Sepsis in the Neonatal Unit

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Newborn Services
## Inborn Admissions to NICU

<table>
<thead>
<tr>
<th>Year</th>
<th>2009 n (%)</th>
<th>2010 n (%)</th>
<th>2011 n (%)</th>
<th>2012 n (%)</th>
<th>2013 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>820</td>
<td>791</td>
<td>839</td>
<td>872</td>
<td>831</td>
</tr>
<tr>
<td><strong>20-27</strong></td>
<td>57 (7.0)</td>
<td>58 (7.3)</td>
<td>43 (5.0)</td>
<td>40 (4.6)</td>
<td>39 (4.7)</td>
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<tr>
<td><strong>28-31</strong></td>
<td>91 (11.1)</td>
<td>110 (13.9)</td>
<td>81 (9.7)</td>
<td>102 (11.7)</td>
<td>88 (10.6)</td>
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<tr>
<td><strong>32-36</strong></td>
<td>315 (38.4)</td>
<td>280 (35.3)</td>
<td>305 (36.4)</td>
<td>334 (38.3)</td>
<td>308 (37.1)</td>
</tr>
<tr>
<td><strong>&gt;37</strong></td>
<td>357 (43.5)</td>
<td>342 (43.5)</td>
<td>410 (48.9)</td>
<td>396 (45.4)</td>
<td>396 (47.1)</td>
</tr>
</tbody>
</table>
Sepsis Rates over 5 years

Early

Late

2009  2010  2011  2012  2013

0  5  10  15  20  25  30  35  40

Early
Late
Early Onset Sepsis

2013
- E. coli – 4 (2)
- Group B Streptococcus – 1
- (Streptococcus mitis -1)

2012
- E coli – 1
- Group B Streptococcus – 6
- Pseudomonas- 1, Group C Streptococcus - 1
Early Onset Sepsis

E. coli Infection (1)

- 30/40, 1290 g, male
  - Maternal type 2 DM, IUGR
  - PPROM 4 days prior, inpatient, on oral erythromycin, complete course of steroids, LSCS for fetal bradycardia
  - Baby extremely unwell with sepsis ?meningitis
  - Died at 36 hours of age
Early Onset Sepsis

E. coli Infection (2)

- 35/40, 2470 g, male
  - PPROM for 5 days, mother inpatient, on oral erythromycin
  - LSCS for fetal tachycardia, clinical chorioamnionitis
  - Baby’s blood culture positive for E. coli, CSF clear
  - Treated with antibiotics, respiratory support
Early Onset Sepsis

E. coli Infection (3)

• 27/40, 660 g, male
  – Em LSCS for maternal preeclampsia and IUGR
  – Baby’s blood initially negative
  – Blood culture positive for E. coli on day 10, CSF clear
  – Treated with antibiotics
Early Onset Sepsis

E. coli Infection (4)

• 34/40, 2390 g, male
  – Ex-utero transfer for surgical management
  – DCDA twins, preterm labour and birth
  – Mild RDS, CPAP for 5 hours; 48 hours antibiotics
  – Day 3 – evidence of bowel perforation on AXR
  – Transverse colon perforation, blood culture positive for E. coli
Early Onset Sepsis

Group B Streptococcus Infection (1)

• 26/40, 1060 g, male
  – 17 year old primigravid mother, limited antenatal care
  – In utero transfer at 26 weeks after PPROM 2 days
  – Given Nifedipine and steroids prior, no antibiotics
  – Febrile and ↑HR in WAU, Cat 1 emergency section
  – IV antibiotics 1.5 hours prior to birth
Early Onset Sepsis

• **Group B Streptococcus Infection (1) (con’t)**
  – Limited antenatal care
  – MSU and swabs positive for GBS
  – Swabs 3 days prior – no GBS (Chlamydia positive)
Early Onset Sepsis

**Streptococcus mitis**

- 29/40, 1280 g, male
  - PPROM for 4 days, in utero transfer
  - Clinical chorioamnionitis, on intravenous antibiotics, emergency section for chorio, pus in uterine cavity
  - Florid chorio and funisitis on placenta
  - Baby treated with 10 days of antibiotics
Early Onset Sepsis

- Preterm premature rupture of membranes
- Clinical chorioamnionitis
- Oral antibiotics
- E. coli and GBS common causative organisms
- Can result in severe illness or death
- Review of GBS prophylaxis as QA activity
Late-Onset Sepsis

- Staph epidermidis: 6
- Coagulase negative staph: 2
- Staph capitis: 1
- Staph warneri: 2
- Staph aureus: 2
- GBS: 1
- E.coli: 1
- Pseudomonas: 2
- Candida: 1
- Klebsiella: 2
Late Onset Sepsis

• Coagulase negative staphylococcus/staphylococcus epidermidis etc.
  – 13/22 (59%)
  – Usually with a central line in situ
• Late GBS, Staphylococcus aureus, E. coli
  – 2/22 (9%) - each
• Others – Klebsiella, Pseudomonas, candida
Late-onset Sepsis 2008-2012

Babies born at <32 weeks and survived to day 2

- **Your Unit (<28 weeks)**
- **Your Unit (28-31 weeks)**
- **ANZNN IQR (<28 weeks)**
- **ANZNN IQR (28-31 weeks)**

ANZNN – Individual unit feedback for babies born in 2012
Late-onset Sepsis

Babies born at >31 weeks GA and survived >2 days

ANZNN – Individual unit feedback for babies born in 2012
Late-onset Sepsis

Babies born <28 weeks GA and survived >2 days

ANZNN – Individual unit feedback for babies born in 2012
Sepsis in the Neonatal Unit

- Neonates at high risk of sepsis
- Fatal in some cases
- Some episodes of sepsis may be preventable
- Overall rates at lower end of range for ANZNN but there is always room for improvement