Interventions for Preterm Newborns and the Principle of “Do No Harm”

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16 November 2015
Overview

• The principle: “Do no harm”
• A particularly vulnerable population
• Interventions for management of preterm labor and care of preterm newborns in low resource settings
• Highlight the conundrum of medical errors related to preterm newborn care in facilities
• Safe and effective use of preterm newborn interventions
The Hippocratic Oath

- First reference is from the Greek: "ἐπὶ δηλήσει δὲ καὶ ἀδικίῃ εἴρξειν", meaning “to abstain from doing harm”
- Found in The Hippocratic Oath (5th Century BCE – physician Hippocrates)
- The oath is a rite of passage for practitioners of medicine in many countries
Primum non nocere
or
Do no Harm

- **Primum non nocere** was introduced into American and British medical culture by Worthington Hooker in his 1849 book *Physician and Patient*.

- **Non-maleficence**, derived from this maxim, is one of the principle precepts of bioethics taught to healthcare students.

- Another way to state it is that, "given an existing problem, it may be better not to do something, or even to do nothing, than to risk causing more harm than good."
When are deaths occurring?

- 1.2 million intrapartum stillbirths
- >1 million neonatal deaths
- ~113,000 maternal deaths

75% neonatal deaths occur within 48 hours around birth.

Labor and the day of birth is the time of greatest risk of death and disability.

Source: Lancet Every Newborn series, paper 2, 2014
Global Newborn Deaths by Cause

- Severe infections (mainly sepsis and pneumonia): 26%
- Asphyxia: 23%
- Preterm birth: 27%
- Congenital anomalies: 7%
- Tetanus: 7%
- Other: 7%
- Diarrhoeal diseases: 3%

Source: UNICEF, 2000
Severity - Preterm Births by Gestational Age and Region for 2010

- 5% of PTB are born less than 28 weeks.
- 10% of PTB are born from 28 to less than 32 weeks.
- 85% of PTB are born from 32 to 37 weeks.

Source: Blencowe et al. National, regional and worldwide estimates of preterm birth rates in the year 2012
Setting: Where 15 million preterm babies receive care

High-income countries
Access to full intensive care
(1.2 million preterm babies)

Middle-income countries
Neonatal care units
(3.8 million preterm babies)

Low-income countries
Home birth and care at home
(5.6 million preterm babies)

Low-income countries
Facility births but limited space, staff and equipment
(4.4 million preterm babies)

Can we reach scale with care interventions that require high functioning care facilities?
Potential for lives saved (and lost) through steroid injections for women in preterm labor

- Respiratory complications due to lung immaturity (RDS) are the commonest cause of death in very preterm babies.
- Single course of antenatal corticosteroids (ACS) to women in preterm labor up to 34 weeks gestational age:
  - 31% newborn mortality reduction (RR 0.69, 95% CI 0.58 to 0.81) in NICU settings where ventilation (+/-surfactant) is standard of care (Cochrane review)
  - 53% reduction in mortality in 4 studies in middle income countries (RR 0.47, 95% CI 0.35 to 0.64) again with advance preterm care
- LIC settings differ significantly
- 2014 ACT trial in six LMICs showed no change in mortality for low birth weight 95%tile, and increased mortality in treatment arm of 3.5/1000 compared to control group (usual care) when provide to women up to 36 weeks GA

This approach was promoted to have the potential to avert about 41% of newborn mortality if reached 95% of women in preterm labor (LiST analysis)
Lifesaving preterm interventions with known potential harm

- Antenatal Corticosteroids
- Oxygen
- CPAP
- External warming devices
- Resuscitation Devices
- Chlorhexidine for cord care
- Special formula feeding
- Technology based NICU criteria
- Continuous skin to skin contact (Kangaroo Mother Care)
- Essential newborn care
- Lactation support for mothers
- Early chord clamping
Types of Errors
Institute of Medicine (IOM) approach

Diagnostic
• Error or delay in diagnosis
• Failure to employ indicated monitoring or tests
• Use of outmoded tests or therapy
• Failure to act on results of monitoring or testing

Treatment
• Error in performance of an operation, procedure, or test
• Error in administering treatment
• Error in the dose or method of using a drug
• Avoidable delay in treatment or in responding to abnormal test
• Inappropriate care

Preventive
• Failure to provide prophylactic treatment
• Inadequate monitoring or follow-up of treatment

Other
• Failure of communication
• Equipment failure or other system failure
Ending preventable child and newborn deaths

Mortality targets in Every Newborn Action Plan and A Promise Renewed

From 2.7 to 0.8 million neonatal deaths

~100 countries have already met the target – focus on equity gaps

About 29 countries will have to more than double their rates of progress
Many premature babies can be saved before neonatal intensive care becomes available.

Over 60% reduction can be achieved before neonatal intensive care and history shows the impact would be huge.

WHO recommendations on interventions to improve preterm birth outcomes in facilities
Questions/Discussion