Meningitis Research Foundation

Neonatal Sepsis in sub-Saharan Africa

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I have no conflicts of interest to declare

18 October 2019
Strengthen the planes where the bullets are causing most damage
Neonatal sepsis – the diagnosis
Neonatal sepsis – morbidity

Exposure to infection

Possible severe bacterial infection

Increased risk for those born preterm

Neonatal period

Death

Meningitis

Sepsis

Pneumonia

Tetanus

Uncomplicated

Childhood and adulthood

Death

Impacts on physical health

Neurological, neurodevelopmental, and hearing

Impacts on mental health

Normal development

Seale et al Paediatric Research 2013
Neonatal sepsis – compartmental model estimates

Neonatal deaths attributed to infections

- 120,000 babies with meningitis
- 1.0 million babies with sepsis or pneumonia
- 2.2 million babies with sepsis or pneumonia
- 6.7 million babies with possible severe bacterial infection

Survivors with disability

- 27,000 with neurodevelopmental disability and/or deafness
- Increased risk of neurodevelopmental disability but unable to quantify
- Long-term higher risk of disease especially if overlap with small for gestational age

Family support after death

Care for children with disability
3.0 million cases of neonatal sepsis based on these data – none from sub-Saharan Africa
Neonatal sepsis – the aetiology

• 151 studies
• (82 since 2008)
• 84534 neonates
• 26 countries
• Almost all in hospital

Staphylococcus aureus 25% (21–29)
Klebsiella spp 21% (16–27)
Escherichia coli 10% (8–10)
Abraham Wald: those that return to base are those that survive
Strengthening needed where the bullet holes aren’t seen
Neonatal sepsis – the example of Group B Streptococcus

Lack of access to care

Poor quality of care and lack of clinical assessment

Failure to take appropriate samples due to lack of protocols, skilled personnel or supplies

Poor quality of laboratory methods to support pathogen detection e.g. automated blood cultures

Case ascertainment in low income contexts may be lower at every stage leading to more biased data, often with inconsistent reporting in published literature
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Late onset pathogens and typically associated with hospital outbreaks
Neonatal sepsis – what are we missing

Early-onset, high mortality, difficult to sample, difficult to detect in the lab
Neonatal sepsis – what does this mean?

Even the most robust observational study will be limited by survivor bias.

ANISA: A robust, large, community based investigation of neonatal sepsis in South Asia.

Saha et al. Lancet 2018

ANISA: A robust, large, community based investigation of neonatal sepsis in South Asia.
Neonatal sepsis – we need to look at alternatives

Study design – include those that don’t survive
Neonatal sepsis – we need to look at alternatives

Study design – an intervention to prevent the deaths
The analysis informed design of planes through the Vietnam War and is considered to have substantially reduced casualties.
Thank you

All those whose work is included here.

All my colleagues and collaborators at LSHTM, KEMRI-Wellcome Trust Research Programme, Haramaya University and Public Health England.

Particular thanks to
Joy Lawn
Anthony Scott
Jay Berkley