

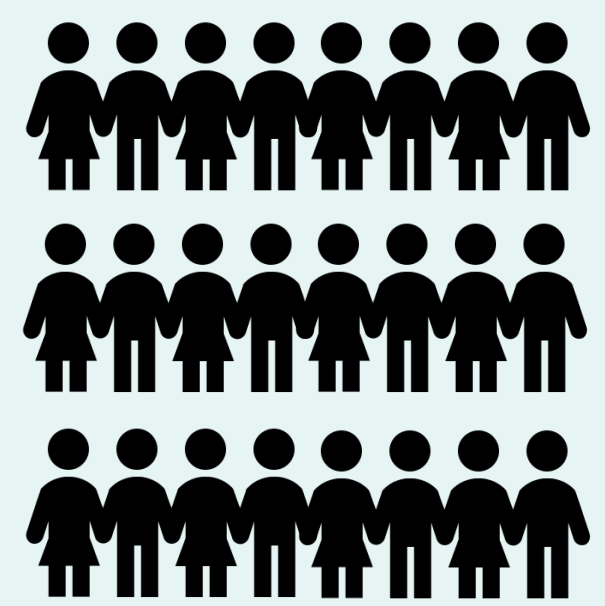
The development and validation of a latrine-based surveillance system to monitor and evaluate soil-transmitted helminthiasis control programs

Abebaw Tiruneh^{1,2}, Sara Roose², Mio Ayana¹, Fiona Vande Velde², Luc Coffeng³, John Gilleard⁴, Michael Templeton⁵, Zewdie Birhanu¹, Zeleke Mekonnen¹, Bruno Levecke²

¹ Jimma University, Ethiopia – ² Ghent University, Belgium, ³ Erasmus MC, The Netherlands, ⁴ University of Calgary, Canada, ⁵ Imperial College London, UK



- Soil-transmitted helminths (STHs): *Ascaris*, *Trichuris*, hookworms pose a significant public health threat, particularly in impoverished communities, leading to malnutrition, growth stunting, and cognitive deficits in children.
- Large-scale school deworming programs are the current tool to reduce STH-related health issues among children.
- Monitoring and evaluation (M&E) surveys are crucial for tracking the progress of STH control programs.
- The current M&E method involving individual examination of stool samples using Kato-Katz thick smear faces operational and financial challenges.



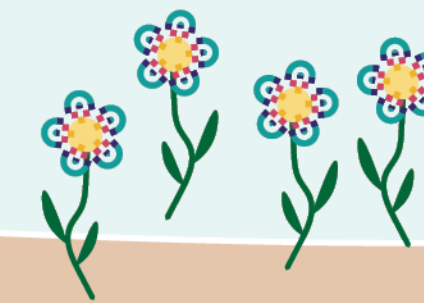
school-based M&E
individual stool samples

Challenges:

- design/selection
- time
- class interruption
- cost-efficient?
- reliable?
- ethical review time?



Development and validation of a latrine-based surveillance system for STH control programs



The project is currently ongoing with results expected to be available by the end of 2024



VALIDATION

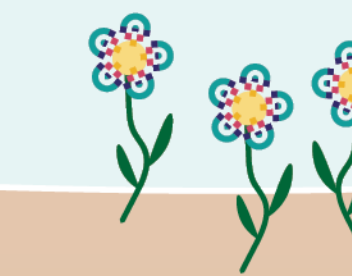
WP 2: The performance of a latrine-based M&E



- Collection and examination of fecal sludge and individual stool samples
→ 25 schools (1,300 children) in Ethiopia



- ✓ Association between mean school fecal egg counts using stool-based and latrine-based sampling
- ✓ STH species diversity via deep amplicon sequencing of stool and fecal sludge samples
- ✓ Detection of anthelmintic resistance-associated SNPs in stool and sludge samples



DEVELOPMENT

WP 1: SOPs for fecal sludge collection and examination



- Explore various sampling devices for collecting sludge from latrines in school compounds
- Optimize the soil straining-flotation method (Tadege et al., 2023) for examining sludge samples
- Adapt the protocol for use in regional laboratories in low-resource settings
- Evaluate method variation across different latrine samples, sludge samples, and schools



- ✓ Develop SOPs for sludge sample collection, processing and examination

types of school pit latrines



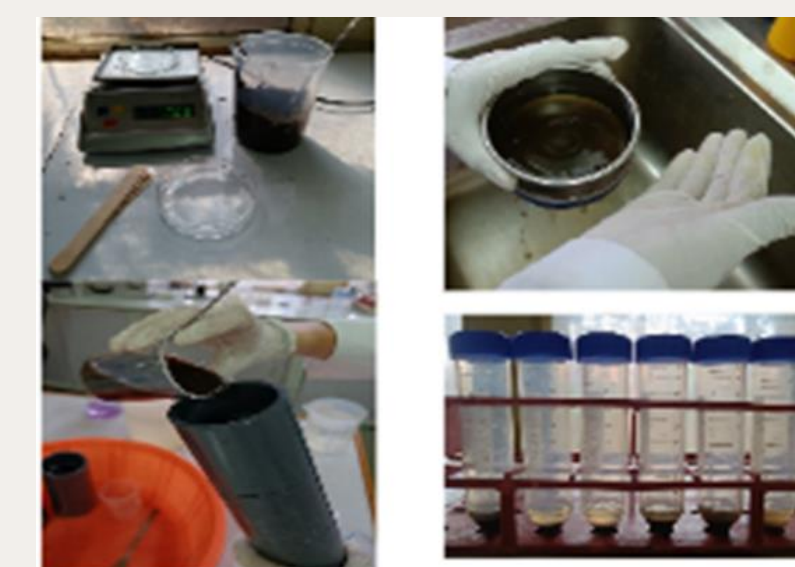
SOP sludge sample collection



collection



SOP sample processing



SOP sample examination



WP 3: The implementation context of a latrine-based M&E



- Focus group discussions with stakeholders



- ✓ Acceptability (stakeholder perception of latrine-based M&E)
- ✓ Appropriateness (i.e., the perceived fit, relevance or compatibility of a latrine-based M&E for a given practice setting, provider or consumer)

WP 4: The cost-efficiency of a latrine-based M&E



- Simulation study based on Kazienga et al. (2023) using results from WP1 and WP2



- ✓ Comparison between the total survey costs to make reliable program decisions for school-based and latrine-based surveys