Incidence and Antimicrobial Resistance Profile of Salmonella Bacteraemia Among Children in sub-Saharan Africa: RTS,S/AS01 Salmonella Ancillary Study

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11th International Conference on Typhoid and Other Invasive Salmonelloses, Hanoi, Vietnam, March 26-28, 2019
11 sites selected to represent diversity of malaria endemicity in sub-Saharan Africa agnostic to incidence of Salmonella disease

Children randomised to receive:
• RTS,S-AS01 3 doses +/- booster
• Comparator vaccine

Cohorts: 6-12 weeks & 5-17 months
Median follow-up: 38 & 48 months
Duration: 2009 to 2014

Main exclusion criteria included
• Malnutrition requiring hospitalisation
• Severe anaemia (<5 g/dL)
**Aim**: Use data from MAL055 to determine incidence of *Salmonella* bacteraemia in children under five years across sub-Saharan Africa.

**Workshop held in Nairobi, Kenya, September 2016**

- 15,460 children enrolled
- Mean baseline Hb = 10.3 g/dl (IQR 9.3 to 11.2).
- Mean height-for-weight z score = 0.2 (IQR -0.7 to 1.1)
- HIV not systematically tested

- Incidence of clinical malaria
  - (min) Kilifi, Kenya 0.05 cases per person year
  - (max) Siaya, Kenya 4.41 and 5.41 per person year

Passive surveillance with blood cultures for febrile admissions
- Salmonella isolates located
- Shipped to **KEMRI, Nairobi**
  - Confirmatory serotyping
  - AMR profiling
  - DNA preparation
- DNA shipped to **WTSI, UK**
  - WGS
  - Bioinformatic analysis
Genomic analysis

Salmonella Typhimurium

Salmonella Enteritidis

Sandra van Puyvelde
‘Genomic Insights From Salmonella Bloodstream Infections Among Young African Children Identified During the MAL055 RTS,S/AS01 Salmonella Ancillary Study – see poster 174
iNTS disease antimicrobial resistance

• >60% MDR (ampicillin, chloramphenicol and cotrimoxazole)
• Ceftriaxone and fluoroquinolone resistance emerging in Africa – particularly in western Kenya sites
Conclusions

• *Salmonella* is a major and persistent cause of bacteremia among children under five years across sub-Saharan Africa

• High levels of MDR and resistance emerging to fluoroquinolones and ceftriaxone


• Other serotypes in West Africa – notably *S. Dublin*

• iNTS disease 7x higher incidence than typhoid fever

• Greatest need for a *Salmonella* vaccine in Africa is a vaccine against iNTS disease
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