Deficient water safety surveillance in Kenya

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Policy Brief

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Introduction

The importance of water safety surveillance and monitoring

Water surveillance is an investigative activity undertaken to identify and evaluate factors associated with drinking water that could pose a health risk. Surveillance contributes to the protection of public health by promoting improvement of the quality, safety, quantity, coverage, cost, and continuity of water supplies. It is also both preventive in the sense that it detects risks so that action may be taken before public health problems occur. Surveillance contributes to the identification of the sources of outbreaks of waterborne disease so that corrective action may be taken promptly (WHO 2011).

Water safety monitoring and surveillance in Kenya remains way below the recommended standards by the WHO. If monitoring were being done continually in Kenya, the cholera outbreaks that affected more than half of the counties from December 2014 to date would not have occurred. This brief assesses the burden and costs of a failure to institute timely water safety surveillance and monitoring and makes recommendations on how to resolve the issue.

The burden of unsafe water

The Millennium Development Goal of ensuring that over 89 percent of the global population has access to safe drinking water was met in 2012 (WHO and UNICEF 2014). This aggregated statistic, however, masks massive geographical inequalities. Several regions in the world still lack clean water. In sub-Saharan countries, coverage of clean water sources lagged behind at between 50-75 percent (WHO and UNICEF 2014). Faecal contamination remains one of the biggest sources of water contamination. It is estimated that 1.8 billion people worldwide use drinking water sources that are faecally contaminated (Bain et al. 2014). The population exposed to the contamination in low- and middle-income countries is 52% (WHO 2014), while 32% those in sub Saharan Africa drink water from an un-improved water source (WHO 2015). For Kenya, faecal contamination of water sources is attributed to the fact that many people use water from wells that are located in close proximity to pit latrines (see Kimani-Murage and Ngindu 2007).

In Kenya, only 63 percent of the population have access to water at household level (WHO/UNICEF 2014). This access to water does not necessarily translate to safe water. Marshal (2011) observed that of the 43 million people living in Kenya, 43 percent did not have access to clean water. The health effects of contaminated water can range from no physical impact to severe illness and even death. According to WHO reports of 2014, diarrheal diseases whose main cause was unsafe water contributed to 7,735 deaths in Kenya (WHO, 2014).

Key Messages

- Water safety surveillance is an important public health intervention that can prevent outbreak of water-borne diseases.
- However, Kenya's water safety monitoring and surveillance efforts are below recommended WHO standards.
- This explains the frequent waterborne disease outbreaks such as cholera that continue to be a major health challenge in the country.
- It is estimated that Kenya Kenya loses up to Ksh. 27 billion annually to treat health problems associated with contaminated water.
- The country needs to urgently implement the recently issued Kenya Environmentanl Health, Sanitation and Hygiene Policy 2016-2030. This should include: unpacking the policy into manuals for water safety surveillance, instituting a data management plan that ensures water safety monitoring data is properly collected, analysed and disseminated to national and county level leaders for decision-making, and generally allocating resources to facilitate the implementation of the policy.

A pilot study conducted by AQUAYA Institute in partnership with Ministry of Health (MoH) in Kisii Central revealed that 50 percent of the water in Mosocho County was contaminated by E. coli among other contaminants. This might partly explain why we are getting the re-emerging of diarrhea-related outbreaks in some counties (KCPHO 2014). In 2014, Kenya experienced cholera outbreaks that started in Nairobi and spread to other countries resulting in 340 cases and 93 deaths by February 2016 (MoH-DDSR 2015). Further, Kenya Health Policy 2014-2030 notes that unsafe water and poor sanitation and hygiene contributed to 5.3% mortalities in 2009.

Legal Framework in Kenya

Safe water is a human right in Kenya as enshrined in the Right to Safe Water and the Right to Reasonable Sanitation Article 43 of Kenya Constitution (Constitution, 2010). According to the Kenya Bureau of Standards, all drinking water should be "free

from any pathogenic organisms" (KEBS, 2007). Public Health Act Cap 242 gives powers to health officers to ensure that the water that is consumed is safe and free from any contaminates.

Further, the Environmental Management and Coordination Act (EMCA) of 2006 states that all vendors must comply with water quality standards and the National Environmental and Management Authority (NEMA) in consultation with lead agencies (i.e. Ministry of Water and Irrigation, and MoH) shall maintain water quality monitoring for sources of domestic water at least twice a year (EMCA 2006).

In Kenya's devolved system of governance, the responsibility for developing manuals or guidelines for assessing the quality of water, in addition to activities such as developing strategies and promoting capacity building, is vested in the national government's MoH, while the implementation of surveillance monitoring activities is the responsibility of the county governments. This legal requirement requires the MoH to ensure that capacity and technical assistance is offered to counties and also develop and provide policy guidelines.

Methodology

A desk study review of published literature and policy documents was used to gather the experiences of countries in Africa and Asia that are implementing similar reforms to achieve universal health coverage and experiences gathered from the Kenyan situation.

Critical assessment of the problem

Failure to Invest in Water Sanitation and Hygiene

An economic study carried out in Kenya by the Water Sanitation Programme in 2012 (WSP 2012) showed that poor sanitation and hygiene cost the economy over Ksh. 27 billion per year (USD 265 million), equivalent of 0.9 percent of annual Gross Domestic Product (GDP). This figure reflects the cost of treating health problems and loss of productivity that results when individuals are sick. However, this estimate does not include the costs associated with environmental impacts (e.g. polluted water), and the adverse impacts on tourism and business.

Drinking Water Quality Monitoring and Water Safety Planning

Drinking water quality management is a key pillar of primary prevention of water-related diseases (WHO 2011). Accurate data on microbial water quality is essential for guiding activities such as water systems management and public health campaigns. Water quality data is also important for evaluating the effects of water, sanitation and hygiene interventions.

Water Safety Planning

Water safety planning is a WHO methodology promoted to improve the operations and management of water supply systems. This methodology focuses on risks identification from water source to the point of use (WHO 2009).

Water safety planning is of great benefits if all water utilities implement it. Without this approach, water suppliers will rely on end product testing to confirm water safety. Water safety planning is a continuous process that identifies and detects the problem before it affects the consumers.

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Discussion of Policy options

WHO Guidelines for Drinking Water Quality has recommended two complementary monitoring activities (WHO 2011):

a) Operational monitoring by water service providers (WSPs), Ministry of Water and Irrigation (MWI), Water Services Regulatory Board (WASREB), Water Regulatory Management (WRMA) and;

b) Surveillance (compliance) monitoring by an independent regulating body (i.e. the MoH).

1) Operational Monitoring

The Ministry of Water and Irrigation has the overall mandate of monitoring and evaluating the implementation of the national water quality management strategy, while the Water Services Regulatory Board develops indicators to monitor and evaluate implementation (MWI 2012).

Water service providers are required to undertake their own monitoring of water quality as part of their quality assurance programme and process control. The Water Services Regulatory Board provides guidance through their Drinking Water Quality and Effluent Monitoring Guidelines (WASREB 2008).


Image: DFID - UK Department for International Development/Flickr

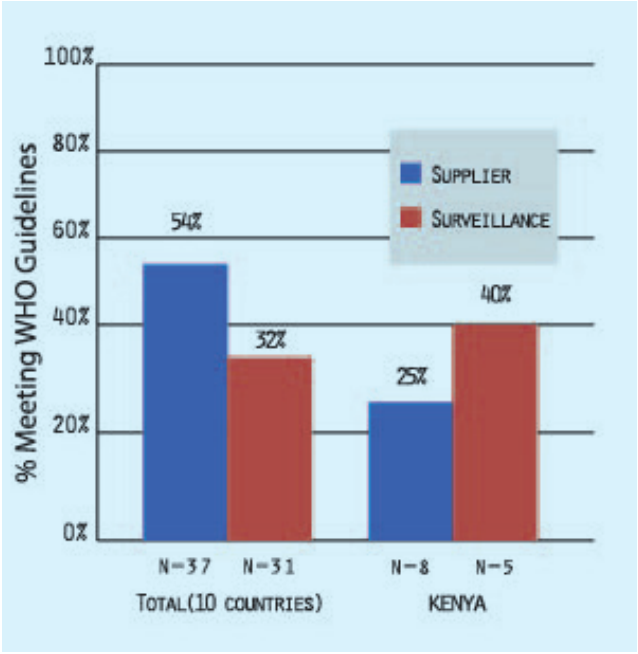
2) Surveillance (compliance) monitoring

Surveillance monitoring for compliance of drinking water falls under the jurisdiction of the MoH's Division of Environmental Health. Evidence of surveillance by health officers is scanty in almost all the counties in Kenya. WHO guidelines recommend surveillance of water points and implementation of water safety plans by all water utilities. The frequency of surveillance should be a minimum of once a year in every water source (WHO 2009). The MoH has endorsed these water safety plans manual and it will be decentralizing the same to the 47 counties (MoH 2016).

However, MoH reports revealed a gap in implementing the WHO requirements (MoH 2013). The reasons provided for this include insufficient capacity, inadequate allocation of resources, lack of equipment for surveillance, and lacking policy guidelines to guide counties in implementing these requirements.

Baseline data conducted by AQUAYA Institute's Monitoring for Safe Water Programme in 2013/14 summarizes water-testing activities from 72 water suppliers and surveillance agencies across 10 countries in sub-Saharan Africa including Kenya. The study found that 87 percent (60/72) of water suppliers and surveillance agencies reported conducting some microbial testing in the past year. However, most were not meeting WHO Guidelines for the number of tests conducted per year (Figure 1). According to the WHO Guidelines, non-piped sources should be tested every 3-5 years, while the recommended testing frequency for piped water sources is dependent on the size of the population served.

Figure 1: Drinking water monitoring is inadequate

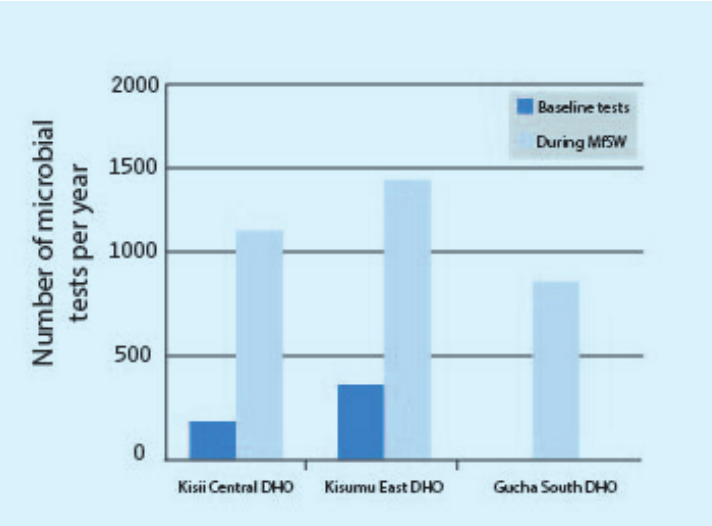


Source: Aquaya Institute 2014 (unpublished).

Kenya pilot sub-counties monitoring for safe water in four sub-counties

The second phase of AQUAYA Institute's Monitoring for Safe Water Programme (2014/2015) engaged a total of 26 water suppliers and surveillance agencies across six countries in sub-Saharan Africa, including a total of 118 distribution networks and 343 health districts. MoH participated in the Kenyan pilot, which included three sub-Counties namely Kisii Central, Kisumu East, and Gucha South (Figure 2).

Figure 2: Microbial water quality testing in three pilot District Health Offices in Kenya.



Nb: Gucha district did not participate in the baseline
Source: Aquaya Institute
*(**Mfsw**- Monitoring for safe water)*

The study found that these sub-Counties did not meet the WHO guidelines for the number of tests conducted per year, which is supposed to be testing all sources every 3-5 years. Also, they did not meet the requirements of Kenya's EMCA, which states that water sources should be tested twice yearly.

Nevertheless, the three sub-Counties in Kenya substantially improved drinking water quality monitoring when results of the baseline in 2013/2014 were compared to those of the second phase of evaluation in 2014/2015. Results showed that safe water monitoring programmes can be improved with capacity building and financial incentives. Before the programme, there was insufficient capacity and resources to support monitoring in the pilot sub-Counties. The Counties did not have testing kits for surveillance. Additionally, the sub-Counties' Public Health Officers (PHOs) supported by Community Health Extension Workers (CHEWs) and Community Health Workers (CHWs) followed up with communities on the testing results. The PHOs communicated to the communities on the safety of their water sources and interventions for improving water safety such as household water treatment, and ending open defecation.

The lessons from these sub-Counties indicate that there is a need to strengthen water surveillance at the county level.

Insuficient monitoring and water safety surveillance is attribiuted to the lack of a surveillance tool to support the officers in the field to ensure that this requirement is met. It is also important to note that the country's health information systems does not capture data on water safety monitoring. This could be attributed to the fact that there has been no policy guidance on this, among other reasons. However, the MoH recently launched the Kenya Environmentanl Health, Sanitation and Hygiene Policy 2016-2030, which has captured issues on water safety. For this policy to help addres some of the challenges above, it needs to be unpacked by developing manuals and monitoring tools for surveillance and water safety planning, which guide the operationalisation of the policy.

Recommendations

Based on the evidence from Monitoring for Safe Water discussed, I recommend the following actions to improve drinking water quality surveillance monitoring in Kenya:

1. Develop surveillance manuals

The Ministry of Health, should develop manuals for water safety Surveillance, (for compliance) complementing the WASREB / KEBs standards for water quality. These Guidelines will include recommendations for water quality monitoring roles, frequency, indicators, testing methods, and reporting. Additionally, the manuals will promote cost-effective monitoring, including risk management approaches. The manuals will be disseminated to counties so that they can implement monitoring.

2. Monitoring Implementation

The County government should ensure that drinking water quality is sufficiently monitored (as recommended by developed Guidelines). Surveillance should include piped and non-piped water supplies managed by communities.

3. Capacity building and training

The National government responsible for surveillance of water safety should capacity build counties on water surveillance and its importance. Training water services providers on water safety plans is equally recommended.

4. Surveillance data management and remedial actions

Water testing alone does not lead to water quality improvement; it is important that strategies be employed for analyzing, summarizing, and disseminating data both at the National and County government. This data should be used to directly inform remedial actions to improve water supply safety, such as water source protection, household water treatment, community health education, and pollution prevention including improved sanitation. Follow-up will be required to ensure that remedial action is taken.

References

[1]*Rob ES Bain, Stephen W Gundry, Jim A Wright, Hong Yang, Steve Pedley, Jamie K Bartram, (2014) Accounting for water quality in monitoring access to safe drinking-water as part of the millennium Development Goals: Lessons from five countries.*

[2]*.Constitution of Kenya ,(2010)*

[3]*.Ministry of Health (2015), Division of Diseases surveillance and Response*

[4]*Ministry of water (2012, National water quality management strategy (2012-2016)*

[5]*Marshal Samantha (2011). The water crisis in Kenya: Causes, Effects and solutions. Global Majority E journal, Vol. 2 (1) 31 – 45.*

[6]*Kimani-Murage, Elizabeth W. and Augustine M. Ngindu (2007) "Quality of Water the Slum Dwellers Use: The Case of a Kenyan Slum", Urban Health: Bulletin of the New York Academy of Medicine, Vol. 84 (6) 829-838*

[7]*Public Health Act cap 242*

[8]*UN (2010), General Assembly Resolution A/RES/64/292*

[9]*Kenya's Water services Regulatory Board (WASREB)2008*

[10]*Kenyan Environmental Management and coordination Act 2006*

[11]*WHO (2014) (Prevention of Diarrhoea through Better Water, Sanitation and Hygiene*

[12]*Water and sanitation program (2012) (ww.wsp.org) (do you have a specific document reference for this?)*

[13]*World Health Organization (2011), Water For Health: WHO Guidelines for Drinking Water*

[14]*Aquaya Institute, research and consulting organization, http://www.aquaya.org*

[15]*Water and sanitation Progran, (2012), Economic impacts of Poor Sanitation in Africa, water.worldbank.org/sites/water.worldbank.org/files/publications/WSP-ESI-Kenya.pdf*

[16]*Ministry of Health Annual Reports (MOH) (2013)*

[17]*Kenya Bureau of Standards (2007)*

[18]*WHO/UNICEF (2014), Progress on Drinking Water and Sanitation report.*

[19]*Kisii County, (2014) County Public Health Report*

[20]*WHO, (2009), Water safety Guidelines*

[21]*MOH, (2016), Kenya Environmental Sanitation and Hygiene Policy*

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