The Deteriorating Maternity Patient

Danny Challis
NSW Perinatal Services Network
The parable of the Obstetrician and the Cardiologist..
So how is maternity care different?

- Well patients – usually good outcomes
- Inaccurate tools for fetal welfare assessment
- Maternal physiology is different
- Differing cultures
  - Midwifery
  - GP
  - Obstetricians
- Varied locations – homebirth to quaternary
- No tolerance for bad outcomes
  - Expectations
  - Impact
  - Cost of claims
How do midwives see labour and birth?
How do obstetricians see labour and birth?
Moving up the ‘slippery slope’

Prevention
Antenatal care / risk assessment

Clinical Review

Clinical support tools

Clinical Pathway/guidelines (pre-eclampsia, PPH, Fetal distress)

Revised Treatment Plan

Continued Treatment Plan

Outcomes

Continued Treatment Plan

Revised Treatment Plan

Referral

High care unit / facility

Fetal welfare assessment
Obstetric emergencies
Neonatal resuscitation
Training

SMOC CTG stickers SNOC

Rapid Response

Sepsis Pathway/Alert

Diagnostic Error

ALS

Time

Death

Maternal / fetus Condition

Clinical support tools

Sepsis KILLS

Take 2 THINK,DO
Prevention – right time and place

• Risk assessment – ongoing
  • ACMI Guidelines
  • Appropriate models of care
  • Continuity models

• Service capability
  • Well defined for planned care

• Advice processes
  • Tiered Maternity Networks - PAL

• Transfer processes
  • PAL/strengthened tiered maternity networks
### Background
- A definition of Time Critical Transfer is a birth deemed to occur within the second stage of labour.

### Control Centre
- Time Critical Perinatal Tertiary Referral Networks.

### ISSUE NUMBER
- 03 2013

### SERVICE CAPABILITY FRAMEWORK
- NSW Ambulance Service
- Control Division Patient Safety Alert
- Excellence in care

---

### Ambulance Service of New South Wales

---

### MATERINITY AND NEONATAL SERVICE CAPABILITY FRAMEWORK

---

### Information Bulletin
- NSW Perinatal Advice Line (PAL)

---

### National Midwifery Guidelines for Consultation and Referral

---

### Critical Care Tertiary Referral Networks (Perinatal)
Maternity VTE risk assessment

**MATERNAL VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT TOOL**

1. Assess Venous Thromboembolism Risk. Risk assessment tool is to be performed on admission to determine risk level.

   - **Risk Factor**
     - Personal history of VTE or other thrombosis
     - Hypertension
     - Diabetes mellitus
     - Obesity
     - Pregnancy
     - History of unexplained death
     - History of antithrombotic therapy
     - Family history of VTE

   If any risk factors are present, proceed to determine risk level.

2. Identify Possible Contraindications to Pharmacological Prophylaxis. Tick if present.

   - **Possible Contraindications**
     - Haemophilia
     - Recent major surgery, acquired coagulopathy, or other bleeding disorder
     - Current anticoagulation
     - Women considered at risk of major haemorrhage (e.g., placenta praevia, high order multiple pregnancy)
     - Severe liver disease
     - Severe renal disease (glomerular filtration rate <30 ml/min/1.73 m²)
     - Severe Fever disease (febrile temperature above normal range, proven sepsis, HELLP syndrome)
     - Uncontrolled hypertension
     - Pregnancies complicated by coagulopathy

3. Patient Education and Documentation of Risk Level and Management.

   - Discussed VTE risk assessment outcome with women. Provided written information (where applicable).
   - Document risk level on:
     - Birth Care Record
     - Antenatal Hand Record (Antenatal Yellow Card)
     - Maternity Safety Box

   - Any advice provided except immediate repair of the plexus.

4. Prophylaxis Guidance for Medical Officers According to Determined Risk Level.

   - **Risk Level**
     - **Higher Risk**
     - **Intermediate Risk**
     - **Lower Risk**

   - **Antepartum Management**
     - As for lower risk below, PLUS: Requires pharmacological prophylaxis with LMWH

   - **Postpartum Management**
     - As for lower risk below, PLUS: Requires at least 5 weeks of pharmacological prophylaxis with LMWH.

   - Note: Depending on the individual’s risk factors, LMWH prophylaxis may not be appropriate.
Moving up the ‘slippery slope’

Prevention
Antenatal care / risk assessment

Clinical Review

Rapid Response

Clinical support tools
Clinical Pathway/guidelines (pre-eclampsia, PPH, Fetal distress)

Outcomes
Continued Treatment Plan
Revised Treatment Plan
Referral
High care unit / facility

Sepsis Pathway/Alert
Diagnostic Error

SMOC
CTG stickers
SNOC

Fetal welfare assessment
Obstetric emergencies
Neonatal resuscitation
Training

ALS

Time
Death
How is fetal deterioration different?

• Inaccurate tools
  • Intermittent auscultation
  • Electronic fetal heart rate monitoring,
  • ultrasound

• High false positives from heart rate monitoring

• Failure to recognise gradual deterioration

• Failure to recognise abnormal heart rate patterns

• Reluctance to use fetal scalp blood sampling

• Chronic vs acute
Electronic fetal heart rate monitoring algorithms and documentation tools

2018-2019
Antenatal
As applied to maternity – baby Eva
PLEASE ENSURE
GROUND POWER LEAD
IS DISCONNECTED BEFORE
RETRACTING AEROBRIDGE.
Are you sure it’s fetal??
## Determine risk

- Consideration of background risks when assessing the FHR features
- Introduction of altered calling criteria

<table>
<thead>
<tr>
<th>Determine Risk</th>
<th>Maternal</th>
<th>Fetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Antenatal FHR Monitoring required?</td>
<td>Any change in maternal condition where there may be compromise to fetal welfare. Conditions may include for example: Any obstetric condition that increases the risk of fetal compromise</td>
<td>For example: Absent or decreased fetal movement  • Any condition that increases the risk of fetal compromise IUGR</td>
</tr>
<tr>
<td>Refer to Maternity Fetal Heart Rate Monitoring Guideline</td>
<td></td>
<td>Are there fetal conditions that require an altered calling criteria? If identified a collaborative care plan should be documented. <em>E.g. maternal magnesium infusion affecting fetal baseline variability</em></td>
</tr>
</tbody>
</table>

NSW Government Health
## Antenatal Fetal Heart Rate Monitoring – Algorithm Equal to or Greater than ≥32 weeks

<table>
<thead>
<tr>
<th>Determined Risk/s and identify reasons why EFM is required</th>
<th>Maternal</th>
<th>Fetal</th>
</tr>
</thead>
</table>
| Refer to Maternity Fetal Heart Rate Monitoring Guideline | Any change in maternal condition where there may be compromise to fetal welfare. Conditions may include, for example:  
  - Any obstetric condition that increases the risk of fetal compromise  
  - Administration of mechanical or chemical cervical ripening agents | For example:  
  - Absent or decreased fetal movement  
  - Any condition that increases the risk of fetal compromise  
  - IUGR |

Are there fetal conditions that require altered calling criteria? If identified, a collaborative care plan should be documented. E.g. Maternal magnesium infusion affecting fetal baseline variability.

### Uterine Activity

<table>
<thead>
<tr>
<th>Nil or gestation ≥37/40</th>
<th>20-100</th>
<th>6-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present &lt;37/40</td>
<td>100-109</td>
<td>Reduced ≤5 or absent for &gt;45 mins; or &gt;25 for &gt;15 mins</td>
</tr>
<tr>
<td>Present and occurring &gt;5:10 Recurrent lasting ≥2 mins and/or &lt;60 secs between contractions</td>
<td>&lt;100</td>
<td>≤5 for &gt;90 mins Sinusoidal/sawtooth &gt;15 mins</td>
</tr>
</tbody>
</table>

### Decelerations

<table>
<thead>
<tr>
<th>(&gt;15 bpm fall for &gt; 15 secs) Recurrent more than one per hour</th>
<th>Nil Single &lt;90 secs on a trace with reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single prolonged &gt;90 sec and &lt;3 min Recurrent on a trace with reactivity</td>
<td></td>
</tr>
<tr>
<td>Recurrent on a trace without reactivity</td>
<td></td>
</tr>
</tbody>
</table>

### Escalation and Management Plan – Clinical Response

**NORMAL**

Providing there is no continued risk to the mother and/or fetus requiring ongoing monitoring, then the CTG can be ceased when it meets all the normal criteria (white zones) after consultation with a 2nd clinician.

An appropriate ongoing care and assessment plan must be formulated.

**ABNORMAL**

Clinical Review by a medical officer within 30 mins. Continue to monitor with ongoing assessment. Inform Senior Midwife when applicable.

An appropriate ongoing collaborative care and assessment plan must be formulated.

2 Yellow Zone features require a Rapid Response (Red)

**ABNORMAL**

Escalate to a Rapid Response as per local CERS; this should involve notifying a medical officer for immediate review.

Consider further fetal welfare assessment and/or expediting birth. (Do not give food or oral fluids)

Note: A clinician, woman, her partner or family member may call for a clinical review at any time if they are concerned or unsure.
## Antenatal label ≥ 32 weeks

<table>
<thead>
<tr>
<th>ANTE NATAL ≥ 32 WEEKS</th>
<th>Name</th>
<th>MRN</th>
<th>Date</th>
<th>Time</th>
<th>Gest Age</th>
<th>Determine Risk:</th>
<th>Fetal movements</th>
<th>Maternal Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altered Calling Criteria</td>
<td>NO</td>
<td>YES</td>
<td>Collaborative care plan in place:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterine Activity</td>
<td>Baseline Rate Variability bpm Reactivity Decelerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>≥110-160</td>
<td>6-25</td>
<td>Present</td>
<td>Nil</td>
<td>Single &lt;90 secs on a trace with reactivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present &lt; 37 /40 &gt;160-180</td>
<td>Reduced ≤5 or absent for &gt; 45 mins; or &gt;25 for &gt;15 mins</td>
<td>Absent &gt;45 mins</td>
<td>Prolonged &gt;90 sec and &lt;3 min</td>
<td>Recurrent on a trace with reactivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present and occurring &gt; 5:10, Recurrent lasting ≥ 2 mins and/or &lt;60 secs between contractions</td>
<td>&lt;100 &gt;180</td>
<td>Reduced 0-5 or absent for &gt;90 mins Sinusoidal /sawtooth &gt;15 mins</td>
<td>Absent &gt;90 mins</td>
<td>Prolonged &gt;3 mins</td>
<td>Recurrent on a trace without reactivity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Clinical Escalation Response

<table>
<thead>
<tr>
<th>Normal</th>
<th>Abnormal - Yellow Response within 30 mins 2 Yellow features = Rapid Response Time of call:</th>
<th>Abnormal – Rapid Response Time of call:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature(s)</td>
<td>Date</td>
<td>Time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name(s)</th>
<th>Date</th>
<th>Time</th>
<th>Agree with Clinical Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature(s)</td>
<td></td>
<td></td>
<td>Yes No</td>
</tr>
</tbody>
</table>
Intrapartum
Determine risk

Consideration of

- Intrapartum risks
- Fetal reserve
- Graded level of risks
### Intrapartum Fetal Heart Rate Monitoring – Algorithm

#### Determining Risk

<table>
<thead>
<tr>
<th>Antenatal risk factors</th>
<th>Refer to antenatal records/management plans and review risk factors</th>
<th>Intrapartum risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxytocin</td>
<td>Uterine scar</td>
<td>Second stage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Epidural</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abnormal labour progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Persistent pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vaginal bleeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Fetal reserve risk factors</td>
<td></td>
<td>IUGR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypertension/Pre-eclampsia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temperature/Infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meconium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prematurity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diabetes</td>
</tr>
</tbody>
</table>

#### EFM Features

<table>
<thead>
<tr>
<th>Contraction Activity</th>
<th>Baseline Rate (bpm)</th>
<th>Baseline Variability (bpm)</th>
<th>Accelerations</th>
<th>Decelerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal activity ≤5 in 10 mins</td>
<td>110-160</td>
<td>6-25 Presence of cycling</td>
<td>Present</td>
<td>Decrelelas are repetitive when associated with &gt;50% contractions</td>
</tr>
<tr>
<td>Abnormal uterine activity &gt;6 in 10 minutes</td>
<td>100-109</td>
<td>Absence of cycling in last 60 minutes</td>
<td>Absent</td>
<td>Early or occasional variable</td>
</tr>
<tr>
<td>Lasting ≥2 minutes</td>
<td>100-109</td>
<td>Increased &gt;25 for &gt;30 mins</td>
<td>Sinusoidal pattern ≥30 mins</td>
<td>Repetitive variable</td>
</tr>
<tr>
<td>≤60 seconds between contractions</td>
<td>&lt;100 for &gt;10 mins</td>
<td>Reduced ≤5 or absent for &gt;50 minutes</td>
<td>Repetitive complicated variable</td>
<td>Repetitive late</td>
</tr>
</tbody>
</table>

**Variable decelerations should be classified as complicated if they occur with one or more of the following:**
- Rising baseline rate
- Large amplitude (falls by 60bpm or to 60bpm)
- Presence of sinusoidal decelerations
- Presence of smooth post-deceleration overshoots (temporary smooth increase in FHR above baseline)
- Persistent decelerations
- Fetal tachycardia
- Slow return to baseline FHR after the end of the contraction

#### Clinical Response

<table>
<thead>
<tr>
<th>Normal</th>
<th>Blue Zone Alert</th>
<th>Yellow Zone Abnormal</th>
<th>Red Zone Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Continue monitoring as required</td>
<td>• Escalate to midwife in charge – initiate appropriate clinical action and document e.g. change maternal position</td>
<td>• Escalate to midwife in charge or a medical officer for Clinical Review within 30 minutes</td>
<td>• Rapid Response is required (as per local CERS) including notifying a medical officer and midwife in charge</td>
</tr>
<tr>
<td>• Ensure a collaborative plan is documented</td>
<td>• Ensure a collaborative plan is documented and in place that addresses identified risk factors</td>
<td>• Identify any reversible causes – change maternal position, give IV fluids if appropriate</td>
<td>• Identify any reversible causes – cease Syntocinon, change maternal position</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Abnormal uterine activity – cease or reduce Syntocinon, consider use of terbutaline</td>
<td>• Consider further fetal wellbeing assessment including FBS or expediting birth by most appropriate means if a significant abnormality persists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2 or more Yellow Zone FHR features + Red Zone = Abnormal. Call a Rapid Response (as per local CERS)</td>
<td></td>
</tr>
</tbody>
</table>

#### Risk of Hypoxia

<table>
<thead>
<tr>
<th>pH</th>
<th>Lactate</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥7.25</td>
<td>&lt;4.2</td>
</tr>
<tr>
<td>7.21-7.24</td>
<td>4.2-4.6</td>
</tr>
<tr>
<td>≤7.20</td>
<td>≥4.9</td>
</tr>
</tbody>
</table>

**Note:** A clinician, woman, her partner or family member may call for a Clinical Review or Rapid Response at any time if they are concerned or unsure.

**Version 1 2016**
Features

► Baseline
  ► identifying the rising baseline

► Variability
  ► Introduction of ‘cycling’ – the normal transition of the fetus through the awake and asleep states.

► Decelerations
  ► Language change to complicated variables
  ► Prolonged decelerations – time frames and recognition of recovery
## Intrapartum label

<table>
<thead>
<tr>
<th>INTRAPARTUM</th>
<th>Name:</th>
<th>MRN</th>
<th>Date</th>
<th>Time</th>
<th>Gest Age</th>
<th>Mat Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal risk factors:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrapartum Risk Factors:</td>
<td>Oxytocin</td>
<td>Uterine scar</td>
<td>Second stage</td>
<td>Epidural</td>
<td>Abnormal labour progress</td>
<td>Persistant pain</td>
</tr>
<tr>
<td>Risk Factors Affecting Fetal Reserve</td>
<td>IUGR</td>
<td>Hypertension / Pre-eclampsia</td>
<td>Temperature / Infection</td>
<td>Meconium</td>
<td>Prematurity</td>
<td>Diabetes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contraction Rate</td>
<td>Baseline</td>
<td>Rate</td>
<td>Variability</td>
<td>bpm</td>
<td>Accelerations</td>
<td>Decelerations</td>
</tr>
<tr>
<td>Normal uterine activity ≤5 in 10 minutes</td>
<td></td>
<td>110-160</td>
<td>Normal 6.25 Cycling present</td>
<td>Present</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>Abnormal uterine activity ≥6 in 10 minutes or lasting ≥2 minutes</td>
<td></td>
<td>≥100 to 109 &gt;160 Rising baseline &gt;10%</td>
<td>Absence of cycling in last 60 minutes</td>
<td>Absent</td>
<td>Early Occasional variable</td>
<td></td>
</tr>
<tr>
<td>&lt;60 seconds between contractions</td>
<td></td>
<td>&lt;100 for &gt;10 minutes</td>
<td>Reduced ≤5 or absent for ≥50 minutes Increased &gt;25 for ≥30 minutes Sinusoidal pattern &gt;30 minutes</td>
<td></td>
<td>Repetitive variable Single prolonged ≥90 seconds and &lt;3 minutes</td>
<td></td>
</tr>
</tbody>
</table>

### Clinical Escalation Response

<table>
<thead>
<tr>
<th>Normal</th>
<th>Blue</th>
<th>Yellow Zone Abnormal – Clinical Review within 30min 2 or more Yellow Zone FHR features = Red Zone abnormal call a Rapid Response Time of call:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Date</td>
<td>Time</td>
</tr>
<tr>
<td>Signature</td>
<td>Date</td>
<td>Time</td>
</tr>
</tbody>
</table>

Red Zone Abnormal – Rapid Response

Time of call:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
</table>

Agree with Clinical Response □ Yes □ No
The deteriorating mother:

- Maternal Physiology
- Healthy and young – late deterioration
- Reluctance to recognise rare complications eg peripartum cardiomyopathy
- Sepsis esp GAS
## Maternal BTF – SMOC & ASSOC

### STANDARD MATERNITY OBSERVATION CHART

**AIRWAY BREATHING**

<table>
<thead>
<tr>
<th><strong>Respiratory Rate</strong></th>
<th><strong>SpO₂ %</strong></th>
<th><strong>O2 Sat</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>

**EXPOSURE**

- **Temperature (°C):**
  - 36.5
  - 37.0
  - 37.5
  - 38.0
  - 38.5
  - 39.0
  - 39.5
  - 40.0

**Pain**

- **Severe (7-10):** Moderate (4-6)
  - Moderate (3-4)
  - Mild (1-3)
  - None (0)

**NURSING**

- **Nursing Action:**
  - Pain: Pain relief measures
  - Hydration: Fluid intake

**CIRCULATION**

- **Systolic Blood Pressure (mmHg):**
  - 80
  - 90
  - 100
  - 110
  - 120
  - 130

**Heart Rate**

- **Heart Rate (bpm):**
  - 60
  - 70
  - 80
  - 90
  - 100

**DISABILITY**

- **Disability:**
  - A: Alert
  - B: Belligerent
  - C: Confused
  - D: Drowsy
  - E: Comatose

**Laboratory**

- **Blood Glucose Level (mmol/L):**
  - 5.0
  - 6.0
  - 7.0

**Urineysis**

- **Protein:**
  - +
  - ++
  - +++

Instructions:

- Total Blood Loss at Birth should be documented on commencement of the SMOC post birth.
- Cumulative blood loss in the Yellow Zone requires immediate escalation to a Medical Officer (as per local CERS).
- Refer to GL2017_016 Maternity – Prevention, Detection, Escalation and Management of Postpartum Haeorrhage.
- Antepartum hemorrhage or bleeding needs to be assessed in the context of the period of gestation, the presence or absence of pain and the location of the placenta.

**Date**

- Initials

**Time**

- Initials
Maternal peripartum BTF - SIOC

<table>
<thead>
<tr>
<th>Family Name</th>
<th>Gender</th>
<th>Date of Admission</th>
<th>Blood Pressure</th>
<th>General Condition</th>
<th>Maternal Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Maternal Observations**

<table>
<thead>
<tr>
<th>Maternal Observations</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- **Complete ALL details or apply patient label here.**
- ACM Risk Category on admission (please tick): A, B, C.
Moving up the ‘slippery slope’

Prevention
Antenatal care / risk assessment

Clinical Review

Fetal welfare assessment
Obstetric emergencies
Neonatal resuscitation
Training

Rapid Response

SMOC
CTG stickers
SNOC
SIOC

Clinical support tools

Clinical Pathway/guidelines
(pre-eclampsia, PPH, Fetal distress)

Sepsis Pathway/Alert

Diagnostic Error

Continued Treatment Plan

Revised Treatment Plan

Referral

High care unit / facility

Outcomes
Current FONT – resuscitation, scenarios drills and team training

• Neonatal resuscitation
• Adult BLS
• Maternal collapse
• Sepsis
• Eclampsia
• Shoulder dystocia
• Vagina breech delivery
• PPH
Sepsis – Maternal and neonatal

**Maternal Sepsis Pathway**
- Maternal sepsis can often present with vague non-specific symptoms.
- Possible infection (PROM, prolonged labour, retained placental products, etc.)

**Newborn Sepsis Pathway**
- This pathway is intended for the recognition and immediate management of early and late onset sepsis during the episode of care associated with the newborn’s birth.
- For readmission after birth, please use the Paediatric Sepsis Pathway.

---

For detailed information, refer to the Standard Maternity Observation Chart (SMOC) and Standard Newborn Observation Chart (SNOC).
Additional neonatal sepsis resources

NEWBORN ANTIBIOTIC GUIDELINE
for early and late onset sepsis during birth episode of care
Revised June 2018

SEPSIS KILLS
NEONATAL BLOOD CULTURE GUIDELINE
### Maternity and Perinatal RCA Clinical Risk Factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan-Jun</td>
<td>Jul-Dec</td>
<td>Jan-Jun</td>
<td>Jul-Dec</td>
<td>Jan-Jun</td>
</tr>
<tr>
<td>Fetal monitoring</td>
<td>5</td>
<td>4</td>
<td>11</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Deteriorating patient - failure to recognise</td>
<td>11</td>
<td>7</td>
<td>11</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Deteriorating patient - delay/failure to escalate</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Neonatal resuscitation</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
</tr>
<tr>
<td>Out of hour presentation</td>
<td>n/a</td>
<td>n/a</td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
### Top system factors in Maternal and perinatal RCAs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Care planning</td>
<td>14</td>
<td>27</td>
<td>57</td>
<td>44</td>
<td>53</td>
<td>54</td>
<td>73</td>
<td>42</td>
<td>67</td>
</tr>
<tr>
<td>Communication</td>
<td>34</td>
<td>17</td>
<td>42</td>
<td>35</td>
<td>36</td>
<td>39</td>
<td>44</td>
<td>23</td>
<td>36</td>
</tr>
<tr>
<td>Policy &amp; Guidelines</td>
<td>20</td>
<td>9</td>
<td>20</td>
<td>15</td>
<td>18</td>
<td>28</td>
<td>32</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Workforce</td>
<td>23</td>
<td>18</td>
<td>26</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>34</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>Observations &amp; monitoring</td>
<td>19</td>
<td>12</td>
<td>19</td>
<td>22</td>
<td>22</td>
<td>23</td>
<td>33</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Assessment</td>
<td>6</td>
<td>17</td>
<td>28</td>
<td>19</td>
<td>15</td>
<td>17</td>
<td>25</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Teamwork</td>
<td>7</td>
<td>6</td>
<td>14</td>
<td>7</td>
<td>13</td>
<td>29</td>
<td>26</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Equipment</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>11</td>
<td>11</td>
<td>18</td>
<td>9</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Environment</td>
<td>9</td>
<td>13</td>
<td>12</td>
<td>16</td>
<td>14</td>
<td>22</td>
<td>17</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Supervision</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>19</td>
<td>33</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Investigations</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Access</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>13</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Transfer</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>n/a</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>152</strong></td>
<td><strong>141</strong></td>
<td><strong>234</strong></td>
<td><strong>192</strong></td>
<td><strong>211</strong></td>
<td><strong>270</strong></td>
<td><strong>340</strong></td>
<td><strong>193</strong></td>
<td><strong>281</strong></td>
</tr>
</tbody>
</table>
Top three system factors in Maternal and perinatal RCAs
The future imagined

• Neonatal resuscitation training (HETI)
• Maternal essential training
• Fetal essential training
  • Team training drills and simulations (Tier II) including DETECT
  • Library of resources and modules
• Responsive escalation, advice, and transfer systems
• More usable data to allow better analysis of critical incidents and deaths
• Reports to generate priorities and actions
Ongoing challenges

• SMO engagement
• Team training – identification of appropriate trainers
• Equivalence of training/RPL
• Culture and human factors work
• EMR challenges