Technical consultation for the use of serology for trachoma surveillance

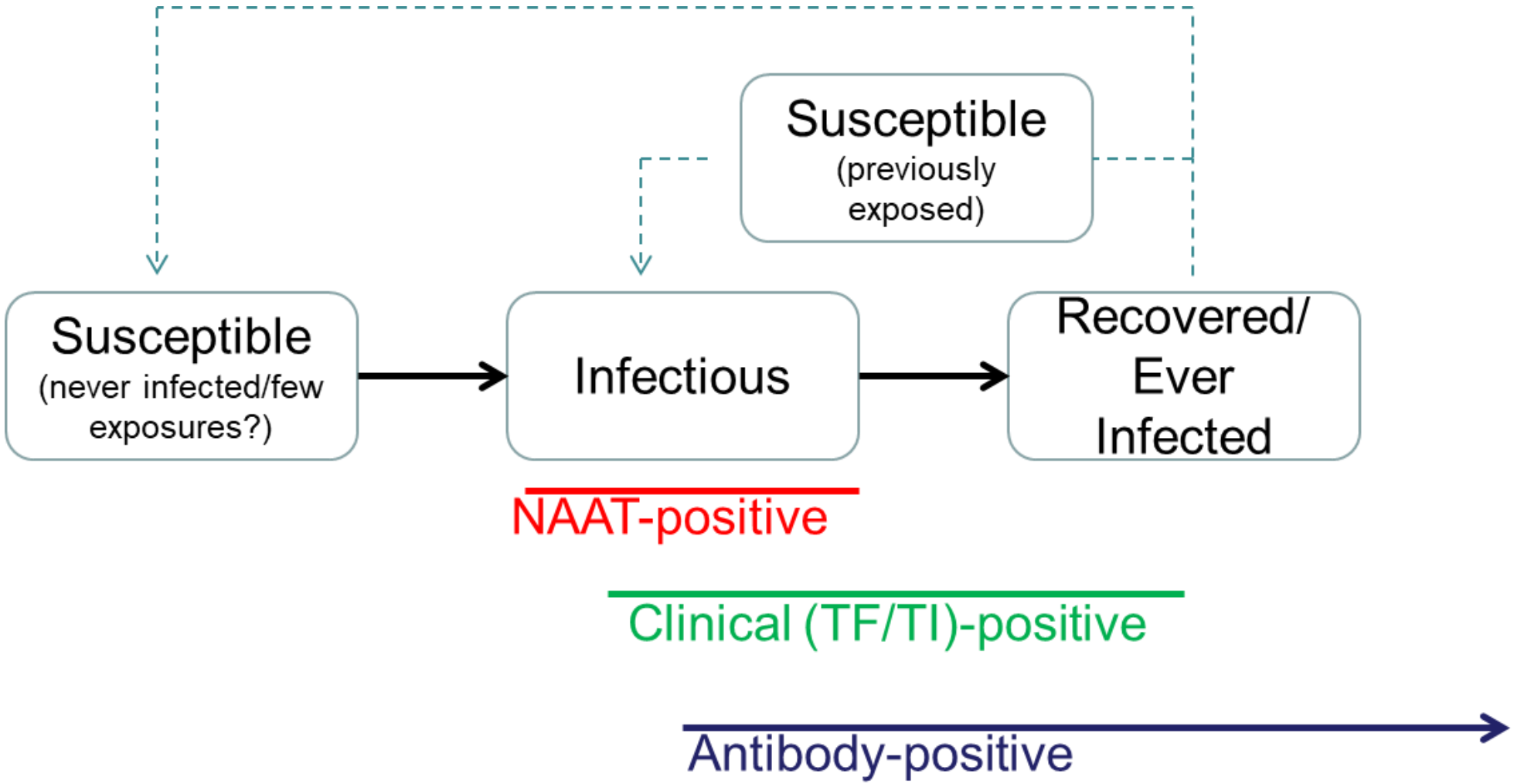
9-10 October 2018

Task Force for Global Health

Decatur GA

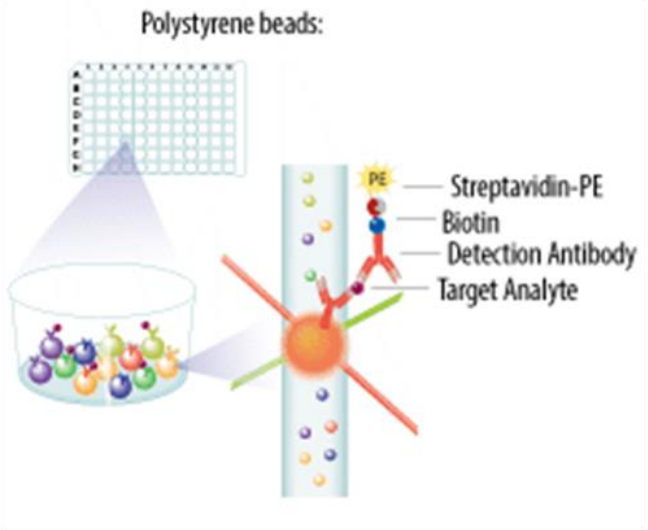
Meeting purpose

- To review available data related to serological surveillance for trachoma, discuss ongoing studies, and identify knowledge gaps to plan future work.


Susceptible
(previously exposed)
Susceptible
(never infected/few exposures?)
Infectious
Recovered/ Ever Infected
NAAT-positive
Clinical (TF/TI)-positive
Antibody-positive

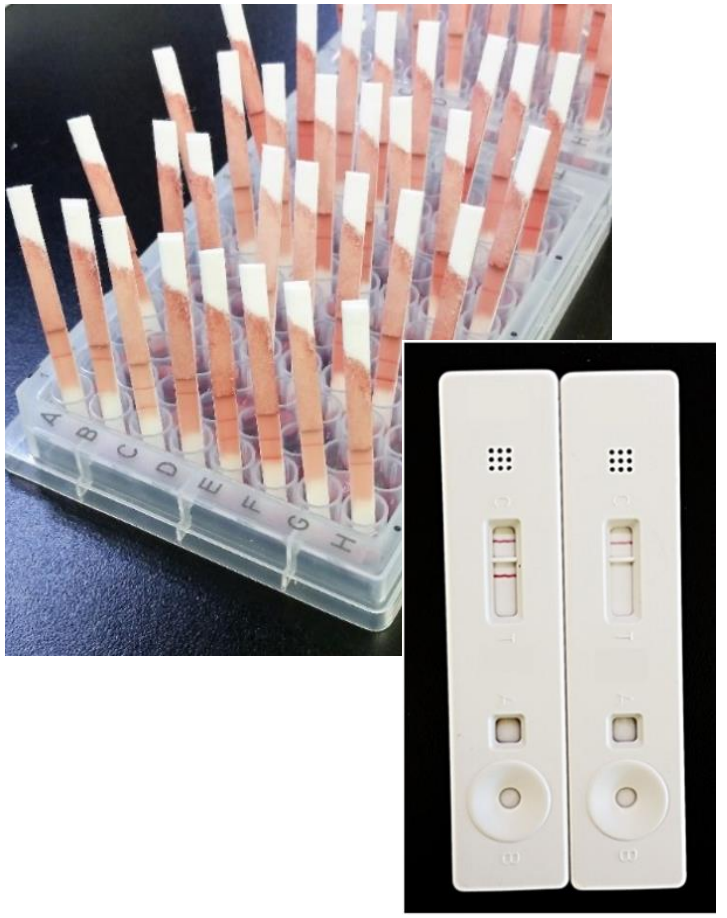
Antibody testing platforms

Bead-based assays (MBA)



ELISA

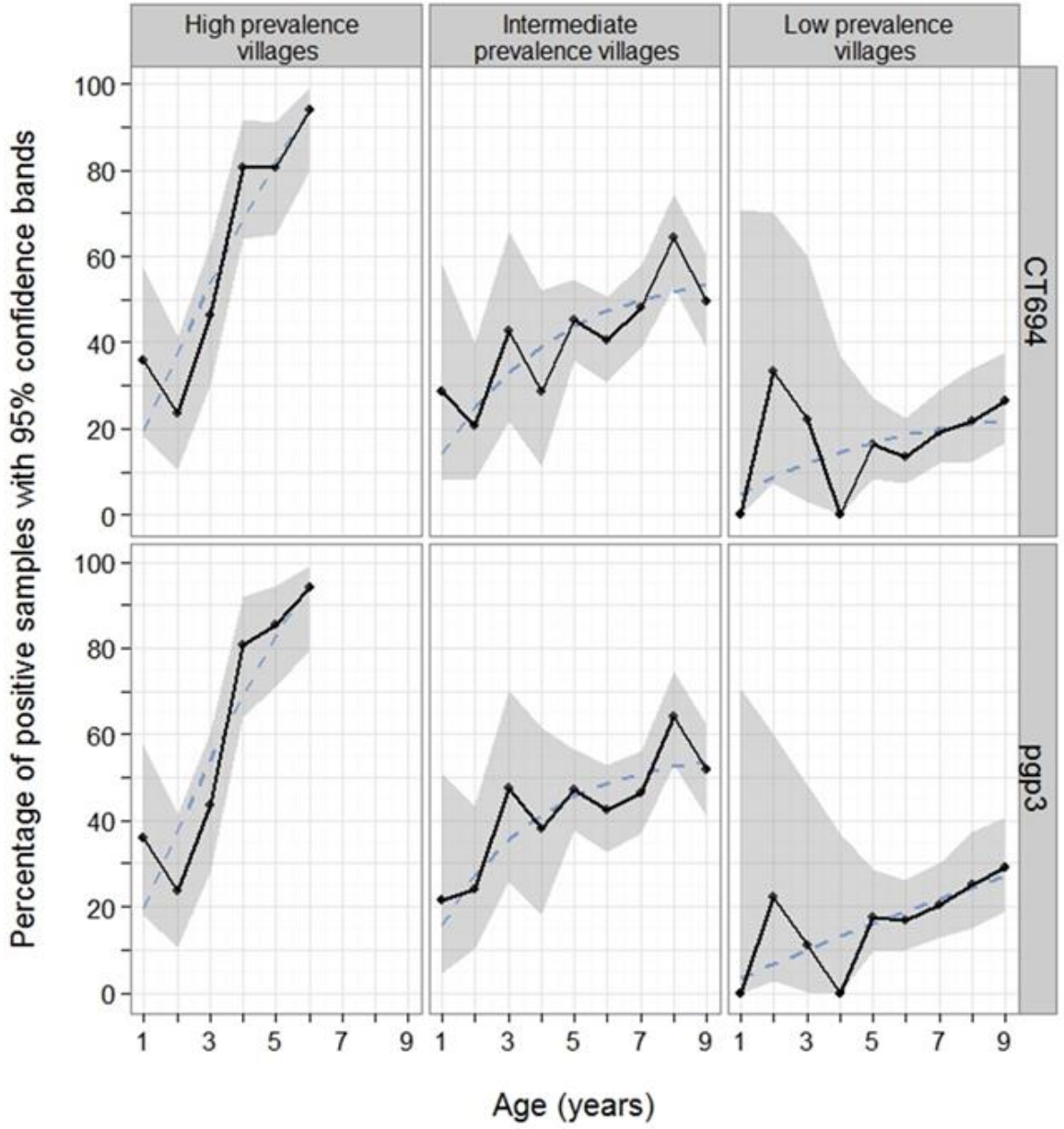
Lateral Flow Assay (LFA)



Summary of studies: community-level

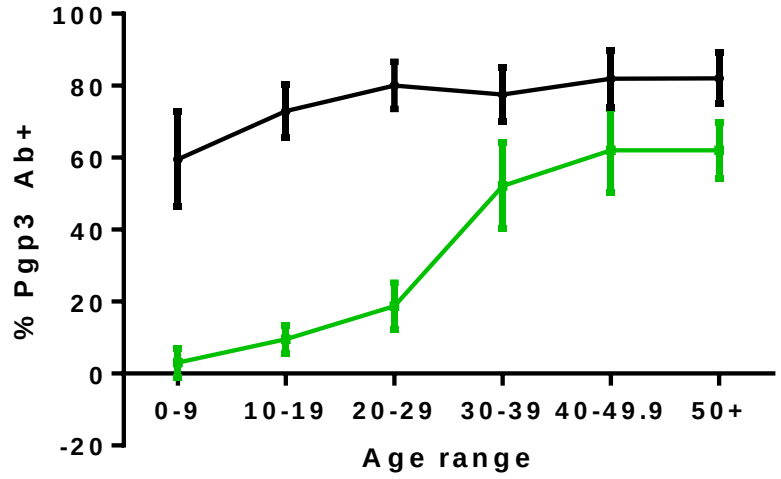
- Kongwa District, TZ
  - Pilot study (2-3 rounds MDA)
  - Longitudinal studies
  - Health Impact Study
- Amhara Region, Ethiopia
  - SWIFT study
  - >7 rounds MDA
- Niger
  - PRET
  - 3 biannual rounds MDA
- Nepal
  - Pre and Post MDA
- Rombo District, TZ
  - 10 years post MDA

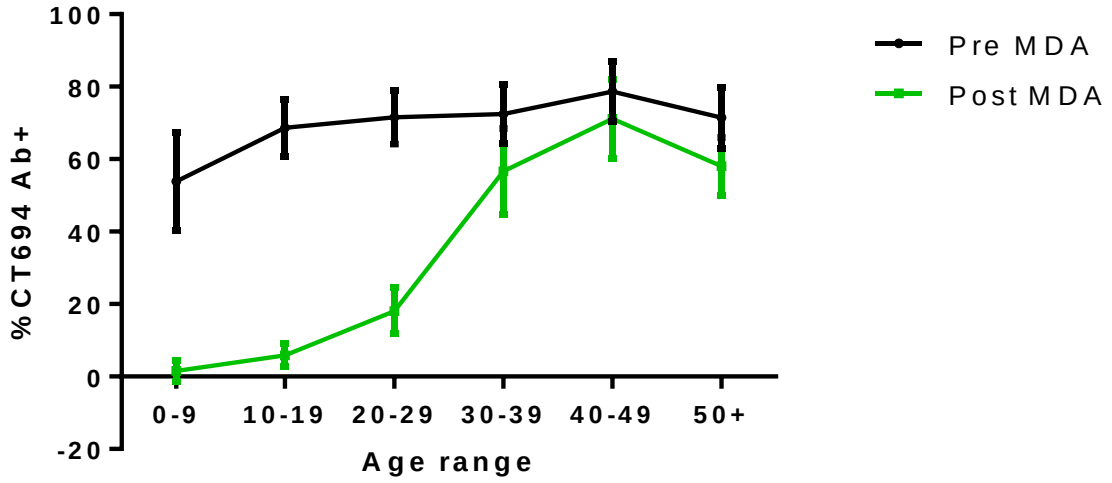
Age Seroprevalence Curves Reflect Transmission Intensity



Martin et al, *Scientific Reports* 2015

Antibody responses in 4 villages pre- and post-MDA Kapilvastu District, Nepal





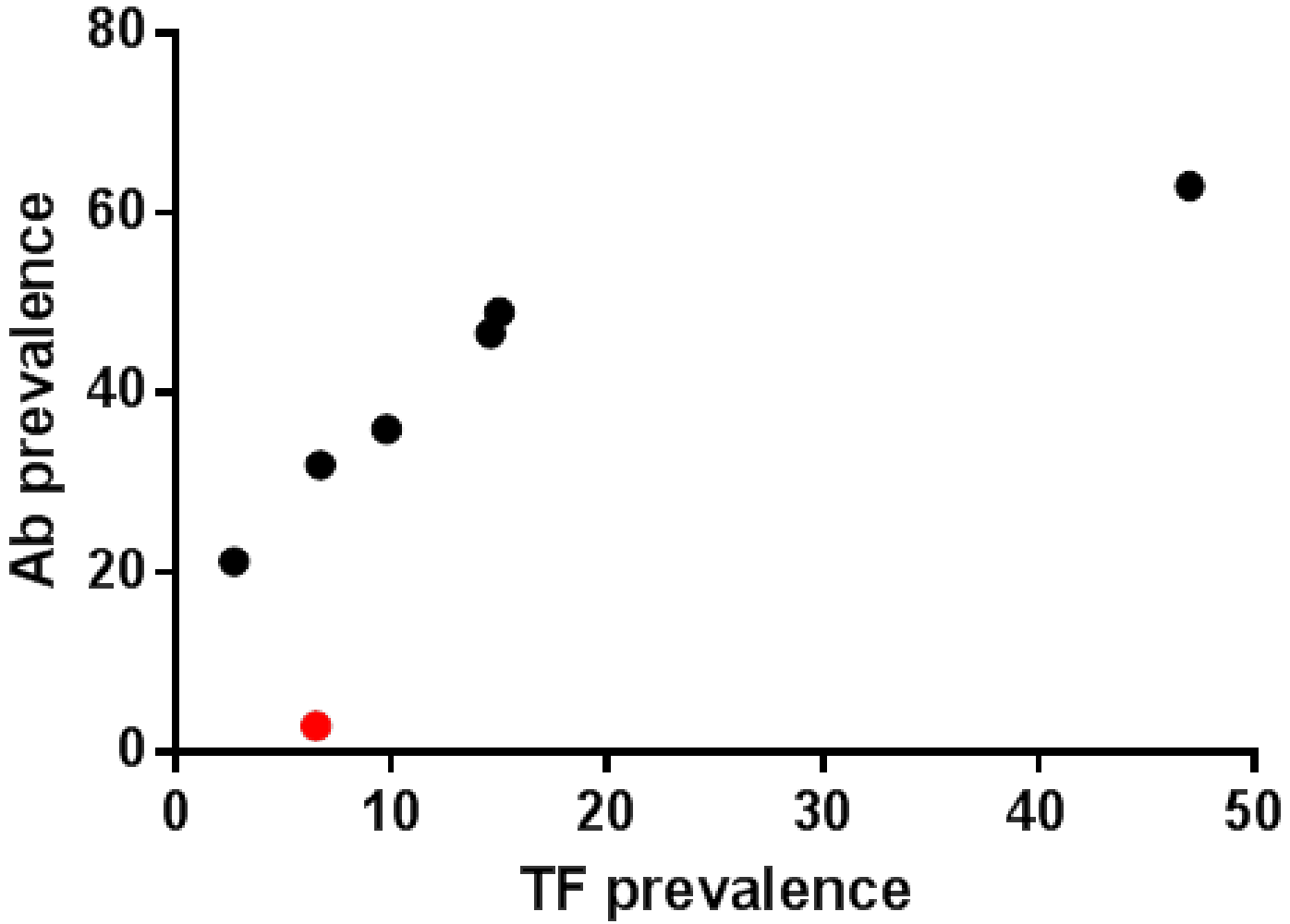
2000 & 2002
Pre-MDA data collection

2007-2009 MDA

2014 post-MDA
data collection

Gwyn et al *AJTMH 2018*

Comparison of TF and antibody prevalence in community-wide baseline surveys



Summary of studies: district-level

- Baseline
  - Africa: Togo, Ethiopia, DR Congo (TBD), Sudan (TBD)
  - Pacific Islands: Papua New Guinea, Fiji, Solomon Islands, Kiribati
  - SE Asia: Lao PDR

- Impact Survey
  - Africa: Malawi, Ethiopia, Uganda

- Pre-validation Surveillance Survey
  - Africa: Ghana, United Republic of Tanzania, Gambia
  - SE Asia: Nepal

Baseline data – district level

- To date, a dearth of information from:
  - Outside Pacific Islands
  - In areas with known medium to high levels of transmission

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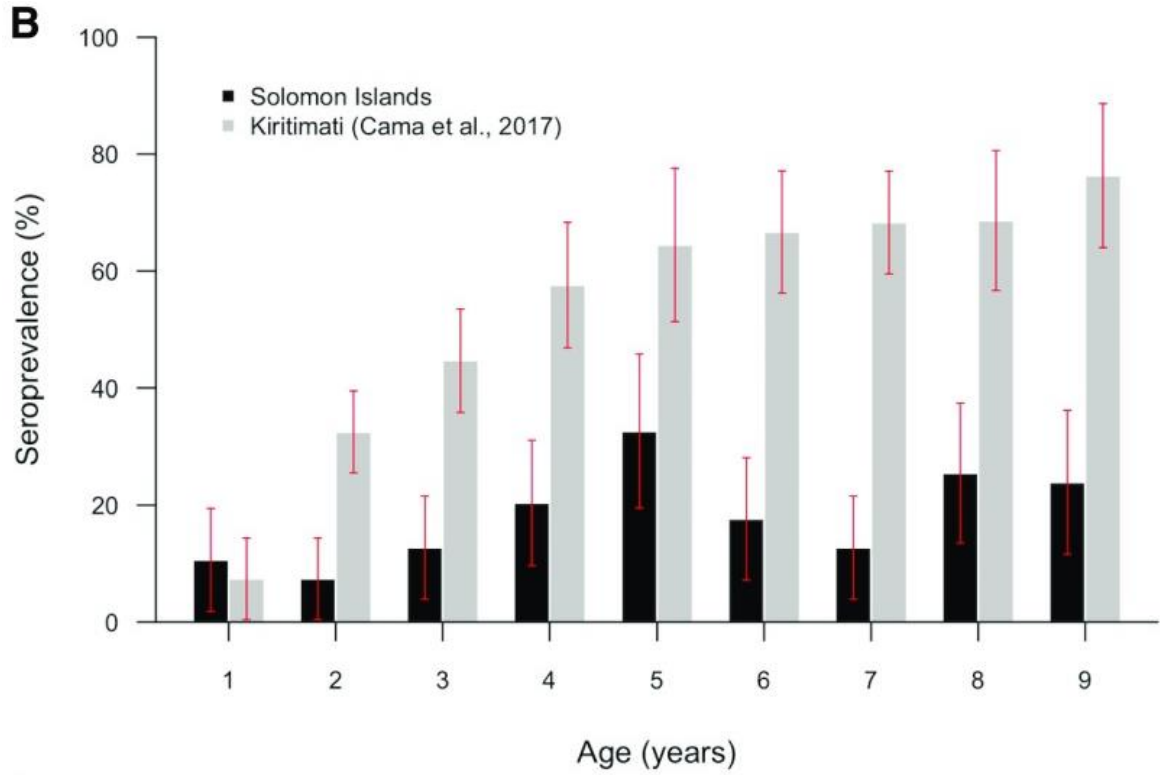

Cama et al *PLOS NTDs* 2017

Butcher et al *Wellcome Open Research* 2018

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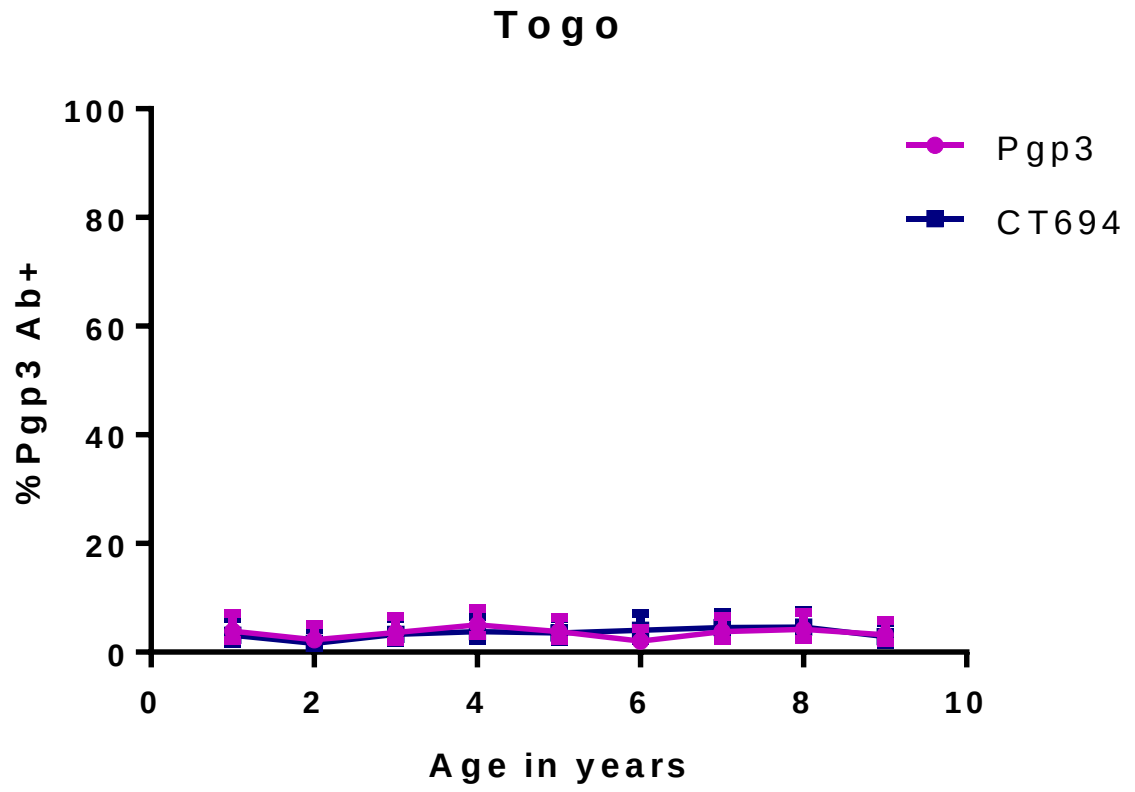
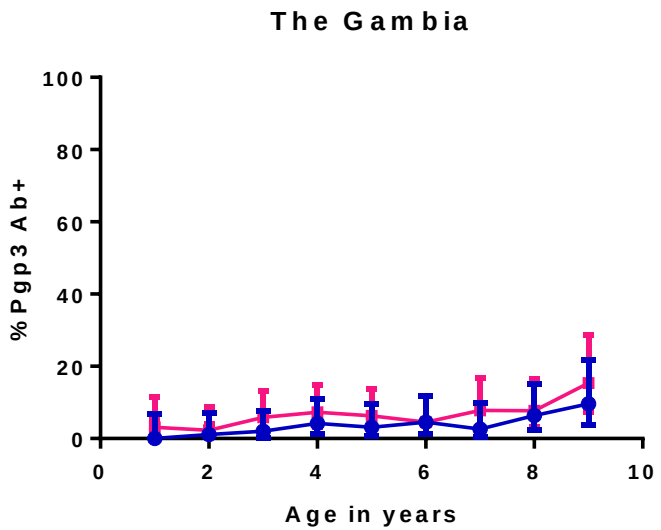


Randall et al, manuscript in preparation

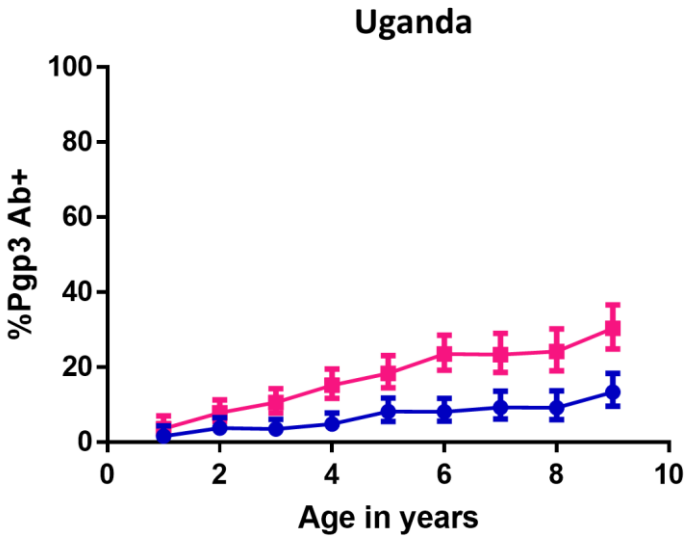
Baseline data – district level

- To date, a dearth of information from:
  - Outside Pacific Islands
  - In areas with known medium to high levels of transmission
- Upcoming:
  - 2 Districts in DR Congo
  - Darfur, Sudan

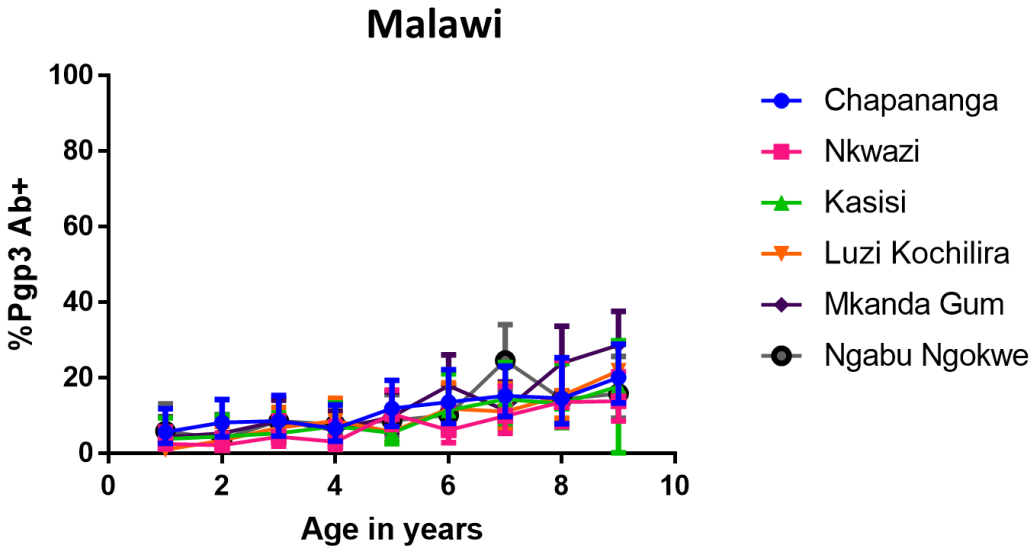
Impact survey data – district level



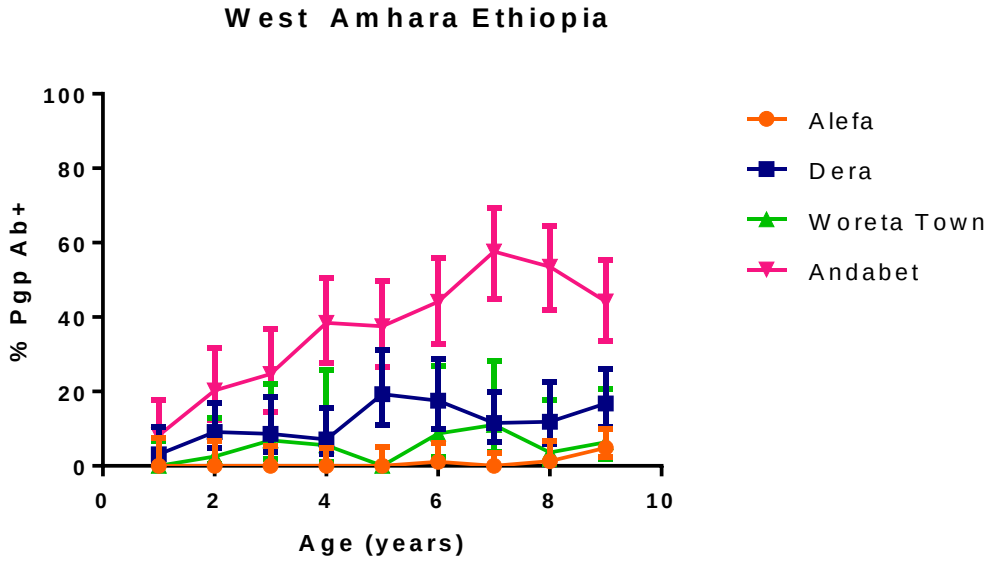
Adapted from Migchelsen et al 2017 and 2018



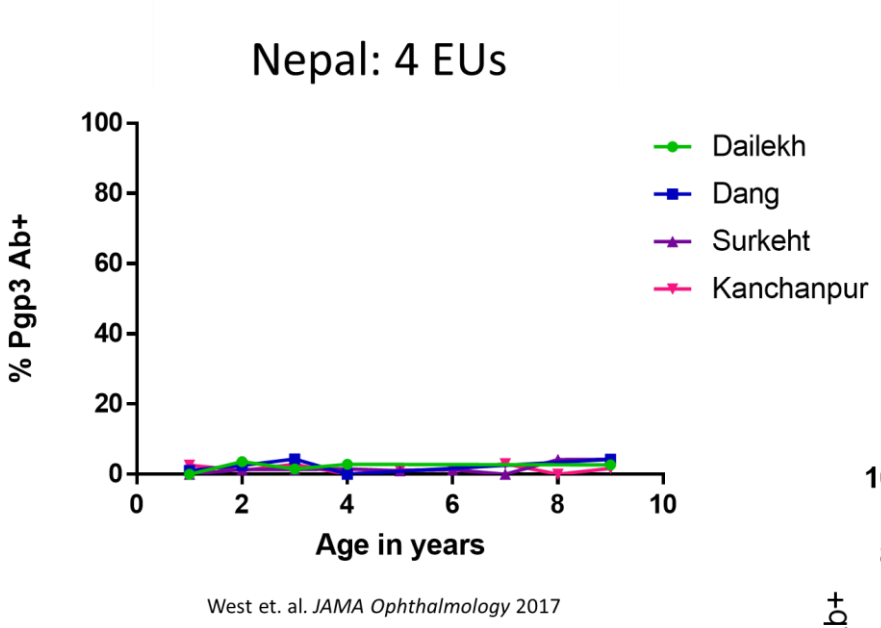
Adapted from Migchelsen et al 2017



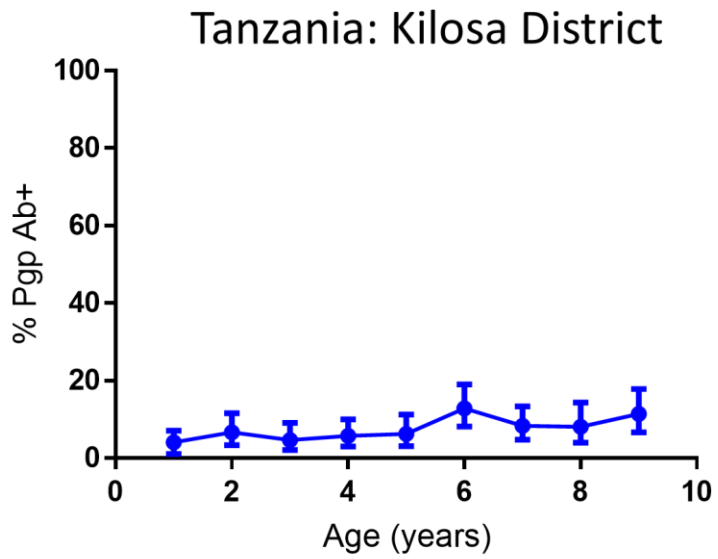
Burr et al manuscript in preparation



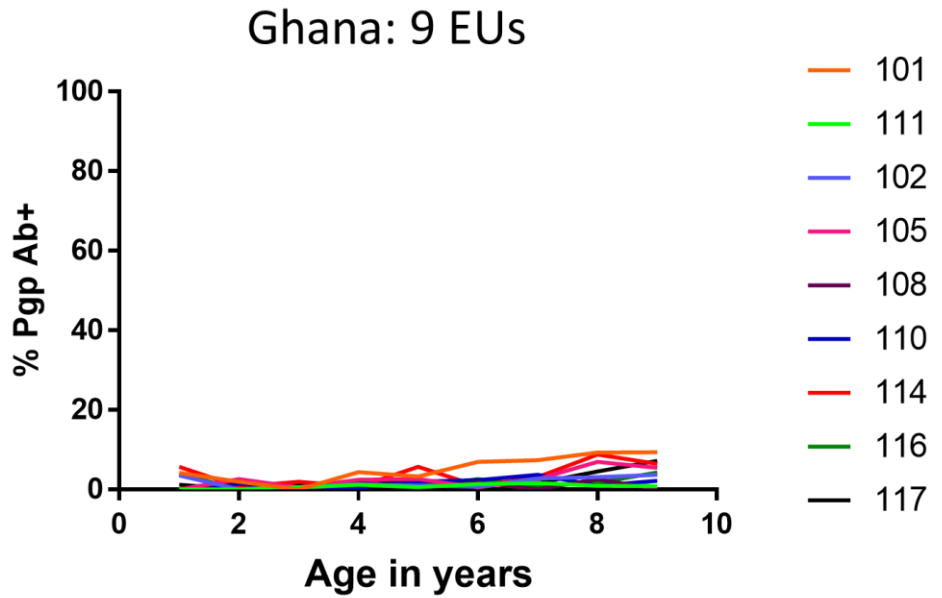
Pre-validation surveillance survey data – district level



West et. al. *JAMA Ophthalmology* 2017



Adapted from data presented in West et al *PLOSNTDS* 2016



Senyonjo et al submitted for publication

Technical Consultation Recommendations (I)

- To collect data from high priority settings.
  - Treatment-naïve trachoma-endemic districts
  - Settings where individuals can be followed longitudinally
    - Identify seroconversion events and better estimate SCR/SRR
- To conduct studies addressing the contribution of STI to anti-Ct Ab responses
  - All-age data from districts with low STI rates
  - Pursue testing of Ags that identify recent infection or are specific to ocular Ct
- To ensure testing of younger ages in serological studies
  - Current opinion is that recrudescence would include infection in ≥12 month olds children

Technical Consultation Recommendations (II)

- To follow up on data collected in Oromia Region, Ethiopia
  - Disrepancy between TF data and Ab/infection data
- To ensure appropriate data collected during serological studies
  - appropriate survey design
  - GTMP/Tropical Data-certified graders
  - demographic data collection
  - all indicator data collected (TF, Ab, infection)
  - permissive consent (for further test development)
  - robust means to follow individuals longitudinally
- To implement appropriate QA and QC for each assay type
  - Process for how to organize lab work flow for relevant studies
  - Coordination with CDC for assay QC