other complication	41519 Other 56969 Other complication 99883 Other complication 99889 Other specific complication procedure, NEC
Wound complication	8912 Open wound knee/leg w/ tendon 99813 Seroma complicating procedure 9983 Postop wound disruption 99883 Non-healing wound
Fever of unknown origin	7806 Pyrexia, unknown origin
Benign neoplasm	2112 Benign neoplasm small bowel 2113 Benign neoplasm large bowel 226 Benign neoplasm thyroid
Malignancy	1479 Malignant neoplasm nasopharynx NOS 1530 Malignant neoplasm hepatic flexure 1532 Malignant neoplasm descending colon 1533 Malignant neoplasm sigmoid colon 1534 Malignant neoplasm cecum 1536 malignant meoplasm ascending colon 1539 Malignant neoplasm colon NOS 1540 Malignant neoplasm rectosigmoid junction 1550 Malignant neoplasm liver, primary 1551 Malignant neoplasm intrahepatic ducts 1562 Malignant neoplasm ampulla of vater 1623 Malignant neoplasm, upper lobe lung 1625 Malignant neoplasm lower lobe lung 1629 Malignant neoplasm bronch/lung NOS

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	1742 Malignant neoplasm breast up – inner
	1748 Malignant neoplasm breast NEC
	185 Malignant neoplasm prostate
	1888 Malignant neoplasm bladder NEC
	1891 Malignant neoplasm renal pelvis
	1960 Malignant neoplasm lymph – head/neck
	1990 Malignant neoplasm disseminated
	1970 Secondary malignancy neo lung
	1972 Secondary malignancy neo pleura
	1976 Secondary malignancy neo peritoneum
	1977 Secondary malignancy neo liver
	1978 Secondary malignancy neo GI nec
	1981 Secondary malignancy neo urin nec
Secondary malignancy	1983 Secondary mal neo brain/spine
	1984 Secondary malignancy neo nerve nec
	1985 Secondary malignancy neo bone
Lymphoma	20288 Lymphomas nec mult
Leukemia	20410 Chronic lymphoid leukemia without remission
	20510 Chronic myeloid leukemia without remission
Chemotherapy	V581 Chemotherapy encounter
Diabetes	25011 Diabetes with ketoacidosis, Type I
	25060 Diabetes with neurological manifestations, Type II
	25061 Diabetes with neurological manifestations, Type I
	25080 Diabetes with other specified manifestations, Type II
	25081 Diabetes with other specified manifestations, Type I
	25082 Diabetes with other specified manifestations, type II, uncontrolled
Anemia	2800 Chronic blood loss anemia
	2809 Iron deficiency anemia, NOS
	2858 Anemia, NEC
	2859 Anemia, NOS
Medication poisoning	9623 Poisoning, insulin and antidiabetic agents
	9642 Poisoning anticoagulants
	9698 Poisoning psychotropic NEC
	9729 Poisoning cardiovascular agent NEC
Endocrine	2449 Hypothyroidism NOS
	2520 Hyperparathyroidism
Gynecologic	6144 Chronic parametritis
Other	2740 Gouty arthropathy
	2749 Gout
	2888 WBC disease NEC

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37000	Corneal ulcer NOS
7070	Decubitus ulcer
7211	Cervical spondylosis with myelopathy
72981	Swelling of limb
7336	Tietze's disease
7812	Abnormality of gait
7823	Edema
7868	Hiccough
9587	Traumatic subcutaneous emphysema
99662	Reaction - other vascular device/graft
99673	Comp - renal dialysis device/graft