How can we best find the missing 64%?

Research to optimize implementation and impact; and promote innovation
Childhood TB estimates

• 1 Million new cases among children 0-14 years
• But only 36% detected
  → TB remains under-diagnosed
  → mis-diagnosed (pneumonia, malnutrition)
  → diagnosed late
  → about 400 children die each day from TB
• The future epidemic: children with TB infection

→ Improve case finding and prevention
Research: New, child-friendly tools

• Diagnostics
  – Pediatric specimens
  – Point of care
  – Disease and infection

• Treatments
  – Shorter
  – DS and DR TB

• A better vaccine

Improve health systems
• Access and service delivery
• Platform for new tools
Research shows the health system failures

- **Community-based cohort (0-2 years)**
  - Crude mortality rate 60.8/1000*
    - Main causes of death: malaria, pneumonia, diarrhea, anemia.
    - **TB not identified as a cause of death**
- **Children presenting to community health centers with cough >2 weeks**
  - Only 17% referred for smear microscopy**
    - Low yield (3.6%), low uptake of TB treatment (56% of sm+)
    - **Children < 5 were less likely to be referred**

- **270 children 2 months - 12 years admitted with severe pneumonia***
  - **TB incidence ratio 18.9%**, (6.3% culture confirmed TB)
  - **Higher likelihood of PTB among children < 5**

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Care seeking along the continuum of care

- Home/Community
- Hospital
- 1st/secondary level facilities
- Improve access
- Decentralize

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But HOW?

Operational/Implementation research

- Best practice
- Documentation
- M&E
- Pilot
- Demonstration

Define question
Collect data
Summarize
Disseminate

Inform practice
Evidence for scale up
Policy change
What is the impact

- TB case finding?
- TB outcomes?
- What would be the impact of scale-up?
- Uptake of preventive therapy – cases prevented?
- **But also:** impact on other child health outcomes: pneumonia, malnutrition
Research shows what works (impact)

- **Symptom-based contact screening** (Indonesia, Viet Nam, Uganda*)
  - 8-10% active TB among child contacts <15 years
  - No active TB after 12 months among children receiving IPT

- **TB among children with ARI/pneumonia**
  - 7.5% confirmed TB (up to 20% overall)

- **TB among children with severe malnutrition**
  - Up to 7% confirmed, 17% clinical TB

- **Symptom-based screening in PMTCT setting***
  - High incidence of previously undiagnosed, smear-negative, culture-confirmed TB (2160/100,000)

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* Triasih CID 2015, Jaganath CID 2013, personal communic.
** Oliwa Lancet RM 2015; *** Kali PB et al, JAIDS 2006
Where we don’t know the impact yet

Caring for the newborn at home
- Promotion of ANC and skilled care at birth
- Care in first week of life
- Recognition and referral of newborns with danger signs
- Special care for low birth weight babies

Caring for the sick child in the community
- Referral of children with danger signs and severe acute malnutrition
- Treatment in the community
  - Diarrhoea
  - Fever (malaria)
  - Pneumonia

Caring for the sick newborn at home
- Promotion of ANC and skilled care at birth
- Care in first week of life
- Recognition and referral of newborns with danger signs
- Special care for low birth weight babies

HIV/Risk of HIV? TB contact?
The complexities of the community platform

- Management of the sick child
- TB risk assessment
- Follow-up
- Contact screening
- IPT
- CHW
- Care of pregnant women
- Newborn care
- Nutrition
- HIV
- NCDs
- WASH
- Family planning
- etc.
How can we best integrate TB into the existing community platform

- **Operational feasibility**
  - Can we maintain quality?
  - What management and reporting tools are needed?
  - How can we develop comprehensive training approaches?
  - How can we harmonize M&E?
  - Referral systems needed
  - Preparedness of receiving facilities

- **Cost**
  - Health system
  - Patients
The ‘best package’ for CHWs might vary between different settings?

- Urban/rural
- TB epidemiology
- Prevalence of other diseases
- Access to referral facilities
Conclusion

• There are ample opportunities for decentralizing child TB activities and linkages with other programmes
• Operational research is essential to provide evidence for scale-up and best practices
• Community partners ideally placed to address many of the questions
• There are opportunities for OR training or collaborations
• Many of you already perform research!