

**Table S1** ICD-9-CM and ICD-10-CM diagnosis and procedure codes used to identify esophageal perforation, esophageal conditions, comorbidities, procedures, and inpatient complications

Diagnosis/procedure	ICD-9-CM	ICD-10-CM <sup>†</sup>
<b>Esophageal injury</b>		
Esophageal perforation	530.4	K22.3
Injury to esophagus, without cavity entry	862.22	S27.818A, S27.819A
Injury to esophagus, with cavity entry	862.32	S21.309A, S27.813A <sup>‡</sup>
Open wound of pharynx, uncomplicated	874.4	S11.20XA, S11.21XA, S11.23XA, S11.25XA
Open wound of pharynx, complicated	874.5	S11.22XA, S11.24XA
<b>Esophageal conditions</b>		
Malignant neoplasm of esophagus	150.0-150.9	C15.3, C15.4, C15.5, C15.8, C15.9
<b>Benign conditions</b>		
Achalasia	530.0	K22.0
Esophagitis	530.10-530.19	K20.0, K20.8, K20.9, K21.0
Esophageal ulcer	530.20, 530.21	K22.10, K22.11
Esophageal stricture	530.3	K22.2
Dyskinesia of esophagus	530.5	K22.4
Diverticulum of Esophagus	530.6	K22.5
Gastroesophageal laceration-hemorrhage syndrome	530.7	K22.6
Barrett's esophagus	530.85	K227.0, K227.10, K227.11, K227.19
Other esophageal conditions	530.81-530.84, 530.86-530.9	K21.9, K22.8, K22.9, K23, J86.0, K94.30, K94.31, K94.32, K94.33, K94.39
Foreign body in esophagus	935.1	T18.100A, T18.108A, T18.110A, T18.118A, T18.120A, T18.128A, T18.190A, T18.198A
Accidental puncture or laceration during procedure	998.2	K91.71, K91.72
<b>Esophageal procedures</b>		
Esophagostomy	42.10, 42.11, 42.82	0D15074 <sup>§</sup> , 0D150J4 <sup>§</sup> , 0D150K4 <sup>§</sup> , 0D150Z4 <sup>§</sup> , 0D153J4 <sup>§</sup> , 0D15474 <sup>§</sup> , 0D154J4 <sup>§</sup> , 0D154K4 <sup>§</sup> , 0D154Z4 <sup>§</sup> , 0D11074, 0D110J4, 0D110K4, 0D110Z4, 0D113J4, 0D11474, 0D114J4, 0D114K4, 0D114Z4, 0D11876, 0D118J6, 0D118K6, 0D118Z6, 0WQ6XZZ
Esophagectomy	42.40, 42.41, 42.42, 42.51	0DB50ZZ, 0DB53ZZ, 0DB57ZZ, 0DB10ZZ, 0DB13ZZ, 0DB17ZZ, 0DB20ZZ, 0DB23ZZ, 0DB27ZZ, 0DB30ZZ, 0DB33ZZ, 0DB37ZZ, 0DB50ZZ, 0DB53ZZ, 0DB57ZZ, 0DT10ZZ, 0DT14ZZ, 0DT17ZZ, 0DT18ZZ, 0DT20ZZ, 0DT24ZZ, 0DT27ZZ, 0DT28ZZ, 0DT30ZZ, 0DT34ZZ, 0DT37ZZ, 0DT38ZZ, 0DT50ZZ, 0DT54ZZ, 0DT57ZZ, 0DT58ZZ
Other repair of esophagus	42.89, 42.99, 42.87	0DR507Z, 0DR50JZ, 0DR50KZ, 0DR547Z, 0DR54JZ, 0DR54KZ, 0DR577Z, 0DR57JZ, 0DR57KZ, 0DR587Z, 0DR58JZ, 0DR58KZ, 0DQ10ZZ, 0DQ13ZZ, 0DQ14ZZ, 0DQ17ZZ, 0DQ18ZZ, 0DQ20ZZ, 0DQ23ZZ, 0DQ24ZZ, 0DQ27ZZ, 0DQ28ZZ, 0DQ30ZZ, 0DQ33ZZ, 0DQ34ZZ, 0DQ37ZZ, 0DQ38ZZ, 0DQ50ZZ, 0DQ53ZZ, 0DQ54ZZ, 0DQ57ZZ, 0DQ58ZZ
Insertion of chest tube	34.04, 34.09	0W9930Z, 0W9B30Z, 0B9N00Z, 0B9N0ZZ, 0B9N30Z, 0B9N40Z, 0B9N4ZZ, 0B9N80Z, 0B9P00Z, 0B9P0ZZ, 0B9P30Z, 0B9P40Z, 0B9P4ZZ, 0B9P80Z, 0BCN0ZZ, 0BCN3ZZ, 0BCN4ZZ, 0BCP0ZZ, 0BCP3ZZ, 0BCP4ZZ, 0BHQ0YZ, 0BHQ3YZ, 0BHQ4YZ, 0BHQ7YZ, 0BHQ8YZ, 0W9900Z, 0W990ZZ, 0W9B00Z, 0W9B0ZZ, 0WC90ZZ, 0WC93ZZ, 0WC94ZZ, 0WCB0ZZ, 0WCB3ZZ, 0WCB4ZZ, 0WCQ0ZZ, 0WCQ3ZZ, 0WCQ4ZZ
Decortication of lung	34.51, 34.52	0BDN0ZX, 0BDN0ZZ, 0BDN3ZX, 0BDN3ZZ, 0BDP0ZX, 0BDP0ZZ, 0BDP3ZX, 0BDP3ZZ, 0BDN4ZX, 0BDN4ZZ, 0BDP4ZX, 0BDP4ZZ
Insertion of permanent tube into esophagus	42.81	0DH50DZ, 0DH53DZ, 0DH54DZ, 0DH57DZ, 0DH58DZ
Suture of laceration of esophagus	42.82	0DQ50ZZ, 0DQ53ZZ, 0DQ54ZZ, 0DQ57ZZ, 0DQ58ZZ
Gastrostomy	43.1	0DH63UZ, 0DH64UZ, 0DH60UZ
Other enterostomy	46.31, 46.32, 46.39	0DHA3UZ, 0DHA4UZ, 0DHA8UZ, 0DH80UZ, 0DH83UZ, 0DH84UZ, 0DH87UZ, 0DH88UZ, 0DH90UZ, 0DH93UZ, 0DH94UZ, 0DH97UZ, 0DH98UZ, 0DHA0UZ, 0DHA7UZ, 0DHB0UZ, 0DHB3UZ, 0DHB4UZ, 0DHB7UZ, 0DHB8UZ
Incision of mediastinum	34.1	0W9C00Z, 0W9C0ZZ, 0W9C40Z, 0W9C4ZZ, 0WCC0ZZ, 0WCC3ZZ, 0WCC4ZZ, 0WHC03Z, 0WHC0YZ
<b>Comorbidities</b>		
Dysphagia	787.2	R13.0, R13.10, R13.11, R13.12, R13.13, R13.14, R13.19
Tobacco use	305.1, V15.82	Z87.891, F17.200, F17.201, F17.210, F17.211, F17.220, F17.221, F17.290, F17.291, Z87.891
Alcohol use	305.00-305.03	F10.10, F10.120, F10.129, F10.11
Chronic obstructive pulmonary disease	491.0-491.9, 492.0-492.9, 496.0-496.9	J41, J42, J43, J44
Electrolyte disorders	276.0-276.9	E87
Abnormal weight loss	783.21	R63.4
<b>Inpatient complications</b>		
Pneumonia	480-480.9, 481, 482-482.9, 483-483.8, 485, 486, 487, 997.31	J12.0-J12.2, J12.81, J12.89, J12.9, J13, J18.1, J14, J15-J15.9, J16.0, J16.8, J18.0, J18.8, J18.9, J11.00, J11.08, J95.851
Sepsis <sup>¶</sup>	038-038.9, 785.52, 790.7, 995.9-995.94	A22.7, A26.7, A32.7, A40-A40.9, A41-A41.9, A42.7, A54.86, R65.1-R65.21, R78.81

<sup>†</sup>, ICD-10-CM codes were identified using forward and backward mapping to the GEMs provided by CMS; irrelevant codes flagged through mapping were removed using clinical review; <sup>‡</sup>, mapped to both Injury to esophagus with entry and injury to esophagus without entry; <sup>§</sup>, mapped to both esophagostomy and esophagectomy; <sup>¶</sup>, includes bacteremia, septicemia, SIRS, sepsis, severe sepsis, and septic shock. ICD-9-CM, International Classification of Disease, 9th revision, Clinical Modification; ICD-10-CM, International Classification of Disease, 10th revision, Clinical Modification; GEMs, general equivalence mappings; CMS, Centers for Medicare and Medicaid Services; SIRS, systemic inflammatory response syndrome.