Clinical Documentation Integrity Fact Sheet

Definitions for Acute Respiratory Failure and ARDS Endorsed by Sutter System

Acute respiratory failure – May be hypoxic or hypercapnic. A clinically significant decrease in PaO₂. (Most commonly, the critical threshold of PaO₂ is considered to be 60 mm Hg, which is an anchor point in the oxyhemoglobin dissociation curve) AND/OR hypercapnia (Paco₂ > 50 mmHg and pH < 7.34) reflecting either excessive CO₂ production or inadequate CO₂ elimination; Acute hypercapnic failure occurs only when the patient has concurrent acidemia, implying that the change in CO₂ was too rapid or too extreme for renal (metabolic) compensation. The pH indicates whether the hypercarbia is acute or chronic. (Murray and Nadel's Textbook of Respiratory Medicine, 5th ed., John F. Murray, MD and Jay A. Nadel, MD, 2010; The Osler Medical Handbook, 2nd ed., Kent R. Nilsson Jr. MD, and Jonathan P. Piccini, MD, 2006)

Acute Respiratory Distress Syndrome (ARDS) – a form of noncardiogenic pulmonary edema that is a result of the nonspecific response of the lung to a variety of insults. ARDS is defined as respiratory failure indicated by a requirement for mechanical ventilation and PaO₂/fraction of inspired oxygen ratio 200 or less in the appropriate clinical setting with one or more recognized risk factors. This presentation is accompanied by new, bilateral, diffuse, patchy or homogeneous pulmonary infiltrates on the chest radiograph, with no clinical evidence of heart failure, fluid overload, or chronic lung disease (pulmonary artery occlusion pressure ≤18 mm Hg) (Rosen's Emergency Medicine: Concepts and Clinical Practice 7th ed., John A. Marx MD, 2010)

Supplemental Definitions: Per The Lippincott Manual of Nursing Practice, there are three types of respiratory failure:

- **Acute Respiratory Failure**
  - Characterized by hypoxemia (low PaO₂) or (hypercapnea) (high PaCO₂) and acidemia (low pH)
  - Occurs rapidly, usually in minutes to hours to days

- **Chronic Respiratory Failure**
  - Characterized by hypoxemia or hypercapnia with a normal pH
  - Occurs over a period of months to years
  - Adds to severity of admission, morbidity and mortality
  - * Can be identified by pH =7.4 and/or CO₂ over 35 on Basic Metabolic Panel

* Source: AHIMA 2006 Audio Seminar Series, Coding Respiratory Conditions

- **Acute and chronic respiratory failure**
  - Characterized by an abrupt increase in the degree of hypoxemia or hypercapnia in patients with preexisting chronic respiratory failure
  - May occur following an acute respiratory infection or pneumonia, without obvious cause
  - Extent of deterioration best assessed by comparing the patient's present ABGs with previous ABGs

Per emedicine.medscape.com/article/167981 (updated 8/24/12)

- Any patient on supplemental oxygen with a P02< 70 or Sp02< 92% may have acute respiratory failure.

- Any patient receiving supplemental oxygen with FI02 >32% may have acute respiratory failure if p02 is < 80 or Sp02< 95%
Any patient requiring FIO2 > 40% almost certainly has acute respiratory failure regardless of the pO2 or SpO2.

Postoperative Respiratory Failure

Many physicians document “acute respiratory failure” in the postoperative period, even though it is usual and customary for the procedure. This may occur when patients are maintained on a ventilator following surgery even though it is a routine and expected aspect of the patients care inherent to the procedure performed. In other words, the respiratory failure is due to the procedure, falls within the routinely expected time frame, and does not require unusual resources, thus should not be considered a complication nor coded as an additional diagnosis.

As the CDI team reviews charts, we will not ‘code’ postoperative respiratory failure if there is not clinical support for this decision – ‘best practice’ would be to state in our notes section that “518.5X noted”. We will not use the documentation of ARF when we compute our working MS-DRG on our Reconciliation Sheet. The final coding decision will be made by the coder.

It ‘may’ be appropriate to code if:

- Physician documents it as not routinely expected or as a complication of the procedure
- Physician documents as due to another cause or due to medications or anesthesia
- Mechanical Ventilation is required for more than 48 hours after surgery or reintubation with mechanical ventilation is performed

Effective October 1, 2011, codes 518.51, Acute respiratory failure following trauma and surgery; 518.52, Other pulmonary insufficiency, not elsewhere classified; and 518.53, Acute and chronic respiratory failure following trauma and surgery, have been created to distinguish postoperative acute respiratory failure from less severe respiratory conditions such as shock lung, drowned lung, pulmonary and lung insufficiency following shock, surgery or trauma, wet lung syndrome, adult respiratory distress syndrome (following shock, surgery, or trauma) and acute idiopathic lung congestion; conditions that only require supplemental oxygen or intensified observation.

Respiratory failure is a relatively common postoperative complication that often requires mechanical ventilation for more than 48 hours after surgery or reintubation with mechanical ventilation after postoperative extubation. Risk factors may be specific to the patient's general health, location of the incision in relation to the diaphragm, or the type of anesthesia used for surgery. Trauma to the chest can lead to inadequate gas exchange causing problems with levels of oxygen and carbon dioxide. Respiratory failure results when oxygen levels in the bloodstream become too low (hypoxemia), and/or carbon dioxide is too high (hypercapnia), causing damage to tissues and organs, or when there is poor movement of air in and out of the lungs. In all cases, respiratory failure is treated with oxygen and treatment of the underlying cause of the failure. Source: AHA Coding Clinic® for ICD-9-CM, 4Q 2011, Volume 28, Number 4, Pages 123-125

Respiratory Failure in the Absence of ABG Testing

There may be instances in which a record may document “acute respiratory failure’ in the absence of ABG testing. The medical staff may chose not to perform ABG testing for a terminal patient that is DNR, for instance. While important, ABG testing should be the not be the sole determinant, a patient must also exhibit increased work of breathing – CC 2nd Qtr, 1990.

“Arterial blood gas determinations are only one of the supportive clinical findings. Other determinations must be taken into consideration before the diagnosis of respiratory failure is determined”... A patient with acute respiratory failure usually presents with increased work of breathing as typified by rapid respiratory rate, use of accessory muscles of respiration (such as intercostal muscle retraction), and possibly paradoxical breathing
and/or cyanosis.”

An oxygen saturation level of < 88% corresponds to a pO2 < 60mm Hg and a pCO2 > 50 mm Hg. Therefore, look for a corresponding oxygen saturation level in patients documented as having acute respiratory distress when ABG levels are not performed. Such a level in a patient with severe dyspnea at rest with a rapid respiratory rate and/or accessory intercostals muscle use and/or paradoxical abdominal motion may be experiencing acute respiratory failure. *Source: AHIMA 2006 Audio Seminar Series, Sepsis, slide 66

If the record documents acute respiratory failure and the patient has severe hypoxemia with an O2 Saturation < 88% AND the patient exhibits other signs of respiratory failure, such as Tachycardia, Tachypnea, Use of Accessory Muscles, Inability to speak in full sentences, and Cyanosis, it may be possible to advocate acute respiratory failure as a valid diagnosis. Use discretion as ABG testing is the “gold standard” in regards to the diagnosis of respiratory failure

How to code respiratory failure:

- Acute and chronic respiratory failure: 518.84
- Chronic respiratory failure: 518.83
- Acute respiratory failure: 518.81
- Due to trauma, surgery, or shock, 518.5X (see coding reference for all choices)

Sequencing:

- Code 518.81, Acute respiratory failure, may be assigned as a principal diagnosis when it is the condition established after study to be chiefly responsible for occasioning the admission to the hospital, and the selection is supported by the Alphabetic Index and Tabular List. However, chapter-specific coding guidelines (obstetrics, poisoning, HIV, Sepsis, newborn) that provide sequencing direction take precedence. Respiratory failure may be listed as a secondary diagnosis if it occurs after admission. (Coding Clinic 2005, 1st Qtr) Ensure sequencing advice is compliant with the most recent guidance found in the appropriate issue of Coding Clinic – see the most recent Coding Clinic for appropriate sequencing advice and examples.

What to look for:

Etiologies

- Acute respiratory failure can result from many causes: respiratory, cardiac, infectious, metabolic, hematologic, neuromuscular or trauma.
- Chronic respiratory failure occurs most frequently in those with COPD.
- Acute on chronic respiratory failure often occurs in a patient with COPD who suffers an additional insult such as a respiratory infection, pulmonary embolus, rib fractures or pneumothorax.

Lab reports

- **ABGs:** Per Coding Clinic 3Q 1988 "Respiratory failure is a condition characterized by inadequate exchange of oxygen and carbon dioxide by the lungs. The diagnosis is generally used when the arterial PaO2 falls below 60 mmHg and/or the arterial PaCO2 rises above 50 mmHg. Thus, the firm diagnosis of respiratory failure is based on measurements of blood gases." These parameters are flexible based on the chronic condition of the patient, especially those with COPD. That same Coding Clinic goes on to state "Patients with COPD have chronically lowered PaO2 and increased PaCO2; therefore the diagnosis of respiratory failure in these patients must be based upon the degree of change from the usual state of the individual and not simply on the levels of PaO2 and/or PaCO2. A drop in PaO2 equal to or greater than 10 to 15 mmHg generally indicates acute respiratory failure."

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Blood pH is also an important determinant of respiratory failure. Coding Clinic 2Q 1990 states that "...the arterial blood gas pH is also helpful in determining respiratory failure in a patient with known chronic lung disease. When arterial blood gas pH is less than 7.35, this is often associated with respiratory failure in such patients."

Signs and symptoms

- **Hypercapnia** (increased PaCO₂): Headache, somnolence, dizziness, confusion
- **Hypoxemia** (decreased PaO₂): Restlessness, agitation, dyspnea, disorientation, confusion, delirium, loss of consciousness
- **Tachypnea** initially; then when no longer able to compensate, bradypnea. Accessory muscle use
- **Asynchronous respirations**
- **Accessory muscle use**

Treatment

- **Mechanical ventilation** may be done, but it is not necessary to verify respiratory failure as a diagnosis. Coding Clinic 2Q 1990 page 21 states "...the absence of mechanical ventilation does not preclude the diagnosis of respiratory failure." (See the coding scenario below for further discussion on the coding of mechanical ventilation).

- Acute or chronic respiratory failure may be treated as follows: "Bronchodilatation with aminophylline given orally or by infusion and beta2-adrenergic agonists and anticholinergics by inhalation has assumed a prominent role in treatment of acute respiratory failure in chronic airways obstruction" per Harrison's.

- Some beta2-adrenergic agonists that might be used are:
  - Albuterol (Proventil, Ventolin),
  - Bitolterol mesylate (Tornalate)
  - Ipratropium bromide (Atrovent)
  - Isotherine hydrochloride (Bronkosol)
  - Iositherine mesylate (Bronkometer)
  - Isoproterenol sulfate (Medihaler- Iso)
  - Metaproterenol sulfate (Alupent, Metarel)
  - Pirbuterol acetate (Maxair), Salmeterol (Serevent)
  - Terbutaline sulfate (Brethaire, Brethine, Bricanyl)

Coding scenario:

**Question:** While mechanical ventilation does not need to be done to prove respiratory failure, it is appropriate to code it. How does one verify that mechanical ventilation was done? When mechanical ventilation sheets are used to record a patient receiving CPAP, what procedure code should be used?

**Answer:** Looking for special forms denoting mechanical ventilation can be an excellent way to discover that mechanical ventilation has been done. Under most circumstances mechanical ventilation codes to 96. 7X. However, these codes are only used if there is intubation. Review of section 96.7 show that the first Includes note is for endotracheal respiratory assistance. If there is no intubation (meaning treatment was given through a mask, nasal catheter or nasal cannula) codes from 96. 7X do not apply. Treatments given by methods other than intubation can be looked for in the coding index. They are also listed in important Excludes notes under 96.7. The following are excluded:

CPAP :.................................................................(93.90)
IPPB ....................................................................................(93.91)
That by face mask, nasal cannula or catheter ................. (93.90-93.99)

Endotracheal tube insertion (96.04) is also to be coded when mechanical ventilation codes are used. (Source: ICD-9-CM under Section 96.7, and Coding Clinic 49 1992)