



Patient Safety Indicator 11 (PSI 11) Postoperative Respiratory Failure Rate

June 2017

Provider-Level Indicator

Type of Score: Rate

Prepared by:

Agency for Healthcare Research and Quality

U.S. Department of Health and Human Services

www.qualityindicators.ahrq.gov

DESCRIPTION

Postoperative respiratory failure (secondary diagnosis), prolonged mechanical ventilation, or reintubation cases per 1,000 elective surgical discharges for patients ages 18 years and older. Excludes cases with principal diagnosis for acute respiratory failure; cases with secondary diagnosis for acute respiratory failure present on admission; cases in which tracheostomy is the only operating room procedure or in which tracheostomy occurs before the first operating room procedure; cases with neuromuscular disorders; cases with laryngeal, oropharyngeal or craniofacial surgery involving significant risk of airway compromise; craniofacial anomalies that had a procedure for the face, esophageal resection (ICD-9 only), lung cancer, lung transplant or degenerative neurological disorders; cases with respiratory or circulatory diseases; and obstetric discharges.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

NUMERATOR

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with either:

- any secondary ICD-9-CM diagnosis code for acute respiratory failure; or
- any secondary ICD-9-CM procedure codes for a mechanical ventilation for 96 consecutive hours or more that occurs zero or more days after the first major operating room procedure code (based on days from admission to procedure); or
- any secondary ICD-9-CM procedure codes for a mechanical ventilation for less than 96 consecutive hours (or undetermined) that occurs two or more days after the first major operating room procedure code (based on days from admission to procedure); or
- any secondary ICD-9-CM procedure codes for a reintubation that occurs one or more days after the first major operating room procedure code (based on days from admission to procedure)

Acute respiratory failure diagnosis codes for discharges on or after October 1, 2011: (ACURF2D)

51851	Acute Respiratory Failure Following Trauma and Surgery	51853	Acute And Chronic Respiratory Failure Following Trauma and Surgery
-------	--	-------	--

Acute respiratory failure diagnosis codes for discharges prior to October 1, 2011: (ACURFID)

51881	Acute Respiratory Failure	51884	Acute And Chronic Respiratory Failure
-------	---------------------------	-------	---------------------------------------

Mechanical ventilation for 96 consecutive hours or more procedure codes: (PR9672P)

9672	Continuous mechanical ventilation for 96 consecutive hrs or more
------	--

Mechanical ventilation for less than 96 consecutive hours procedure codes: (PR9670P)

9670	Continuous Mechanical Ventilation Of Unspec Duration
------	--

Mechanical ventilation for less than 96 consecutive hours procedure codes: (PR9671P)

9671	Continuous Mechanical Ventilation For Less Than 96 Consecutive Hrs
------	--

Reintubation procedure codes: (PR9604P)

9604	Insertion Of Endotracheal Tube
------	--------------------------------

DENOMINATOR

Elective surgical discharges, for patients ages 18 years and older, with any-listed ICD-9-CM procedure codes for an operating room procedure. Elective surgical discharges are defined by specific MS-DRG codes with admission type recorded as elective (ATYPE=3).

[*Appendix A – Operating Room Procedure Codes*](#)

[*Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)*](#)

DENOMINATOR EXCLUSIONS

Exclude cases:

- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for acute respiratory failure (see below)
- where the only operating room procedure is tracheostomy
- where a procedure for tracheostomy occurs before the first operating room procedure†
- with any-listed ICD-9-CM diagnosis codes for neuromuscular disorder
- with any-listed ICD-9-CM procedure codes for laryngeal or pharyngeal, nose, mouth, pharynx or facial surgery
- with any listed ICD-9-CM procedure codes involving the face and any listed ICD-9-CM diagnosis codes for craniofacial anomalies
- with any-listed ICD-9-CM procedure codes for esophageal resection
- with any-listed ICD-9-CM procedure codes for lung cancer
- any-listed ICD-9-CM diagnosis codes for degenerative neurological disorder
- with any-listed ICD-9-CM procedure codes for lung transplant
- MDC 4 (diseases/disorders of respiratory system)
- MDC 5 (diseases/disorders of circulatory system)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

† If day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available.

Tracheostomy procedure codes: (TRACHIP)

311	Temporary Tracheostomy	3129	Other Perm Tracheostomy
3121	Mediastinal Tracheostomy	3174	Revision Of Tracheostomy

Neuromuscular disorder diagnosis codes: (NEUROMD)

3570	Ac Infect Polyneuritis	35921	Myotonic Muscular Dystrophy
35800	Myasthna Grvs W/O Ac Exac	35922	Myotonia Congenita
35801	Myasthna Gravs W Ac Exac	35923	Myotonic Chondrodystrophy
3581	Myasthenia In Oth Dis	35929	Other Unspecified Myotonic Disorder
3582	Toxic Myoneural Disorder	3593	Famil Periodic Paralysis
35830	Lambert-Eaton Syndrome, Unspecified	3594	Toxic Myopathy
35831	Lambert-Eaton Syndrome In Neoplastic Disease	3595	Myopathy In Endocrin Dis
35839	Lambert-Eaton Syndrome In Other Diseases Classified Elsewhere	3596	Infl Myopathy In Oth Dis
3588	Myoneural Disorders Nec	35971	Inclusion Body Myositis
3589	Myoneural Disorders Nos	35979	Inflm/Immune Myopath Nec
3590	Cong Hered Musc Dystrophy	35981	Critical Illness Myopathy
3591	Hered Prog Musc Dystrophy	35989	Myopathies Nec
3592	Myotonic Disorders	3599	Myopathy Nos

Laryngeal, pharyngeal, nose, mouth and pharynx surgery procedure codes: (NUCRANP)

214	Resection Of Nose	2769	Oth Plastic Repari Palat
2161	Diather/Cryo Turbinectom	2771	Incision Of Uvula
2162	Turbinate Fracture	2772	Excision Of Uvula
2169	Turbinectomy Nec	2773	Repair Of Uvula
2172	Open Reduction Nasal Fx	2779	Other Uvula Operations
2199	Nasal Operation Nec	2792	Mouth Incision
2231	Radical Maxillary Antrot	2799	Oral Cavity Ops Nec
2239	Ext Maxillary Antrot Nec	280	Peritonsillar I & D
2241	Frontal Sinusotomy	284	Excision Of Tonsil Tag
2242	Frontal Sinusectomy	285	Excision Lingual Tonsil
2250	Sinusotomy Nos	2891	Incis To Remov Tonsil Fb
2251	Ethmoidotomy	2892	Excis Tonsil/Adenoid Les
2252	Spehnoidotomy	2899	Tonsil/Adenoid Ops Nec
2253	Multiple Sinus Incision	290	Pharyngotomy
2260	Sinusectomy Nos	292	Exc Branchial Cleft Cyst
2261	C-Luc Exc Max Sinus Les	293	Destruct Pharyngeal Les (no longer valid)
2262	Exc Max Sinus Lesion Nec	2931	Cricopharyngeal Myotomy (Begin 1991)
2263	Ethmoidectomy	2932	Pharyngeal Diverticulect (Begin 1991)
2264	Spenoidectomy	2933	Pharyngectomy (Begin 1991)
2271	Nasal Sinus Fistula Clos	2939	Excis/Destr Les Phar Nec (Begin 1991)
2279	Nasal Sinus Repair Nec	294	Plastic Op On Pharynx
229	Other Nasal Sinus Ops	2951	Suture Of Pharyngeal Lac
251	Destruction Tongue Les	2952	Clos Branch Cleft Fistul
252	Partial Glossectomy	2953	Clos Pharynx Fistula Nec
253	Complete Glossectomy	2954	Lysis Pharyngeal Adhes
254	Radical Glossectomy	2959	Pharyngeal Repair Nec
2559	Repair Of Tongue Nec	2991	Dilation Of Pharynx
2594	Other Glossotomy	2992	Divis Glossopharyng Nerv
2599	Tongue Operation Nec	2999	Pharyngeal Operation Nec
2621	Salivary Cyst Marsupial	3009	Other Excision Or Destruction Of Lesion Or Tissue Of Larynx
2629	Saliv Lesion Excis Nec	3021	Epiglottidectomy
2630	Sialoadenectomy Nos	3022	Vocal Cordectomy
2631	Partial Sialoadenectomy	3029	Other Partial Laryngectomy
2632	Complete Sialoadenectomy	303	Complete Laryngectomy
2641	Suture Of Saliv Gln Lac	304	Radical Laryngectomy
2642	Salivary Fistula Closure	310	Injection Of Larynx
2649	Salivary Repair Nec	313	Other Incision Of Larynx Or Trachea

2699	Salivary Operation Nec	315	Local Excision Or Destruction Of Lesion Or Tissue Of Trachea
270	Drain Face & Mouth Floor	3161	Suture Laceration Larynx
271	Incision Of Palate	3162	Closure Fistula Larynx
2731	Loc Esc Bony Palate Les	3163	Revision Laryngostomy
2732	Wide Exc Bony Palate Les	3164	Repair Laryngeal Fracture
2742	Wide Excision Of Lip Les	3169	Other Repair Of Larynx
2743	Excision Of Lip Les Nec	3171	Suture Laceration Trachea
2749	Excision Of Mouth Nec	3172	Closure Fistula Trachea
2753	Closure Of Mouth Fistula	3173	Closure Of Other Fistula Of Trachea
2754	Repair Of Cleft Lip	3175	Reconstruction Of Trachea And Construction Of Artificial Larynx
2755	Full-Thick Grft To Mouth	3179	Other Repair And Plastic Operations On Trachea
2756	Skin Graft To Mouth Nec	3191	Division Of Laryngeal Nerve
2757	Pedicle Attach To Mouth	3192	Lysis Adhesions Tracea Larynx
2759	Mouth Repari Nec	3193	Replac Laryngeal Trach Stent
2761	Suture Of Palate Lacerat	3194	Inject Local Therap Subst
2762	Cleft Palate Correction	3195	Tracheosop Fistulization
2763	Revis Cleft Palat Repair	3198	Other Operations On Larynx
2764	Insert Palatal Implant (Begin 2004)	3199	Other Operations On Trachea

Face procedure codes: (CRANI2P_PSI)

252	Partial glossectomy	7670	Reduc facial fracture
2559	Other repair and plastic operations on tongue	7671	Cl reduc malar zygo fx
2732	Wide excision or destruction of lesion or tissue of bony palate	7672	Op reduc malar zygo fx
2762	Correction of cleft palate	7673	Cl reduc maxill fx
2763	Revision of cleft palate repair	7674	Op reduc maxill fx
2769	Other plastic repair of palate	7675	Cl reduc mandibular fx
2931	Cricopharyngeal myotomy	7676	Op reduc mandibular fx
7631	Partial mandibulectomy	7677	Op reduc alveolar fx
7639	Partial ostectomy fac bone	7678	Cl reduc alveolar fx
7641	Total mandibulect syn reconst	7679	Ot open reduc facial fx
7642	Total mandibulect	7691	Bone graft to facial bone
7643	Reconstruct mandible	7692	Insert synth implan facial
7644	Total osectomy of other fac	7693	Cl reduct tm disloc
7645	Tot ostectomy fac bone	7694	Op reduct tm disloc
7646	Other reconstr oth fac bone	7695	Oth manip tm joint
7661	Cl osteoplasty mand ramus	7696	Inj therap subst tmj
7662	Op osteoplasty mand ramus	7697	Remov internal fix facial
7663	Osteoplasty mand body	7698	Facial bone operations
7664	Oth orth surg mandible	7699	Ot facial bone operat
7665	Segmen osteoplasty maxilla		
7666	Total osteoplasty maxilla		
7669	Other facial bone repair		

Craniofacial anomalies diagnosis codes: (CRANIID)

74483	Macrostomia	7483	Congenital Anomalies Of Skull And Face Bones
74484	Microstomia	7560	Tracheomalacia And Congenital Tracheal Stenosis
7449	Unspecified Anomalies Of Face And Neck		

Esophageal resection procedure codes: (PRESOPP)

4210	Esophogastomy NOS	4255	Thorac Lg Bowel Interpos
4211	Esophogastomy Cervical	4256	Thorac Esophagocolos Nec
4212	Esophogastomy Ext Pouch	4258	Thorac Interposition Nec
4219	Esophogastomy Other Ext Fist	4259	Thorac Esophag Anast Nec
424	Esophagectomy (no longer valid)	426	Stern Esophag Anast
4240	Esophagectomy NOS	4261	Stern Esophagoesophagost
4241	Partial Esophagectomy	4262	Stern Esophagogastrostom
4242	Total Esophagectomy	4263	Stern Sm Bowel Interpos
425	Thorac Esophag Anast	4264	Stern Esophagoenter Nec
4251	Thorac Esophagoesophagos	4265	Stern Lg Bowel Interpos
4252	Thorac Esophagogastrost	4266	Stern Esophagocolos Nec
4253	Thorac Sm Bowel Interpos	4268	Stern Interposition Nec
4254	Thorac Esophagoenter Nec	4269	Stern Esophag Anast Nec

Gastrectomy procedure codes: (PRESO2P)

4399	Total Gastrectomy Nec		
------	-----------------------	--	--

Lung cancer procedure codes: (LUNGCIIP)

3230	Thoracoscopic Surgery	3249	Lobectomy Of Lung Nec
3239	Oth Seg Lung Resect Nos	3250	Thoracoscopic Surgery
3241	Thoracoscopic Surgery	3259	Other Pneumonectomy Nos

Lung transplant procedure codes: (LUNGTRANSP)

3350	Lung transplantation, not otherwise specified	91	Transplant from live related donor
3351	Unilateral lung transplantation	92	Transplant from live non-related donor
3352	Bilateral lung transplantation	93	Transplant from cadaver
336	Combined heart-lung transplantation		

Degenerative neurological disorder diagnosis codes: (DGNEUID)

2900	Senile Dementia Uncomp	29410	Dementia In Oth Diseases W0 Behavral
29010	Presenile Dementia	29411	Dementia In Oth Diseases Wbehavioral Oct00-
29011	Presenile Delirium	2948	Organic Brain Synd NEC
29012	Presenile Delusion	2949	Organic Brain Synd NOS
29013	Presenile Depression	3100	Frontal Lobe Syndrome
29020	Senile Delusion	3102	Postconcussion Syndrome
29021	Senile Depressive	3108	Nonpsychot Brain Syn NEC (end 2012)
2903	Senile Delirium	31081	Psedobulbar Affect
29040	Arterioscler Dement NOS	31089	Other Specified Nonpsychotic Mental Disorder
29041	Arterioscler Delirium	3109	Nonpsychot Brain Syn NOS
29042	Arterioscler Delusion	3310	Alzheimers Disease
29043	Arterioscler Depressive	3311	Frontotemporal Dementia (end 2004)
2908	Senile Psychosis NEC	33111	Picks Disease
2909	Senile Psychot Cond NOS	33119	Other Frontotemporal Dementia
2930	Acute Delirium	3312	Senile Degenerat Brain
2931	Subacute Delirium	3316	Corticobasal Degeneration
2940	Amnestic Syndrome	33182	Dementia With Lewy Bodies
2941	Dementia In Oth Diseases	34882	Brain Death

***Acute respiratory failure diagnosis codes (exclusion only) for discharges on or after October 1, 2011:
 (ACURF3D)***

51851	Acute respiratry failure following trauma and surgery	51882	Other pulmonary insufficiency, not elsewhere classified
51853	Acute and chronc respiratry failure following trauma and surgery	51884	Acute and chronic respiratory failure
51881	Acute respiratory failure		