



MEILLEUR ACCÈS AUX SOINS DE SANTÉ

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INTRODUCTION

M.A. SANTE is a non-profit making organization which became official in 2006 with objective to contribute in improving access to health care in Cameroon through health research, training and implementation of health interventions. The headquarter is based in Yaoundé and the organization has three field offices in Kousseri, Mogode and Douala hosting two research laboratories from where field activities are organized and coordinated. (Figure 1).

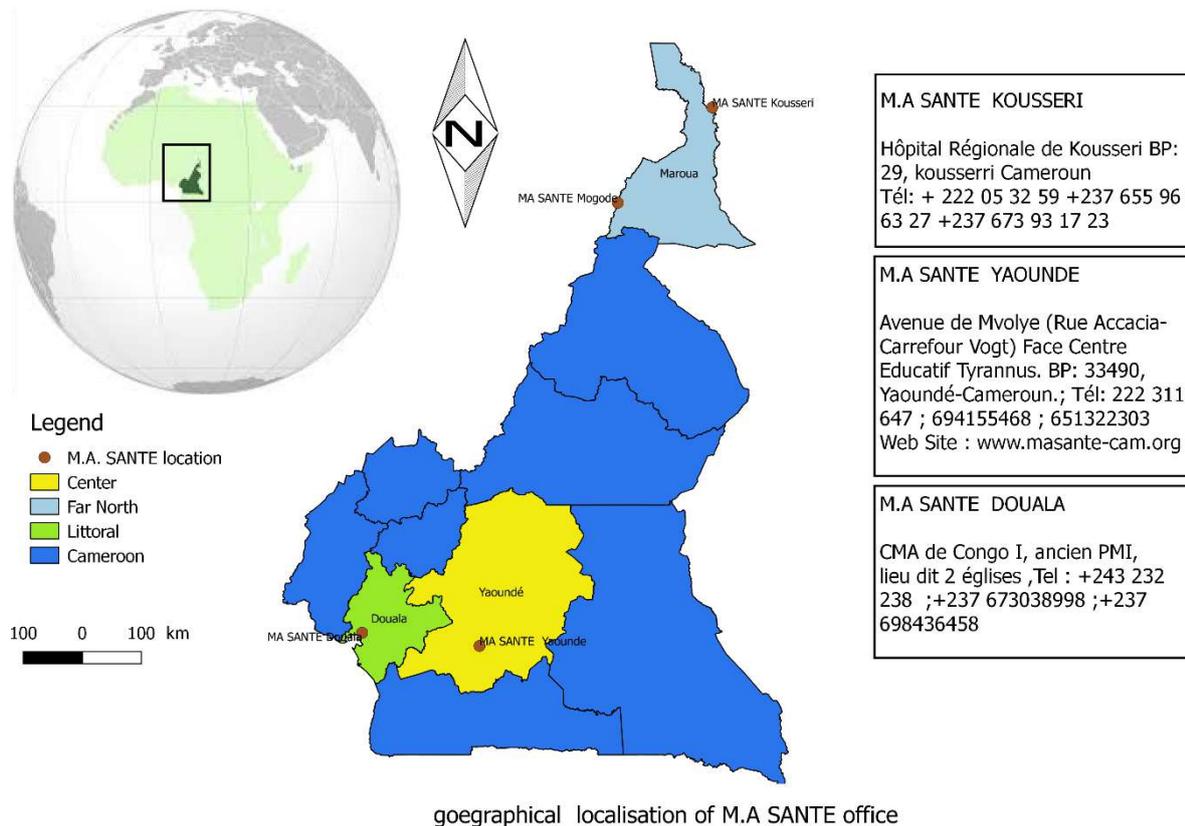


Figure 1: The Geographical Location of M.A. SANTE

The organization is made up of a board of directors and a multi-disciplinary team of 22 personnel constituting a technical team (MD, MPH, Epidemiologists, Clinical Biologists, Laboratory Technicians, Medical Microbiologist, Nurses, and Information Technicians), administrative and financial team (financial officers, secretary, administrators and logistician). So far, it has been collaborating with the Cameroon Ministry of Public Health since 2011 in five domains that is; Prevention of outbreaks, promotion of access to portable water, promotion of breastfeeding, prevention of chronic diseases and sensitization against street drugs. With regards to the afore mentioned domains, M.A. SANTE has carried out research and intervention projects in three regions of Cameroon covering 09 health districts. The organization is equally contributing in promoting research participants’ protection, pharmacovigilance and research results dissemination in Cameroon, training of health personnel on prevention of epidemic and endemic diseases, graduate students’ training on

research methods, scientific paper writing, data management, analysis and offers on-the-job training during internships.

M.A. SANTE has and is implementing projects supported by the Cameroon Ministry of Public Health at central and operational levels like: the Department of International Health, Bloomberg School of Public Health, Johns Hopkins University; The Center for Disease Control and Prevention through International Medical Corps and US National Institute of Health. It is also actively participating in national network and coordination meetings with local and international NGOs working on humanitarian activities. To facilitate its functioning, the organization is presently equipped with two four wheel drives. In line with its above outlined objectives, this report highlights activities carried out by M.A. SANTE in 2017 as represented in the following subheadings; research, interventions, promotion of access to research results, training and internship.

A. RESEARCH PROJECTS

In 2017, M.A. SANTE implemented three research projects subsequently elaborated as follows;

1. Delivering Oral Cholera Vaccine effectively (DOVE 2)
2. Dose Interval Study for Cameroon (DISC)
3. Epidemiology and Ecology of *Vibrio cholerae* in Africa-Cameroon (E2CHOLA)

Sustainable Cholera Surveillance for Cameroon (Cameroon chapter of DOVE (Delivering Oral Cholera Vaccine Effectively))

Cameroon in the last ten years has been affected by 04 Cholera outbreaks; 2009, 2010-2012, 2014 and 2015. The particularity of these outbreaks was a high morbidity and mortality which was partially due to limitations of the surveillance system that does not enable the health system to anticipate outbreaks. With the financial and technical support of the DOVE (Delivering Oral Cholera Vaccine Effectively) project hosted by the Department of International health of the Johns Hopkins University, Bloomberg School of Public Health in USA and the Cameroon Ministry of Public Health's collaboration, the Cameroon chapter of the DOVE project (Sustainable cholera surveillance for Cameroon) is been ongoing since 2013 with aim of identifying strategies to improve the efficiency and sustainability of cholera epidemiological surveillance.



Assessing Health facility-based consultation registers for diarrhea and cholera surveillance

In 2017, the following activities were conducted in 07 health districts in the Littoral and Far-North regions:

- Organization of routine health facility-based cholera and integrated diarrhea surveillance activities involving 21 health facilities, 23 trained focal points,
- Detection of cholera suspected cases using an improved (targeting all people aged 2 years and above) WHO cases definition, and online reporting using mobile data collection systems,
- Investigation all suspected diarrhea and cholera cases (collecting and testing stool samples with improved cholera dipstick and PCR from collected stool samples on filter papers),
- Supervision of epidemiological surveillance activities in all 21 health facilities,
- Insuring data management and sharing with involved partners,
- Organizing results dissemination of outcomes from activities.



Trained Nurse using different cups for collection of stool samples



Training of surveyors to carry out health facility-based intervention needs for diarrhea and cholera surveillance using smartphones

At the end of the project in October 2017, our team was able to demonstrate excellent detection, reporting and investigating rates of suspected cases of cholera and diarrhea consulted at our targeted health facilities, excellent completeness and timeliness of reported cases. It was as well shown that it was feasible and more efficient to explore the variety of diarrhea etiologies from stools samples collected on filter papers using PCR methods than current standard practices.

DISC (Effect of extended dose intervals on the immune response to oral cholera vaccine in Cameroon)

DISC is an 18-months study sponsored by DOVE (Delivering Oral Cholera Vaccine Effectively) project based at JHU and saw the light of day in September 2017 and is implemented by M.A. SANTE in collaboration with the Cameroon Ministry of Public Health and local health authorities in Soboum Sub divisional medical centre in Douala. It has as objective to assess the effect of extended dose intervals on the immune system's response to oral cholera vaccine in Cameroon and as specific to assess the equivalence of the immune system's response when the intervals of administration of the two doses of vaccine are extended (6 and 12 months) than the recommended 02 weeks interval. This extension is expected to allow a more efficient use of the OCV vaccine during outbreaks. With regards to DISC in 2017, the main activities of the study focused on:

- Developing the protocol,
- Developing data collection tools, informed consent tools and procedures as well as procedures for protocol implementation,
- obtaining administrative authorizations and participants' insurance,
- ordering vaccines, supplies and equipment ,
- Preparing the study site.

At the end of 2017, planned preparatory activities of the study were executed and in the coming year, it was planned to acquire needed vaccines supplies and equipment, recruit and train personnel and to start the implementation phase of project activities.



Drafting study SOPs and tools for the study with the Johns Hopkins University partners



Discussing project details with health facility staff



Discussing project details with administrative authorities for administrative authorization for project implementation

Epidemiology and Ecology of *Vibrio cholerae* in Africa- Cameroon (E2CHOLA)

E2CHOLA being a five year project funded by the US National Institute of Health through the Department of International Health, Bloomberg School of Public Health, Johns Hopkins University (JHU) started in April 2017. Its main objective is to describe the differing epidemiological and ecological patterns of cholera in Cameroon in order to understand the nature of cholera emergence and transmission in this area of Africa. M.A. SANTE in collaboration with JHU and the Cameroon Ministry of Public Health and its four health districts from the Littoral (Nylon and Deido) and Far North (Kousseri and Mada) health regions have been carrying out activities to ensure effective implementation of this project in targeted health districts. They put in to effect the following main activities:

- Applying and obtaining ethical and administrative approval,
- Acquiring needed supplies and equipment,
- Hiring and training of needed personnel,
- Developing data collection tools, study procedures and training modules for field staffs,
- Designing and testing the mobile data collection system,
- Starting the implementation phase of the project.

As at the moment of this report, the preparatory phase of the project was completed and the implementation phase successively started.



Designing and testing the mobile data collection and GIS systems



Training of field staff on project details and data collection procedures

B. INTERVENTION ACTIVITIES

Dating to this report period, M.A. SANTE has implemented the following intervention projects;

1. Reducing Morbidity and Mortality of Cholera in Cameroon (REMMOCC)
2. OCV (Oral Cholera Vaccine) Mogode

Reducing Morbidity and Mortality of Cholera in Cameroon (REMMOCC)

REMMOCC is implemented by M.A.SANTE with funding from the Center for Disease Control and Prevention (CDC) through the International Medical Corps (IMC) as part of the Global Health Security Agenda's (GHS) project. The first two phases were carried out from May 2016 to September 2017 in the Far North and Littoral regions of Cameroon and the third phase began in October, 2017 and is expected to last for



M.A. SANTE and IMC staff discussing project planning

3 years. The project is implemented in four health districts including two in the littoral region (Deido and Nyllon health districts) and two in the Far North region (Kouserri and Mada health districts) with objectives to improve household level of primary prevention of diarrhea by training the population at household levels on two water treatment methods (chlorination and solar disinfection), and providing them with necessary supplies, secondary prevention by conducting community-based case detection, reporting and referral of diarrhea and suspected cholera cases, providing needed supplies and training on how to use ORS to rehydrate cases of diarrhea. Also, water sources were mapped in targeted districts and visited on monthly bases to assess its functioning and risk of contamination. Community health volunteers were identified and trained on implementing field activities assigned to them. Prior to the implementation of planned activities, baseline surveys were conducted to identify households that were targeted by the project interventions. During the implementation of the project, each community volunteer was charged to visit each household and public water source of his/her targeted village twice per month to implement planned activities. A given percentage of them were supervised every couple of weeks by a team of trained supervisors.

As per this moment (January 1 to December 30, 2017), REMMOCC activities included 1,200 households being covered each month by community volunteers. During this period, 32000 tablets of Aquatabs were distributed for water treatment; 3450 cases of diarrhea were detected, 2255 treated with ORS, 294 public water sources were visited and data collected to plan future actions for diarrhea prevention.



Training of community health workers on household primary and community-based secondary diarrhea and cholera prevention methods.



Training of community health workers on household conservation of water methods for primary prevention of cholera.



Teaching community members the solar disinfection of water method for cholera prevention.

Monitoring and Evaluation of Oral Cholera Vaccine Campaign in the Mogode Health District (OCV Mogode), 2017

So far, the distribution and the propagation parameters of cholera outbreaks in Cameroon are still to be understood for better prevention of outbreaks. Limited access to water and health care, as well as behavior and beliefs of the affected populations are thought to be associated with these outbreaks. Cameroon Ministry of Public Health, after a risk assessment on cholera, selected Mogode health district to benefit in 2017 from a preventive vaccination campaign against cholera using the oral vaccine "Shanchol®". M.A. SANTE was in charge of the independent monitoring and evaluation of the campaign including the implementation of a one year health facility-based cholera surveillance in the district.

The project was implemented with the collaboration of the Ministry of Public Health, the regional delegation of public health of the Far North, the Mogode health district, 14 health facilities and funding from the DOVE project having as objective to provide timely, accurate and useful information that will guide decision-making to maximize the quality, coverage and impact of the OCV vaccination campaign in the Mogode health district, as well as future campaigns. Specifically the project:

- Evaluated the achievement preparatory and campaign activities,
- Evaluated the vaccine coverage of the campaign through two independent post-campaign surveys;
- Provided timely results of the campaign evaluation for quick decision-making,
- Conducted a community-based assessment of access to water and knowledge, attitudes and practices of people about cholera,
- Stimulated the detection and reporting of Post-Immunization Adversely Protected Events (AEFI),
- Contributed to the investigation of serious AEFIs,
- Set a hospital-based cholera surveillance system.

The hospital-based post-campaign surveillance of cholera targeted diarrheal patients consulting at the 14 health facilities of the District. In each health facility, a focal point was trained and handled surveillance equipment. Surveillance focused on;

- Active detection of diarrhea and cholera suspected cases,
- Stool sample collection and testing using the improved dipstick test,
- Stool sample collection on filter paper for further investigation.



Family picture during the training of surveyors for field supervisors



Assessing community knowledge on access to water and KAP of cholera



M.A. SANTE supervisor presenting results of the daily M&E activities during evening campaign coordination meeting sessions

- Contribute to investigation of cholera outbreaks and transmission of surveillance data using smartphones.

The results of these activities were shared during several workshops, coordination meetings, and conferences to the Ministry of Public Health and its partners.

C. PROMOTION OF ACCESS TO RESEARCH RESULTS

Here, M.A. SANTE carried out two main activities which included organization of a research conference (CaHReF 2016) for dissemination of results from health research in Cameroon and dissemination of results in peer reviewed journals.

CaHReF (Cameroon Health Research Forum)

CaHReF is a conference organized every couple of years by M.A. SANTE with the support of its key partners; the Cameroon Ministry of Public Health and the DOVE (**Delivering Oral Cholera Vaccine Effectively**) projects. The first edition was held in August 2016 at the Yaounde congress hall but extended its activities into 2017 during which key issues from CaHReF 2016 such as recommendations, drafting of conference report activities and publication of conference presented abstracts on the website were being discussed.



CaHReF organizing committee working sessions for post conference (CaHReF 2016) activities

Peer Reviewed Publications

In the year 2017, M.A. SANTE research team published three articles in reputable international journals.

1. **Yakum MN, Ateudjieu J, Guenou E, Walter EA**, Ram M, Debes AK, **Njimbina CA, Nafack SS**, Sack DA. Health seeking behaviour among suspected cases of cholera in Cameroonian health districts in Lake Chad basin. BMC Res Notes. 2017; 10:433. <https://doi.org/10.1186/s13104-017-2756-9>
2. **Walter E, Jerome A**, Marceline D, **Yakum MN**, Pierre W. Map of biomedical research in Cameroon; a documentary review of approved protocols from 1997 to 2012. Globalization and Health. 2017;13:85. <https://doi.org/10.1186/s12992-017-0312-y>
3. Njotang PN, **Yakum MN**, Ajong AB, Essi MJ, Akoh EW, Mesumbe NE, Ako S, Mbu ER. Determinants of modern contraceptive practice in Yaoundé-Cameroon: a community based cross sectional study. BMC Res Notes. 2017;10:219. <https://doi.org/10.1186/s13104-017-2543-7>.

D) STUDENTS INTERNSHIPS

During this report period, M.A. SANTE supported field phases of two Master's degree thesis (including one in clinical biology and one in Public Health) and one pre-employment internship. These thesis were:

1. Evaluation of the Diagnostic Sensitivity and Specificity of Two Types of Malaria Rapid Diagnostic Tests Used in Cameroon.

This project was carried out by MBONG Deborah KUDI for a Master's degree in Clinical Biology from the University of Dschang, Cameroon. It was conducted within the period February 28th to June 5th, 2017 at the Yaoundé University Teaching Hospital Parasitology laboratory. Its objective was to evaluate the sensitivity and specificity of two types of Malaria Rapid Diagnostic Tests (MRDTs) used in Cameroon. After answering a questionnaire, blood samples of all consulting patients who consented were collected and tested for malaria parasites using two most frequently used MRDTs in Cameroon. Thick and thin blood smears were simultaneously done on each of the tested samples. The sensitivity and specificity of each RDT was estimated using thick blood smear as gold standard. Out of 800 participants targeted, 783 consented to participate among which, 98 were diagnosed positive (12.52%) on microscopy, 141 positive for RDT HRP2 and 137 positive for RDT PAN+Pf at a rate of 18.01% and 17.50% respectively. The performances of HRP2 and PAN+Pf were as follows: HRP2, sensitivity 84.53%, specificity 91.21%, PPV 58.16%, NPV 97.61%; PAN+Pf sensitivity 84.62%, specificity 89.92%, PPV 56.20%, NPV 97.45%. The study concluded that, sensitivity and specificity of the two rapid diagnostic tests were limited to be used as the only diagnostic method for malaria. Hence, studies should be conducted to improve parameters of these tests.

2. Sex Education: Implementation and Adolescent Knowledge and Behavior in the South Cameroon Region

This was a Master of Science in Epidemiology and Public Health thesis by MAKALA Paulette Amélie from the University of Dschang, conducted from 1 April to 30 June 2017 in the southern region of Cameroon. The main aim of this study was to describe the distribution of taught course on sex education in secondary schools and the relationship with students' sexual behavior. It was a descriptive and analytical study in which data were collected using a face to face questionnaire (interview) administered to students aged 10-19 years selected by two levels systematic random sampling from 91 secondary schools from a total of 94 existing schools. In 46 (50.54%) of these schools, sex education was taught to adolescents. The research team interviewed 899 (94.5%) out of 951 selected students. Of those interviewed, 636 (71.5%) and 515 (57.9%) claimed received sex education from school lectures and videos shared by classmates respectively. Of the respondents, 588 (66.1%) were already sexually active, 309 (34.8%) were already active from when they were between the ages 10-14 years, 509 (57.3%) consented for their first sexual contact and among 79 (8.9%) who declared to have not consented to the first sexual contact, 48 (60.8%) were girls and 39 (39.2%) boys. Of the students surveyed, 435 (48.38%) said they had no idea about contraception and among 454 responding girls, 139 (30.6%) had experienced pregnancy.

3. Surveillance for Antibiotic Sensitivity of Diarrhea-Associated Bacteria (SSBD): Case of Regional Annex Hospital, Kousseri (HRAK)

This was a pre-employment internship conducted at M.A. SANTE laboratory for the Surveillance of Cholera and Diarrheal Diseases (LSCDD) based at Kousseri regional hospital. The intern was Beyala Landry, holder of a Master of Clinical Biology. He conducted a hospital-based surveillance and stool sample collection of all cases of diarrhea from which culture was done to identify bacteria known to be associated with gastroenteritis. A total of 275 patients with diarrhea were included from the period June 30, 2016 to May 31, 2017. Of these 275 patients, 254 (92.36%) were Cameroonians and 21 (7.64%) from neighboring Chad. The maximum number of cases of diarrhea was observed from the 43rd to 3rd epidemiological weeks which corresponds to the months of October to January. From collected stools samples, pathogenic bacteria were isolated from 41/97 (42.26%) patients. The bacteria, *E. coli* was the most represented with 16/32 (50%) patients; followed by *Salmonella* in 12/32 (37.5%) patients. An estimate of 31.58%, 63.15% and 68.42% of *Salmonella spp.* (which is the most pathogenic bacterium associated with diarrhea) were susceptible to ceftriaxone, gentamicin and ciprofloxacin respectively. These are antibiotics usually prescribed based on clinical assumption in case of suspicion of bacterial diarrhea in health. This work demonstrated the feasibility and how helpful it could be to implement antibiotic surveillance in all health facilities in remote areas where antibiotic prescription is still based on clinical assumptions.



Type of stool samples



Antibiotic susceptibility analysis



Antibiotic susceptibility test results

CONCLUSION

During the year 2017, M.A. SANTE succeeded in conducting research, research results dissemination, health intervention and training projects that are expected to contribute in improving Cameroon population's access to care. This was possible with the financial technical assistance of its partners; the collaboration with the Cameroon Ministry of Public Health, targeted regional delegations of public health and health districts and; the strong support of the M.A. SANTE board of directors and the wonderful engagement of staff teams involved in each project. The experience gained will be used to develop implemented projects in order to make them accessible to a wider population and to develop other projects expected to contribute to improving the organization's impact in improving populations' access to care.