BRIEFING PAPER

Improving Maternal Health in Zanzibar through Improved WASH

Photo: Catriona Towriss/University of Cape Town

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Summary

Improving maternal and newborn health (MNH) is a key priority for the Government of Zanzibar (GoZ). Between September 2013 and November 2014 it commissioned The Soapbox Collaborative, WaterAid and the Pemba Health Laboratory Ivo de Carneri – 'the research team' – to conduct a needs assessment examining the standards of water, sanitation and hygiene (WASH), infection prevention control (IPC) and solid waste management (SWM) across Zanzibar's thirty-seven maternity units, funded by SHARE. The results of the assessment were shared at a workshop in November 2014 during which the research team supported the GoZ in developing an intervention plan focused on improving WASH infrastructure in maternity units and developing training materials to improve health facility staff knowledge and practice on IPC and WASH.

Background

WASH and IPC are essential to the delivery of MNH services [1]. Hand hygiene is currently considered the primary measure necessary for reducing healthcare associated infections (HAIs) [2]. Faecal-oral infections driven by poor hygiene, for example lack of hand-washing by the person assisting labour, can lead to life-threatening sepsis [1]. Although the action of hand hygiene is simple, the lack of compliance among health workers continues to be a problem throughout the world. Poor environmental hygiene also increases infection risk through the transfer of pathogens directly from surfaces or via the hands of healthcare workers who have touched contaminated surfaces. There is robust evidence suggesting that improved surface cleaning and disinfection reduces the incidence of HAIs [3].

HAIs are particularly high in low and middle-income countries; however, the lack of good data does not allow for quantifying the burden of hospital-associated sepsis infection [4]. Nevertheless, beyond the facility setting, evidence suggests that at the population level the burden of sepsis contributes to 10-15% of maternal deaths and 16% of newborn deaths annually [5].

Adequate WASH facilities are essential for effective IPC and there is sufficient evidence to suggest that improved WASH may reduce maternal mortality. Yet, despite this, adequate WASH facilities are frequently lacking in healthcare settings in much of the developing world. Indeed, a recent study in Tanzania revealed that only 24% of delivery rooms had an improved water source[1] at the facility, running water and soap for hand washing in the delivery room, and a functional latrine for clients [6], thus suggesting that the basic requirements for maternity and delivery unit IPC is not being met in Tanzania.

The improvement of MNH is a key priority for the GoZ. Efforts to reduce maternal and neonatal mortality have thus far focused on increasing the proportion of births attended by skilled healthcare workers, and on increasing the coverage of facility-based maternity services and provision of emergency obstetric care. Nevertheless, currently only about 50% of deliveries in Zanzibar occur in facilities [7]. There is increased recognition that further efforts are needed to improve the quality of these services (including the quality of WASH services), as well as to increase the utilization of facilities by expectant mothers.

To support the GoZ's Ministry of Health's wider plans to improve quality of care in maternity units, the research team were commissioned to conduct an assessment of WASH and IPC services in health facilities. The study aimed to:

- Assess the coverage of functional WASH facilities in maternity units across Zanzibar
- Assess the range of stakeholders' perceptions of cleanliness and IPC system failures
- Inform the design of a phased GoZ improvement plan to improve the quality of care in maternity units in Zanzibar, specifically with regards to WASH and IPC.

Methodology

The research team followed a mixed-methods approach and used several different research tools:

[1] Defined as: a source, which by nature of its construction or through active intervention, is likely to be protected from outside contamination, in particular from contamination with fecal matter (WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2008) Available at: http://www.wssinfo.org/definitions-methods/)

National Facility Questionnaire - All 37 facilities with maternity units were surveyed, with the purpose of assessing the coverage of WASH and IPC determinants and SWM systems across maternity units in Zanzibar.

Walkthrough Checklist – A checklist to record various aspects of WASH, IPC and SWM at specific locations on the maternity unit was applied to the 7 maternity units selected for in-depth assessment[2]. Data was collected while walking through the maternity unit through the use of observation, collection of microbiological swabs and water samples, and taking of photographs to assess the state of repair, and visual and microbiological cleanliness of the maternity unit. Information was also collected on equipment provision and availability. .

Sanitary Inspection Form – The water sources present at the 7 maternity units were assessed against a number of criteria to ascertain the likelihood of the water being contaminated. Water samples were also taken to see if the assessed risk correlated with the actual level of contamination.

Qualitative interviews – Semi-structured interviews were conducted with staff in the 7 maternity units selected, including: facility in-charges, midwives, orderlies and the person responsible for maintaining the facility's WASH facilities. Questions focused on policies, guidelines and protocols, training, and barriers to maintaining good practice. Interviews were also conducted with women who had delivered within the past 8 weeks. These were conducted at the 7 facilities or at the respondent's home. The women's interviews sought to capture their perception of a good versus bad delivery environment as well as their experiences during their most recent child birth, particularly in relation to IPC on the delivery unit.

Findings

1. Infrastructure, supplies and equipment

Water: All facilities were found to have good water infrastructure and an improved water source. However, 46% of the facilities which lacked an operating theatre reported that their water systems do not usually work and that there is insufficient water for hand-washing. This is highly problematic for practicing effective IPC, as one staff member interviewed explained: *"It's over three months now the water pump is broken and we are carrying water by buckets. It very much affects IPC."*

Water quality was a major issue in the 7 maternity units assessed, with samples taken from bore holes and facility water storage containers – drinking water sources for staff and clients – all testing positive for high levels of faecal contamination and thus deemed unsafe to drink.

Sanitation: There were an insufficient number of toilets in 75% of facilities with an operating theatre and in 59% of those without. Where toilets were present, flush mechanisms were often broken due to blockages – during interviews in the in-depth assessment, it was reported that women often put khangas (pieces of cotton fabric often worn by women) and pads into the toilets causing them to block. The overall level of cleanliness across the observed toilets was poor; swabs samples tested positive for multiple organisms on toilet door handles in 67% of the facilities.

[2] An in-depth assessment was carried out in 7 facilities which were selected to capture the variety of size and quality of maternity units in Zanzibar, as well as variations in the volume of deliveries. It consisted of a Walk-through Checklist, Sanitary Inspection Form and Qualitative interviews.

Hygiene: An index of basic resources necessary for hand-washing was constructed for assessment of the maternity units. It included availability of soap, an improved water source, piped water that was interrupted once a week or less, 24 hour water availability, at least one functional hand-washing sink, and availability of disposable gloves . Around 50% of facilities met the requirements; only one with an operating theatre did not. Concerningly, 30% of facilities without an operating theatre reported no functional hand-washing stations in their maternity areas. The practice of sharing sinks for different purposes was also found to be commonplace, with 60% of facilities having the same sink being used by different cadres – i.e. either by both patients and healthcare staff, or by staff and cleaners, or by patients and cleaners. Only two facilities reported an absence of soap within the maternity unit. Alcohol hand rub was present in 65% of facilities, but in only 37% of facilities with an operating theatre.

There was fairly good availability of cleaning equipment at most of the facilities, but the pathogenic contamination level of the majority of cleaning equipment was generally high. Delivery beds were also found to be contaminated with multiple organisms, especially around the perineal area. Overcrowding of beds was an issue with 62% of facilities reporting women having to share a maternity bed at least once a day.

Waste disposal: Addressing poor infrastructure for waste disposal was identified as a priority area by the GoZ, particularly with regards to infectious waste. 3 out of 7 facilities observed in the walkthrough did not have an infectious waste pit. Two of these reported to the necessary transfer of waste to another site for disposal, with one reporting the transfer of placentas and other infectious waste by the hospital ambulance.

2. Human Resources

It was reported that all facilities had someone in charge of cleaning the maternity unit and sterilizing the equipment. However, in 30% of facilities without an operating theatre the delivery room was cleaned less than once a day, and staff complained about shortages of orderlies. In one facility staff also reported a lack of dedicated personnel responsible for cleaning the environment outside the facility. Overall there appeared to be very low levels of training for health orderlies; the majority of cleaning staff had not received any training in relation to their job description. This led to major concerns regarding cross-contamination and poor maintenance of the facility environment; swabs from various hand-touch sites and cleaning equipment in the maternity units reinforced these concerns, revealing significant levels of contamination of multiple microorganisms.

Overall, there was found to be poor availability of staff dedicated to IPC; low staffing levels were frequently cited as contributing to poor IPC. During the qualitative interviews, most orderlies reported performing healthcare-related tasks such as wound dressing, thus reducing the time available to spend on cleaning activities. None of the orderlies had received any formal medical training and worked only on instructions from the skilled healthcare workers.

3. Policies, practices and monitoring

Despite the lack of training provided to orderlies, the provision of healthcare provider training on IPC in the past year was reported widely across the facilities. There was good knowledge around key moments for hand-washing after patient contact, after body fluid exposure, after wearing gloves and after using the toilet, but poorer knowledge around moments involving

before patient contact. 8% of facilities also reported *never* changing gloves between patients and 13% reported that this is only done sometimes. The majority of healthcare providers did, nonetheless, showed knowledge and understanding of the appropriate techniques to wash hands.

The percentage of facilities with either policies, posters or protocols on IPC was 51% and on hand-washing specifically was 45%, increasing to 75% for facilities with an operating theatre. Only 20% of the facilities had policy documents available on sewage disposal, 37% had documents on cleaning surfaces and 32% had documents on the decontamination of areas contaminated with body fluids. Nevertheless, most interviewed respondents could correctly explain the procedures for implementing the WASH and solid waste disposal guidelines and protocols.

Transferable Lessons

The methodology and tools adapted from the original WASH & CLEAN study for this needs assessment could be further adapted by Governments or Ministries in other countries to inform their facility-based WASH and IPC conditions and needs.

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Research for sanitation and hygiene solutions

The SHARE Research Consortium comprises eight organisations that have come together to generate rigorous and relevant research for use in the field of sanitation and hygiene. The purpose is to join together the energy and resources of the five partners in order to make a real difference to the lives of people all over the world who struggle with the realities of poor sanitation and hygiene.

SHARE is led by the London School of Hygiene and Tropical Medicine (LSHTM) and includes the following partners:

- Centre for Infectious Disease Research, Zambia
- Great Lakes University of Kisumu, Kenya
- International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B)
- International Institute for Environment and Development (IIED)
- Mwanza Interventions Trial Unit, Tanzania
- Shack/Slum Dwellers International (SDI)
- University of Malawi (College of Medicine and Polytechnic)
- WaterAid

The SHARE core team work from LSHTM.

October 2015

UKaid from the Department for International Development

This material has been funded by UK aid from the Department for International Development (DFID). However, the views expressed do not necessarily reflect the Department's official policies.

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