

## Improving collaboration between humanitarian and research actors to strengthen the evidence base for water, sanitation and hygiene interventions

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It is the subject of “water, sanitation and hygiene” that is the focal point for the three authors in this paper as they single out the obstacles to combined actions between researchers and humanitarian workers. They illustrate the possible solutions through an innovative mechanism that their respective organisations – Tufts University and the French non-governmental organisation *Solidarités Internationales* – have put in place.

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**T**he provision of safe water, sanitation, and hygiene (WASH) to affected populations is essential for human dignity and communicable disease control<sup>1</sup>. The WASH interventions that have been evaluated have been shown to consistently reduce the risk of disease and transmission in humanitarian emergencies<sup>2</sup>. However, it would be necessary for more of these interventions to be evaluated under the actual conditions of their implementation, as many WASH interventions regularly implemented in humanitarian contexts are not evidence-based. It would indeed allow to take in account contextual factors that influence effectiveness and to convince users of the reproducibility of the results. Overall, there is a need to strengthen the evidence base for WASH interventions in humanitarian response, while simultaneously using existing evidence to support policy and practice<sup>3</sup>.

There are challenges, however, to conducting research during humanitarian emergencies, including the need for collaboration between humanitarian and research actors. Indeed, research in humanitarian contexts is the convergence of two very different cultures, which comes with challenges. These will require adaptations and creative solutions to be overcome. In this article, we will present issues faced when conducting research in humanitarian emergencies, both from the humanitarian and the research perspectives, and drawing from our respective experiences. We will then explore solutions and considerations we developed to improve this collaboration and ultimately strengthen the evidence base for WASH interventions in humanitarian emergencies.

### Challenges faced by humanitarian actors

First, humanitarian aid actors face issues that make implementation of rigorous evidence-based research both more difficult and not necessarily of the highest priority. This is the case with constraints inherent to humanitarian interventions, including short time frames and inertia in the humanitarian sector, which limits the capacity of actors to correct or adjust their methods. For example, although the activities consisting of sending a team to disinfect the home of a person infected during a cholera epidemic may no longer be recommended by the United Nations Children’s Fund (UNICEF)<sup>4</sup> and some

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<sup>1</sup> John T. Watson, Michelle Gayer and Maire A. Connolly, “Epidemics after natural disasters”, *Emerging Infectious Diseases*, 13(1), January 2007, p.1-5.

<sup>2</sup> Travis Yates *et al.*, “Water, sanitation, and hygiene interventions in outbreak response: a synthesis of evidence”, *Waterlines*, 38(1), January 2018, p.5-30.

<sup>3</sup> Lauren D’Mello-Guyett *et al.*, “Setting priorities for humanitarian water, sanitation and hygiene research: a meeting report”, *Conflict and Health*, 12/22, 15 June 2018.

<sup>4</sup> UNICEF, *Cholera Toolkit*, 2013, [https://sites.unicef.org/cholera/index\\_71222.html](https://sites.unicef.org/cholera/index_71222.html)

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donors, many humanitarian actors continue to implement them. In addition, data collection and monitoring is usually limited to producing reports for donors and headquarters, and does not generally focus on improvement of activities, or evaluation of their effectiveness. Finally, aid actors are usually not intended to remain long-term in the areas where they implement activities.

These constraints sit within a changing humanitarian system, as many humanitarian crises are now considered protracted and subject to recurring shocks. Despite the growing trend to respond to both shocks and the medium- to long-term needs of populations, humanitarian actors often lack the culture, analytical capacity, and tools to ensure long-term programming, and incorporation of evidence. Humanitarian practitioners primarily base their decision-making on their personal and previous experience, and highly value interpersonal and field- and practice-based methods for learning<sup>5</sup>. This means that interventions that have been implemented for a long time, even if they lack evidence or are less effective, will continue to be implemented. Similarly, innovative and evidence-based interventions will struggle to be adopted. In addition, existing guidelines and international recommendations that are provided by institutions, sectors and clusters remain time-specific (emergency, early recovery, development) and, although breaking down silos has been a long-standing desire, it still rarely translates into practical solutions. The traditional working environment of humanitarian actors can also create barriers that limit this opportunity for culture change: humanitarian NGOs lack experience in working with institutional actors and in WASH service delivery governance because they often operate in States or areas where these actors are weak or absent.

Lastly, the humanitarian imperative to respond to the most urgent needs is often impeded by structural issues and political or institutional blockages. As an example, countries sometimes do not want permanent infrastructures to be constructed for the refugees because they fear long-term settlement. Addressing these conjectural issues and structural needs simultaneously is a challenge that humanitarian actors are struggling to overcome. In Lebanon, informal settlements for Syrian refugees are regularly dismantled by the military and so latrines and shelters have to be moved or rebuilt. Moreover, obtaining permits to connect infrastructure to existing services (water supply, sewage systems) is often complicated or simply denied. This creates a constant and additional workload for humanitarians and limits long-term planning of improvement of interventions. This is in addition to difficulties such as shortage of funding, inadequate and insufficient funding for flexible multi-year programming, staff turnover and lack of local skills. As a result, many aid actors already lack sufficient resources to implement relief projects. The work required to implement research projects may thus be an additional burden that is difficult to manage for humanitarian actors, especially if these projects do not contribute directly to relief activities and the improvement of the beneficiaries' life.

Considering the constraints, the changing humanitarian system, and the imperative to respond to the most urgent needs, it is difficult for research projects to be considered a useful and actionable mean for corrective action.

### Challenges faced by research actors

On the research side, there are also specific constraints that are not always easy to reconcile with humanitarian contexts. Rigorous methods for data collection, such as randomised control trials, are desired but usually difficult to implement in emergency contexts, due to the instability and difficulties of access, lack of resources and specific knowledge, ethical concerns, population migration, or changes in conditions over time. A mixed-methods methodology is more adapted to humanitarian contexts: it allows for a broad range of data to be collected, so if a particular data type cannot be collected, it can usually be replaced by another type of data. For example, in a study of Household Water Treatment (HWT) in Nepal, micro-biological sampling could not be conducted because of the extremely remote data collection site, so free chlorine residual data was used instead.

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<sup>5</sup> BORDA, *Preparing to be Unprepared – Decision Making and the Use of Guidance on Sanitation Systems and Faecal Sludge Management in the First Phase of Rapid-Onset Emergencies*, March 2018, <https://www.solidarites.org/wp-content/uploads/2018/04/Preparing-to-be-Unprepared.pdf>

In addition, there is a need for specific data collected at multiple stages of the intervention, which is different from the data collected routinely by responders. This data is thus difficult to obtain if not planned for in advance. For example, in post-intervention studies, the lack of equivalent data collected at baseline is a common issue that makes comparison before and after the intervention, and drawing any meaningful conclusion from it, difficult. The variability of intervention and monitoring approaches and of methodologies between aid actors is also an added difficulty for the comparison of data when multiple partners are involved in the research. All this increases the risk that investments made in a research project in a humanitarian context will have less compelling results because of the unreliability of the data collected.

Finally, over the last decade, significant protections have been established for conducting research in humanitarian response. These protections are important, but they may result in more logistics difficulties. Indeed, the deployment process has many requirements involving many actors. It entails institutional ethics approval of the research protocol and obtaining specific information necessary for approval at institutional, responder, local and donor levels. Coordinating this approval process chain usually takes researchers several months, not counting the response time. These approval processes thus impact research projects and may result in the impossibility of meaningfully deploying research in many contexts. For example, when wanting to investigate household spraying and water trucking interventions during a cholera outbreak in Nigeria, the local ethics process took six to eight months, which was longer than the programme implementation timeframe<sup>6</sup>. Approval processes may also delay deployment of the research team: in several of the authors' experiences, it happened that the research team arrived near the end of the programme, or even after the programme's end in one case. Suffice to say that in such cases the research is no longer suitable.

Thus, approval processes can make it challenging for the research actors to quickly deploy, particularly during acute emergencies, and thus desynchronise the temporalities between the research and the emergency intervention that is evaluated. More stable, accessible, long-term, protracted contexts where crises can be predicted and approval processes can begin in advance are more logistically feasible to conduct research. However, the focus on research in stable contexts is a limitation of humanitarian response research, as data from those potentially most impacted cannot be obtained.

Many other constraints may result in the impossibility to conduct a research project in emergencies: it may be denied by institutional security, fall outside of the donor mandate, or visa restrictions for international researchers can put it at risk. Thus, doing research in humanitarian contexts requires research actors to be flexible, to accept risks pertaining to contexts with unknowns, to be adaptable and to think on their feet, and to be able to develop on-the-ground partnerships.

### **Solutions for a better collaboration**

Within these constraints, solutions have been implemented to improve collaboration between humanitarian and research actors and improve research project implementation. A key element is to design research projects that directly support relief activities. Indeed, this type of operational research can bring and support humanitarian actors to implement evidence-based approaches and interventions, provided it responds to issues and difficulties that they encounter, and the results can be directly used to improve programming. For example, HWT intervention efficacy is well established in theoretical settings<sup>7</sup>, and in development-context health impact studies<sup>8</sup>. Additional research recently conducted in multiple emergency contexts showed that HWT distribution without beneficiary training was ineffective. These results are now commonly accepted by the humanitarian community and were included into guidance established for the sector. All these lessons converge to feed the recommendations that follow.

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<sup>6</sup> Daniele Lantagne *et al.*, "Lessons learned from conducting six multi-country mixed-methods effectiveness research studies on water, sanitation, and hygiene (WASH) interventions in humanitarian response", *BMC Public Health*, 21/560, 22 March 2021.

<sup>7</sup> World Health Organization, *WHO International Scheme to Evaluate Household Water Treatment Technologies*, vol. 9, 2015.

<sup>8</sup> Thomas F. Clasen *et al.*, "Interventions to improve water quality for preventing diarrhoea", *Cochrane Database of Systematic Reviews*, 2015(10), 20 October 2015.

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First, providing research protocols to institutions without significant training and day-to-day oversight from a consistent person leads to poor day-to-day decision-making. This can modify the study design and lead to less robust results. Indeed, in multiple studies we participated in, data collection was lacking uniformity and the methodology was not consistently implemented, thus decreasing the reliability of the data. It is thus recommended to either have a person on the ground that supervises the research or to provide remote research training and ongoing daily support to ensure robust and high-quality results. For example, for a project in Uganda, remote training and supervision was done because researchers were not able to travel due to the Covid-19 crisis.

Secondly, a common modality for global health research is to get an international academic institution, an international response organisation, a local response organisation and a local research university to work together. This can lead to more experienced researchers completing research in conjunction with long-term local researchers. WASH humanitarian response donors are currently moving toward requiring these partnerships between research and response organisations for funded evaluations, which will lead to increased collaboration between actors across sectors. Moreover, in research budgets, including funding for trainings, capacity building and dissemination activities is also increasingly encouraged, which will hopefully lead to improved collaboration between actors. However, there are still questions on how to complete research in countries where local academic institutions have been destroyed, are not able to work with external partners or do not have the capacity to conduct research.

In addition, funding the humanitarian responder implementing the intervention may also encourage more research in humanitarian settings, as this allows them to dedicate resources to support the research project. For example, in a study in Myanmar, a part of the funding was dedicated to the field mission supporting the research. In another study, dedicated staff were hired through the implementing partner and were in charge of data collection, which also ensured its consistency.

Personal connections, in-person communication, trust, and experience working together are key factors for a successful collaboration between research and humanitarian aid actors. They can be put in touch through the United Nations WASH Cluster platform, international agencies such as UNICEF or donors, or simply through conferences. This is precisely during an international conference that the authors of this article met and developed a proposal for the study that launched the mechanism detailed below.

### **An example of collaboration**

In the context of this solution to overcome constraints and enable robust and high-quality research in humanitarian contexts, Tufts University and *Solidarités Internationales* (SI) have developed an innovative mechanism: they are designing and implementing research projects together as part of a PhD thesis conducted by a previous SI employee. As part of this mechanism, SI is pulling up intervention evaluation or improvement needs directly from the field, and Tufts University designs research projects to respond to those needs. As an example, the efficacy of several types of dewatering geotextiles commonly used in humanitarian contexts for faecal sludge treatment will be tested at the Tufts University laboratory. This will then inform the upgrade of SI faecal sludge treatment interventions in Cox's Bazar, Bangladesh, and the development of this treatment technique in other contexts depending on the results.

This mechanism ensures both that the research project's results answer the needs of the responder and contributes directly to relief activities, but also that the results are relevant, significant and generalisable to other humanitarian interventions or contexts through a strong research design. As another example, a systematic review on faecal sludge management (FSM) in humanitarian settings is conducted as part of the thesis and was designed based on the questions and difficulties faced by the PhD student during her years of working in humanitarian contexts. This allows evidence-based information to be collected and analysed in a systematic way, and will inform other aid actors on current evidence-based knowledge related to FSM in emergencies. The benefits of the partnership are also a better understanding of the research constraints, requirements and project cycle for the aid

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actor, and a better understanding of and capacity to adapt to the field complications for the research institution. At last, it allows a deeper and long-lasting perspective on constraints from both research and humanitarian actors, and it strengthens collaboration on projects to ensure long-term research partnership between the organisations. This mechanism also contributes to training multi-skilled staff who understand and can work in both the humanitarian and research environments, which will help bridge the gap between both sectors and ensure better collaboration in the future.

Working on the development and implementation of innovation projects is also an interesting way to bridge the gap between the research and humanitarian sectors. To address existing or emerging needs in chronic, complex and volatile crises, innovative WASH products and services are developed through collaboration between the academic, humanitarian and private sectors. The scaling up and adoption of the proposed solution require pilot and evaluation phases to validate the effectiveness and relevance of the initiative, especially in comparison with more traditional interventions. As an example, Veolia Foundation is developing a turnkey, rapidly deployable and easy to operate solution for emergency faecal sludge treatment in humanitarian contexts. Once this solution is validated in a theoretical setting, it will be piloted in one SI mission, with the support of Tufts University to evaluate its effectiveness and possibilities for scale-up. Thus the specific process of innovation development can facilitate the anticipation of constraints and small-scale testing to encourage the establishment of joint protocols and collaboration between the humanitarian and research sectors.

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### Biographies

**Marine Ricau** • A PhD candidate at the Graduate School of Engineering in the Department of Civil and Environmental Engineering at Tufts University. Marine earned a Master's degree in Environmental Engineering at the Mines-Douai Engineering School in France in 2012. Before doing her PhD at Tufts, she worked for five years on sanitation projects in humanitarian contexts in Haiti, Lebanon and Myanmar.

**Daniele Lantagne** • An associate professor at the School of Engineering in the Department of Civil and Environmental Engineering at Tufts University. Daniele earned her Bachelor's and Master's degrees in environmental engineering from the Massachusetts Institute of Technology (MIT) in 1996 and 2001 respectively. She received her PhD from the London School of Hygiene and Tropical Medicine in 2011. Between her degrees she worked as a public health engineer at the Centers for Disease Control and Prevention (2003-2010) and as the programme director of the Ipswich River Watershed Association (1997-2000). She joined Tufts University from a postdoctoral fellowship in sustainability science at Harvard's Kennedy School of Government. Since 2000, Daniele Lantagne has provided technical assistance to, and evaluation of, water treatment programmes in more than forty countries across Africa, Asia, and Central and South America.

**Baptiste Lecuyot** • The senior WASH advisor at the French NGO *Solidarités Internationales* (SI). He earned a Master's degree in Water management from the Polytech Montpellier engineering school in France. He worked for five years in France in the private water and sanitation sector, first as founder of a water and environmental engineering company, then as a sanitation project manager for a public works company. After graduating from Bioforce, he worked for three years as a WASH programme manager for international non-governmental organisations in South Soudan and the Middle East then for two years as the WASH coordinator of the emergency response team at SI. He is now in charge of supporting WASH initiatives and developing research projects in line with SI's WASH strategy.

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<https://alternatives-humanitaires.org/en/2021/07/20/improving-collaboration-between-humanitarian-and-research-actors-to-strengthen-the-evidence-base-for-water-sanitation-and-hygiene-interventions/>

ISBN of the article (PDF): 978-2-37704-828-1