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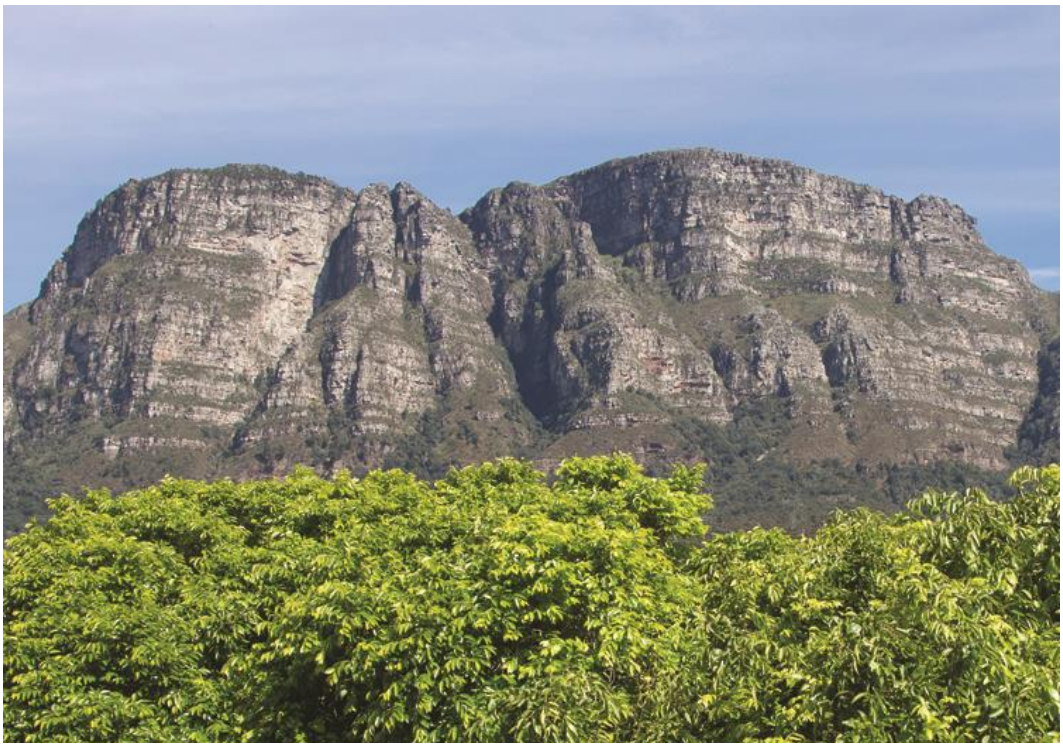

Report

Operationalizing the Signature Initiative to Mitigate Deliberate Biological Threats in Africa and strengthening the Africa CDC's regional health-security Capabilities

Thursday 3 – Saturday 5 November 2022 | WP3060

In association with:

Global Partnership against WMD

African Union

AFRICA CDC Centres for Disease Control and Prevention Safeguarding Africa's Health

Canada

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Executive summary of topics discussed:

- Representatives of the Africa Centres for Disease Control and Prevention (Africa CDC) identified areas of biosecurity and biosafety in need of further support including:
  - multi-pathogen surveillance capabilities that require increased staffing for mapping of biological events;
  - establishment and/or strengthening of partnerships with international organisations that have epidemic intelligence capabilities; and
  - development of deliberate biological event response mechanisms.
- The necessity of a collaborative approach, based on One Health principles, in order to optimise resource allocation for surveillance and response mechanisms.
- Development of sustainable laboratories is essential for expedient sample processing.
- Facilitating the training of biosecurity experts by establishing four regional Centres of Excellence.
- The importance of continuous engagement with political and technical experts to facilitate ratification, implementation, and compliance with the Biological and Toxin Weapons Convention (BTWC) in African nations.
- The importance of allocating resources to the development of vaccines and therapeutics for emerging and priority pathogens.
- The importance of building biosecurity networks comprised of technical experts and political stakeholders, including a Women's Network to promote gender mainstreaming in biosecurity.
- The need to build an investment case by developing and implementing messaging emphasizing that biosecurity and biosafety are beneficial for the public.
- The importance of identifying biosecurity champions who can develop sustainable communication channels and partnerships with parliamentarians in order to advocate for political support of biosafety and biosecurity initiatives.

Introduction

1. Wilton Park hosted the event: Operationalizing the Signature Initiative to mitigate deliberate biological threats in Africa and strengthening the Africa Centres for Disease Control and Prevention (CDC) regional health-security capabilities from Thursday, 3 November to Saturday, 5 November 2022. Attendance was by invitation only and was held under the Wilton Park Protocol, whereby all discussions are off the record.

2. Technical and political experts from both the African and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership / GP) communities were invited to discuss methodologies for strengthening Africa CDC capability to mitigate biosecurity threats and hazards under the purview of the Signature Initiative to Mitigate Biological Threats in Africa (SIMBA), and to strengthen the Africa CDC's Regional Coordinating Centres (RCCs) capabilities to deliver strategic programmes on a local level.

3. The purpose of this event was to encourage biosecurity and related investments by governments and funding agencies in support of the Signature Initiative, and thereby increasing engagement and compliance with the BTWC. It was stressed that investments do not necessarily have to be financial in nature, but can include expertise. Through expert panels and roundtable discussions, opportunities to find solutions to challenges in bio-surveillance, the development of rapid response mechanisms, and sustainable resourcing were explored.

4. As was outlined at the virtual launch of the Signature Initiative on biosecurity and pandemic preparedness, which was co-hosted by South Africa in November 2021, an objective was to advocate for the establishment of Regional Centres of Excellence which would run training and certification programmes for biosafety and biosecurity experts for each region. The first such centre in Africa is being developed in South Africa, an important advance.

5. This is an important achievement, but significant work remains for the Signature Initiative. The WHO's Joint External Evaluation (JEE) report has identified important gaps in biosafety and biosecurity across Africa, where most countries have relatively limited capacities in these areas, which were highlighted by the COVID-19 pandemic and which suggest that African states remain unprepared to meet future epidemic and pandemic threats. Moreover, global trends such as the development of new technologies in life sciences, and the rise of a biotechnological social movement in which genetic engineering and other technologies are becoming increasingly widely available, complicate and amplify this challenge.

6. It is therefore important to identify and focus on specific capabilities that will bolster the capacity of African states to prevent, detect and respond to all manner of biological threats. Some discrete examples are how to improve the coordination of bio-surveillance and research programmes; growing regional capacity for new and improved vaccines, therapeutics and antivirals, along with the growth of biobanks; equitable sharing of benefit from the research; resourcing of efficient and sustainable laboratory infrastructure; strengthening of oversight and regulatory mechanism in laboratories especially high containment laboratories.

7. More generally, what is required is increased collaboration, greater effort, and more funding. The Signature Initiative's unique selling point and added value are in leveraging the joint weight of a collective. Six Principles for Strengthening Biological Security in Africa were agreed in November 2021, and further statements and declarations are not required at this stage: now we need to action the plans. A key requirement will be strong and sustained African leadership; the GP is here to support but Africa will have to drive, and generate Africa-specific solutions.

Surveillance

8. Africa's recurrent infectious disease burden necessitates strong surveillance mechanisms to detect and understand the continent's disease outbreaks and trends – whether natural, accidental or deliberate in origin. Facilitation of digital data sharing, risk mapping and monitoring, awareness of priority diseases, multi-pathogen capability, and early warning systems are key elements of a robust surveillance system.

9. An artificial intelligence-based biosecurity risk-monitoring tool, capable of performing functions such as generation of risk calendars and risk maps, and the ability to perform analysis of strengths and weaknesses of existing operations, would prove useful in optimizing resource distribution.

10. Africa CDC currently has systems for microbial resistance surveillance, cross border surveillance and event-based surveillance (EBS). Indicator-based surveillance (IBS) is coordinated by the WHO. Africa CDC has developed a continental surveillance system, applying the One Health approach and an EBS community of practice where data are shared, verified, and harmonised. As continental surveillance capacities grow, it will be important to address the barriers to data sharing between regions.

11. Integrated Disease Surveillance and Response systems have been implemented in most African countries. Data standardisation, harmonisation, and community-based surveillance capabilities for EBS and IBS are needed to improve their efficacy.

12. Of African nations, three have harmonised data and seven have demonstrated integration of data between animal, human and environmental surveillance. In every region save central Africa, at least one nation has integrated surveillance. There are also event management systems, where an incidence is tracked from multiple sources, including open sources. Weekly EBS reports are used to categorise risks and inform responses where necessary; however, plant-related events are not recorded – an oversight that needs to be corrected.

13. Rapid threat detection, followed by the coordination and dissemination of clear, comprehensive information within and between African government, healthcare, and biosecurity officials, is paramount in the formulation and enaction of timely, effective countermeasures.

14. The WHO's Berlin-based Pandemic and Epidemic Hub, established in 2021, provides public health intelligence via its Epidemic Intelligence from Open Sources initiative. Surveillance data sharing between continental and international organisations such as the WHO, Africa CDC, and the World Organization for Animal Health (WOAH), is key to maximizing available resources and expertise.

15. The ability to detect potentially deliberate biological events requires specialised technology and expertise. It is therefore important to establish partnerships with initiatives of surveillance and epidemic intelligence capacity, such as the ASEAN BioDiaspora Virtual Centre, BlueDot, and INTERPOL's BioTracker; the latter being dedicated specifically to bioterrorism threats. There is a call for the Global Partnership to support Africa CDC in making a baseline assessment of the endemic risk of deliberate biological events before requesting further technical and financial support related to this matter.

16. Areas of development for surveillance include:

    - Utilizing laboratory capacity, including genomic surveillance capacity;
    - Strengthening Africa CDC's EBS;
    - Building capacity for epidemic intelligence in Africa;
    - Aggregating surveillance data using the One Health approach, including data from private laboratories;

- Sharing of research data and findings during outbreaks; and
- Developing cybersecurity and genomic data security capacities in Africa.

17. According to one analysis, an estimated US$3 billion in upfront fixed costs, which include the development of laboratories and training skilled personnel, is needed to establish continent wide surveillance network. Annual operating costs for such a network would be approximately US$700m. To meet this need, funding channels need to be pursued.

18. Co-investors will be sought for SIMBA-related projects being implemented by Africa CDC and the WHO Hub for Pandemic and Epidemic Intelligence to strengthen health-security in the region. Canada remains committed to support initiatives under the Signature Initiative and has expressed interest in supporting a new biothreat reduction project in the North African and Sahel regions. Partnerships with the United Kingdom Health Security Agency (UKHSA) are in place to strengthen human disease surveillance and diagnostics in Morocco and Nigeria. The US-based non-profit Nuclear Threat Initiative (NTI) has expressed willingness to assist with development of performance metrics for SIMBA pillars 3 (surveillance and epidemic intelligence) and 4 (non-proliferation).

19. The World Organisation for Animal Health (WOAH) has expressed interest in collaborating on emergency preparedness capacity building. The United Kingdom's Animal and Plant Health Agency, together with UKHSA, are developing technical capacity building projects for animal disease surveillance. The UK will fund a workshop to strengthen WOAH's African network, which will include participants from the WOAH's laboratory twinning projects in Africa.

Emergency response and medical countermeasures

20. Capabilities and strategies to mitigate potentially dangerous biological events must be developed to account for a wide range of threats. Africa CDC should develop deliberate event response mechanisms at the national, regional, and continental levels, while on-the-ground response should be delegated to the relevant RCCs. Such a centralised response coordination mechanism is necessary for optimal resource distribution.

21. Africa CDC has identified a pressing need for recruitment and training of emergency response personnel throughout the continent. A universal standard operating procedure should be developed to ensure best practice regardless of region.

22. Logistical factors that need to be addressed when responding to biological events include:

    - eliminating visa requirements for cross border emergency responders and providing support for emergency responders;
    - promoting and strengthening cross border communication;
    - supporting digitised platforms that are One Health oriented; and
    - removing barriers to data sharing, including through appropriate legislation and regulation.

23. A survey of official responses to the SARS-CoV-2 pandemic's presence in Africa should be conducted to identify the most and least successful biological threat mitigation strategies to inform current and future response to biological threats on both the small and large scale.

24. Strategic reserves of vaccines and therapeutics for the prevention and treatment of diseases posed by high-consequence pathogens (to be identified through expert epidemiologic analysis) should be established, with need-based prioritisation of distribution throughout the continent.

25. Determining which pathogens should be prioritised must be informed by (retrospective) surveillance data points over the last 5 years and the evolving threat landscape. The pathogen prioritisation process should be iterative and responsive to the needs of each region.

26. A strategy for increasing countermeasures, including baseline vaccines to address unknown biological threats of deliberate origin is ongoing research and development. While domestic research and manufacture of preventative and therapeutic agents is essential to long-term African health security, the risk of accidental or deliberate misuse is thereby made possible; stringent laboratory oversight and cybersecurity protocol are fundamental elements of biosecurity which should not be subject to compromise.

27. It was proposed that the GP could support Africa CDC to map sites that handle high consequence pathogens and that conduct gain-of-function studies with potential for dual-use. Contextual factors that increase the potential for biological weapons to be produced, such as areas in conflict and/or with terrorist activities and areas with increased unsecured high-consequence pathogens, need to be included in the mapping.

Capacity building

28. Developing biological threat response capacity requires increasing both the number and the skillset of response personnel. Training programmes in areas of epidemiology and biosecurity should be made available in a variety of languages, and the participation of women encouraged and incentivised. Existing initiatives which may serve as useful models or adjuncts for this endeavour include the US CDC's Field Epidemiology and Laboratory Training Program, along with its Public Health Informatics Fellowship Program

29. To advance a new generation of African biosecurity experts, development of specialised educational pathways is necessary. One such Canadian-sponsored programme is underway at Kenya's Masinde Muliro University of Science and Technology. Collaboration with Sandia National Laboratories may also provide an opportunity to this end. These programmes should aim to produce individuals capable of training others in core biosafety and biosecurity competencies.

30. With support from Global Affairs Canada and USDOD's Defense Threat Reduction Agency, the Regional Diagnostic Demonstration Centre at the National Institute for Communicable Disease in South Africa, will be the first of five proposed Africa CDC Regional Centres of Excellence and will serve as a biosafety and biosecurity training facility. As the remaining four Centres of Excellence are developed, it will be important to define their degree of involvement in African health and security emergency response plans.

31. Technical support and sharing of best practices are needed for the development of an autonomous African laboratory system and optimal function of existing laboratories. To this end, WOAH, with support from Global Affairs Canada, is launching a Grand Challenge for Sustainable Laboratories. Discussions are underway regarding involvement of the Botswana National Veterinary Laboratory in the Grand Challenge process with the aim to increase its ability to detect and respond to high-consequence agents and toxins.

One Health

32. “One Health” describes a holistic approach to infectious disease prevention, detection, and response via understanding disease relationships between humans, non-human animals, and their natural environments. In Africa, focus is mainly on human and non-human animal health, but there is a compelling need for increased focus on plant health and security, including prevention of agricultural crime (agro-crime) and agro-terrorism. The UK’s IBSP plans to engage with the International Plant Protection Convention to address security vulnerabilities in Africa’s plant/crop production systems.

33. The holistic approach embodied in One Health clearly has a significant interface with biosecurity and the biological threat reduction objectives of the Global Partnership. The Signature Initiative focuses primarily on threat reduction, and while the One Health approach is essential for the prevention of those bio-threats, there are many aspects of the One Health agenda that are beyond the scope of the Signature Initiative. In this context, enhanced communication is required at all levels — between a country’s disparate ministries, between countries, and between international organisations. Establishment of efficient multilateral channels to facilitate ongoing communication will be essential.

34. To generate a more wholistic and effective threat reduction mechanism, it is important to involve social scientists to understand the social drivers and impact of biological events on society. To the same end, it will also be important to understand the perceptions of societies of biological threats and events.

Biological and Toxin Weapons Convention

35. 47 African countries are currently parties to the BTWC. Two countries, Egypt, and Somalia are signatories and 5 countries (i.e. Chad, Comoros, Eritrea, Djibouti and South Sudan) have neither signed nor ratified the Convention. Only 62% of African States Party to the BTWC (29/47) have a national focal point.

36. Compliance with the BTWC is dependent on the adoption of supportive legislation and completion of Confidence Building Measures (CBMs). A limited number of African states have adopted BTWC-related legislation, and 22 African State Parties have submitted CBMs at least once. Biothreat risk-mapping mechanisms can also be used for CBMs. The stronger a nation’s biological surveillance system, the greater the ability to submit CBMs. State Parties should be encouraged to pay their assessed contributions to the Convention.

37. The following are some of the barriers to the ratification and implementation of the BTWC:

    - Circumstances can vary from state to state, i.e., political support for the objectives of the Convention can be different, and States can be at different levels of progress towards universalisation.
    - There can be different levels of awareness and resources together with a lack of capacity and concerns over financial and reporting obligations.
    - External factors, such as natural disasters, political upheaval, and elections, can delay and halt processes.

38. Despite these challenges, there are opportunities for universalising the BTWC. Continuous engagement at both technical and political levels is important. The benefits of ratifying the BTWC can be promoted, for example the benefits of assistance under Article X. Advocacy and engagement can leverage complementary initiatives, at international, continental, and regional levels. The COVID-19 pandemic highlights the importance of biosecurity and the mitigation of biothreats.

39. Familiarisation and training on the BTWC efforts are also important, as evidenced by activities undertaken by the Kenyan focal point, the National Commission for Science, Technology and Innovation. The United Nations Office for Disarmament Affairs is also working with Kenya to develop a Biosafety and Biosecurity undergraduate degree.

40. In addition to the efforts of the BTWC Implementation Support Unit (ISU), there are projects supported by the GP and undertaken by United Nations Security Council Resolution (UNSCR) 1540 Committee, the European Union (EU), VERTIC and other States Parties that can help States with BTWC implementation and compliance. The GP is called upon to continue supporting the BTWC ISU efforts on universalisation, implementation, and compliance to the Convention in Africa. Global Affairs Canada's Weapons Threat Reduction Program, UK MOD IBSP and the US are providing financial support to these efforts and supports additional efforts to solicit contributions from other GP partners for SI projects, including the project implemented by the ISU. Global Affairs Canada reiterated its offer to support states in a position to contribute funding to such projects via the "piggybacking mechanism" where contributors provide funding to Canada for onward transmission to and management of with the implementing partner.

Awareness and advocacy

41. Awareness and advocacy efforts must take place on the both the local and international political levels through targeted and transparent public dialogue about biosecurity and its relevance to both the public and individual stakeholders.

42. It is important to develop and leverage existing networks involving biosafety and biosecurity mandates. Collaboration between public health institutions and technical experts, such as researchers and military health officials, to raise awareness of issues and advocate for changes is important. Lessons can be drawn from the way by which climate experts collectively advocated for climate-change related issues to appear on policy agendas. It was agreed that the 9th BTWC Review Conference would provide an opportunity for experts to reflect on past and ongoing biosecurity initiatives, particularly those that have arisen during the COVID-19 pandemic, and to promote new ideas.

43. There is a need for increased female participation in African and global biosecurity. A women's network on biosecurity could provide a platform for progressing and increasing female participation at both technical and decision-making levels. Discussions will continue to identify and develop initiatives in this area, and to elaborate what such a network could entail. Efforts at the BTWC level are being made through the Women in Biosecurity program to promote female participation. SI Working Group 4 supports and will work with the BTWC on the gender and disarmament program.

44. Demonstrating to policymakers that biosecurity is of national and continental security relevance and a long-term, economically viable societal investment may be achieved through provision of clear data making plain the need for, and opportunities in, health security; a process that will require input from economists to present the financial case for investment in biosecurity. An increase in the number of publications in scientific journals demonstrating evidence for the case of strengthened biosecurity will provide useful data in engagement with policymakers.

45. To promote international political commitment, inclusion in policy agendas, and investment in the cause of increased African and global biosecurity, it will be crucial to establish communication links with governments. This can be done through identifying and engaging with biosecurity champions amongst both intercontinental policymakers and those at the African level, such as members of the Community Parliament of the Regional Economic Communities, and of the Pan-African Parliament. Speakers of parliaments and ministerial level clusters of relevant technical areas will also prove important allies in the cause of biosecurity, especially in the mitigation of biological weaponry proliferation. Due to inevitable fluctuations of political power and partisan agendas in government, a strong, sustained, and non-partisan engagement strategy will be necessary for the long-term prioritization of these issues.
46. The UK Ministry of Defence is committed to taking the initiative for the GP and African States in developing a 'working with decision-makers/ministers guide' to support officials in seeking decision-maker / political buy-in in their respective states. This initiative could be undertaken by SI Working Group 2.
47. Establishing best practices for biosecurity governance and finance and developing metrics for assessing parliamentary performance in the advancement of health security would be helpful tools.
48. At the G7 level, it will be important to engage with the 2023 Presidency, Japan, to ensure that the SIMBA remains a top priority. A GP mission to Addis Ababa will be planned in early 2023 to engage senior officials at the Africa CDC, African Union and other partners: the aim is to identify leaders for change who can generate increased political support and financial investments towards SIMBA.
49. Identifying donors and African leaders who are willing to dedicate a budget to biosecurity would be a significant advancement towards the expansion of financial support. Funding should be sought from both public and private institutions. Canada is to produce a GP newsletter edition dedicated to the SI's purpose, scope, accomplishments, and opportunities to raise awareness of the SI's efforts and to solicit contributions from GP members.
50. It will be necessary to work on building the relationship between leadership in the public and private health care sectors, and beyond that in education and resilience for business. The pandemic offers an opportunity to work on this: its impact on business and the private sector has generated a capacity to change there.
51. The case study of climate change advocacy can prove instructive here in understanding how to make the business and investment case for private sector involvement. Advocates of private sector action on climate change successfully monetised the consequences of not dealing with the risks, helping (for example) to change the view of renewable energy sources as high-risk. Businesses have realised the threat and its scope, and this can inform interest and changed behaviour.
52. Standardised metrics should be used to determine level of engagement and overall impact of stakeholders and implemented initiatives.
53. Dependent on need and demonstrable progress, the UK Ministry of Defence, through the IBSP, will potentially fund another SI event in Africa in 2023.

Lizeka Tandwa
Wilton Park | December 2022

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Acronyms

Africa CDC: Africa Centres for Disease Control and Prevention

BTWC: Biological and Toxin Weapons Convention

CBM: Confidence Building Measure

EBS: Event-based surveillance

EU: European Union

GP: Global Partnership

IBS: Indicator-based surveillance

IBSP: International Biological Security Programme

IFBA: International Federation of Biosafety Associations

ISU: Implementation Support Unit

NTI: Nuclear Threat Initiative (Bio)

RCC: Regional Collaborating Centres

SI: Signature Initiative

SIMBA: Signature Initiative to Mitigate Bio-threats in Africa

UK: United Kingdom

UKHSA: United Kingdom Health Security Agency

WHO: World Health Organisation

WOAH: World Organisation for Animal Health