

Supplementary Table 1 Clinical classification software for grouping the causes of acute coma

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
Neurological group				
Primary CNS	CNS meningitis	7,76	7,76	Meningitis (except that caused by tuberculosis or sexually transmitted disease),Viral infection
	Brain space occupied	11,35	11,35	Cancer of brain and nervous system,Cancer of head and neck
	CNS encephalitis	77,78,8	77,78,8	Encephalitis (except that caused by tuberculosis or sexually transmitted disease),Other CNS infection and poliomyelitis,Other infections; including parasitic
	Cerebrovascular disease	109,110,111,112,113,82	109,110,111,112,113,82	Acute cerebrovascular disease,Late effects of cerebrovascular disease,Occlusion or stenosis of precerebral arteries,Other and ill-defined cerebrovascular disease,Paralysis,Transient cerebral ischemia
	CNS trauma	227,228,233,234,235	227,228,233,234,235	Crushing injury or internal injury,Intracranial injury,Open wounds of head; neck; and trunk,Skull and face fractures,Spinal cord injury
Encephalopathy	Encephalopathy	79,80,81,84,95	79,80,81,84,95	Headache; including migraine,Multiple sclerosis,Other hereditary and degenerative nervous system conditions,Other nervous system disorders, Parkinson's disease
	Dementia	653	653	Delirium dementia and amnestic and other cognitive disorders,Delirium, dementia, and amnestic and other cognitive disorders
Seizure	Seizure and epilepsy	83	83	Epilepsy; convulsions

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Trauma	Trauma	225,226,229,230,231,232,236,239,240,244,2601,2602,2603,2604,2605,2606,2607,2608,2609,2610,2612,2618,2619,2620,2621	0,144,145,146,147,148,149,225,226,229,230,231,232,236,239,240,244,2601,2602,2603,2604,2605,2606,2607,2608,2609,2610,2612,2618,2619,2620,2621	Arthroscopy,Burns,E Codes: Cut/pierceb,E Codes: Drowning/submersion,E Codes: Fall,E Codes: Fire/burn,E Codes: Firearm,E Codes: Machinery,E Codes: Motor vehicle traffic (MVT),E Codes: Other specified and classifiable,E Codes: Other specified; NEC,E Codes: Overexertion,E Codes: Pedal cyclist; not MVT,E Codes: Pedestrian; not MVT,E Codes: Place of occurrence,E Codes: Transport; not MVT,E Codes: Unspecified,External cause codes: Cut/pierce,External cause codes: Drowning/submersion,External cause codes: Fall,External cause codes: Fire/burn,External cause codes: Firearm,External cause codes: Machinery,External cause codes: Motor vehicle traffic (MVT),External cause codes: Other specified and classifiable,External cause codes: Other specified; NEC,External cause codes: Overexertion,External cause codes: Pedal cyclist; not MVT,External cause codes: Pedestrian; not MVT,External cause codes: Place of occurrence,External cause codes: Struck by; against,External cause codes: Transport; not MVT,External cause codes: Unspecified,Fracture of lower limb,Fracture of neck of femur (hip),Fracture of upper limb,Fracture treatment including reposition with or without fixation of other fracture or or dislocation,Fracture treatment including reposition with or without fixation; facial

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				fracture or dislocation,Fracture treatment including reposition with or without fixation; hip or femur fracture or dislocati,Fracture treatment including reposition with or without fixation; lower extremity fracture or disloc,Fracture treatment including reposition with or without fixation; radius or ulna fracture or disloca,Joint disorders and dislocations; trauma-related,Open wounds of extremities,Other fractures,Other injuries and conditions due to external causes,Sprains and strains,Superficial injury; contusion
	Injury and suicide	2615,662	2615,662	E Codes: Suffocation,External cause codes: Suffocation,Suicide and intentional self-inflicted injury
Medical group				
Alcohol	Alcohol	660	660	Alcohol-related disorders
Cardiovascular	Cardiovascular	100,101,102,104,105,106,107,108,114,115,116,117,118,119,121,247,96,97,98,99	100,101,102,104,105,106,107,108,114,115,116,117,118,119,121,183,96,97,98,99	Acute myocardial infarction,Aortic and peripheral arterial embolism or thrombosis,Aortic; peripheral; and visceral artery aneurysms,Cardiac arrest and ventricular fibrillation,Cardiac dysrhythmias,Conduction disorders,Congestive heart failure; nonhypertensive,Coronary atherosclerosis and other heart disease,Essential hypertension,Heart valve disorders,Hypertension complicating pregnancy; childbirth and the puerperium,Hypertension with complications and secondary hypertension,Lymphadenitis,Nonspecific chest pain,Other and ill-defined heart disease,Other circulatory disease,Other

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
				diseases of veins and lymphatics,Peri-; endo-; and myocarditis; cardiomyopathy (except that caused by tuberculosis or sexually transm,Peripheral and visceral atherosclerosis,Phlebitis; thrombophlebitis and thromboembolism,Varicose veins of lower extremity
	Shock	249	249	Shock
Diabetes and insulin	Diabetes and insulin	186,49,50	186,49,50	Diabetes mellitus with complications,Diabetes mellitus without complication,Diabetes or abnormal glucose tolerance complicating pregnancy; childbirth; or the puerperium
Digestive	Digestive	120,136,137,138,139,140,141,143,145,146,147,152,153,154,155,250,251	120,136,137,138,139,140,141,143,145,146,147,152,153,154,155,250,251	Abdominal hernia,Abdominal pain,Anal and rectal conditions,Diseases of mouth; excluding dental,Disorders of teeth and jaw,Diverticulosis and diverticulitis,Esophageal disorders,Gastritis and duodenitis,Gastroduodenal ulcer (except hemorrhage),Gastrointestinal hemorrhage,Hemorrhoids,Intestinal obstruction without hernia,Nausea and vomiting,Noninfectious gastroenteritis,Other disorders of stomach and duodenum,Other gastrointestinal disorders,Pancreatic disorders (not diabetes)
	Liver	149,151,222,6	149,151,222,6	Biliary tract disease,Hemolytic jaundice and perinatal jaundice,Hepatitis,Other liver diseases
Drugs	Intoxication	241,242,243,2613,661	241,242,243,2613,661,663	E Codes: Poisoning,External cause codes: Poisoning,Poisoning by nonmedicinal substances,Poisoning by other medications and drugs,Poisoning by

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
				psychotropic agents,Screening and history of mental health and substance abuse codes,Substance-related disorders
	Medication	2617	2617	Adverse effects of medical drugs,E Codes: Adverse effects of medical drugs
Electrolyte	Electrolyte	55	55	Fluid and electrolyte disorders
Endocrine	Endocrine	48,51,52,53,58	48,51,52,53,58	Disorders of lipid metabolism,Nutritional deficiencies,Other endocrine disorders,Other nutritional; endocrine; and metabolic disorders,Thyroid disorders
Genitourinary	Urogenital	160,161,162,163,164,165,166	160,162,163,164,165,166,168	Calculus of urinary tract,Genitourinary symptoms and ill-defined conditions,Hyperplasia of prostate,Inflammatory conditions of male genital organs,Inflammatory diseases of female pelvic organs,Other diseases of bladder and urethra,Other diseases of kidney and ureters,Other male genital disorders
Hematology	Hematology	59,60,61,62,63,64	59,60,61,62,63,64	Acute posthemorrhagic anemia,Coagulation and hemorrhagic disorders,Deficiency and other anemia,Diseases of white blood cells,Other hematologic conditions,Sickle cell anemia
Infection	Infection	1,10,122,124,125,126,135,142,148,159,2,201,248,3,4,5,9,90,92	1,10,122,124,125,126,142,148,159,197,2,201,246,247,248,3,4,5,9,90,92	Acute and chronic tonsillitis,Acute bronchitis,Appendicitis and other appendiceal conditions,Bacterial infection; unspecified site,Fever of unknown origin,Gangrene,HIV infection,Immunizations and screening for infectious disease,Infective arthritis and osteomyelitis (except that caused by tuberculosis or sexually transmitted di,Inflammation; infection of eye (except

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
				that caused by tuberculosis or sexually transmitteddisease),Intestinal infection,Lymphadenitis,Mycoses,Other upper respiratory infections,Otitis media and related conditions,Peritonitis and intestinal abscess,Pneumonia (except that caused by tuberculosis or sexually transmitted disease),Septicemia (except in labor),Sexually transmitted infections (not HIV or hepatitis),Skin and subcutaneous tissue infections,Tuberculosis,Urinary tract infections
	Influenza	123	123	Influenza
Musculoskeletal and integumentary	Musculosketal	197,198,199,200,203,204,205,206,207	173,198,199,200,203,204,205,206,207	Chronic ulcer of skin,Osteoarthritis,Osteoporosis,Other diagnostic procedures on skin subcutaneous tissue fascia and breast,Other inflammatory condition of skin,Other non-traumatic joint disorders,Other skin disorders,Pathological fracture,Skin and subcutaneous tissue infections,Spondylosis; intervertebral disc disorders; other back problems
	Connective	144,202,210,211,253,54,57,86,87,88,89,91,94	144,202,210,211,253,54,57,86,87,88,89,91,94	Allergic reactions,Blindness and vision defects,Cataract,Glaucoma,Gout and other crystal arthropathies,Immunity disorders,Other connective tissue disease,Other ear and sense organ disorders,Other eye disorders,Regional enteritis and ulcerative colitis,Retinal detachments; defects; vascular occlusion; and retinopathy,Rheumatoid arthritis and related disease,Systemic lupus erythematosus and connective tissue

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
				disorders
Neoplasm	Malignancy	12,13,14,15,16,17 18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,36,37,38,39,40,41,42,43,44,45,47	12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,36,37,38,39,40,41,42,43,44,45,47	Cancer of bladder,Cancer of bone and connective tissue,Cancer of breast,Cancer of bronchus; lung,Cancer of cervix,Cancer of colon,Cancer of esophagus,Cancer of kidney and renal pelvis,Cancer of liver and intrahepatic bile duct,Cancer of other female genital organs,Cancer of other GI organs; peritoneum,Cancer of other male genital organs,Cancer of other urinary organs,Cancer of ovary,Cancer of pancreas,Cancer of prostate,Cancer of rectum and anus,Cancer of stomach,Cancer of testis,Cancer of thyroid,Cancer of uterus,Cancer; other and unspecified primary,Cancer; other respiratory and intrathoracic, Hodgkin's disease,Leukemias,Maintenance chemotherapy; radiotherapy,Malignant neoplasm without specification of site,Melanomas of skin,Multiple myeloma,Neoplasms of unspecified nature or uncertain behavior, Non-Hodgkin's lymphoma,Other and unspecified benign neoplasm,Other non-epithelial cancer of skin,Secondary malignancies

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Women's health and perinatal care	Women's health and perinatal care	167,168,169,170, 171,172,173,174, 175,176,177,178, 179,180,181,182, 183,184,185,187, 188,189,190,191, 192,193,194,195, 196,218,220,221, 223,224,46	167,169,170,171,17 2,173,174,175,176, 177,178,179,180,18 1,182,184,185,187, 188,189,190,191,19 2,193,194,195,196, 218,219,220,221,22 3,224,46	Benign neoplasm of uterus,Birth trauma,Contraceptive and procreative management,Early or threatened labor,Ectopic pregnancy,Endometriosis,Female infertility,Fetal distress and abnormal forces of labor,Fetopelvic disproportion; obstruction,Forceps delivery,Hemorrhage during pregnancy; abruptio placenta; placenta previa,Hypertension complicating pregnancy; childbirth and the puerperium,Induced abortion,Inflammatory diseases of female pelvic organs,Intrauterine hypoxia and birth asphyxia,Liveborn,Malposition; malpresentation,Menopausal disorders,Menstrual disorders,Nonmalignant breast conditions,OB-related trauma to perineum and vulva,Other complications of birth; puerperium affecting management of mother,Other complications of pregnancy,Other female genital disorders,Other perinatal conditions,Other pregnancy and delivery including normal,Ovarian cyst,Polyhydramnios and other problems of amniotic cavity,Postabortion complications,Previous C-section,Prolapse of female genital organs,Prolonged pregnancy,Respiratory distress syndrome,Short gestation; low birth weight; and fetal growth retardation,Spontaneous abortion,Umbilical cord complication
Renal	Renal	156,157,158	156,157,158,161	Acute and unspecified renal

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				failure,Chronic kidney disease,Nephritis; nephrosis; renal sclerosis,Other diseases of kidney and ureters
Respiratory	Respiratory and hypoxia	103,127,128,129,130,131,132,133,134,56	103,127,128,129,130,131,132,133,134,135,56	Aspiration pneumonitis; food/vomitus,Asthma,Chronic obstructive pulmonary disease and bronchiectasis,Cystic fibrosis,Intestinal infection,Lung disease due to external agents,Other lower respiratory disease,Other upper respiratory disease,Pleurisy; pneumothorax; pulmonary collapse,Pulmonary heart disease,Respiratory failure; insufficiency; arrest (adult)
Functional group				
Psychiatry	Psychiatry	650,651,652,656,657,658,659,663,670	650,651,652,656,657,658,659,670	Adjustment disorders,Anxiety disorders,Attention-deficit conduct and disruptive behavior disorders,Attention-deficit, conduct, and disruptive behavior disorders,Impulse control disorders NEC,Impulse control disorders, NEC,Miscellaneous mental health disorders,Mood disorders,Personality disorders,Schizophrenia and other psychotic disorders,Screening and history of mental health and substance abuse codes
Symptomatic and care	Symptomatic and care	246,252,254,255,256,000,000,000	252,254,255,256,257,258,259	Administrative/social admission,Fever of unknown origin,Malaise and fatigue,Medical examination/evaluation,Other aftercare,Other screening for suspected conditions (not mental disorders or infectious disease),Rehabilitation care;

Acute coma causes	Subgroups	ICD-9 CCS groups	ICD-10 CCS groups	Lable
				fitting of prostheses; and adjustment of devices,Residual codes; unclassified
Syncope	Syncope	245,93	245,93	Conditions associated with dizziness or vertigo,Syncope
Others	Iatrogenic	0,237,238,2616	237,238,2616	Adverse effects of medical care,Complication of device; implant or graft,Complications of surgical procedures or medical care,E Codes: Adverse effects of medical care,Invalid procedure
	Congenital	208,209,212,213,214,215,216,217,219,654,655	208,209,212,213,214,215,216,217,654,655	Acquired foot deformities,Cardiac and circulatory congenital anomalies,Developmental disorders,Digestive congenital anomalies,Disorders usually diagnosed in infancy childhood or adolescence,Disorders usually diagnosed in infancy, childhood, or adolescence,Genitourinary congenital anomalies,Nervous system congenital anomalies,Other acquired deformities,Other bone disease and musculoskeletal deformities,Other congenital anomalies,Short gestation; low birth weight; and fetal growth retardation
	Environment	2611	2611	E Codes: Natural/environment,External cause codes: Natural/environment