D18/E18: Safety in Maternity Care: Global Examples

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These presenters have nothing to disclose.

BUZZ Sessions

Buzz sessions are highly interactive sessions that involve small-group discussions. These sessions are designed to stimulate thinking and draw on the collective experience of the audience.

- Introductory presentation introduces an issue or task to the audience
- Audience divides into small groups to discuss
- Groups report out key ideas or findings from their discussion
Objectives

- Identify the key interventions, tools, and techniques that are currently showing results in maternity care
- Discuss the adoption of these interventions in a local context
- Build the IHI maternity QI community

Introductions
Key facts...WHO November 2015

- Every day, approximately nearly 830 women die from preventable causes related to pregnancy and childbirth.
- 99% of all maternal deaths occur in developing countries.
- Maternal mortality is higher in women living in rural areas and among poorer communities.
- Young adolescents face a higher risk of complications and death as a result of pregnancy than other women.
- Skilled care before, during and after childbirth can save the lives of women and newborn babies.
- Between 1990 and 2015, maternal mortality worldwide dropped by about 44%.
- Between 2016 and 2030, as part of the Sustainable Development Agenda, the target is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births.

The major complications that account for nearly 75% of all maternal deaths are:

- severe bleeding (mostly bleeding after childbirth)
- infections (usually after childbirth)
- high blood pressure during pregnancy (pre-eclampsia and eclampsia)
- complications from delivery
- unsafe abortion.
Stillbirths- A Link to Maternal Mortality

WHO regional summary of stillbirths 1995 to 2009

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Number of stillbirths 1995</th>
<th>Number of stillbirths 2009</th>
<th>Stillbirth rate per 1000 births 1995</th>
<th>Stillbirth rate per 1000 births 2009</th>
<th>Per cent annual rate of change 1995–2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Region</td>
<td>1778790</td>
<td>892850</td>
<td>31.0</td>
<td>28.1</td>
<td>0.7</td>
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<tr>
<td>Region of the Americas</td>
<td>158236</td>
<td>111330</td>
<td>9.8</td>
<td>7.0</td>
<td>2.4</td>
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<tr>
<td>Eastern Mediterranean Region</td>
<td>438051</td>
<td>454820</td>
<td>29.7</td>
<td>27.2</td>
<td>0.6</td>
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<tr>
<td>European Region</td>
<td>90669</td>
<td>67910</td>
<td>8.1</td>
<td>6.3</td>
<td>1.9</td>
</tr>
<tr>
<td>South-East Asia Region</td>
<td>1,062,611</td>
<td>859,160</td>
<td>25.9</td>
<td>22.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>502,941</td>
<td>259,950</td>
<td>17.4</td>
<td>10.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Total</td>
<td>3,031,298</td>
<td>2,642,020</td>
<td>22.1</td>
<td>18.9</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Stillbirth rate in 2009 (per 1000 births)

- <5
- 5-14.9
- 15-24.9
- >25
- Data not available
- Not applicable
The Scottish Patient Safety Maternity Programme

Dr Patricia O’Connor
Dr Pauline Lynch

Buzz

At your table

• Buzz 1 what are some of the complex problems you are dealing with in maternity care

• Buzz 2 from what you’ve heard what did you learn that might help

• Buzz 3 What will you change and take action on
Aim

• increase the percentage of women satisfied with their experience of maternity care to > 95% by 2015,
• reduce the incidence of avoidable harm in women and babies by 30% by 2015.

Collaborative Series methodology

Source: IHI
http://www.ihi.org/resources/Pages/IHIWhitePapers/TheBreakthroughSeriesIHI'sCollaborativeModelforAchievingBreakthroughImprovement.aspx
Avoidable harm is defined

- reduce stillbirths and neonatal mortality by 15%
- reduce severe post-partum haemorrhage (PPH) by 30%
- reduce the incidence of non-medically indicated elective deliveries prior to 39 weeks gestation by 30%
- offer all women carbon monoxide (CO) monitoring at the booking for antenatal care appointment
- refer 90% of women who have raised CO levels or who are smokers to smoking cessation services,
- provide a tailored package of antenatal care to all women who continue to smoke during pregnancy.
The six questions to be asked of EVERY change programme:

1. **Aim**
   Is there an agreed aim that is understood by everyone in the system?

2. **Correct changes**
   Are we using our full knowledge to identify the right changes and prioritising those that are likely to have the biggest impact on our aim?

3. **Clear change method**
   Does everyone know and understand the method(s) we will use to improve?

4. **Measurement**
   Can we measure and report progress on our improvement aim?

5. **Capacity and capability**
   Are people and other resources deployed and being developed in the best way to enable improvement?

6. **Spread plan**
   Have we set out our plans for innovating, testing, implementing and sharing new learning to spread the improvement everywhere it is needed?

Remember, improvement is unlikely to occur without clarity around these questions.

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**Run chart showing annual Scottish stillbirth rate (per 1000 births) 2000 to 2014, NRS**

Median: 5.3

**15% Reduction**
National Data

% compliance with the MEWS bundle

% of observations identified as at risk that have appropriate interventions undertaken in terms of their management as categorised by MEWS
Background NHS Scotland

Births and deaths
Scotland, 2014

The latest data from NHS shows statistics on registered births and deaths in Scotland in 2014.

Live births
56,725
51% Male (56,014 in 2013) 49% Female

The number of live births has increased by 1.3% compared to 2013.

Stillbirths
4.0 stillbirths per thousand total births (4.2 in 2013)

Infant Mortality
3.6 deaths per thousand live births (3.3 in 2013)

The infant mortality rate has increased slightly compared to 2013. However, long-term annual trends show that the infant mortality rate has decreased by two-thirds over the last 50 years.

Annual trends

There has been positive national change (more births than deaths) for the last nine years consecutively.
NHS Scotland

- 5 million+ people
- 56,000 births
- 35 maternity units (18 midwife led)

NHS Tayside

- 4500 deliveries annually
- Complex deliveries in one consultant unit
- 4 community units led by midwives
  (3 are stand alone 0.5-1 hour distant)

Tayside

Currently working on
- Reducing Stillbirth
- Improving recognition & management of sepsis
- Next focus - PPH reduction
Stillbirth – Fetal Movements

Provision of information regarding fetal movements to support staff and mothers. Movements Matter.

Small staff education sessions to discuss why documented discussions are important given the lack of knowledge about stillbirth amongst women.

1st test. Did women understand why we asked about fetal movements?

% of women with a documented discussion

- Introduction of staff teaching sessions to staff leaflet to go with discussion
- Official public launch
- Compliance feedback to teams monthly
- RFM guideline updated
- Management changed
- Prompt sends standard documentation
- Assessment session
- Compliance feedback to teams both midwifery

Feedback to team for discussion

Rapid test of change

percent of women

11/23/2015
Balancing Measures

No. of women triaged for Fetal Movements, no induced and %rate inductions

Innes
Week One
Patient Story

Lynne: A first time mother from rural Perthshire, 34 weeks pregnant. A reduction in her baby’s movements over a weekend was attributed to being busy. Recalling the midwife’s discussion at her recent antenatal visit Lynne re-read the leaflet she had been given. This led to a phone call at 1 a.m. and prompt attendance at her local community midwife unit. Monitoring of the baby’s heart rate indicated a significant cause for concern. Lynne was immediately transferred to Ninewells Hospital where baby Innes was delivered at 4:30 a.m by Caesarean Section.

Rate of Still birth per 1000 deliveries

65% Reduction
Think Sepsis!

"Act quickly & state I think this woman is Septic so everyone knows what to do"

"Capillary refill & remember hypothermia too!"

"Golden Hour – seriousness of problem – get antibiotics in quickly!"

Feedback from Multidisciplinary Training Sessions

Name 1 Key Message
Sepsis 6: Element Compliance

Sepsis 6: Overall Compliance

Tayside

Mini teach on ward areas
Review of missed cases

Ongoing reinforcement of key local issues at multidisciplinary training

Midwives trained in obtaining blood cultures

1 fail due to poor iv access
PPH WORK

PPH Rates >1500ml Tayside

<table>
<thead>
<tr>
<th>Rate (%)</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0000%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0000%</td>
<td></td>
<td></td>
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</tbody>
</table>

Rate per 1,000 maternities

Rate of severe post-partum haemorrhage >2.5 l

MD training - top tips

testing PPH risk assessment form

New risk assessment form
Sepsis 6: Element Compliance

- Oxygen therapy
- Blood cultures
- Required antibiotics

Stillbirth rate

- Education sessions/prompt cards
- Introduction documented discussion
- Launch of staffet
- Compliance feedback/education

Percent compliance
Ninewells Maternity

Sepsis 6: Element Compliance

- IV fluid challenge
- Serum lactate / FBC
- Accurate urinary output

Tayside

Sepsis 6: Overall Compliance

- Continual audit and feedback to staff
- Compliance charts
- Risk management
- Feedback to individual staff
- Failure to initiate bundle on Datix
- Compliance on improvement boards
- Midwives trained in obtaining blood
- Highlighted to staff
- 1 fail due to poor IV access
National Maternity Modified SIRS Criteria

Any 2 or more:
- Temp < 36 or > 38 °C
- HR > 100 bpm
- WCC < 4 or > 16 x 10⁹/L
- RR > 20 bpm
- Altered mental state

Sepsis Screening Tool for Maternity Services

The screening tool incorporates the use of existing local MEWS charts/triggers and a modified SIRS criteria for maternity services. The use of the screening tool should include assessment against the MEWS and SIRS criteria, as well as consideration of a possible source of sepsis (either suspicion of an infection or a known cause).

Considerations before implementing Sepsis 6:

<table>
<thead>
<tr>
<th>Local MEWS triggers (where applicable)</th>
<th>2 or more SIRS triggers</th>
<th>Suspicion of / confirmed infection</th>
<th>Implement Sepsis 6</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Elements</th>
<th>Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEWS Criteria</td>
<td>As per local use of MEWS and triggers</td>
</tr>
<tr>
<td>Modified SIRS Criteria</td>
<td>Any 2 or more:</td>
</tr>
<tr>
<td></td>
<td>- Temp &lt; 36 or &gt; 38 °C</td>
</tr>
<tr>
<td></td>
<td>- HR &gt; 100 bpm</td>
</tr>
<tr>
<td></td>
<td>- WCC &lt; 4 or &gt; 16 x 10⁹/L</td>
</tr>
<tr>
<td></td>
<td>- RR &gt; 20 bpm</td>
</tr>
<tr>
<td></td>
<td>- Altered mental state</td>
</tr>
</tbody>
</table>
Our Results

- We now have a well trained and confident multidisciplinary workforce who promptly recognise and manage Sepsis.

- A significant reduction in serious wound infection and other sepsis morbidity reduces healthcare costs by shortening lengths of stay, readmission and other interventions which can have significant implications for bonding, breast feeding and mental health following delivery.

- We believe that this integrated approach to improving sepsis management and prevention has had a significant benefit to women & families in Tayside.

**Suspicion of Sepsis**

- Cellulitis/wound/joint swelling
- Chorioamnionitis
- Diarrhoea and vomiting
- Dysuria/frequency/ loin pain
- Endometritis/retained products of conception
- Headache with neck stiffness
- Mastitis/breast tenderness
- Perineal trauma
- Pre-term prolonged rupture of membranes/offensive liquor
- Rash
- Severe pain
- Sore throat/cough/sputum/SCIB
- Uterine tenderness/offensive lochia
- Vaginal discharge
- Wound infection

**Severe Sepsis Criteria**

- Systolic BP < 90 or MAP < 65 or systolic > 40 below pt's normal
- Lactate > 4 mmol/L
- Unexplained coagulopathy/thrombocytopenia < 100 x 10^9/L
- INR > 1.5 or aPTT > 60s
- Creatinine > 120 umol/L
- Urine output <0.5ml/kg/hr for 2 hours
- Hb/Hct 70 umol/L
- New need for oxygen to maintain SPO2 > 94%
- Newly altered mental state

www.scottishpatientsafetyprogramme.scot.nhs.uk
Vision for a “Population Approach”

To develop a system for population health which reliably ensures:

1. Pregnant women are empowered and informed to take an active role in their perinatal health;
2. Communities improve the lives of pregnant women; and
3. Care environments deliver the best known care to all pregnant women.

Innovation at IHI

90 day cycles

<table>
<thead>
<tr>
<th>Scan</th>
<th>Focus</th>
<th>Summarize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review, conduct</td>
<td>Visits, tests, analysis</td>
<td>Validate, write up &amp;</td>
</tr>
<tr>
<td>interviews &amp; select</td>
<td>&amp; concept design</td>
<td>handoff to projects</td>
</tr>
<tr>
<td>an angle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Questions for 90-day Innovation cycle: April-June 2015

- What are examples of promising population-based models which improve health and outcomes for high-risk pregnant women?

- What are some core principles for developing a population management approach to improving outcomes for this population?

- Who might be interested in testing this approach with IHI?

Narrowing the Focus: Why Medicaid?

- Medicaid reimbursed 45 percent of the 4 million births in the United States in 2010, a percentage that has been rising over time.

- Poor birth outcomes are more prevalent in the Medicaid population.

- At least four Medicaid payment models have emerged with the potential to better integrate maternal health and care:
  - Accountable Care Models (Shared Savings and Global Payment with providers at risk) implemented by Accountable Care Organizations (ACOs)
  - Managed Care Medicaid Models (Medicaid HMOs)
  - Bundled payments for perinatal and maternity care
  - Maternity Health Homes or Pregnancy Medical Homes
Narrowing the Focus: Why preterm birth?

- Preterm birth is a major cause of both LBW and neonatal mortality.
- Preterm babies are at increased risks for long term morbidities and often require extensive care after birth.
- Preterm birth is the top driver of costs for childbirth.
- 12.6% of births paid for by Medicaid are preterm; this rate is 25% higher than in the commercial population.
- Premature babies cost Medicaid 9 times as much as uncomplicated babies, averaging $2.9 billion annually for each state.

Methods

1. A national scan for best practice models of care;
2. An evidence scan of risk factors and interventions to reduce preterm birth;
3. Interviews with 40 experts across 15 states to understand state and regional approaches to perinatal care; and
4. A design meeting in September 2015 which brought together experts to vet and further develop a theory of change for how to improve birth outcomes among Medicaid beneficiaries.
Interventions for Testing

1.) The pregnancy medical home model;
2.) Peer support, including group prenatal care;
3.) Improving screening for Pregnancy Intention and increasing access to Effective Contraception; and
4.) Integrating substance abuse treatment with perinatal care.
Next steps

1.) Transformative testing partnership with one organization or community serving a population of Medicaid beneficiaries.
2.) Facilitated learning community to test one or more elements of the population management approach, building experience and degree of belief in these interventions in different contexts.

Thank you!

- What population health best practices have you seen in caring for this population?
- Would you like to stay involved with this work or join a prototype testing community around one of these interventions?
- Please join us for a Special Interest Breakfast on Wednesday from 7:00-7:45 AM in Grand Ballroom, Salon 1-2 to discuss this topic further.