Overview of the strategy to control and prevent cholera in West and Central Africa

The “Shield and Sword” concept

The West and Central Africa Cholera Platform
www.plateformecholera.info
Title:
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Purpose:
To inform and advice governments, donors, health stakeholders, as well as water, sanitation and hygiene actors on the strategy to control and prevent cholera in West and Central Africa

Endorsement:
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KEY MESSAGES
REGIONAL CHOLEREA STRATEGY

The “shield and sword” concept, a common language for a proactive, cross-border and multi-disciplinary strategy to prevent the spread of cholera

An evidence-based and multi-sectorial approach targeting high-risk populations, locales, periods and practices

Intervention at a national, cross-border and regional level both before and during outbreaks as well as over the long-term

Building bridges between emergency response and development programs

Achieving national commitment from water, sanitation and hygiene (WASH) and health stakeholders to strongly engage in comprehensive strategies to eliminate cholera

Advocacy towards donors as well as WASH and health stakeholders for long-term intervention in cholera hotspots
I. Background

a. History of cholera control

Since 2007, several epidemiological studies aiming to better understand cholera dynamics at a national, cross-border and regional level have been conducted in West and Central Africa. The findings have established the foundation for a strategy to control and prevent cholera in this region of Africa.

Furthermore, between 2006 and 2012, the regional cholera strategy was built from lessons learned from pilot response projects implemented in Democratic Republic of Congo, Chad and Guinea. The approach was based on the integration of WASH (water, sanitation and hygiene), epidemiology and the use of GIS (geographical information systems) to target and optimize interventions. During the same period, regional and sub-regional workshops have taken place in the region to define the framework for a better collaboration between countries.

In 2012, due to the lack of cross-border collaboration and the delayed response during the cholera epidemic in Sierra Leone and Guinea, the West and Central Africa Cholera Platform was established. Since 2013, UNICEF has established partnership with ECHO through regional projects with the main objective of reducing the incidence of cholera via animation of the regional platform and promotion of an integrated and targeted approach known as the “shield and sword” strategy.

b. Cholera burden and characteristics in West and Central Africa

In the West and Central Africa region, an average of approximately 70,000 cholera cases and 1,600 cholera-related deaths are reported every year, with a high case fatality rate of 2.3% (World Health Organization (WHO) standard: 1%), which highlights specific problems in early detection and case management (WHO, 2005-2014).

Cholera epidemics regularly affect 16 countries in this region and are often associated with other humanitarian crises such as floods, other epidemics, population displacement or armed conflict. Democratic Republic of Congo, Nigeria and Ghana are the most affected countries despite their strong annual growth, thereby highlighting striking inequalities. Cholera epidemics generally occur in a cross-border manner, which renders countries located along the Guinean gulf, the Mano River, the Congo River and around Lake Chad at risk.

Within a country, cholera often burdens a small number of specific zones and populations termed “cholera hotspots”. The cholera hotspots are geographically limited areas with alternating seasonal outbreaks and lull periods. These areas are regularly affected and often at the origin of epidemics that spread to other regions.

Cholera epidemics in West and Central Africa remain a public health concern. The regional cholera platform is currently advocating governments and decision makers to implement a common cholera elimination strategy by targeting these cholera hotspots.
II. The “shield and sword” strategy

a. Summary of the approach

Strategy development involves a risk-informed and evidence-based approach, through continued operational research and multi-disciplinary studies that support expanding knowledge and efficiency in cholera preparedness, emergency response and long-term intervention.

Epidemiologists, WASH specialists, health professionals, anthropologists and community mobilization specialists work together to achieve a common goal: elimination of cholera.

The “sword” aspect involves intervention during an outbreak in affected areas, as soon as the first suspected cases are reported, thereby enabling a short delay in response based on case investigation and mapping. The “shield” feature is characterized by sustainable and preventive WASH interventions conducted outside of epidemic periods in priority areas, which are defined as specifically at risk for cholera. The “shield” approach is also implemented during emergency situations to prevent the spread of outbreaks by protecting unaffected but high-risk populations (Figure 1).

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1 WASH intervention, case management, surveillance, social mobilization and possibly oral cholera vaccine
2 Oral cholera vaccine can help provide protection for a population during the period when sustainable WASH interventions are implemented in cholera hot spots
3 WASH and Health intervention and Communication for behavior change

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Figure 1: Shield and sword strategy concept
b. From emergency response to long-term intervention

The regional strategy to combat cholera includes risk-informed preparedness before outbreaks, an emergency response during outbreaks and a development program targeting cholera hotspots over the long-term (Figure 2). The interventions are implemented at national, cross-border and regional levels. The activities are adjusted based on high-risk populations, locales, periods and practices defined by the evidence produced by all sectors concerned.

The strategy in an emergency setting involves delivery of a timely, epidemiology-driven and targeted response as soon as the first suspected cases are detected. The strategy also aims to anticipate and prevent cholera transmission to unaffected populations at immediate risk, which are identified via the analysis of previous outbreak patterns and cross-border collaboration.

![Figure 2: Shield and sword strategy holistic approach](image-url)

The activities to control cholera outbreaks are driven by the understanding of the transmission context and systematic outbreak mapping. The transmission context is defined as the circumstances in which a person will contract the disease (Figure 3).

Information concerning the epidemiology of the disease are exploited at various time and space perspectives, thereby yielding an efficient emergency response.
The intervention includes:

1) case management,
2) surveillance of the outbreak including laboratory analysis and data management,
3) WASH activities such as hygiene promotion, safe burial, household disinfection, household water treatment, network chlorination and bucket chlorination,
4) community mobilization,
5) multi-sectorial coordination including cross-border collaboration and
6) possible Oral Cholera Vaccine (OCV) campaigns.

Cholera prevention includes the concepts of preparedness and long-term prevention. **Preparedness** aims at improving the readiness of agencies, governments, civil societies and communities during cholera outbreaks.

Pre-positioning of necessary supplies and capacity building are conducted in pre-identified high-risk areas, taking into account the cross-border characteristics of cholera outbreaks.
By establishing a national plan, this strategy also affords the opportunity to unit government, donors, WASH actors and health stakeholders in the interest of a common goal: elimination of cholera. **Long-term prevention** aims at improving hygiene conditions, behavior change and providing sustainable access to potable water, sanitation facilities and basic health services in cholera hotspots for the long-term. The success of this holistic approach relies on:

1) Obtaining national commitment from the WASH and health sectors to strongly engage in comprehensive strategies focused on cholera elimination

2) Building bridges between emergency response, disaster preparedness and long-term prevention

c. Position on the use of Oral Cholera Vaccines

OCV is considered a supplementary tool to control cholera epidemics both before and during an outbreak. OCV can help provide protection for a population during the period when sustainable WASH interventions are implemented in cholera hotspots.

The issue of civil society and government commitment to ongoing or future WASH projects in locales where an OCV campaign has been conducted is of concern.

Thus, the cholera platform proposes a few essential requirements that must be filled prior to a pre-emptive OCV campaign in cholera hotspots, such as ensuring that minimum evidence defining the WASH-related technical options to prevent cholera outbreaks is produced and that sustainable WASH interventions are implemented or both planned and funded.

The group recommends that basic information concerning the benefits of WASH interventions (compared with repetitive OCV campaigns) on the health, economic and social welfare be provided to the civil society and government to avoid lack of interest for ongoing or future sustainable WASH interventions.

d. Research projects and studies

Numerous studies and research projects have been conducted in the region, including integrated WASH and epidemiological studies, anthropological studies and lessons learned exercises (Box 1).

Innovative initiatives are also ongoing using Rapid Diagnostic Test to detect Vibrio cholerae in water samples and advanced molecular biology techniques to understand cholera epidemic diffusion mechanisms and therefore anticipate outbreaks (Box 2).

Furthermore, the cholera platform is working closely with the Global Task Force for Cholera Control (GTFCC) WASH working group to develop a methodology to conduct investment case studies for cholera prevention and control at a national level, with the aim of applying this methodology to Niger and Guinea as pilot countries.
**Water, sanitation and hygiene and cholera epidemiology: an integrated evaluation in the countries of the Lake Chad Basin**

In 2011, the University of Franche Comté was mandated by UNICEF WCARO to better understand the epidemiology of cholera, assess the WASH conditions and evaluate the heath surveillance system in Nigeria, Niger, Cameroon and Chad.

The results showed that epidemics spread along major trade routes, around Lake Chad and in cross-border areas. Six border areas were identified for priority interventions (Figure 4).

The analysis of the epidemiological surveillance system in the four countries revealed two major aspects for improvement: 1) community surveillance and 2) cross-border collaboration.

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**Research project – applying molecular biology technology to understand the dynamics of cholera in West Africa**

In 2015, the University of Aix-Marseille was mandated by UNICEF WCARO to better understand the dynamics of cholera in Ghana, Togo and Benin using an integrated approach that combined field investigations with molecular biology analysis of V. cholerae isolates.

The results showed that Ghanaian isolates grouped into the West Africa cluster together with isolates from Togo and Guinea (Figure 5). Interestingly, the 2011 isolates from Ghana were closely related to and likely gave rise to the 2012 Guinean epidemic, which highlights the importance of an early warning system along the Guinean coast.
III. Strategy implementation

a. The regional West and Central Africa Cholera Platform

The regional cholera platform unites the main regional WASH and health actors involved in the fight against cholera, including but not restricted to Action Against Hunger (ACF), ACTED, ALIMA, ECHO, IFRC, Doctors Without Borders (MSF), OCHA, UNICEF and WHO. The coordination is supported through regional projects piloted by UNICEF and funded by ECHO and DFID since 2013. The main objectives of the platform are the following:

- Provide technical support to partners and countries in all domains of cholera risk assessment and control, for both outbreak preparedness and response (surveillance, case management, WASH intervention, social mobilization and possible OCV campaigns)
- Strengthen epidemiological and laboratory surveillance to better estimate the burden of cholera and conduct timely and targeted control interventions
- Improving the exchange of information and experience between countries by formalizing cross-border collaborations
- Advocate and support technical and financial partners regarding the implementation of sustained cholera prevention activities in cholera hotspot regions

b. Regional project

UNICEF has been funded by ECHO since 2013 and more recently by DFID to contribute to the reduction in cholera incidence in the region via the promotion of the “shield and sword” strategy. The main activities of the regional project include the following:

- Diffusion of an epidemiological update and mapping of actor capacities (Box 3)
- Institutional support for cholera preparedness including cross-border collaboration and national plans
- Early response capacity with dedicated human resources and emergency funds
- Research projects and studies aimed to inform preparedness, response and WASH development programming (Box 4)

Key output – West and Central Africa cholera regional update

Since 2012, UNICEF WCARO has been producing an update of the cholera cases and deaths reported in 18 countries in the region. The bulletin is broadcasted on a bi-monthly basis via the OCHA, UNICEF and the cholera platform contact lists. According to the situation, the bulletin comprises the following:

- Cross-border alerts
- Real time information concerning outbreak dynamics and the results of investigations conducted
- Good practices and lessons learned
- Summary of relevant studies, research and recent publications
- Forthcoming events in the region

http://www.unicef.org/cholera/index_74805.html

Box 3: West and Central Africa cholera regional update
c. National pilot projects

In the past years, a number of innovative projects to control cholera outbreaks have been conducted in the region. The “shield” aspect of the regional strategy was launched in 2006 in the city of Kalemie (Democratic Republic of Congo) by increasing drinking water coverage through installation of water tap stands equipped with a 10 m3 tank in cholera hotspots.

The pilot project was conducted by the NGO Solidarités International, together with the Veolia Foundation, the Governorate of Katanga and MSF. Since 2007, UNICEF has supported the Democratic Republic of Congo government and agencies in the elaboration and implementation of a cholera elimination plan.

During the 2010 – 2011 period, ACF responded to the cholera outbreak in Chad via systematic case investigations in rural settings, cross-border collaborations with the health authorities in northern Cameroon and both epidemiological and anthropological studies.

In 2012, MSF performed the first targeted OCV campaign during an outbreak in the costal prefectures of Guinea.

In 2012, MSF performed the first targeted OCV campaign during an outbreak in the costal prefectures of Guinea.

At the same time, ACF and the University of Franche Comté (France) tested an innovative response strategy in urban settings based on the use of GIS technology (Box 6). Since 2013, IFRC has entered into a partnership with ECHO to implement the “shield and sword” strategy, particularly in Ghana, using GIS technology.
d. Key resources and tools

The West and Central Africa Region Cholera Platform has gathered and standardized tools to ease the implementation of the regional “shield and sword” strategy.

Training modules, essential documentation for lessons learned and roadmap exercises, key tools to implement preparedness and response activities (such as an investigation format or a checklist for preparedness) are all accessible on the West and Central Africa Cholera Platform website: www.plateformecholera.info.
IV. Conclusion: progress towards cholera elimination

Cholera is predictable, preventable and can ultimately be eliminated where access to clean water and satisfactory hygiene conditions are ensured and sustained.

However, communities in cholera hotspots have been left out of WASH development programs, partly due to the fact that WASH sector objectives were typically non-health driven and lacked donor investment.

The Cholera Platform thus advocates that:

- Cholera hotspots in each country are identified and become the primary targets of interventions
- Epidemiological, environmental and anthropological findings are mainstreamed into national policy
- Comprehensive strategies for cholera elimination are established with national commitment and high-level support from the health sector
- Resources for cholera prevention programs are mobilized in hotspots as a long-term investment for the benefit of public health, economic and social welfare
REFERENCES

1. Didier Bompangue et al.,
   Lakes as Source of Cholera Outbreaks, Democratic Republic of Congo
   Emerging Infectious Diseases 14, no. 5 (May 2008).

2. Bertrand Sudre and Didier Bompangue,
   Epidémiologie du Choléra et évaluation du système d’alerte précoce en République de
   Guinée
   UNICEF, Université de Franche-Comté, 2009).

3. Luquero, Francisco J.,
   Time-Series Analysis of Cholera in Guinea-Bissau (1996-2008)
   Epicentre, 2009

4. Pierre-Yves Oger and Bertrand Sudre,
   Water, Sanitation and Hygiene and Cholera Epidemiology: An Integrated Evaluation in
   the Countries of the Lake Chad Basin
   UNICEF, August 1, 2011,

5. Jessica Dunoyer and Bertrand Sudre,
   Le Choléra Au Tchad En 2011 et Les Stratégies de Lutte Associées
   ACF, Université de Franche-Comté, April 2012,

6. Renaud Piarroux and Stanislas Rebaudet,
   Origine et déterminants de l’épidémie de choléra 2012 en République de Guinée: Ap-
   ports de la cartographie dynamique et de l’épidémiologie moléculaire
   APHM / UNICEF / MSHP République de Guinée, 2013,

7. Jessica Dunoyer and Bertrand Sudre,
   Le Choléra transfrontalier en Sierra Leone et Guinée en 2012 et les stratégies
   d’intervention associées
   ACF, Université de Franche-Comté, February 2013

8. Sandy Moore, Paul Cottavoz, and Renaud Piarroux,
   Integrated Approach to Understand the Dynamics of Cholera Epidemics in Ghana, Togo
   and Benin

9. Francisco J. Luquero et al.,
   First Outbreak Response Using an Oral Cholera Vaccine in Africa: Vaccine Coverage,
   Acceptability and Surveillance of Adverse Events, Guinea, 2012,