

STS General Thoracic Surgery Executive Summary
January 2002 – December 2016 Procedures
All Patients

Table 1: Number of Operations submitted, Discharge Mortality, Operative Mortality, by year

Table 2: Operative Mortality, by Primary Procedure





STS General Thoracic Surgery Database
All Patients

Executive Summary
STS Period Ending 12/31/2016



Table 1: Number of Operations submitted, discharge mortality, and operative mortality, by year

	Last Year Jul 2015 - Dec 2016	STS Last 3 Years Jul 2013 - Dec 2016	All Years Jan 2002 - Dec 2016
Number of Operations	41,253	120,652	499,987
Discharge Mortality			
Number of Mortalities	612	1,901	9,281
Number Eligible	41,253	120,652	445,477
Mortality Percent	1.5%	1.6%	2.1%
Operative Mortality			
Number of Mortalities	852	2,598	12,662
Number Eligible	39,441	115,375	396,161
Mortality Percent	2.2%	2.3%	3.2%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
		# / Eligible	%
PRIMARY PROCEDURES			
CHEST WALL (v2.07)			
Chest Wall Biopsy	343	3/221	1.4%
Rib Resection (single)	462	5/333	1.5%
First/Cervical Rib Resection	165	0/124	0.0%
Chest Wall Resection	1,121	14/795	1.8%
Chest Wall Reconstruction	182	0/152	0.0%
Thoracoplasty	46	2/26	7.7%
Pectus Repair	182	0/125	0.0%
Sternectomy, complete	27	1/16	6.3%
Sternectomy, partial	110	1/77	1.3%
Muscle Flap	112	5/59	8.5%
Other Chest Wall Repair	1,534	14/985	1.4%
MEDIASTINUM/NECK (v2.07)			
Mediastinal LN Biopsy	2,480	18/1,476	1.2%
Mediastinoscopy	9,965	74/7,425	1.0%
Anterior Mediastinotomy	577	5/453	1.1%
Extended Cervical Mediastinoscopy	78	0/62	0.0%
Mediastinal Lymph Node Dissection	489	2/231	0.9%
Mediastinal Lymph Node Sampling	854	5/595	0.8%
Biopsy, Mediastinal Mass	849	10/581	1.7%
Resection, Mediastinal Mass	1,842	9/1,390	0.6%
Thymectomy	1,409	0/1,095	0.0%
Sympathectomy	1,857	3/1,268	0.2%
Thoracic duct ligation	258	4/184	2.2%
Other Mediastinal/Neck procedure	2,060	41/1,451	2.8%
TRACHEOBRONCHIAL (v2.07)			
Flexible Bronchoscopy	6,416	122/4,191	2.9%
Rigid Bronchoscopy	1,442	34/1,378	2.5%
Removal of Foreign Body (Tracheobronchial)	197	4/173	2.3%
Endobronchial ablation, Laser / PDT	1,424	35/1,332	2.6%
Endobronchial Ablation, Mechanical	348	7/327	2.1%
Tracheal/Bronchial Stent	1,091	54/1,011	5.3%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
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TRACHEOBRONCHIAL (v2.07) - continued			
Tracheostomy	3,210	340/2,578	13.2%
Tracheal Repair	107	7/98	7.1%
Tracheal Stricture Resection	378	2/356	0.6%
Tracheal Tumor Resection	116	0/103	0.0%
Carinal Resection (no lung resection)	11	0/10	0.0%
Bronchotomy	10	0/8	0.0%
Bronchial Repair	121	8/104	7.7%
Bronchoplasty	49	1/43	2.3%
Sleeve Bronchial Resection			
TE Fistula Repair	91	5/80	6.3%
Other Tracheobronchial procedure	1,962	42/1,695	2.5%
PULMONARY (v2.07)			
Wedge Resection, single	12,723	246/8,977	2.7%
Wedge Resection, multiple	7,970	290/5,891	4.9%
Segmentectomy	1,850	27/1,362	2.0%
Lobectomy	18,952	263/13,806	1.9%
Sleeve Lobectomy	382	7/345	2.0%
Bilobectomy	1,013	32/703	4.6%
Pneumonectomy, standard	1,130	48/813	5.9%
Pneumonectomy, Carinal	41	1/32	3.1%
Completion pneumonectomy	245	19/172	11.0%
Extrapleural pneumonectomy	211	14/142	9.9%
Pneumonectomy, intrapericardial	322	10/238	4.2%
Lung Volume Reduction	325	18/230	7.8%
Bullectomy / repair	1,044	14/775	1.8%
Hydatid Cyst Resection	2	0/1	0.0%
Single Lung Transplant	370	20/344	5.8%
Double Lung Transplant	629	32/588	5.4%
Lung Donor Harvest	16	4/14	28.6%
Other Lung procedure	1,416	49/955	5.1%
ESOPHAGOGASTRIC (v2.07)			
Esophagoscopy, flexible	4,256	39/3,248	1.2%
Esophagoscopy, rigid	91	3/84	3.6%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
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ESOPHAGOGASTRIC (v2.07) - continued			
Removal of Foreign Body (Esophagogastric)	163	4/129	3.1%
Dilation of Esophagus	3,523	36/3,290	1.1%
Esophageal Tumor Ablation, Laser / PDT	235	4/202	2.0%
Stent Placement	554	45/496	9.1%
Cervical esophagostomy	81	7/59	11.9%
Anterior Thoracic Esophagostomy	10	0/5	0.0%
Zenker's Diverticulum Repair	231	1/205	0.5%
Myotomy, cricopharyngeal	66	0/51	0.0%
Myotomy, esophageal (long)	209	0/155	0.0%
Myotomy, cardia (short)	494	1/438	0.2%
Resection, intrathoracic diverticulum	85	0/68	0.0%
Resection, esophagus (esophagectomy)	4,393	125/3,606	3.5%
Resection, esophageal wall lesion	102	0/84	0.0%
Repair, perforation of esophagus - Iatrogenic	146	8/119	6.7%
Repair, perforation of esophagus - Malignant	5	0/4	0.0%
Repair, perforation of esophagus - Other	255	19/212	9.0%
Fundoplication, circumferentia	1,448	8/1,103	0.7%
Fundoplication, partial	418	3/364	0.8%
Gastroplasty	162	1/149	0.7%
Pyloroplasty	18	0/16	0.0%
Pyloromyotomy	8	0/8	0.0%
Gastrectomy	209	7/168	4.2%
Gastrostomy	381	31/336	9.2%
Jejunostomy	363	20/289	6.9%
Conduit, gastric	34	2/27	7.4%
Conduit, colon	26	0/20	0.0%
Conduit, jejunum	4	0/3	0.0%
Conduit, other	2	0/2	0.0%
Anastomosis, neck	16	2/13	15.4%
Anastomosis, Chest	7	0/5	0.0%
Other Esophageal procedure	692	19/543	3.5%
Other GI procedure	785	23/600	3.8%
CARDIAC/PERICARDIUM/GREAT VESSELS (v2.07)			
Pericardial Window	2,741	189/1,707	11.1%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

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CARDIAC/PERICARDIUM/GREAT VESSELS (v2.07) - continued			
Pericardiectomy	210	9/151	6.0%
Repair Cardiac Laceration	33	5/27	18.5%
Other Pericardial Procedure	356	12/302	4.0%
Repair / Reconstruction, thoracic aorta	142	7/102	6.9%
Repair / Reconstruction, abd aorta	371	4/40	10.0%
Repair / Reconstruction, SVC	16	0/11	0.0%
Repair / Reconstruction, IVC	16	3/16	18.8%
Repair / Reconstruction, pulmonary artery	26	6/26	23.1%
Repair / Reconstruction, pulmonary vein(s)	5	1/5	20.0%
Repair / Reconstruction, left atrium	6	1/6	16.7%
Repair / Reconstruction, Subclavian Artery	20	1/12	8.3%
Cardiopulmonary Bypass	15	0/7	0.0%
Other Cardiac procedure	918	23/461	5.0%
DIAPHRAGM (v2.07)			
Plication of Diaphragm	191	2/159	1.3%
Diaphragmatic Hernia Repair, acute	122	4/90	4.4%
Diaphragmatic Hernia Repair, chronic	456	2/366	0.5%
Resection of Diaphragm	50	2/33	6.1%
Reconstruction of Diaphragm	43	0/28	0.0%
Other Diaphragm procedure	107	1/65	1.5%
PLEURA (v2.07)			
Pleural Drainage Procedure - Open	2,946	194/2,122	9.1%
Pleural Drainage Procedure - Closed	2,314	224/1,598	14.0%
Pleural Biopsy	2,022	74/1,434	5.2%
Pleurodesis	4,017	275/2,967	9.3%
Pleurectomy	506	13/374	3.5%
Decortication	5,698	232/4,205	5.5%
Clagett Procedure	140	7/124	5.6%
Other Pleural procedure	964	41/744	5.5%
AIR LEAK CONTROL MEASURES (v2.07)			
Fibrin Glue	16	0/15	0.0%
Pericardial Strips	13	0/5	0.0%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
		# / Eligible	%
AIR LEAK CONTROL MEASURES (v2.07) - continued			
Lung Sealant	15	0/10	0.0%
Pleural Tent	16	0/10	0.0%
Other Air Leak Control Measures	79	1/53	1.9%
TRACHEA, BRONCHI AND LARYNX (v2.081, v2.2 and v2.3)			
Tracheostomy, planned (31600) v2.2, v2.3	36	2/36	5.6%
Rigid Stent Removal v2.3	3	0/3	0.0%
Tracheostomy replacement (tube change) prior to est. of fistula tract (31502) v2.3	3	2/3	66.7%
Unlisted procedure, trachea, bronchi (31899) v2.081	2,443	243/1,975	12.3%
Tracheostomy revision simple, without flap (31613) v2.3			
Bronchogenic cyst removal v2.3	8	0/6	0.0%
Tracheal stenosis excision and anastomosis; cervicothoracic (31781)	128	2/122	1.6%
Bronchial laceration suture v2.3	3	0/3	0.0%
Tracheal tumor or carcinoma excision; cervical (31785)	127	2/115	1.7%
Bronchial sleeve resection v2.3	26	0/25	0.0%
Tracheal tumor or carcinoma excision; thoracic (31786)	132	2/122	1.6%
Bronchoplasty, graft repair (31770) v2.3	5	0/5	0.0%
Tracheal wound or injury suture repair; cervical (31800)	44	2/39	5.1%
Bronchoplasty; excision stenosis and anastomosis (31775)	81	3/60	5.0%
Tracheal wound or injury suture repair; intrathoracic (31805)	79	6/72	8.3%
Bronchopleural fistula closure (32906) v2.3	69	3/68	4.4%
Tracheoplasty; cervical (31750)	231	12/125	9.6%
Carinal reconstruction (31766)	23	1/21	4.8%
Tracheoplasty; intrathoracic (31760)	217	7/212	3.3%
Laryngectomy, partial (31370) v2.2, v2.3	5	0/4	0.0%
Tracheostomy revision complex, with flap (31614) v2.3	9	2/9	22.2%
Tracheal stenosis excision and anastomosis; cervical (31780)	728	7/708	1.0%
Tracheostomy mediastinal v2.3	5	0/4	0.0%
BRONCHOSCOPY (v2.081, v2.2, v2.3)			
Bronchoscopy, diagnostic, with or without cell washing (31622)	4,618	124/2,195	5.6%
Bronchoscopy, each additional major bronchus stented (31637)	13	1/8	12.5%
Bronchoscopy, navigational (31627) v2.2, v2.3	30	3/26	11.5%
Bronchoscopy, with bronchial alveolar lavage (BAL) (31624)	902	39/526	7.4%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
		# / Eligible	%
BRONCHOSCOPY (v2.081, v2.2, v2.3) - continued			
Bronchoscopy, with bronchial or endobronchial biopsy(s), single or multiple sites (31625)	1,581	33/403	8.2%
Bronchoscopy, with brushing or protected brushings (31623)	329	3/88	3.4%
Bronchoscopy, with destruction of tumor or relief of stenosis by any method other than excision (e.g., laser therapy) (31641)	1,737	71/848	8.4%
Bronchoscopy, with excision of tumor (31640)	443	24/227	10.6%
Bronchoscopy, with placement of bronchial stent(s) (includes tracheal/bronchial dilation as required), initial bronchus (31636)	528	36/313	11.5%
Bronchoscopy, with placement of catheter(s) for intracavitary radioelement application (31643)	64	1/13	7.7%
Bronchoscopy, with placement of Fiducial markers (31626) v2.2, v2.3	1	0/1	0.0%
Bronchoscopy, with placement of tracheal stent(s) (includes tracheal/bronchial dilation as required) (31631)	643	33/367	9.0%
Bronchoscopy, with removal of foreign body (31635)	379	15/213	7.0%
Bronchoscopy, with revision of tracheal or bronchial stent inserted at previous session (31638)	266	5/150	3.3%
Bronchoscopy, with therapeutic aspiration of tracheobronchial tree, initial (drainage of lung abscess) (31645)	162	4/103	3.9%
Bronchoscopy, with therapeutic aspiration of tracheobronchial tree, subsequent (31646)	43	1/37	2.7%
Bronchoscopy, with tracheal/bronchial dilation or closed reduction of fracture (31630)	1,567	14/508	2.8%
Bronchoscopy, with transbronchial lung biopsy(s), each additional lobe (31632)	55	1/16	6.3%
Bronchoscopy, with transbronchial lung biopsy(s), single lobe (31628)	597	8/129	6.2%
Bronchoscopy, with transbronchial needle aspiration biopsy(s) (31629)	1,362	7/192	3.6%
Bronchoscopy, with transbronchial needle aspiration biopsy(s), each additional lobe (31633)	161	1/20	5.0%
Endobronchial ultrasound (EBUS) during bronchoscopy diagnostic or therapeutic intervention(s) (31620)	1,508	10/193	5.2%
Tracheobronchoscopy through established tracheostomy incision (31615)	128	5/76	6.6%
PLEURAL SPACE AND LUNG (v2.081, v2.2 and v2.3)			
Thoracoscopy, diagnostic lungs and pleural space, without biopsy (32601)	1,530	85/1,290	6.6%
Thoracoscopy, surgical; with pleurodesis (e.g., mechanical or chemical) (32650)	6,579	487/5,342	9.1%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
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PLEURAL SPACE AND LUNG (v2.081, v2.2 and v2.3) - continued			
Thoracoscopy, surgical; with removal of intrapleural foreign body or fibrin deposit (32653)	827	36/710	5.1%
Thoracoscopy, diagnostic; with biopsy(ies) of lung infiltrate(s) (eg wedge), unilateral (32607) v2.2, v2.3	479	13/416	3.1%
Thoracoscopy, diagnostic; with biopsy(ies) of lung nodule(s) or mass(es) (eg incisional), unilateral (32608) v2.2, v2.3	318	6/303	2.0%
Thoracoscopy, diagnostic; with biopsy(ies) of pleura (32609) v2.2, v2.3	150	7/135	5.2%
Thoracostomy; with rib resection for empyema (32035)	207	19/180	10.6%
Thoracostomy; with open flap drainage for empyema (32036)	386	26/329	7.9%
Thoracotomy with biopsy(ies) lung infiltrate(s) (eg wedge), unilateral (32096)	130	9/114	7.9%
Thoracotomy with biopsy(ies) lung nodule(s) or masses (eg incisional), unilateral (32097)	83	3/75	4.0%
Thoracotomy with biopsy(ies) of pleura (32098)	61	3/57	5.3%
Thoracotomy with cardiac massage (32160)	11	6/10	60.0%
Pleural scarification for repeat pneumothorax (32215)	97	4/65	6.2%
Insertion indwelling tunneled pleural catheter (32550)	3,077	355/2,239	15.9%
Repair lung hernia through chest wall (32800)	100	0/90	0.0%
Closure of chest wall following open flap drainage for empyema (Clagett type procedure) (32810)	126	3/103	2.9%
Total lung lavage (for alveolar proteinosis) (32997)	65	0/45	0.0%
Radio-frequency ablation (RFA) lung tumor (32998)	115	1/87	1.1%
Unlisted procedure, lung (32999)	745	32/423	7.6%
Thoracoscopy, surgical; with partial pulmonary decortication (32651)	6,969	357/6,241	5.7%
Thoracoscopy, surgical; with total pulmonary decortication (32652)	12,516	518/11,685	4.4%
Thoracoscopy, surgical; with control of traumatic hemorrhage (32654)	1,008	50/921	5.4%
Thoracoscopy, surgical; with excision-plication of bullae, including any pleural procedure (32655)	7,007	70/6,571	1.1%
Thoracoscopy, surgical; with parietal pleurectomy (32656)	1,807	71/1,708	4.2%
Thoracoscopy, surgical; with lobectomy (32663)	42,380	365/39,555	0.9%
Thoracoscopy with therapeutic wedge resection (eg mass or nodule, initial, unilateral (32666) v2.2, v2.3	25,411	193/23,694	0.8%
Thoracoscopy with therapeutic wedge resection(eg mass or nodule) each additional resection, ipsilateral (32667) v2.2, v2.3	1,393	20/1,278	1.6%
Thoracoscopy with diagnostic wedge resection followed by anatomic lung resection (32668) v2.2, v2.3	687	13/631	2.1%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

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PLEURAL SPACE AND LUNG - continued			
Thoracoscopy with removal of a single lung segment (segmentectomy) (32669) v2.2, v2.3	4,298	27/4,095	0.7%
Thoracoscopy with removal of two lobes (bilobectomy) (32670) v2.2, v2.3	745	13/702	1.9%
Thoracoscopy with removal of lung, pneumonectomy (32671) v2.2, v2.3	247	11/229	4.8%
Thoracoscopy with resection-plication for emphysematous lung (bullous or non-bullous) for lung volume reduction- LVRS, unilateral including any pleural procedure (32672) v2.2, v2.3	537	11/505	2.2%
Thoracotomy with therapeutic wedge resection (eg mass nodule) initial (32505) v2.2, v2.3	4,340	64/4,171	1.5%
Thoracotomy with therapeutic wedge resection (eg mass nodule) each additional resection, ipsilateral (+32506) v2.2, v2.3	603	14/554	2.5%
Thoracotomy with diagnostic wedge resection followed by anatomic lung resection (+32507) v2.2, v2.3	212	3/200	1.5%
Thoracotomy, limited, for biopsy of lung or pleura (i.e.; open lung biopsy) (32095) v2.081	870	95/617	15.4%
Thoracotomy, with exploration (32100)	2,717	144/2,327	6.2%
Thoracotomy, major; with control of traumatic hemorrhage and/or repair of lung tear (32110)	904	146/831	17.6%
Thoracotomy, major; for postoperative complications (32120)	1,399	44/1,284	3.4%
Thoracotomy, major; with cyst(s) removal, with or without a pleural procedure (32140)	258	1/223	0.4%
Thoracotomy, major; with excision-plication of bullae, with or without any pleural procedure (32141)	636	20/580	3.4%
Thoracotomy, major; with removal of intrapleural foreign body or hematoma (32150)	1,001	71/906	7.8%
Thoracotomy with open intrapleural pneumolysis (32124) v2.3	72	4/67	6.0%
Decortication, pulmonary, total (32220)	7,983	356/7,028	5.1%
Decortication, pulmonary, partial (32225)	2,317	115/2,035	5.7%
Pleurectomy, parietal (32310)	408	13/380	3.4%
Decortication and parietal pleurectomy (32320)	1,700	76/1,565	4.9%
Thoracotomy, with biopsy of pleura (32098) (v2.081, v2.2)	127	9/90	10.0%
Removal of lung, total pneumonectomy; (32440)	3,540	189/3,251	5.8%
Removal of lung, sleeve (carinal) pneumonectomy (32442)	119	8/107	7.5%
Removal of lung, total pneumonectomy; extrapleural (32445)	572	43/529	8.1%
Removal of lung, single lobe (lobectomy) (32480)	29,390	573/26,588	2.2%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS	
		# / Eligible	Operative Mortality %
PLEURAL SPACE AND LUNG - continued			
Removal of lung, two lobes (lobectomy) (32482)	2,682	91/2,447	3.7%
Removal of lung, single segment (segmentectomy) (32484)	2,707	41/2,525	1.6%
Removal of lung, sleeve lobectomy (32486)	1,452	20/1,370	1.5%
Removal of lung, completion pneumonectomy (32488)	686	52/632	8.2%
Removal of lung, excision-plication of emphysematous lung(s) for lung volume reduction (LVRS) (32491)	387	16/358	4.5%
Resection and repair of portion of bronchus (bronchoplasty) when performed at time of lobectomy or segmentectomy (32501)	53	1/53	1.9%
Resection of apical lung tumor (e.g., Pancoast tumor), including chest wall resection, without chest wall reconstruction(s) (32503)	408	12/376	3.2%
Resection of apical lung tumor (e.g., Pancoast tumor), including chest wall resection, with chest wall reconstruction (32504)	281	7/259	2.7%
Removal of lung, wedge resection, single or multiple(32500) v2.081	4,256	131/3,517	3.7%
Extrapleural enucleation of empyema(empyemectomy) (32540) v2.081	129	5/116	4.3%
Thoracoscopy, diagnostic lungs and pleural space, with biopsy (32602) v2.081	4,675	212/3,594	5.9%
Thoracoscopy, diagnostic pericardial sac, without biopsy (32603) v2.081	23	0/15	0.0%
Thoracoscopy, surgical; with wedge resection of lung, single or multiple (32657) v2.081	17,872	363/15,118	2.4%
LUNG OTHER (v2.081, v2.2 and v2.3)			
Open closure of major bronchial fistula (32815)	412	28/382	7.3%
Thoracoplasty with closure of bronchopleural fistula (32906)	184	14/170	8.2%
Single lung transplant (32851)	1,051	49/1,034	4.7%
Single lung transplant with CPB (32852)	387	30/387	7.8%
Double lung transplant (32853)	1,651	48/1,615	3.0%
Double lung transplant with CPB (32854)	2,163	136/2,149	6.3%
MEDIASTINUM AND DIAPHRAGM (v2.081, v2.2 and v2.3)			
Thoracoscopy, diagnostic; mediastinal space, with biopsy (32606)	880	15/675	2.2%
Mediastinotomy with exploration or biopsy; cervical approach (39000)	1,112	8/253	3.2%
Mediastinotomy with exploration or biopsy; transthoracic approach (39010)	783	11/461	2.4%
Mediastinoscopy, with or without biopsy (39400)	10,528	66/1,949	3.4%
Unlisted procedure, mediastinum (39499)	567	10/251	4.0%
Unlisted procedure, diaphragm (39599)	739	12/709	1.7%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS	
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MEDIASTINUM AND DIAPHRAGM (v2.081, v2.2 and v2.3) - continued			
Thoracoscopy, surgical; with excision of mediastinal cyst, tumor, or mass (32662)	4,037	17/3,708	0.5%
Thoracoscopy, diagnostic mediastinal space, without biopsy (32605) v2.081	74	2/64	3.1%
Thoracoscopy with mediastinal and regional lymphadenectomy (+32674) v2.2, v2.3	354	0/327	0.0%
Thoracic lymphadenectomy, regional, including mediastinal and peritracheal nodes (38746)	909	4/571	0.7%
Mediastinal cyst, excision, open, Transthoracic approach (39200)	552	7/474	1.5%
Mediastinal tumor, excision, open, Transthoracic approach (39220)	2,837	23/2,555	0.9%
Thoracoscopy with resection of thymus, unilateral or bilateral (32673) v2.2, v2.3	1,459	5/1,405	0.4%
Thymectomy, transcervical approach (60520)	444	3/381	0.8%
Thymectomy, transthoracic approach (60521)	2,433	7/2,227	0.3%
Thymectomy, transthoracic approach, with radical mediastinal dissection (60522)	1,178	7/1,105	0.6%
VATS thymectomy (605XX) v2.081	402	0/360	0.0%
Diaphragm, laceration repair, any approach (39501)	151	12/146	8.2%
Repair of paraesophageal hiatus hernia, transabdominal with or without fundoplasty (39502) v2.081	1,019	17/935	1.8%
Diaphragmatic hernia repair (other than neonatal), traumatic; acute (39540)	350	6/324	1.9%
Diaphragmatic hernia repair (other than neonatal), traumatic; chronic (39541)	867	10/818	1.2%
Diaphragm Imbrication (i.e., plication) (39545)	1,474	12/1,394	0.9%
Diaphragm; resection with simple repair (e.g., primary suture) (39560)	248	5/232	2.2%
Diaphragm; resection with complex repair (e.g., prosthetic material, local muscle flap) (39561)	246	3/235	1.3%
ESOPHAGOSCOPY (v2.081, v2.2, v2.3)			
Esophagoscopy (43200)	1,134	25/519	4.8%
Esophagoscopy with biopsy (43202)	645	9/107	8.4%
Esophagoscopy with removal of foreign body (43215)	377	13/206	6.3%
Esophagoscopy with insertion of stent (43219)	809	52/510	10.2%
Esophagoscopy with balloon dilation (43220)	704	2/111	1.8%
Esophagoscopy with insertion of guide wire followed by dilation over guide wire (43226)	1,899	10/338	3.0%
Esophagoscopy with ablation of tumor (43228)	379	2/96	2.1%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS	
		# / Eligible	Operative Mortality %
ESOPHAGOSCOPY (v2.081, v2.2, v2.3) - continued			
Esophagoscopy with endoscopic ultrasound examination (EUS) (43231)	62	1/5	20.0%
Esophagoscopy with transendoscopic ultrasound-guided fine needle aspiration (43232)	26	0/4	0.0%
Upper gastrointestinal endoscopy, diagnostic (43235)	1,509	22/452	4.9%
Upper gastrointestinal endoscopy with endoscopic ultrasound examination limited to the esophagus (43237)	90	0/3	0.0%
Upper gastrointestinal endoscopy with transendoscopic ultrasound-guided FNA (43238)	43	0/5	0.0%
Upper gastrointestinal endoscopy with biopsy (43239)	2,581	3/135	2.2%
Upper gastrointestinal endoscopy with dilation of gastric outlet for obstruction (43245)	326	4/103	3.9%
Upper gastrointestinal endoscopy with directed placement of percutaneous gastrostomy tube (43246)	633	47/531	8.9%
Upper gastrointestinal endoscopy with removal of foreign body (43247)	312	6/162	3.7%
Upper gastrointestinal endoscopy with insertion of guide wire followed by dilation of esophagus (43248)	3,319	16/520	3.1%
Upper gastrointestinal endoscopy with balloon dilation of esophagus (43249)	726	3/91	3.3%
Upper gastrointestinal endoscopy with transendoscopic stent placement (43256)	624	45/402	11.2%
Upper gastrointestinal endoscopy with ablation of tumor (43258)	359	4/93	4.3%
ESOPHAGUS RESECTION (v2.081, v2.2 and v2.3)			
Transhiatal-Total esophagectomy, without thoracotomy, with cervical esophagogastrostomy (43107)	3,348	95/3,240	2.9%
Three hole-Total esophagectomy with thoracotomy; with cervical esophagogastrostomy (43112)	1,575	69/1,462	4.7%
Ivor Lewis-Partial esophagectomy, distal two-thirds, with thoracotomy and separate abdominal incision (43117)	5,117	181/4,865	3.7%
Thoracoabdominal-Partial esophagectomy, thoracoabdominal approach (43122)	492	15/460	3.3%
Minimally invasive three hole esophagectomy v2.2, v2.3	809	24/772	3.1%
Minimally invasive esophagectomy, Ivor Lewis approach	2,996	62/2,922	2.1%
Minimally invasive esophagectomy, Abdominal and neck approach	579	19/518	3.7%
Total esophagectomy without thoracotomy; with colon interposition or small intestine reconstruction (43108)	81	7/80	8.8%



STS General Thoracic Surgery Database
All Patients

Executive Summary
STS Period Ending 12/31/2016



Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
		# / Eligible	%
ESOPHAGUS RESECTION (v2.081, v2.2 and v2.3) - continued			
Total esophagectomy with thoracotomy; with colon interposition or small intestine reconstruction (43113)	71	5/67	7.5%
Partial esophagectomy, cervical, with free intestinal graft, including microvascular anastomosis (43116)	17	2/15	13.3%
Partial esophagectomy, with thoracotomy and separate abdominal incision with colon interposition or small intestine (43118)	68	4/60	6.7%
Partial esophagectomy, distal two-thirds, with thoracotomy only (43121)	119	6/107	5.6%
Partial esophagectomy, thoracoabdominal with colon interposition or small intestine (43123)	69	2/64	3.1%
Total or partial esophagectomy, without reconstruction with cervical esophagostomy (43124)	371	32/338	9.5%
Conduit revision s/p esophagectomy v2.3	39	2/37	5.4%
ESOPHAGUS OTHER PROCEDURES (v2.081, v2.2 and v2.3)			
Cricopharyngeal myotomy (43030)	156	0/118	0.0%
Diverticulectomy of hypopharynx or esophagus, with or without myotomy; cervical approach (43130)	276	6/245	2.4%
Esophagostomy, fistulization of esophagus, external; cervical approach (43352)	99	8/89	9.0%
Closure of esophagostomy or fistula; cervical approach (43420)	60	2/46	4.3%
Excision esophageal lesion with primary repair, cervical approach (43100) v2.2, v2.3	4	0/3	0.0%
Trans oral fundoplication v2.3			
Unlisted laparoscopy, esophagus (43289) v2.2, v2.3	145	1/137	0.7%
Unlisted procedure, esophagus (43499)	1,194	19/944	2.0%
Per oral endoscopic myotomy (POEM) v2.3	250	0/226	0.0%
Laparoscopy, surgical with repair of paraesophageal hernia (fundoplasty) without mesh (43281) v2.2, v2.3	4,904	36/4,427	0.8%
Laparoscopy, surgical with repair of paraesophageal hernia (fundoplasty) with mesh (43282) v2.2, v2.3	2,522	20/2,284	0.9%
Laparoscopy, surgical, esophageal lengthening procedure (Collis) (43283) Secondary Procedure code v2.2, v2.3	13	0/12	0.0%
Laparoscopy, surgical, esophagogastric fundoplasty (e.g., Nissen, Toupet procedures) (43280)	6,343	18/5,638	0.3%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
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ESOPHAGUS OTHER PROCEDURES (v2.081, v2.2 and v2.3) - continued			
Laparoscopic esophageal myotomy (Heller Myotomy, with or without fundoplication) (43279) v2.2, v2.3	3,302	6/3,056	0.2%
Thoracoscopy, surgical; with esophagomyotomy (Heller type) (32665) - v2.081	220	4/197	2.0%
Nissen fundoplasty- laparotomy (includes partial fundoplication/ wrap) (43327) v2.2, v2.3	236	2/218	0.9%
Trans thoracic Fundoplication- open thoracotomy (includes Belsey/ Nissen) (43328) v2.2, v2.3	361	4/352	1.1%
Repair, paraesophageal hiatal hernia via laparotomy without mesh (43332) v2.2, v2.3	711	10/703	1.4%
Repair, paraesophageal hiatal hernia via laparotomy with mesh (43333) v2.2, v2.3	151	2/146	1.4%
Repair, paraesophageal hiatal hernia via thoracotomy without mesh (43334) v2.2, v2.3	705	11/698	1.6%
Repair, paraesophageal hiatal hernia via thoracotomy with mesh (43335) v2.2, v2.3	168	0/165	0.0%
Repair, paraesophageal hiatal hernia via thoracoabdominal approach without mesh (43336) v2.2, v2.3	168	0/165	0.0%
Repair, paraesophageal hiatal hernia via thoracoabdominal approach with mesh (43337) v2.2, v2.3	102	3/101	3.0%
Esophageal lengthening procedure - open (Collis) Secondary Procedure code (43338) v2.2, v2.3	38	0/38	0.0%
Diverticulectomy of esophagus, with or without myotomy; thoracic approach (43135)	13	0/13	0.0%
Excision Esophageal lesion with primary repair, thoracic approach (eg: leiomyoma) (43101) v2.2, v2.3	496	9/463	1.9%
Esophagoplasty with repair of TEF, cervical approach (43305) v2.2, v2.3	265	0/254	0.0%
Esophagoplasty with repair TEF, thoracic approach (43312) v2.2, v2.3	51	5/50	10.0%
Esophagomyotomy (Heller type); thoracic approach (43331) v2.2, v2.3	101	4/98	4.1%
Esophagogastric fundoplasty (e.g., Nissen, Belsey IV, Hill procedures) (43324) v2.081	137	2/129	1.6%
Esophagogastric fundoplasty; with gastropasty (e.g., Collis) (43326) v2.081	694	3/542	0.6%
Esophagomyotomy (Heller type); thoracic approach (43331) v2.081	569	5/513	1.0%
Gastrointestinal reconstruction for previous esophagectomy with stomach (43360)	284	6/243	2.5%
Gastrointestinal reconstruction for previous esophagectomy with colon interposition or small intestine (43361)	189	2/182	1.1%
	197	8/187	4.3%



STS General Thoracic Surgery Database
All Patients



Executive Summary
STS Period Ending 12/31/2016

Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS	
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ESOPHAGUS OTHER PROCEDURES (v2.081, v2.2 and v2.3) - continued			
Ligation or stapling at gastroesophageal junction for esophageal perforation (43405)	139	12/135	8.9%
Suture of esophageal wound or injury; cervical approach (43410)	172	12/165	7.3%
Suture of esophageal wound or injury; transthoracic or transabdominal approach (43415)	910	62/852	7.3%
Free jejunum transfer with microvascular anastomosis (43496)	10	0/10	0.0%
Total gastrectomy with esophagoenterostomy (43620)	56	4/49	8.2%
Total gastrectomy with Roux-en-Y reconstruction (43621)	564	11/555	2.0%
CHEST WALL AND NECK (v2.081, v2.2 and v2.3)			
Excision tumor, soft tissue of neck or thorax; subcutaneous (21555)	238	2/71	2.8%
Excision tumor, soft tissue of neck or thorax; deep, subfascial, intramuscular (21556)	400	6/216	2.8%
Excision of rib, partial (21600)	379	5/283	1.8%
Excision first and/or cervical rib (21615)	317	0/232	0.0%
Excision first and/or cervical rib; with sympathectomy (21616)	19	0/17	0.0%
Division of scalenus anticus; without resection of cervical rib (21700)	7	0/6	0.0%
Division of scalenus anticus; with resection of cervical rib (21705)	31	0/28	0.0%
Open treatment of sternum fracture with or without skeletal fixation (21825)	94	0/72	0.0%
Hyoid myotomy and suspension (21685) secondary procedure code	1	0/1	0.0%
Removal of sternal wire(s) v2.3	3	0/2	0.0%
Unlisted procedure, neck or thorax (21899)	2,893	54/1,536	3.5%
Major reconstruction, chest wall (posttraumatic) (32820)	252	2/236	0.8%
Muscle flap, neck (15732)	38	4/32	12.5%
Muscle flap; trunk (i.e., intercostal, pectoralis or serratus muscle) (15734)	347	9/313	2.9%
Excision of chest wall tumor including ribs (19260)	930	11/795	1.4%
Excision of chest wall tumor involving ribs, with reconstruction (19271)	1,673	14/1,574	0.9%
Radical resection of tumor (e.g., malignant neoplasm), soft tissue of neck or thorax (21557)	257	6/223	2.7%
Radical resection of sternum (21630)	222	9/207	4.3%
Radical resection of sternum; with mediastinal lymphadenectomy (21632)	39	1/37	2.7%
Reconstructive repair of pectus excavatum or carinatum; open (21740)	721	2/648	0.3%
Reconstructive repair of pectus, minimally invasive approach (Nuss procedure), without thoracoscopy (21742)	110	0/81	0.0%



STS General Thoracic Surgery Database
All Patients

Executive Summary
STS Period Ending 12/31/2016



Table 2: Primary Procedures Operative Mortality, All Available Records, Jan 2002 - Dec 2016 - continued

Primary Procedure by Organ System	Incidence #	STS Operative Mortality	
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CHEST WALL AND NECK (v2.081, v2.2 and v2.3) - continued			
Reconstructive repair of pectus, minimally invasive approach (Nuss procedure), with thoracoscopy (21743)	555	0/535	0.0%
MISCELLANEOUS (v2.081, v2.2 and v2.3)			
Thoracoscopy, diagnostic pericardial sac, with biopsy (32604)	88	2/70	2.9%
Thoracoscopy, surgical; with removal of clot or foreign body from pericardial sac (32658)	83	1/70	1.4%
Thoracoscopy, surgical; with creation of pericardial window or partial resection of pericardial sac for drainage (32659)	697	52/603	8.6%
Tube pericardiostomy (33015)	91	8/60	13.3%
Pericardial window (33025)	3,256	288/2,525	11.4%
Thoracoscopy, surgical; with thoracic sympathectomy (32664)	983	1/216	0.5%
Removal substernal thyroid, cervical approach (60271)	106	0/83	0.0%
Application of wound vac (97605, 97606) v2.2, v2.3	20	0/20	0.0%
Stereotactic radiosurgery (SRS) and stereotactic body radiotherapy (SBRT) surgeon participation (32701) v2.2, v2.3			
Other Minor Procedure v2.2, v2.3	34	2/32	6.3%
Thoracoscopy, surgical; with total pericardiectomy (32660)	97	6/89	6.7%
Thoracoscopy, surgical; with excision of pericardial cyst, tumor, or mass (32661)	355	1/322	0.3%
Ligation thoracic duct (38381)	885	12/803	1.5%
Intraoperative jejunostomy (44015)	1,205	76/1,096	6.9%
Omental flap (49904)	55	8/50	16.0%
Transthoracic thyroidectomy (60270)	181	3/165	1.8%
SVC resection and reconstruction (34502)	27	0/24	0.0%
Other	6,788	190/5,002	3.8%
MISSING DATA			
[Missing data]	3,834	34/1,502	2.3%