

Research into Use Summary

- 1. Research project:** What environmental, physical and behavioural factors make a latrine hygienic?
- 2. Lead researcher:** Jeroen Ensink, LSHTM
- 3. SHARE partners:** LSHTM
- 4. Research budget:** £30,190
- 5. Location:** Tanzania

Research description:

This research aims to identify key environmental, design and usage factors that make a latrine unhygienic in order to develop a hygiene scale that can better inform the classification of improved and unimproved sanitation facilities. It will involve:

- Testing soil samples from areas adjacent to latrines for helminth eggs and larvae
- Testing samples and swabs from latrine walls and doors for *E. coli*
- Asking the female heads of every household sampled about latrine use and maintenance
Measuring fly density using a 24-hour exit trap placed over the latrine drop-hole

The communities in Tanzania will be informed about the aims of the research and all individuals will have to give their written consent before participating in the study.

What is the relevance of the research to national and/or global sector challenges?

Diarrhoeal diseases are the second leading cause of death in children under five years of age, as well as the leading cause of malnutrition in this age group. Intestinal worms, like hookworm, human roundworm and whipworm, infect over one billion people worldwide and are associated with anaemia, intestinal obstruction and poor school performance. These diseases can be caused by several excreta-related pathogens such as bacteria, viruses and parasites, which are generally found in unhygienic areas. Although improved facilities are theoretically meant to separate human waste from human contact in a hygienic manner, there is not enough observational evidence to prove that facilities classified as unimproved do in fact pose a greater risk to human health than improved sanitation facilities. This lack of evidence related to latrine conditions may lead to inaccuracies since facilities classified as unimproved may actually be hygienic. Consequently, it is deemed crucial to determine correctly the quality and design characteristics of latrines in order to improve this classification system.

Who are the intended users of this research?

The hygiene scale developed shall be made available to the WHO/UNICEF Joint Monitoring Programme (JMP) for water supply and sanitation in the form of a SHARE position paper in order to help re-define the concept of improved and unimproved sanitation facilities. It will also be converted into a sanitation chart for policy-makers and planners to highlight the different grades of latrine hygiene standards based on construction and cleanliness. Information obtained from the analysis of soil samples and fly density will guide the design of latrines in future sanitation interventions by identifying characteristics which minimise the presence of such excreta-related pathogens. A summary of the research findings will be made publicly available on the SHARE website and will be disseminated within the SHARE consortium and to a broad range of users.

