Beginning a Pediatric Mortality Review/
Neonatal Mortality Reviews

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Learning Objectives

At the completion of this educational activity, the learner will be able to:

- Describe the needs for a mortality review at a pediatric facility
- Identify current and future needs for a successful pediatric review process
- Determine opportunities for provider engagement and education
- Identify how to develop a sound structure of neonatal mortality reviews through aligning with key leaders
“Raise Your Hand” Question 1

• Does your facility/system currently have a pediatric mortality program?
  – Yes
  – No
  – No, but we’re considering adding one
Pediatric Mortality Reviews

Lauren Shivers, MSHI, RN, CPC
*CDE Manager*
Children’s of Alabama
Birmingham, AL
Children’s of Alabama®

- Alabama’s only freestanding pediatric hospital and pediatric Level I trauma center
- Main campus with 360 beds—South campus with outpatient clinics and surgical services
- Clinical documentation excellence (CDE) department implemented in 2014—within the finance division at COA
- Department includes: 5 inpatient nurses, 3 outpatient nurses, manager, director
- Pediatric hospitalist physician advisor

https://www.childrensal.org/about-childrens
# CDE Department Metrics

<table>
<thead>
<tr>
<th>CDE department</th>
<th>Current results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query rate</td>
<td>25%–30%</td>
</tr>
<tr>
<td>Physician response rate</td>
<td>85%</td>
</tr>
<tr>
<td>Physician agreement rate</td>
<td>90%</td>
</tr>
</tbody>
</table>
COA Mortality Process

- Did not have one
- Initially involved the CDE and coding departments—showing specific examples of low SOI/ROM cases
- Brought in MD advisor as needed—had no official query process for mortality cases
- Mortality data overall was not being seen or used in the hospital
- Preliminary data showed the need for a more rigorous mortality review process and how CDE/coding could positively affect quality metrics
Documentation Example

• MD documentation states: 13 yo with CP, epilepsy, FTT, GT dependence admitted in full arrest after aspiration event at home. Probable aspiration PNA. Pt appears malnourished. Patient intubated by EMTs and arrived to ED and given multiple fluid boluses and rounds of Epi for hypotension. Pt transferred to PICU. Time of death 0430.
## Initial Coding Summary Results

<table>
<thead>
<tr>
<th>DRG</th>
<th>SOI</th>
<th>ROM</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>APR DRG 137 Major Respiratory Infections &amp; Inflammations</td>
<td>4</td>
<td>2</td>
<td>1.3186</td>
</tr>
</tbody>
</table>
Query Opportunities

• Acute hypoxic respiratory failure
• Severe malnutrition
• Hypovolemic shock
Results After Query

<table>
<thead>
<tr>
<th>DRG</th>
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<td>4</td>
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Benefits of Pediatric Mortality Review

- Accurately capture the severity of illness and risk of mortality
- Improve predicted mortality measures
- Basically show how sick these patients actually are
- Can allow for identification of patient safety issues that may have contributed to the patient deaths and can help improve patient care processes
- Quality improvement initiative could help our facility create meaningful data to track trends in mortality patient cases
Next Steps

• Met with COA medical director and COA patient safety officer to establish initial process for mortality reviews
• Reached out to IT department to establish a monthly report of all mortality cases to review
• CDE manager and coding manager perform 2nd level review and bring to MDs as needed for retrospective query
• Plans to reach out to CVICU, NICU, hem/onc, and PICU to assess their current mortality data
• Plans to collaborate with PI (performance improvement) department as quality improvement initiative
Plans for Multidisciplinary Approach

#1 CDE RN & coder review case

#2 Collaborate with MDs

#3 MD to MD clarification

#4 Share data with multiple depts

#5 Ongoing physician education and improved patient safety
Children’s Hospital Association

- PHIS database (Pediatric Health Information System)
- CDE physician advisor showed PHIS comparative data to our C-suite

https://www.childrenshospitals.org/phis
Moving Forward

• Departments involved: CDE, coding, performance improvement
• How we incorporated mortality into our current chart review process
• Results to show C-suite
• Future plans to include patient safety initiatives
CDE Mortality Educational Plans

- MD education opportunities regarding mortality documentation trends:
  1. Acute respiratory failure
  2. Shock
  3. Malnutrition
  4. Acute kidney injury

- Service line–specific mortality data

- Education about observed/expected mortality ratio (O/E) in comparison to other freestanding pediatric facilities
CDE Mortality Review Process Goals

- Incorporate concurrent and retrospective queries for mortality patients
- Establish official process for scheduled mortality reviews involving CDE, coding, quality, patient safety officer, and performance improvement
- Establish guidelines and education for CDE nurses to use when reviewing documentation for mortality patients
Neonatal Mortality Reviews

Julian Everett, BSN, RN, CDIP
Clinical Documentation Excellence Educator
Orlando Health Hospital
Orlando, FL
Arnold Palmer Children’s Hospital CDE Program

- Clinical documentation excellence program was established in 2016
- Eight clinical documentation specialists
- Review medical records concurrently

<table>
<thead>
<tr>
<th>Description</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare productivity</td>
<td>90% or higher</td>
</tr>
<tr>
<td>Medicaid productivity</td>
<td>90% or higher</td>
</tr>
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<td>Query rate</td>
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“Raise Your Hand” Question 2

- Do you query a physician even if the answer would only affect quality measures?
  - Yes
  - No
  - Unsure
Benefits of Neonatal Mortality Reviews

- Accurate capture of O/E mortality ratio
- Ensuring high-quality data drive
- Obtain documentation regarding do-not-resuscitate (DNR) and palliative care status present on admission (POA)
- Internal quality audits
What Is Neonatal Mortality?

• Neonatal period is defined as the first 28 days of life
• Deaths occurring within the first 28 days can be defined as newborn or neonatal death
• Neonatal death can be divided into three categories
  A. First 24 hours after birth
  B. 1–6 days after birth (early neonatal death)
  C. 7–28 days after birth (late neonatal death)
• Neonatal mortality rate (NMR) per 1,000 live births
Central Florida Mortality and Low Birth Weight Rate

• Top five leading causes of neonatal mortality
  1. Birth defects
  2. Preterm birth (birth prior 37 weeks)
  3. Maternal complications
  4. Low birth weight
  5. Injuries

• In 2017, the infant mortality rate in Orange County was 7.1 per 1,000 live births
Neonatal Mortality Rate Calculation (Neonatal Quality Indicator #2)

• In-hospital death per 1,000 neonates. Excludes newborns weighing less than 500 grams; cases with anencephaly, polysystic kidney, trisomy 13, or trisomy 18; and transfers to an acute care facility
• Numerator: Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator
• Denominator: All newborn and outborn discharges
Arnold Palmer Medical Center Vital Statistics

Pediatric Mortality

- 2017: 6,300
- 2018: 6,400

Neonatal Mortality

- 2017: 10,500
- 2018: 11,000

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Structure of Neonatal Mortality Reviews
Structure of Mortality Reviews

**STEP 1**
- Potential mortality cases are escalated for a second-level review
- Cases are reviewed for clinical gaps and low SOI/ROM scores

**STEP 2**
- Queries recommendations are sent concurrently by assigned CDS
- Queries sent on mortality cases are closed out within 24–48 hours

**STEP 3**
- Retrospectively, cases are reviewed by second-level CDS prior to coding
- Completed mortality cases are emailed to the clinical quality specialist (CQS)
Clinical Documentation Specialist (CDS) Education

- CDSs were made aware of end-of-life documentation phrases such as:
  - “Brain death exam will be conducted”
  - “Quality of life is poor”
  - “Patient has multiple system organ failure”
  - “Not responding to treatment”
  - “Do not resuscitate”
Clinical Documentation Specialist (CDS) Education (cont.)

<table>
<thead>
<tr>
<th>Date:</th>
<th>Account:</th>
<th>□ Gestational Weeks □ Weigh □ Query Sent □ YES □ NO □ Clinical Quality Specialist Notified □ Patient Safety Indicators □ YES □ NO</th>
<th>Comments:</th>
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<td></td>
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Physician Education

- Defining All Patient Refined Diagnostics (APR-DRG)
- The effect of severity of illness and risk of mortality within the neonatal population
- Documentation requirements for neonates < 22 weeks gestation
- Retrospective query opportunities
  1. Acute respiratory failure
  2. Acuity of hypotension
  3. Linking acute respiratory failure to underlying cause
## Physician Mortality Educational Session

<table>
<thead>
<tr>
<th>Cases to Be Discussed</th>
<th>Working DRG</th>
<th>Working SOI/ROM</th>
<th>Query Opportunities</th>
<th>Final DRG</th>
<th>Final SOI/ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td></td>
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<tr>
<td>II.</td>
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<tr>
<td>III.</td>
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<tr>
<td>IV.</td>
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</tr>
</tbody>
</table>
Case Example
**Extreme Premature Babies**

**History and Physical**

- **Pt:** This is 26 week 2 days gestation 500 gram born via cesarean delivery.


- Patient delivered due to maternal pre-eclampsia and was placed on an oscillator due to respiratory distress syndrome.

**Day Two**

- Patient became hypotensive with increased apneic events. Septic workup completed and blood cultures grew E. coli. Infant started on vancomycin and cefepime.

- Patient continued to deteriorate and was placed on epinephrine and dobutamine. Patient became bradycardic. FiO2 increased to 100%, with a pH of 6.9 and PCO2 78. Aerial saturation declined and neonatal resuscitation was started with no response. Time of death 22:00.
### CDS Query Opportunities

#### History and Physical
- **Pt:** This is 26 week 2 days gestation 500 gram born via cesarean delivery.

- **Maternal pregnancy complication:** Pre-eclampsia, gestational diabetes, **intrauterine growth restriction.**

- **Patient delivered due to maternal pre-eclampsia** and was placed on an oscillator due to respiratory distress syndrome.

#### Day Two
- Patient became **hypotensive** with increased apneic events. **Septic** workup completed and blood cultures grew E. coli. Infant started on vancomycin and cefepime.

- Patient continued to deteriorate and was placed on **epinephrine** and **dobutamine.** Patient became bradycardic. FiO2 increased to 100%, with a pH of 6.9 and PCO2 78. Aerial saturation declined and neonatal resuscitation was started with no response. Time of death 22:00.
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<th>ROM</th>
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</thead>
<tbody>
<tr>
<td>Z38.01</td>
<td>Single liveborn infant, delivered by cesarean</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P36.4</td>
<td>Sepsis of newborn due to Escherichia coli</td>
<td>2↑</td>
<td>3↑</td>
</tr>
<tr>
<td>I95.9</td>
<td>Hypotension, unspecified</td>
<td>3↑</td>
<td>2</td>
</tr>
<tr>
<td>P22.0</td>
<td>Respiratory distress syndrome of newborn</td>
<td>2↑</td>
<td>1</td>
</tr>
<tr>
<td>P07.25</td>
<td>Extreme immaturity of NB, gestatnl age 26 completed weeks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P00.0</td>
<td>Newborn affected by maternal hypertensive disorders</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P07.02</td>
<td>Extremely low birth weight newborn, 500-749 grams</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table:**

<table>
<thead>
<tr>
<th>DRG</th>
<th>APR-DRG</th>
<th>SOI</th>
<th>ROM</th>
<th>RW</th>
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<tbody>
<tr>
<td>790</td>
<td>591</td>
<td>3</td>
<td>2</td>
<td>17.6190</td>
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</table>

## Results After Query

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<td>Single liveborn infant, delivered by cesarean</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>R65.21</td>
<td>Severe sepsis with septic shock</td>
<td>4↑</td>
<td>4↑</td>
</tr>
<tr>
<td>P28.5</td>
<td>Respiratory failure of newborn</td>
<td>4↑</td>
<td>3↑</td>
</tr>
<tr>
<td>P36.4</td>
<td>Sepsis of newborn due to Escherichia coli</td>
<td>2</td>
<td>3↑</td>
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<tr>
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<td>1</td>
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<tr>
<td>P07.25</td>
<td>Extreme immaturity of NB, gestational age 26 completed weeks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P00.0</td>
<td>Newborn affected by maternal hypertensive disorders</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P05.12</td>
<td>Newborn small for gestational age, 500-749 grams</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

http://quantimprod:8080/topaz/main.do
APR-DRG 633 Neonate Birth Weight > 2499 g w/Major Anomaly

- Anencephaly is a baby born with an underdeveloped brain and an incomplete skull
- 75% of babies with anencephaly born at term survive their birth
- 1 in every 4,000 babies are born in the United States with anencephaly

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<th>ROM</th>
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</thead>
<tbody>
<tr>
<td>Z38.00</td>
<td>Single liveborn infant, delivered vaginally</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Q00.0</td>
<td>Anencephaly</td>
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<tr>
<td>Z51.5</td>
<td>Encounter for palliative care</td>
<td>1</td>
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http://quantimprod:8080/topaz/main.do
Multidisciplinary Approach in Mortality Reviews

CLINICAL DOCUMENTATION SPECIALIST

- Review the medical record concurrently
- Query physician for documentation clarification
- Establish physician education

QUALITY DEPARTMENT

- Monitors O/E rate
- Identifies neonatal quality indicators
- Establishes documentation standards in neonates < 22 gestational weeks

PALLIATIVE CARE DEPARTMENT

- Notifies CDSs of upcoming deliveries for major congenital anomalies
- Documents on palliative care patients

PHYSICIANS

- Physician engagement is a major part of mortality reviews
- Physician educational topics will arise from mortality reviews
Winnie Palmer Neonatologists
References

Thank you. Questions?

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In order to receive your continuing education certificate(s) for this program, you must complete the online evaluation. The link can be found in the continuing education section of the program guide.