

## Putting the “A” into WaSH: a call for integrated management of water, animals, sanitation, and hygiene



Water, sanitation, and hygiene (WaSH) are foundational public health interventions for infectious disease control. Renewed efforts to end open defecation and provide universal access to safe drinking water, sanitation, and hygiene by 2030 are being enacted through the Sustainable Development Goals. However, results from clinical trials<sup>1-3</sup> question the efficacy of conventional rural WaSH approaches in low-income and middle-income countries (LMICs). Randomised trials in Bangladesh,<sup>1</sup> Kenya,<sup>2</sup> and Zimbabwe,<sup>3</sup> which introduced household pit latrines, hand-washing with soap, and point-of-use water chlorination, found no effect on child growth, and two of the three trials found no reductions in diarrhoea in children. We have, therefore, called for transformative WaSH approaches,<sup>4</sup> to more effectively reduce pathogen burden and promote child health and growth in LMICs. However, currently, it remains uncertain what transformative WaSH entails.

We hypothesise that exposure to animal faeces is currently an under-recognised threat to human health. Estimates published in 2018 have highlighted the scale of animal faecal hazards,<sup>5</sup> which are not explicitly addressed by conventional WaSH strategies. Globally, 80% of the faecal load is estimated to come from livestock animals, including two-thirds of faeces at the household level.<sup>5</sup> Research addressing the effect of domestic and wild animal faeces on WaSH effectiveness is scarce<sup>6,7</sup> and collaboration between the WaSH, public health, and animal health sectors in LMICs insufficient.<sup>6</sup> As an interdisciplinary group of researchers, policy makers, and practitioners in One Health, epidemiology, veterinary medicine, child health, nutrition, microbiology, geography, social science, WaSH, and animal ecology, we met (on May 22–23, 2019) to focus attention on the neglected burden of domestic and wild animal faecal exposure among rural households in LMICs. We contend that without adding safe management of animal faeces to current programmes focused solely on human waste, rural WaSH programmes will insufficiently reduce faecal exposure from all sources to the extent needed to improve child health. To emphasise this, we propose a paradigm shift in WaSH terminology, by upgrading the

currently diminutive and redundant “a” to “A”—Water, Animals, Sanitation, and Hygiene—highlighting that reducing exposure to animals and their faeces also needs to be central to WASH approaches. Current programmes focus on containment of human faeces and so do not avert two-thirds of potential faecal hazards,<sup>5</sup> meaning they are unlikely to achieve the large-scale reductions in microbial exposure that we believe are necessary.<sup>4</sup>

There are many unknowns in how to best maximise the benefits and minimise the risks of animal ownership.<sup>7</sup> Livestock are crucial to rural livelihoods, contributing to household economic and sociocultural wellbeing, and providing animal-source foods, transport, and manure for fertiliser and fuel. However, the message that animal faeces should be considered potentially hazardous, just as human faeces are, needs to be central to WASH programming, with safe management of animal faeces added to the global WASH agenda. Although some trials have attempted to reduce zoonotic transmission of enteropathogens by providing tools to separate livestock from children,<sup>3,8,9</sup> this approach is not always feasible, financially viable (eg, penned chickens require feeding), beneficial to animal health and welfare, or viewed favourably by local community members. Instead, we argue for a more holistic One Health approach to WASH, which considers the interconnection between the health of people, animals, and our shared environment. A One Health approach encourages collaboration across multiple disciplines and sectors with the ultimate goal of achieving optimal health outcomes for all, rather than a singular focus on human health as the endpoint. This approach would provide an opportunity to devise and test integrated programmes that are mindful of the numerous competing and interdependent priorities for households, while considering livestock production, welfare, and social value; soil health and crop yields; and water and air quality, in addition to human health. Indeed, such a comprehensive approach might yield greater gains to all sectors than individually focused projects alone.

Negative trial results,<sup>1-3</sup> published in 2018 and 2019, from conventional WaSH interventions indicate that it has never been more important to seek transformative,

For more on Sustainable Development Goals see <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

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community-driven, integrated approaches.<sup>4</sup> The first step—putting the “A” into WASH—is to shift the thinking to accelerate progress towards transformative WASH by considering pathways of enteropathogen transmission that are not currently central to WaSH strategies. We believe more substantial reductions in household and environmental faecal contamination are possible through concerted efforts to collectively improve the health of animals, humans, and the environment, while maintaining the benefits of livestock ownership. There is a pressing need to test new intervention approaches that will tackle all household faecal exposure through a combined focus on Water, Animals, Sanitation, and Hygiene to yield greater gains from WASH.

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