RESEARCH ARTICLE

# Control of antimicrobial resistance in Cameroon: Feasibility of implementing the National Action Plan

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**Abstract**

**Objectives:** Rising antimicrobial resistance is a major threat worldwide. WHO has developed a Global Action Plan and has urged all countries to develop and implement a National Action Plan. We analysed the implementation of the Cameroon National Action Plan by identifying the prioritised activities and assessing possible challenges which could limit implementation.

**Methods:** We conducted a review of national documents on the control of antimicrobial resistance, including regulations, policies and guidelines and assessed the health system structure. Publications and other supporting documents were obtained by a systematic literature search. We applied the policy analysis triangle framework and the theory of change to analyse the National Action Plan, actors involved and the process of implementation.

**Results:** The National Action Plan consisted of six strategic objectives, with the first five being a direct translation of the five pillars of the Global Action Plan. The related activities were to be implemented using a phased approach with allocated targets for each year. Several gaps were identified. There was no timeline of activities set per year, the chronology of activities was not consistent, there were no activities or objectives to ensure the sustainability of the National Action Plan like creating awareness on antimicrobial resistance and the indicators for impact evaluation were not included. Among the actors involved, the Ministry of Public Health had the highest interest in the implementation as the lead stakeholder to oversee the overall implementation. However, there was no clear source of funding, and stakeholders at the primary level of the various sectors responsible for implementation were not clearly defined.

**Conclusion:** Despite adequate multisectoral collaboration within the prioritised activities relevant to Cameroon, more is needed for effective implementation of the National Action Plan. The timeline of the different activities, as well as the involvement of key stakeholders at the primary level, needs to be improved. The government's overall commitment to healthcare should be increased and implementation of an action plan should commence at the district or regional level, while challenges in mobilising the necessary funds need to be overcome.

**KEYWORDS**
antimicrobial resistance, feasibility, National Action Plan, policy implementation analysis

## INTRODUCTION

The impact of antimicrobial resistance has placed it among one of the top public health problems worldwide. Antimicrobial resistance is challenging the prevention and treatment of common bacterial infections [1]. An increase in the global infectious disease burden due to antimicrobial resistance puts a greater strain on health systems, making it critical for every country, regardless of income level, to be actively involved in the fight against antimicrobial resistance [2]. In reaction to the rapidly rising levels of antimicrobial resistance, WHO developed a Global Action Plan to serve as a guide for all countries to develop a context-specific National Action Plan to combat antimicrobial resistance. The five pillars of this Global Action Plan include: (1) improving awareness and understanding of antimicrobial resistance; (2) strengthening knowledge through surveillance and research; (3) reducing the incidence of infection; (4) optimising the use of antimicrobial agents and (5) developing the economic case for sustainable investment that takes account of the needs of all countries, as well as increasing investment in new medicines, diagnostic tools, vaccines and other interventions. This action plan also highlights the need for a 'one health' approach involving collaboration among numerous sectors and actors, including human and veterinary medicine, agriculture, finance, environment and well-informed consumers [3].

The emergence, persistence and transmission of antimicrobial resistance in low-income countries have been as a result of several factors such as the high burden of microbial infections, insufficient monitoring of antimicrobial resistance patterns, indiscriminate use of antibiotics, nonjudicious prescription by healthcare providers, poor access to diagnostics, unavailability of second-line antibiotics, presence of substandard and/or counterfeit antibiotics, inadequate infection prevention and control strategies, globalisation, socio-economic factors and fragile health systems [4]. A status report for the African region in 2017 showed that only two of 47 countries (4.3%) have a national antimicrobial resistance plan in place, while only seven countries (14.9%) have extensive national infection prevention and control policies [5], with Cameroon not among them. As of 31 December 2019 and according to the WHO Regional Office for Africa, 33 African countries have antimicrobial resistance National Action Plans, 16 politically endorsed at government level, 13 technically endorsed and still going through countries legislative processes and the rest were being developed [6]. The lack of reliable data in most parts of Africa, including Cameroon, challenges local and regional guidelines and highlights the need for sustainable efforts by stakeholders towards coordination and harmonisation of competencies to assess and monitor antimicrobial resistance emergence. A recent systematic review in Cameroon revealed high levels of resistance to commonly used antimicrobials in humans, animals and the environment [7].

The study assesses the activities within the National Action Plan and how they are prioritised, the different stakeholders and their specific roles in each of the activities, the feasibility of implementing and evaluating these activities as well as the strength and weaknesses of the National Action Plan when compared to other established National Action Plans in neighbouring countries.

## Study setting and scope

Cameroon is located in the central African region at the southwest juncture of the Gulf of Guinea along the Atlantic ocean [8]. Its geographical location and the porous borders with neighbouring countries make it a territory open to unchecked migration and trade, enabling disease transmission and circulation of substandard medications within the region. The population in 2019 was estimated at 25.6 million inhabitants, with an annual population growth rate of 2.5%, and over 40% of the population are still living below the poverty line [9]. Thus, it is challenging for the population to adequately access services such as education, healthcare, energy, food, drinking water and security [10].

The Cameroon health system is pyramidal, and it is classified into three levels (central, intermediate and peripheral), with each level characterised by administrative and healthcare structures [11]. The centralised administrative structure, which is overseen by the Ministry of Public Health, provides strategic and technical support from the central through the intermediary, and cumulating at the peripheral level. Formal and informal user fees contribute to the financing of Cameroon's health sector and account for approximately 70%–80% of facility operational budgets. Only 5% of the annual national GDP is allocated to health [3]. The majority of the peripheral health facilities barely have adequately functioning laboratories, which are characterised by frequent stock-out of reagents and unavailability of competent laboratory technicians [12]. A national drug commission responsible for examining and approval of pharmaceutical products available in health facilities and pharmacies exists. Still, its structure is centralised with little or no effective supervision, training and regulation done at the peripheral level [11].

## Control of antimicrobial resistance

Very few hospitals have appropriate AMR surveillance structures, hospital IPC committees and antibiotic stewardship committees, whose mission is to ensure the proper use of antimicrobials. An assessment in 2017 identified only 13 public health laboratories, 1 animal health laboratory and 4 research laboratories in the entire country which could detect and report cases of antimicrobial resistance. Despite efforts to improve antimicrobial resistance detection capabilities as well as better case management, there are still significant obstacles hampering the overall institutional responses in the fight against antimicrobial resistance [13].

# METHODS

## Data sources

The documents used included published information obtained by using a Boolean online search strategy from official websites and unpublished information obtained from official sources as well as through personal contacts with some of the implementing organs. The search was focused on national documents on the control of antimicrobial resistance, including regulations, policies and guidelines; as well as assessed the health system structure and other literature specifically related to the study objectives.

Publications and other supporting documents were obtained by the search of keywords and phrases from PubMed, Cochrane and Google Scholar. Key phrases used in the search included 'implementing a National Action Plan for control antimicrobial resistance and its associated challenges', 'disease control in Cameroon' and 'feasibility of implementing a disease control intervention in Cameroon or Africa'.

## Method of analysis

To analyse the feasibility of implementing the National Action Plan to control antimicrobial resistance in Cameroon and to highlight the strength and weaknesses which could be encountered, we applied the policy analysis triangle and the theory of change. The policy analysis triangle emphasises the central role of each actor as well as highlights the links between the different actors [14]. The actors or stakeholders were further analysed using the schemer's model [15] to identify their roles, interest and influence on the implementation of the action plan. The theory of change outlines how different components of the National Action Plan are expected to interact, and also illustrated the possible change pathways expected in the implementation of some of the prioritised activities or strategies. This enables the identification of risks that may impact the feasibility of implementation.

# RESULTS

## Content of the National Action Plan

The government's strategies to control antimicrobial resistance were incorporated in a National Action Plan adopted in 2018, where specific activities for each objective are outlined. The plan was structured in a top-down manner, where solutions are generated and problems sorted based on the solutions they can offer. The prioritised activities for each objective, as illustrated in the National Action Plan are summarised in Table 1.

## Process of implementation of the National Action Plan

The implementation of the key activities would begin with the improvement of the institutional frameworks by strengthening the administrative and organisational structures, taking into account the national context to make the committees functional. However, most of the strategies of implementation seemed to be a direct translation of the Global Action Plan and were not fine-tuned enough to suit the national context, which already had a pre-existing political crisis with rising insecurity in the Anglophone regions before the adoption of the National Action Plan.

The National Action Plan was scheduled to be implemented within 3 years, starting from 2018 and ending in 2020 [16]. There was a limited commitment by the government to this time frame as the implementation of the NAP was not specifically included in the health budget for the years 2018 and 2019 [12]. Strengthening quality management systems of laboratories per international standards, which was among the prioritised activities, had already commenced since 2012, but so far only five laboratories in Cameroon have been validated [3].

Despite specific targets allocated for each year aimed at facilitating monitoring and evaluation, there was no specific time frame or schedule of activities indicated within each year. A midterm evaluation and a final evaluation on the implementation of the National Action Plan were planned, but there were no specified indicators mentioned to be evaluated at these time points.

## Change pathways for implementation of the National Action Plan for antimicrobial resistance

Using the theory of change, pathways or preconditions required were mapped out. This facilitated the identification of some possible risks as well as missing pathways, which reduced the feasibility of effectively implementing prioritised activities as well as attainment of National Action Plan objectives. To improve the awareness and understanding of antimicrobial resistance through effective communication, education and training, the prioritised actions were mass sensitisation of the population and education as well as training of the actors involved. Following the illustration of the changed pathways, the development and dissemination of communication plans to key stakeholders in the organisation of mass sensitisation was scheduled for 2019; meanwhile, the mass sensitisation was supposed to begin already in 2018. Capacity building was allocated for only 100 professionals from all sectors but without specifying if these professionals are at the central or primary level [16] (Figure 1).

## Actors involved in the implementation of the National Action Plan

A multisectoral approach was present to implement the various strategies with the involvement of stakeholders across different sectors. The frequently involved stakeholders included representatives from the Ministry of

**TABLE 1** Strategic objectives and prioritised activities of the National Action Plan

| Strategic objective | Prioritised actions | Activities |
| --- | --- | --- |
| Improve awareness and understanding of antimicrobial resistance through effective communication, education and training | Ensure mass sensitisation | • Conduct two basic studies to assess the level of knowledge, attitudes and practices (KAP studies) on AMR in different social and professional groups by the end of 2019 |
| | | • Develop and disseminate a communication plan for the fight against AMR to key players between 2019 and 2020 |
| | | • Train 500 communicators to fight AMR (between 2018 and 2019) |
| | | • Organise two awareness campaigns for the fight against AMR at the national and communal levels |
| | | • Organise a national sensitisation week annually on the awareness of AMR and the use of antibiotics |
| | Education and training of key actors | • To develop and validate AMR training modules for higher-level learners (specified for 2019) |
| | | • Building the capacity of 100 professionals to fight AMR by the end of 2020 |
| Strengthen knowledge and evidence through surveillance and research | Setting up a surveillance system for AMR | • Develop a national framework document for AMR surveillance by the end of 2018 |
| | | • Develop a priority list of antimicrobial-resistant germs in human, animal and plant health and then establish a list of laboratories designated to conduct priority detection of resistant germs at all levels by the end of 2018 |
| | | • Update and disseminate Standardized Operational Procedures (SOP) in each sector that have integrated the AMR control aspects for the surveillance of infections caused by antimicrobial-resistant pathogens (by 2019) |
| | | • Strengthen the technical platform of the (MINSANTE), Ministry of Livestock, Fisheries and Animal Industries (MINEPIA), Ministry of Agriculture and Rural Development (MINADER) laboratories for AMR detection and antimicrobial residue analysis between 2018 and 2019 |
| | | • Track compliance with guidelines for the use of antimicrobials are administered in animals and plants (2018 and 2019) |
| | | • Map the laboratories responsible for detecting and monitoring AMR in human and animal health (by the end of 2018) |
| | Improvement of laboratory capacities in the detention of resistant pathogens | • To establish and make operational a multi-sector network of laboratories to monitor AMR by the end of 2020 |
| | | • To organise training, mentoring and training supervision for 50 laboratory staff in antimicrobial diagnostics and sensitivity testing. This was scheduled to take place between 2019 and 2020 |
| | | • To strengthen 14 regional laboratories, and the laboratory network systems for the proper monitoring of AMR and the fight against hospital-acquired infections by providing refrigerators, incubators, autoclaves, parasitology automatons and culture preparation reagents |
| | | • Strengthen the laboratory quality management systems of 10 regional laboratories in accordance with international standards by 2019 |
| | Research and development | • Develop a national multi-sector AMR research programme which was to be completed by 2020 |
| | | • Conduct at least five priority research projects based on the national multi-sector AMR research programme |
| | | • Organise a multi-sector scientific symposium on antimicrobial resistance by 2020 |
| | | • Set up a national biobank for the conservation of germ samples/strains by the end of 2019 |

(Continues)

**T A B L E  1**    (Continued)

| Strategic objective | Prioritised actions | Activities |
| --- | --- | --- |
| Reducing the incidence of infections by implementing effective sanitation, hygiene and infection prevention measures | Set up IPC interventions | • Develop, validate and disseminate a multi-sector plan of IPC, as well as a plan for the fight against hospital-acquired infections and the promotion of hygiene in hospitals by the end of 2020 |
| | | • Strengthen the capabilities of 540 sanitation staff, zootechnical structures and breeders in the domain of IPC between 2018 and 2020 |
| | | • Develop and disseminate IPC guidelines for operational players in the sectors involved between 2018 and 2019 |
| | Setting up a waste management system | • Strengthen waste treatment in 10 district hospitals and 10 veterinary centres by the end of 2019 |
| | | • Strengthen the application of waste management regulations in all sectors and within the decentralised territorial communities, in hospitals, zootechnical centres between 2019 and 2020 |
| Optimise the use of antimicrobials in human, animal and plant health | Optimising the use of antimicrobials in human, animal and plant health | • Update and popularise antimicrobial management guidelines (approval, import, quality control, distribution, conservation, prescribing, dispensation, use and destruction of antimicrobial agents), including aspects of AMR control |
| | Improvement in the practices of preservation, prescribing, dispensation and use of antimicrobial agents in different sectors | • To develop and popularise guidelines for good diagnostic practices, antimicrobial prescribing and the use of plant protection products using the 'one health' approach by 2020 |
| | | • Strengthening the system of pharmacovigilance in human and animal health by 2020 |
| Develop economic arguments for sustainable investment and the production of new medicines, diagnostic tools, vaccines and other interventions for the fight against AMR | Provide sustainability of interventions in the fight of AMR in order to ensure continuity of the actions against AMR | • Support the dissemination of innovative ideas on investing in new medicines, reagents, equipment and vaccines |
| | | • Develop an integrated funding strategy for the fight against AMR with an 'one health' approach |
| | | • Advocate with governments, the private sector and technical and financial partners (TFP) on investment requirements for the implementation of the National Action Plan to combat AMR |
| | | • Strengthen existing partnerships and create new private–public partnerships to encourage exchange, research and development of new antimicrobial drugs and diagnostic tools |
| Improve the management process, governance in the administrations involved in the fight against AMR through strengthening standardisation, monitoring, evaluation, regulation and accountability | Ensuring optimal managerial of the process | • Ensure the operationalisation of the national plan to control AMR at the decentralised level and in each sector |
| | | • Track AMR control activities in each sector |
| | | • Ensure midterm evaluation and final evaluation of NAP |
| | Ensuring transparency and accountability by the different implementation actors | • Ensure multisectoral coordination and the functioning of steering and coordination bodies for the fight against AMR |
| | | • Ensure transparency and accountability in the implementation of the national plan to control AMR |

Public Health, Ministry of Livestock, Fisheries and Animal Industries, Ministry of Agriculture and Rural Development, Ministry of Environment, Nature Protection and Sustainable Development, Ministry of Higher Education, Ministry of Scientific Research and Innovation, Civil Society Organizations, Technical and Financial Partners and Decentralized Territorial Communities. Analysis of the interest and influence of the various stakeholders on the implementation of the NAP was done with the aid of a report from one of the stakeholder's meetings in 2019 [17] (Table 2).

Using Schmeer's guideline [9], the different stakeholders and their roles in the implementation of the NAP were identified. The Ministry of Public Health was the central actor designated to oversee the programme implementation. It had

higher interest and influence because it is the most developed sector among the main sectors or Ministries involved in the fight against antimicrobial resistance, as it has pre-existing disease control programmes, human resources as well as hospitals and laboratories present in all districts, even though not sufficient with regards to the health needs of the population [11]. Most of the other stakeholders still have largely underdeveloped structures, while more activities were planned to target the human health sector. The technical and financial partners required to provide support in strengthening the capacity of laboratories were reported to be very few and stakeholders at the peripheral level, such as doctors, nurses, laboratory technicians, pharmacists, local administrative authorities and politicians, were not involved.
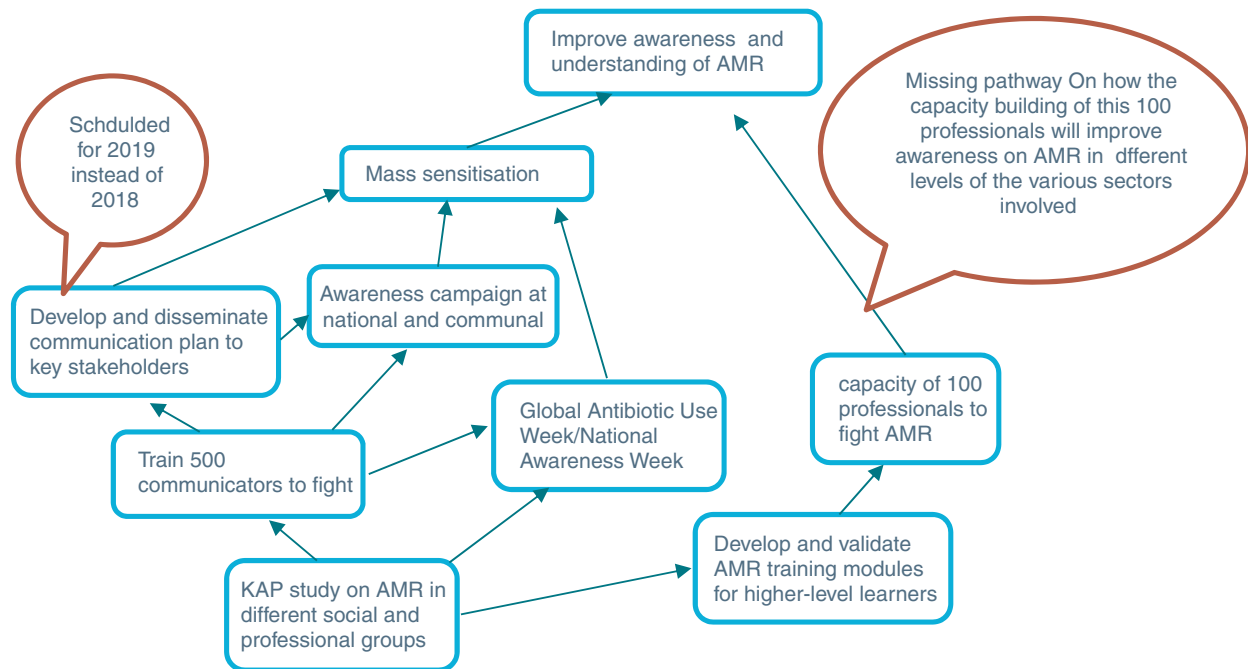
**FIGURE 1** Change pathway for improving awareness and understanding of antimicrobial resistance

**TABLE 2** Interest and Influence analysis of Stakeholders

| Stakeholder | Key roles | Interest | Influence | Impact |
|---|---|---|---|---|
| MINSANTE | Oversees the implementation of the NAP and ensures multisectoral collaboration | High | Medium | High |
| MINEPIA | Provides technical support in facilitating the operationalisation of different activities involved in the implementation of the various strategies in the NAP | Medium | Medium | High |
| MINEPDED | To ensure the operationalisation of the NAP to control AMR at the decentralised level | Low | Medium | Medium |
| MINRESI | Develop a national multi-sector AMR research programme | Medium | High | Medium |
| MINADER | To ensure the operationalisation of the NAP to control AMR at the decentralised level | Medium | Medium | Medium |
| MINESUP | Partake in developing a national multi-sector AMR research programme and also validating AMR training modules for higher-level learners | Medium | Medium | Medium |
| MINCOM | Support in awareness campaigns for the fight against AMR at the national and communal levels | Medium | Medium | Medium |
| TFP | NGO and INGO providing technical and financial support for the implementation of the different strategies within the NAP | High | Low | High |
| DTC | Participate in ensuring community awareness, capacity building of professionals and AMR surveillance | Medium | High | High |
| CSO | Participate in strengthening AMR surveillance, community awareness, waste management systems and research | Medium | Medium | Medium |

Camparisons of the Actions Plans of Cameroon, Nigeria and Ghana (Table 3)

## DISCUSSION

This study explored the progress in implementing the National Action Plan for the control of AMR in Cameroon, with specific reference to the prioritised activities within the National Action Plan, the different stakeholders involved and their roles, as well as analysing how the activities were to be implemented and also explore strengths and weaknesses of the National Action Plan.

In addition to the recommended five pillars of the WHO Global Action Plan [3], there is an extra pillar outlined in the Cameroon National Action Plan which focuses on improvement in the management process as well as governance in the administrations [16]. This was in contrast with findings from National Action Plans of Nigeria and Ghana (which have a similar context and implementation challenges), as their strategies were restricted to the five pillars of the Global Action Plan [17,18]. However, this additional strategy is very relevant

**TABLE 3** Differences and similarities between the action plans of Cameron, Nigeria and Ghana

| | Cameroon | Nigeria | Ghana |
|---|---|---|---|
| **Differences** | | | |
| 1 | In addition to the five strategic objectives of the GAP, there is an additional objective to improve the management process, governance in the administrations involved in the fight against AMR through strengthening standardisation, monitoring/assessment, regulation and accountability | Addresses precisely the five strategic objectives of the GAP | Addresses precisely the five strategic objectives of the GAP |
| 2 | There was no clearly outlined timeline of activities within each year | There was no clearly outlined timeline of activities within each year | Timeline of activities for each of the objectives was clearly defined |
| 3 | There were no impact indicators identified for short-term and long-term evaluations for the implementation of the NAP | Short- and long-term evaluations were to be conducted but there was absence of some impact indicators and target | Impact evaluation was planned to be done after 5 years, and specific goals, as well as indicators, were stated |
| 4 | The NAP was planned to be implemented within 3 years from 2018 to 2020 with no clear plan to ensure sustainability | Scheduled to be implemented from 2017 to 2021 with a sustainability plan indicated | To be implemented over a 5-year period (2017–2021) with regular assessments on the progress of implementation |
| 5 | The funding required for each of the activities was stated but there were no sources of funding mentioned | The source of funding was clearly indicated for each of the activities | The source of funding was clearly indicated for each of the activities |
| 7 | Sub-activities or changed pathways for the strategic objectives were absent | Several sub-activities or change pathways for some of the objectives were mentioned | Several sub-activities or change pathways for most of the objectives were indicated |
| 8 | The strategic objective involving IPC and control did not include activities on promoting food safety and the use of vaccines in human and animals | The strategic objective of IPC included promoting food safety and the use of vaccines in humans and animals as part of their actions | The strategic objective of IPC included promoting food safety and the use of vaccines in humans and animals as part of their actions |
| **Similarities** | | | |
| 1 | Each of the NAPs was developed following a situational analysis that was focused on: the structures that are considered preconditions to fight antimicrobial resistance, a comprehensive national plan, laboratory capacity to carry out surveillance for resistant pathogens, access to safe, effective antimicrobials, control of the misuse of these medications, awareness and understanding among the general public as well as effective infection prevention and control programmes | | |
| 2 | Multisectoral collaboration following the 'one health' concept was well elaborated with the involvement of the human, animal and environmental health sectors | | |
| 3 | The respective NAPs were developed based on the model recommended in the GAP, focused on improving awareness and understanding of antimicrobial resistance, strengthening knowledge through surveillance and research, reducing the incidence of infection, optimising the use of antimicrobial agents and lastly, by ensuring sustainable investment in countering antimicrobial resistance | | |
| 4 | Each of the action plans from the various countries had identified sets of activities for each strategy and specific indicators for monitoring the implementation | | |
| 5 | The implementation of the NAP in each of the countries was to commence nationally with the involvement of all the different levels (primary, secondary and tertiary) of the various sectors | | |

based on the poorly developed governance structures at the district level, as only 10 of 189 districts in Cameroon are fully functional and for the majority of services, including monitoring, regulations are still very centralised [11].

The absence of some key activities was noted in the strategic objectives, such as improving awareness and understanding of antimicrobial resistance through effective communication, education and training. There were no activities planned to ensure the sustainability of the strategy like the adequate engagement of civil society organisations or media as partners in continuous education on the responsible use of antimicrobials. This activity was included in the Ghana National Action Plan [17]. This communication could target individuals not enrolled in schools or formal educational programmes on antimicrobial resistance, supporting a decrease in the high rates of self-medication as well as incorrect use of antimicrobials [7].

Among the 14 regional laboratories targeted for strengthening, there is only one animal laboratory, which is the only one existing in the entire country [13], and no plan on extending the activities or involving actors at the local or district level that are more accessible to the population despite barely having functional veterinary facilities and laboratories [12,19]. Effective implementation of national antimicrobial resistance control strategies requires the involvement of stakeholders at the peripheral level (district health

office, health facility managers and healthcare providers) with their roles clearly defined in the National Action Plan. Stakeholders at the district or primary level of the health pyramid will have more influence on the operationalisation of prioritised interventions [20]. Furthermore, less than 8% of funds allocated to healthcare have been used for improving the capacity of facilities with medical and laboratory equipment and furniture over the past years [21]. Thus, the programme will be highly reliant on support from technical and financial partners who were not identified yet.

The activities within the National Action Plan were to be implemented using a phased approach following allocated targets per year, starting from 2018 and ending in 2020 [16]. The allocation of specific targets per activity per year is similar as in the National Action Plans for Ghana and Nigeria [17,18], which will facilitate monitoring and evaluation of the programme as well as ensure accountability.

However, the 3 years' duration allocated for implementation of all the activities might be short considering that some regions have not been very accessible over the past 4 years due to an increasing level of insecurities following the ongoing political crisis [22]. Furthermore, there still has not been any specific funding allocated to the control of antimicrobial resistance in the respective Ministries involved over the past years [13]. This has made it very difficult to effectively implement, evaluate and sustain the specified activities in the National Action Plan within the allocated timeframe. The evaluation of the National Action Plan is aimed at assessing the implementation in terms of effectiveness, efficiency, impact and viability and in relevance to the sectoral health strategy [16]. A midterm evaluation was to provide an update on the progress of physical and financial achievements, identify difficulties and make recommendations to improve implementation performance and a final evaluation aimed to assess the results of the actions or activities carried out in relation to the objectives of the National Action Plan. However, there were no specified indicators to be evaluated at the end of each term but rather targets were set for each year.

The action plan is fully integrated within the concept of 'One Health' as it is coordinated by the Ministry of Public Health, together with seven other ministries. Given that antimicrobial resistance is not only harmful to human health but also threatens animal health and food safety [23], whole chain management of antimicrobial agents and AMR is the only way to control. Considering that it is a 3-year programme, financial investment should be put in place on time to ensure that its actions can be performed rapidly as this will determine the success or failure of the Plan.

The main limitation of this study was the fact that, as a document review, it did not provide data on the perceptions of the key stakeholders to be involved in the implementation. Understanding the perceptions of key stakeholders on the outlined strategies and activities for the control antimicrobial resistance will provide more evidence on the feasibility of implementing the proposed National Action Plan. However, the review still provided extensive information with regards to the National Action Plan as well as the organisation and functioning of the Cameroon health system, which was essential for the identification of various stakeholders and their roles and also prioritised activities for control of antimicrobial resistance.

## CONCLUSION

In May 2018, the National Action Plan for the control of antimicrobial resistance in Cameroon was adopted with the implementation to span from 2018 to 2020. However, it is already 2021, and almost no progress has been made on the implementation of this policy. This analysis of the feasibility of implementing the National Action Plan revealed adequate multisectoral collaboration following a 'one health' approach, and prioritised activities indicated being relevant to the Cameroon context. However, it also showed some flaws, such as limited involvement of key actors at the local level, the chronology of activities not consistent as key activities were absent and the time frame allocated seemingly inadequate based on the listed activities. Furthermore insufficient availability of required resources and a fragile political situation in the country due to the ongoing political crisis hampered progress. The goal of the National Action Plan was defined in general but did not elaborate on how to measure policy impact on health outcomes, or consider potential barriers for implementation. There was no dedicated source of financing, which could be one of the main obstacles in the implementation of the policy. The sustainability, equity, effectiveness and efficiency of the action plan were insufficiently addressed. Experiences from similar African countries might provide useful input to mitigate some of the observed shortcomings.

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