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Global Health Security: A Complex and Challenging Issue

From integrated surveillance of skin Neglected Tropical Diseases (NTDs) to the prevention of epidemics and health crises in Cameroon

Cameroon makes big steps in preventing epidemics

By Alphonse Um Boock and Lorenz Indermühle

Cameroon is a country highly endemic for Neglected Tropical Diseases (NTDs), with more than 15 of the 21 NTDs listed by the WHO present in the country. This poses a major public health challenge. Moreover, emerging infectious phenomena are a critical issue both in Cameroon and globally. Addressing this justifies vigilante and well-structured actions that are adaptable and realistic, emphasizing the need for an evolving and flexible organizational framework. In this context, some partners such as FAIRMED support the country through projects and programs.



Skin condition screening campaign in a village by a team FAIRMED-OCEAC. Photo: © Alphonse Um Boock

But how can these individual projects and programs, as structured actions, contribute to preventing epidemics and health crises or to responding to them more adequately?

We aim to answer this question through the following points, which will be developed in this article.

- From a single disease program to integrated surveillance of skin NTDs.
- From integrated surveillance to surveillance and response to epidemics.
- Main challenges related to the implementation of surveillance
- Ways to improve epidemic prevention

II. From the single program disease to integrated surveillance of skin neglected tropical diseases

Cameroon's political commitment to eliminating leprosy resulted in the establishment of a national program which, with its partners like the WHO and FAIRMED, successfully achieved the elimination of the disease as a public health problem defined as a prevalence rate of less than one case per 10,000 inhabitants in 2002. To maintain these gains, the country abandoned the single disease program to a program including leprosy and Buruli ulcer.

Around 2015, an informal group of WHO experts met to launch discussions for an integrated fight against skin NTDs, being Leprosy, Buruli Ulcer, Leishmaniasis, Yaws. A symposium held subsequently proposed guidance that could help countries implement this new policy for the integrated control and management of cutaneous NTDs (Mitjà, O. et al. 2017). Following these recommendations, integrated approaches to surveillance and control of skin NTDs were tested in Benin, Ghana and Ivory Coast between 2017 and 2020 (Barogui, YT. et al. 2018; Koffi, A. P. et al., 2020; Adokiya, M.N. et al. 2015).



From 2020 and 2023, as part of a national program to fight skin NTDs (OCEAC project funded by the German government), Cameroon established an integrated skin NTD surveillance system in 20 health districts in order to demonstrate the effectiveness of an integrated identification and treatment approach of skin NTDs. This system was intended to integrate Leprosy, Buruli Ulcer, Yaws, Lymphatic filariasis, deep fungal infections and Scabies.

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III. From integrated surveillance to surveillance and response to epidemics

To address priority communicable diseases, an effectively functioning national surveillance system is crucial. Such a system is vital for public health decision-making, including identifying priorities, planning, resource mobilization and allocation, and predicting and early detecting epidemics. Within this framework, Cameroon developed the integrated surveillance model for 20 health districts covering a population of nearly 490'000 inhabitants as part of the above-mentioned project. The table below describes the decision-making process for the integrated skin NTD surveillance.

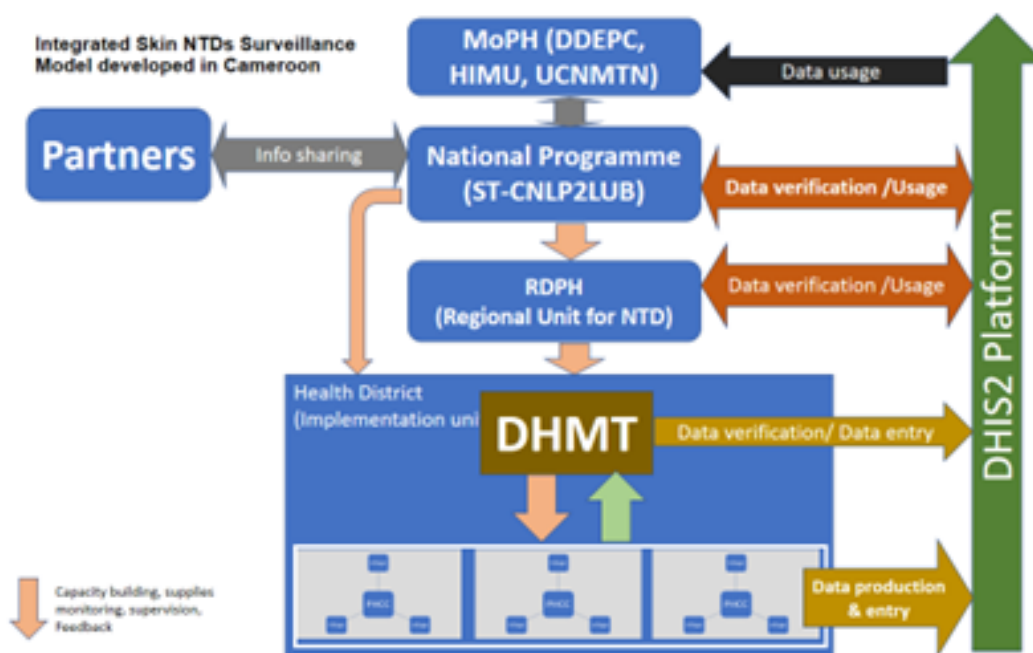


Figure 1: Integrated Skin NTDs Surveillance Model developed in Cameroon (see list of abbreviations at the end of the text)

The development process of this model was based on the following six steps:

1. Development of integrated data collection tools
2. Development of data collection sheets and integrated registers.
3. Development of an integrated training manual
4. Configuration of skin NTDs indicators in the DHIS2 (District Health Information System) platform
5. Training of actors: Health personnel (358) and the community (1740)
6. Establishment of a robust monitoring, evaluation and supervision system.

The main results in terms of reporting between 2020 and 2023 were:

Skin conditions	Total	Percentage (%)
Skin NTDs	4504	11
Other skin conditions	6653	16
Sytemic condition	500	1
Absence of skin lesion	29133	72
	40790	100

Table 1: Skin conditions notification

As shown in the graph above, the integrated system, thanks to its sensitivity, is capable of monitoring beyond neglected tropical skin diseases. This system was implemented during Covid 19 to monitor the disease. It also made it possible to detect a case of Monkey pox in one of the 20 health districts.

IV. Major challenges in monitoring the system

During the implementation of the surveillance system, several challenges were met. The most significant were the communication, the quality of the health system, the impact of climate change and the lack of sufficiently applying the One Health approach.

Effective community communication

Communication messages are often developed solely by health experts and disseminated in communities through various channels such as posters, radio messages, or market shouters. The traditional communities' perceptions are based on beliefs, traditions and rumors with regards to the skin NTDs and other health interventions like vaccination. And often, traditional communities did not easily accept or follow the “modern” forms of communication. The main limitation was that the communities did not identify with the content of the communication and therefore did not adhere to the planned behavioural change.

Poorly performing health systems

Weak health systems are a major barrier to effective disease surveillance. Often insufficient diagnostic capacities characterized by low availability of reagents caused by stock shortages were observed. In terms of access to care, very often, patients suffer from both geographic accessibility and case management. The disease thus finds time to spread. In addition, many district health systems lacked financial, human and other resources for supervision.

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Reaching the remote villages – communication with the communities. Photo: © FAIRMED

Insufficient consideration of the One Health approach

The increasing pressures at the human-animal-environment interface pose significant health risks. This situation increases the risk of zoonotic diseases and epidemics. This was often not sufficiently taken into consideration. One Health approach, which integrates human, animal, and environmental health, has not been sufficiently developed or implemented in the country's health strategies.

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V. Some directions for better prevention of epidemics

Based on the above-mentioned challenges and on the experience of the surveillance program in Cameroon, it is recommended to work on the following topics to guarantee better results in epidemic control, surveillance and finally the prevention of epidemics.

Establish effective communication

Effective communication requires a deep understanding of risky behaviors and practices within their specific environments. It is crucial to consider the influence of religious factors and to leverage the trust of traditional healers. Communication on risks has socio-anthropological implications. It is therefore important to engage communities and go beyond the simple broadcast of radio and television spots. It is of utmost importance to strengthen awareness of risks and community engagement and to build ownership. Due to the stigmatization of many diseases, specific work must be carried out to overcome denial and stigma. As an example, spaces, where former patients can speak and explain openly about diseases can be a very effective measure.

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Strengthening the performance and resilience of the health system

Improving health coverage in remote areas and implementing universal health coverage are essential for better surveillance and performance. This aspect is still too weak and requires more attention.

In addition, and to strengthen the district health systems, testing capacities need to be strengthened, medical equipment provided, and technical capacities of health workers and community workers strengthened. Putting more resources on the front lines to detect and treat diseases early, before they become more serious, saves lives, improves health outcomes, reduces health care costs and strengthens outbreak preparedness.

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Strengthen the prevention and spread of zoonoses among indigenous peoples

Zoonoses – animal born diseases in humans – are a mayor challenge, specifically when looking at the recent epicemics worldwide. One form of transmission is through bushmeat (wild game). Preventing such diseases involves working with and communicating to rural women who run locally owned restaurants and are often involved in the bushmeat trade. traders, commonly known as buyam-sellams, are a target group in the bushmeat value chain. They should be made aware of the health risks due to diseases linked to wildlife such as Ebola, Covid-19, avian flu, etc.

Enhance stakeholder engagement for the promotion of the One Health Concept:

Considering that to date, most epidemics are due to zoonoses, it is important to include environmental and veterinary aspects in the prevention of epidemics.

The One Health concept is part of Global Health Security, the objective is to make the world safer and more secure, by strengthening the capacities of the international community to predict, detect and respond to epidemics of infectious diseases.

It is therefore recommended, that the cooperation and communication among different government entities (Ministries of Health, Environment, Agriculture and others) is strengthened. And at district and community level, the relationship between different vectors of diseases and the spread needs to be better known and understood.



Reaching the remote villages. Photo: © FAIRMED

V. Conclusion

Thanks to the tireless efforts in the fight against neglected tropical diseases in Cameroon, the government and its partners, notably FAIRMED and the WHO, have developed mechanisms for prevention and response to epidemics through integrated surveillance of Neglected Tropical Diseases. This device was used as part of the response and surveillance of COVID-19.

Establishing effective and adapted communication from and with communities will support the needed understanding, appropriation and behavioural change to prevent epidemics. Strengthening the different components of the health system, through the provision of material, the training of staff and the access for remote regions will support the surveillance, fast information and possibility of early prevention of the spread of diseases. And the One Health approach will support the analysis of diseases and its vectors from different angles and will also suggest action taken not only from a human health perspective but also from veterinary or environmental points of view.

Improving all these weaknesses could make it possible to have a surveillance system ready to respond and prevent future health emergencies.

List of abbreviations

- COVID-19: Disease caused by the coronavirus SARS- Cov-2
- DHMT: District Health management Team
- DHIS2: Tool for collecting, validating, analyzing and presenting aggregated and patients-based statistical data, suitable for integrated health information management activities

- FAIRMED: Swiss NGO very active in fight against Neglected Tropical Diseases
- MoH: Ministry of Health
- NTD: Neglected Tropical Diseases
- OCEAC: Organisation de Coordination pour la lutte contre les Endemies en Afrique Central
- RDPH: Regional Division of Primary Health (in charge of NTDs)
- ST- CNLP2LUB: Secrétariat Technique du Programme National de Lutte contre la Lèpre, le Pian, la Leishmaniose et l'Ulcère de Buruli
- UCNMTN: Unité de Coordination Nationale des MTN
- WHO: World Health Organization

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