Challenges in Clinical Documentation Integrity

Literature Definitions and Clinical Validity

1. Acute Respiratory Failure
2. Acute Encephalopathy
3. Sepsis

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- Board Certified in Emergency Medicine
- Board Certified in Internal Medicine
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Disappearing Diagnoses

Conditions presenting to the emergency department in extremis, that are intervened upon by the emergency physician such that by the time the inpatient order is written, if not duly recorded, they may be lost.

- Acute respiratory failure
  - Heart failure
  - COPD
  - Asthma
- Encephalopathy
- Sepsis
- Ventricular fibrillation

Review new ICU admissions for conditions not captured by the hospitalist or the emergency physician.

Clinical Conditions – with critical risk adjustment impact

Acute Respiratory Failure
Acute Respiratory Failure

• There is no literature definition of acute respiratory failure –
  • There is, however, abundant literature about how to manage it and its underlying cause.

CDIMD definition:

• Requirements for establishing acute respiratory failure
  1. Documented hypoxia (or hypercapnea)
  2. Potentially life-threatening circumstance (clinical judgment)
  3. Immediate action required

Acute Hypoxemic Respiratory Failure

1. Confirm Hypoxia
   • On room air (RA)
     By arterial blood gas (ABG)
     Hypoxia = PaO₂ < 60 mmHg, SaO₂ < 88%
     By peripheral oxygen saturation
     Hypoxia = SpO₂ ≤ 90%
   • On supplemental oxygen
     \( P/F \) ratio Divide \( \text{PaO}_2 \) (arterial) by \( \text{FiO}_2 \)
     60 (lowest acceptable) / 0.21 (room air) = 285
     Hypoxia = quotient ≤ 285
     • Translating SpO₂ to PaO₂ to follow

2. Life-Threatening Event
   - Mechanical ventilation, or
   - BiPAP (non-invasive assistance), or
   - High-flow \( \text{O}_2 \), or
   - Aggressive respiratory therapy, or
   - Frequent monitoring, usually ICU or ER
   Source: Coding Clinic, 2nd Quarter 1990, pp 20, 21

3. Immediate Action –
   Respiratory assistance or monitoring
   - Mechanical ventilation, or
   - BiPAP (non-invasive assistance), or
   - High-flow \( \text{O}_2 \), or
   - Aggressive respiratory therapy, or
   - Frequent monitoring, usually ICU or ER
   \( \text{SpO}_2 \) consistently ≤ 90%
   If not an acute life-threatening state, requiring acute monitoring or intervention, document as hypoxemia only.
SpO₂ and PaO₂ Equivalency

<table>
<thead>
<tr>
<th>Oximetry</th>
<th>Blood gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>SpO₂ (%)</td>
<td>PaO₂ (mmHg)</td>
</tr>
<tr>
<td>80</td>
<td>44</td>
</tr>
<tr>
<td>81</td>
<td>45</td>
</tr>
<tr>
<td>82</td>
<td>46</td>
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<td>83</td>
<td>47</td>
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<td>84</td>
<td>49</td>
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<td>86</td>
<td>52</td>
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<td>87</td>
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<td>89</td>
<td>57</td>
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<td>90</td>
<td>60</td>
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<td>62</td>
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<td>92</td>
<td>65</td>
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<td>93</td>
<td>69</td>
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<tr>
<td>94</td>
<td>73</td>
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<tr>
<td>95</td>
<td>79</td>
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<td>96</td>
<td>86</td>
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<td>97</td>
<td>98</td>
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<tr>
<td>98</td>
<td>112</td>
</tr>
<tr>
<td>99</td>
<td>145</td>
</tr>
</tbody>
</table>

Oxygen Delivery

<table>
<thead>
<tr>
<th>Oxygen Delivery and FiO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
</tr>
<tr>
<td>Room air</td>
</tr>
<tr>
<td>Nasal cannula</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Nasopharyngeal catheter</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Face mask</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Face mask with reservoir</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Face mask with reservoir</td>
</tr>
</tbody>
</table>

www.tinyurl.com/OxygenCharts

Acute Hypoxemic Respiratory Failure

Means of Oxygenation

<table>
<thead>
<tr>
<th>Determinant of Oxygenation</th>
<th>Room Air</th>
<th>Supplemental O₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood gas</td>
<td>PaO₂ &lt; 60 mm Hg</td>
<td>Divide PaO₂ by FiO₂ &lt; 285 = hypoxia</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>SpO₂ &lt; 90% corresponds to PaO₂ &lt; 60</td>
<td>Convert SpO₂ to PaO₂, Divide PaO₂ by FiO₂ &lt; 285 = hypoxia</td>
</tr>
</tbody>
</table>

Example

Saturation, SpO₂: 90%
PaO₂ equiv. 60
Oxygen delivery: BNC
Rate: 6 L/min
FiO₂: 44% (0.44)

PaO₂ divided by FiO₂
60 / 0.44 = 136
136 is < 285
Hypoxemia confirmed
ICU Admission: Heart Failure

Hospitalist’s H&P:

Patient presented to the emergency department in acute heart failure. On admission:

- **120/75, 85, 20, 90% on 6 L/min BNC**
- In the ED had **UOP: 1 L**

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Emergency Physician’s Note

**CC:** SOB

**Hx:** 65 yo M, SOB, 2 d, increasing. Unable to lay flat or walk across the room. Occasionally sweaty. No CP, N/V. 
**ROS:** No F/C, cough. No HA.

**PHH:** History of HTN
- History of Diabetes, Type 2
- History of ASCVD

**PE:** 180/120, 95, 28, SpO2 80% (RA), 97.8°F. 
**General:** WD WN M, alert, moderate respiratory distress, increased work of breathing. 
**HEENT:** JVD to angle of jaw. 
**CV:** HRR. 
**Lungs:** crackles to mid-lung. Increase RR and effort. 
**Extr:** 2+ pitting edema.

**Impression:**
- CHF
- HTN

**Treatment:**
- NTG 0, 10 L/min via face mask
- Lasix

**Reassessment:**
- **120/75, 85, 20, 90% on 6 L BNC**
- **UOP: 1 L**

**Plan:** Admit to Medicine Service
Acute Respiratory Failure

- CDI checklist – looking for red flags
  - Clinical scenario: Heart failure, pneumonia, asthma, COPD
  - Vital signs:
    - Peripheral oxygen saturation: < 90% RA;
      - If on supplemental O₂,
    - Tachycardia, tachypnea
  - Appearance:
    - “Respiratory distress”
    - “Increased work of breathing”
    - “NAD” (no acute distress) is disqualifying, may be subject to amendment if other evidence warrants query (sometimes they say it without thinking)
  - Blood gas:
    - PaO₂ < 60 mmHg (acute hypoxemic respiratory failure)
    - PaCO₂ > 50 mmHg (acute hypercapnic respiratory failure)
  - Query:
    - Abnormal Respiration Query

Example

<table>
<thead>
<tr>
<th>Saturation, SpO₂:</th>
<th>90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaO₂ equiv.</td>
<td>60</td>
</tr>
<tr>
<td>Oxygen delivery:</td>
<td>BNC</td>
</tr>
<tr>
<td>Rate:</td>
<td>6 L/min</td>
</tr>
<tr>
<td>FiO₂:</td>
<td>44% (0.44)</td>
</tr>
</tbody>
</table>

PaO₂ divided by FiO₂
60 / 0.44 = 136
136 is < 285
Hypoxemia confirmed

Clinical Example: Red Flags for ARF

CC: SOB

Hx: 65 yo M, SOB, 2 d, increasing. Unable to lay flat or walk across the room. Occasionally sweaty. No CP, N/V.

ROS: No F/C, cough. No HA.

PMH: History of HTN
   History of Diabetes, Type
   History of ASCVD

PE: 180/120, 95, 28, SpO₂ 80% (RA), 97.8°F.
   General: WD WN M, alert, moderate respiratory distress, increased work of breathing.
   HEENT: JVD to angle of jaw.
   CV: HRR.
   Lungs: crackles to mid-lung. Increase RR and effort.
   Extr: 2+ pitting edema.

Impression: CHF
   HTN

Reassessment: 120/75, 85, 20, 90% on 6 L/min BNC
   UOP: 1 L

Plan: Admit to Medicine Service

Reassessment: 120/75, 85, 20, 90% on 6 L/min BNC
   UOP: 1 L

Plan: Admit to Medicine Service

Recommendation: Hospitalists, include description of the patient on arrival to the ED.
  - Supports medical necessity for level of care
Acute Systolic HF & ARF: Facility Impact

- Acute respiratory failure, if present in the setting of HF, is always treated.
- Recognizing it as a distinct condition, naming it, and documenting it has tremendous impact on facility reimbursement.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Description</th>
<th>RW</th>
<th>Reimb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDx: Acute systolic heart failure</td>
<td>Heart Failure &amp; Shock w/o CC/ MCC</td>
<td>0.6853</td>
<td>$4,088</td>
</tr>
<tr>
<td>SDx: HTN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDx: Acute systolic heart failure</td>
<td>Heart Failure &amp; Shock w MCC</td>
<td>1.4943</td>
<td>$8,915</td>
</tr>
<tr>
<td>SDx: Acute respiratory failure</td>
<td></td>
<td></td>
<td>+ $4,827</td>
</tr>
<tr>
<td>HTN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Acute Systolic HF & ARF: Physician Impact

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>HCC #</th>
<th>HCC RW*</th>
<th>MS DRG CC/MCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDx I50.21</td>
<td>Acute systolic heart failure</td>
<td>85</td>
<td>0.323</td>
<td>N/A</td>
</tr>
<tr>
<td>SDx I10</td>
<td>Essential (primary) hypertension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total HCC Risk Adjustment Factor</td>
<td></td>
<td></td>
<td></td>
<td>0.323</td>
</tr>
<tr>
<td>MS-DRG 293 HF w/o CC/MCC</td>
<td>Hospital Reimbursement</td>
<td></td>
<td></td>
<td>$4,088</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>HCC #</th>
<th>HCC RW</th>
<th>MS DRG CC/MCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDx I50.21</td>
<td>Acute systolic heart failure</td>
<td>85</td>
<td>0.323</td>
<td>N/A</td>
</tr>
<tr>
<td>SDx I10</td>
<td>Acute respiratory failure</td>
<td>84</td>
<td>0.302</td>
<td>MCC</td>
</tr>
<tr>
<td>SDx I10</td>
<td>Essential (primary) hypertension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total HCC Risk Adjustment Factor</td>
<td></td>
<td></td>
<td></td>
<td>0.625</td>
</tr>
<tr>
<td>MS-DRG 340 HF w/ MCC</td>
<td>Hospital Reimbursement</td>
<td></td>
<td></td>
<td>$8,915</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+ $4,827</td>
</tr>
</tbody>
</table>

* HCC RW for aged. There are separate HCC RWs for Medicare+Medicaid and institutionalized (nursing home) patients.
Acute Hypercapnic Respiratory Failure

**Hypercapnic respiratory failure**

- Normal PaCO\(_2\) = 40
- Hypercapnea classically defined as PaCO\(_2\) > 45-50
  - *Coding Clinic* states PaCO\(_2\) > 50
- pH value dependent upon chronicity and renal effects
  - *Coding Clinic* states pH < 7.33–7.35; however, this applies only to acute respiratory failure
  - If pH > 7.33–7.35, consider chronic respiratory failure

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**Clinical Validation: The Next Level of CDI**

AHIMA Practice Brief, July 2016

In an nutshell: Clinical validity is the responsibility of CDS, not the coders. Clinical validity queries need to be resolved while the patient is hospitalized; or, if identified by coders, referred to CDS for resolution.

Clinical validation is the process of CDI before the record goes to coding.
CDI: Reliability of Diagnosis
Acute Respiratory Failure

Clinical Validity: Growing aspect of RAC scrutiny, is the responsibility of CDS, before final coding.

Clinical Example: COPD & Respiratory Failure

<table>
<thead>
<tr>
<th>D/C Summary</th>
<th>Impression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Marked exacerbation of COPD</td>
</tr>
<tr>
<td></td>
<td>2. Acute on chronic respiratory failure</td>
</tr>
<tr>
<td></td>
<td>(with respiratory failure being the MCC)</td>
</tr>
</tbody>
</table>

Clinical data
- Room air oxygen saturation 90%
- Had not been on supplemental home oxygen (i.e., did not have chronic respiratory failure), not discharged on home oxygen (i.e., still doesn’t have chronic respiratory failure)
- No ABG is identified

The clinical validity is questionable. Actually, meets criteria for neither acute nor chronic respiratory failure.

Billed as: DRG 190 – COPD W/MCC

<table>
<thead>
<tr>
<th>Relative Weight</th>
<th>GLOS</th>
<th>SOI</th>
<th>ROM</th>
<th>Reimb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1743</td>
<td>4.8</td>
<td>3</td>
<td>2</td>
<td>$9,563</td>
</tr>
</tbody>
</table>

Corrected to: DRG 192 – COPD W/O CC/MCC

<table>
<thead>
<tr>
<th>Relative Weight</th>
<th>GLOS</th>
<th>SOI</th>
<th>ROM</th>
<th>Reimb</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7190</td>
<td>2.8</td>
<td>1</td>
<td>1</td>
<td>$6,121</td>
</tr>
</tbody>
</table>

Clinical Validity: Growing aspect of RAC scrutiny, is the responsibility of CDS, before final coding.
Admitting H&P: Reliability – Respiratory Failure

HISTORY OF PRESENT ILLNESS: This patient is a 64-year-old white married male who comes in with a chief complaint of severe shortness of breath. He is having [loss of coughing in spams]. He can't stop coughing, he says. He has been running a low grade fever. He is having difficulty expectorating his sputum. He is very short of breath. He is a smoker and he continues to smoke at least a pack a day, if not more. We last saw him in the office in 9/04 and again, he was still smoking. He is known with chronic obstructive pulmonary disease. He does have some sleep apnea. He has chronic bronchitis.

PHYSICAL EXAMINATION: the patient is a well developed, well nourished very pleasant male, who appears in no acute distress, but who appears short of breath. Upon arrival to our emergency room, his blood pressure was found to be 184/50, pulse 124 per minute, regular respiration 34 per minute, temperature 97.8. C9 SATs were 97% on room air. His chest x-ray shows and emphysematous chest, increased markings with a possible infiltrate in the right lung base consistent with pneumonia. Pupils equal, round and reactive to light and accommodation.

IMPRESSION:
1. Acute right lower lobe pneumonitis.
2. Chronic obstructive pulmonary disease with acute and chronic bronchitis and acute exacerbation of such with acute respiratory failure.
3. Sepsis disorder.
4. Arteriosclerotic heart disease with a history cardiac arrhythmias in the past.

Clinical Conditions – with critical risk adjustment impact

Postoperative Respiratory Failure
Discharge summary:

On 5/3/2012, the patient underwent Redo MVR. Patient was extubated within 24 hours postoperatively. Patient’s chest tubes and temporary pacing wires were removed without difficulty. Patient has been placed on Coumadin for his mitral valve prosthesis. Patient is to remain on Coumadin for six weeks with an INR goal of 2.0–3.0. Patient has been instructed to have his INR checked 2x a week, and follow up with his cardiologist to determine his current dose. Patient has had an otherwise uneventful postoperative course and is stable for discharge home.

Reliability – Complications
Postop “Respiratory Failure” After MVR

Immediate postop note:
- Cardiogenic Shock on Epinephrine
- Cardiac Shock on Epinephrine
- Post op Acute Respiratory Failure
- Post op Acute Hypox Respir Failure (Post op)
- New Sx Shortness of Breath
- Cardiac hemorrhage
- New Sx Shortness of Breath

- Note that “shock” and “respiratory failure” are documented.
- If coded, are complications to the surgeon.
- CDI must ascertain if the MDs intended for these to be coded as complications or, if expected/integral to the procedure.

Compliance Issues With Postoperative Respiratory Failure

- Many physicians document “acute respiratory failure” in the postoperative period, even though it is usual and customary for the procedure
  - Helps justify their E/M billing level
  - Consequently, coders have to query the physician to determine if the code should be added or not

- Appropriate to add ARF if the physician documents it as:
  - Not routinely expected or as a complication of the procedure
  - Due to another cause or to medications or anesthesia
Differentiating Post-Operative Respiratory Failure due to Surgery or Another Condition

- **Acute post-procedural respiratory failure** codes (J95...) always as a complication (PSI 90, #11)

- **Acute respiratory failure due to (a specified condition)** is not a complication of surgery.
  - If due to a specific condition other than the surgery, name as “due to” that condition
  - E.g., “Respiratory failure due to morbid obesity” or “COPD,” etc.

  - When hypoxemic or hypercapneic respiratory failure is present, document its underlying cause (e.g., ARDS, exacerbations of COPD, Pickwickian Syndrome, or status asthmaticus, etc.)

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Clinical Conditions – with critical risk adjustment impact

Postoperative Pulmonary Insufficiency
Differentiating Post-Operative Respiratory Failure and Post-Operative Pulmonary Insufficiency

<table>
<thead>
<tr>
<th>Code</th>
<th>ICD-10-CM Title</th>
<th>HCCF</th>
<th>HCC Name</th>
<th>HCC RN Medicare</th>
<th>HCC RN Medicaid</th>
<th>HCC RN Instud</th>
<th>AHRO PSI</th>
<th>MS-DAGS Cobcc</th>
<th>APR-DRG SO1</th>
<th>APR-DRG ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>J64.021</td>
<td>Acute postprocedural respiratory failure</td>
<td>84</td>
<td>Cardio-Respiratory Failure &amp; Shock</td>
<td>0.302</td>
<td>0.471</td>
<td>0.207</td>
<td>119R</td>
<td>MCC</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>J65.622</td>
<td>Acute and chronic postprocedural respiratory failure</td>
<td>84</td>
<td>Cardio-Respiratory Failure &amp; Shock</td>
<td>0.302</td>
<td>0.471</td>
<td>0.207</td>
<td>119R</td>
<td>MCC</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>J66.1</td>
<td>Acute pulmonary insufficiency following thoracic surgery</td>
<td>84</td>
<td>Cardio-Respiratory Failure &amp; Shock</td>
<td>0.302</td>
<td>0.471</td>
<td>0.207</td>
<td>MCC</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>J66.2</td>
<td>Acute pulmonary insufficiency following non-thoracic surgery</td>
<td>84</td>
<td>Cardio-Respiratory Failure &amp; Shock</td>
<td>0.302</td>
<td>0.471</td>
<td>0.207</td>
<td>MCC</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

- **Acute post-procedural respiratory failure** codes **always** as a complication (PSI 90, #11)
- **Acute respiratory failure due to (a specified condition)** is **not** a complication of surgery.
  - E.g., “Respiratory failure due to morbid obesity” or “COPD,” etc.

**Postoperative pulmonary insufficiency:**
- “Conditions that only require supplemental oxygen or intensified observation”
- Should have documentation of hypoxemia or a severe lung disease or other convincing reason for additional observation
  - [Coding Clinic, 4th Quarter 2011, pp 123-125](#)
  - Not a complication of surgery.

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**Postoperative Pulmonary Insufficiency**

- “Conditions that only require supplemental oxygen or intensified observation”
- Intervention(s) at a time in the post-operative course when routine patients do not require them:
  - Supplemental oxygen
  - Bronchodilator therapy
  - (Beyond the routine use of incentive spirometry)
Acute Respiratory Failure During Hospitalization

Question:
- The patient presented to the Emergency Department (ED) in **full cardiac arrest** and respiratory failure due to an acute myocardial infarction. He was resuscitated, intubated and mechanically ventilated. The patient was admitted to the ICU but expired. The ED physician documented **acute respiratory failure**. However, the attending physician did not document acute respiratory failure in the health record. Is acute respiratory failure a codeable secondary diagnosis based on the ED physician’s documentation of this condition?

Answer:
- Yes, code 518.81 [ICD-10-CM: J96], **Acute respiratory failure**, should be assigned based on the ED physician’s diagnosis, as long as there is no other conflicting information in the health record. Whenever there is any question as to whether acute respiratory failure is a valid diagnosis, query the provider.

(Coding Clinic, 3rd Quarter 2012, p 22)

Interpretation: Resuscitation from cardiac arrest and mechanical ventilation allows addition of acute respiratory failure. Failure to resuscitate from cardiac arrest does not.

**Acute respiratory failure** and **respiratory arrest** are not the same.

Respiratory Failure vs. Arrest (Tables)

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>HCC #</th>
<th>HCC RW Aged</th>
<th>MS-DRG CC/MCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>J96.00</td>
<td>Acute respiratory failure, unspecified whether with hypoxia or hypercapnea</td>
<td>84</td>
<td>0.302</td>
<td>MCC</td>
</tr>
<tr>
<td>J96.01</td>
<td>Acute respiratory failure with hypoxia</td>
<td>84</td>
<td>0.302</td>
<td>MCC</td>
</tr>
<tr>
<td>J96.02</td>
<td>Acute respiratory failure with hypercapnea</td>
<td>84</td>
<td>0.302</td>
<td>MCC</td>
</tr>
<tr>
<td>R09.2</td>
<td>Respiratory arrest</td>
<td>83</td>
<td>0.658</td>
<td>MCC</td>
</tr>
</tbody>
</table>

Three reasons to intubate: 1) acute respiratory failure, 2) respiratory arrest, 3) airway protection.
Disappearing Diagnoses

Conditions presenting to the emergency department in extremis, that are intervened upon by the emergency physician such that by the time the inpatient order is written, if not duly recorded, they may be lost.

- Acute respiratory failure
  - Heart failure
  - COPD
  - Asthma
- Altered Mental Status & Encephalopathy
- Sepsis

Clinical Conditions – with critical risk adjustment impact

Altered Mental Status

Manifestation of an underlying problem
Manifestation: Altered Mental Status

- AMS: non-specific functional observation
  - Provides no information about how the mental status is altered
  - Provides no information about how it came to be altered
- Specific manifestation of AMS
  - Delirium – poor ability to focus, sustain attention; misperceptions of sensory stimuli
  - Psychosis – loss from reality – delusions, hallucinations
  - Somnolence – drowsiness
  - Stupor – deep sleep or similar unresponsiveness
  - Coma = unconscious
- The manifestation is due to a specific underlying brain pathology (e.g. an encephalopathy, stroke, etc.)

| M | Manifestation – Presenting Symptoms  
  | e.g., confusion, agitation, delirium, dementia, psychosis, stupor, coma.  
  | [Altered mental status and unresponsive do not have codes that add RW] |
|---|---|
| U | Underlying Cause  
  | Cerebral edema, stroke, Alzheimer’s disease, encephalopathy, etc. |
| S | Severity or Specificity  
  | Metabolic encephalopathy due to hypoglycemia in the setting of diabetes, septic encephalopathy, uremic encephalopathy; acute/chronic |
| I | Instigating or precipitating causes  
  | Indwelling Foley cath & UTI, insulin with no meal, ESRD, drug overdose |
| C | Consequences or Complications  
  | Acute respiratory failure, seizure (status epilepticus), trauma |

When given a diagnosis, place it one of these categories and then look for the other four, linking them with terms such as “caused by,” “due to,” or “resulting in” whenever possible.
Early Delirium can be Subtle

- Loss of ability to focus may be unapparent to one not intimate with the patient
- Family: the patient “isn’t acting quite right”
  - Should be taken seriously

Sundowning

- Some elderly get acutely confused in the hospital after dark – manifested as delirium
- Can be an acute change on top of a baseline chronic dementia
- Consider a mechanism of clear communication of the event to physicians, who typically do not round at night.

Sundowning is in the Tables under delirium (a CC)
Delirium - Epidemiology

Delirium can occur in up to 30% of older hospitalized patients

- Particular conditions at risk
  - Fractures after fall
  - Cardiac surgery
  - Polypharmacy
  - Infection
  - Dehydration
  - Malnutrition
  - Immobility
  - Use of bladder catheters

- Hospital environments with high rates of delirium
  - ICU, 70%
  - Hospice unit, 40%
  - Post acute care settings, 16%
  - Emergency department, 10%

Francis J, et al., Diagnosis of delirium and confusional states, UpToDate, Topic 4824, Version 15.0, Accessed 03/16/2017

“Behavioral Disturbance” with Dementia

F01 Vascular dementia
Vascular dementia as a result of infarction of the brain due to vascular disease, including hypertensive cerebrovascular disease.
Includes: arteriosclerotic dementia
Code first the underlying physiological condition or sequelae of cerebrovascular disease.

F01.5 Vascular dementia
F01.50 Vascular dementia without behavioral disturbance
F01.51 Vascular dementia with behavioral disturbance
  - Vascular dementia with aggressive behavior
  - Vascular dementia with combative behavior
  - Vascular dementia with resistant behavior
Use additional code, if applicable, to identify wandering in vascular dementia (Z91.83)

Behavioral disturbance is a CC
Glasgow Coma Scale

- Glasgow Coma Scale (GCS) has ICD-10 codes
- Can be coded from non-physician documentation
- For example — EMTs, paramedics, RNs
- Can be used in all clinical circumstances — trauma, medical diagnoses, etc.
- Must document each component score, not just the GCS total

Published in 1974 by professors of NSG at the Glasgow (Scotland) Institute of Neurological Sciences

Glasgow Coma Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Eye opening</th>
<th>Verbal response</th>
<th>Motor response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>To pain</td>
<td>Vocal but not verbal</td>
<td>Extension</td>
</tr>
<tr>
<td>3</td>
<td>To voice</td>
<td>Verbal but not conversational</td>
<td>Flexion</td>
</tr>
<tr>
<td>4</td>
<td>Spontaneous</td>
<td>Conversational but disoriented</td>
<td>Withdrawing from pain</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
<td>Oriented</td>
<td>Localizes pain</td>
</tr>
<tr>
<td>6</td>
<td>—</td>
<td>—</td>
<td>Obeys commands</td>
</tr>
</tbody>
</table>

Glasgow Coma Scale Score

- Eye Opening
  1. Eyes open, never
  2. Eyes open, to pain
  3. Eyes open, to sound
  4. Eyes open, spontaneous

- Verbal
  1. Best verbal response, none
  2. Best verbal response, incomprehensible words
  3. Best verbal response, inappropriate words
  4. Best verbal response, confused conversation
  5. Best verbal response, oriented

- Motor
  1. Best motor response, none
  2. Best motor response, extension
  3. Best motor response, flexion
  4. Best motor response, withdrawal
  5. Best motor response, localizes pain
  6. Best motor response, obeys commands

- Total
  Glasgow coma scale score 13-15
  Glasgow coma scale score 9-12
  Glasgow coma scale score 3-8

  When using only the final GCS tally, your patient’s severity of illness is not credited
Underlying Causes

Encephalopathy

- An acute condition of **global cerebral dysfunction** in the absence of primary structural brain disease
- Caused by the direct physiological consequences of a medical condition
  - Cannot be accounted for by preexisting or evolving dementia
- Clinical manifestation is an alteration in mental status
Delirium and Encephalopathy

- Delirium/Psychosis/Dementia is a manifestation
- Encephalopathy is an underlying cause
  - Delirium does not equal encephalopathy
  - Encephalopathy does not equal delirium

“Delirium due encephalopathy of a named condition”

MUSIC: “caused by,” “due to,” “resulting in”

Delirium as Manifestation of Encephalopathy

Metabolic encephalopathy
- Fluid and electrolyte disturbances
  - dehydration, hyponatremia and hypernatremia
- Infections
  - urinary tract, respiratory tract, skin and soft tissue
  - Delirium due to infection represents organ dysfunction, supporting severe sepsis
- Withdrawal from alcohol
- Withdrawal from barbiturates, benzodiazepines, and selective serotonin reuptake inhibitors
- Metabolic disorders (hypoglycemia, hypercalcemia, uremia, liver failure, thyrotoxicosis)
- Low perfusion states (shock, heart failure)
- Postoperative states, especially in the elderly

Toxic encephalopathy
- Acute alcohol intoxication
- Acute drug overdose
### Diabetes Control

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>HCC #</th>
<th>HCC RW</th>
<th>MS DRG</th>
<th>APR DRG SDI</th>
<th>APR DRG ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>E109</td>
<td>Type 1 diabetes mellitus without complications</td>
<td>19</td>
<td>0.121</td>
<td>--</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E10649</td>
<td>Type 1 diabetes mellitus with hypoglycemia without coma</td>
<td>18</td>
<td>0.368</td>
<td>--</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>E1065</td>
<td>Type 1 diabetes mellitus with hyperglycemia</td>
<td>18</td>
<td>0.368</td>
<td>--</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>E10641</td>
<td>Type 1 diabetes mellitus with hypoglycemia with coma</td>
<td>17</td>
<td>0.368</td>
<td>MCC</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>G9341</td>
<td>Metabolic encephalopathy</td>
<td>--</td>
<td>--</td>
<td>MCC</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>E162</td>
<td>Hypoglycemia (non-diabetic)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>R739</td>
<td>Hyperglycemia (non-diabetic)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

- Documenting an episode of hypoglycemia *triples* the HCC RW to the physician.
- If the mental status is altered and “metabolic encephalopathy due to hypoglycemia” is documented, the SDx has the RW of an MCC.

There are different ICD-10-CM codes for Type 2 diabetes but the coding principals and relative weights are the same.

---

### Hypertensive Encephalopathy

- Rapidly evolving syndrome of severe hypertension in association with headache, nausea and vomiting, visual disturbances, confusion, and—in advanced cases—stupor and coma
  - Multiple seizures are frequent and may be more marked on one side of the body
  - Diffuse cerebral disturbance may be accompanied by focal or lateralizing neurologic signs, either transitory or lasting, which should suggest cerebral hemorrhage or infarction, i.e., the more common cerebrovascular complications of severe chronic hypertension
  - A clustering of multiple microinfarcts and petechial hemorrhages in one region may occasionally result in a mild hemiparesis, aphasic disorder, or rapid failure of vision
  - Special characteristics of signal changes in the occipital white matter may occur
    - The terms reversible posterior leukoencephalopathy (RPLE) and posterior or reversible leukoencephalopathy syndrome (PRES)

Hepatic Encephalopathy

- A wide array of transient and reversible neurologic and psychiatric manifestations usually found in patients with chronic liver disease and portal hypertension, but also seen in patients with acute liver failure
  - Occurs in 50%–70% of patients with cirrhosis
- Treatment options
  - Diet – low protein
  - Medications – lactulose, neomycin, rifaximin, probiotics
- Serves as a reason for admission
  - Only an MCC if with coma

<table>
<thead>
<tr>
<th>Grade</th>
<th>Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intellectual function</td>
</tr>
<tr>
<td>0</td>
<td>Normal</td>
</tr>
<tr>
<td>Minimal,</td>
<td>Normal examination findings.</td>
</tr>
<tr>
<td>subclinical</td>
<td>Subtle changes in work or driving.</td>
</tr>
<tr>
<td>1</td>
<td>Personality changes, attention,</td>
</tr>
<tr>
<td></td>
<td>deficits, irritability, depressed</td>
</tr>
<tr>
<td></td>
<td>state</td>
</tr>
<tr>
<td>2</td>
<td>Changes in sleep-wake cycle,</td>
</tr>
<tr>
<td></td>
<td>lethargy, mood and behavioral</td>
</tr>
<tr>
<td></td>
<td>changes, cognitive dysfunction</td>
</tr>
<tr>
<td>3</td>
<td>Altered level of consciousness</td>
</tr>
<tr>
<td></td>
<td>(somnolence), confusion,</td>
</tr>
<tr>
<td></td>
<td>disorientation, and amnesia</td>
</tr>
<tr>
<td>4</td>
<td>Stupor and coma</td>
</tr>
</tbody>
</table>

Uremic Encephalopathy

- Marked elevation of BUN
- Acute kidney failure or acute-on-chronic failure
- Marked encephalopathy may occur earlier in the elderly than the young.
- Uremic encephalopathy reverses with dialysis, but mental clearing may lag 1-2 days.
- Could reasonably be termed metabolic or toxic encephalopathy
Sodium-Related Encephalopathy

- **Hyponatremic Encephalopathy**
  - Often in the setting of the syndrome inappropriate secretion of antidiuretic hormone (SIADH)
  - Sodium levels typically below 120 mEq/L
- **Hypernatremic Encephalopathy**
  - Typically due to increase water loss and inadequate replacement
  - Mortality in patients with sodium levels greater than 160 mEq/L is typically 70%.

Septic Encephalopathy

- Delirium (as the altered mental status) in the setting of suspected or confirmed infection supports severe sepsis (S2) or sepsis (S3)
- CDIMD endorses continued use of the term “severe sepsis” when associating an organ dysfunction, to avoid the uncertainty of whether the author is using S2 or S3 definitions.
Other Metabolic Encephalopathies

“Metabolic encephalopathy due to...”

- Hypercalcemia
- Hypocalcemia
- Hypophosphatemia
- Hypomagnesemia
- Wernicke’s encephalopathy
  - Due to thiamine deficiency
  - Confusion, ataxia, ophthalmoplegia
- Some transplant medications can cause encephalopathy
  - Cyclosporine
  - Corticosteroids

Chalela J, et al., Acute toxic-metabolic encephalopathy in adults, UpToDate, Topic 1661 Version 8.0, accessed 03/16/2017

Post-Ictal Encephalopathy due to Seizure

Question:
The patient is a 70-year-old female who presented to the emergency department (ED) because of mental status change. While in the ED, she had a tonic-clonic seizure that was witnessed by staff. The patient had no previous history of seizure and was admitted as an inpatient for further evaluation and management. In the discharge summary, the provider noted, “On admission the patient had mental status changes, which subsequently resolved. Consequently, we have determined that the patient had encephalopathy secondary to postictal state.” Should encephalopathy be reported as an additional diagnosis with seizure when it’s due to a postictal state? Would the encephalopathy be considered inherent to the seizure or can it be separately reported?

Answer:
Assign code 780.39, Other convulsions, as the principal diagnosis. The encephalopathy due to postictal state is not coded separately since it is integral to the condition. Seizure activity may be followed by a period of decreased function in regions controlled by the seizure focus and the surrounding brain. The postictal state is a transient deficit, occurring between the end of an epileptic seizure and the patient’s return to baseline. This period of decreased functioning in the postictal period usually lasts less than 48 hours.

Coding Clinic, 4th Quarter 2013, pp 89-90
Complete Documentation
(Made easy with MUSIC)

<table>
<thead>
<tr>
<th>Alteration of mental status (AMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Manifestation of the AMS</td>
</tr>
<tr>
<td>• Delirium, psychosis, somnolence, unconsciousness, etc.</td>
</tr>
<tr>
<td>U Underlying cause</td>
</tr>
<tr>
<td>• Hyponatremia, hypercalcemia, hypoglycemia, HTN, hepatic failure, sepsis, etc.</td>
</tr>
<tr>
<td>S Specificity</td>
</tr>
<tr>
<td>• Acute metabolic encephalopathy</td>
</tr>
<tr>
<td>• Acute toxic encephalopathy</td>
</tr>
<tr>
<td>I Inciting cause</td>
</tr>
<tr>
<td>• Diabetes</td>
</tr>
<tr>
<td>• Infection</td>
</tr>
<tr>
<td>• Tumor</td>
</tr>
<tr>
<td>C Consequences</td>
</tr>
</tbody>
</table>

Disappearing Diagnoses

Conditions presenting to the emergency department in extremis, that are intervened upon by the emergency physician such that by the time the inpatient order is written, if not duly recorded, they may be lost.

• Acute respiratory failure
  • Heart failure
  • COPD
  • Asthma

• Altered Mental Status & Encephalopathy
  • Sepsis
Clinical Conditions – with critical risk adjustment impact

Sepsis

Sepsis Game Changer

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

Mervyn Singer, MD, FRCPC, Clifford S. Deutschman, MD, MS; Christopher Warren Seymour, MD, MSc; Manu Shankar-Hari, MSc, MD, FFICM; Djjitl I Annane, MD, PhD, Michael Bauer, MD, Rinaldo Bellomo, MD, Gordon R. Bernard, MD, Jean-Daniel Chiche, MD, PhD; Craig M. Cooper-Smith, MD; Richard S. Hotchkiss, MD; Mitchell M. Levy, MD, John C. Marshall, MD; Greg S. Martin, MD, MSc; Steven M. Opal, MD, Gordon D. Rubenfeld, MD, MS, Tom van der Poll, MD, PhD, Jean-Louis Vincent, MD, PhD; Derek C. Angus, MD, MPH


http://tinyurl.com/Sepsis2016JAMA
Sepsis-3

• Sepsis defined: “Life-threatening organ dysfunction due to a dysregulated host response to infection.”

• Out: SIRS criteria
• In: Organ dysfunction (severe sepsis)

Historical Thoughts on Sepsis:
1991 Definition of SIRS/Sepsis (Sepsis-1)

• SIRS – 2 out of 4
  1. Body temperature > 38°C or < 36°C
  2. Heart rate > 90/minute
  3. Respiratory rate > 20/minute or PaCO$_2$ < 32 mmHg
  4. White blood cell count > 12,000/μL or < 4,000/μL

• Sepsis – SIRS due to infection
• Severe Sepsis – Sepsis with acute organ dysfunction

2012 Diagnostic Criteria for Sepsis (Sepsis-2)

Infection, documented or suspected & "some" of the following:

- **General variables**
  - Fever (> 38.3°C or 101°F)
  - Hypothermia (core temperature < 36°C)
  - Heart rate > 90/min or more than two SD above the normal value for age
  - Tachypnea
  - Altered mental status
  - Significant edema or positive fluid balance (> 20 mL/kg over 24 hr)
  - Hyperglycemia (plasma glucose > 140 mg/dL or 7.7 mmol/L) in the absence of diabetes

- **Inflammatory variables**
  - Leukocytosis (WBC count > 12,000/μL)
  - Leukopenia (WBC count < 4000/μL)
  - Normal WBC count with greater than 10% immature forms
  - Plasma C-reactive protein > two or SD above the normal value
  - Plasma procalcitonin > two SD above normal

  **Notice:** Blood Culture is not on the list

**NOTE:** Only findings that cannot be easily explained by other causes


---

**Specificity: Severe Sepsis (Sepsis-2)**

- **Severe sepsis:** sepsis with acute organ dysfunction
  - **Organ dysfunction variables**
    - Arterial hypoxemia (PaO₂/FiO₂ < 300)
    - Acute oliguria (urine output < 0.5 mL/kg/hr for at least 2 hrs despite adequate fluid resuscitation)
    - Creatinine increase > 0.5 mg/dL or 44.2 μmol/L
    - Coagulation abnormalities (INR > 1.5 or aPTT > 60 s)
    - Ileus (absent bowel sounds)
    - Thrombocytopenia (platelet count < 100,000/μL)
    - Hyperbilirubinemia (plasma total bilirubin > 4 mg/dL or 70 μmol/L)
  - **Tissue perfusion variables**
    - Decreased capillary refill or mottling
    - Lactate level
      - o > 2 mmol/L supports organ dysfunction
      - o > 4 mmol/L supports septic shock

Sepsis
The Definition has Changed (again)

- Sepsis defined: “Life-threatening organ dysfunction due to a dysregulated host response to infection.”
  - The key element of sepsis-induced organ dysfunction is defined by
    “an acute change in total SOFA score ≥ 2 points consequent to infection, reflecting an overall mortality rate of approximately 10%.”
  - Out: SIRS criteria: (WBC, T, HR, RR)
  - In: Organ dysfunction (required for sepsis)
    - New definition of “sepsis” begins at current “severe sepsis”

- SOFA Score:
  Sequential (Sepsis-related) Organ Failure Assessment

### SOFA Score: Sequential Organ Failure Assessment

<table>
<thead>
<tr>
<th>System</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic GCS</td>
<td>15</td>
</tr>
<tr>
<td>Respiratory</td>
<td>PaO₂/FiO₂ room air PaO₂, O₂ sat</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>MAP &gt; 70 mmHg</td>
</tr>
<tr>
<td>Hepatic Bilirubin, mg/dL</td>
<td>&lt; 1.2</td>
</tr>
<tr>
<td>Coagulation Platelets, x 1,000</td>
<td>≥ 150</td>
</tr>
<tr>
<td>Renal Creatinine, mg/dL</td>
<td>&lt; 1.2</td>
</tr>
<tr>
<td>UOP, ml/d</td>
<td>&gt; 500</td>
</tr>
</tbody>
</table>

Abbreviations:
- PaO₂: partial pressure of oxygen; FiO₂: fraction of inspired oxygen;
- MAP: Mean arterial pressure

Catecholamine doses are in mcg/kg/min for at least 1 hour.
SOFA Score: Sequential Organ Failure Assessment

<table>
<thead>
<tr>
<th>System</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic GCS</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>13-14</td>
</tr>
</tbody>
</table>

- Glasgow Coma Scale (GCS) has ICD-10 codes
  - Can be coded from non-physician documentation
    - For example – EMTs, paramedics, RNs
  - Can be used in all circumstances – trauma, medical diagnoses, etc.
  - Must document each component score, not just the GCS total

<table>
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<td>6</td>
<td>—</td>
<td>—</td>
<td>Obeys commands</td>
</tr>
</tbody>
</table>

SOFA Score: Sequential Organ Failure Assessment

<table>
<thead>
<tr>
<th>System</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td></td>
</tr>
<tr>
<td>(\text{PaO}_2/\text{FiO}_2) room air (\text{PaO}_2, \text{O}_2\text{ sat})</td>
<td>(\geq 400) 84, 95%</td>
</tr>
</tbody>
</table>

**On room air (RA)**
- By arterial blood gas (ABG)
- Hypoxia = \(\text{PaO}_2 < 60 \text{ mmHg}, \text{SaO}_2 < 88\%
- By peripheral oxygen saturation
- Hypoxia = \(\text{SpO}_2 < 90\%

**On supplemental oxygen**
- \((P/F \text{ ratio})\) Divide \(\text{PaO}_2\) (arterial) by \(\text{FiO}_2\)
- 60 (lowest acceptable) / 0.21 (room air) = 285
- Hypoxia = quotient \(< 285\)
- Translating \(\text{SpO}_2\) to \(\text{PaO}_2\) to follow

On arterial \(\text{O}_2\) saturation (\(\text{SO}_2, \%\)) dissolved \(\text{O}_2\)

Klabunde, R. L., Cardiovascular Physiology Concepts, 2nd Ed, Lipincott Williams & Wilkins (2011)
SOFA Score: Sequential Organ Failure Assessment

### System Score

<table>
<thead>
<tr>
<th>System</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\text{Pao}_2/\text{FiO}_2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>room air (\text{Pao}_2/\text{O}_2) sat</td>
<td>(\geq 400)</td>
<td>&lt; 400</td>
<td>&lt; 300</td>
<td>&lt; 200 with respiratory support</td>
<td>&lt; 100 with respiratory support</td>
</tr>
<tr>
<td>(\text{PaO}_2)</td>
<td>84, 95%</td>
<td>84, 95%</td>
<td>63, 91%</td>
<td>42, 80%</td>
<td>21, &lt; 80%</td>
</tr>
<tr>
<td>(\text{O}_2) sat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### \(O_2\) Delivery and FiO\(_2\)

<table>
<thead>
<tr>
<th>Method</th>
<th>O2 Flow (l/min)</th>
<th>O2 Sat (%)</th>
<th>Estimated FiO(_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room air</td>
<td>21%</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Nasal cannula</td>
<td>1</td>
<td>24</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>28</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>32</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>36</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>40</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>44</td>
<td>0.44</td>
</tr>
<tr>
<td>Nasopharyngeal catheter</td>
<td>4</td>
<td>40</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>50</td>
<td>0.70</td>
</tr>
<tr>
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### Oxymetry

<table>
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<th>(\text{SO}_2) (%)</th>
<th>(\text{PaO}_2) (mmHg)</th>
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</table>

### Mean Arterial Pressure (MAP)

- It is believed that a MAP greater than 70 mmHg is enough to sustain organ function in an average person.
  - MAP is normally between 65 and 110 mmHg

### MAP Approximation

- At normal resting heart rates MAP can be approximated using the more easily measured using systolic (SP) and diastolic pressures (DP)

\[
\text{MAP} \sim [\text{SP} – \text{DP}] \times 0.33 + \text{DP}
\]

### Measurement

- MAP = (CO X SVR) + CVP
  - CO = cardiac output
  - SVR = Systemic venous resistance
  - CVP = central venous pressure
SOFA Score:
Sequential Organ Failure Assessment

<table>
<thead>
<tr>
<th>System</th>
<th>Score</th>
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<tbody>
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</tr>
<tr>
<td>Renal Creatinine, mg/dL</td>
<td>&lt; 1.2</td>
</tr>
<tr>
<td>UOP, ml/d</td>
<td></td>
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</table>

Acute Kidney Injury (AKI) Definition
• Any of the following:
  – Serum creatinine
    • Increase by ≥ 0.3 mg/dL within 48 hours, or
    • Increase to ≥ 1.5 times baseline which is known or presumed to have occurred within the prior 7 days, or
  – Urine output
    • Volume < 0.5 ml/kg/hr for 6 hours

Published 2012

SIRS vs. Sepsis (in ICD-10-CM)

SIRS – Non-infectious origin
Systemic inflammatory response syndrome (SIRS)
Diagnostic components (2 of 4)
• Fever: > 38°C (100.4°F) or < 36°C (96.8°F)
• Tachycardia: HR > 90 per minute
• Tachypnea: RR > 20 per minute or PaCO₂ < 32 mm Hg
• WBC: Abnormal white blood cell count (> 12,000/µL or < 4,000/µL or > 10% immature [band] forms)
Non-infectious origin
• w/o organ dysfunction (CC)
• with acute organ dysfunction (MCC)
American College of Chest Physicians (ACCP) and the Society of Critical Care Medicine (SCCM), 1992

Sepsis – Infectious origin
The presence of infection (probable or confirmed) together with systemic manifestations of infection.
Infectious origin
• w/o organ dysfunction (MCC)
• with acute organ dysfunction, “severe sepsis” (MCC)

PHYSICIAN MUST SAY “SEPSIS”, NOT “SIRS due to INFECTION”, TO GET “SEPSIS” IN ICD-10
Terms & Definitions

- **Bacteremia**
  - Bacteria in the blood

- **Septicemia**
  - Systemic disease with organisms or toxins in the blood (e.g., bacteria, fungi, virus)

- **Sepsis**
  - S-2: Systemic inflammatory response to known or suspected infection
  - S-3: Acute organ dysfunction (not failure) due to infection [added 2016]

- **Severe Sepsis**
  - Sepsis plus organ dysfunction

- **SIRS**
  - Systemic inflammatory response syndrome
    - Originally of infectious or non-infectious etiology
    - Subsequent interpretation, of non-infectious etiology only

- **Septic Shock**
  - Sepsis with impaired tissue perfusion
    - Hypotension not required

Don’t forget to link condition & cause: “caused by,” “due to”

Conditions, Details, & Interdependencies

**MUSIC**

- **Manifestation**
  - Presenting signs, symptoms, syndromes
    - Fever, WBC 18K, pleuritic chest pain, abnormal CXR

- **Underlying Cause**
  - “Due to:” Pneumonia

- **Severity or Specificity**
  - Aspiration? Multi-resistant Gram-negative rods or MRSA? Sepsis?

- **Instigating or precipitating causes**
  - “Caused by:” Oropharyngeal dysphagia as a late effect of stroke, use of sedating medications

- **Consequences or Complications**
  - “Resulting in:” Sepsis, septic shock, acute respiratory failure, empyema

When given a diagnosis, place it one of these categories and then look for the other four, linking them with terms such as “caused by," “due to,” or “resulting in" whenever possible.

“Caused by,” “Due to,” “Resulting in”
CDI: Reliability of Diagnosis
Sepsis

Reliability – Sepsis
Sepsis vs. Pyelonephritis Only

CHIEF COMPLAINT: Suprapubic pain and abdominal pain and also left flank pain.

HISTORY OF PRESENT ILLNESS: An 80-year-old woman with a history of diabetes and hypertension. The patient had a urinary tract infection which was treated with Bactrim. However, the patient's symptom has not gotten better. The patient did not have any fever, chills, chest pain or palpitations. The patient has poor appetite and generalized weakness.

PHYSICAL EXAMINATION:

VITAL SIGNS: Temperature max 98.6, blood pressure 136/72, heart rate 84, respiratory rate 14.

LABORATORY DATA: White count 16.4, hemoglobin 10.8, hematocrit 33, platelet count 272. Sodium 121, potassium 4.2, BUN and creatinine 10/0.9. UA shows pyuria. CT of the abdomen and pelvis showing focal area of hypodensity involving right renal cortex suggestive of pyelonephritis.

IMPRESSION:

1. Pyelonephritis with outpatient treatment failure with the Bactrim.

H&P
Sx: Poor appetite and weakness
PE:
Temp max 98.6
HR 84
RR 14
Lab:
UA: pyuria
WBC 16,400
CT: c/w pyelonephritis
Impression:
Pyelonephritis
Note that the H&P documents only pyelonephritis.
Reliability – Sepsis
Admit and Discharge Notes

- Though documented in the D/C summary, upon review, lack of more than one sepsis criteria disqualifies this condition for coding as sepsis (S2).
- No organ dysfunction is identified to qualify it for severe sepsis (S3).

Sepsis Syndrome

- **Question:** The provided listed "sepsis syndrome" in the final diagnostic statement. How should sepsis syndrome be coded?

- **Answer:** The term "sepsis syndrome" is poorly defined. Query the physician to determine the specific condition(s) the patient has.

NOTE: “Sepsis syndrome” is not in the ICD-10-CM Index to Diseases. Consequently, a query must be rendered to determine if sepsis or severe sepsis is present.

Source: Coding Clinic, 2nd Quarter 2012, pages 21–22
MDC 18 – Rules Regarding Sepsis

• **Negative or inconclusive blood cultures and sepsis**
  - Negative or inconclusive blood cultures do not preclude a diagnosis of sepsis in patients with clinical evidence of the condition; however, the provider should be queried.

• **Urosepsis**
  - The term urosepsis is a nonspecific term. It is not to be considered synonymous with sepsis. It has no default code in the Alphabetic Index. Should a provider use this term, he/she must be queried for clarification.

Challenges in Clinical Documentation Integrity

**Literature Definitions and Clinical Validity**
1. Acute Respiratory Failure
2. Acute Encephalopathy
3. Sepsis

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- Board Certified in Internal Medicine
AHIMA-Approved ICD-10-CM/PCS Trainer

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donblanton027@att.net