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)

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Neuromuscular disorder diagnosis codes: (NEUROMD)

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<td>Other Unspecified Myotonic Disorder</td>
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Laryngeal, pharyngeal, nose, mouth and pharynx surgery procedure codes: (NUCRANP)
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### Face procedure codes: (CRANI2P_PSI)

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<td>2559</td>
<td>Other repair and plastic operations on tongue</td>
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<td>2732</td>
<td>Wide excision or destruction of lesion or tissue of bony palate</td>
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<td>2762</td>
<td>Correction of cleft palate</td>
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<td>2763</td>
<td>Revision of cleft palate repair</td>
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<td>2769</td>
<td>Other plastic repair of palate</td>
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<td>Cricopharyngeal myotomy</td>
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<tr>
<td>7631</td>
<td>Partial mandibulectomy</td>
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<td>7639</td>
<td>Partial osteectomy fac bone</td>
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<td>7641</td>
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<td>7642</td>
<td>Total mandibulect</td>
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<td>Reconstruct mandible</td>
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<td>7644</td>
<td>Total osectomy of other fac</td>
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<td>7645</td>
<td>Tot osteectomy fac bone</td>
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<td>7646</td>
<td>Other reconstr oth fac bone</td>
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<td>7661</td>
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<td>7662</td>
<td>Op osteoplasty mand ramus</td>
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<td>7663</td>
<td>Osteoplasty mand body</td>
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<td>7669</td>
<td>Other facial bone repair</td>
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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  Esophagogastomy NOS  4255  Thorac Lg Bowel Interpos
4211  Esophagogastomy Cervical  4256  Thorac Esophagocolos Nec
4212  Esophagogastomy Ext Pouch  4258  Thorac Interposition Nec
4219  Esophagogastomy Other Ext Fist  4259  Thorac Esophag Anast Nec
424  Esophagectomy (no longer valid)  426  Stern Esophag Anast
4240  Esophagectomy NOS  4261  Stern Esophagoesophagostom
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 Esophagogastrostom  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: (LUNGCIP)

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: (LUNGTRANS)

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)

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

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<td>Acute and chronic respiratry failure following trauma and surgery</td>
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