Good Practice

Cross-border collaboration and capacity-building for improved health emergency response planning in Southern Africa

Joslyn Walker[1], Marieta Liebenberg[1], James Michael Burnett[1], Tonicah Maphanga[1], Judith King[1]

[1] Health Systems Trust

https://doi.org/10.61473/001c.81023

South African Health Review

Vol. 25, 2022

Background

Many countries were ill prepared for the COVID-19 pandemic and the sudden border closures introduced to stem contagion. To address this planning and response gap, Health Systems Trust and the US Centers for Disease Control and Prevention's Division of Global Migration and Quarantine jointly implemented a capacity-building project among eight Southern African countries during 2022. The intention was to strengthen collaboration among the countries in implementing public health emergency response strategies. Shared analysis of cross-border movement patterns, and building neighbouring countries' capacity to identify priority areas for such response planning, strengthened relationships for communicating health risks and events.

Approach

This chapter presents findings from project participants' perspectives on whether and how the project supported improved regional collaboration for emergency responses to public health events, and their perceptions of how the project strengthened their border health systems.

Country delegates were convened in multi-sectoral regional and sub-regional meetings and workshops to facilitate cross-border public health information-sharing and co-ordination, and to align surveillance for emergency preparedness and response. They drafted procedures to: strengthen cross-border and multi-sectoral communication; prioritise points of entry for cross-border co-ordination; map population movement patterns; and identify national and regional border health priorities. Training focused on points of entry to enhance planning for future disease outbreaks by introducing the Population Connectivity Across Borders Toolkit for analysing population movement data to guide the design of public health interventions.

Conclusions

Collaboration with global and regional institutions strengthened the countries' ability to comply with International Health Regulations in responding to communicable disease outbreaks.

The outcomes indicate that sustained engagement, refinement of standard operating procedures, and multilateral agreements that ensure balancing of country priorities with global health requirements, can be achieved. Continued analysis of and reflection on country work plans are needed to assess similarities and differences in priority identification, which will guide future training and development of regional strategies to build stronger border health systems.

Introduction

Population mobility influences the spread of communicable diseases, which challenges public health system capacity in neighbouring countries.[1] Advancement of regional, bilateral, and multilateral frameworks and agreements developed by partners at all border system levels can shift policy towards improved alignment of cross-border public health strategies for a coherent response approach.[2,3]

The US Centers for Disease Control and Prevention (CDC) Global Border Health Team (GBHT) works with countries to strengthen their ability to prevent, detect, and respond to public health events at points of entry (PoEs) and among mobile populations, and to enhance

cross-border information-sharing for improved surveillance and strategy alignment.

Jointly implemented by the CDC GBHT and Health Systems Trust (HST), the Border Health Project supported in-country stakeholders from multi-disciplinary departments in eight Southern African Development Community (SADC) Member States (namely Botswana, Eswatini, Lesotho, Mozambique, Namibia, South Africa, Zambia and Zimbabwe) to identify priority areas for border health-system strengthening. These priorities informed the project objectives and activities (as detailed in later sections), and were addressed through capacity-building workshops and regional meetings.

The project approach accounted for the multi-sectoral nature of border health management and the evolution of policies to address public health emergencies by partnering with the World Health Organization (WHO), the East, Central, and Southern Africa Health Community (ECSA-HC), the Africa Centers for Disease Control and Prevention (Africa CDC), and the International Organization for Migration (IOM).

PoEs are strategic spaces for intervention to manage the spread of communicable diseases. They form the nexus of mobility and health where population movement creates joint priority areas for neighbouring countries. While the project's technical aspects were prompted by the countries' response to the COVID-19 pandemic, the project concept was aimed at building sustainability into each country's emergency response and border health monitoring, and epidemiological surveillance of communicable diseases. This was done by describing and mapping mobility patterns and developing procedures for the detection, isolation, management and referral of ill travellers at PoEs.

A range of key international and regional border health strategies and protocols were cited by the participating countries during project implementation. Foremost were the Africa CDC Strategy (2017-2021),[4] the WHO International Health Regulations (IHR) of 2005,[5] the 1999 SADC Protocol on Health,[6] and the One Health approach to addressing zoonotic diseases in countries[7,8] jointly formulated by the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (WOAH)[1], and the WHO.

Also listed were guidelines for cross-border collaboration and transportation[6,9] and public health capacity-building at ground crossings,[10,11] and reports with recommendations on priority communicable diseases such as anthrax,[7,12,13] cholera,[14-16] COVID-19,[6,17,18] HIV,[7,19] malaria,[6,20,21] plague,[22,23] polio,[24-26] rabies,[7] tuberculosis,[6,27] and viral haemorrhagic fevers.[7] Reviews on special population groups, i.e. military personnel[28] and prisoners,[29] were also mentioned.

The chapter presents the findings of semi-structured interviews and an online survey conducted with Border Health Project participants to determine whether and how the project supported improvements in regional collaboration in preparing for and refining responses to limit cross-border disease spread. Also explored were the countries' perceptions of how their border health systems were strengthened through the project, and whether the trainings were cascaded to stakeholders at their key PoEs.

Methods

The methodologies applied are presented in chronological order to reflect how the project unfolded. Common tools were used throughout the process, from site assessments and audit tools, Geographic Information Systems (GIS), Population Connectivity Across Borders (PopCAB), and these were implemented within an approach that incorporated the WHO and SADC guidelines, the Integrated Disease Surveillance and Response (IDSR) framework, and individual country monitoring tools.

Country need assessments

In-country introductory meetings and PoE site visits were held to assess and collate capacity-building needs; this process informed the development of training plans and workshop content. The assessments were populated by the participating countries, which identified their priorities in driving the capacity-building project agenda.

Regional consultative meetings

Regional meetings held during 2022 supported the eight countries in identifying border health priorities, aligning strategies to strengthen regional cross-border public health information-sharing, and improving co-ordinated public health surveillance, communication, preparedness and response.

The specific objectives of the first regional meeting, held in Zimbabwe from 20 to 24 June 2022, were to:

- facilitate peer-to-peer sharing of lessons learnt from recent national and regional public health responses (including COVID-19 and polio outbreaks) and identify best practices for responding to public health events with cross-border implications;
- develop procedures to strengthen cross-border public health information-sharing and co-ordination at national and local levels in support of operationalising existing frameworks; and
- characterise regional cross-border movement dynamics towards identifying shared priority areas for enhanced cross-border co-ordination.

1 Founded as Office International des Epizooties (OIE)

Table 1. Perceived border health best practices and challenges per country

Country	Perceived best practice	Perceived challenge
Botswana	Points of entry linked to nearest facilities for assessing ill travellers	No memorandum of understanding for sharing information
Eswatini	Openness to sharing data and information	Late sharing of public health information
Lesotho	Personnel appointed as Focal Points were stationed at district and national level for cross-border sharing of public health information	Due to trade- and travel-related economic considerations, relevant data on zoonotic diseases and food-related illnesses may be withheld or moderated.
Mozambique	Establishment of cross-border committee with South Africa	Language barriers at ports of entry
Namibia	Memorandum of understanding signed between five Ministers of Health (Angola, Republic of Congo, Democratic Republic of Congo, Namibia and Zambia)	Lack of clear mechanisms for data-sharing
South Africa	Bi-annual meetings with neighbouring countries	Data comparability and systems interoperability: reliability of information systems and trustworthiness of information
Zambia	Regional and multinational agreements as well as agencies participating in cross-border information-sharing	Late data/information-sharing on shared platforms
Zimbabwe	Regular meetings with Mozambique, South Africa and Zambia	Exchange of data and information through a multi-country platform, i.e. disease trends

This meeting enabled participants to share border health best practices, list priority diseases, and articulate existing communication structures and channels for information-sharing. The participants drafted procedures to facilitate the operationalisation of existing cross-border frameworks and bilateral and multilateral agreements. Table 1 lists each participating country's best practices and challenges.

Mapping exercises helped to illustrate population movement across borders, and the delegates drew up a regional map of bi- and multi-national PoEs per country and overlapping between countries, prioritised for cross-border information-sharing and co-ordination (Figure 1).

Presentations delivered by the CDC GBHT and various partners - Africa CDC, ECSA-HC, the IOM, the SADC, and the WHO - provided perspectives on how existing systems for cross-border collaboration could be strengthened.

Through an iterative and collaborative process, the participants redirected the workshop programme for the second regional meeting (held in South Africa from 12 to 16 September 2022) for closer synergy of the countries' identified needs. The final agreed objectives resulted in the following outcomes:

- case definition comparison;
- refinement of procedures drafted during the first regional meeting;
- the development of a comprehensive report for participants to share with their respective leadership to advance cross-border co-ordination; and
- the distribution of a draft Memorandum of Understanding (MoU) template.

Each country presented its input on these core aspects during facilitated group working sessions organised for country- and regional-level deliberation. The group results were synthesised in plenary sessions for documentation purposes.

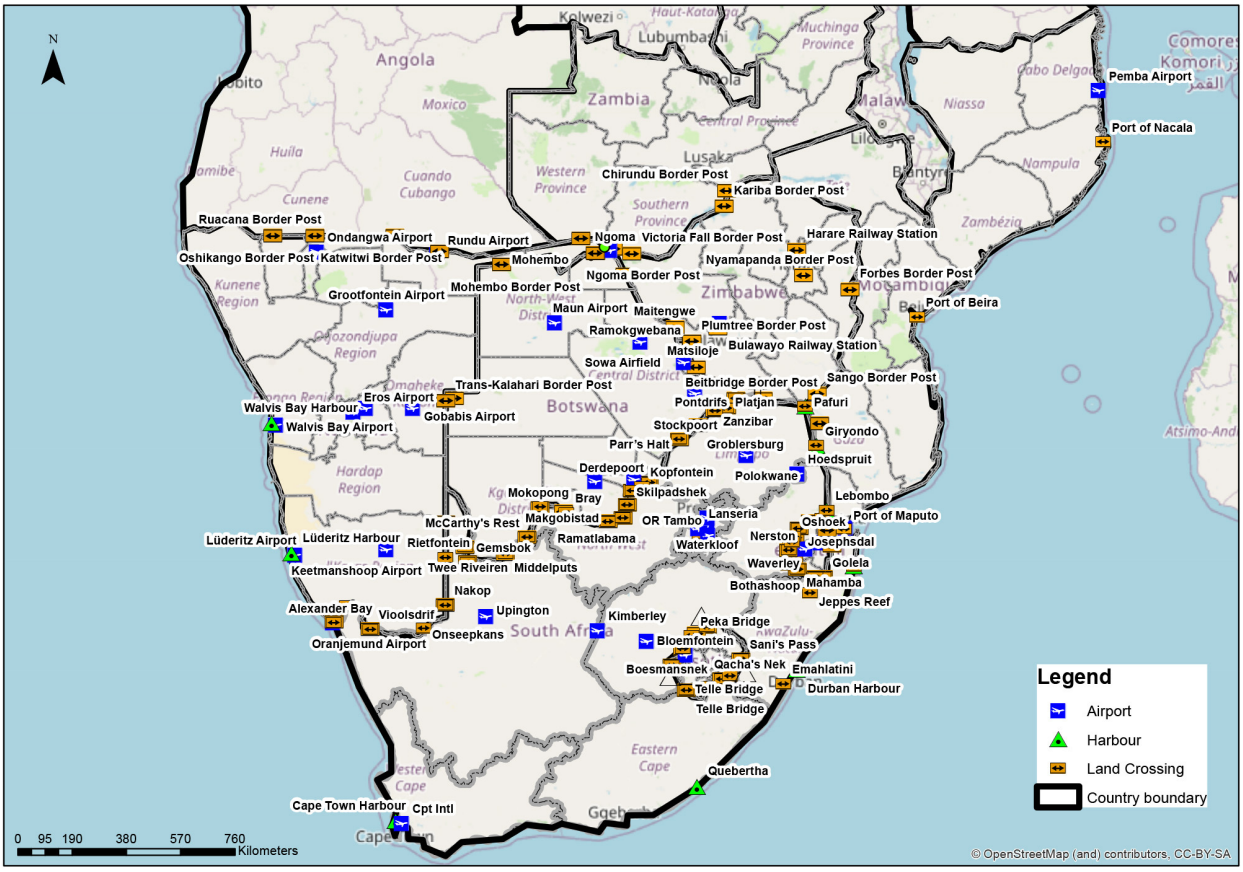
Training on cross-border health and population mobility

The CDC GBHT developed training materials to capacitate stakeholders with skills and knowledge for responding to public health events at PoEs, and for routinely collecting information on mobile populations.

The project's skills-development component, delivered from June to August 2022, comprised a PoE capacity-building workshop; training on the PopCAB Toolkit; and orientation on GIS to deepen stakeholders' understanding of geospatial information on regional cross-border movement dynamics.

Each country sent five delegates from their Ministry of Health and other departments managing border health activities to attend the workshops. They represented departments of Agriculture and Veterinary Services, Immigration, and Health, and in their various capacities play a role in cross-border movement control, disease surveillance including cross-border/Port Health control activities, information-sharing, regulation, and human and animal health sector involvement..

Figure 1. SADC regional map showing points of entry per country, 2022



Source: Existing map template sourced from OpenStreetMap; boundaries sourced from the Municipal Demarcation Board, with country detail added by Regional Meeting participants from each of the country teams.

Point-of-entry capacity-building

Two sub-regional workshops for PoEs were conducted, the first in Eswatini from 18 to 23 July 2022, and the second in Lesotho from 26 to 30 July 2022, with 40 participants trained overall.

This training-of-trainers programme focused on building capacity to improve border health systems at PoEs through cascaded training to other Port Health and non-health border staff in the following areas:

- routine roles and responsibilities;
- developing and operationalising multi-sectoral public health emergency and response plans (PHERPs) and standard operating procedures (SOPs) in line with the IHR; and
- implementing exercises to test public health responses at PoEs.

The PoE training consisted of didactic sessions, country presentations, working group exercises to practise applying the guidance gleaned during the training, and plenary sessions. The content covered the IHR, conducting ill-traveller risk assessment, training non-health partners on RING (**R**ecognise, **I**solate, **N**otify, and **G**ive support), developing SOPs and PHERPs at PoEs, and public health exercises to evaluate and strengthen response plans and procedures. The participants also consulted with the facilitators to address areas needing clarity or elaboration. A key resource in this training was a GBHT publication on strengthening comprehensive national and regional border health responses to communicable diseases.[30]

PopCAB Toolkit and GIS training

The PopCAB training was delivered in two sub-regional workshops, the first in South Africa from 13 to 15 July 2022, and the second in Zimbabwe from 2 to 4 August 2022, for five Ministry of Health representatives from each participating country.

A key GBHT resource used was an approach integrating population mobility patterns and socio-cultural factors in communicable disease preparedness and response.[30] The didactic and practical activities included orientation on the PopCAB Toolkit[31] - a resource designed to gather and analyse information on population mobility patterns to inform public health interventions – as well as map annotation, data application and processing, and group-work presentations on results from a practice PopCAB.

The PopCAB Toolkit enables identification of routes taken, travellers' reasons for travel, and the types of travellers moving through an area, to inform response strategies for infectious diseases.

This workshop built the participants' skills in conducting focus-group discussions and key informant interviews to gather qualitative and geospatial information on country and regional cross-border movement dynamics.

GIS training was held in Gaborone from 15 to 19 August 2022. The country officials were introduced to methods of managing, visualising and analysing qualitative and participatory mapping data on population mobility at local and national levels for sustainability, and were guided on how such data can be used to inform public health interventions.

The intended outcomes of the PoE capacity-building and PopCAB Toolkit trainings were that countries would be equipped to proceed with information-gathering on mobile populations to inform public health interventions and cross-border collaboration; and that countries would establish and/or enhance border health systems with relevant PoE-level SOPs and PHERPs. Where time and budget allowed, the project supported in-country cascade of the trainings to other health and non-health border staff members.

Data collection

This investigation deployed two data-collection methods:

Firstly, responses were extracted from summarised transcriptions of video-recorded, semi-structured interviews conducted with a lead representative from each of the eight countries during the first regional meeting held in Zimbabwe from 20 to 24 June 2022 (Table 2).

The country leads were interviewed by a Division of Global Migration and Quarantine (DGMQ) facilitator. The following question prompts were provided to the interviewees in advance of each 20-minute interview:

- Name, position and portfolio description
- The role of their division in monitoring border health and population movement
- The primary challenges encountered and lessons learnt during the COVID-19 pandemic and/or other disease outbreaks
- Their insights gleaned during the first regional workshop
- Their expectations for the forthcoming training.

The team reviewed the video content to identify key themes.

Secondly, a survey with closed and open-ended questions was administered in October/November 2022 to each of the eight countries' lead representatives (16 in total), using Survey Monkey. The eight questions required a combination of Yes/No and explanatory responses. Respondents were given 14 days to respond. Feedback was solicited on the project's various trainings and meetings: whether these met the objectives for strengthening capacity at PoEs in the respective countries; how many countries had cascaded trainings to other staff members who had not attended the workshops; and lessons learnt from the trainings and meetings.

Qualitative analysis was done on the 13 responses to the questionnaire. Analysis was conducted in line with a Code Book of identified themes, sub-themes and inclusion criteria, using NVivo software to organise the data for distillation of meaning in relation to the coding strategy. Microsoft Excel was used for quantitative data analysis.

Table 2. Country leads interviewed at the first regional meeting, 20–24 June 2022

Country	Roles
Botswana	IHR Officer, Ministry of Health
Eswatini	Head of Environmental Health Services, Ministry of Health
Lesotho	Epidemiologist and Medical Officer
Mozambique	Director of Environmental Health, Ministry of Health
Namibia	Director of Health Information and Research, Ministry of Health and Social Services
South Africa	Assistant Director: Public Health Surveillance – Directorate of Epidemiology and Surveillance, Ministry of Health
Zambia	Assistant Director of Environmental Health, Ministry of Health, and IHR Team Lead for Points of Entry
Zimbabwe	Director of Environmental Health Services, Ministry of Health and Child Care

Key findings

Analysis of the video content yielded the following main findings:

- MoUs finalised between the neighbouring countries are effective mechanisms for cross-border collaboration, and should detail the roles and responsibilities of countries, the conditions under which information will be shared, and the intended use of the information.
- Border health capacity-building is crucial to ensure improved country preparedness, heightened alertness to situations in neighbouring countries, reduction in the spread of diseases across borders, and optimised disease management in the country of origin.
- The Border Health Project enabled face-to-face meetings between country counterparts to discuss important issues such as PoE capacities; the project also provided a common framework template for the creation of cross-border MoUs, and operationalised the drafting thereof. This was seen as a vital capacity-building opportunity that highlighted the importance of strengthening cross-border collaboration to manage pandemics. It was noted that

the project had been offered at the right juncture following the harrowing experience of countries during the COVID-19 pandemic.

- The most important aspects of the project support cited were joint identification of challenges and best practices, and collective adoption of these for cross-border collaboration.

> *"The training was beneficial; it provided support for border health which has always had limited funding in Zimbabwe."*
> *"We learnt from COVID-19 that each country's capacity must be strengthened."*
> *"We don't know where to start; this meeting provided a common framework and common language."*
> *"Through this support, we can define communication channels for information- and knowledge-sharing."*

Qualitative analysis of the 13 responses to the survey questionnaire generated the following findings:

PoE capacity-building

The most frequently mentioned topic centred on the PoE capacity-building delivered through the project, with 33 references made regarding completed, current, or planned capacity-building at various PoEs. Capacity-building ranged from border co-ordination and collaboration:

> *"The trainings integrated border co-ordination, collaboration, [and] role definitions during outbreaks."*

to formalisation of communication structures:

> *"...training has been conducted for point-of-entry staff to establish structures at that level..."*

Some countries expanded on their plans to cascade training and capacity-building to more PoEs:

> *"Capacity-building is required; the trainings need to be cascaded to the PoE so that all the staff members are on board. The PoE capacity-building training also has to be cascaded to the other PoE staff."*

while others advised that although PoE capacity-building was a priority area, lack of funding prevented cascade of the project training to other PoEs:

> *"We do not have funding but these are priority areas."*
> *"Lack of funding..."*
> *"We want to conduct this training, though there is no funding now for the activity."*

Standard operating procedures and Public Health Emergency Response Plans

The second most frequently mentioned theme was the importance of SOPs and PHERPs, with 21 references made. While most countries had SOPs pertaining to the screening of travellers:

> *"Screening of travellers during outbreaks."*
> *"SOPs on identification and notification of an ill traveller for PoEs."*

some countries were yet to expand their SOPs for ground crossings:

> *"Only airports have procedures formulated during COVID-19 but [this] needs to be refined to be holistic plans. Ground crossings do not have [SOPs]."*

Some countries had fully developed PHERPs, and these were used as exemplars by other countries during the meetings to gauge their levels of preparedness and to support the development of their own PHERPs:

> *"The plans were developed during this project and they include cross-border collaboration, co-ordination and data management."*

In-country communication

In-country communication channels and structures emerged as a diverse theme across the eight countries. Some respondents indicated that while in-country structures were fully developed, the project had led to the enhancement of certain sections of the structures:

> *"The Ministry's communication structures remain the same, but there ha[ve] been deliberate efforts to strengthen the communication with the district level."*
> *"[The project] enhanced and strengthened the already existing internal reporting and communications structures between district, regional and national levels when responding to a cross-border public health concern."*

Other countries noted that their structures were not fully established and required urgent attention:

> *"The structures are not fully established but there is an existing high-level structure, but training has been conducted for point-of-entry staff to establish structures at that level."*

Inter-country collaboration

Inter-country collaboration and communication formed a dominant theme that emerged from the feedback. While some countries already had clear structures and agreements in place, the project strengthened them:

> *"There are clear structures and agreements in place and the regional meetings have strengthened them."*

Although there were active cross-border committees in place in certain countries, the responses highlight that data-management and information-sharing across international borders is a crucial component requiring enhancement, as indicated by one of the country respondents:

> *"Cross-border collaboration committees with countries such as Zimbabwe, Mozambique and Angola [exist], but [are] not distinct on external information-sharing as prior approval is required. MoUs and other collabora-*

Table 3. List of border health capacity-building requests by country

Capacity-building training request	BWA	SZ	LES	MOZ	NAM	RSA	ZMB	ZWE
Capacity-building/ refresher training of PoE staff		X		X				X
Exchange visits with other countries								X
Support to attend international trainings and meetings								X
Developing/reviewing PHERPs/SOPs on health threats	X		X		X	X	X	
PopCAB training				X				X
GIS training				X			X	X
Surveillance, statistical analysis, data management and information-sharing	X	X					X	X
Conducting risk assessments	X		X					
International Health Regulations							X	
In-country and inter-country communication		X						
Benchmarking and simulation exercises		X	X		X			

BWA = Botswana; SZ = Eswatini; LES = Lesotho; MOZ = Mozambique; NAM = Namibia; RSA = South Africa; ZMB = Zambia; ZWE = Zimbabwe.

tive agreements are required to enhance the collaboration...”

For other countries, the project had highlighted the need to update current structures, and to develop MoUs to simplify the process of cross-border collaboration:

“...we are in the process of reviewing our external communication protocols and working with some countries to develop a memorandum of understanding.”

Routine inter-country information-sharing

The need for routine inter-country information-sharing did not feature dominantly in the responses. However, they indicated that the project had provided the countries with a vital platform to discuss important issues pertaining to information-sharing:

"The meetings also helped, as they provided a platform for information-sharing and future cross-border collaboration."

Reference was made to the plans developed during the project to strengthen cross-border co-ordination and information-sharing:

"The plans were developed during this project and they include cross-border collaboration, co-ordination and data management."

Requests for additional border-health capacity-building

The respondents listed their requests for various types of additional capacity-building needed for prioritising any infectious diseases that might present public health threats. Table 3 shows the requests by country.

Quantitative analysis of the survey questionnaire feedback indicated that 13 responses were received from the eight countries. Of these, 10 responses were complete while the remaining three were incomplete. Table 4 sets out the quantified data for the survey responses.

In response to whether countries had managed to establish or enhance clear internal and external communications structures for reporting and responding to a cross-border public health event, 10 respondents (77%) indicated that they had established internal communication structures, two (15%) indicated that they had not, and one respondent (8%) did not answer the question. Ten (77%) indicated that external communication structures had been established, one (8%) indicated that this had not been done, and two (15%) did not answer the question.

Figures 2 and 3 show the percentage of respondents who indicated that internal and external communications structures had been established in their country.

During the sub-regional trainings, country representatives were urged to ensure the roll-out of capacity-building to other colleagues to strengthen border health systems. Of the 13 survey responses, four indicated that their countries had cascaded trainings to other col-

Table 4. Quantified data for questionnaire responses

Communication and inter-country collaboration	
Has your country established or enhanced clear internal communications structures for reporting and responding to a cross-border public health event?	n (%)
Yes	10 (77%)
No	2 (15%)
No response	1 (8%)
Has your country established or enhanced clear structures for external communications with other countries - particularly those in the SADC region - regarding any public health threats?	
Yes	10 (77%)
No	1 (15%)
No response	2 (8%)
Points-of-entry capacity-building, PopCAB training and GIS-PopCAB training	
Has your country conducted cascaded trainings to other staff members at the point of entries?	
Yes	4 (31%)
No	5 (38%)
No response	4 (31%)
Specific to PopCAB & GIS-PopCAB trainings, has your country conducted any training(s) related to gathering of population mobility data or plans?	
Yes	1 (8%)
No	7 (54%)
No response	5 (38%)
List any plans related to capacity-building at the points of entry in your country	
Does your country have a plan or plans for responding to public health events at the points of entry?	
Yes	9 (69%)
No	0
No response	4 (31%)
Has your country developed standard operating procedures (SOPs) at the points of entry?	
Yes	9 (69%)
No	0
No response	4 (31%)

leagues, while five indicated that they had not, and four did not respond to the question. Mozambique indicated that the IOM and WHO also conducted trainings related to cross-border health issues in their country.

The respondents were asked to list any specific trainings and other PoE activities planned for the near future, and these are presented by country in Table 5. Six of the countries indicated that they had training plans in place, among which were modules for the development of contingency plans and SOPs, risk assessment, and surveillance training. Lesotho and Namibia did not indicate whether they had training plans.

Nine respondents indicated that their countries had PHERPs at PoE level, and four did not answer the question. Nine respondents indicated that their countries had developed SOPs for guidance on emergency public health events, while two participants from Lesotho, one from South Africa, and one from Namibia did not respond to the question.

Conclusions

During the project's first regional meeting, participants expressed that their countries had become increasingly isolated following the outbreak of COVID-19, and had made unilateral decisions that were often not understood by their neighbouring countries. The survey responses indicate that the project's face-to-face meetings were therefore critical for enhancing communication at all levels for regional knowledge-building. Moreover, the project provided a valuable platform for facilitating the development of MoUs between neighbouring countries.

Figure 2. Proportion of countries reporting establishment of internal communication structures to respond to public health threats

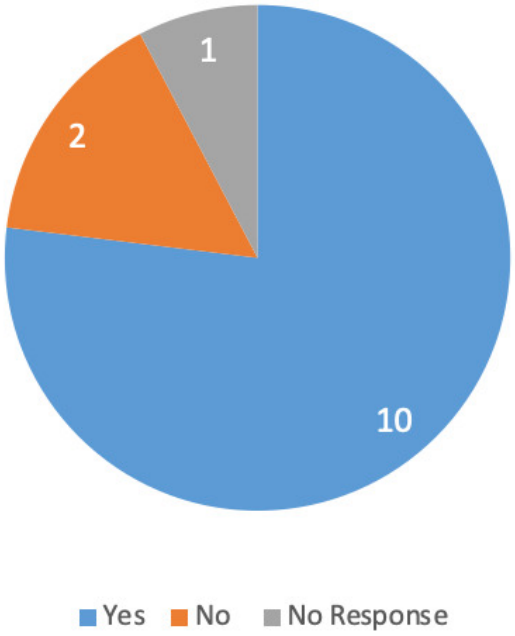


Figure 3. Proportion of countries reporting establishment of external communication structures to respond to public health threats

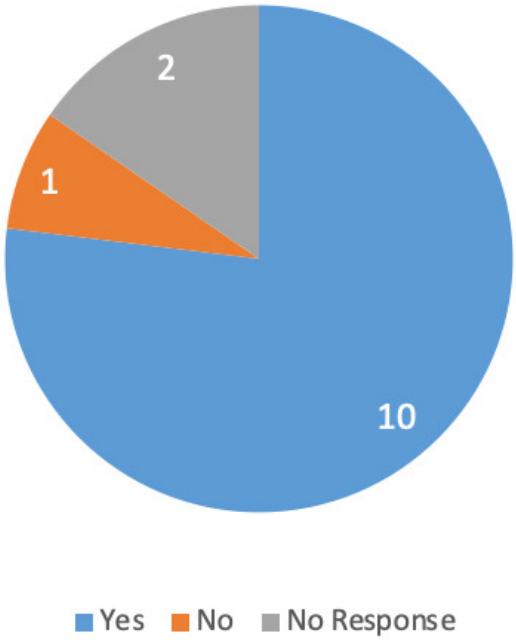


Table 5. Planned PoE activities by country

Country	Planned PoE activities by country
Botswana	Expected to do a risk assessment and start developing contingency plans
Eswatini	Quarterly refresher trainings; periodic review of plans and SOPs; conducting simulation exercises; benchmarking/study tour
Lesotho	No response
Mozambique	Updating contingency plans at PoEs; PoE surveillance training; and in-service training on monkeypox
Namibia	No response
South Africa	Training on: • IHR Assessment Tool; • refresher training on Ebola; • IDSR in the country
Zimbabwe	Plan to train all Port Health personnel on PopCAB and GIS; cascade PoE capacity-building to all PoE staff
Zambia	IDSR, GIS, and Event-based Surveillance (EBS) trainings; statistical analytics tools; Infection Prevention and Control; SOPs for PoEs, and IHR training

Disrupted trade and supply chains caused by border closures to control cross-border disease transmission have been shown to impair livelihoods, and in turn, to impact household health and welfare in African countries.[1, 32] Understanding the effectiveness of cross-border and PoE health measures used in regional settings can help to inform evidence-based rationales for policy and practice that balance public health goals with other societal needs.

The project's support for instilling national and regional good practice in internal and inter-country collaboration on disease mitigation, and a renewed focus on data management and information-sharing for public health initiatives, laid a strong foundation for more co-ordinated management of cross-border health measures.

Recommendations

- The evidence gleaned from the respondents' feedback indicates that further exploration using key informant interviews could define the countries' needs for specific interventions and role-players' transfer of skills developed through the project.
- All the respondents noted that time constraints had obviated cascade of the PopCAB training at this stage. Three countries expressed interest in doing so, suggesting that this is an area for continued action as a region.

- Bi-monthly follow-up with country leads to monitor progress with preparedness planning and implementation should be undertaken internally by each country.
- Master trainers in each country should provide additional PoE capacity-building support where needed.
- The leads in each country should continue to refine their SOPs and PHERPs.
- Where they do not exist, MoUs should be established between neighbouring countries. Senior-level implementers who took part in the training undertook to engage with relevant ministry principals to finalise such MoUs.
- Timeframes for inter-country communication (e.g. monthly or bi-annual meetings) should be established by the respective countries.
  DGMQ and the HST should engage with countries for post-project analysis to measure the sustainability of the project, subject to availability of funding. A regional body should bring countries together to chart a way forward for standardising use of tools and frameworks for policy coherence. Dialogue among member states for such harmonisation should be facilitated through a regional bloc such as SADC.
  External partners such as the IOM, SADC, ECSA-HC, and WHO should facilitate clearly delineated guidance.

Acknowledgements

The authors are grateful to their CDC colleagues, Dr Rebecca Merrill, Ms Sarah Ward, Dr Kiswendsida Sawadogo, and Ms Chloe Crocker, and to their HST colleague, Ms Noluthando Ndlovu, for their support and contribution to the project and this chapter. The authors also acknowledge the United States Centers for Disease Control and Prevention for funding the project, and all representatives of the participating countries and regional bodies for their invaluable insights and committed effort.

Abbreviations

Abbreviation	Description
Africa CDC	Africa Centres for Disease Control and Prevention
BWA	Botswana
CDC	Centers for Disease Control and Prevention
COVID-19	coronavirus disease
DGMQ	Division of Global Migration and Quarantine
EBS	Event-based Surveillance
ECSA-HC	East, Central, and Southern Africa Health Community
FAO	Food and Agriculture Organization of the United Nations
GBHT	Global Border Health Team
GIS	Geographic Information System
HIV	Human Immunodeficiency Virus
HST	Health Systems Trust
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IOM	International Organization for Migration
LES	Lesotho
MoU	memorandum of understanding
MOZ	Mozambique
NAM	Namibia
OIE	World Organisation for Animal Health
PHERP	public health emergency and response plan
PoE/s	point of entry / points of entry
PopCAB	Population Connectivity Across Borders
RING	Recognise, Isolate, Notify, and Give support
RSA	South Africa
SADC	Southern African Development Community
SOP	standard operating procedure
SZ	eSwatini
WHO	World Health Organization
ZMB	Zambia
ZWE	Zimbabwe

References

1. Merrill RD, Chabi AIB, McIntyre E, et al. An approach to integrate population mobility patterns and sociocultural factors in communicable disease preparedness and response. *Humanit Soc Sci Commun*. 2021;8(1):23. doi:10.1057/s41599-020-00704-7

2. Lee K, Grépin KA, Worsnop C, Marion S, Piper J, Song M. Managing borders during public health emergencies of international concern: a proposed typology of cross-border health measures. *Global Health*. 2021;17(1):62. doi:10.1186/s12992-021-00709-0

3. Organisation for Economic Co-operation and Development (OECD). *The Territorial Impact of COVID-19: Managing the Crisis across Levels of Government*. OECD; 2020.

4. Africa Centres for Disease Control and Prevention. *Africa CDC Strategy at a Glance (2017–2021)*. Africa CDC; 2017. https://africacdc.org/download/africa-centres-for-disease-control-and-prevention-strategy-at-a-glance/

5. World Health Organization. *International Health Regulations*. WHO; 2005. https://www.who.int/publications/i/item/9789241580496

6. Southern African Development Community. *Protocol on Health in the Southern African Development Community*. SADC; 1999. https://www.sadc.int/document/protocol-health-1999

7. World Health Organization. *Taking a Multisectoral, One Health Approach: A Tripartite Guide to Addressing Zoonotic Diseases in Countries*. WHO; 2019. https://apps.who.int/iris/handle/10665/325620

8. Africa Centres for Disease Control and Prevention. *Framework for One Health Practice in National Public Health Institutes: Zoonotic Disease Prevention and Control*. Africa CDC; 2020. https://africacdc.org/download/framework-for-one-health-practice-in-national-public-health-institutes/

9. Southern African Development Community. *SADC Guidelines on Harmonisation and Facilitation of Cross-Border Transport Operations across the Region During the COVID-19 Pandemic*. SADC; 2020. https://www.sars.gov.za/wp-content/uploads/Docs/CandE/Final_SADC_Guidelines_on_Cross-Border_Transport_during_COVID19-Adopted_on_6_April_2020-ENGLISH.pdf.pdf

10. World Health Organization. *Controlling the Spread of COVID-19 at Ground Crossings: Interim Guidance, May 2020*. WHO; 2020. https://apps.who.int/iris/handle/10665/332165

11. World Health Organization. *Handbook for Public Health Capacity-Building at Ground Crossings and Cross-Border Collaboration*. WHO; 2020. https://www.who.int/publications/i/item/9789240000292

12. Centers for Disease Control and Prevention. *What Is Anthrax?* CDC; 2020. https://www.cdc.gov/anthrax/resources/index.html

13. Centers for Disease Control and Prevention. *How to Prevent Anthrax*. CDC; 2020. https://www.cdc.gov/anthrax/prevention/index.html

14. Global Task Force on Cholera Control. *Ending Cholera: A Global Roadmap to 2030*. GTFCC; 2017. https://www.gtfcc.org/wp-content/uploads/2019/10/gtfcc-ending-cholera-a-global-roadmap-to-2030.pdf

15. Global Task Force on Cholera Control. *Cholera Outbreak Response: Field Manual*. GTFCC; 2019. https://choleraoutbreak.org/

16. Global Task Force on Cholera Control. *Interim Guiding Document to Support Countries for the Development of Their National Cholera Plan*. GTFCC; 2020. https://www.gtfcc.org/wp-content/uploads/2020/11/gtfcc-interim-guiding-document-to-support-countries-for-the-development-of-their-national-cholera-plan.pdf

17. World Health Organization. *Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19*. WHO; 2021. https://www.who.int/publications/i/item/WHO-2019-nCoV-Risk-based-international-travel-2021.1

18. World Health Organization. *Policy Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19, 2 July 2021*. WHO; 2021. https://www.who.int/publications/i/item/WHO-2019-nCoV-Policy-Brief-Risk-based-international-travel-2021.1

19. Southern African Development Community. *SADC Assessment Report on the Status of HIV Testing and Counselling Policies in the SADC Region*. SADC; 2009. https://dev-www.sadc.int/files/4314/1172/0046/Assessment_Report_on_the_Status_ofHIV_Testing_and_Counselling_Policies_inthe_SADC_Region.pdf

20. Southern African Development Community. *Regional Minimum Standards for the Prevention, Treatment and Management of Malaria in the SADC Region*. SADC; 2009. https://www.sadc.int/document/regional-minimum-standards-prevention-treatment-and-management-malaria-sadc-region

21. World Health Organization. *World Malaria Report 2021*. WHO; 2021. https://www.who.int/publications/i/item/9789240040496

22. World Health Organization. *Plague Manual: Epidemiology, Distribution, Surveillance and Control*. WHO; 1999. https://apps.who.int/iris/handle/10665/66010

23. South African National Department of Health. *National Plague Control Guidelines*. NDoH; 2022. https://www.medbox.org/preview/59e73b9f-32a8-4014-8677-36d31fcc7b87/doc.pdf

24. Global Polio Eradication Initiative. https://polioeradication.org/

25. Global Polio Eradication Initiative. *Global Polio Eradication Strategy 2022-2026*. GPEI; 2021. https://polioeradication.org/wp-content/uploads/2022/06/Polio-Eradication-Strategy-2022-2026-Delivering-on-a-Promise.pdf

26. World Health Organization. *Guidelines for Environmental Surveillance of Poliovirus Circulation*. WHO; 2003. https://apps.who.int/iris/handle/10665/67854

27. Southern African Development Community. *Assessment Report for the Development of Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region*. SADC; 2010. https://www.sadc.int/document/assessment-report-development-harmonised-minimum-standards-prevention-treatment-and

28. Southern African Development Community. *Assessment Report for the Harmonised Control of HIV and AIDS, Tuberculosis and Malaria in Militaries in the SADC Region*. SADC; 2009. https://www.sadc.int/document/assessment-report-harmonised-control-hiv-and-aids-tuberculosis-and-malaria-militaries-sadc

29. Southern African Development Community. *Assessment Report on HIV and AIDS, Tuberculosis, Hepatitis B and C, and Other Sexually Transmitted Infections in Prison Settings in the SADC*. SADC; 2009. https://www.sadc.int/sites/default/files/2021-08/Assessment_Report_on_HIV_and_AIDSTuberculosis_Hepatitis_B_and_C_andother_Sexually_Transmitted_Infectionsin_Prison_Settings_in_the_SADC.pdf

30. Merrill RD, Rogers K, Ward S, et al. Responding to communicable diseases in internationally mobile populations at points of entry and along porous borders, Nigeria, Benin, and Togo. *Emerg Infect Dis*. 2017;23(Suppl 1):S114-120. doi:10.3201/eid2313.170520

31. Centers for Disease Control and Prevention. Population Connectivity Across Borders (PopCAB) Toolkit. October 14, 2021. https://www.cdc.gov/immigrantrefugeehealth/popcab-toolkit.html

32. Emeto TI, Alele FO, Ilesanmi OS. Evaluation of the effect of border closure on COVID-19 incidence rates across nine African countries: an interrupted time series study. *Trans R Soc Trop Med Hyg*. 2021;115(10):1174-1183. doi:10.1093/trstmh/trab033