

RESPIRATORY FAILURE INFORMATION FOR THE PHYSICIAN ADVISOR

DEFINITIONS

Respiratory failure is the inability of the respiratory system to meet the oxygenation, ventilation, or metabolic requirements of the patient.

Causes of respiratory failure are varied - any underlying condition/process/trauma that interferes with oxygenation or ventilation can result in respiratory failure.

Examples include:

- neuromuscular (e.g., MS, ALS, Guillain-Barre syndrome)

- CNS (e.g., stroke, centrally acting medications)
- upper airway obstruction (e.g., OSA, epiglottitis, vocal cord paralysis or trauma)
- lung parenchymal disease (e.g., asthma, bilateral pneumonia, bronchiolitis, radiation injury)
- thorax and pleura (e.g., pleural effusion, chest wall trauma)
- cardiovascular (e.g., cardiogenic pulmonary edema, acute heart failure)

RESPIRATORY FAILURE CAN BE SUBCLASSIFIED BASED ON ACUITY AND TYPES ACUITY

- **Acute** respiratory failure develops over minutes to hours and is life threatening. Serum pH is often affected without resulting metabolic compensation.
- **Chronic** respiratory failure develops over days (months) or longer. It is often the result of a chronic illness, COPD or ALS, for example. Metabolic compensation occurs, and serum pH is normal. Chronic oxygen requirements are common.

- **Acute on chronic** respiratory failure is an acute condition with acute respiratory distress superimposed on underlying chronic respiratory failure.

TYPE

There are 2 types of respiratory failure and they can be found concomitantly:

- **Type 1** – hypoxemic respiratory failure
- **Type 2** – hypercapnic respiratory failure

CLINICAL SIGNS AND SYMPTOMS

The classic definition of acute respiratory failure is based on identification of hypoxemia or hypercapnia (or both).

- Acute **hypoxemic** respiratory failure is defined as a PaO₂ <60 mmHg acutely and in the appropriate clinical context
- Acute **hypercapnic** respiratory failure is defined as a PaCO₂ >50 mmHg¹ with pH < 7.35 acutely and in the appropriate clinical context

Acute on chronic can be hypoxemic or hypercapnic or both

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- Acute on chronic hypoxic respiratory failure is defined as $PO_2 \leq 10$ mmHg from baseline
- Acute on chronic hypercapnic respiratory failure is defined as $PaCO_2 >10$ mmHg above the patient's baseline and $pH < 7.352$

Pulse oximetry can be affected by pH and the presence of fetal, carboxy-, and met- hemoglobin, so it should be interpreted with caution. Under typical circumstances, an oxygen saturation of $\leq 90\%$ on room air is considered hypoxemia (O_2 sat of 91% correlates with PO_2 of 60 mmHg).

Clinical indicators of respiratory distress supporting the diagnosis of acute respiratory failure should be present **and should be documented** in the medical record such as: tachypnea, bradypnea, hypopnea, gasping, dyspnea, wheezing, decreased

or absent breath sounds, cyanosis, use of accessory muscles, retractions, paradoxical respiratory movements, nasal flaring, inability to talk in full sentences, appearance of distress or apprehension, altered mental status, and diaphoresis.

Acute on chronic respiratory failure can have a similar presentation and the clinician should take care to identify the underlying chronic condition as well as the superimposed acute respiratory failure.

Other clinical indicators include endotracheal intubation, noninvasive positive pressure ventilation (e.g., CPAP, BiPAP), and high flow oxygen ($\geq 5-6$ LPM).

BEST PRACTICE DOCUMENTATION

- Should include physical signs/symptoms of respiratory distress, clinical data such as ABG, pulse oximetry or capnography readings, and treatment
- Proper documentation of respiratory failure should be as specific as possible: acute vs chronic vs acute on chronic; hypoxic or hypercapnic (or both)

- Low oxygen level which does not fall below the threshold for acute hypoxic respiratory failure is characterized as hypoxemia
- Linkage to etiology is best practice, when possible
- Respiratory failure should be indicated if present on admission (POA status)
- Acute respiratory failure that is treated in the ED with clinical improvement should still be documented in the H&P, progress notes and discharge summary (Evolve, Resolve, Remove, Recap).
- Acute Respiratory Distress Syndrome (ARDS) is a distinct clinical entity and, coding-wise, incorporates acute respiratory failure
- Respiratory distress and respiratory insufficiency are considered nonspecific and do not code to respiratory failure
- Acute respiratory failure treated in the ED should be documented in the H&P/progress notes. May document as "improving", "resolved", if applicable.

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METRICS AND DOCUMENTATION

There are multiple codes for different types of respiratory failure

Type of respiratory failure	ICD-10-CM Code
Acute	J96.0-
Chronic	J96.1-
Acute and chronic combined	J96.2-
Unspecified	J96.9-

- Acute, acute on chronic, and unspecified respiratory failure serve as MCCs for other unrelated MSDRGs.
- Chronic respiratory failure serves as a CC for other unrelated MSDRGs.

Important additional documentation considerations:

- Respiratory failure does not map into the HCC system
- Overaggressive diagnosis of acute respiratory failure may result in clinical validation queries or denials. Patients requiring low flow oxygen (i.e., <5-6 LPM) can be documented and diagnosed as "hypoxemia."
- Nighttime oxygen use alone is not diagnostic of chronic respiratory failure as sleep related breathing disorders can be present with or without chronic respiratory failure
- "Airway protection" is intubation in a patient who is able to ventilate and oxygenate but unable to physically protect their airway from aspiration of fluids or encroachment by tissue or foreign body. It is not acute respiratory failure. Airway protection is uncommon. If a patient is intubated for hypoventilation, there is acute respiratory failure.
- Conversely, if there is significant hypoxemia or hypercapnia, acute respiratory failure should not be documented as "airway protection."
- Respiratory failure that occurs in the postoperative period requires special consideration since postprocedural respiratory failure is considered a complication and is included on the PSI 90 indicator. See Postprocedural Respiratory Failure materials (yet to be released) for further details.

	MDC 4 Diseases & Disorders of the Respiratory System
MS-DRG	189
RW	1.2353
GLOS	3.8
Principal diagnoses	Hypostatic pneumonia, unspecified organism, Pulmonary edema due to chemicals, gases, fumes and vapors, Acute pulmonary edema, Chronic pulmonary edema, Acute pulmonary insufficiency following thoracic surgery, Acute pulmonary insufficiency following nonthoracic surgery, Chronic pulmonary insufficiency following surgery, Acute postprocedural respiratory failure, Acute and chronic postprocedural respiratory failure, Acute respiratory failure, unspecified whether with hypoxia or hypercapnia, Acute respiratory failure with hypoxia, Acute respiratory failure with hypercapnia, Chronic respiratory failure, unspecified whether with hypoxia or hypercapnia, Chronic respiratory failure with hypoxia, Chronic respiratory failure with hypercapnia, Acute and chronic respiratory failure, unspecified whether with hypoxia or hypercapnia, Acute and chronic respiratory failure with hypoxia, Acute and chronic respiratory failure with hypercapnia, Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia, Respiratory failure, unspecified with hypoxia, Respiratory failure, unspecified with hypercapnia

MS-DRG=Medicare Severity Diagnosis Related Group; CC=Comorbid condition or complication; MCC=Major CC; SOI=Severity of Illness; RW=Relative Weight; PD=Principal Diagnosis; GLOS=Geometric Length of Stay All DRG metrics from 2019 data

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SAMPLE QUERIES

1. Acute Respiratory Failure Query:

Clinical scenario:

Patient presented to the ED with heroin overdose and was noted to be apneic and hypoxic. Treatment in the ED included resuscitation with bag-mask ventilation prior to administration of naloxone. Normal respiratory rate and oxygenation were unable to be maintained and patient required a naloxone drip. The admitting provider documented respiratory insufficiency in the H&P.

Dear Provider:

Patient Name: ----- MRN: ----- Encounter: -----

The following clinical indicators were noted in this patient's medical record:

[Vital signs; Symptoms (apnea, hypopnea, dyspnea, retractions, use of accessory muscles, etc.); Laboratory studies, e.g. ABG or pulse ox readings; Consultant impression; treatment; etc.]
with reference document specification (e.g., H&P from 1/1/21)

Based on these clinical indicators and your professional judgment, please document in the medical record whether you believe any of the following conditions are present:

- Acute respiratory failure (specify type – hypoxic, hypercapnic, or combined hypoxic and hypercapnic)
- Hypoxia
- Respiratory arrest
- Unable to determine
- Other (specify)

Thank you for your prompt documentation clarification. If you have any questions, please contact me.

N.B. to PAs: Don't offer up "airway protection" as an option, unless the patient did not need oxygenation or ventilation post-intubation.

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2. Clinical Validation of Acute Respiratory Failure Query

Dear Provider:

Patient Name: ----- MRN: ----- Encounter: -----

You documented an impression of acute respiratory failure on this patient (insert reference document specification, e.g., in the H&P on 2/1/21).

[Insert here the lack of clinical indicators: e.g., no dyspnea, normal oxygen saturation, normal respiratory rate]

Based on these clinical indicators and your professional judgment, please document in the medical record whether you believe the diagnosis of acute respiratory failure is:

- Validated (please give your clinical support)
- Ruled out
- Unable to determine
- Other diagnosis (specify)

Thank you for your prompt documentation clarification. If you have any questions, please contact me.

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