



WORKSHOP ON CHOLERA CONTROL IN THE FAR NORTH CAMEROON AUGUST 20-23, 2014; SAVANO HOTEL MAROUA REPORT



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I. SUMMARY

The Maroua 2014 workshop on cholera control in Far North Cameroon was a contribution of the DOVE (Delivering Oral cholera Vaccine Effectively) project to fight against the cholera outbreak that started in the region since April 2014. The workshop was organized by a Cameroon based NGO called M.A. SANTE (Meilleur Accès aux Soins de Santé) in collaboration with the Far North regional delegation of public health. It had as objective to empower all the 30 health districts of the region with skills in implementing cholera epidemiological surveillance and control intervention's activities.

The workshop took place at Savano Hotel in Maroua from August 20th to August 23rd 2014. It included presentations, discussions, case studies, participants and facilitators evaluation. The key points on the agenda included: opening and closing ceremonies by the regional delegate of public health, the review of cholera situation in the region, fundamentals on cholera biology, cholera epidemiology, basics of epidemiological and cholera surveillances, cholera outbreak preparedness, interventions for cholera control, pretest and post test, evaluation of presentations and facilitators, assessment of health district preparedness to cholera outbreak; presentation of the DOVE project and basics of epidemiological surveillance data managements.

The facilitating team included 2 MD MPH, 3 Masters of Epidemiology and Public Health and 2 Masters of Clinical Biology. Participants were Medical Doctors and Nurses who were either supervisors or holding administrative and/or technical positions at different levels of the health system of the region. They included 10 people from regional delegation of public health, 4 from district health services and 26 from health facilities (regional hospital, district hospitals, sub-divisional hospital, integrated health centers, military hospitals and health centers, prison health center, police health center) covering in total 20 health districts with media coverage coming from CRTV for Far North and CANAL2.

All the 20 presentations planned were realized. The knowledge of the participants on cholera preparedness and control significantly improved after the workshop (0% of the participant had a mark equal or more than average during pretest while 25% of them had equal or more than average during post test). The quality of presentations and the attitude of the facilitators gradually improved throughout the training from the results of daily evaluation of facilitators by participants. All presentations, national guidelines for epidemiological surveillance were burned on a cd-ROM and shared to the participants

The workshop was a success in terms of collaboration, organization, coverage of the health facilities in the region, and knowledge acquired by the participants. This success is expected to have greater impacts since the regional delegate instructed all participants to replicate this training at their respective health districts targeting all health facilities.

At the end of the workshop, it was recommended that such workshops should be organized in the region each year and earlier before the anticipated period of outbreak to ensure that new personnel are well armed and old ones refreshed to better fight against the outbreak.

II. BACKGROUND

The Far North is the most populated region in Cameroon with 3,855,398 inhabitants in 2014 with 70% living in rural areas. The region is constituted of 30 health districts and shares boundaries with Chad, Nigeria and the North region of Cameroon. High illiteracy rate, poor access to portable water, poor hygiene and sanitation, behaviors, cultural beliefs and practices, poor geographical accessibility of health facilities and insecurity are some factors exposing this population to cholera outbreak and increasing the burden of the disease.

The Far North is the most vulnerable region in the country to cholera outbreak. Eight out of the 11 cholera outbreaks registered in Cameroon since 1996 started in the Far North. The region has the highest burden of the disease with 19,785 cases and 1,522 deaths (case-fatality of about 7.7%) between 1996 and 2010.

The Far North region presently suffers an outbreak that started on April 26, 2014 in Mogode (neighboring Nigeria). Since then, the epidemic has been spreading to other health districts of the region



Figure1: participants seated in the hall during a discussion session



Figure2: presentation of the situation of cholera in the Far North region by the Dr

and presently, eleven districts have reported at least one suspected case. Counting from the beginning of the epidemic up to August 7th 2014, a total of 1654 suspected cases have been reported with 41 confirmed and 81 deaths (CFR=4.6%). The real situation is presumed to be worse since the information about cases and deaths in some communities is not available due to insecurity and geographical inaccessibility.

The DOVE project has as aim to identify efficient interventions to improve cholera control in Africa. Its Cameroon part entitled “Sustainable Cholera Surveillance for Cameroon” is being implemented in 4 health districts of the Far North region and 4 districts of Douala to assess sustainable methods of cholera surveillance. The project is committed to extend its activities to support the Far North region responding to 2014 cholera outbreak. In this line, it has supported surveillance activities in the affected districts and training of personnel on cholera control.

III. OBJECTIVE

The main aim of this workshop was to empower health workers in the Far North region of Cameroon with skills on implementing surveillance activities and interventions to improve cholera control.

IV. EXPECTED RESULTS

At the end of the workshop, the participants were expected to acquire a minimum knowledge on the following:

1. The biology, pathogenicity, and epidemiology of

Kaossiri



Figure3: participants concentrated during pretest



Figure4: interview of Dr Ateudjieu by the CRTV Maroua

Vibrio cholerae

2. Why and How to prepare health facilities, Health Districts and Health Region on cholera outbreak response.
3. Implementing key interventions for better cholera control
4. Providing adequate care to cholera patients
5. Conducting case by case epidemiological investigations of cholera outbreaks
6. Generating and sharing data and information from cholera outbreaks and surveillance activities.
7. Be aware of the cholera epidemiology and situation in the Far North region Cameroon

Be knowledgeable on the overview of the Cameroon part of the DOVE project (sustainable cholera surveillance for Cameroon)

V. PARTICIPANTS AND FACILITATORS

A total of 40 potential participants were invited from 18 health facilities, 4 district health services representing 15 health districts and 10 from the regional delegation of public health. A total of 37(92.5%) participants were actually present in the seminar; representing 18 (100%) health facilities, 15(100%) health districts and 2 media men. The participants were invited by the public health delegate for Far North Cameroon. Both public (district health services, district and regional hospitals) and private health facilities were represented. The list of participants is attached.

The facilitators included the following:

- Dr Jérôme Ateudjieu, MD, MPH. Senior Lecturer,



Figure5: opening speech from the representative of the regional delegate



Figure6: closing speech from the

University of Dschang; Division of Health Operations Research at the Ministry of Public Health and project coordinator for M.A. SANTE.

- Dr Brekmo Kaoussiri, MD, MPH. Coordinator of the epidemic control unit for Far North Cameroon.
- Nouetchognou Julienne Stephanie, Master in Epidemiology and Public Health. Consultant for the workshop.
- Guenou Etienne, Master in Clinical Biology. Laboratory and field activities supervisor for the project “Sustainable Cholera Surveillance for Cameroon” in Kousseri.
- Yakum Martin Ndinakie, Master in Epidemiology and Public Health. M.A. SANTE research officer in charge of supplies and activity monitoring of the project “Sustainable Cholera Surveillance for Cameroon”
- Ebile Akoh Walter, Master in Epidemiology and Public Health. M.A. SANTE research officer in charge of data management for the project “Sustainable Cholera Surveillance for Cameroon”
- Njimbia Chebe Anthony, M.Sc. Medical Microbiology and Parasitology. Laboratory and field activities supervisor for the project “Sustainable Cholera Surveillance for Cameroon” in Kousseri.

The following assisted in preparing presentations:

- Djouma Nembot Fabrice, Master in Epidemiology

representative of the delegate



Figure7: facilitator during a presentation



Figure8: facilitator during a presentation

and Public Health, M.A. SANTE consultant for the workshop

Nafack Sonkeng Sonia, Master in Epidemiology and Public health. Laboratory and field activities supervisor for the project “Sustainable Cholera Surveillance for Cameroon” in Douala.

VI. AGENDA APPROVAL

The agenda of the workshop was discussed and adopted by the following:

- Pr. David Sack, MD. Professor in the department of International Health, Bloomberg School of Public Health; Johns Hopkins University. P.I for the DOVE (Delivering Oral Cholera Vaccine Effectively) and Stop Cholera projects.
- Dr. Djaou Rebecca, MD, MPH. Public health regional delegate for Far North Cameroon.

All the seminar Facilitators and participants

VII. OPENING AND CLOSING CEREMONIES

The opening and closing speeches were made by the representative of the Far North regional delegate for public health, Dr Kaoussiri Brekmo. During the opening ceremony, he called the attention of the participants on the importance of the workshop and requested their regular attendance and active participation throughout the working days. At the end of the seminar, he thanked all those who were involved in the preparation and the implementation of the seminar. He further instructed the participants to



Figure9: participant contributing during the discussion session



Figure10: a group working on their case study

share the knowledge acquired during the seminar with all those who did not have the opportunity to participate in their respective institutions.

VIII. METHODOLOGY

The seminar started with self introduction of all the participants and facilitators. The agenda of the workshop was discussed and validated by assembly. The methods used during the workshop were PowerPoint presentation, discussion through question and answering session, evaluation of participants by pretest and post test, evaluation of presentations and facilitators' attitude, practical activities and group work (case studies).

There were 2 case studies: one was on how participants could react to a cholera outbreak at the district level, neighboring district and the regional level. The participants were divided into 4 groups and each group worked individually and presented their suggestions in a plenary session which were discussed by the general assembly of participants. The second case study was on data management in which the participants after been briefed on the different types of variable, how to create a data view, enter and retrieve data in epiinfo, and how to run simple analysis; were divided into 10 groups. Each group was then provided with a line listing of cholera cases and was asked to create a view and enter data in epiinfo and to further run simple analysis. Each group after the group work presented their results to the assembly which was discussed.



Figure11: facilitator during a presentation



Figure12: facilitator during a presentation

IX. PRESENTATIONS AND DISCUSSION

a) GENERAL KNOWLEDGE ON CHOLERA

There was one presentation for this module.

Key Messages from the presentation:

- *Vibrio cholerae* lives in surface water, contaminated foods, fruits and vegetables, seafood and human
- Determinants of outbreak are not yet understood.
- There are many serogroups of *Vibrio cholerae* but only O1 and O139 are known responsible for cholera
- For an infected individual (symptomatic or not), the pathogen is present in the stool, vomits and even on corpses.
- Its pathogenicity is mainly due to the liberation of an exotoxin in the lumen of the small intestine. The toxin attaches to intestinal cells and induces water and electrolyte loss, leading to diarrhea and vomiting.
- Treatment is essentially by rehydration
- Prevention is done by ensuring hygiene and sanitation and vaccination

Point Discussed:

Exotoxin's action mechanism in inducing diarrhea and vomiting

b) SITUATION OF CHOLERA IN THE FAR NORTH REGION

This module included one presentation done by the regional coordinator of epidemic control for the Far North region.

Key points

- The first cases were received on April 26, 2014 and managed in the following Cameroon health facilities KILA, RHUMSIKI of Mogodé health district, OUDDA integrated health center of Bourha health



Figure13: facilitator during a presentation



Figure14: facilitator during a presentation

district.

- These cases were reported to have come from Nigeria (Sena village of Mitchika Adamawa state) and 2 of them were confirmed at Centre Pasteur Garoua
- The first case in Cameroon was reported in Bourha health district on May 05, 2014.
- It further spread to Mokolo and Mogode in the first 4 weeks and later to 8 other health districts.
- Table 1 presents distribution of suspected cases reported in the Region and the various health districts from the beginning of the epidemic to August 15, 2014.

Table1: Distribution of the epidemic in the Health region According to the health district

District	Number of cases	Number of deaths
MOGODE	1082	49
BOURHA	123	6
MOKOLO	56	5
HINA	381	16
ROUA	4	1
KOZA	35	3
MINDIF	36	01
MAROUA RURAL		
MAROUA URBAIN	2	0
GOULFEY	3	0
KOUSSERI	3	0
TOTAL	1756	81 (4,6%)

NB: 26 cases and 2 deaths reported from MINAWAOU refugee camp



Figure15: facilitator during a presentation



Figure16: facilitator during a presentation

From districts investigations, the following factors were suspected to be responsible for the rapid spread of the epidemic:

- Low access to potable water
- Low rate of utilization of toilets
- Raining season
- High rate of migration
- late seeking of health care (cultures and believes were responsible for this)
- resistance of the population to change of behavior

However, an epidemiological investigation has not been conducted to confirm these factors.

Activities implemented to control the epidemic included

- Investigation of cases and outbreak confirmation. However, this was not done in all the Health districts
- Informing all partners and stakeholders involve in cholera control
- Activating regional and district committees for cholera control
- Technical support, training and drug supply to affected health districts
- Supply of rapid diagnostic tests, stool bottles and ORS to affected health Districts by M.A. SANTE

Training of health personnel on epidemiological surveillance by M.A. SANTE,

c) CHOLERA SURVEILLANCE

For this module, 4 presentations were made.

Key points

- Surveillance provides the health system with data that is needed to generate information used in detecting, reporting, investigating, planning and guiding interventions for cholera control.
- There exist criteria to put a disease into the surveillance



Figure17: facilitator during a presentation



Figure 18: participant contributing during discussion

system which are diseases of epidemic potential, the disease is one of the major causes of morbidity and mortality and the disease can be controlled.

- For a good surveillance system, there should be a standardized case definition, case report form, procedure of detecting, reporting and investigating cases as well as procedure for data analyzing and sharing of results.

In Cameroon, cases of cholera are reported by health facilities to the health district. The district reports to the regional delegation and the regional delegation reports to the ministry of Health (Department of Disease Control)

Points Discussed:

- *National guidelines on epidemiological surveillance.* In Cameroon there is a national guideline providing the list of disease under surveillance and the surveillance procedure of each of them. However, this guideline was not available at the level of the districts and the health facilities. Example none of the participants had ever seen or used this guide.
- *Case report form.*
 - The case reporting forms in the national guide line were not specific for each disease and lack necessary variable for a good case by case investigation and epidemiological investigation of outbreak.
 - Reporting forms in the guidelines were not available at the field level; because of this each health facility is reporting using an un-harmonized line listing. At the end of the seminar, a line listing form was drafted and discussed and proposed to the regional delegation for adoption while waiting for the national guidelines to be updated.
- *Data base:*
 - The data base at the districts was not harmonized



Figure 19: facilitator during a presentation



Figure20: participant contributing during discussion

with that of the regional delegation of public health. Also, none of the health facilities had a data base for cholera data.

- *Reporting circuit:*
 - There was a discussion on who should report a cholera case received from a health facility but coming from a different district.
 - The reporting of cases from private health facilities is not fluent.
 - How to financially transport stool samples to the laboratory

Recommendations:

- The national guidelines for disease surveillance and cholera case notification forms should be made available to all health districts. Line listings should be standardized and harmonized.
- The national guidelines should be updated on the following points: revising the reporting forms to be specific to diseases, to include adequate variable needed for investigation of outbreak and standardizing methods of data management.
- Actions should be taken to reinforced collaboration between private, military and public health facilities
For proper conservation of *V cholerae*, specimen should be transported in Cary-Blair medium or in container whose temperature is kept between 4 and 8°C if specimen can reach the laboratory in less than twenty four hours

d) CHOLERA OUTBREAK PREPAREDNESS

This module was explained in one presentation.

Key Messages:

- Cholera outbreak cannot be predicted
- Once the outbreak has occurred, the delay to mobilize



Figure21: facilitator during discussion



Figure22: facilitator during a presentation

resources, training health personnel before intervention can be very costly in terms of lives lost time and resources for adequate investigation.

- Outbreak preparedness should be done by districts in endemic region, neighboring district to the district in epidemic, districts that recently suffer from epidemic and neighboring district to one which recently suffer from the epidemic.
- Preparedness should be done at all levels of the health system (health facilities, health district, regional and central levels):
 - At each level, there should be a budgeted action plan that includes requirements in terms of supplies, equipments, human and financial resources
 - Guidelines for preparedness should be made available at each level
 - Regional and district levels should be supervised on the state of preparedness
 - At district level, resources should be made available before the expected outbreak period e.g drugs, ringer, ORS, health personnel etc
 - Health personnel should be trained on case definition and cholera management
 - Coordination of partners activities and resources should be done to avoid overlapping of activities and misused of resources
 - Surveillance activities should be reinforced to make sure that outbreak is detected in time.

Point Discussed:

- Budgeting difficulty
 - National budget is standardized for all districts per year and does not depend on district's action plan.



Figure23: facilitator during a presentation



Figure24: participant contributing during discussion

- The national guidelines for cholera outbreak preparedness are still to be developed.

Recommendation:

Guidelines on cholera outbreak preparedness should be developed and distributed to different levels of the health system

e) CHOLERA CASE MANAGEMENT

Two presentations were made for this module.

Key Messages:

- Dehydration is the major cause of death in cholera patients.
- Suspected cases should be rehydrated as soon as symptoms start
- Correct case management requires proper evaluation of the dehydration stage of the patient through clinical examinations and timely administration of ORS or ringer lactate solution through IV.
- Cholera case management is based on rehydration. However, the administration of antibiotics, identification and treatment of complication is needed in severely dehydrated patients.
- Case management also includes hygiene and sanitation, management of vomits, stools, corpses, and Health education of the patients and the relatives
- The following strategies can be used to improve the access to rehydration of patients:
 - Prepositioning of ORS at the community level
 - Rehydration using ORS through nasogastric route for severely dehydrated patients to whom it is difficult to take an IV line
 - Preparation of rehydration solution at the community level using local substances like water, table salt, lemon, sugar and rice.



Figure25: facilitator during discussion



Figure26: facilitator during discussion

Points Discussed:

- How to calculate the quantity of ORS adequate for rehydration of a patient
- Assessing patient's dehydration state and determining the corresponding rehydration procedure
- Formulae for the preparation of rehydration solutions in the community level
- Rehydration through nasogastric tubes
- Simple measures to improve case management in health facilities
- Due to care offered free of charge, some districts are receiving influx of patients from other districts and are not having sufficient resources to take care of them. What to do in this case to make sure that resources from the district producing the cases are sent to the caring centers



Figure27: participants during a case study

Recommendations:

- For patients whose veins are difficult to find, rehydration can be done through nasogastric tubes. Districts receiving cases out of their zone should inform the regional delegation

f) INTERVENTIONS FOR CHOLERA CONTROL

This module included 4 presentations.

Key Messages:

- Cholera control interventions are community focused and health system focused
- At the health system, interventions for cholera control include proper allocation of resources, training health personnel on case management, supervision, improving epidemiological



Figure28: participants during case study

surveillance, improving socio cultural financial and geographical accessibility of the community to health care and health facilities and proper organization of the referral system

- At the community level, the interventions include the following
 - improving access to potable water and access to latrines and toilets
 - health education on hand washing, Water treatment, Waste management and evacuation, How to deal with corpse, How to store water in the house, Food handling;

Vaccination has been recommended by the WHO as one of the key interventions to control cholera. Due to insufficient vaccine stock, there is a need to identify population that needs vaccine the most

Point Discussed:

- Framing messages to sensitize communities on cholera control
- How to choose the population that will benefit from this limited vaccine stock

Recommendations:

- Due to language barriers and low media coverage, community sensitization should be prioritized using community health workers, religious leaders, traditional leaders, school heads and local organization leaders.
- The sensitization messages should be adapted to the local context i.e. using local pictures and taking into consideration local cultures and believes.

The Far North is eligible for vaccination against cholera and should be prioritized for immunization campaign if organized in Cameroon



Figure29: participants during practical of data management



Figure30: post test session

g) DOVE PROJECT

There was one presentation for the module

Key Points:

- The DOVE project has as aim to
 - Provide research and evaluation support for better cholera control
 - Development of a rapid and practical toolkit to guide decisions on the use of OCV.
 - Characterize the epidemiology of cholera in Cameroon
 - Disseminate the results
- The Cameroon part of the DOVE project is entitled “sustainable cholera surveillance for Cameroon” and has as objectives to:
 - Assess sustainable cholera surveillance methods in resource limited countries.
 - Describe the epidemiology of cholera in the Far North Region of Cameroon
 - Identify predictors of cholera outbreak in Far North Cameroon
- The project started in 4 health districts of the Far North region since 2013 and has been extended to 4 health districts in Douala in August 2014.
- The project is assessing environmental and clinical (routine and intensive) methods of cholera epidemiological surveillance
- The activities being implemented include: obtaining ethical clearance, training of field workers and supervisors, implementation of the surveillance activities(patient recruitment, collecting and testing clinical and environmental samples, supervision, data management, reporting and results dissemination, supporting students theses)



Figure31:post test session



Figure32: daily evaluation meeting of facilitators

- Preliminary results from August, 2013 to January 31, 2014
 - 496 Participants have been Enrolled from 7 study sites
 - 471 environmental samples were collected from 44 environmental sites

Points Discussed:

- Could the available results be enough to decide on vaccinating the region against cholera?
- How possible is it to extend the project to involve other districts of the region since all the health district are judged to be vulnerable to cholera outbreak?

Recommendation:

- Extend the project to other health districts of the region
To make the results available as soon as it is possible so that decision maker can utilize them.

h) PRACTICAL SESSIONS

Key messages

- When a district is in epidemic, the response should concern the district itself, neighboring districts and the region as a whole.
- Practical activities during epidemic include: reinforcing epidemiological surveillance, improving access to efficient interventions of cholera control, properly allocating resources, sharing information.

X. OTHER ACTIVITIES

i) SEMINAR EVALUATION

Pretest and post test

The workshop has greatly improved the knowledge of the participant on cholera control. This is evident with the pretest and the post test that were administered to the participants at the beginning and at the end of the workshop respectively. The



Figure33: presentation of group work



Figure34: facilitators preparing for the next day

results of the pretest and the post-test were entered and analyzed with epi info software.

In the pretest, the mean total mark was 6/23 with 0% of the participants having a total mark equal to or more than the average. In the pretest, the majority of the insufficiency was observed in the identification of the *Vibrio cholerae* responsible for cholera outbreak, the composition of chlorine water to disinfect contaminated flow, rehydration plan, identification of cholera contamination sources, cholera outbreak preparedness plan, the existence of cholera vaccine. On the other hand, the mean mark for the post test was 10/23 with about 25.7% of the participants having a mark equal to or more than the average. It should be noted that the difference between the mean mark of the pretest and that of post test was significant statistically. The paired t test was about 4.23 and the p-value of 0.000. Also, the weak points in the pretest were greatly improved upon in the post test. Table 2 shows the results of the tests

Facilitators evaluation

It should be noted that all the trainees were supplied with an evaluation form to grade the quality of the presentation, the attitude of the trainers, mastery of the subject by the trainers, and to grade if the presentation was in line with their expectations and whether or not they have gained something from the presentation. In total, 22 presentations were made counting all the case studies and the 2 case studies. At the end of each day the training team during their evaluation meeting examined their performance for the day and decided on the resolutions to improve the weak points identified.

All these parameters ameliorated progressively from the first day to the last one.

Cholera outbreak Preparedness evaluation

In collaboration with the regional delegation, the level of preparedness of the health district and the health facilities of the region to cholera outbreak response were assessed.



Figure35: appreciation speech from Dr Ateudjieu toward the end of the seminar



Figure 36: family picture in front of the Savano Hotel hall

The questionnaire was administered to the available district medical officers and head of health facilities. To improve on representativeness, it was decided to extend the study to health district that were not represented during the seminar.

XI. CONCLUSION

The workshop was a success in terms of collaboration, organization, coverage of the health facilities in the region, and knowledge acquired by the participants. A greater impact is expected since the regional delegate instructed all participants to replicate this training at their respective health districts targeting all health facilities. The collaboration of key partners highly contributed to the success of the seminar. These included Johns Hopkins University, DOVE project, M.A. SANTE, regional delegation of public health for Far North region, participating health districts and health facilities, CRTV Far North, CANAL2

At the end of the workshop, the following recommendations were made

- The workshops should be organized in the region each year and earlier before the usual period of outbreak to ensure that new personnel are well armed and old ones refreshed to better fight against the outbreak.
- The national guide for disease surveillance and cholera case notification forms should be made available to all health districts. Line listings should be standardized and harmonized.



Figure37: coffee break



Figure37: coffee break

XII. ACKNOWLEDGMENT

- Professor D. Sack who accepted to support the workshop
- DOVE project for financial support of the project
- Dr Djao Rebecca for her commitments for the success of the workshop
- Dr Kaossiri for organizing the preliminary activities and the logistics of the workshop

XIII. ANNEX

- Copy of the invitation of participants
- Daily report of the seminar
- Agenda
- Attendance list