CONFERENCE REPORT

5th Emergency Environmental Health Forum

Public Health Promotion in Water and Sanitation Programmes

17th and 18th December 2012

London School of Hygiene and Tropical Medicine

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Sanitation and Hygiene Applied Research for Equity

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Presentations from the Emergency Environmental Health Forum are available to download at www.shareresearch.org.

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SHARE stands for *Sanitation and Hygiene Applied Research for Equity*, and is a five year initiative (2010-2015) funded by the UK Department for International Development. SHARE is a consortium of five organisations that have come together to generate rigorous and relevant research for use in the field of sanitation and hygiene. Led by the London School of Hygiene and Tropical Medicine, SHARE includes the following partners: the International Centre for Diarrhoeal Disease Control, Bangladesh; the International Institute for Environment and Development; Slum/Shack Dwellers International; and, WaterAid.

SHARE works in two regions with historically low levels of sanitation access: sub-Saharan Africa and South Asia. And is conducting sustained research and 'research into use' programmes in four focus countries: India, Bangladesh, Malawi and Tanzania. Please visit our website at www.SHAREresearch.org, or contactshare@lshtm.ac.uk.

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Monday 17th December: First Session

Keynote speech

Professor Sandy Cairncross, SHARE Research Director and Professor of Environmental Health at London School of Hygiene and Tropical Medicine (LSHTM)

Professor Sandy Cairncross' presentation gave an overview of findings from a recent paper:

> *Brown, J. et al (2012) Water, sanitation & hygiene in emergencies; summary review & recommendations for future research. Waterlines* ***31*** *(1 – 2): 11 - 29*

Prof Cairncross noted that during or after disasters or conflict disease often kills more people than the primary event, especially where existing infrastructure is inadequate. In some cases, diarrhoea causes the majority of deaths (such as the 1991 Kurdish refugee crisis) and faecal-oral diseases can cause more than 40% of deaths in the acute phase of an emergency. Many common co-infections may be prevented or reduced with WASH control measures such as improved water quality, availability and hygiene, treatment of excreta before re-use, reduced contact with contaminated water, drainage of stagnant water and rodent control:

- water-washed (trachoma; scabies; conjunctivitis; louse-borne infections)
- soil helminths and tapeworms (ascaris; hookworm; taenia)
- water-based (cholera; legionella; leptospirosis; schisto)
- insect vectors (dengue, yellow fever, malaria, trypanosomiasis, filariasis, trachoma)
- rodent borne (leptospirosis; hantavirus, tularemia)

Prof Cairncross outlined current knowledge regarding WASH and emergencies. While excreta disposal is the first line of defence against faecal-oral pathogen transmission, no one approach is appropriate for all cases and emerging sanitation solutions may not be available for immediate dispatch in the early stages of an emergency. There is strong evidence that both sufficient water quantity and quality are critical to interrupting disease transmission in humanitarian settings. Finally, the evidence demonstrates that handwashing with soap works in reducing diarrhoeal disease in emergency settings: a 240g bar soap per person per month resulted in a 27% reduction in diarrhoeal disease in refugee camp in Malawi.

Prof Cairncross noted that there are many areas that require further research. In sanitation, the means and innovations regarding wastewater and faecal sludge removal need to be developed, challenging environmental conditions such as high water tables need to be considered in hardware design and delivery, and further innovations are required to develop sanitation solutions that are inclusive, durable, affordable, effective, sustainable and safe. In terms of water, further research is required regarding sustainable methods for safeguarding existing water quality from recontamination. Regarding hygiene, innovations are required both in terms of hardware such as handwashing stations, but also software that achieves rapid yet sustainable behaviour change. Across all aspects of WASH, the themes of inclusion of marginalised groups, transition of support from emergency status to longer-term development, and rapid deployability all require further attention.

To close, Prof. Cairncross noted that experience and 'lessons learned' are not usually published in peer-reviewed literature but is instead health as institutional knowledge or grey literature. The sector needs to consider how to conduct research, evaluation and innovation in an ethical and practical manner in order to be able to develop WASH interventions in emergency settings.

Effective use: A metric for assessing the potential impact of household water treatment system intervention

Daniele Lantagne, LSHTM

Lantagne presented research conducted in Haiti, Pakistan and Nepal which centred on the question of how organisations can know whether the wide range of Point of Use (PoU) treatments that they distribute are being used properly. The research highlighted that the majority of responding agencies were distributing chlorine based treatments, because they were prepositioned in country and easy to store. A summary data table was produced to compare the treatment methods and countries:

		Reported Use	Confirmed	Effective
Nepal	Aquatabs	8%	87%	7%
	Piyush	16%	51%	8%
	WaterGuard	6%	56%	3%
Indonesia	AirRahmat	3%	--	--
	Tabs	1%	--	--
	Boiling	88%	31%	27%
Turkana	Aquatabs	13%	42%	5%
	PuR	6%	39%	2%
Haiti	Aquatabs	24, 75-92%	62, 75%	15, 54-66%
	Ceramic	72%	27%	20%
	Biosand	53%	20%	8%

The main results were:

1. A lack of follow up training led to few people using the treatment methods appropriately and therefore they were less effective
2. 'Context matters' – no one option will work everywhere; factors that should be taken into account are what was there before and what people are familiar with.

Three follow up projects have now started as a result:

1. Working with WHO to develop a toolkit for monitoring and evaluation of household water treatment (HHWT) programmes
2. With the Government of Haiti to develop a national strategy for HHWT
3. With the Gates Foundation – researching the use of treatment dispensers in the emergency context

Following the presentation, a lively question and answer session ensued. The importance of follow-up training was highlighted in the data collected from Haiti where rural areas received follow up training and had a lower incidence of misuse. The general rule was for a simple two step treatment process, one training session was required. For more complex treatment processes, follow-up training with community workers is required.

It was noted that the research recommendations seemed to be less about guidance and more about the importance of coordination in emergencies, ideally through national governments. Lantange agreed with this observation, also noting that NGOs have a responsibility to carry out proper assessments and to try not to impose pre-planned project.

It was queried whether short-term interventions have any impact on the health of the service users such as reducing immunisation capacity, and therefore should aid agencies always be aiming for longer term interventions? Lantange responded that "there is a myth that all emergencies have high diarrhoeal risk", and there are no proven impacts of short-term interventions on health. While household water treatment may not have a role in long-term

emergencies where there is no ongoing distribution and training, it can be appropriate to distribute simple household water treatment methods such as chlorine tabs in short-term settings.

The value of chlorine as a treatment method versus boiling water was discussed, as results from one of the study countries suggested that boiling water had a higher success rate. Lantange noted that in that instance gas was subsidised by the government and was an accepted method by the community who had pre-existing safe methods to carry out that treatment and safe storage. This may not have worked so well in an area where people had to collect wood for the boiling, for example. In discussions of hardware, participants noted that while ceramic filter were easy to use, transport can be a problem due to them being heavy and easy to break. Also, manufacturing processes can be slow to respond to demand.

Finally, participants discussed confusing that can arise among suppliers and agencies stemming from variation on advice regarding free chlorine residual (FCR) in water (i.e. WHO state that aquatabs should provide a FCR of 2mg/litre, however Oxfam work on a range of 0.3 – 0.6mg/litre. It was agreed that this confusion can stem from the fact that organisations estimate the length of time from point of treatment to point of use to be different. Most agree that FCR at PoU should be 0.2mg/litre but this could be 30mins or 24hrs after treatment. It was noted that there are other factors that may affect dosing such as pH and ammonia content.

Monday 17th December: 2nd Session - Handwashing

Behaviour change in emergency contexts: Handwashing promotion in post-earthquake Haiti and drought response in Borena Zone, Ethiopia

Nadja Contzen, EAWAG

In this study conducted in collaboration with Oxfam, psychologists measured the effectiveness of various hygiene promotion activities using handwashing behaviour change as a measure. The RANAS model and cross sectional studies were used, surveying every third household.

Local scientists and students spent around one hour interviewing the primary care giver; hygiene promotion activities were rated on scales and the questions asked were related to the norms described on the RANAS model. The findings confirmed that self-reported behaviour is over-estimated.

The findings saw that six hygiene promotion activities directly related to handwashing behaviour change, six did not relate directly and five showed a negative impact on handwashing behaviour indicating that when people heard messages through these activities, they washed their hands less than previously.

During the question and answer session, the query was raised regarding how the link between a particular intervention and impact was made, given that people had been exposed to different interventions by different agencies. Contzen responded that no interaction analysis was done and suggested to scale down and apply two or three promotion activities and focusing on those and evaluate interactions. A second question asked whether Contzen

disaggregated the data by age or sex, different methods are often more effective with certain demographics than others. She responded that the study did not disaggregate for age group but agreed this may yield interesting results. Some final comments were provided to the study: the first one relates to the reported negative effect of handwashing day on handwashing, observing that as respondents' behaviour before the handwashing day was not known, conclusions on negative impacts must be read with caution. A further observation was that in Haiti the study investigated long-term interventions, which take a little bit longer to establish their impacts. To close, Prof Sandy Caincross noted that cross sectional questions are challenging due to multiple variables which interconnect in potentially unpredictable ways. He recommended that this research may benefit from a multivariate analysis approach.

Identifying the determinants of handwashing behaviour in three refugee populations in Ethiopia, Kenya and Thailand

Penninah Mathenge, IRC and Dorothy Pepra, PhD student at LSHTM

This study looked at whether handwashing messages have different effects in camp and non-camp communities. The study took place in long established refugee camps where IRC had responsibility for hygiene promotion. The study aimed to find solutions that made an impact within the normal limits of NGO operations. The study used trained non-IRC staff for data collection and found that the situations people were in before they had come to the camp had an impact on their current handwashing behaviour while in the camp.

Mathenge and Pepra showed three handwashing videos that demonstrated the difficulties of maintaining handwashing practices in the camp situations. These videos helped them to understand the barriers to handwashing and demonstrated that the sequence of actions for washing hands is often difficult and complex.

The study found that using triggers of disgust and desire worked well but that an increase in knowledge does not always translate to practice. Community health club were seen as the best method to effect sustained behaviour change.

From the discussion following the presentation, several research gaps were identified including:

- a socio-economic study had been conducted to investigate whether free soap distribution could be substituted by payment schemes
- determining effective guidelines for the effective amount of water for handwashing, to inform manufacturers

Prof Cairncross noted that this research demonstrates that asking questions about hygiene behaviour alone does not always give a full picture of the situation.

Accelerated hygiene promotion (AHP) through accelerated alternative basic education (AABE) in Somalia

Melchizedek Mailile, NRC

Mailile presented a study focussed on hygiene promotion as part of a targeted advanced education programme to allow children affected by displacement to catch up with the formal national education system. The methodology included training teachers as champions of behaviour change. Hygiene promotion sessions were incorporated into the curriculum and

the effects reviewed. The programme also created child friendly spaces which allowed behaviour change to take place in a safe environment. The methodology aimed to work across programmes for the best effect.

The repetition of key messages through the curriculum made it easy to reach children. Influence from school mates created a multiplier effect and a schools classification system (rating schools from one to five stars based on the school's progress) encouraged behaviour change and competition between schools. Education committees which monitor school progress also have wider influence in the community, ensuring the sustainability of hygiene promotion activity in schools and wider dissemination of public health messages.

Prof Cairncross concluded the session with the following recommendations:

1. Studies should not only rely on closed questions
2. Research must beware of statistical associations
3. When surprising results are found at the end of study, the researchers should go back and explore those results by means of a qualitative approach

Monday 17th December: 3rd Session - Women

Menstruation: the Ultimate Taboo

Sarah House, Independent Consultant

'Anyone in the field should know about menstrual hygiene management.'

In this presentation, Sarah House, author of *Menstrual Hygiene Matters,* discusses the realities of menstrual hygiene in emergency contexts, and how to integrate menstrual hygiene management as standard practice across sectors within emergency response.

House observes that current training materials on menstrual hygiene managements are inadequate, stating that it is often an afterthought of agencies responses during emergencies, with menstrual hygiene management (MHM) having no influence on discussions regarding infrastructure design or feedback mechanisms, and is not by standard practice included in needs assessments.

House recommends integrating menstrual hygiene management into more training courses, and shows examples of training models that have been trialled worldwide through various initiatives, and asks the audience for declarations of interest for a MHM training of trainers' course.

In the question and answer session, House recommended that both men and women should be present on assessment teams as we shouldn't assume that gender alone is the determinant of women feeling comfortable to speak. Above all, team members should be confident and able to facilitate discussion. House also recommended that beyond the provision of sanitary materials, agencies can often easily improve existing facilities to allow for the safe disposal of pads. Agencies should also not think only of hardware but also providing information and private space for women and girls.

Menstruation Hygiene Management in Emergencies

Timothy Hayden, UNICEF and Louise Maule, UNICEF

In this presentation, Louise Maule discusses a study of UNICEF-supported menstrual hygiene management responses, focusing on Haiti, Kenya, Somalia and the Philippines. The study aimed to examine three questions through focus group discussions: how do emergencies affect normal MHM processes, what are the needs of menstruating girls and women are during emergencies, and how UNICEF can support them?

The importance of MHM during emergencies was underlined, with anecdotal evidence showing that there is often no time for women to get the materials they need for MHM during emergency contexts. Anecdotal evidence also shows the risk of infection increases without adequate MHM.

Common finding from the different contexts (Haiti, Somalia and Philippines – data from Kenya was unavailable) showed that there was a lack of consultation, lack of sectoral coordination and the attitude towards menstrual hygiene management was that of a material problem.

The recommendations from the study are to increase beneficiary consultation and feedback, increased recognition of MHM as an issue, increased sectoral coordination (preparation and response).

Commenting more broadly on approaches to MHM in emergency settings, Maule argued that best practice guidelines on MHM are often not implemented and the issue should be incorporated in the unified assessment. She also noted that poor responses from field offices to the research demonstrated that MHM is often not a priority in emergency settings.

Women's WASH Platforms (WWP) in Bangladesh

Golam Morshed, Oxfam

Golam Morshed gave a presentation on a project that was run in the flood-prone Jamalpur and Noakhali districts of Bangladesh, called the *Women's Wash Platform* (WWP). The project aimed to empower women within these communities to address specific women's needs in relation to WASH through financial assistance and training.

The outputs of the project were the formations of committees which then discussed community issues and prioritization of problems. There was some initial resistance from some people in the community, mostly men, who felt that funds should be redirected to the Imam. However, through discussion, women were able to explain and demonstrate the value of the WWPs. These groups then went through project management training, which enabled them to plan, budget, procure and implement WASH projects within their communities. This resulted in the increase of access to dignity and private bathing, as well as spreading good practice.

In terms of next steps, some WWPs have started their own savings schemes to ensure sustainability and improvement of services. Morshed also noted that this is a pilot project that is intended to be scaled up in collaboration with the government.

Monday 17th December: 4th Session - CLTS

Community-Led Total Sanitation in Emergency and Post-Emergency Contexts

Frank Greaves, Tearfund UK

"Before we were perishing because of lack of knowledge, (now) we are responsible for our own hygiene."

Greaves presented the debate of whether the community-led total sanitation (CLTS) approach has value in emergency and post-emergency contexts. Greaves recognised challenges in adopting demand-driven approaches to sanitation instead of supply-driven approaches, such as the vulnerability of people in emergency settings, the lack of community structure and the lack of available materials. However, it can also be said that emergency settings are already periods of behaviour change and anecdotal examples demonstrate that when CLTS has been successful in such fragile settings, the community have implemented sanitation faster than any humanitarian agency could.

He presented a range of case studies of organisations such as UNICEF, WES and Tearfund trialling CLTS or similar approaches in settings such as Haiti, Sudan and Afghanistan. Key points learned from these case studies and from relevant forums were:

- the use of 'disgust' in the CLTS triggering process must be adjusted to the emergency or post-emergency settings as it is not appropriate for people that have already experienced shock
- the success of CLTS in these settings largely rests on the quality of the facilitation
- CLTS doesn't work well combined with supply-driven activity
- CLTS is effective when embedded within a wider environmental health approach (e.g. food hygiene, clean environment
- CLTS is particularly effective when linked to livelihoods approaches (e.g. latrine construction as an income generation tool)
- It is effective to engage local religious organisations in CLTS delivery and in advocacy work
- CLTS needs to be context-specific, prescriptive frameworks should be avoided
- The success of CLTS may be hampered by economic and market factors (e.g. lack of resources)

Greaves' overview of existing knowledge of CLTS in emergency questions raised a number of questions, such as what should the criteria be for when and how CLTS can replace conventional supply-driven sanitation approaches. The group first debated the key issues regarding CLTS in emergencies that require further investigation, including:

- Quality standards in CLTS in emergencies
- The appropriate time to wait for triggering before supply-driven approaches are adopted
- Are there certain types of emergencies where CLTS is not appropriate, such as rapid onset emergencies? Is there a type of emergency setting where CLTS has proved more effective?
- How staff training is managed, when so much emphasis is placed on the facilitator role
- Better evidence on the impact of CLTS linked to the kind of emergency and community
- The propensity for behaviour change in emergency settings
- The scale that can be achieved by CLTS
- What CLTS means for donor investments and decision-making processes

The group then debated whether there is enough existing knowledge to construct a 'CLTS in Emergencies Planning Framework', or should we instead form basic guidelines based on our experience of CLTS interventions? The framework format was commended as a useful, short tool to support decision making, although it was suggested that the framework would benefit from the addition of case studies, links to relevant documentation and 'no-go' criteria for using CLTS, such as if staff don't have adequate facilitations skills.

The group concluded by debating broader issues related to CLTS in emergencies. In response to queries of whether CLTS was ethical during epidemics such as cholera, it was noted that case studies from Freetown in Sierra Leone demonstrated that districts that have a strong uptake of CLTS have lower cholera rates in the recurring epidemic. It was noted that CLTS can be effective as it can work very quickly, however concerns were raised that rapid triggering could great different problems such as unplanned and unsafe latrine building. It was also noted that CLTS can be a useful community mobilisation tool which can trigger improvement in food hygiene, menstrual hygiene, wastewater disposal and general village cleanliness, and can also have knock-on effects in surrounding communities. These aspects need to be investigated further.

Tuesday 18th December: 1st Session - Cholera

Haitian population facing Cholera for the first time: Awareness and applied anthropology

Yasmin Al Kourdi, MSF

"People must understand a disease through their cultural lens before changing their behaviour"

Al Kourdi presented an anthropological survey conducted in Haiti from 2009-2010 during the first cholera outbreak in 100 years. The study aimed to identify popular knowledge on the cholera epidemic and the dimensions of the illness that could affect MSF's medical intervention. The study comprised of a literature review and a qualitative exploratory study in rural and urban areas.

In Haiti, the disease is understood as 'good cholera' (caused air-transmitted microbes, treated with good hygiene, IV fluids and antibiotics) and 'bad cholera' (linked to voodoo, caused by a mystical powder or spirits which emerge from dead bodies, treated by tradition medicine). Sufferers therefore chose traditional or anecdotally-evidenced treatment over Cholera Treatment Centres (CTC).

Al Kourdi recommended collaboration with community leaders and traditional medicine practitioners and advocacy for the proper disposal of dead bodies and for technical solutions to WASH issues. Al Kourdi noted the importance of adjusting health promotion communications to local context, such as explaining the origins of the cholera outbreak in Haiti to counteract beliefs of 'good' and 'bad' cholera.

Cholera response and prevention lessons learned: Chad, Cameroon and Zimbabwe

Jean Lapegue, ACF-France

Lapegue presented the WASH Emergency Response Unit (WERU) approach to cholera. WERU is a flexible 'punch and shield' approach, emphasising collaboration between WASH and health sectors.

WERU includes brief operational research to inform prevention and response, incorporating:

1. *Anthropology*
2. *Epidemiology:* Analyse transmission patterns for priority districts for prevention and response.
3. *Environmental parameters* e.g. In Chad, dry season outbreaks (interpersonal transmission) are explosive and large-scale, while rainy season outbreaks (hydric transmission) are slow onset.
4. *Microbiology:* Biomolecular analysis of cholera strains helps to identify the origin of the outbreak.

The WERU objectives of effective prevention are to reinforce collaboration between ministries of health at a regional level, to standardise response protocols, ensure transboundary surveillance and alert systems are in place and to improve coherence of the wider prevention infrastructure. The 'shield' approach also aims to create links between emergency and development actors and donors.

The development of onsite wastewater treatment in Cholera Treatment Centres

Jeff Fesselet, MSF

MSF and University of Brighton investigated alternative wastewater treatment systems where the regulatory environment, space, ground conditions or pollution poses challenges.

The research was conducted in Haiti where the constraints were a lack of space in urban areas, high water table, close proximity to rivers and sea, and no suitable offsite treatment or disposal site. The aim for the treatment was to remove *v. cholera* and organic matter in a simple, rapid, straightforward and scalable manner. Treatment methods which were discounted included offsite (not available), disinfection (not feasible), and biological (required expertise, takes too long, high chlorine content).

Two methods of onsite chemical coagulation/flocculation treatment were trialled; Method A using lime (or lime and magnesium) to increase Ph, and Method B using acid and coagulant to lower Ph. Both methods were successful in terms of treatment. Method A produces odourless sludge which dries well while Method B produces sludge with some odour which dries badly. Existing incinerators were used for sludge disposal, as reuse was challenging and unreliable.

The challenges encountered included tackling misconceptions regarding the efficacy of onsite treatment, dealing with a backlog of wastewater, the lack of reliable data and securing the funds to cover expect staff resources and equipment costs to deliver onsite treatment. In the future investment in training of national staff to manage the treatment process and simpler monitoring tools are required.

Tuesday 18th December: 2nd Session - Technology

Hygiene promotion in urban context and the role of new technology. An experience from the earthquake response in Haiti

Sharon Reader, British Red Cross

Sharon Reader is a communications specialist who works on beneficiary communication, with the aim of improving hygiene promotion in an urban context. Her presentation looked at what people do with information specifically from the BRC.

Reader reported that the lack of social cohesion in camps in Haiti and people's mistrust of their neighbours posed a challenge for word of mouth information dissemination. Reaching people in a condensed space was difficult, and there was a lack of hierarchy to aid communication. The authority system in Haiti was also very complicated and it was challenging to recruit volunteers to go door to door without any remuneration. Determining needs was challenging in that as slum dwellers moved into camps and this population tends to have higher resilience so it was difficult to determine who were the most vulnerable groups. Camp populations were very fluid, and people moved depending on where the best support was available.

Reader looked at how people want to receive information in an emergency setting, including available communications channels, segmenting audiences and appropriate communication plans. She noted the communications preferences of different segments in society: generally women preferred face to face communication or hotlines while young people preferred using text messages. Older people engaged the least with communications channels. Reader also experimented in the latter stages of the programme with using emotive messaging relating to childcare, but found that the system worked better with practical information.

BRC used SMS as a main communication method; an online platform allowed them to target areas and send messages directly. SMS was also used to send surveys and get information back, for example a survey on health promotion kits helped to scale down distributions appropriately. SMS were a particularly useful channel as it is cost-effective and messages could be kept by recipients for future reference, such as the recipe for making a sugar-salt solution. BRC estimate that mobile phone coverage will be at 100% within five years as mobile phones are becoming cheaper and more available.

BRC used other technological innovations such as interactive voice response technology that could deal with calls and do surveys using push buttons, which handled over 130,000 calls a day and collecting data from 16,000 people in total. It was noted that this technology could also be used as a rapid assessment and montoring tool, with participants noting that Oxfam has used it this way in Somalia. In addition, a local radio show with phone-in segments was used to bridge the gap between knowledge and understanding – each week, the show picked one key topic, such as cholera or food, and went into this in much more detail.

While acknowledging limitations associated with measuring outcomes of the communications programme through self-reporting mechanisms such as focus group discussions, monitoring demonstrated that the programme resulted in increased knowledge of cholera protection and disaster preparedness.

mWASH - Increasing beneficiary reach through cost effective mobile phone based integrated WASH interventions in Somalia

Jesse Kinyanjui, Oxfam

Jesse Kinyanjui reported that in Somalia, text is a well known way of receiving information, even for the older generations as they use SMS for payment and receiving money. The mWASH was used in Somalia to counteract the complexity of access to the country and instability. The programme developed a mobile application for hard to reach places, reaching 55% of people in Mogadishu on an interactive basis.

The programme undertook an initial baseline survey and based their system on this data. A system independent of a mobile phone operator was set up as operators were wary about setting up mass communication systems due to possible interference by Al Shabab. All the messaging was done remotely from Nairobi on a simple system which could send and receive 10,000 SMS per minute. The software can be used to set up the system anywhere in the world. For this trial, 10,000 people were registered and used the system.

The programme tried a baseline questionnaire to determine current knowledge levels and based the rest of the service on this. They found that young people felt more confident to ask questions as it was a private system.

In future they are looking to use the system to help with the distribution of 'non-food items' using a pre-pay system. Based on the choices made by households, tailored messages are sent which can be specific to the water treatment or sanitation systems they use.

Using modern mapping techniques to identify priority areas for WASH intervention during a typhoid outbreak in Harare, Zimbabwe

Fabienne Nackers, MSF

Fabienne Nackers reported how MSF supported the Harare health department to record the GPS coordinates of patients with cholera, which were then mapped against control areas and analysed to detect clustering of cases to inform the response. This mapping exercise occurred towards the end of the outbreak and the study found that the majority of cases centred on two main areas which corresponded to two boreholes. The mapping shows dynamism over time and, although there was no evidence that the boreholes were the cause of the outbreak, both tested high for faecal coliforms.

Unfortunately, the timing of the mapping was too late to inform the response. However, if such mapping was done rapidly in the field, it could be used to show hot spots for targeting interventions. Raising awareness needs to happen around the ease of use of mapping for this purpose.

During the question and answer session, participants discussed barriers to incorporating such mapping into standard emergency response. Nackers responded that while road conditions can limit GPS data collection and sometimes authorities limit GPS mapping, it may be possible to use mobile phones for this purpose. The biggest challenge is a lack of awareness around how simple it is to use: training in using GPS and software can take as little as half a day. The tool is useful for following the dynamic and the evolution of diseases, and gives water, sanitation and hygiene specialists access to much-needed health data. It was also noted that the priority should usually be to plot where cases of disease are

occurring because this can inform some sort of response in itself, and plotting population density has secondary importance in that this information can help agencies to prioritise their response. Priorities for plotting approaches should be context-specific, i.e. tailored for rural or uban settings, for example.

Tuesday 18th December: 3rd Session - Nutrition

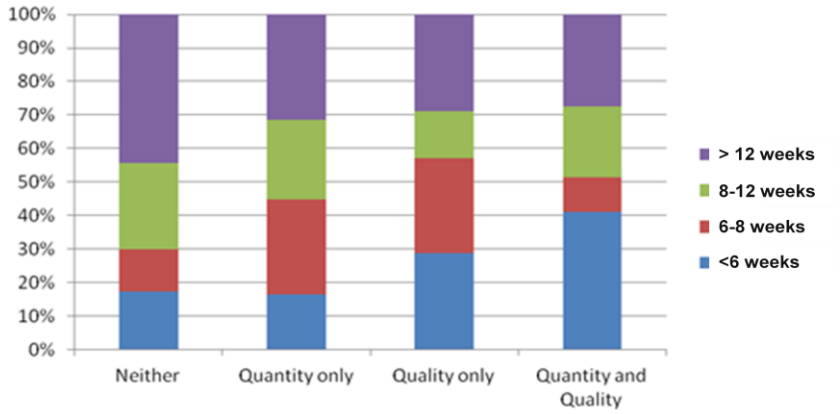
Does village water supply affect children's length of stay in therapeutic feeding centres in Tahoua region, Niger

Peter Maes, MSF

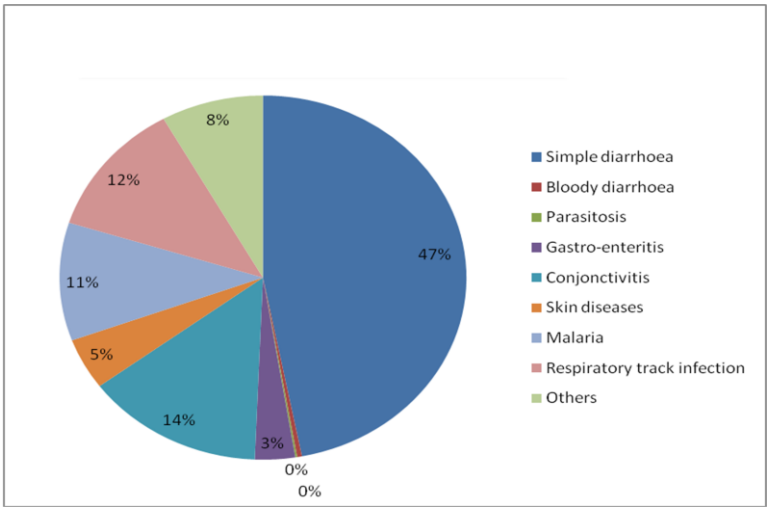
During this session, Peter Maes presented findings of research on the link between malnutrition recovery and access to adequate quantity and quality water. Despite acknowledged methodological limitations, Maes argues that even limited evidence is of value in the context on linking malnutrition and WASH. The full research is published at:

Dorion, C. et al. (2012) Does Village Water Supply Affect Children's Length of Stay in a Therapeutic Feeding Program in Niger? Lessons from a Médecins Sans Frontières Program. PLoS ONE 7(12): e50982. doi:10.1371/journal.pone.0050982

Conducted retrospectively on data collected in MSF therapeutic feeding centres, the research explored the potential link between access to water in villages and the length of stay in therapeutic feeding centres in children under five years old. The data tends to show that inadequate access to water, both in quality and quantity, leads to a longer recovery time.



The above diagram compares length of stay in a feeding programme and adequacy of the water supply. It demonstrates that 40% of children who have inadequate access to water required 12 weeks or more of care in the therapeutic feeding centres. This is double the estimated average recovery time. Water related infections comprised 69% of secondary infections:



Integrating WASH and malnutrition in drought and food crisis: What, why and how based on in-depth research in Turkana, Kenya

Jesse Kinyanjui, Oxfam

Jesse Kinyanjui presented findings of qualitative research on links between malnutrition and WASH during drought crisis, and activities undertaken to develop integrated assessment tools for nutrition and WASH intervention. Kinyanjui explained how qualitative research in Kenya was used to create integrated tools to assess and address nutritional and WASH situation during drought crisis.

The participants discussed of the complexity of the links between nutrition and WASH that include the role of tropical enteropathy, which is currently being investigated in several randomised-controlled trials. It was also noted that weaning food hygiene seems to have an important impact on nutrition of young children. The question of the quality and strength of evidence in linking nutrition and WASH interventions was also debated – if the link between nutritional status of a population and access to WASH in general is not questioned, the best strategy to integrate both responses in emergency settings is not yet informed and coordination between the relevant clusters remains weak. Participants agreed that more evidence was needed and that a better sharing of experiences at program level, successful or not, would be beneficial.

Tuesday 18th December: Further research questions and open forum

Participants discussed suggestions for further research, with the following themes emerging:

Hardware-focussed research:

- What are the water disinfection protocols for Hepatitis E virus?
- Low cost technologies to identify and trace microbial contamination in water sources
- Ecosan and safety: are single vault latrines sanitary is ash is added every day?
- Practical ways to respond to menstrual hygiene needs in emergency settings
- Epidemiology and control interventions for Hepatitis E and Cholera control
- What are the alternatives to water and soap for hand hygiene?

- Research into the usage of soap: hand hygiene, laundry or washing dishes?
- Do questionnaire surveys on handwashing tell you anything?
- What are acceptable free chlorine residual levels for cholera: rationales and evidence?
- What are the impact of hygiene kits and other similar interventions?
- What are the risk factors for cholera, typhoid and the ebola virus?
- The impact and effectiveness of hygiene promotion methods on nutrition, e.g. handwashing with soap.

Software-focussed research:

- Use of health professionals at different levels in hygiene promotion
- Identification of health promotion barriers/motivators for children, women and men
- What models of behaviour or theories of change help staff to do behaviour change?
- Feedback from the field to manufacturers: share failures and lessons learned
- How or whether to integrate water and sanitation
- The link between cash transfers and WASH based on existing successes (e.g. Somalia)
- How can the private sector be involved in research or 'value for money' projects?
- Case studies and guidelines on subsidies in relief-recovery-development continuum
- Do we do too much research on 'them' and not enough reflective research on 'us'?
- Is the problem a lack of relevant information, or a lack of time to digest the information?
- How can failure and lessons learned be incorporated into published research?
- How many 'open-defecation free' villages are needed before others follow without direct intervention?
- What are the causes of infant mortality in emergencies and what is the role of WASH?
- Long term and sustainable development approaches in emergencies: what are the ethical issues?

This session concluded by inviting any unanswered questions from the floor for discussion by a panel consisting of Suzanne Ferron (Independent), Liz Walker (IRC), Paul Sherlock (Independent) and Trevor White (OFDA).

1. *What are your views on having coordinated, sector-specific monitoring and evaluation indicators that are recognised by donors?*

It was agreed that it would be useful to have universal indicators but it's a struggle to achieve consensus on them. Agencies need to consider why then are conducting monitoring and whether they need indicators or standards. UNHCR reported that they are implementing common indicators for all locations, and service indicators at the camp and household levels with a preference for household indicators. Learning from UNHCR could be applied beyond the refugee setting. Other agencies reported having detailed indicator frameworks but also acknowledged there were gaps in their systems such as measuring handwashing at key times. It was noted that the CAT was designed to monitor outcomes against Sphere indicators, but there has not been much uptake of this system.

2. *Are any agencies conducting research in other contexts, such as urban?*

It was noted that some urban settings, such as the slums in Freetown in Sierra Leone, are 'an emergency waiting to happen'. However it was noted that the sector considers such examples as development issue rather than an emergency. It is only when there is a disease outbreak such as cholera that the sector becomes involved. The issue of the right moment for emergency agencies to become involved is discussed often in fora such as this, but has not translated into action as yet. It was noted that there is an existing UNHABITAT Urban WASH Group, and the WASH Cluster also has a forum for these discussions.