ICD-10’s Impact Upon Physicians Neonatology

James S. Kennedy, MD, CCS, CDIP
Founder and President, CDIMD

- American Health Information Management Association (AHIMA) certified coding specialist since 2001
- Association of Clinical Documentation Improvement Specialists (ACDIS) Advisory Board
- Multiple author on clinical aspects of ICD-10 and DRGs

Contact: (615) 479-7021 jkennedy@CDIMD.com
Goals

• Have a firm understanding of how CMS and the state of Texas evaluate physician/hospital quality

• Know the differences between the CDC’s ICD-9-CM and ICD-10-CM/PCS terminology

• Master challenging definitions impacting severity and risk adjustment

• Devise a plan to assure the integrity of their ICD-10-CM/PCS data measuring patient outcomes
Phone Book
Interesting Characters – Terrible Plot

![Greater Dallas Yellow Pages](image1)

![ICD-10](image2)

Dictionary without Definitions
<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>Procedures</th>
</tr>
</thead>
</table>
| **ICD-10-CM**  
*(Clinical Modification)*  
Used by all entities:  
(providers & facilities) for diagnoses  
To be used in all settings:  
– Hospital inpatients  
– Hospital outpatients  
– Physicians offices  
– Emergency department  
– Home health  
– Long-term care  
– Rehabilitation facilities | **ICD-10-PCS**  
*(Procedure Coding System)*  
Used by inpatient facilities ONLY  
• Includes outpatient facility services rendered within the prior 72 hours of writing the inpatient order  
• Very different than ICD-9-CM or CPT  
  
**CPT**  
• Physician and outpatient/observation facility services still utilize CPT  
• CPT does not change!! |
International Classification of Disease Versions

• First edition, known as the International List of Causes of Death, was adopted by the International Statistical Institute in 1893

• WHO took in 1948 when the Sixth Revision, which included causes of morbidity for the first time, was published.
  • 1977 - ICD-9
  • 1993 - ICD-10
  • 2017 (tentative) - ICD-11
US Modifications – ICD-10-CM & PCS
The Cooperating Parties

- CDC
  - Responsible for diagnoses
- CMS
  - Responsible for inpatient procedures
- American Hospital Assn.
  - Responsible for interpreting ICD-9 or ICD-10 (Coding Clinic)
- American HIM Assn.
  - Provides input from coding community
ICD-10-CM Basics

• The entire medical record is reviewed
  – H&P – progress notes – discharge summary
    • Discharge summaries have more weight than the H&P, given that they are the provider’s final word
    • The DC documentation must be congruent with the patient’s conditions and other parts of the medical record, resolving all conflicts and inconsistencies
  – ER notes
    • Extremely crucial when conditions resolve in the ED (e.g. shock, acute respiratory failure, hypovolemia)
    • All ER diagnoses should be repeated again in H&P if possible
  – Pre-anesthesia assessments
    • If signed by an anesthesiologist or CRNA
  – Operative notes
    • Coders code off the narrative, not off the title
    • The surgeon must explicitly describe what he or she does and the operative anatomy during the course of a procedure
ICD-10-CM Basics

• Coders cannot ASSUME what a patient has
  – If a physician documents “anemia due to GI bleed, Tx with 2 units of PRBC,” the coder cannot assume that the anemia is due to acute blood loss
  – If a patient presents with a pH of 6.9 and pCO$_2$ of 100 and requires mechanical ventilation, the coder cannot assume that the patient has acute hypercapnic respiratory failure
  – If a patient has heart failure with preserved ejection fraction, the coder cannot assume that this is diastolic heart failure

• All diagnoses must be documented by a licensed provider with face-to-face patient contact except under rare circumstances
  – Physicians, NPs, PAs
  – Interpretations of ancillary studies (e.g., radiology, echocardiography, pathology) may not be coded unless commented on by a provider
ICD-10-CM Basics
Lab/EKG/Pathology Results

• Abnormal findings (laboratory, x-ray, pathologic, and other diagnostic results) are not coded and reported unless the provider indicates their clinical significance in their documentation.
  – Reciting “potassium 2.6” does not count; hypokalemia does
  – Reciting “ANC 500” does not count; neutropenia does
  – “See Path report” does not count; adding the result to the diagnostic statement does

• Exceptions are
  – Coders may code pathology reports incorporated into cancer staging forms that are then signed by an attending physician
  – Coders may code specificity of fractures from radiology reports so long as the fracture itself is documented by the provider
    • Does not apply to other conditions (e.g., strokes, malignancies)
ICD-10-CM Basics
Inpatient Uncertain Diagnoses

• For inpatients diagnoses DOCUMENTED ON THE DC SUMMARY qualified as:
  – “Probable,”
  – “Possible,”
  – “Still to be ruled out,”
  – “Likely,”
  – “Suspected,”
  – “Appears to be,”
  – “Consistent with,”
  – “Indicative of,”
  – Or any variation thereof

• Code the condition as if it existed or was established
  – The bases for these guidelines are the diagnostic workup, arrangements for further workup or observation, and initial therapeutic approach that correspond most closely with the established diagnosis
    • Applicable only to inpatient admissions to short-term, acute, long-term care, and psychiatric hospitals
    • Does NOT apply to HIV (AIDS), avian or novel influenza
  – Physician or outpatient facility billing (including observation care) can never use uncertain diagnoses
ICD-10-CM Basics
DC Summary is Crucial

• The primary document defining “the condition that was found after study to have occasioned the inpatient hospital admission.”
  – Need statements like “the patient was admitted for sepsis due to pneumonia” or “the patient was admitted both to repair their hip and to address their fever”

• The primary document whereby uncertain diagnoses may be coded. Examples include:
  – Pneumonia probably due to pseudomonas
  – Atypical chest pain probably due to GERD

• The last chance a provider has to clarify if conditions were present on admission, are still to be ruled out, or were in fact ruled out.
Conditions Interdependencies (M.U.S.I.C.)

- **Manifestation**
  - e.g., sepsis, heart failure, chest pain, angina
- **Underlying cause or pathology**
  - e.g., UTI, a specified cardiomyopathy, GERD
- **Severity or specificity**
  - e.g., severe sepsis, diabetes out of controlled, systolic or diastolic heart failure
- **Instigating or precipitating cause**
  - Indwelling foley cath, NSAID use, carbon monoxide poisoning
- **Complications or consequences**
  - Septic shock, diabetic neuropathy

When given a diagnosis, place it one of these categories and then look for the other four, linking them with terms such as “due to,” “resulting in,” and the like.
Examples of MUSIC
Altered Mental Status

• **Manifestation**
  – Dementia, delirium, psychosis, vegetative state, stupor, coma
  – Unresponsive does not have a code; unconscious does

• **Underlying cause**
  – Anoxic, toxic, or metabolic encephalopathy
  – Petit-mal status epilepticus
  – Concussion

• **Severity or specificity**
  – Correlates with manifestation and underlying cause
  – Acute states (e.g., acute delirium) are higher weighted

• **Instigating cause**
  – Drug adverse effect (declare if an overdose or not properly taken)
  – Medication underdosing or noncompliance
  – Severe sepsis from a urinary tract infection (not “urosepsis”)

• **Consequences or complications**
  – Acute respiratory failure
  – SIADH leading to hyponatremia resulting in a metabolic encephalopathy

Document “due to”, “caused by”, “resulting in” or other language when known or suspected
Case #1
History

Term female born via vaginal (ROM 1 hour prior to delivery with clear fluid) without complications at 0900 on 9/26/13. Mother's prenatal care was done in Mississippi but records not available.

- Reported being GBS positive and received PCN x2. Apgars 9,9. Taken to mother's room and was breastfeeding.
- Noted to be Coombs positive at ~ 1600, taken to nursery to check the bilirubin and temp was noted to be low. Placed under a warmer until temp was "normal" and returned to mom dressed and wrapped.
- Mom was breastfeeding the baby for 15 minutes well then thought the baby went to sleep. She went to move the patient to the other breast and noticed that he was blue and not moving (per report that could have been as long as 10 minutes). A code was called and patient was found to be limp, cyanotic and without an audible heart rate.
Case #1
History

- Patient received BMV x1 minute with improvement in HR to 62. The infant was intubated by "ancillary staff" with improvement in HR to >100. Per report the code lasted 10 minutes. The on call neo arrived and was noted to have minimal reactivity for 1-2 hours.

- She was given NS bolus x1 and placed on vent. A blood culture was sent and started on ampicillin and gentamicin. Initial gas 7.27/18/151/10.2/-13, received Na bicarb of 6 meq, repeat gas 7.36/18/151/10.2/-13 and received another 9 meq of Na bicarb.

- Vent was weaned prior to transfer to PIP 20 PEEP 5 rate of 30 with 30% of O2. Passive cooling started at 2130. Upon arrival of transport team patient noted to have more spontaneous activity.
Admission

- Active Problems:
  - Term birth of female newborn
  - HIE (hypoxic-ischemic encephalopathy)
  - Need for observation and evaluation of newborn for sepsis
  - Hyperglycemia
  - Metabolic acidosis

Discharge

<table>
<thead>
<tr>
<th>Final Diagnosis:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Hospital Problems</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Developmental concern</td>
</tr>
<tr>
<td>Term birth of female newborn</td>
</tr>
<tr>
<td>HIE (hypoxic-ischemic encephalopathy)</td>
</tr>
</tbody>
</table>

| Resolved Hospital Problems | Date Noted | Date Resolved |
| Diagnosis | |
| Atelectasis | 10/03/2013 | 10/13/2013 |
| Hypoxemia requiring supplemental oxygen | 10/03/2013 | 10/13/2013 |
| Feeding problems in newborn | 09/29/2013 | 10/14/2013 |
| Hypertonia | 09/27/2013 | 10/03/2013 |
| Need for observation and evaluation of newborn for sepsis | 09/26/2013 | 09/29/2013 |
| Hyperglycemia | 09/26/2013 | 09/29/2013 |
| Metabolic acidosis | 09/26/2013 | 09/29/2013 |
Hypoxemic-ischemic Encephalopathy

- ICD-10 (and ICD-9-CM) categorize HIE by severity
  - Moderate and severe HIE have higher severity and risk than HIE not otherwise specified
  - The term “neonatal encephalopathy” not otherwise specified is not weighted
# Sarnet Classification of HIE

<table>
<thead>
<tr>
<th>SARNET HIE Classification</th>
<th>Grade I mild</th>
<th>Grade II moderate</th>
<th>Grade III severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alertness</td>
<td>Hyperalert</td>
<td>Lethargy</td>
<td>Coma</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Normal or increased</td>
<td>Hypotonic</td>
<td>Flaccid</td>
</tr>
<tr>
<td>Seizures</td>
<td>None</td>
<td>Frequent</td>
<td>Uncommon</td>
</tr>
<tr>
<td>Pupils</td>
<td>Dilated, reactive</td>
<td>Small, reactive</td>
<td>Variable, fixed</td>
</tr>
<tr>
<td>Respiration</td>
<td>Regular</td>
<td>Periodic</td>
<td>Apnoeic</td>
</tr>
<tr>
<td>Duration</td>
<td>&lt;24h</td>
<td>2 - 14 days</td>
<td>Weeks</td>
</tr>
</tbody>
</table>

- Described as having “hypertonia”
- No seizures during admission
- Was apneic upon transfer to TCH
- Ventilated for over 96 hours at TCH while on hypothermia protocol
- **Physician specificity of the HIE severity needed for proper coding**
Respiratory Failure vs. Hypoxemia

• **Acute Respiratory Failure**
  - Inability to provide O₂ and remove CO₂ at a rate that meets metabolic demands.
  - Intubation and mechanical ventilation not required
  - Interventions meeting criteria
    • Supplemental O₂ >30-35% to maintain adequate oxygenation
    • High-flow nasal cannula use
    • Nasal CPAP or BiPAP, except for isolated obstructive sleep apnea

• **Chronic Respiratory Failure**
  - Respiratory processes requiring home oxygen or ventilator support (mechanical vent or nasal BiPAP), or having baseline SaO₂ < 88% on room air or pCO₂ > 50 with a normal pH

• **Acute on Chronic Respiratory failure**
  - Chronic respiratory failure with worsening of baseline respiratory symptoms and SaO₂ and/or pCO₂

*Jurg Hammer: Paediatric Respiratory Reviews 14 (2013) 64-69*
• **Hematology:**
  
  – Phototherapy: Yes, 9/27-9/28/13, 10/1-10/3/13
  Peak TSB: 15 on 10/1/13
  HGB 14.3 (L)
  
  – HCT 41.2 (L)
  
  – Medications: none
  Issues Pending: None
# Neonatal Jaundice

**Adds No Weight w/o Underlying Etiol.**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>SOI</th>
<th>ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>P580</td>
<td>Neonatal jaundice due to bruising</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P581</td>
<td>Neonatal jaundice due to bleeding</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P582</td>
<td>Neonatal jaundice due to infection</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P583</td>
<td>Neonatal jaundice due to polycythemia</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P5841</td>
<td>Neonatal jaundice due to drugs or toxins transmitted from mother</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P5842</td>
<td>Neonatal jaundice due to drugs or toxins given to newborn</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P585</td>
<td>Neonatal jaundice due to swallowed maternal blood</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P588</td>
<td>Neonatal jaundice due to other specified excessive hemolysis</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P589</td>
<td>Neonatal jaundice due to excessive hemolysis, unspecified</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P590</td>
<td>Neonatal jaundice associated with preterm delivery</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P591</td>
<td>Insipissated bile syndrome</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>P5920</td>
<td>Neonatal jaundice from unspecified hepatocellular damage</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>P5929</td>
<td>Neonatal jaundice from other hepatocellular damage</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>P593</td>
<td>Neonatal jaundice from breast milk inhibitor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P598</td>
<td>Neonatal jaundice from other specified causes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P599</td>
<td>Neonatal jaundice, unspecified</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

- The etiology of neonatal jaundice must be specified
  - OK to say “possible”, “probable” on DC summary

**Bilirubin level during stay**
Acute Kidney Injury

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>APR-DRG SOI</th>
<th>APR-DRG ROM</th>
<th>APR-DRG PPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N170</td>
<td>Acute kidney failure with tubular necrosis</td>
<td>4</td>
<td>4</td>
<td>24 &amp; 25</td>
</tr>
<tr>
<td>N171</td>
<td>Acute kidney failure with acute cortical necrosis</td>
<td>4</td>
<td>4</td>
<td>24 &amp; 25</td>
</tr>
<tr>
<td>N172</td>
<td>Acute kidney failure with medullary necrosis</td>
<td>4</td>
<td>4</td>
<td>24 &amp; 25</td>
</tr>
<tr>
<td>N178</td>
<td>Other acute kidney failure</td>
<td>4</td>
<td>4</td>
<td>24 &amp; 25</td>
</tr>
<tr>
<td>N179</td>
<td>Acute kidney failure, unspecified</td>
<td>3</td>
<td>3</td>
<td>24 &amp; 25</td>
</tr>
<tr>
<td>O904</td>
<td>Postpartum acute kidney failure</td>
<td>4</td>
<td>3</td>
<td>59</td>
</tr>
</tbody>
</table>

- If acute kidney injury is not present on admission, then it counts as a PPC (even if not on dialysis)
Modified RIFLE criteria in critically ill children with acute kidney injury

A Akcan-Arikan¹, M Zappitelli¹, L L Loftis², K K Washburn¹, L S Jefferson² and S L Goldstein¹

¹Renal Section, Department of Pediatrics, Baylor College of Medicine, Texas Children’s Hospital, Houston, Texas, USA
²Section of Critical Care Medicine, Department of Pediatrics, Baylor College of Medicine, Texas Children’s Hospital, Houston, Texas, USA

Correspondence: SL Goldstein, Renal Section, Department of Pediatrics, Baylor College of Medicine, Texas Children’s Hospital, 6621, Fannin Street, MC3-2482, Houston, TX 77030, USA. E-mail: stuartq@bcm.tmc.edu

Received 21 December 2006; Revised 21 January 2007; Accepted 6 February 2007; Published online 28 March 2007.

Abstract

A classification system has been proposed to standardize the definition of acute kidney injury in adults. These criteria of risk, injury, failure, loss, and end-stage renal disease were given the acronym of RIFLE. We have modified the criteria based on 150 critically ill pediatric RIFLE (pRIFLE) patients to assess acute kidney injury incidence and course along with renal and/or non-renal comorbidities. Of these children, 11 required dialysis and 24 died. Patients without acute kidney injury in the first week of intensive care admission were less likely to subsequently develop renal injury or failure; however, 22% of acute kidney injury occurred in this...
2007 Pediatric RIFLE Criteria

Table 6. Pediatric-modified RIFLE (pRIFLE) criteria

<table>
<thead>
<tr>
<th>Estimated CCI</th>
<th>Urine output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk eCCI decrease by 25%</td>
<td>&lt;0.5 ml/kg/h for 8 h</td>
</tr>
<tr>
<td>Injury eCCI decrease by 50%</td>
<td>&lt;0.5 ml/kg/h for 16 h</td>
</tr>
<tr>
<td>Failure eCCI decrease by 75% or eCCI &lt;35 ml/min/1.73 m²</td>
<td>&lt;0.3 ml/kg/h for 24 h or anuric for 12 h</td>
</tr>
<tr>
<td>Loss Persistent failure &gt;4 weeks</td>
<td></td>
</tr>
<tr>
<td>End stage End-stage renal disease (persistent failure &gt;3 months)</td>
<td></td>
</tr>
</tbody>
</table>

eCCI, estimated creatinine clearance; pRIFLE, pediatric risk, injury, failure, loss and end-stage renal disease.

• Caveats
  – “Persistent” AKI (not resolved within 48 hours of hydration) is equivalent to acute tubular necrosis; however cannot be coded as such unless explicitly documented by the physician
Section 2: AKI Definition

2.1.1: AKI is defined as any of the following *(Not Graded)*:
- Increase in SCr by $\geq 0.3 \text{ mg/dl} (\geq 26.5 \text{ \mu mol/l})$ within 48 hours; or
- Increase in SCr to $\geq 1.5$ times baseline, which is known or presumed to have occurred within the prior 7 days; or
- Urine volume $< 0.5 \text{ ml/kg/h}$ for 6 hours.

2.1.2: AKI is staged for severity according to the following criteria (Table 2). *(Not Graded)*

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Staging of AKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage</td>
<td>Serum creatinine</td>
</tr>
<tr>
<td>1</td>
<td>1.5–1.9 times baseline OR $\geq 0.3 \text{ mg/dl} (\geq 26.5 \text{ \mu mol/l})$ increase</td>
</tr>
<tr>
<td>2</td>
<td>2.0–2.9 times baseline</td>
</tr>
<tr>
<td>3</td>
<td>3.0 times baseline OR Increase in serum creatinine to $\geq 4.0 \text{ mg/dl} (\geq 353.6 \text{ \mu mol/l})$ OR Initiation of renal replacement therapy OR In patients $&lt; 18$ years, decrease in eGFR to $&lt; 35 \text{ ml/min per 1.73 m}^2$</td>
</tr>
</tbody>
</table>

Published 2012
Challenges to Serum Creatinine-based Definitions in Neonates

Gallini F: Pediatric Nephrology 2000 (15); 119-124
Normal Creatinine Values
Mayo Clinic

<table>
<thead>
<tr>
<th>Males – Age (in years)</th>
<th>Normal Cr. Ranges (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>0.1-0.4</td>
</tr>
<tr>
<td>3-4</td>
<td>0.1-0.5</td>
</tr>
<tr>
<td>5-9</td>
<td>0.2-0.6</td>
</tr>
<tr>
<td>10-11</td>
<td>0.3-0.7</td>
</tr>
<tr>
<td>12-13</td>
<td>0.4-0.8</td>
</tr>
<tr>
<td>14-15</td>
<td>0.5-0.9</td>
</tr>
<tr>
<td>≥ 16</td>
<td>0.8-1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Females – Age (in years)</th>
<th>Normal Cr. Ranges (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>0.1-0.4</td>
</tr>
<tr>
<td>4-5</td>
<td>0.2-0.5</td>
</tr>
<tr>
<td>6-8</td>
<td>0.3-0.6</td>
</tr>
<tr>
<td>9-15</td>
<td>0.4-0.7</td>
</tr>
<tr>
<td>≥ 16</td>
<td>0.6-1.1</td>
</tr>
</tbody>
</table>

Reference values have not been established for patients <12 months of age.
**Note:** eGFR results will not be calculated for patients <18 or >70 years old.
Case Example

Admission for Cardiogenic Shock

- 2 month old brought in after presenting to an OSH in cardiogenic shock.
- Acute renal failure not documented on the IP admission; is it POA?

<table>
<thead>
<tr>
<th>Component</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Chloride</th>
<th>Carbon Dioxide</th>
<th>BUN</th>
<th>Creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latest Ref Rng</td>
<td>133 - 142 MMOL/L</td>
<td>3.7 - 5.6 MMOL/L</td>
<td>95 - 105 MMOL/L</td>
<td>20 - 28 MMOL/L</td>
<td>8 - 28 MG/DL</td>
<td>0.12 - 1.06 MG/DL</td>
</tr>
<tr>
<td>5/13/2014</td>
<td>139</td>
<td>5.3</td>
<td>105</td>
<td>25</td>
<td>8</td>
<td>0.30</td>
</tr>
<tr>
<td>9/9/2013</td>
<td>138</td>
<td>4.8</td>
<td>105</td>
<td>21</td>
<td>9</td>
<td>0.40</td>
</tr>
<tr>
<td>9/5/2013</td>
<td>135</td>
<td>5.5</td>
<td>104</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/2/2013</td>
<td>139</td>
<td>5.2</td>
<td>106 (H)</td>
<td>17 (L)</td>
<td>11</td>
<td>0.45</td>
</tr>
<tr>
<td>8/31/2013</td>
<td>137</td>
<td>5.3</td>
<td>108 (H)</td>
<td>22</td>
<td>14</td>
<td>0.43</td>
</tr>
<tr>
<td>8/30/2013</td>
<td>140</td>
<td>3.5 (L)</td>
<td>108 (H)</td>
<td>23</td>
<td>19</td>
<td>0.57</td>
</tr>
<tr>
<td>8/29/2013</td>
<td>141</td>
<td>3.7 (L)</td>
<td>108 (H)</td>
<td>20</td>
<td>40 (H)</td>
<td>0.83</td>
</tr>
<tr>
<td>8/28/2013</td>
<td>137</td>
<td>3.3 (L)</td>
<td>103</td>
<td>20</td>
<td>58 (H)</td>
<td>1.16 (H)</td>
</tr>
<tr>
<td>8/27/2013</td>
<td>136</td>
<td>3.3 (L)</td>
<td>100</td>
<td>20</td>
<td>45 (H)</td>
<td>1.36 (H)</td>
</tr>
<tr>
<td>8/26/2013</td>
<td>136</td>
<td>3.6 (L)</td>
<td>99</td>
<td>25</td>
<td>40 (H)</td>
<td>1.46 (H)</td>
</tr>
<tr>
<td>8/26/2013</td>
<td>137</td>
<td>3.8 (L)</td>
<td>103</td>
<td>23</td>
<td>38 (H)</td>
<td>1.81 (H)</td>
</tr>
<tr>
<td>8/25/2013</td>
<td>3.7 (L)</td>
<td>106 (H)</td>
<td>17 (L)</td>
<td>11</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>8/25/2013</td>
<td>139</td>
<td>2.9 (L)</td>
<td>105</td>
<td>23</td>
<td>37 (H)</td>
<td>1.89 (H)</td>
</tr>
<tr>
<td>8/25/2013</td>
<td>142</td>
<td>3.3 (L)</td>
<td>107 (H)</td>
<td>26</td>
<td>33 (H)</td>
<td>1.94 (H)</td>
</tr>
<tr>
<td>8/24/2013</td>
<td>144 (H)</td>
<td>3.3 (L)</td>
<td>114 (H)</td>
<td>23</td>
<td>29 (H)</td>
<td>1.46 (H)</td>
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<tr>
<td>8/24/2013</td>
<td>3.6 (L)</td>
<td>106 (H)</td>
<td>17 (L)</td>
<td>11</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>8/23/2013</td>
<td>145 (H)</td>
<td>3.8 (L)</td>
<td>113 (H)</td>
<td>24</td>
<td>33 (H)</td>
<td>1.27 (H)</td>
</tr>
<tr>
<td>8/23/2013</td>
<td>145 (H)</td>
<td>3.1 (L)</td>
<td>108 (H)</td>
<td>28</td>
<td>33 (H)</td>
<td>0.92</td>
</tr>
<tr>
<td>8/22/2013</td>
<td>146 (H)</td>
<td>4.2</td>
<td>108 (H)</td>
<td>21</td>
<td>26</td>
<td>0.72</td>
</tr>
</tbody>
</table>
Shock Stages Categories

• STAGES OF SHOCK —
  – Compensated shock
    • Evidence of hypoperfusion (e.g. increased capillary refill, cool skin) but normal BP
  – Hypotensive shock
    • Hypotension with evidence of hypoperfusion
  – Irreversible shock

• CLASSIFICATION
  – Hypovolemic
  – Distributive
    • Sepsis
    • Anaphylaxis
    • Neurogenic
  – Cardiogenic
  – Obstructive
Case Example
ED History

• Patient presents with:
  – Nasal Congestion
  – Cold
  – Poor Feeding
  – Decreased Urine Output - only 2 wet diapers today
  – Crying

• HPI Comments: Pt is a 2 week female presenting to ED with rhinorrhea and cough x 3 days. Mom states that she has been having fevers at home, however Tmax 99.7 axillary. While in ER temp rectal= temp was 100.8. She has been taking decreased PO for the past day or so as well. Decreased wet diapers and decreased BMs.
Case Example
ED Physical

BP 97/52 | Pulse 211 | Temp(Src) 100.8 °F (38.2 °C) (Rectal) | Resp 66 | Wt 3.4 kg (7 lb 7.9 oz) | SpO2 98%

Physical Exam
Nursing note and vitals reviewed.
Constitutional: She appears well-developed and well-nourished. She is active. She has a weak cry. No distress.
HENT:
Head: Anterior fontanelle is flat.
Nose: Nasal discharge present.
Mouth/Throat: Mucous membranes are dry. Oropharynx is clear.

Thick nasal discharge
Eyes: Conjunctivae are normal. Pupils are equal, round, and reactive to light. Right eye exhibits no discharge. Left eye exhibits no discharge.
Neck: No tenderness or swelling.
Cardiovascular: Regular rhythm, S1 normal and S2 normal. Tachycardia present.
Pulmonary/Chest: No nasal flaring. Tachypnea noted. She has no wheezes. She has no rhonchi. She exhibits retraction.
Abdominal: Soft. Bowel sounds are normal.
Musculoskeletal: Normal range of motion.
Neurological: She is alert. She has normal strength. Suck normal. Symmetric Moro.
Skin: Skin is warm. Capillary refill takes 3 to 5 seconds. There is cyanosis. There is mottling.
satiating 100% on room air with normal color but when agitated and crying will dusky in color.

- Note the prolonged capillary refill, mottled appearance, and dusky color
- 70 cc saline fluid bolus administered
- Lactate level was not drawn due to patient’s age
Case Example
Impressions

• ED Resident
  – 2 week female with cough, rhinnorhea and neonatal fever. RSV +
  – S/p LP with clear fluid.

• ED Attending
  – 2 week female with RSV bronchiolitis presents with fever, tachycardia, respiratory distress
The PAT is to be a QUICK initial assessment, 30s upon entering the room before even touching the pediatric patient, in order to indicate the TYPE and SEVERITY of complaint. The PAT should be followed by ABCs, SAMPLE Hx, and a thorough 2° still.

**Appearance (TICLS):**
- **Tone** — abnormal muscle tone, limpness, self-righting?
- **Interactivity** — appropriate interaction with environment? Unaware of surroundings?
- **Consolability** — responds appropriately to affection by caregivers?
- **Look** — tracking, interacting with environment? Blank stare?
- **Speech** — Normal speech, or appropriate pre-verbal cooing/noises? Altered, or unabated crying?

**Work of Breathing:**
- Audible abnormal breath sounds? Increased, labored efforts? Positioning, Orthopnea, Tripoding?
- Suprasternal retractions? Subcostal, or even intercostal retractions? Nasal flaring? SeeSaw breathing?
- "Head bobbing"? (lifts the head on inspiration to better align airways, but drops in fatigue during exhale)

**Circulation to Skin:**
- Quick assessment of perfusion. Pallor? Cyanosis? Mottling (patchy pale coloration, like your palm)? Cap Refill >2s?
- **PALLOR** may be the only sign of ↓ circulation for child still in Compensated Shock, especially for blunt trauma victims!
Shock Stages Categories

STAGES OF SHOCK —

• Compensated shock
  – Evidence of hypoperfusion (e.g. increased capillary refill, cool skin) but normal BP

• Hypotensive shock
  – Hypotension with evidence of hypoperfusion

• Irreversible shock

CLASSIFICATION

• Hypovolemic
• Distributive
  – Sepsis
  – Anaphylaxis
  – Neurogenic
• Cardiogenic
• Obstructive
Congenital vs Acquired

• The ICD-9-CM (and ICD-10) system has specific newborn coding rules for acquired vs. congenital conditions
  • The designation of a condition as acquired vs congenital may alter the DRG or its relative weight
  • If not specifically documented by the provider, the default is always to congenital
• Query may be needed in order to accurately code the record
  • CMV may be congenital or may be acquired postnatally through breast feeding from an infected mother
  • Hydrocephalus may be congenital due to aqueductal stenosis or acquired secondary to IVH
### 2005 Clinical Indicators of Sepsis in Pediatrics

Table 2. Definitions of systemic inflammatory response syndrome (SIRS), infection, sepsis, severe sepsis, and septic shock

**SIRS**

- The presence of at least two of the following four criteria, one of which must be abnormal temperature or leukocyte count:
  - Core\(^b\) temperature of >38.5\(^\circ\)C or <36\(^\circ\)C.
  - Tachycardia, defined as a mean heart rate >2 SD above normal for age in the absence of external stimulus, chronic drugs, or painful stimuli; or otherwise unexplained persistent elevation over a 0.5- to 4-hr time period OR for children <1 yr old: bradycardia, defined as a mean heart rate <10th percentile for age in the absence of external vagal stimulus, \(\beta\)-blocker drugs, or congenital heart disease; or otherwise unexplained persistent depression over a 0.5-hr time period.
  - Mean respiratory rate >2 SD above normal for age or mechanical ventilation for an acute process not related to underlying neuromuscular disease or the receipt of general anesthesia.
  - Leukocyte count elevated or depressed for age (not secondary to chemotherapy-induced leukopenia) or >10% immature neutrophils.

**Infection**

A suspected or proven (by positive culture, tissue stain, or polymerase chain reaction test) infection caused by any pathogen OR a clinical syndrome associated with a high probability of infection. Evidence of infection includes positive findings on clinical exam, imaging, or laboratory tests (e.g., white blood cells in a normally sterile body fluid, perforated viscus, chest radiograph consistent with pneumonia, petechial or purpuric rash, or purpura fulminans).

**Sepsis**

SIRS in the presence of or as a result of suspected or proven infection.

**Severe sepsis**

Sepsis plus one of the following: cardiovascular organ dysfunction OR acute respiratory distress syndrome OR two or more other organ dysfunctions. Organ dysfunctions are defined in Table 4.

**Septic shock**

Sepsis and cardiovascular organ dysfunction as defined in Table 4.
Sepsis vs. SIRS
ICD-9-CM vs. ICD-10-CM Table of Diseases

ICD-9-CM

SIRS (systemic inflammatory response syndrome) 995.90
- due to infectious process 995.91
- with acute organ dysfunction 995.92
- non-infectious process 995.93
- with acute organ dysfunction 995.94

ICD-10-CM

Syndrome, systemic inflammatory response
- NO CODE FOR SIRS DUE TO INFECTION (aka sepsis) or SEPSIS SYNDROME
- of non-infectious origin (without organ dysfunction) R65.10
- -- with acute organ dysfunction R65.11

PHYSICIAN MUST SAY “SEPSIS”, NOT “SIRS due to INFECTION”, TO GET “SEPSIS” IN ICD-10
R/O Sepsis Workups

• Joint Commission is monitoring the incidence of sepsis that is not present on admission
  – If a child is admitted to “r/o sepsis”, please declare if sepsis was ruled in or ruled out”
Respiratory Failure

• Acute Respiratory Failure (ARF)
The inability to provide O$_2$ and remove CO$_2$ at a rate that meets metabolic demands.
  – Not all patients with ARF require intubation and mechanical ventilation.

Any of the following interventions likely meet the criteria for ARF
  – Supplemental oxygen >30-35% to maintain adequate oxygenation
  – Any level of high-flow nasal cannula
  – Any level of nasal CPAP or BiPAP, except for isolated obstructive sleep apnea

• Chronic Respiratory Failure
  • Respiratory processes requiring home oxygen or ventilator support (mechanical vent or nasal BiPAP), or having baseline SaO$_2$ < 88% on room air or pCO$_2$ > 50 with a normal pH

• Acute on Chronic Respiratory failure
  • Chronic respiratory failure with worsening of baseline respiratory symptoms and SaO$_2$ and/or pCO$_2$

Necrotizing Enterocolitis

- ICD-10 classifies NEC as **unspecified, Stage 1, Stage 2, Stage 3**
  - Provider should state the stage being treated (coder cannot assume)

<table>
<thead>
<tr>
<th>NEC Stage</th>
<th>Clinical Characteristics</th>
<th>CC/MCC</th>
<th>SOI</th>
<th>ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unspecified</td>
<td></td>
<td>MCC</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Stage 1</td>
<td>W/o pneumatosis, w/o perforation</td>
<td>MCC</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Stage 2</td>
<td>With pneumatosis, w/o perforation</td>
<td>MCC</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Stage 3</td>
<td>With perforation or with pneumatosis and perforation</td>
<td>MCC</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
## Evolving Pediatric Definitions

<table>
<thead>
<tr>
<th>Classification</th>
<th>Variable</th>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gomez (1955)</td>
<td>Median WFA (%)</td>
<td>Mild</td>
<td>75%–90% WFA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>60%–74% WFA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>&lt;60% WFA</td>
</tr>
<tr>
<td>Waterlow (wasting) 1972</td>
<td>Median WFH (%)</td>
<td>Mild</td>
<td>80%–89% WFH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>70%–79% WFH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>&lt;70% WFH</td>
</tr>
<tr>
<td>Waterlow (stunting) 1972</td>
<td>Median HFA (%)</td>
<td>Mild</td>
<td>90%–94% HFA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>85%–90% HFA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>&lt;85% HFA</td>
</tr>
<tr>
<td>WHO (wasting)</td>
<td>WFH (z scores below median WFH)</td>
<td>Moderate</td>
<td>z score between −2 and −3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>z score &lt;-3</td>
</tr>
<tr>
<td>WHO (stunting)</td>
<td>HFA (z scores below median HFA)</td>
<td>Moderate</td>
<td>z score between −2 and −3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>z score &lt;-3</td>
</tr>
<tr>
<td>Kanawati &amp; McLaren 1970</td>
<td>MUAC divided by HC</td>
<td>Mild</td>
<td>&lt;0.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate</td>
<td>&lt;0.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>&lt;0.25</td>
</tr>
<tr>
<td>Cole (2007)</td>
<td>BMI z-scores for age</td>
<td>Grade 1</td>
<td>Less than negative 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 2</td>
<td>Between -2 and -3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 3</td>
<td>Less than negative 3</td>
</tr>
</tbody>
</table>

BMI, body mass index; HC, head circumference; HFA, height-for-age; MUAC, mid–upper arm circumference; WFA, weight-for-age; WFH, weight-for-height; WHO, World Health Organization.
Game Changer
Pediatric Malnutrition - 2013

Defining Pediatric Malnutrition: A Paradigm Shift Toward Etiology-Related Definitions

Nilesh M. Mehta, MD\textsuperscript{1}; Mark R. Corkins, MD, CNSC, SPR, FAAP\textsuperscript{2}; Beth Lyman, MSN, RN\textsuperscript{3}; Ainsley Malone, MS, RD, CNSC\textsuperscript{4}; Praveen S. Goday, MBBS, CNSC\textsuperscript{5}; Liesje (Nieman) Carney, RD, CSP, LDN\textsuperscript{6}; Jessica L. Monczka, RD, CNSD\textsuperscript{7}; Steven W. Plogsted, PharmD, RPh, BCNSP, CNSC\textsuperscript{8}; W. Frederick Schwenk, MD, FASPEN\textsuperscript{9}; and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors

- Published in JPEN in 2013
- [http://www.tinyurl.com/2013pedmalnutrition](http://www.tinyurl.com/2013pedmalnutrition)
- Approved by the American Academy of Pediatrics
Pediatric Malnutrition Definition
ASPEN – Summer 2013

### 2013 Pediatric Malnutrition Dependent on BMI z-scores

<table>
<thead>
<tr>
<th>Malnutrition Severity</th>
<th>BMI z-Score</th>
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<tbody>
<tr>
<td>Mild</td>
<td>Less than -1</td>
</tr>
<tr>
<td>Moderate</td>
<td>Between -2 and -3</td>
</tr>
<tr>
<td>Severe</td>
<td>Less than -3</td>
</tr>
</tbody>
</table>

Note: z-scores are determined by:
- Age < 2 yrs – WHO charts
- Age 2-20 yrs – CDC charts

Z-score is determined by age-related BMI charts furnished by the WHO or the CDC
Another Game Changer
Pediatric Malnutrition - 2014

Consensus Recommendations

Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Indicators Recommended for the Identification and Documentation of Pediatric Malnutrition (Undernutrition)

- Refinement published in JPEN in 2014
- [http://www.tinyurl.com/2014pedmalnutrition](http://www.tinyurl.com/2014pedmalnutrition)
- Approved by the American Academy of Pediatrics
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight gain velocity</td>
<td>Age &lt; 2</td>
<td>Less than 75% of the norm for expected weight gain</td>
<td>Less than 50% of the norm for expected weight gain</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>Age 2-20</td>
<td>5% usual body weight</td>
<td>7.5% usual body weight</td>
</tr>
<tr>
<td>Deceleration in weight for length/height z score</td>
<td>Decline of 1 z score</td>
<td>Decline of 2 z score</td>
<td>Decline of 3 z score</td>
</tr>
<tr>
<td>Inadequate nutrient intake</td>
<td>51%–75% estimated energy/protein need</td>
<td>26%-50% estimated energy/protein need</td>
<td>≤25% estimated energy/protein need</td>
</tr>
</tbody>
</table>

**Criteria with 2 points available**
What About Marasmus and Kwashiorkor?

- **Marasmus** - a state in which virtually all available body fat stores have been exhausted due to starvation.
  - Conditions that produce marasmus in developed countries tend to be chronic and indolent, such as cancer, chronic pulmonary disease, and anorexia nervosa
  - Patients appear starved or “cachetic”

- **Kwashiorkor** - an acute form of protein-energy malnutrition characterized by edema, irritability, anorexia, ulcerating dermatoses, and an enlarged liver with fatty infiltrates.
  - Occurs mainly in connection with acute, life-threatening illnesses such as trauma and sepsis, and chronic illnesses that involve acute-phase inflammatory responses.
  - Now called “severe acute malnutrition”

http://www.who.int/nutrition/topics/malnutrition/en/index.html

- Very rare in the United States
- Probably should not be coded unless deemed to be valid by the provider
- Surveillance for kwashiorkor is on the 2015 OIG Work Plan
What about Cachexia?

• Sarcopenia
  – Loss of muscle mass and muscle strength

• Cachexia:
  – A multifactorial syndrome characterized by severe body weight, fat and muscle loss and increased protein catabolism due to underlying diseases
    • The result of the complex interplay between underlying disease, disease-related metabolic alterations and, in some cases, the reduced availability of nutrients
  – Clinical indicators in cancer patients – weight loss that is
    • >5% or
    • >2% in patients already showing depletion according to current body weight for height (BMI <20kg/m²) or skeletal muscle mass


Newborn (Suspected to Be) Affected By Significant Problems

- Maternal hypertensive disorders
- Maternal renal and urinary tract diseases
- Other maternal circulatory and respiratory diseases
- Maternal nutritional disorders
- Maternal injury
- Surgical procedure on mother
- Other medical procedures on mother, not elsewhere classified
- Periodontal disease in mother
- Unspecified maternal condition
- Incompetent cervix
- Premature rupture of membranes
- Oligohydramnios
- Polyhydramnios
- Ectopic pregnancy
- Multiple pregnancy
- Maternal death
- Malpresentation before labor
- Other maternal complications of pregnancy
- Paternal complication of pregnancy, unspecified
- Placenta previa
- Other forms of placental separation and hemorrhage
- Unspecified morphological and functional abnormalities of placenta
- Other morphological and functional abnormalities of placenta
Newborn (Suspected to Be) Affected By Significant Problems

- Placental transfusion syndromes
- Chorioamnionitis
- Other abnormalities of membranes
- Abnormality of membranes, unspecified
- Abnormal uterine contractions
- Abnormality in fetal (intrauterine) heart rate or rhythm before the onset of labor
- Abnormality in fetal (intrauterine) heart rate or rhythm during labor
- Abnormality in fetal (intrauterine) heart rate or rhythm, unspecified as to time of onset
- Meconium passage during delivery
- Other specified complications of labor and delivery
- Maternal anesthesia and analgesia in pregnancy, labor and delivery
- Other maternal medication
- Maternal use of tobacco
- Maternal use of alcohol
- Maternal use of cocaine
- Maternal use of other drugs of addiction
- Maternal use of nutritional chemical substances
- Maternal exposure to environmental chemical substances
- Other maternal noxious substances
- Maternal noxious substance, unspecified
How Does This Impact Physicians?

Viewpoint  |  May 21, 2014

CMS—Engaging Multiple Payers in Payment Reform

Rahul Rajkumar, MD, JD\textsuperscript{1,2}; Patrick H. Conway, MD, MSc\textsuperscript{1,3}; Marilyn Tavenner, RN, MHA\textsuperscript{1}

[+] Author Affiliations


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The Affordable Care Act created the Center for Medicare and Medicaid Innovation (Innovation Center) to test innovative payment and service delivery models to reduce program expenditures under Medicare, Medicaid, and the Children’s Health Insurance Program (CHIP) and to enhance the quality of care that Centers for Medicare & Medicaid Services (CMS) beneficiaries receive. CMS is testing more than 20 models under this authority that create new incentives for clinicians and organizations that deliver medical care through CMS programs to deliver better care at lower cost. CMS is also supporting a variety of state efforts to create new incentives for these clinicians and organizations through the Medicaid and CHIP programs. All of these models share a common pathway for success: they hinge on getting clinicians and health care
Alternative Payment Models
Bundled Payment Care Initiative

• Hospitals and physicians paid out of the same payment for current admissions and all care within 30 days of discharge
• Places physicians at risk for efficient hospital resource utilization.

"(g) IMPLEMENTATION PLAN.—
“(1) IN GENERAL.—Not later than January 1, 2016, the Secretary shall submit a plan for the implementation of an expansion of the pilot program if the Secretary determines that such expansion will result in improving or not reducing the quality of patient care and reducing spending under this title.

“(h) ADMINISTRATION.—Chapter 35 of title 44, United States Code, shall not apply to the selection, testing, and evaluation of models or the expansion of such models under this section.”
<table>
<thead>
<tr>
<th>Services Lines Under Current Study</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute myocardial infarction</td>
<td>Major bowel</td>
</tr>
<tr>
<td>Amputation</td>
<td>Major cardiovascular procedure</td>
</tr>
<tr>
<td>Atherosclerosis</td>
<td>Major joint replacement of the lower extremity</td>
</tr>
<tr>
<td>Automatic implantable cardiac defibrillator generator or lead</td>
<td>Major joint upper extremity</td>
</tr>
<tr>
<td>Back and neck except spinal fusion</td>
<td>Medical non-infectious orthopedic</td>
</tr>
<tr>
<td>Cardiac arrhythmia</td>
<td>Medical peripheral vascular disorders</td>
</tr>
<tr>
<td>Cardiac defibrillator</td>
<td>Nutritional and metabolic disorders</td>
</tr>
<tr>
<td>Cardiac valve</td>
<td>Other knee procedures</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>Other respiratory</td>
</tr>
<tr>
<td>Cervical spinal fusion</td>
<td>Other vascular surgery</td>
</tr>
<tr>
<td>Chest pain</td>
<td>Pacemaker Device replacement or revision</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease, bronchitis/asthma</td>
<td>Pacemaker</td>
</tr>
<tr>
<td>Combined anterior posterior spinal fusion</td>
<td>Percutaneous coronary intervention</td>
</tr>
<tr>
<td>Complex non-Cervical spinal fusion</td>
<td>Red blood cell disorders</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>Removal of orthopedic devices</td>
</tr>
<tr>
<td>Coronary artery bypass graft surgery</td>
<td>Renal failure</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Revision of the hip or knee</td>
</tr>
<tr>
<td>Double joint replacement of the lower extremity</td>
<td>Sepsis</td>
</tr>
<tr>
<td>Esophagitis, gastroenteritis and other digestive disorders</td>
<td>Simple pneumonia and respiratory infections</td>
</tr>
<tr>
<td>Fractures femur and hip/pelvis</td>
<td>Spinal fusion (non-Cervical)</td>
</tr>
<tr>
<td>Gastrointestinal hemorrhage</td>
<td>Stroke</td>
</tr>
<tr>
<td>Gastrointestinal obstruction</td>
<td>Syncope and collapse</td>
</tr>
<tr>
<td>Hip and femur procedures except major joint</td>
<td>Transient ischemia</td>
</tr>
<tr>
<td>Lower extremity and humerus procedure except hip, foot, femur</td>
<td>Urinary tract infection</td>
</tr>
</tbody>
</table>
## Expected costs

### Pneumonia

<table>
<thead>
<tr>
<th>MS-DRG</th>
<th>MDC</th>
<th>MS-DRG Title</th>
<th>Wgts</th>
<th>Bundle</th>
</tr>
</thead>
<tbody>
<tr>
<td>871</td>
<td>18</td>
<td>SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS</td>
<td>1.8527</td>
<td>$27,791</td>
</tr>
<tr>
<td>177</td>
<td>04</td>
<td>RESPIRATORY INFECTIONS &amp; INFLAMMATIONS</td>
<td>W MCC</td>
<td>$29,901</td>
</tr>
<tr>
<td>178</td>
<td>04</td>
<td></td>
<td>W CC</td>
<td>$20,933</td>
</tr>
<tr>
<td>179</td>
<td>04</td>
<td>W/O CC/MCC</td>
<td>0.9741</td>
<td>$14,612</td>
</tr>
<tr>
<td>193</td>
<td>04</td>
<td>SIMPLE PNEUMONIA &amp; PLEURISY</td>
<td>W MCC</td>
<td>$21,825</td>
</tr>
<tr>
<td>194</td>
<td>04</td>
<td></td>
<td>W CC</td>
<td>$14,657</td>
</tr>
<tr>
<td>195</td>
<td>04</td>
<td>W/O CC/MCC</td>
<td>0.6997</td>
<td>$10,496</td>
</tr>
</tbody>
</table>

Multiple relative weight by base rate (e.g., $15,000) to get reimbursement
St. Joseph’s ICD-10 Strategy - CDI

Physician

CDI Team

ICD-10 Coder
ICD-10 Prep
How do we do it?

• The best way to get ready for ICD-10 is to do ICD-9-CM correctly and then negotiate the differences
  – A team effort of which St. Joseph is willing and ready to assist
Descriptions of St. Joseph Resources

• Precyse – E-learning ICD-10 Modules
  – Accessible through your St. Joseph physician portal
  – CMEs available

• ICD-10 DocTips
  – Specialty specific
  – Available through the SJH Pulse – mobile Apple/Android APP

• Regional ICD-10 Coordinators
  – Sandra McDonald – (305) 298-5677 - Sandra.macdonald@stjoe.org
  – Available for one-on-one specialty –specific consultation upon request

• Ongoing support of your documentation improvement and coding teams
What’s Old?
ICD-9-CM

Numeric or Alpha (E or V)

Numeric

4 1 4

Category

0 0

Etiology, anatomic site, manifestation
What’s New
ICD-10-CM
ICD-10-CM
Diagnosis Changes

• Major expansions in coding primary care encounters, external causes of injury, mental disorders, neoplasms, and preventative health
  – Addition of new conditions since last revision
  – New categories for postprocedural disorders
  – Addition of laterality (right, left, bilateral)
  – Expansion of diabetes and injury codes
  – New combination codes
  – Greater specificity for current conditions
  – Inclusion of trimester in pregnancy codes
  – More space to accommodate expansion
## Asthma: Severities of Illness

### Component of Severity

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Intermittent</th>
<th>Classification of Severity</th>
<th>Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
<td>&gt; 2 days/week but not daily</td>
<td>Daily</td>
</tr>
<tr>
<td>0-4</td>
<td>0</td>
<td>1-2x/month</td>
<td>3-4x/month</td>
</tr>
<tr>
<td>&gt;=5</td>
<td>2x/month</td>
<td>&gt; 1x/week but not nightly</td>
<td>1x/week</td>
</tr>
<tr>
<td>SABA use for symptom control</td>
<td></td>
<td>&gt; 2 days/week but not daily</td>
<td>Daily</td>
</tr>
<tr>
<td>All</td>
<td>&lt;=2 days/week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None</td>
<td>Minor limitation</td>
<td>Some limitation</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Lung Function:

<table>
<thead>
<tr>
<th>FEV1 (predicted) or PEF (personal best)</th>
<th>Normal FEV1</th>
<th>Normal FEV1</th>
<th>Normal FEV1</th>
<th>Normal FEV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=5</td>
<td>Normal FEV1</td>
<td>Normal FEV1</td>
<td>Normal FEV1</td>
<td>Normal FEV1</td>
</tr>
<tr>
<td></td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;60-80%</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>FEV1/FVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-11</td>
<td>&gt;85%</td>
<td>&gt;80%</td>
<td>75-80%</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>&gt;=12</td>
<td>Normal</td>
<td>Reduced 5%</td>
<td>Reduced &gt; 5%</td>
<td></td>
</tr>
</tbody>
</table>

### Exacerbations requiring oral corticosteroids

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Intermittent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>&gt;=1x/year</td>
</tr>
<tr>
<td>5-11</td>
<td></td>
</tr>
<tr>
<td>&gt;=12</td>
<td></td>
</tr>
</tbody>
</table>

Source: UMichHS Asthma Quality Improvement Steering Committee

---

**St. Joseph Health**

**ICD-10** Perfect Care. Perfect Code.
New ICD-10-CM
Asthma Specificity

• Clinical classifications:
  – Mild Intermittent
  – Mild Persistent
  – Moderate Persistent
  – Severe Persistent

• Each of the above is further categorized as:
  – “uncomplicated”
  – With acute exacerbation
  – With status asthmaticus

Use additional code to identify:
- exposure to environmental tobacco smoke (Z77.22)
- history of tobacco use (Z87.891)
- occupational exposure to environmental tobacco smoke (Z57.31)
- tobacco dependence (F17.0)
  
*Includes “smoker”*

“Smoker in withdrawal”
“Nicotine withdrawal”
= MS-DRG CC
Asthma in Meditech 5.67

<table>
<thead>
<tr>
<th>Qualifiers</th>
<th>Asthma severity</th>
<th>Asthma complication type</th>
<th>Qualified Code</th>
<th>Problem Specific A/P</th>
<th>Support Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis Present on Admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mild intermittent</td>
<td>mild persistent</td>
<td>moderate persistent</td>
<td>severe persistent</td>
<td>unspecified severity</td>
<td></td>
</tr>
<tr>
<td>with acute exacerbation</td>
<td>with status asthmaticus</td>
<td>uncomplicated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reactive Airways Disease (RAD)

- RAD codes in ICD-9-CM and ICD-10-CM to unspecified asthma
  - Usually not the intent of most pediatricians
- Avoid the term RAD!

- Use the most specific diagnosis known
  - RSV or human metapneumovirus bronchiolitis
  - Asthma if one means asthma (plus the previously mentioned specificities)

- Otherwise just document applicable symptoms
  - wheezing
  - acute bronchospasm
Acute Respiratory Failure
Now with hypercapnia or hypoxemia

Physicians must state that acute or chronic respiratory failure exists AND document hypoxia or hypercapnia exists to gain the additional specificity. Coders may not interpret abnormal blood gases or clinical circumstances.

Acute respiratory failure is inferred if the patient is in a life-threatening circumstances.

Chronic respiratory failure is supported if on chronic oxygen or with chronic hypercapnia.
Respiratory Failure in Meditech 5.67

<table>
<thead>
<tr>
<th>Diagnosis Present on Admission</th>
<th>Respiratory failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifiers</td>
<td>Yes</td>
</tr>
<tr>
<td>Chronicity</td>
<td></td>
</tr>
<tr>
<td>Respiratory failure complication</td>
<td></td>
</tr>
<tr>
<td>Qualified Code</td>
<td></td>
</tr>
<tr>
<td>Problem Specific A/P</td>
<td></td>
</tr>
<tr>
<td>Support Text</td>
<td></td>
</tr>
</tbody>
</table>

- acute
- acute on chronic
- chronic
- unspecified
- hypoxia
- hypercapnia
- hypoxia and hypercapnia
- unspecified whether with hypoxia or hypercapnia
New Categories for Postprocedural Disorders

- J95.8 Other intraoperative and postprocedural complications and disorders of respiratory system, not elsewhere classified
  - J95.81 Postprocedural pneumothorax and air leak
    - J95.811 Postprocedural pneumothorax
    - J95.812 Postprocedural air leak
  - J95.82 Postprocedural respiratory failure
    - Excludes1: Respiratory failure in other conditions (J96.-)
    - J95.821 Acute postprocedural respiratory failure
      Postprocedural respiratory failure NOS
    - J95.822 Acute and chronic postprocedural respiratory failure

- Time frame dependent
- Count as complications

- Crucial to determine if any of these are “integral to” or “inherent to the normal recovery” of surgical procedures as to properly classify these conditions as “complications”
# AHRQ PSI 11

## Postoperative Respiratory Failure

### Acute respiratory failure diagnosis codes

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
<th>ICD-10-CM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>518.51</td>
<td>Acute respiratory failure following trauma and surgery</td>
<td>J95.821</td>
<td>Acute postprocedural respiratory failure</td>
</tr>
<tr>
<td>518.53</td>
<td>Acute and chronic respiratory failure following trauma and surgery</td>
<td>J95.822</td>
<td>Acute and chronic postprocedural respiratory failure</td>
</tr>
</tbody>
</table>

### Mechanical ventilation for 96 consecutive hours or more procedure code

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
<th>ICD-10-PCS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.72</td>
<td>Continuous invasive mechanical ventilation for 96 consecutive hours or more</td>
<td>5A1955Z</td>
<td>Respiratory Ventilation, Greater than 96 Consecutive Hours</td>
</tr>
</tbody>
</table>

### Mechanical ventilation for less than 96 consecutive hours (or undetermined) procedure codes

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
<th>ICD-10-PCS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.70</td>
<td>Continuous invasive mechanical ventilation of unspecified duration</td>
<td>None of the ICD-10-CM codes apply to this concept. ICD-10-CM does not have information on the specific duration whereas the original ICD-9-CM code is expressly non-specific.</td>
<td></td>
</tr>
</tbody>
</table>

### Mechanical ventilation for less than 96 consecutive hours (or undetermined) procedure codes

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
<th>ICD-10-PCS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.71</td>
<td>Continuous invasive mechanical ventilation for less than 96 consecutive hours</td>
<td>5A1935Z</td>
<td>Respiratory Ventilation, Less than 24 Consecutive Hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5A1945Z</td>
<td>Respiratory Ventilation, 24-96 Consecutive Hours</td>
</tr>
</tbody>
</table>
Postop “Resp Failure” After MVR
Is it Unexpected or Out of the Routine?

Immediate postoperative progress note

Note that “shock” and “respiratory failure” are documented, which were then coded

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 6 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 coumadin dose.

Patient has had an otherwise uneventful postoperative course and is stable for discharge home.
Intraoperative vs. Postoperative Events

J95.4 Chemical pneumonitis due to anesthesia
   Mendelson’s syndrome
   Postprocedural aspiration pneumonia
   Use additional code for adverse effect, if applicable, to identify drug (T41.- with fifth or sixth character 5)

Excludes1: aspiration pneumonitis due to anesthesia complicating labor and delivery (O74.0)
   aspiration pneumonitis due to anesthesia complicating pregnancy (O29)
   aspiration pneumonitis due to anesthesia complicating the puerperium (O89.01)

J95.5 Postprocedural subglottic stenosis

J95.6 Intraoperative hemorrhage and hematoma of a respiratory system organ or structure complicating a procedure
   Excludes1: intraoperative hemorrhage and hematoma of a respiratory system organ or structure due to accidental puncture and laceration during procedure (J95.7-)

J95.61 Intraoperative hemorrhage and hematoma of a respiratory system organ or structure complicating a respiratory system procedure

J95.62 Intraoperative hemorrhage and hematoma of a respiratory system organ or structure complicating other procedure

If clinically significant, a complication
If documented as not clinically significant, not a complication
Atherosclerotic heart disease of native coronary artery
Atherosclerotic cardiovascular disease
Coronary (artery) atheroma
Coronary (artery) atherosclerosis
Coronary (artery) disease
Coronary (artery) sclerosis

Use additional code, if applicable, to identify:
coronary atherosclerosis due to calcified coronary lesion (I25.84)
coronary atherosclerosis due to lipid rich plaque (I25.83)

Excludes2: atheroembolism (I75.-)
atherosclerosis of coronary artery bypass graft(s) and transplanted heart (I25.7-)

I25.10 Atherosclerotic heart disease of native coronary artery without angina pectoris
Atherosclerotic heart disease NOS

I25.11 Atherosclerotic heart disease of native coronary artery with angina pectoris

I25.110 Atherosclerotic heart disease of native coronary artery with unstable angina pectoris
Excludes1: unstable angina without atherosclerotic heart disease (I20.0)

I25.111 Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spasm
Excludes1: angina pectoris with documented spasm without atherosclerotic heart disease (I20.1)

I25.118 Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris
Excludes1: other forms of angina pectoris without atherosclerotic heart disease (I20.8)

I25.119 Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris
Atherosclerotic heart disease with angina NOS
Atherosclerotic heart disease with angina NOS
Atherosclerotic heart disease with ischemic chest pain
Summary
Clinical Documentation Integrity

• Critical that your patient’s diagnoses are classified correctly
  – Coders are not allowed to clinically interpret
  – If you don’t write it down, they cannot code it
  – If they cannot code it, you cannot get credit for that part of your patient’s severity of illness
    • Lower Relative Weights
    • Lower Reimbursements
    • Look worse that you should in comparison with peers
Questions?