

COUNTDOWN

Calling time on Neglected Tropical Diseases



Case Study: Exploring Collaboration with the Global Polio Laboratory Network Platform to Screen for NTDs in Ghana

The Global Polio Laboratory Network (GPLN) comprises 145 laboratories spread throughout the world. Across Africa, there are 16 GPLN laboratories which received around 22,017 samples per year to screen for polio. The polio control programme has been hugely successful and will leave a legacy of expertise in surveillance and disease control. Here, we partnered with the GPLN to explore cross-disease partnerships and utility of their infrastructure and expertise to survey for NTDs?

The aim of this study was to assess the suitability of samples collected at a GPLN laboratory for their use in the screening of soil transmitted helminths and parasites that cause schistosomiasis. The Ghanaian GPLN laboratory, based at the Noguchi Memorial Institute for Medical Research, Accra, was selected to carry out the assessment. To assess the suitability of the GPLN for screening neglected tropical diseases, COUNTDOWN screened the faecal collection for six pathogens.

Study Design and Findings

- Built successful collaboration with GPLN in Ghana and the NTD programme.
- Trained GPLN scientists to use molecular diagnostics to screen for six helminth types: *Ascaris lumbricoides*, *Trichuris trichiura*, *Necator americanus*, *Ancylostoma duodenale*, *Strongyloides stercoralis* and *Schistosoma* spp.
- Around 1000 samples processed
- Distribution and age of participants that supplied the samples was mapped and recorded

Location

To categorise where the samples had come from in Ghana, the country was divided into six: North East, North West, Central, Volta, South East, and South West. This was then used to determine how evenly across Ghana the origins of the samples were distributed. The distribution of helminth species across the six different regions of Ghana varied with the Central region having the highest proportion of positive samples and the South-East region having the lowest proportion of positives. These differences could be due to agricultural practices, environmental or socio-economic factors.

Age Range

It was possible to observe the age range of samples as this would affect the suitability of samples for soil transmitted helminth screening. Across the six sites, the average age ranged from 5 to 6 years and analysis indicated there was no significant difference in participant age across the six regions of Ghana.

Infection Detection

In a pilot study, 111 out of 448 samples were found to be positive for one or more helminth types tested, giving an overall prevalence of 24.8%, with 98 of these being single helminth infections and 14 being co-infections.



Impact

The research conducted in this study shows innovation cross-disease collaboration. We successfully partnered with the GPLN to share expertise, samples and infrastructure to survey helminth and flatworm infections.

As well as exploring an alternative neglected tropical disease surveillance platform this study simultaneously explores the question of the GPLN legacy, as the efforts to eradicate polio are ever more successful the question of legacy will be worth exploring.

Schistosomiasis has been listed for elimination in specific settings, to ensure elimination is both achieved and maintained, novel methods of surveillance ought to be explored. The approach explored by COUNTDOWN's research will act as a useful surveillance tool to monitor the success of elimination campaigns.

The benefits of using the findings generated in this study are that it shows that the laboratories of the GPLN can be adapted to screen for alternative pathogens and that these alternative targets can include the neglected tropical diseases listed by the WHO for regional elimination.

The primary audience for the findings of the study are members of the GPLN and the different in-country research teams studying schistosomiasis and soil transmitted helminths with a view to better controlling these widespread and debilitating diseases. The study was also picked up by the wider scientific community and was given a press-release by the publication (PLOS-NTD). The study was subsequently reported in at least eight separate scientific-news websites, including an online Ghanaian newspaper.

Key Recommendations

- ✓ The GPLN has the potential to assist in the monitoring and control of neglected tropical diseases.
- ✓ Uptake of this innovative collaboration by science websites and Ghanaian press.
- ✓ Faecal samples currently being collected by the GPLN are suitable for the screening of soil transmitted helminths and schistosomiasis SCH.

References and Further Reading



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