

**Table S1.** Identification of Potentially Preventable Complications

Potentially Preventable Complications <sup>a</sup>	ICD-10 Code	Description	Exclusions <sup>b</sup>
Delirium	F05	Delirium due to known physiological condition	
	R41.0	Disorientation, unspecified	
	R41.82	Altered Mental Status, unspecified	
	G92.8	Other toxic encephalopathy	
	G92.9	Unspecified toxic encephalopathy	
	G93.40	Encephalopathy, unspecified	
	G93.41	Metabolic encephalopathy	
	G93.49	Other encephalopathy	
Aspiration Pneumonia	J69.0	Pneumonitis due to inhalation of food and vomit	Principal Diagnosis of Pneumonia CCSR code RSP002
	J69.1	Pneumonitis due to inhalation of oils and essences	
	J69.8	Pneumonitis due to inhalation of other solids and liquids	
Cardiac Arrest	I46.2	Cardiac arrest due to underlying cardiac condition	
	I46.8	Cardiac arrest due to other underlying condition	
	I46.9	Cardiac arrest, cause unspecified	
	I49.01	Ventricular fibrillation	
	I49.02	Ventricular flutter	
	5A12012	Performance of Cardiac Output, Single, Manual	
	5A1221J	Performance of Cardiac Output, Continuous, Automated	
<i>C. Difficile</i> Infection	A04.71	Enterocolitis due to <i>Clostridium difficile</i> , recurrent	
	A04.72	Enterocolitis due to <i>Clostridium difficile</i> , not specified as recurrent	
Deep Venous Thrombosis	I80.10	Phlebitis and thrombophlebitis of unspecified femoral vein	
	I80.11	Phlebitis and thrombophlebitis of right femoral vein	
	I80.12	Phlebitis and thrombophlebitis of left femoral vein	
	I80.13	Phlebitis and thrombophlebitis of femoral vein, bilateral	
	I80.201	Phlebitis and thrombophlebitis of unspecified deep vessels of right lower extremity	
	I80.202	Phlebitis and thrombophlebitis of unspecified deep vessels of left lower extremity	
	I80.203	Phlebitis and thrombophlebitis of unspecified deep vessels of lower extremities, bilateral	
	I80.209	Phlebitis and thrombophlebitis of unspecified deep vessels of unspecified lower extremity	
	I80.211	Phlebitis and thrombophlebitis of right iliac vein	
	I80.212	Phlebitis and thrombophlebitis of left iliac vein	
	I80.213	Phlebitis and thrombophlebitis of iliac vein, bilateral	
	I80.219	Phlebitis and thrombophlebitis of unspecified iliac vein	
	I80.221	Phlebitis and thrombophlebitis of right popliteal vein	
	I80.222	Phlebitis and thrombophlebitis of left popliteal vein	
	I80.223	Phlebitis and thrombophlebitis of popliteal vein, bilateral	
	I80.229	Phlebitis and thrombophlebitis of unspecified popliteal vein	
	I80.291	Phlebitis and thrombophlebitis of other deep vessels of right lower extremity	
	I80.292	Phlebitis and thrombophlebitis of other deep vessels of left lower extremity	
	I80.293	Phlebitis and thrombophlebitis of other deep vessels of lower extremity, bilateral	
	I80.299	Phlebitis and thrombophlebitis of other deep vessels of unspecified lower extremity	
	I80.3	Phlebitis and thrombophlebitis of lower extremities, unspecified	
	I80.9	Phlebitis and thrombophlebitis of unspecified site	
	I82.401	Acute embolism and thrombosis of unspecified deep veins of right lower extremity	

	I82.402	Acute embolism and thrombosis of unspecified deep veins of left lower extremity	
	I82.403	Acute embolism and thrombosis of unspecified deep veins of lower extremity, bilateral	
	I82.409	Acute embolism and thrombosis of unspecified deep veins of unspecified lower extremity	
	I82.411	Acute embolism and thrombosis of right femoral vein	
	I82.412	Acute embolism and thrombosis of left femoral vein	
	I82.413	Acute embolism and thrombosis of femoral vein, bilateral	
	I82.419	Acute embolism and thrombosis of unspecified femoral vein	
	I82.421	Acute embolism and thrombosis of right iliac vein	
	I82.422	Acute embolism and thrombosis of left iliac vein	
	I82.423	Acute embolism and thrombosis of iliac vein, bilateral	
	I82.429	Acute embolism and thrombosis of unspecified iliac vein	
	I82.431	Acute embolism and thrombosis of right popliteal vein	
	I82.432	Acute embolism and thrombosis of left popliteal vein	
	I82.433	Acute embolism and thrombosis of popliteal vein, bilateral	
	I82.439	Acute embolism and thrombosis of unspecified popliteal vein	
	I82.491	Acute embolism and thrombosis of other specified deep vein of right lower extremity	
	I82.492	Acute embolism and thrombosis of other specified deep vein of left lower extremity	
	I82.493	Acute embolism and thrombosis of other specified deep vein of lower extremity, bilateral	
	I82.499	Acute embolism and thrombosis of other specified deep vein of unspecified lower extremity	
	I82.4Y1	Acute embolism and thrombosis of unspecified deep veins of right proximal lower extremity	
	I82.4Y2	Acute embolism and thrombosis of unspecified deep veins of left proximal lower extremity	
	I82.4Y3	Acute embolism and thrombosis of unspecified deep veins of proximal lower extremity, bilateral	
	I82.4Y9	Acute embolism and thrombosis of unspecified deep veins of unspecified proximal lower extremity	
	T81.72xA	Complication of vein following a procedure, not elsewhere classified, initial encounter	
Falls	W[01][0123456789] <sup>c</sup>	Slipping, tripping, stumbling and falls	Absence of comorbid diagnoses ICD-10-CM code Y92.23 "Hospital as place of occurrence for external cause of injury"
Ileus	K91.3	Postprocedural intestinal obstruction	
	K56	Paralytic ileus and intestinal obstruction without hernia	
	K59.81	Ogilvie syndrome	
	K59.00	Constipation unspecified	
	K59.01	Slow transit constipation	
	K59.02	Outlet dysfunction constipation	
	K59.03	Drug induced constipation	
	K59.09	Other constipation	

Pulmonary Embolism	I26.01	Septic pulmonary embolism with acute cor pulmonale	
	I26.02	Saddle embolus of pulmonary artery with acute cor pulmonale	
	I26.09	Other pulmonary embolism with acute cor pulmonale	
	I26.90	Septic pulmonary embolism without acute cor pulmonale	
	I26.92	Saddle embolus of pulmonary artery without acute cor pulmonale	
	I26.93	Single subsegmental pulmonary embolism without acute cor pulmonale	
	I26.94	Multiple subsegmental pulmonary emboli without acute cor pulmonale	
	I26.99	Other pulmonary embolism without acute cor pulmonale	
Urinary Tract Infection	N30.00	Acute cystitis without hematuria	Principal Diagnosis of UTI CCSR code GEN004
	N30.01	Acute cystitis with hematuria	
	N30.80	Other cystitis without hematuria	
	N30.90	Cystitis, unspecified without hematuria	
	N30.91	Cystitis, unspecified with hematuria	
	N39.0	Urinary tract infection, site not specified	
	N41.3	Prostatocystitis	
Decubitus Ulcer	L89.000	Pressure ulcer of unspecified elbow, unstageable	Length of Stay ≤4 days
	L89.003	Pressure ulcer of unspecified elbow, stage 3	
	L89.004	Pressure ulcer of unspecified elbow, stage 4	
	L89.006	Pressure-induced deep tissue damage of unspecified elbow	
	L89.010	Pressure ulcer of right elbow, unstageable	
	L89.013	Pressure ulcer of right elbow, stage 3	
	L89.014	Pressure ulcer of right elbow, stage 4	
	L89.016	Pressure-induced deep tissue damage of right elbow	
	L89.020	Pressure ulcer of left elbow, unstageable	
	L89.023	Pressure ulcer of left elbow, stage 3	
	L89.024	Pressure ulcer of left elbow, stage 4	
	L89.026	Pressure-induced deep tissue damage of left elbow	
	L89.100	Pressure ulcer of unspecified part of back, unstageable	
	L89.103	Pressure ulcer of unspecified part of back, stage 3	
	L89.104	Pressure ulcer of unspecified part of back, stage 4	
	L89.106	Pressure-induced deep tissue damage of unspecified part of back	
	L89.110	Pressure ulcer of right upper back, unstageable	
	L89.113	Pressure ulcer of right upper back, stage 3	
	L89.114	Pressure ulcer of right upper back, stage 4	
	L89.116	Pressure-induced deep tissue damage of right upper back	
	L89.120	Pressure ulcer of left upper back, unstageable	
	L89.123	Pressure ulcer of left upper back, stage 3	
	L89.124	Pressure ulcer of left upper back, stage 4	
	L89.126	Pressure-induced deep tissue damage of left upper back	
	L89.130	Pressure ulcer of right lower back, unstageable	
	L89.133	Pressure ulcer of right lower back, stage 3	
	L89.134	Pressure ulcer of right lower back, stage 4	
	L89.136	Pressure-induced deep tissue damage of right lower back	
	L89.140	Pressure ulcer of left lower back, unstageable	
	L89.143	Pressure ulcer of left lower back, stage 3	
	L89.144	Pressure ulcer of left lower back, stage 4	
	L89.146	Pressure-induced deep tissue damage of left lower back	
	L89.150	Pressure ulcer of sacral region, unstageable	
	L89.153	Pressure ulcer of sacral region, stage 3	
	L89.154	Pressure ulcer of sacral region, stage 4	
	L89.156	Pressure-induced deep tissue damage of sacral region	
	L89.200	Pressure ulcer of unspecified hip, unstageable	
	L89.203	Pressure ulcer of unspecified hip, stage 3	
	L89.204	Pressure ulcer of unspecified hip, stage 4	
	L89.206	Pressure-induced deep tissue damage of unspecified hip	

L89.210	Pressure ulcer of right hip, unstageable
L89.213	Pressure ulcer of right hip, stage 3
L89.214	Pressure ulcer of right hip, stage 4
L89.216	Pressure-induced deep tissue damage of right hip
L89.220	Pressure ulcer of left hip, unstageable
L89.223	Pressure ulcer of left hip, stage 3
L89.224	Pressure ulcer of left hip, stage 4
L89.226	Pressure-induced deep tissue damage of left hip
L89.300	Pressure ulcer of unspecified buttock, unstageable
L89.303	Pressure ulcer of unspecified buttock, stage 3
L89.304	Pressure ulcer of unspecified buttock, stage 4
L89.306	Pressure-induced deep tissue damage of unspecified buttock
L89.310	Pressure ulcer of right buttock, unstageable
L89.313	Pressure ulcer of right buttock, stage 3
L89.314	Pressure ulcer of right buttock, stage 4
L89.316	Pressure-induced deep tissue damage of right buttock
L89.320	Pressure ulcer of left buttock, unstageable
L89.323	Pressure ulcer of left buttock, stage 3
L89.324	Pressure ulcer of left buttock, stage 4
L89.326	Pressure-induced deep tissue damage of left buttock
L89.43	Pressure ulcer of contiguous site of back, buttock and hip, stage 3
L89.44	Pressure ulcer of contiguous site of back, buttock and hip, stage 4
L89.45	Pressure ulcer of contiguous site of back, buttock and hip, unstageable
L89.46	Pressure-induced deep tissue damage of contiguous site of back, buttock and hip
L89.500	Pressure ulcer of unspecified ankle, unstageable
L89.503	Pressure ulcer of unspecified ankle, stage 3
L89.504	Pressure ulcer of unspecified ankle, stage 4
L89.506	Pressure-induced deep tissue damage of unspecified ankle
L89.510	Pressure ulcer of right ankle, unstageable
L89.513	Pressure ulcer of right ankle, stage 3
L89.514	Pressure ulcer of right ankle, stage 4
L89.516	Pressure-induced deep tissue damage of right ankle
L89.520	Pressure ulcer of left ankle, unstageable
L89.523	Pressure ulcer of left ankle, stage 3
L89.524	Pressure ulcer of left ankle, stage 4
L89.526	Pressure-induced deep tissue damage of left ankle
L89.600	Pressure ulcer of unspecified heel, unstageable
L89.603	Pressure ulcer of unspecified heel, stage 3
L89.604	Pressure ulcer of unspecified heel, stage 4
L89.606	Pressure-induced deep tissue damage of unspecified heel
L89.610	Pressure ulcer of right heel, unstageable
L89.613	Pressure ulcer of right heel, stage 3
L89.614	Pressure ulcer of right heel, stage 4
L89.616	Pressure-induced deep tissue damage of right heel
L89.620	Pressure ulcer of left heel, unstageable
L89.623	Pressure ulcer of left heel, stage 3
L89.624	Pressure ulcer of left heel, stage 4
L89.626	Pressure-induced deep tissue damage of left heel
L89.810	Pressure ulcer of head, unstageable
L89.813	Pressure ulcer of head, stage 3
L89.814	Pressure ulcer of head, stage 4
L89.816	Pressure-induced deep tissue damage of head
L89.890	Pressure ulcer of other site, unstageable
L89.893	Pressure ulcer of other site, stage 3
L89.894	Pressure ulcer of other site, stage 4

	L89.896	Pressure-induced deep tissue damage of other site	
	L89.93	Pressure ulcer of unspecified site, stage 3	
	L89.94	Pressure ulcer of unspecified site, stage 4	
	L89.95	Pressure ulcer of unspecified site, unstageable	
	L89.96	Pressure-induced deep tissue damage of unspecified site	

Abbreviations: ICD-10 = International Classification of Diseases, 10<sup>th</sup> Revision, *C. difficile* = *Clostridium difficile*,

CCSR = Clinical Classification Software Refined, UTI = Urinary Tract Infection

- a) Complications were only considered present if the record had a corresponding “N” value for the “Present on Admission” indicator.
- b) The complication was considered not present for records with an indication for exclusion of the complication.
- c) Denotes regular expression of ICD-10 code.

**Table S2.** Identification of Life Sustaining Therapies

Life-Sustaining Therapies	ICD-10 Code	Description
Invasive Mechanical Ventilation	5A1935Z	Respiratory Ventilation, Less than 24 Consecutive Hours
	5A1945Z	Respiratory Ventilation, 24-96 Consecutive Hours
	5A1955Z	Respiratory Ventilation, Greater than 96 Consecutive Hours
	0BH17EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening
	0BH18EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening Endoscopic
Tracheostomy	0B110F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Open Approach
	0B113F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Approach
	0B114F4	Bypass Trachea to Cutaneous with Tracheostomy Device, Percutaneous Endoscopic Approach
	0BH13EZ	Insertion of Endotracheal Airway into Trachea, Percutaneous Approach
Gastrostomy	0D16074	Bypass Stomach to Cutaneous with Autologous Tissue Substitute, Open Approach
	0D160J4	Bypass Stomach to Cutaneous with Synthetic Substitute, Open Approach
	0D160K4	Bypass Stomach to Cutaneous with Nonautologous Tissue Substitute, Open Approach
	0D160Z4	Bypass Stomach to Cutaneous, Open Approach
	0D163J4	Bypass Stomach to Cutaneous with Synthetic Substitute, Percutaneous Approach
	0D16474	Bypass Stomach to Cutaneous with Autologous Tissue Substitute, Percutaneous Endoscopic Approach
	0D164K4	Bypass Stomach to Cutaneous with Nonautologous Tissue Substitute, Percutaneous Endoscopic Approach
	0D16874	Bypass Stomach to Cutaneous with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
	0D168J4	Bypass Stomach to Cutaneous with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic
	0D168K4	Bypass Stomach to Cutaneous with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic
	0D168Z4	Bypass Stomach to Cutaneous, Via Natural or Artificial Opening Endoscopic
	0DH60UZ	Insertion of Feeding Device into Stomach, Open Approach
	0DH63UZ	Insertion of Feeding Device into Stomach, Percutaneous Approach
	0DH64UZ	Insertion of Feeding Device into Stomach, Percutaneous Endoscopic Approach
	0DH67UZ	Insertion of Feeding Device into Stomach, Via Natural or Artificial Opening
	0DH68UZ	Insertion of Feeding Device into Stomach, Via Natural or Artificial Opening Endoscopic
	0DHA[03478]UZ <sup>a</sup>	Insertion of Feeding Device into Jejunum

Abbreviations: ICD-10 = International Classification of Diseases, 10<sup>th</sup> Revision

a) Denotes regular expression of ICD-10 code.