Optimising the impact of BCG on neonatal mortality

Age and missed opportunities

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BCG coverage and missed opportunities in rural Africa

Current wastage policy

BCG 20 dose vials
Opened for 10-12 children

Implications of wastage policy

Rural Guinea-Bissau
Monthly visits

BCG vaccination at a local vaccination post during village visits

Implications of wastage policy

BCG → Scar

Thysen et al, BMC Public Health, 2014
Determinants for BCG scar

- Post-vaccination wheals → BCG scarring
- Larger post-vaccination wheals → more BCG scars
  Funch et al., under preparation
  Frankel et al., Vaccine, 2016

Determinants for BCG scar

- Experienced nurses and training → more scars
- No underlying health marker affected BCG scarring
  Funch et al., under preparation
  Frankel et al., Vaccine, 2016

BCG scar and mortality
Rural Africa

Scar prevalence 52% among BCG vaccinated children
  Storgaard et al., CID, 2015

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Mortality
Consistent results in 6 studies covering both high and low scar prevalence cohorts

- Timmermann 2016 LBW
- Timmermann 2016 NBW
- Storgaard 2015
- Roth 2006
- Roth 2005 – cohort B
- Garly 2003

Combined estimate 0.54 (0.43-0.68)

BCG strain and scar frequency

- 2016: rural Guinea-Bissau
- 2016: urban Guinea-Bissau
- 2012: Uganda
- 2005: urban Guinea-Bissau

Danish BCG strain | Russian BCG strain | Other BCG strain

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Overall 26% reduction in mortality

Scar prevalence 52% among BCG vaccinated children
  Storgaard et al., CID, 2015
Conclusions and recommendations

BCG vaccination policy
• Age of BCG vaccination is important
  ➢ Remove wastage policy
• BCG scar is associated with lower mortality
  ➢ Consider re-vaccination of scar-negative children

Conclusions and recommendations

• Vaccination technique is important
  ➢ Intensive training in vaccine administration
  ➢ Monitor BCG scar and vaccination technique in assessment of the BCG program
• Strain of BCG is important
  ➢ Study overall effect of different BCG strains
  ➢ Consider overall effect when approving vaccines