World Health Organization

African Region

Essential and actionable measures for enhancing country preparedness for Viral Haemorrhagic Fever outbreaks in the WHO African Region

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Foreword

In the African Region, the World Health Organization Regional Office for Africa (WHO AFRO) routinely responds to public health emergencies, including infectious disease outbreaks and pandemics.

In recent years, these have included an increasing number and scale of viral haemorrhagic fever (VHF) outbreaks involving bat-associated viruses (Ebola and Marburg), rodent-associated viruses (Lassa fever), and arthropod-borne viruses (yellow fever, dengue, Crimean-Congo haemorrhagic fever and Rift Valley fever). Each, in its own right, represents a serious public health threat. Together, they represent one of the most dangerous collection of pathogens affecting the African Region. It is therefore essential that Member States strengthen their VHF preparedness to ensure readiness and a more effective response.

Accordingly, this document (including the associated online companion tool) proposes essential and actionable preparedness measures for dealing with VHF outbreaks in the African Region. The measures are organized to be as practical and realistic as possible, taking into account the Region's unique challenges. They are also aligned with existing resources, frameworks and guidelines, ensuring consistency with existing best practices. The document also considers the broader context of public health as its foundation.

We encourage Member States, decision- and policy-makers, partners and stakeholders to consider these essential and actionable preparedness measures in their VHF contingency planning. Doing so holds the promise of strengthening core capacities and, ultimately, saving lives.

Dr Matshidiso Moeti

WHO Regional Director for Africa

Acknowledgements

We express our profound gratitude to all those individuals and organizations that have made invaluable contributions to this guiding document.

We are deeply grateful to those who provided invaluable feedback from the Ministries of Health of Angola (Eusebio Manuel), Côte d'Ivoire (Eboua N'Guetta Emilienne), Ghana (Joseph Oliver-Commey), Guinea (Barrè Onivogui), Kenya (Athman Mwatondo), Liberia (Amos Gborie), Mali (Ibrahima Guindo), Mauritania (El Moctar Mohamed Abbad), Senegal (Diop Boly), Sierra Leone (Charles Keimbe), South Africa (Veerle Dermaux-Msimang and Tsakani Furumele), Uganda (Henry Kyobe Bossa), and United Republic of Tanzania (Emmanuel Geofrey Mwakapasa). Their collaboration, knowledge and shared vision have been paramount in addressing the specific health challenges of their respective regions and beyond.

We also appreciate the dedicated efforts of all the individuals who supported this work: from the WHO headquarters (Anaïs Legand and Kazunobu Kojima); from the WHO Regional Office for Africa (Mory Keita, Samuel Boland, Dick Chamla, Elongo Lokombe, Traore Tieble, Latt Anderson, Julienne Anoko, Ibrahim Mamadu, Charles Njuguna, Gertrude Noufack, Giuseppina Ortu, Zinedine Kada, Reena Doshi, Alejandro Costa and William Komakech); and from the various WHO country offices (Annet Alenyo, Christiane Muhau Kuku, Vivien Hilaire Nyanga, Youba Kandako, Bah Ives Olivier Kouadio, Aly Antoine Kamano, Richard Fotsing, Patrick Mawupemor Avevor, Diba Dulacha, Julius Monday, Alle Baba Dieng, Raymond Bernard Pallawo, Alex Chimbaru, Ibrahim Oumar Ba, Victor Caulker, Takalani Nemungadi, and Faraja Msemwa). Their unwavering commitment and guidance have been instrumental in shaping the scope and direction of this work.

Special thanks are also extended to partner organizations and their representatives, including Médecins Sans Frontières (MSF, John Johnson), The Alliance for International Medical Action (ALIMA, Richard Kojan), and Institut Pasteur (Ousmane Faye), for their expertise and support.

In November 2023, a two-day consultative workshop was organized, which played a critical role in the development of this document. The success of the workshop was made possible by the active participation and shared wisdom of all delegates present. The discussions and exchange of ideas were an invaluable contribution to the depth and breadth of this guiding document. We also acknowledge the tireless work of the coordinators, facilitators, and all supporting staff who ensured the smooth running of the consultative workshop. Their dedication and attention to detail have been a cornerstone of our progress.

Finally, our heartfelt appreciation goes out to every individual, community and organization that has indirectly contributed through insights, studies, and ongoing efforts in the field. This document is a testament to our collective commitment to improving health outcomes and building a healthier, more resilient world. Together, we move forward with the shared goal of implementing the strategies and recommendations outlined in this document to effect positive change in public health across the regions represented and beyond.

Dr Abdou Salam Gueye
Regional Emergency Director
WHO Regional Office for Africa

Abbreviations

AAR	after-action review
AEFI	adverse event following immunization
Africa CDC	Africa Centres for Disease Control and Prevention
AI	artificial intelligence
ALIMA	The Alliance for Medical Action
BDBV	Bundibugyo virus
CCHF	Crimean-Congo haemorrhagic fever
CCHFV	Crimean-Congo haemorrhagic fever virus
CDC	Centres for Disease Control and Prevention
CEBS	community event-based surveillance
CFR	case fatality rate
CHEW	community health extension worker
CHPV	Chapare virus
CIF	case investigation form
CoP	community of practice
CRF	case report form
DENV	dengue virus
DHIS2	District Health Information Software 2
DOBV	Dobrava-Belgrade virus
DRC	Democratic Republic of the Congo
EBOV	Ebola virus
EMT	emergency medical team
EOC	Emergency Operations Centre
EVD	Ebola virus disease
EWARS	Early Warning, Alert and Response System
EYE strategy	Eliminate yellow fever epidemics strategy
FETP	Field Epidemiology Training Programme
Filoviruses	ebolaviruses and Marburg virus
FIT tool	health facility improvement tool
GTOV	Guanarito virus
HCW	health care worker
HEPR	health emergency preparedness, response and resilience
HIM	health information management

HLIU	high-level isolation unit
HMIS	Health Management Information System
HR	human resources
HTNV	Hantaan virus
ID	identification or identify
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IMS	Incident Management System
INGO	international nongovernmental organization
IPC	infection prevention and control
IRB	Institutional Review Board
IT	information technology
IVM	integrated vector management
JEE	joint external evaluation
JUNV	Junin virus
KAP survey	knowledge, attitudes, behaviours and practices survey
KFDV	Kyasanur Forest disease virus
KPI	key performance indicator
LASV	Lassa virus
LCMV	lymphocytic choriomeningitis virus
LIS	Laboratory Information System
LGBTQIA+	lesbian, gay, bisexual, transgender, queer, questioning, intersex, asexual, 'plus'
LUJV	Lujo virus
MACA	Military aid to civil authorities
MACV	Machupo virus
MARV	Marburg virus
MHPSS	mental health and psychosocial support
MoH	Ministry of Health
MoU	memorandum of understanding
MSF	Médecins Sans Frontières
MVD	Marburg virus disease
NA	not applicable
NCP	National Contingency Plan
NGO	nongovernmental organization

NHP	non-human primate
OGD	other government department
OHFV	Omsk haemorrhagic fever virus
OSL	Operations Support and Logistics
PFA	psychological first aid
PHEOC	Public Health Emergency Operations Centre
PMVC	preventive mass vaccination campaign
PoE	point of entry
PPE	personal protective equipment
PRSEAH	Preventing and responding to sexual exploitation, abuse and harassment
PSEA	Prevention of sexual exploitation and abuse
PUUV	Puumala virus
QT	quarantine
RA	risk assessments
RCCE	risk communication and community engagement
RECO	community relay
RI	routine immunization
RRT	Rapid Response Team
RVF	Rift Valley fever
RVFV	Rift Valley fever virus
SAAV	Saaremaa virus
SABV	Sabia virus
SAGE	Strategic Advisory Group of Experts on Immunization
SDB	safe and dignified burials
SEOV	Seoul virus
SFTSV	Severe fever with thrombocytopenia syndrome virus
SimEx	simulation exercise
SNV	Sin Nombre virus
SOP	standard operating procedure
SoW	scope of work
STAR	Strategic toolkit for assessing risks
SUDV	Sudan virus
TAFV	Taï Forest virus
ToRs	terms of reference
TTX	tabletop exercise

TULV	Tula virus
TWG	Technical Working Group
UHPR	Universal Health and Preparedness Review
US	United States
VHF	viral haemorrhagic fever
VHT	Village Health Team
VPD	vaccine-preventable disease
VQF	voluntary quarantine facility
YF	yellow fever
YFV	yellow fever virus
UHPR	Universal Health and Preparedness Review
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UN	United Nations
VHF	Viral Haemorrhagic Fever
VHT	Village Health Team
VPD	Vaccine Preventable Disease
VQF	Voluntary Quarantine Facility
VSAT	Very Small Aperture Terminal
VSPB	Viral Special Pathogens Branch of the US CDC
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation
W/I	Within
XB	Cross-Border
YF	Yellow fever
YFV	Yellow fever virus

Glossary

4W	Who does what, where, and when
5W	Who does what, where, when, and for whom
Five Cs of HEPR	The 'five Cs' of health emergency preparedness, response and resilience (emergency coordination, collaborative surveillance, community protection, safe and scalable care, and access to countermeasures)
Baseline preparedness measures	Preparedness measures that apply regardless of priority level
Preparedness[a]	The stage that includes the development of public health emergency response plans for relevant hazards: the mapping of potential hazards and hazard sites, the identification of available resources, the development of appropriate national stockpiles of resources, and the capacity to support operations at the intermediate and community and/or primary response levels during a public health emergency. These activities may take six months to two years to achieve a state of full preparedness for an emerging infectious disease and/or public health threats.
Readiness[a]	The stage that links effective preparedness to efficient response. It is a statement of the capacity and capability of a relief agency or service. These activities may take up to six months to ensure readiness for a specific defined threat. They are designed to mitigate the impact of a specific outbreak on the health system and to reduce morbidity and mortality, as details on a communicable disease threat are emerging. By flattening the epidemic curve and avoiding a sharp peak of cases, the impact on the population and on health care system capacity can be better controlled.

a Definitions for 'preparedness' and 'readiness' are drawn from WHO's 'Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the national level'.1 The document, published in 2021, offers a practical framework of actions for strengthening IPC outbreak preparedness, readiness and response; and a toolkit that provides resources to assist in the development of local contingency or action plans to strengthen IPC outbreak preparedness, readiness and response. This document shares similar objectives, but has a broader focus than IPC: it includes the full breadth of relevant preparedness and readiness activities across sectors.

Executive summary

The World Health Organization Regional Office for Africa (WHO AFRO) faces a growing challenge in managing viral haemorrhagic fever (VHF) outbreaks in the Region, including a range of serious pathogens: Ebola, Marburg, Lassa, yellow fever, dengue, Crimean-Congo haemorrhagic fever, and Rift Valley fever. These VHFs pose a significant public health threat due to their high morbidity, mortality, and increasing frequency of outbreaks. Recognizing this urgent issue, WHO AFRO presents this comprehensive guide containing preparedness measures that can be taken by countries in the Region to mitigate VHF risks. The document (including the associated online companion tool) also serves as a practical tool, offering actionable measures for Member States to improve their readiness and response capabilities.

The guide consolidates and advances existing VHF guidelines, integrating recent scientific breakthroughs and lessons learnt from past outbreaks. It provides specific, high-impact steps for better preparedness, in line with WHO's framework for health emergency preparedness, response and resilience (HEPR); the One Health principles; and the 7-1-7 target[b] of the Regional strategy for health security and emergencies 2022–2030.

Key aspects of the guide include **systematic preparedness steps** (that is, detailed strategies to enhance preparedness capabilities). These include 'baseline preparedness measures' (that apply regardless of specific VHF risks), as well as measures that are specific to different VHFs or depend on the degree of epidemiological risk in a given country. Preparedness measures include the **integration of innovative practices** (with an emphasis on incorporating new innovations in vaccinations, therapeutics and contact management); building on lessons learnt from recent VHF outbreaks and other scientific breakthroughs; and adopting a **multisectoral approach in line with the HEPR framework**, in order to ensure a holistic and aligned approach to this crucial public health challenge.

This document is crucial for all stakeholders involved in public health emergency management, providing a blueprint for comparing capacities and developing national VHF contingency plans. It emphasizes the need for continuous vigilance, adaptability and collaboration in preparedness efforts. It also advocates for iterative reviews and updates to reflect evolving knowledge and technologies, aiming to fortify the WHO African Region against VHFs. In conclusion, the guide represents a significant step forward in the collective effort to manage VHFs effectively. It stresses the importance of proactive and informed action in enhancing the resilience of health systems against these diseases. By following these guidelines, Member States and partners can work towards a future where VHFs are not a formidable threat but a manageable aspect of resilient public health systems.

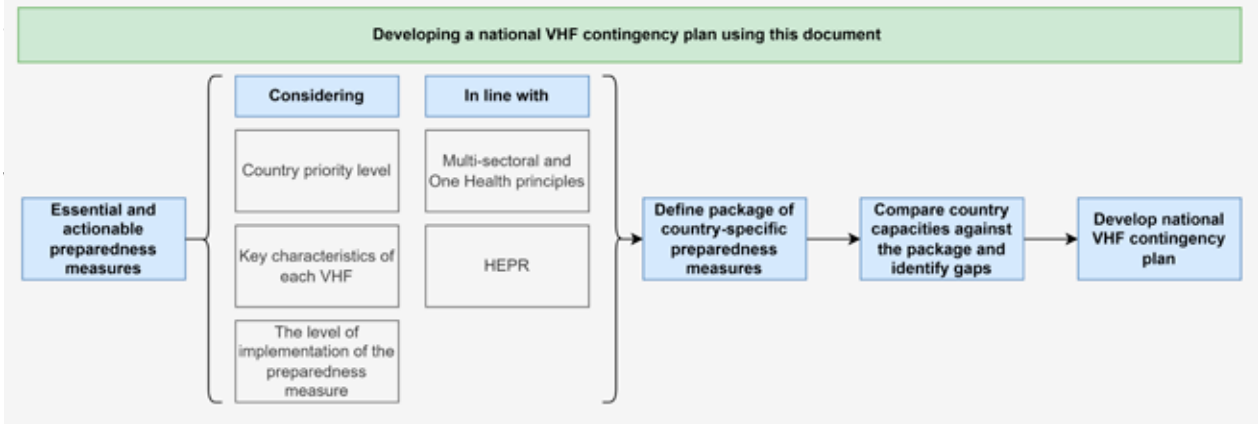
b Whereby suspected outbreaks are identified within seven days of emergence, reported to public health authorities with initiation of response efforts within one day, and effectively responded to within seven days.

1. Purpose of this document and target audience

Viral haemorrhagic fevers (VHFs) are a diverse group of illnesses characterized by fever and bleeding disorders (Table 1, page 14).[2] They are associated with high morbidity and mortality and constitute a major challenge to public health, especially in parts of the world with endemic zoonotic reservoirs.[3] Africa is significantly affected, with outbreaks increasing in both scale and frequency.[4] Given the significant morbidity, mortality, and overall disruption caused by VHF outbreaks, effective and timely responses are imperative. It is therefore crucial to increase proactive focus on high-impact preparedness activities for these pathogens, so as to prepare for, inform, and guide reactive responses. Better preparedness will reduce the impact of emergencies on overall public health, lower the cost of response and recovery, and serve as a long-term investment in health systems' capacity to manage public health emergencies in line with IHR 2005. Accordingly, the purpose of this document is to consolidate, complement and advance existing VHF guidelines (referenced throughout this document) by specifying key, specific, and high-impact steps towards better preparedness for VHF outbreaks in the African Region (Fig. 1).

This document considers new scientific breakthroughs and builds on lessons learned from recent VHF outbreak responses, including in West Africa (2014–2016, 2021, 2022), the Democratic Republic of the Congo (2018–2022), and Uganda (2022 and 2023); as well as Lassa fever in Nigeria, where the virus is endemic. Breakthroughs include new and crucial innovations in diagnostics, vaccinations.[5,6] therapeutics,[7] and social sciences.[8–11] The document also considers a range of different sectors in line with WHO's framework for health emergency preparedness, response and resilience (HEPR) and the general One Health principles. It is also aligned with the WHO AFRO Regional strategy for health security and emergencies 2022–2030 7-1-7 target to 'identify [an] outbreak within seven days of emergence, report to public health officials within one day, and effectively respond within seven days.[12] Taken together, the document will help ensure better preparedness and readiness (defined in the glossary of this document beginning on page xii) to prevent, detect, respond to, and contain any potential threat of VHF cases in Member States.

Fig. 1. Developing a national VHF contingency plan using this document



The target audience of this document (and the associated online companion tool) includes WHO country offices in Member States of the African Region; Member States' ministries of health and their public health emergency operation centres; relevant external assessment teams; and partners looking to identify preparedness gaps and support interventions that help address them. In the event of a suspected or confirmed VHF case, the document also serves to provide any intervening partner with a sense of what structures should be in place, in order to guide scale-up activities in line with regional and national plans.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2. Epidemiological profile of VHFs affecting the WHO African Region

2.1 Key characteristics of VHFs affecting the World Heath Organization African Region

The following table (Table 1) lists VHFs affecting human populations in the WHO African Region (a comprehensive table of all VHFs is included in this document's annex on page 93).[c]

Table 1: VHFs affecting WHO AFRO including key characteristics

VHFs affecting WHO AFRO including key characteristics				
VHF	**CFR**	**H-H transmission**	**WHO 'Top 10' pathogen***	**Vaccine**
Rift Valley fever	<1%[18]	N	Y	Y**
Dengue	<1%[19]	N	N	Y***
Yellow fever	<1%[20]	N	N	Y
Lassa fever	~1%[21]	Y†	Y	N††
Crimean-Congo haemorrhagic fever	~30%[22]	Y†	Y	N
Ebola disease†††	~50%[23]	Y	Y	Y‡
Marburg disease	~88%[24]	Y	Y	N

Table 2: Table 1 notes

Table 1 notes	
Symbol	**Note**
*	WHO top-10 pathogens that could cause future outbreaks and pandemics. The list was last updated in November 2018.[25]
**	A vaccine is available for livestock but not for people.[26]
***	Vaccines are newly available but not yet in routine use.[27]
†	With respect to Lassa fever, while human-to-human transmission is possible, the primary mode of transmission remains contact with food or household items contaminated with rat excreta.[28] Similarly, human-to-human transmission of CCHF is possible, but the primary mode of transmission is through tick bites or contact with infected animal blood.[22,29]

c There are three VHFs that either have affected the WHO African Region previously, or are known to exist in zoonotic reservoirs. These include the rodent-associated Lujo virus (LUJV), the rodent-associated lymphocytic choriomeningitis virus (LCMV), and the bat-associated Nipah virus. There has only ever been one recorded LUJV outbreak (2008).[13] While identified in South Africa and resulting in the deaths of four out of five patients (CFR = 80%), the index case had travelled from Zambia and this is where the outbreak is believed to have originated. Due to the exceptional nature of LUJV, this VHF is not considered in this document. For LCMV, no human infection has ever been recorded in Africa. However, the virus has been recently isolated in mouse populations in Gabon.[14] Virtually all human cases of LCMV are mild and self-limiting; hence this VHF is not considered in this document. Nipah virus (which is also on the WHO top-10 list) is a bat-associated virus characterized as a VHF that can be transmitted to humans through contaminated food or directly between people.[15] It has never been known to have caused human infections on the African continent. However, antibodies have been found in African fruit bats,[16,17] indicating a possible risk to countries in Africa. Were Nipah virus identified as a meaningful risk or identified in the human population, this would represent a serious public health threat.

Table 1 notes	
Symbol	**Note**
††	Vaccines for Lassa fever are currently being trialled but not yet available.[30,31]
†††	The genus *Orthoebolavirus* includes six species, namely Ebola virus (formerly known as "Zaire"); Sudan virus; Bundibugyo virus; Taï Forest virus; Reston virus; and Bombali virus.[32] Ebola virus causes most outbreaks; Sudan virus caused a recent outbreak in Uganda.[33] Taï Forest and Bundibugyo viruses have only ever caused a relatively small number of cases in human populations.[33] Reston virus is not known to be pathogenic in humans, nor is Bombali virus.[32]
‡	There is a vaccine available for Ebola virus,5 but not for any other Orthoebolavirus (see †††).

2.2 Country priority levels

In this section, a priority level is assigned to each VHF in each Member State of the WHO African Region. Prioritization is useful for reflecting the epidemiological burden in a given country (and necessary in this document because countries at higher priority levels should consider more robust preparedness measures). For each VHF, four priority levels are defined:

Priority 1 — Highest priority countries that are continuously or most frequently affected by a given VHF

Priority 2 — Elevated priority countries that exceed Priority 3 criteria but do not meet Priority 1 criteria

Priority 3 — Elevated priority countries that do not meet criteria for Priority 1 or 2

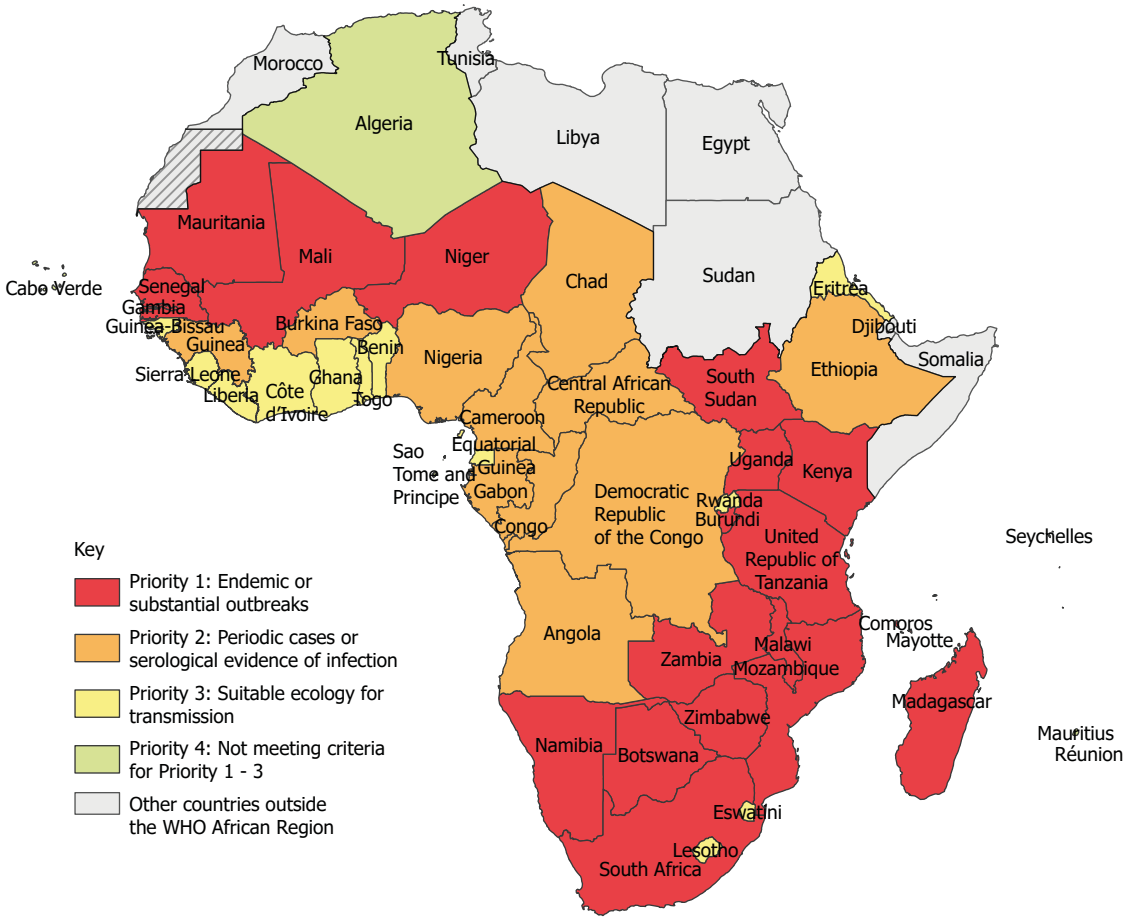
Priority 4 — Countries without elevated priority (that is, they do not meet criteria for Priority 1, 2, or 3)

Given the range and diversity of VHFs affecting the WHO African Region (page 3), there is no one measure that can be used to assess and assign priority levels. Relevant factors include: the frequency or recency with which a given country is affected (including endemically); the presence of relevant vectors and evidence of reservoir ecology and serosurveys;[37] and relative linkages to affected or most at-risk countries. Therefore, different criteria are necessary for the purpose of assigning a priority level to each VHF separately. These are reflected in the keys for each of the following figures.

In most cases, the 2016 World Heath Organization African Region document '*Mapping the risk and distribution of epidemics in the WHO African Region: a technical report*' was used to assign priority levels.[36] This was supplemented and adjusted with other resources (described at greater length in Annex 3.

Rift Valley fever					
Primary mode of transmission					
Contact with or consumption of blood, tissues, secretions, or excretions of infected animals as well as infected mosquitoes and flies. Those routinely handling animals, such as farm workers, butchers/abbatoir workers and veterinarians, are at highest risk.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission**	**Vaccine**	**WHO 'Top-10' pathogens***	**Year of last case****
Mosquitoes	<1%[18]	N	Y***	Y	Endemic†

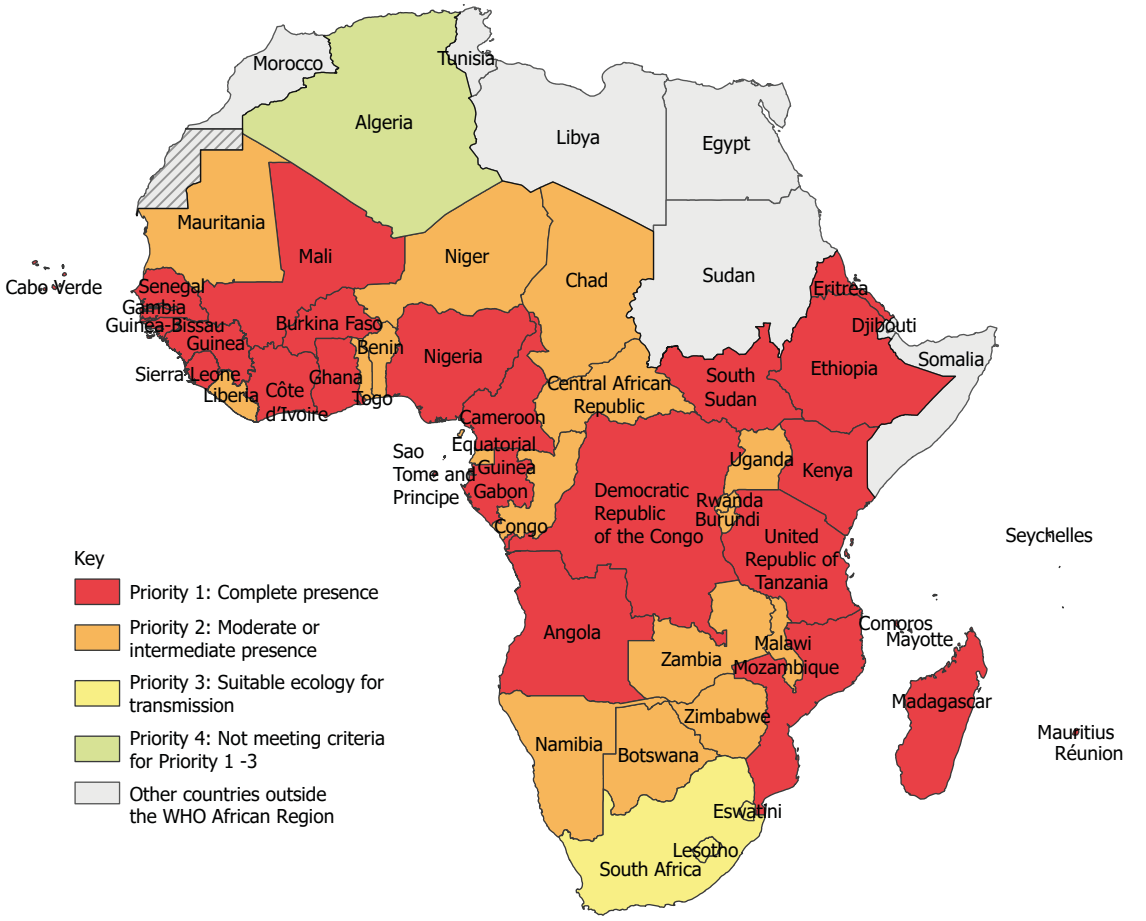
Member States of the WHO African Region and their assessed priority levels as of December 2023



Notes: ** That could cause future outbreaks and pandemics.[25] ** As of December 2023. *** A vaccine is available for livestock but not for people.[26] † In some countries.*

Dengue					
Primary mode of transmission					
Dengue fever (the infection caused by exposure to dengue virus) is spread by the *Aedes* mosquito. A rise in cases has been observed globally in the past two decades. The vast majority of cases are not haemorrhagic, but severe cases can be.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission**	**Vaccine**	**WHO 'Top-10' pathogen***	**Year of last case****
Mosquitoes	<1%[19]	N	Y***	N	Endemic†

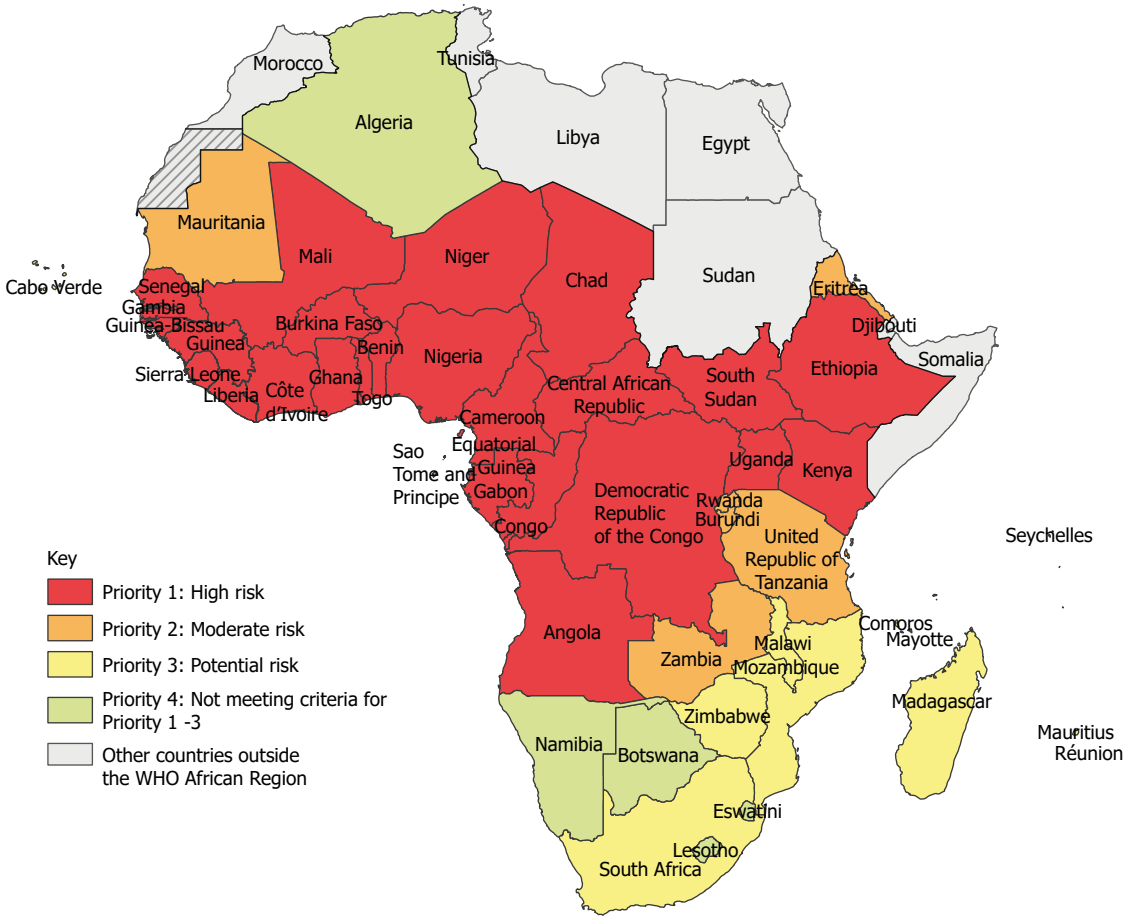
Member States of the WHO African Region and their assessed priority levels as of December 2023



***Notes:** * That could cause future outbreaks and pandemics.[25] ** As of December 2023. *** Vaccines are newly available but not yet in routine use.[27] † In some countries.*

Yellow fever					
Primary mode of transmission					
Yellow fever virus is transmitted through the bite of infected *Aedes* and *Haemagogus* mosquitoes. Large-scale vaccination campaigns have reduced its incidence, but non-vaccinated populations remain vulnerable, leading to sporadic outbreaks.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission**	**Vaccine**	**WHO 'Top-10' pathogen***	**Year of last case****
Mosquitoes	<1%[20]	N	Y	N	Endemic***

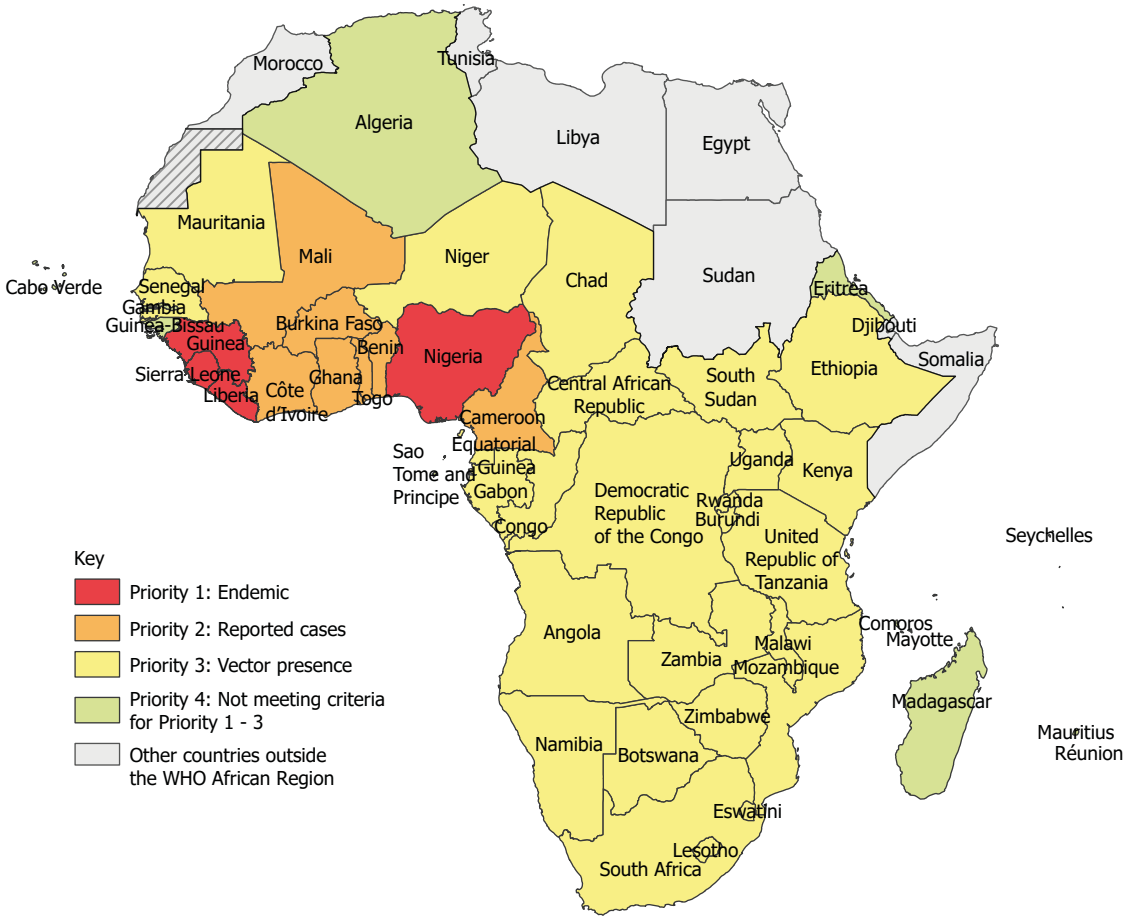
Member States of the WHO African Region and their assessed priority levels as of December 2023



Notes: ** That could cause future outbreaks and pandemics.[25] ** As of December 2023. *** In some countries. [†] Refer to Annex 3 for more information.*

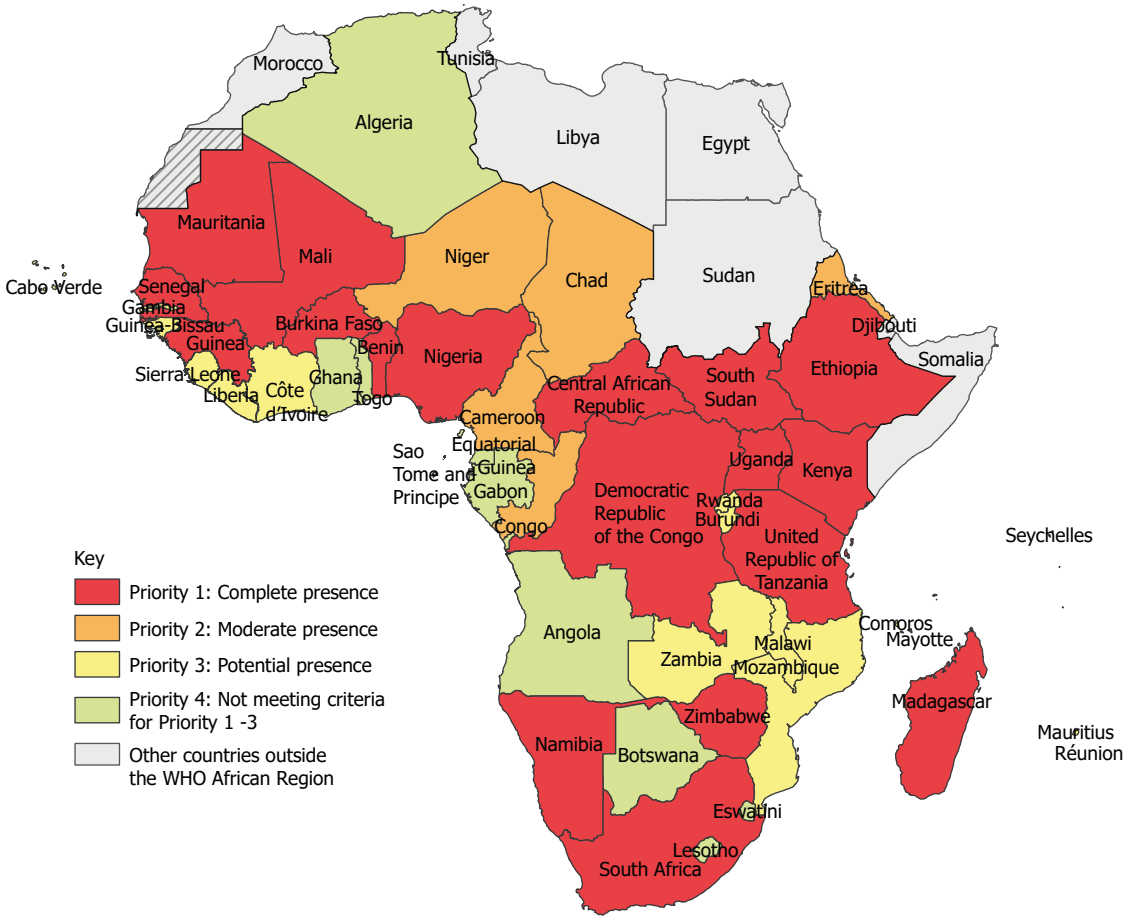
Lassa					
Primary mode of transmission					
Humans usually become infected with Lassa virus through exposure to food or household items contaminated with urine or faeces of infected rats. Carers and health workers are at risk if caring for patients in the absence of proper IPC.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission***	**Vaccine**	**WHO 'Top-10' pathogen****	**Year of last case*****
Rats	~1%[21]	Y	N	Y	Endemic†

Member States of the WHO African Region and their assessed priority levels as of December 2023



***Notes:** * Human-to-human transmission is possible, but the primary mode of transmission is through contact with contaminated rat excreta. ** That could cause future outbreaks and pandemics.[25] *** As of December 2023. † In some countries.*

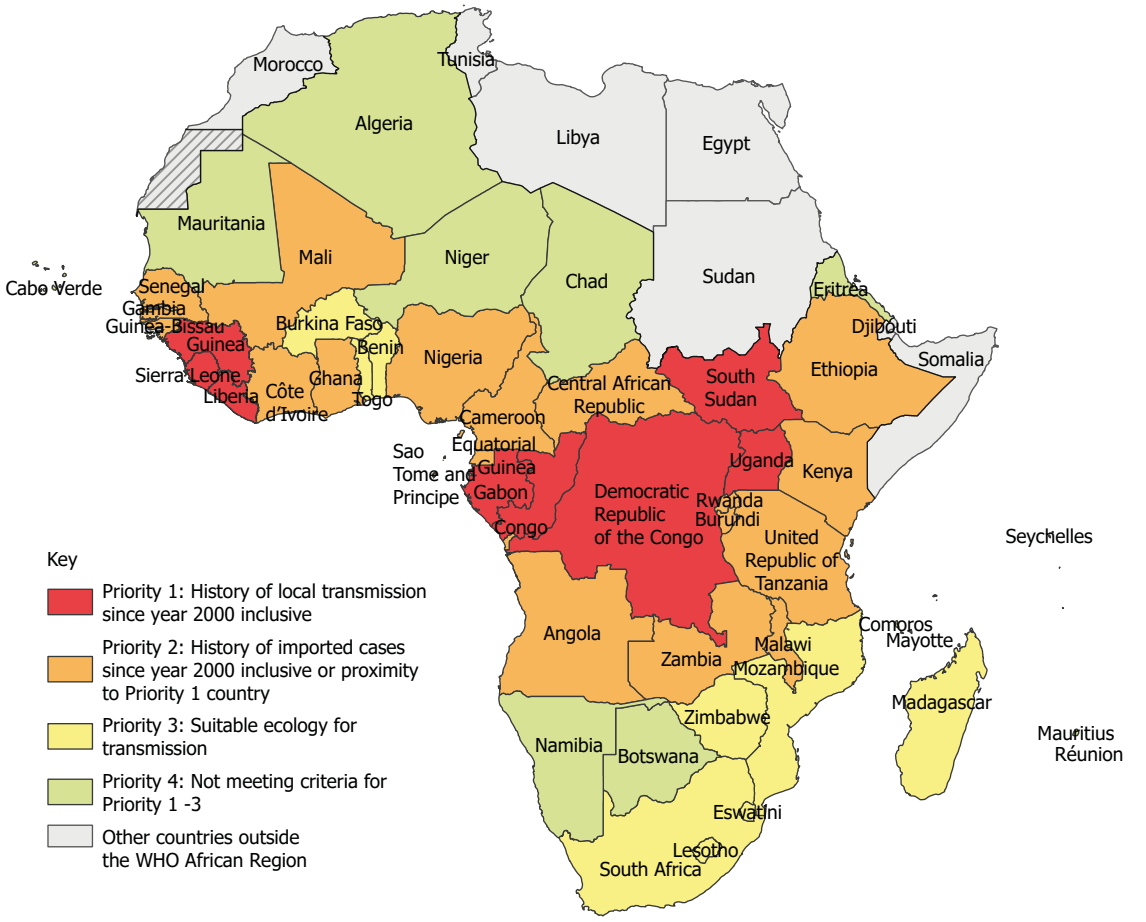
CCHF					
Primary mode of transmission					
While it is possible for CCHF to be transmitted nosocomially (usually to health care workers in hospital settings), most infections are acquired through tick bites or contact with infected animal blood or tissues immediately after slaughter.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission***	**Vaccine**	**WHO 'Top-10' pathogen****	**Year of last case*****
Ticks	~30%[22]	Y	N	Y	Endemic†
Member States of the WHO African Region and their assessed priority levels as of December 2023					



***Notes:** * Human-to-human transmission is possible, but the primary mode of transmission is tick bites. ** That could cause future outbreaks and pandemics.[25] *** As of December 2023. † In some countries. †† Several countries were 'upgraded' from Priority 2 to Priority 1 based on US CDC data. See Annex 3 for more information.*

Ebola disease*					
Primary mode of transmission					
Once acquired from its zoonotic source, human-to-human transmission is the primary mode of transmission. Transmission is through contact with the blood or body fluids of an infected person or corpse.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission**	**Vaccine****	**WHO 'Top-10' pathogen*****	**Year of last case†**
Bats††	~50%[23]	Y	Y	Y	2022†††

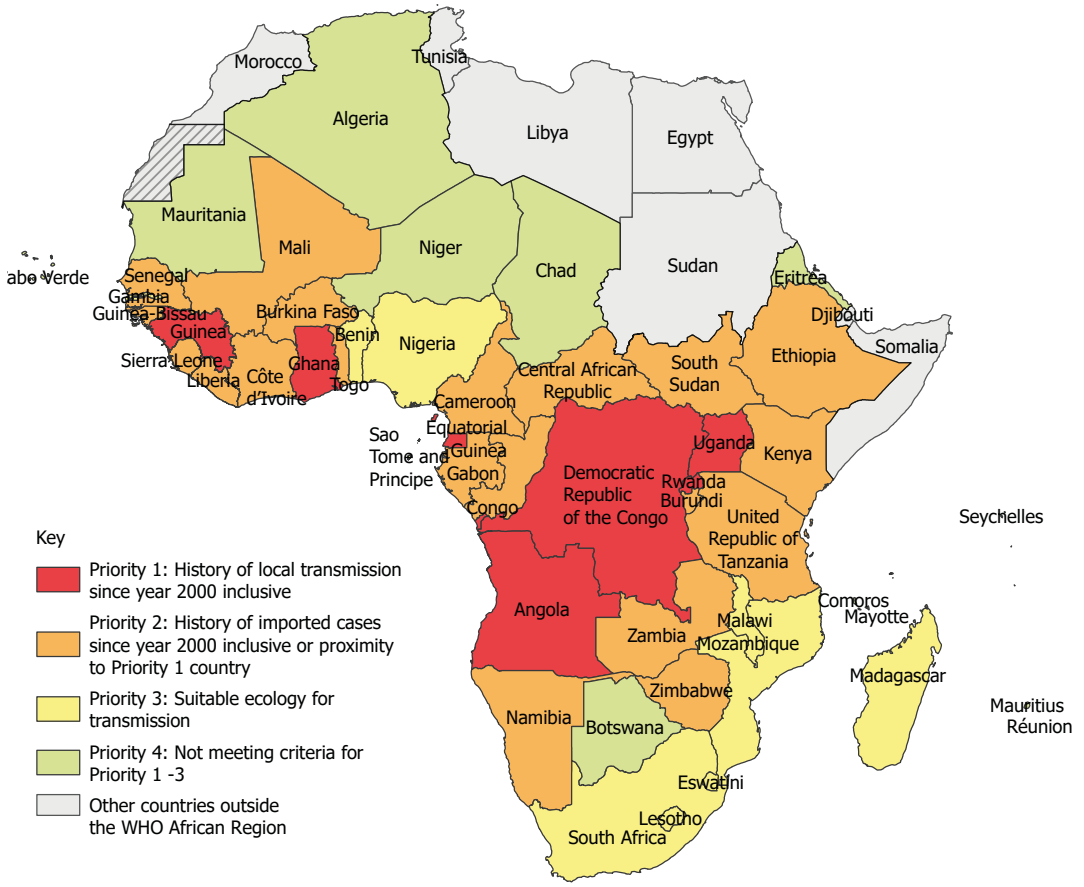
Member States of the WHO African Region and their assessed priority levels as of December 2023



***Notes:** * Includes six species. ** Only for Ebola virus. *** That could cause future outbreaks and pandemics.[25] † As of December 2023. †† Suspected reservoir but not confirmed.[38] ††† SUDV in Uganda. ‡ Sierra Leone and Liberia are graded Priority 1 due to the proximity of local transmission from Meliandou (Guinea), and the presence of large numbers of Ebola survivors. See Annex 3 for more information.*

Marburg					
Primary mode of transmission					
Once acquired from its zoonotic source, human-to-human transmission is the primary mode of transmission for Marburg virus. Transmission is through contact with the blood or body fluids of an infected person or corpse.					
Other key information					
Zoonotic reservoir	**CFR**	**H-H transmission**	**Vaccine**	**WHO 'Top-10' pathogen***	**Year of last case****
Bats	~88%[24]	Y	N	Y	2024**

Member States of the WHO African Region and their assessed priority levels as of November 2024[d]



***Notes:** * That could cause future outbreaks and pandemics.[25] ** As of 04 November 2024, there is an ongoing Marburg virus outbreak in Rwanda.*

d This document was prepared and developed prior to the outbreak of Marburg virus that has subsequently been declared in Rwanda. Given the significance of this event, exceptionally, the Marburg virus map and related data has been adjusted to account for this new outbreak. Therefore, unlike other maps which are up to date as of December 2023, the Marburg virus map and related data is up to date as of November 2024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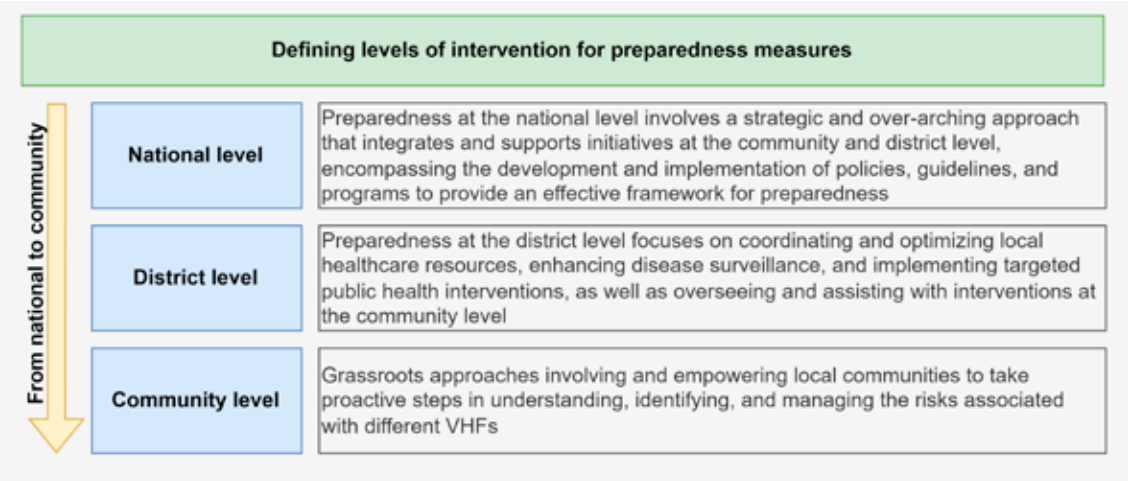
3. Organization of preparedness measures in this document

In this document, preparedness measures are presented according to their level of intervention (that is, whether a preparedness measure takes place at the national, district or community level, as explained in Figure 2).

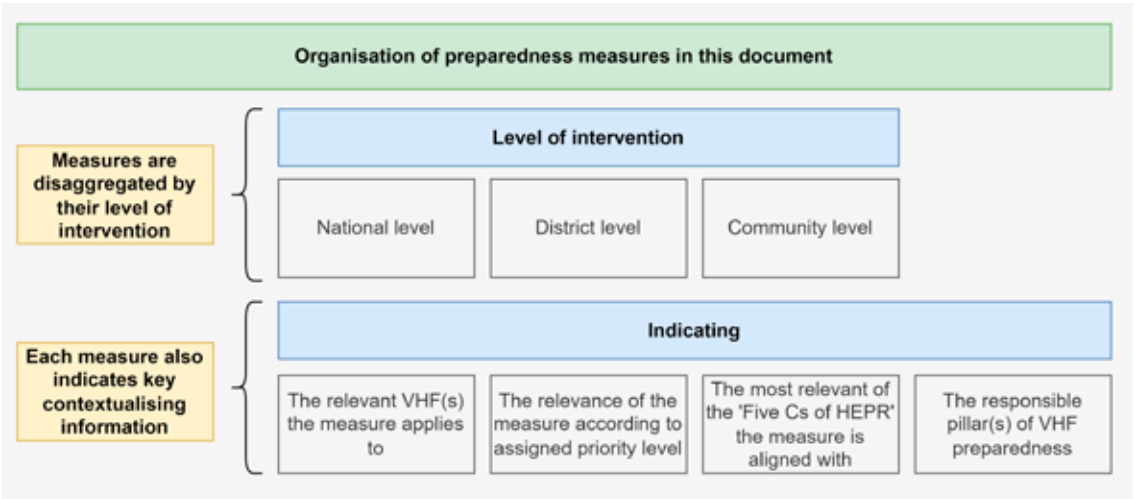
Fig. 2. Defining levels of preparedness activities



Note: a more detailed explanation of these 'levels of intervention' is provided in Annex 4.

In addition, for each preparedness measure, considerations and indications are given as to whether the measure applies regardless of the VHF or is specific to certain VHFs; whether the measure applies regardless of priority level or is specific to certain priority levels; the most relevant of the five Cs of WHO's global architecture for health emergency prevention, preparedness, response and resilience (HEPR) with which the measure is aligned;[39] and the pillar(s) of VHF preparedness with primary responsibility for advancing the measure. This is summarized in the figure below (Figure 3). In the annex of this document (page 100), these criteria and the justification for their use in this document are described at greater length.

Fig 3. Organisation of preparedness measures in this document

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Bilanciamento del Bianco
Bilanciamento del Nero
Frame Rate: 29

4. Using this document to develop a national VHF contingency plan

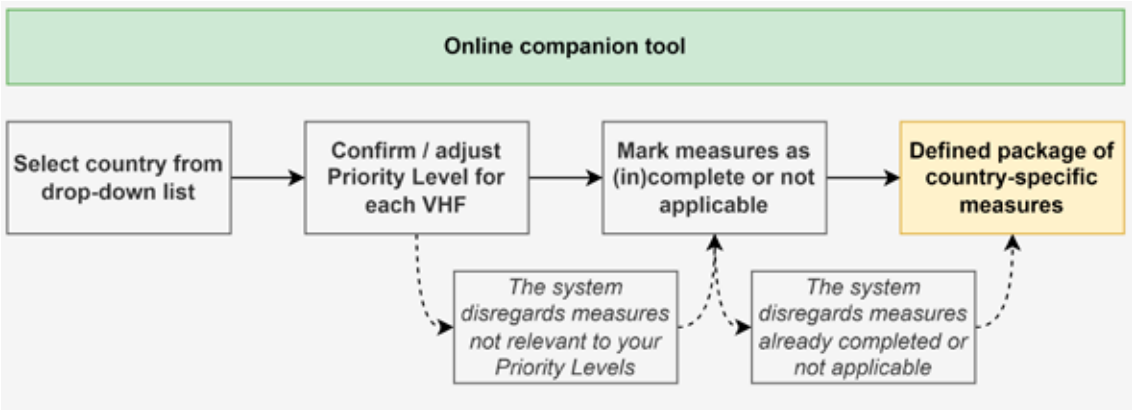
The next three chapters of this document articulate the package of essential and actionable preparedness measures for any given country in the WHO African Region. There are four key steps to using the presented measures in developing a national VHF contingency plan (Figure 5, page 25):

- **Step 1** consider all 'baseline preparedness measures' that apply regardless of a country's priority level;
- **Step 2** each country to assess and assign a priority level to each VHF (see page 4), and then consider all country-specific preparedness measures; [d]
- **Step 3** combine the baseline preparedness measures with country-specific preparedness measures — together, this represents a country-specific package of essential and actionable preparedness measures for VHFs;
- **Step 4** is to then follow the standard process of developing and implementing a preparedness plan (this process is described in greater detail in the annex of this document on page 98), including by:
    - conducting a capacity assessment against the identified package of preparedness measures;
    - developing a prioritized action plan to address any gaps between the package of preparedness measures and existing country capacities, including costing;
    - conducting resource mapping and mobilization for the costed action plan;
    - implementing the action plan; and
    - monitoring and evaluating the action plan, and reviewing and revising it on an annual basis (or sooner if there is an outbreak or change to a country's priority level).

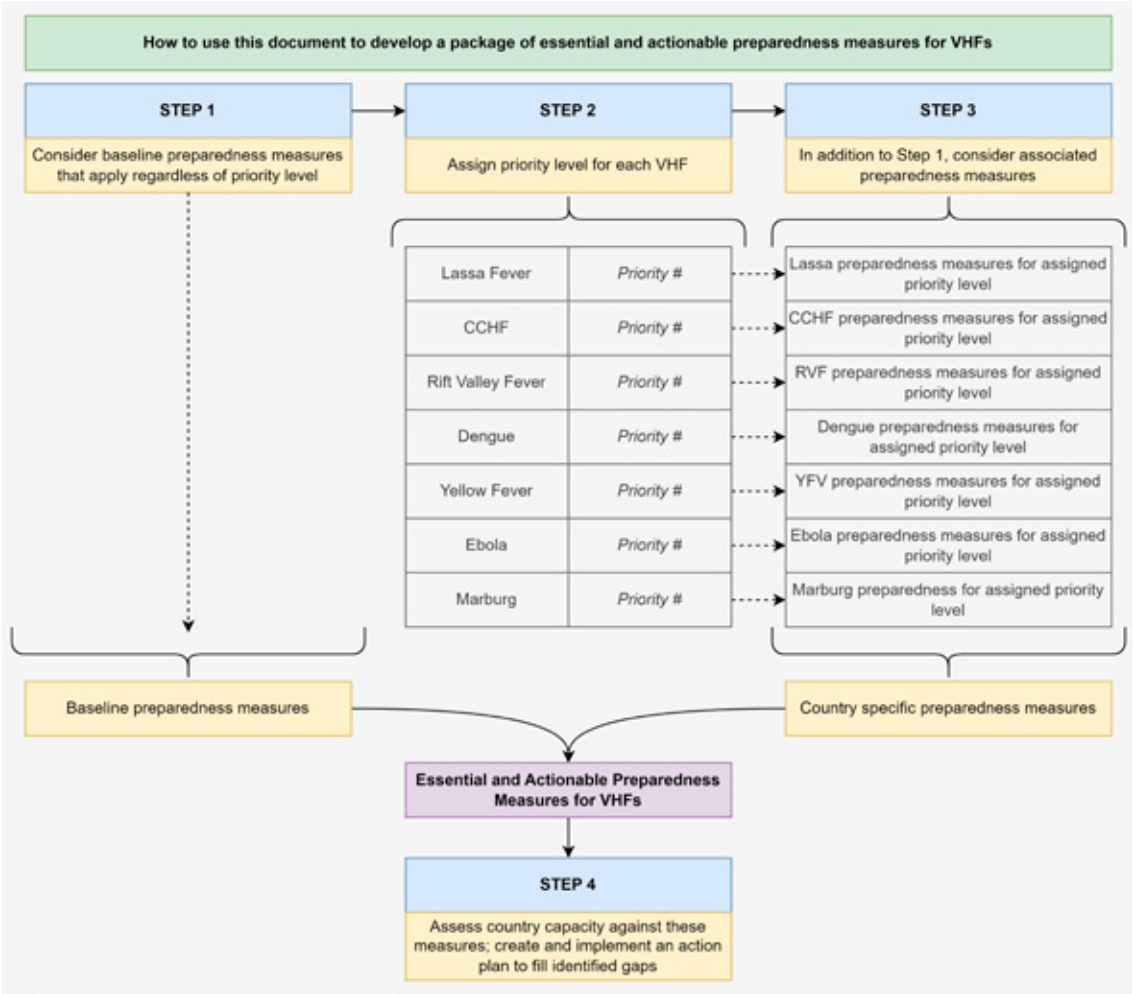
For those who find the format more useful, this document includes an online companion tool (Figure 4) to assist countries in identifying their country-specific package of measures. It can be found at this link: https://enketo.whonghub.org/x/pngSnqWv

d As presented in the prior chapter of this document, an assessment and assignment has been made (relevant as of December 2023) to assist relevant authorities. Relevant authorities at the country level are encouraged to use this to guide their assessment and assignment of priority levels, rather than to define it, especially as epidemiology and other risk factors will change over time.

Fig. 4. Online companion tool



Fig, 5. How to use this document to develop a national VHF contingency plan



5. Index of preparedness measures linking to detailed steps

For the reader's convenience, the table below (Table 3) lists the preparedness measures presented in the following three chapters of this document. Each preparedness measure is linked to its respective page outlining detailed steps and components for advancing the measure.

Table 3. Index of preparedness measures linking to steps

Index of preparedness measures linking to detailed steps		
Measure	**VHF relevance**	**Priority level relevance**
National level		
Develop, deliver, monitor and routinely revise a national VHF contingency plan (revised biennially)	All	Baseline
Ensure all key leadership, coordination and partnership management functions are in place and practised regularly	All	Baseline
Annually (re)assess relevant domestic laws, legal frameworks and regulations dealing with VHF response	All	Baseline
Ensure partnerships for VHF preparedness are effective and accountable	All	Baseline
Annually (re)assess SOPs, protocols, plans, assessment tools, ToRs/SoWs and MoUs relevant to VHF preparedness	All	Baseline
Implement WHO's National civil-military health collaboration framework for strengthening health emergency preparedness	All	Baseline
Create and advance a national VHF research agenda and reassess biennially	All	1 and 2
Establish and continuously improve a national high-level isolation unit (HLIU) for the treatment of infectious VHF hazards	LASV, CCHF, EBOV, MARV	1 and 2
Ensure that at least one national reference laboratory can process high consequence pathogens	All	Baseline
Have a sufficient number of mobile laboratories capable of processing high consequence pathogens anywhere within 24 hours	LASV, CCHF, EBOV, MARV	1 and 2
Establish a minimum of one ultra-cold chain facility at the national level with national distribution capacity	All	Baseline
Establish a standby network of voluntary quarantine facilities in key locations	EBOV, MARV	1 and 2
Preventatively vaccinate essential health care workers against Ebola virus	EBOV (Ebola virus only)	1 and 2

Continued...

Index of preparedness measures linking to detailed steps		
Measure	**VHF relevance**	**Priority level relevance**
Support relevant education and continuous learning for public health professionals including as relevant to VHF risks	All	Baseline
Consider self-procuring a minimum buffer stock of Ebola virus vaccines for reactive rapid response	EBOV (Ebola virus only)	1 and 2
Implement the Eliminate yellow fever epidemics (EYE) strategy	YVF	1 and 2
Ensure effective and robust RCCE systems and coordination components are in place and that they consider VHF risks	All	Baseline
Ensure that RCCE messages, SOPs, communication channels, etc. are pre-developed and pre-identified for VHF readiness	All	Baseline
Establish a multisectoral coordination mechanism and framework involving health, the environment and other relevant sectors	All	Baseline
Develop a national vector surveillance and control management plan and ensure the inclusion of VHF risks	RVF, DENV, YFV, LASV, CCHF	1 and 2
Establish a functional PHEOC and plan an IMS for VHFs	All	Baseline
Establish a minimum of one rapid response team (RRT) and one emergency medical team (EMT) at national level capacitated in VHF response	All	All
Establish cross-border coordination that includes relevant VHF risks	All	Baseline
Assess whether to advance a national dengue vaccination campaign, and if so, advance the campaign	DENV	1 and 2
Develop a Rift Valley fever control plan in line with the One Health platform	RVF	1 and 2
Support relevant education and continuous learning for public health professionals, including as relevant to VHF risks	All	Baseline
Develop an agreed set of ethical compliance standards (‘health and safety standards’) for all involved in VHF preparedness	All	Baseline
Develop and maintain robust maps for epidemiological and operational readiness with consideration of relevant VHF risks	All	Baseline
Design and implement comprehensive points of entry monitoring systems with capacity to stand up contact tracing if necessary	All	Baseline
Regularly (re)assess and, if necessary, revise key VHF tools, including case definitions, in line with WHO standards	All	Baseline
Regularly conduct simulation exercises, readiness assessments and associated after-action reviews to ensure readiness	All	Baseline
Assess the capacity of surveillance systems to detect relevant VHF risks and advance capacity training in line with national systems	All	Baseline
Establish robust monitoring and evaluation systems for VHF preparedness measures	All	Baseline
Develop national protocols for staff safety and security including as related to VHF-related field activities	All	Baseline
Establish and enhance health information management (HIM) systems that are sensitive to relevant VHF risks	All	Baseline
Implement robust logistics to ensure availability/deployment of essential supplies and other cross-functional support for VHF-related activities	All	Baseline
Develop key training materials of relevance to VHF risks	All	Baseline
Ensure holistic, robust and sustainable financial planning for the national VHF contingency plan and associated interventions	All	Baseline

Continued...

Index of preparedness measures linking to detailed steps		
Measure	**VHF relevance**	**Priority level relevance**
District level		
Conduct regular social mobilization campaigns focused on promoting specific risk reduction and health protection from VHFs	All	1 and 2
Identify and capacitate a district-level referral hospital for the treatment of severe cases of relevant VHFs not including filoviruses	RVF, DENV, YVF, LASV, CCHF	1 and 2
Establish/enhance routine surveillance for all relevant VHFs	All	1, 2, and 3
Establish a minimum of one rapid response team (RRT) at district level capacitated in VHF response	All	1 and 2
Implement a system for the collection, packaging, storage and shipment of VHF specimens to capacitated laboratories	All	Baseline
Complement community-based vector control through sustainable vector management strategies	RVF, DENV, YFV, LASV, CCHF	1 and 2
Consider holistic health system approaches to improve community health and health-seeking behaviours relevant to VHF risks	All	Baseline
Build district-level RCCE capacity that includes consideration of VHF risks and community data for action	All	Baseline
Establish district-level stockpiles of key countermeasures including PPE	All	1 and 2
Ensure the availability of a subnational reference laboratory in at-risk areas or the existence of a sample transfer system to the national laboratory < 24 hours	All	1 and 2
Establish an SDB team at the district level	EBOV, MARV	1
Enhance oversight of IPC in facilities in high-risk areas	LASV, CCHF, EBOV, MARV	1 and 2
Community level		
Implement community-based vector control plans that include consideration of VHF risks	RVF, DENV, YFV, LASV, CCHF	1 and 2
Implement community-based surveillance (CBS) systems that include consideration of relevant VHF risks	All	1 and 2
Advance a package of enhanced WASH services in areas deemed to be at high risk	LASV, CCHF, EBOV, MARV	1 and 2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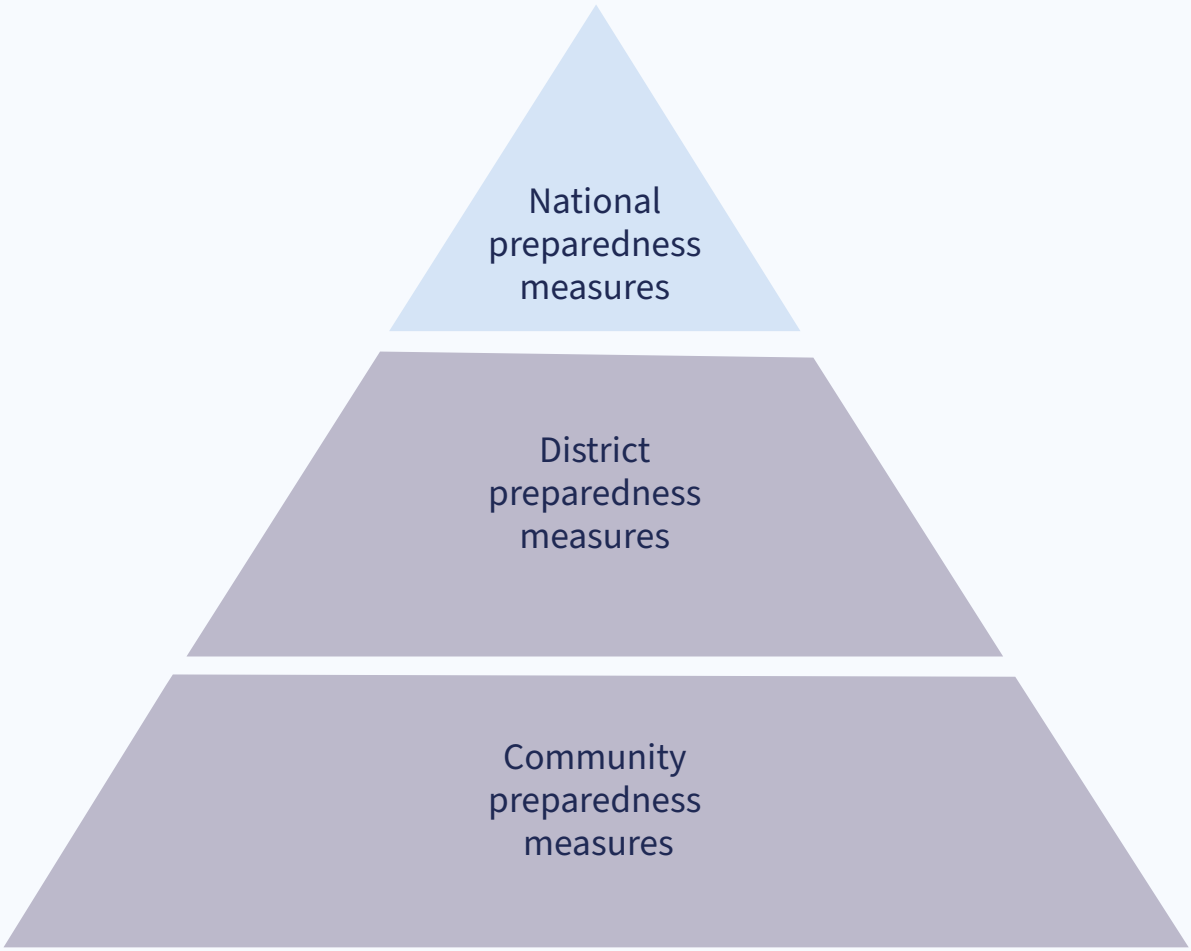
6. National-level preparedness measures



	Y = Completed; N = Not; NA = Not applicable →
Measure	**Develop, deliver, monitor, and routinely revise a national VHF contingency plan (revised biennially)**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency Coordination → Strengthening HEPR → Prioritised and Costed Plans
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management
Steps / (sub-)components	
As guided by the prioritization methods described herein, biennially (re)assign a priority level to each VHF (Y/N/NA?)	
Define the package of preparedness measures relevant to your country (Y/N/NA?)	
Conduct a country capacity assessment of core VHF preparedness capacities against the defined package (Y/N/NA?)	
• To the extent possible, integrate the assessment with existing preparedness assessment tools (Y/N/NA?)	
o Conduct STAR (Y/N/NA?)	
o Conduct the Joint External Evaluation (JEE) (Y/N/NA?)	
o Conduct the Universal Health and Preparedness Review (UPHR) (Y/N/NA?)	
o Conduct the States Party self-assessment annual reporting (SPAR) (Y/N/NA?)	
Where there are gaps, develop a prioritized action plan that is costed (including for recurring costs) (Y/N/NA?)	
Map and mobilize resources, especially to fill critical funding gaps (this may require developing investment cases) (Y/N/NA?)	
Identify relevant partners who may be able to support with implementation (Y/N/NA?)	
Develop ToRs defining roles and responsibilities for advancing the preparedness plan as well as any necessary MoUs (Y/N/NA?)	
Ensure quality improvement through regular simulation exercises and after-action reviews (Y/N/NA?)	
Continuously update the plan based on evolving risks, biennially, and sooner if the epidemiological situation changes prioritisation level (Y/N/NA?)	
Notes and resources	In Annex A5 there is further guidance on the process of developing a national VHF contingency plan. There is also a list of key resources in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure all key leadership, coordination, and partnership management functions are in place and practiced regularly**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency Coordination → Strengthened Workforce Capacities for Health Emergencies → Connected Health Emergency Leadership
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management
Steps / (sub-)components	
Oversee development, maintenance, and annual revision of a national VHF preparedness plan (Y/N/NA?)	
• Prepare a VHF preparedness plan: include cost considerations and prioritize actions (Y/N/NA?)	
• Assess progress: regularly evaluate the plan and develop contingencies for delays or challenges (Y/N/NA?)	
• Support teams: provide necessary support to teams to complete their action plan points (Y/N/NA?)	
• Establish oversight mechanisms: ensure there are robust systems for monitoring and accountability (Y/N/NA?)	
Ensure the PHEOC is operational and conducting regular meetings even in the absence of ongoing outbreaks (Y/N/NA?)	
• Identify key roles: pre-identify roles such as incident manager, deputy, and chief of staff, and have ToRs for each (Y/N/NA?)	
• Maintain physical structure: establish and sustain a physical structure for the PHEOC (Y/N/NA?)	
• Staffing and redundancy: ensure adequate staffing and backup across the organigramme (Y/N/NA?)	
Form and manage rapid response teams relevant to VHF response were it to occur (Y/N/NA?)	
• Define team roles: for each pillar, identify leads, deputies, and chiefs of staff, and have ToRs for each (Y/N/NA?)	
• Regular simulation exercises: conduct pillar-specific training and exercises (Y/N/NA?)	
• Maintain staff register: develop a list of deployable staff beyond the core team (Y/N/NA?)	
Ensure relevant partnerships are established and accountable (Y/N/NA?)	
Continuously update MOUs, health and safety protocols, and relevant laws and legal frameworks (Y/N/NA?)	
Ensure compliance with health and safety amongst all PHEOC and rapid response staff (Y/N/NA?)	
Ensure mechanisms are in place for robust adherence to the International Health Regulations (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Ensure all key leadership, coordination, and partnership management functions are in place and practiced regularly**
Keep track of financial, funding, and resource issues, and have effective plans for managing these needs (Y/N/NA?)	
Manage thresholds for crisis escalation including when to advise national leadership on the declaration of a public health emergency (Y/N/NA?)	
Establish and sustain cross-border collaboration (Y/N/NA?)	
• Regularly assess laws and agreements for cross-border collaboration (Y/N/NA?)	
• Set a regular schedule for cross-border meetings, define their structure, and assign liaisons, points of contact, and translators (Y/N/NA?)	
• Develop standardized formats and systems for sharing data (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1.

		Y = Completed; N = Not; NA = Not applicable
Measure	**Annually (re)assess relevant domestic laws, legal frameworks, and regulations relevant to VHF response**	
VHF relevance	All (though many laws are relevant only to outbreaks of viruses capable of being communicated person-to-person)	
Priority level relevance	Baseline	
'Five Cs' component(s)	Emergency Coord. → Health Emergency Alert and Response Coord. → Standardised Triggers and Rapid Resources for Immediate Response	
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management	
Steps / (sub-)components		
Annually (re)assess emergency powers legistlation and advise leadership if necessary changes are identified (Y/N/NA?)		
Annually (re)assess laws related to limits on freedom of movement and voluntary quarantine during public health emergencies (Y/N/NA?)		
• Ensure consideration for use of lockdowns and checkpoints (Y/N/NA?)		
• Ensure consideration for limits on mass gatherings and tourism (Y/N/NA?)		
• Ensure consideration for employment protection for those advised to quarantine voluntarily (Y/N/NA?)		
Annually (re)assess laws related to compelling public health measure compliance during public health emergencies (e.g., mandatory masking) (Y/N/NA?)		
• Develop clear pre-crisis agreements on repercussions (if any) for non-compliance with mandatory public health measures (Y/N/NA?)		
Annually (re)assess laws related to information dissemination and misinformation (Y/N/NA?)		
Annually (re)assess laws related to military aid to civil authorities (MACA) and civil-military cooperation (Y/N/NA?)		
Annually (re)assess laws related to regulations / limits on traditional healing and private health facility care during public health emergencies (Y/N/NA?)		
Annually (re)assess laws related to cross-border collaboration including data sharing and privacy laws (Y/N/NA?)		
Annually (re)assess laws related to environmental and vector control management of VHF vectors (e.g., regulating land use or wildlife trade) (Y/N/NA?)		
Annually (re)assess laws related to suspected / confirmed VHF patient or sample movement across international or district borders (Y/N/NA?)		
Annually (re)assess laws and regulations governing international cooporation and aid in the case of an outbreak (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Annually (re)assess relevant domestic laws, legal frameworks, and regulations relevant to VHF response**
• Ensure consideration of visa and work permit requirements for international frontline workers (Y/N/NA?)	
• Ensure consideration of the importation of medical countermeasures and lab reagents in line with national standards and regulatory approvals (Y/N/NA?)	
• Ensure consideration of collaborative research in line with national standards (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure partnerships for VHF preparedness are effective and accountable**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency Coordination → Strengthened Workforce Capacities for Health Emergencies → Connected Health Emergency Leadership
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management
Steps / (sub-)components	
Map potential partners: identify OGDs, INGOs, private sector entities, and other organizations with relevant expertise or resources (Y/N/NA?)	
Develop a strategy to engage these stakeholders, outlining benefits of collaboration and shared interest in effective VHF preparedness (Y/N/NA?)	
• Clearly define to partners how VHF outbreaks could affect partners (restrictions, reporting requirements, et cetera) (Y/N/NA?)	
Annually convene interested partners to contribute to the national VHF contingency plan including its costing (Y/N/NA?)	
• Ensure community representatives are involved in agreed partnerships to address local needs and insights (Y/N/NA?)	
• Draft and sign MoUs that outline the terms of agreed partnerships, including roles, responsibilities, and resource commitments (Y/N/NA?)	
• Ensure all partners comply with agreed health and safety standards as well as relevant laws, regulations, and frameworks (Y/N/NA?)	
Establish coordination mechanisms or a committee to coordinate partner activities (Y/N/NA?)	
• Develop a communication plan that facilitates regular and effective information sharing (Y/N/NA?)	
• Hold regular joint meetings as required according to the mutually agreed plan (Y/N/NA?)	
Establish an M&E framework for monitoring and evaluating the performance of partnerships and the impact of joint efforts (Y/N/NA?)	
• Define KPIs to measure the effectiveness of the partnership and progress towards preparedness goals (Y/N/NA?)	
• Conduct biannual reviews of partnership agreements and strategies to ensure they remain relevant and effective (Y/N/NA?)	
Establish feedback channels for regular feedback among partners and systems for continuous improvement processes (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1.

Y = Completed; N = Not; NA = Not applicable

Measure	**Anually (re)assess SOPs, protocols, plans, assessment tools, ToRs/SoWs, and MoUs relevant to VHF preparedness**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Emergency Coord. → Health Emergency Alert and Response Coord. → Standardised Triggers and Rapid Resources for Immediate Response	
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management	
Steps / (sub-)components		
Develop a consolidated list of all SOPs, protocols, plans, assessment tools, ToRs/SoWs, and MoUs relevant to VHF preparedness in your country (Y/N/NA?)		
Cross-check against the list of SOPs, protocols, plans, *et cetera* included in the annex of this document (Y/N/NA?)		
Identify relevant gaps according to the process in the annex of this document (Y/N/NA?)		
Create a priority plan for document development focusing first on missing documents, then on those which are out of date (Y/N/NA?)		
Advance the priority plan (target developing missing docs w/i 6 months; and updating all out-of-date w/i 12 months and at least 3 before known seasonal occurance (Y/N/NA?)		
Notes and resources	The Annex of this document includes a brainstormed list of the relevant SOPs, SOPs, protocols, plans, assessment tools, ToRs/SoWs, and MoUs relevant to VHF preparedness. It is not intended to be comprehensive but may be a useful guide to ensure holistic consideration of the range of activities required to advance VHF preparedness. There is a list of key resources in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Implement the WHO's Nat. Civil-Military Health Collaboration Framework for Strengthening Health Emergency Preparedness**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency Coordination → Strengthened Workforce Capacities for Health Emergencies → Connected Health Emergency Leadership
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management
Steps / (sub-)components	
Establish a strategic collaboration for health emergency preparedness that includes consideration of VHFs (Y/N/NA?)	
• Review existing national legislation and other legal instruments on civil-military collaboration (Y/N/NA?)	
• Establish civil-military collaboration at the highest levels of government to facilitate functional cross-sectoral partnership (Y/N/NA?)	
• Promote a multisectoral, whole-of-government approach to health emergency management that includes military health stakeholders (Y/N/NA?)	
• Commit to a systematic approach to assessing civil–military health capacities for health emergency preparedness (Y/N/NA?)	
• Conduct a regular mapping exercise to facilitate overview of synergetic functions, capacities and activities at the national level (Y/N/NA?)	
• Facilitate regular exchange between the public health and military health services to foster mutual understanding and trust (Y/N/NA?)	
• Develop cross-sectoral engagement strategies and techniques acknowledging services' applicability at the national level (Y/N/NA?)	
Identify technical areas for health emergency preparedness collaboration that includes consideration of VHFs (Y/N/NA?)	
• Identify lacking capacity to prevent, detect, or respond to health emergencies in developing joint initiatives for improvement (Y/N/NA?)	
• Utilize the military health services' technical expertise relevant to public health functions related to health emergencies (Y/N/NA?)	
Institutionalise civil-military health collaboration for preparedness that includes consideration of VHFs (Y/N/NA?)	
• Develop an agreement on cross-sectoral collaboration including defining roles and responsibilities for capacity-building (Y/N/NA?)	
• Request WHO support in institutionalizing civil–military health collaboration (Y/N/NA?)	
• Roadmap civil-military health emergency preparedness activities outlining stakeholders, timelines, and indicators (Y/N/NA?)	
• Promote a community of practice between public health and military health practitioners (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Implement the WHO's Nat. Civil-Military Health Collaboration Framework for Strengthening Health Emergency Preparedness**
Jointly build capacities and training for health emergency preparedness that includes consideration of VHFs (Y/N/NA?)	
• Regularly conduct simulation exercises after-action focusing on civil–military health collaboration for emergency preparedness (Y/N/NA?)	
• Commit funds to developing health emergency preparedness capacities strengthened by civil–military health collaboration (Y/N/NA?)	
Notes and resources	Refer to the WHO's National Civil-Military Health Collaboration Framework for Strengthening Health Emergency Preparedness for more information and guidance on advancing this preparedness measure.[40] There is a list of key resources in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Create and advance a national VHF research agenda and reassess biennially**	
VHF relevance	All	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Access to Countermeasures → Fast-Track Research and Development → Coordinated Research Built on a Shared Global R&D Agenda	
Preparedness pillar(s)	Leadership, Coordination, and Partnership Management	
Steps / (sub-)components		
Identify focal point(s) at all national universities and in-country private sector institutions with relevant research agendas (Y/N/NA?)		
Biennially convene focal point(s) for a three-day conference on advancing a national VHF research agenda (Y/N/NA?)		
• Biennial one-day workshop to develop/revise a national VHF research agenda and (re)assess all ongoing research related to VHFs (Y/N/NA?)		
○ Ensure consideration of and preparation for research on VHF vaccines and therapeutics (Y/N/NA?)		
○ Create an MoU with the national high-level isolation unit (HLIU) and put systems in place to conduct research there (Y/N/NA?)		
○ Create an MoU with the national reference laboratory and put systems in place to conduct research there (Y/N/NA?)		
• Biennial one-day conference to discuss new research findings related to VHFs (including from other countries) (Y/N/NA?)		
• Biennial one-day workshop of interested researchers to develop research proposals in line with the national VHF research agenda (Y/N/NA?)		
Mobilise international research institutions to fund research in line with the national VHF research agenda (Y/N/NA?)		
• Collaborate with research institutions for vaccine and therapeutics research (Y/N/NA?)		
Develop domestic and international research partnerships in line with the national VHF research agenda (Y/N/NA?)		
• Train identified local teams on good clinical practices (Y/N/NA?)		
• Require local partnership with international research projects (Y/N/NA?)		
• Identify local Principal Investigators with relevant expertise including for vaccines and therapeutics (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Create and advance a national VHF research agenda and reassess biennially**
• Identify focal points at international research institutions and disseminate the national VHF research agenda to them (Y/N/NA?)	
• Encourage PhD and postdoctoral research in VHFs (Y/N/NA?)	
• Invite relevant researchers to contribute to the annually-revised national VHF contingency plan (Y/N/NA?)	
• Have key rapid response personnel and other VHF frontline workers lecture and teach relevant university courses (Y/N/NA?)	
Ensure appropriate research ethics boards are active (including biosciences, social sciences, medical sciences, and clinical trial research) (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1. This includes an AFRO research blueprint for future filovirus outbreaks.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish and continuously improve a national high-level isolation unit (HLIU) for the treatment of infectious VHF hazards**
VHF relevance	Lassa fever, CCHF, Ebola, and Marburg only
Priority level relevance	Priority 1 and Priority 2 only
'Five Cs' component(s)	Safe and Scalable Care → Scalable Clinical Care During Emergencies → Scalable Infrastructure for Safe Clinical Surge
Preparedness pillar(s)	Case Management
Steps / (sub-)components	
Biannually (re)assess existing HLIU capacity treat severe cases of infectious VHFs (Y/N/NA?)	
• Assess the facility's IPC readiness according to relevant VHFs including decontamination and waste management (Y/N/NA?)	
○ Use WHO's 2023 IPC guideline for filoviruses as a principal reference and pre-position IPC kits according to anticipated patient loads (Y/N/NA?)	
○ Pre-position essential medicines and consumables for critical care management (Y/N/NA?)	
○ Ensure availability and systems are in place to provide mental health and psychosocial support for any suspect or confirmed case (Y/N/NA?)	
• Assess links between the facility and laboratories capable of processing suspected VHF samples as well as surveillance and ambulance teams (Y/N/NA?)	
• Assess healthcare providers at the facility on their early diagnosis, case management, and supportive treatment knowledge (Y/N/NA?)	
○ (In Priority 1 and Priority 2 countries for filoviruses only) Annually train/refresh ≥20 clinicians on the WHO's new filovirus case management training (Y/N/NA?)	
• (In Priority 1 and Priority 2 countries for Ebola virus only) Vaccinate all willing frontline workers against Ebola virus (Y/N/NA?)	
• Develop clear referral pathways from district-level centres for screening, triage, isolation and transfer, and routinely check/update points of contact (Y/N/NA?)	
• Assess links to safe and dignified burial teams (Y/N/NA?)	
On an annual basis, identify gaps identified in the assessment (as above) and develop a costed action plan to build capacity over time (Y/N/NA?)	
• Design and annually provide refresher trainings where necessary, such as for new staff or if/as new technologies become available (Y/N/NA?)	
Every two years, assess and revise as necessary case management criteria and SOPs for VHF patients and make updated materials available district level (Y/N/NA?)	
Comply with relevant VHF risk and case management guidelines and ensure ready supply of key medical countermeasures and therapeutics (Y/N/NA?)	
• Ensure alignment with national procurement and stockpiling strategies (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish and continuously improve a national high-level isolation unit (HLIU) for the treatment of infectious VHF hazards**
• Ensure robust systems are in place for stock monitoring and replenishment (Y/N/NA?)	
Develop clear referral pathways from lower levels of care (Y/N/NA?)	
• Ensure availability of biohazard-secure ambulances, associated ambulance teams, and mechanisms for ambulance decontamination on arrival (Y/N/NA?)	
• Assess and enhance referral pathways between the district referral facility and primary/secondary health facilities (Y/N/NA?)	
○ Develop criteria for referral of severe/critical cases from the sub-district level and ensure this is available at the sub-district level (Y/N/NA?)	
Annually conduct a full simulation exercise on receiving a VHF-positive patient to test preparedness, at least three months before known seasonal occurrence (Y/N/NA?)	
Notes and resources	The WHO has a recently updated training package on filovirus case management. There are also comprehensive guidelines available on IPC for filoviruses to guide IPC in HLIUs.41 There is a list of key resources in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure at least one national reference laboratory can process high consequence pathogens**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Collab. Surv. → Effective Diagnostics and Lab Capacity for Pathogen and Genomic Surv. → Expanded Lab Cap. and Collab. Incl. Genomics
Preparedness pillar(s)	Laboratories; Operational Support & Logistics
Steps / (sub-)components	
Conduct annual needs assessment (Y/N/NA?)	
• Identify laboratory requirements, including key infrastructure, personnel, equipment and consumables required for sample processing (Y/N/NA?)	
• Stakeholder engagement: collaborate with health officials, scientists and potential users to understand needs and expectations (Y/N/NA?)	
• Assess existing laboratories against the identified needs (Y/N/NA?)	
Based on identified gaps, create and annually revise a national laboratory development plan in line with international standards (Y/N/NA?)	
• Identify equipment needs and appropriate vendors, and procure and install equipment with necessary calibration (Y/N/NA?)	
Put in place a supply chain management system for reagents, countermeasures and all other consumables (Y/N/NA?)	
• Establish a system for managing reagent inventory, including storage conditions and expiration tracking (Y/N/NA?)	
• Develop relationships with multiple suppliers to ensure consistent supply and contingency options (Y/N/NA?)	
• Develop a plan for the safe and efficient transport and storage of samples, sensitive reagents, and countermeasures from sub-national level (Y/N/NA?)	
Conduct financial planning and secure funding for the annual development plan, including for recurring costs (Y/N/NA?)	
Recruit and train laboratory technicians, scientists, and support staff, and build capacity through ongoing training (Y/N/NA?)	
• Adjusted to VHF risks, provide specialized training in detection methods including serological and molecular techniques (Y/N/NA?)	
Conduct quality control and assurance (Y/N/NA?)	
• Develop and implement SOPs for all laboratory processes and ensure all laboratories follow standardized testing protocols (Y/N/NA?)	
• Establish a quality management system to monitor and improve laboratory performance (Y/N/NA?)	
• Secure laboratory accreditation by relevant bodies and conduct internal and external audits on an agreed timeline (Y/N/NA?)	
Ensure health and safety protocols are in place including biosafety and plans for dealing with accidents, spills, and related emergencies (Y/N/NA?)	

Continued...

Y = Completed; N = Not; NA = Not applicable	
Measure	**Ensure at least one national reference laboratory can process high consequence pathogens**
Put in place a laboratory information system (LIS) for efficient data management and reporting (Y/N/NA?)	
Ensure system is in place for real-time integration of laboratory data to national surveillance systems including rapid reporting of VHF results (Y/N/NA?)	
Regularly re-assess and update diagnostic technologies as they improve to enhance detection accuracy and reduce turnaround times (Y/N/NA?)	
Notes and resources	This measure is applicable to both the national and district level. There is a list of key resources in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Have a sufficient number of mobile laboratories capable of processing high consequence pathogens anywhere within 24 hours**
VHF relevance	Lassa fever, CCHF, Ebola and Marburg only
Priority level relevance	Priority 1 and Priority 2 only
'Five Cs' component(s)	Collaborative surveillance → Effective diagnostic and laboratory capacity for pathogen and genomic surveillance → Decentralized point-of-care testing capacity
Preparedness pillar(s)	Laboratories, operations support and logistics
Steps / (sub-)components	
Follow the same sequence of steps indicated for permanent laboratories (Y/N/NA?)	
Develop clear protocols for activation of mobile laboratories (Y/N/NA?)	
Annually simulate the deployment of the mobile laboratory to a hard-to-reach area (Y/N/NA?)	
Ensure integration with all LIS and national surveillance systems (Y/N/NA?)	
Consider inaccessible or hard-to-reach terrain and where to pre-position mobile laboratories accordingly (Y/N/NA?)	
Consider the need for mobile electricity, connectivity, water and life support (Y/N/NA?)	
Have a plan for mobile waste management and adherence to all other laboratory best practices (Y/N/NA?)	
Have clear linkages with the national reference laboratory as well as subnational laboratories (Y/N/NA?)	
Notes and resources	This measure is applicable at both the national and district levels. The absolute number will depend on country and population size, the number and extent of inaccessible or hard-to-reach areas, and also relevant VHF risks. This function should be understood as a component of rapid response, so that in the event of an outbreak (including in an area away from a permanent laboratory structure), a laboratory can be made readily available in the immediate vicinity of the outbreak within 24 hours. A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish a minimum of one ultra-cold chain facility at the national level with national distribution capacity**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Access to countermeasures → End-to-end health emergency supply chains → Resilient logistics and distribution
Preparedness pillar(s)	Operations support and logistics, vaccination, and laboratories
Steps/(sub-)components	
Evaluate the existing ultra-cold chain infrastructure (Y/N/NA?)	
• Current capacity analysis: assess existing storage facilities and their capacities, including power supply stability and other resources (Y/N/NA?)	
• Assess if more than one facility is required due to size of population, high-risk areas, and/or hard-to-reach areas (Y/N/NA?)	
• Identify the gap between current capacity and required capacity (Y/N/NA?)	
Select the appropriate technology and equipment, including equipment identification and vendor assessments, considering sustainability (Y/N/NA?)	
Estimate the cost for procurement, installation and maintenance of the ultra-cold chain equipment (Y/N/NA?)	
Identify potential funding sources, including government, international aid, and private sector partnerships (Y/N/NA?)	
Train local personnel on the operation and maintenance of the equipment for sustainable operation and troubleshooting (Y/N/NA?)	
Conduct routine monitoring and quality assurance (Y/N/NA?)	
• Implement systems for real-time monitoring of temperature and equipment performance (Y/N/NA?)	
• Conduct periodic audits to ensure compliance with storage standards (Y/N/NA?)	
Ensure compliance with national and international standards and regulations	
Create a contingency plan to deal with equipment failure or other disruptions (Y/N/NA?)	
Implement necessary collaborations and partnerships (Y/N/NA?)	
• Form partnerships with NGOs, international agencies and other governments for technical and financial support as required (Y/N/NA?)	
• Engage in knowledge exchange and best practices sharing with other countries (Y/N/NA?)	
Notes and resources	Large countries, or countries with hard-to-reach populations, should extend UCC capacity to the district level. A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →	
Measure	**Establish a standby network of voluntary quarantine facilities in key locations**	
VHF relevance	Ebola and Marburg only	
Priority level relevance	Priority 1 and Priority 2 countries only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Public health and social measures	
Preparedness pillar(s)	Contact management and support; operations support and logistics	
Steps / (sub-)components		
Identify at-risk areas: pinpoint cities and regions with elevated risk of outbreaks, considering hard-to-reach areas (Y/N/NA?)		
Determine the characteristics and capacities needed in voluntary quarantine facilities, considering the principles of voluntary quarantine (Y/N/NA?)		
Identify and evaluate potential facilities (Y/N/NA?)		
• Facility scouting: identify potential buildings such as hotels, dormitories, or unused medical facilities (Y/N/NA?)		
• Criteria assessment: evaluate these facilities against criteria such as size, accessibility, security and potential for containment (Y/N/NA?)		
• Infrastructure suitability: ensure facilities have essential infrastructure like water, electricity, and adequate space (Y/N/NA?)		
Develop logistical and operational plans, and establish necessary partnerships and agreements (Y/N/NA?)		
• Adaptation requirements: plan for necessary modifications to the facilities for safe and effective quarantine (Y/N/NA?)		
• Resource allocation: determine and allocate the resources needed for rapid activation, including staffing, equipment, and supplies (Y/N/NA?)		
• Operational protocols: establish operating protocols, including admission criteria, length of stay, and discharge procedures (Y/N/NA?)		
• Partnership with facility owners: negotiate MoUs with owners of identified facilities for their use in emergencies (Y/N/NA?)		
• Pre-identify suitable partnerships for food, laundry, medical supplies and other necessary services (Y/N/NA?)		
Plan for health and safety and psychosocial support mechanisms (Y/N/NA?)		
• Infection control protocols: develop protocols for strict infection prevention and control measures in facilities (Y/N/NA?)		
• Safety and security measures: develop security protocols to protect occupants and staff (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish a standby network of voluntary quarantine facilities in key locations**
• Waste management: plan for safe and effective waste management, especially for potentially infectious materials (Y/N/NA?)	
• Plan for psychosocial support services for occupants, including counselling, recreational activities, and communication with loved ones (Y/N/NA?)	
Ensure compliance with national laws and ethical standards, including human rights standards, guided by the principles of voluntary quarantine (Y/N/NA?	
• Develop clear procedures for obtaining informed consent from individuals choosing to stay in these facilities (Y/N/NA?)	
Train designated staff on the operational protocols, safety measures and emergency procedures, and conduct regular readiness drills (Y/N/NA?)	
Plan for public awareness campaigns about the purpose and function of these facilities if they were to be activated (Y/N/NA?)	
Maintain regular communication with key community leaders and stakeholders about the status and readiness of the facilities (Y/N/NA?)	
Annually reassess logistical and operational plans, as well as partnerships and agreements (Y/N/NA?)	
Notes and resources	In Annex 8, there is a list of principles for voluntary quarantine. There is also a list of key resource in Annex 1.

		Y = Completed; N = Not; NA = Not applicable
Measure	**Preventatively vaccinate health care workers against Ebola virus**	
VHF relevance	Ebola virus only	
Priority level relevance	Priority 1 and Priority 2 countries only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vaccination	
Preparedness pillar(s)	Vaccination; operations support and logistics	
Steps / (sub-)components		
Conduct needs assessments and plan (Y/N/NA?)		
• Identify health worker demographics: determine the number and location of health care workers who need vaccination (Y/N/NA?)		
o High-level isolation unit staff: 100% coverage of eligible persons (Y/N/NA?)		
o Laboratory staff working in laboratories that sequence suspected Ebola virus samples: 100% coverage of eligible persons (Y/N/NA?)		
o PHEOC staff, Rapid Response Team (RRT) and EMT staff: 100% coverage of eligible persons (Y/N/NA?)		
o Health workers in high-risk areas: at least 50% coverage of eligible persons (Y/N/NA?)		
• Assess the quantity of Ebola virus vaccines needed based on the workforce size and targets (Y/N/NA?)		
Develop a vaccination strategy and protocols (Y/N/NA?)		
• Develop criteria for prioritizing vaccination among frontline workers, focusing on those at highest risk (Y/N/NA?)		
• Develop protocols for vaccine administration, including guidelines for monitoring vaccine safety (as for other vaccines) (Y/N/NA?)		
• Stakeholder engagement: collaborate with health and frontline sector leaders, international health agencies, and unions (Y/N/NA?)		
• Estimate the cost for vaccine procurement, distribution and administration (note: ICG stock is free of charge) (Y/N/NA?)		
Understand the mechanism and create a plan to rapidly submit requests for supply from the International Coordinating Group (ICG) when applicable (Y/N/NA?)		
Mobilize and optimize financial resources (considering governmental sources, international aid, and public-private partnerships) (Y/N/NA?)		
Establish vaccination sites and infrastructure (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Preventatively vaccinate health care workers against Ebola virus**
• Develop a system for managing vaccine inventory, distribution and replenishment, including a country-wide system for vaccination tracking in DHIS2 or similar systems (Y/N/NA?)	
• Ensure the capacity of the ultra-cold chain to store and transport the Ebola vaccine (Y/N/NA?)	
• Identify and set up vaccination sites that are accessible to frontline workers (Y/N/NA?)	
Develop and conduct training for health care professionals on Ebola vaccine administration with a framework for ongoing support (Y/N/NA?)	
Implement targeted communication and awareness campaigns on the importance and safety of the vaccine as well as feedback mechanisms (Y/N/NA?)	
Apply standard AEFI/pharmacovigilance protocols and procedures (as for other vaccines) (Y/N/NA?)	
Develop contingency plans for potential challenges, such as vaccine shortages or transportation disruptions (Y/N/NA?)	
Evaluate the proportion of vaccinated workers against identified targets annually and adjust strategies to identified gaps (Y/N/NA?)	
Notes and resources	A list of key resources can be found in in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure effective and robust RCCE systems and coordination components are in place and that they consider VHF risks**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Community protection → RCCE and infodemic management to guide priority actions and strengthen community resilience → RCCE	
Preparedness pillar(s)	Risk communication and community engagement	
Steps / (sub-)components		
Develop or review existing RCCE plans and strategies using intelligence from local surveillance and epidemiological and social-behavioural data (Y/N/NA?)		
Conduct a stakeholder analysis to assess the communication capacity of all relevant partners (Y/N/NA?)		
• Identify contact information and points of contact with all relevant partners (Y/N/NA?)		
Agree on procedures for the timely, transparent release of information (Y/N/NA?)		
Define clearance procedures for messages and products (Y/N/NA?)		
Establish a roster of spokespersons at all levels and among relevant stakeholders (Y/N/NA?)		
Establish or strengthen RCCE coordination mechanisms; set up an RCCE working group or task force (Y/N/NA?)		
Develop terms of reference for an RCCE working group/task force with defined roles and responsibilities and linkages to other pillars (Y/N/NA?)		
Prepare a budget for RCCE activities and plans (including a plan for scale-up in the event of a VHF outbreak) (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Consider self-procuring a minimum buffer stock of Ebola vaccines for reactive rapid response**
VHF relevance	Ebola virus only
Priority level relevance	Priority 1 and Priority 2 countries only
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vaccination
Preparedness pillar(s)	Vaccination; operations support and logistics
Steps/(sub-)components	
Conduct needs assessments and plan (understanding that this is outside the purview of the ICG and would require self-procurement) (Y/N/NA?)	
• Assess the quantity of vaccine desired for reactive ring vaccination and frontline worker immunization (targeting approximately 500 doses) (Y/N/NA?)	
• Pinpoint regions most at risk and ensure logistical readiness to deliver vaccinations to these regions (Y/N/NA?)	
Develop a vaccination strategy and protocols (Y/N/NA?)	
• Develop criteria for ring vaccination (Y/N/NA?)	
• Develop protocols for vaccine administration, including guidelines for monitoring vaccine safety (standard AEFI/pharmacovigilance protocols and procedures apply) (Y/N/NA?)	
• Estimate the cost for vaccine procurement, distribution and administration (Y/N/NA?)	
Understand the mechanism and create a plan to rapidly submit requests for supply from the International Coordinating Group (ICG) when applicable (Y/N/NA?)	
• Biannually check for updates to ICG protocols related to securing buffer stock supplies which are outside the ICG's current purview (Y/N/NA?)	
Mobilize and optimize financial resources (considering governmental sources, international aid, and public-private partnerships) (Y/N/NA?)	
• Develop a system for managing vaccine inventory, distribution and replenishment, including a country-wide system for vaccination tracking in DHIS2 or similar systems (Y/N/NA?)	
• Ensure the capacity of the ultra-cold chain to store and transport the Ebola vaccine (Y/N/NA?)	
• Plan for the disposal of expired or unused vaccines in a safe and compliant manner (Y/N/NA?)	
Develop plans for the distribution of soon-to-expire vaccine stocks to at-risk health workers (Y/N/NA?	
• Put in place a reliable alert system to flag it when the stock is six months from expiring (Y/N/NA?)	
• Pre-identify at-risk health care workers to receive soon-to-expire vaccine stocks (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Consider self-procuring a minimum buffer stock of Ebola vaccines for reactive rapid response**
• Ensure that soon-to-expire stocks being drawn from the buffer are replaced prior to or within 30 days of distribution (Y/N/NA?)	
Develop and conduct training for rapid response vaccination teams on vaccine administration with a framework for ongoing support (Y/N/NA?)	
• Ensure this includes communication strategies on the importance and safety of the vaccine as well as feedback mechanisms (Y/N/NA?)	
Apply standard AEFI/pharmacovigilance protocols and procedures (as for other vaccines) (Y/N/NA?)	
Develop contingency plans for potential challenges, such as vaccine shortages or transportation disruptions (Y/N/NA?)	
Notes and resources	This measure is related to the one recommending vaccination of key health care workers, and should be advanced together to maximize efficiency and to ensure the adequate supply of Ebola vaccines in at-risk countries. A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Implement the Eliminate yellow fever epidemics (EYE) strategy and advance the related RCCE**
VHF relevance	Yellow fever only
Priority level relevance	Priority 1 and Priority 2 countries only
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vaccination
Preparedness pillar(s)	Vaccination; leadership, coordination and partnership management; surveillance; points of entry
Steps/(sub-)components	
Protect at-risk populations through preventive mass vaccination campaigns (Y/N/NA?)	
• Where the risk is high, vaccinate everyone (Y/N/NA?)	
• Vaccinate every child (including through integration into the national schedule) (Y/N/NA?)	
• Implement catch-up campaigns where there is low routine vaccination coverage or potential gaps (Y/N/NA?)	
Prevent international spread (Y/N/NA?)	
• Protect high-risk workers (for example, the extractive, construction and forestry industries, and the transport sector) (Y/N/NA?)	
• Apply the IHR (2005),42 including by confirming the vaccination status of travellers from areas at risk of yellow fever (Y/N/NA?)	
• Join the regional surveillance network (Y/N/NA?)	
Build resilient urban centres (Y/N/NA?)	
• Develop urban-specific contingency plans for yellow fever and review them annually to assess whether updates are required (Y/N/NA?)	
• Conduct sustained vector surveillance and control programmes, especially in cities (Y/N/NA?)	
Implement the Risk communication and community engagement readiness and response toolkit for yellow fever	
Implement the IDSR framework[43] alongside CEBS and ensure that yellow fever surveillance is integrated with other surveillance systems (Y/N/NA?	
Maintain a yellow fever stockpile for reactive campaigns that ensures vaccine equity in yellow fever outbreak response (Y/N/NA?)	
Notes and resources	Refer to the Eliminate yellow fever epidemics (EYE) strategy for more information and guidance on advancing this preparedness measure.[44] A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure RCCE messages, SOPs, communication channels, *etc.* are pre-developed and pre-identified for VHF readiness**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Community protection → RCCE and infodemic management to guide priority actions and strengthen community resilience → RCCE	
Preparedness pillar(s)	Risk communication and community engagement	
Steps/(sub-)components		
Create or review a repository of existing RCCE materials such as message banks, tools, products and templates (Y/N/NA?)		
• Adapt targeted messages to the media; health and frontline workers; local and traditional healers; churches; schools; and other community stakeholders (Y/N/NA?)		
• Adapt targeted messages towards most at-risk communities as adjusted to VHF risks (for example, butchers in areas at risk of RVF) (Y/N/NA?)		
Coordinate RCCE activities and use standard operating procedures (SOPs) for clearance and sharing (Y/N/NA?)		
Map and prioritize trusted and commonly used communication channels and platforms (Y/N/NA?)		
• Evaluate for accessibility to people in remote areas, without digital skills or internet access, with low literacy skills, or who speak other languages (Y/N/NA?)		
Identify alternative communication channels to reach all pockets of society (Y/N/NA?)		
Identify key media: create and update a list of journalists with their contact information, and foster media relations with key media partners (Y/N/NA?)		
Identify key public figures, experts and influencers, and assess their potential reach and interest in communicating public health messaging (Y/N/NA?)		
Ensure translation capacities are available to tailor all RCCE materials into local languages and dialects (Y/N/NA?)		
Map out, identify and monitor critical communication networks for rumours (Y/N/NA?)		
Establish clear roles, responsibilities and clearance protocols for responding to rumours and mis/disinformation (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

Y = Completed; N = Not; NA = Not applicable

Measure	**Establish a multisectoral coordination mechanism and framework involving health, the environment and other relevant sectors**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Connected health emergency leadership	
Preparedness pillar(s)	Leadership, coordination and partnership management	
Steps/(sub-)components		
Establish a multisectoral steering committee comprising representatives from health, environment, agriculture, forestry, and industry (and possibly security) (Y/N/NA?)		
Appoint a chairperson from the health sector to lead and coordinate activities (Y/N/NA?)		
Convene biannually (Y/N/NA?)		
Draft or revise a framework document outlining collaboration strategies, communication protocols, and shared objectives across sectors (Y/N/NA?)		
• Ensure the framework includes acceptance and agreement by other sectors of surveillance and vector control interventions by the health sector (Y/N/NA?)		
Biannually develop a detailed action plan with timelines, specific activities and responsible parties in each sector (Y/N/NA?)		
• Define or revise clear roles for each sector focusing on their unique contributions to VHF preparedness and response (Y/N/NA?)		
• Align with the objectives of ongoing vector control activities and interventions (Y/N/NA?)		
• Ensure wildlife officers in national parks strengthen surveillance for causes of wild animal mortality (Y/N/NA?)		
Mobilize resources and allocate them according to the agreed framework and action plan (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable
Measure	**Develop a national vector surveillance and control management plan and ensure the inclusion of VHF risks**
VHF relevance	RVF, dengue, YFV, Lassa fever, CCHF
Priority level relevance	Priority 1 and Priority 2 only
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vector control
Preparedness pillar(s)	Surveillance
Steps/(sub-)components	
Determine the primary vectors of concern based on Priority levels (Y/N/NA?)	
Biennially (re)assess the current status of vector surveillance and control activities, including infrastructure and resources (Y/N/NA?)	
Biennially (re)develop an annual vector surveillance and control plan including defined objectives, surveillance strategies, and control measures (adjusted for urban areas) (Y/N/NA?)	
• Align the national plan with community-based vector control plans (Y/N/NA?)	
• Define clear key performance indicators (KPIs) to measure adherence to the plan (Y/N/NA?)	
Identify funding sources and allocate resources to the plan (Y/N/NA?)	
Put in place a data repository platform to archive data from entomological surveillance (Y/N/NA?)	
Integrate vector surveillance data into the national surveillance system (Y/N/NA?)	
Notes and resources	WOAH guidance is a useful reference for developing arthropod vector surveillance.45 A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish a functional PHEOC and plan an IMS for VHFs**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Health emergency alert and response coordination → Standardized triggers and rapid resources for immediate response
Preparedness pillar(s)	Leadership, coordination and partnership management
Steps/(sub-)components	
Identify a physical location for a public health emergency operations centre (PHEOC) (Y/N/NA?)	
Define the PHEOC organogram with all relevant roles, including communication channels within and between PHEOC and IMS (Y/N/NA?)	
Establish ToRs for all VHF preparedness pillar leads within the organogram (Y/N/NA?)	
• At the national level, include ToRs for rapid response team functions (Y/N/NA?)	
Develop guidelines/SOPs for operations at the strategic, operational and tactical levels (Y/N/NA?)	
• Flow charts outlining coordination and communication lines within the IMS/PHEOC are adapted and in use (Y/N/NA?)	
• Establish clear crisis escalation thresholds for each relevant VHF risk, including when to advise leadership on the declaration of a national health emergency (Y/N/NA?))	
Review current policy and legislative frameworks to ensure that they provide authorization for the preparedness measures proposed in the national plan (Y/N/NA?)	
Ensure coherent and systematic communication between the PHEOC and relevant departments and agencies (Y/N/NA?)	
• Liaise with national disaster management structures (Y/N/NA?)	
• Liaise with the ministries of defence and interior (Y/N/NA?)	
• Identify focal points within key technical partners (such as WHO, US CDC, and Africa CDC) as well as within key donors and partners (Y/N/NA?)	
Identify, train and designate a national incident manager and deputy incident manager empowered to make operational decisions (Y/N/NA?)	
Identify and train a cohort of standby district-level incident managers and deputy incident managers (at least two per district) (Y/N/NA?)	
• Identify PHEOC/IMS personnel at the subnational/district level for localized coordination and management in case of an outbreak (Y/N/NA?)	
Contingency or emergency plans for VHF response (including rapid response plans) exist and are fully budgeted for identification of fund opportunities (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure **Establish a functional PHEOC and plan an IMS for VHFs**	
• Consider safety and security hazards and ensure staff compliance with any agreed package of health and safety standards (Y/N/NA?)	
Conduct 5W mapping and update/revise biannually to ensure effective and responsible partnerships (Y/N/NA?)	
Develop rapid response plans and regularly practice them through tabletop and simulation exercises and drills as relevant to VHF risks (Y/N/NA?)	
In Priority 1 and Priority 2 countries, in the absence of an outbreak, hold a VHF-specific intra-pillar PHEOC meeting at least monthly (Y/N/NA?)	
In Priority 3 and Priority 4 countries, in the absence of an outbreak, hold a VHF-specific intra-pillar PHEOC meeting at least quarterly (Y/N/NA?)	
Notes and resources A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish a minimum of one rapid response team (RRT) and one emergency medical team (EMT) at national level capacitated in VHF response**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Strengthened Workforce capacities for health emergencies → Health emergency corps
Preparedness pillar(s)	Leadership, coordination and partnership management (et al.)
Steps/(sub-)components	
Identify and assign team leaders and multidisciplinary team members (Y/N/NA?)	
• RRT and EMT members are rostered and a contact list generated and disseminated to the regional/county/district level (Y/N/NA?)	
• National RRT teams: case management, IPC, surveillance, social mobilization, OSL, and vaccination if relevant, plus access to burial teams if relevant (Y/N/NA?)	
• In Priority 1 and Priority 2 countries, also establish district-level RRTs (Y/N/NA?)	
Ensure clear lines of responsibility for the activation and coordination of the RRT and EMT in response to potential VHF cases (Y/N/NA?)	
• Develop a clear rapid response plan according to VHF risks (Y/N/NA?)	
• Liaise with OSL to ensure logistical readiness (including financial mechanisms for rapid cash) for rapid response (Y/N/NA?)	
• Develop clear ToRs, operational guidelines and SOPs for the RRT and EMT (Y/N/NA?)	
Assemble and supply the RRT and EMT with standardized kits (for example, contact details, case definition, case investigation forms, SOPs, etc.) (Y/N/NA?)	
• If there is no other system in place, train the RRT on EWARS, and ensure "EWARS in a box" is available to all RRTs (Y/N/NA?)	
Provide the required training to the RRT and EMT as relevant (case management, specimen acquisition and transport, surveillance and contact tracing, decontamination, etc.) (Y/N/NA?)	
Equip each RRT with an ambulance that can deploy within 48 hours (in areas at risk of Lassa, CCHF, Ebola and Marburg; ensure it is biohazard-secure) (Y/N/NA?)	
Establish a functional transport mechanism and ensure that a designated driver is readily available for RRT and EMT deployment (Y/N/NA?)	
An outbreak template (IDSR) for the initial index case investigation report is available at the regional/county/district level (Y/N/NA?)	
Ensure a functional communication linkage between the alert system and the RRT at the regional/county/district level (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish a minimum of one rapid response team (RRT) and one emergency medical team (EMT) at national level capacitated in VHF response**
Ensure a functional communication linkage between the RRT and the EMT (Y/N/NA?)	
Plan refresher drills (based on rapid response plans) for the RRT and the EMT (biannually) in the event of no VHF case (Y/N/NA?)	
Map the emergency workforce (all routine public health workers), with the identification and rostering of staff to be repurposed/relocated for surge (Y/N/NA?)	
Notes and resources	WHO's Early Warning, Alert and Response System (EWARS) is an effective package of interventions for RRTs where there is no other system in place.[46] The Annex 1 includes a draft rapid response plan to guide the development of national plans, if they do not already exist. A list of key resources can be found in Annex 1. In Priority 1 and Priority 2 countries, these steps should also be replicated at the district level.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish cross-border coordination that includes relevant VHF risks**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Connected health emergency leadership
Preparedness pillar(s)	Leadership, coordination and partnership Management
Steps/(sub-)components	
Annually (re)assess the VHF risks in your country and adjacent countries (or in countries with known trade and travel links), thereby identifying relevant countries (Y/N/NA?)	
With relevant countries, develop a legal or regulatory framework that facilitates cross-border cooperation (if not already in place) (Y/N/NA?)	
• Regularly assess all other national laws and frameworks relevant to cross-border coordination (Y/N/NA?)	
Develop a cross-border collaborative agreement (reassessed in accordance with agreed MoU but not less frequently than every five years) (Y/N/NA?)	
• Develop standardized policies, protocols, and MoUs (Y/N/NA?)	
• Align with expectations and procedures around PoEs and border communities, including data necessary for contact tracing of relevant travellers (exit and entry procedures) (Y/N/NA?)	
• Ensure the plan has clearly defined objectives and outcomes and includes clear stipulations of relevant factors (Y/N/NA?)	
o The degree, extent and limits of political commitment and the scope and level of cooperation (Y/N/NA?)	
o The identification of key stakeholders (Y/N/NA?)	
o The identification of relevant hazards, including VHF risks (Y/N/NA?)	
o Agreements on VHF-positive patients and samples across borders (Y/N/NA?)	
o Mutual agreement on identified PoEs where screening (including for relevant VHF risks) will take place on both sides of the border (Y/N/NA?)	
o Operational considerations including complementary communication and technical mechanisms (see below) (Y/N/NA?)	
o Mutual agreement on the data to be shared and agreed mechanisms for its secure transfer in accordance with both countries' laws (Y/N/NA?)	
o Leveraging existing agreements (Y/N/NA?)	
o Required financial resources and commitments (Y/N/NA?)	
o Agreements on facilitating the safe continuation of trade, commerce and population movements in the event of an outbreak (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish cross-border coordination that includes relevant VHF risks**
o Dispute resolution mechanisms (Y/N/NA?)	
Establish reliable and fast communication channels between public health agencies: helps in the rapid sharing of information and resources (with translators if required) (Y/N/NA?)	
• Identify focal points within respective PHEOCs (where there is very substantive cross-border movement; consider official liaison officers) (Y/N/NA?)	
• Mutually agree a 'battle rhythm' (frequency of meetings) between focal points/liaisons (Y/N/NA?)	
Implement systems for data sharing and joint surveillance to help in early detection of health threats, and coordinate responses if relevant (Y/N/NA?)	
Engage in joint planning for public health emergencies, including conducting simulations and drills: helps in preparing for real-life scenarios (Y/N/NA?)	
• Regularly assess the effectiveness of cross-border collaboration through annual tabletop exercises and make adjustments as necessary (Y/N/NA?)	
Notes and resources	See the WHO handbook for PoEs and cross-border activities.[47] A list of key resources can be found in Annex 1.

Y = Completed; N = Not; NA = Not applicable

Measure	**Assess whether to advance a national dengue vaccination campaign, and if so, advance the campaign**	
VHF relevance	Dengue	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vaccination	
Preparedness pillar(s)	Vaccination	
Steps/(sub-)components		
Check biannually for updated SAGE guidance on dengue vaccination and develop national plans once new guidance is released (see notes and resources, below) (Y/N/NA?)		
Upon release of the updated SAGE guidance, assess the guidance within six months for whether to advance a national dengue vaccination campaign (Y/N/NA?)		
If deciding to advance a dengue vaccination campaign, develop the plan within six months and secure access to vaccine supplies required for the campaign (Y/N/NA?)		
Notes and resources	As of January 2024, the Strategic Advisory Group of Experts on Immunization (SAGE) is in the process of reassessing advice around vaccination for dengue, given the recent approval of new vaccine technologies.[48,49] National planning for advancing dengue vaccination campaigns should await the release of this forthcoming guidance. On its release, national planning should take place within six months. Other guidance documents are available here and here. A list of key resources can be found in Annex 1.	

Y = Completed; N = Not; NA = Not applicable

Measure	**Develop a Rift Valley fever control plan in line with the One Health platform**	
VHF relevance	Rift Valley fever only	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vector control	
Preparedness pillar(s)	Surveillance; vaccination	
Steps / (sub-)components		
Develop a national plan for surveillance of RVF in sentinel herds of susceptible animals in line with WOAH guidance (Y/N/NA?)		
Ensure measures are in place for the immediate notification of clinical cases upon detection (in line with WOAH reporting requirements) (Y/N/NA?)		
Cross-check the national laboratory's capacity to assess suspected RVF cases in line with WOAH diagnostic guidance and develop concrete plans to fill any identified gaps (Y/N/NA?)		
Ensure intersectoral coordination mechanisms are in place and active at the national level (Y/N/NA?)		
Ensure RVF risks feed into national vector control strategies (Y/N/NA?)		
Ensure RVF risks feed into national RCCE campaigns and are targeted at those who work with livestock (especially slaughterers and butchers) (Y/N/NA?)		
Define thresholds for livestock quarantine and slaughter bands during outbreaks (and ensure the necessary enabling laws are in place) (Y/N/NA?)		
Assess the different vaccines available for RVF (as of writing, several are in development so be sure to cross-check) (Y/N/NA?)		
• Contact WOAH at least annually to discuss RVF vaccine candidates and assess whether to advance a national campaign for livestock (Y/N/NA?		
• If advancing a national immunization campaign for livestock, develop, cost, and implement the plan in accordance with WOAH guidance (Y/N/NA?)		
Notes and resources	Vaccination is the primary option available for prevention of RVF infections in animals in areas where the disease is endemic, but this is hampered by uncertainties on when and where outbreaks are most likely to occur and the time it may take to produce the vaccines.[50] Therefore, public education, livestock quarantine and slaughter bans are perhaps the most effective measures against disease spread during the pre-outbreak and outbreak phases.[50] Different types of vaccines are available for use in animals.[26] Inactivated, or killed, vaccines are not practical in routine animal field vaccination because of the need for multiple doses.[26] A modified live vaccine (the Smithburn vaccine) is one of the oldest and most widely used vaccines for controlling RVF in Africa.[26] This vaccine only requires a single dose but is known to cause birth defects and abortions in pregnant livestock and may only provide cattle with limited protection from infection with RVF.[26] Several candidate vaccines are being developed and evaluated.[26] The live-attenuated vaccine, MP-12, has shown promising results in laboratory trials in domesticated animals, but more research is needed before the vaccine can be used in the field.[26] The live-attenuated clone 13 vaccine was recently registered and used in South Africa.[26] Alternative vaccines using molecular recombinant constructs are in development and show promising results.[26] The World Organisation for Animal Health (WOAH) released a guiding document on RVF, including for vaccination, in 2018.[50] A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Support relevant education and continuous learning for public health professionals, including as relevant to VHF risks**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Public health and emergency workforce
Preparedness pillar(s)	Leadership, coordination and partnership management
Steps / (sub-)components	
Biennially assess, encourage and support relevant university education and maintain a national roster of graduates from relevant programmes (Y/N/NA?)	
Ensure national education institutions provide degrees in key fields; create and advance a national plan to develop relevant college/university degrees not in place (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in epidemiology (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in public administration (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in nursing and medicine (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in public health (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in anthropology and sociology of medicine and public health (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in laboratory sciences (Y/N/NA?)	
• If not already present, create a five-year plan to develop national university programmes in other relevant fields (such as GIS/data management, statistics, etc.) (Y/N/NA?)	
Biennially (re)assess technical training and certification programmes for key roles and skillsets and maintain a register of PHEOC/IMS personnel having completed these programmes (Y/N/NA?)	
• Health and safety training and certification programmes (Y/N/NA?)	
• Safety and security training and certification programmes (Y/N/NA?)	
• Any other relevant training and certification programme (including WHO's filovirus clinical management training) (Y/N/NA?)	
Develop a costed national plan for continuing education of key personnel involved in VHF preparedness and response (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Support relevant education and continuous learning for public health professionals, including as relevant to VHF risks**
• Identify key personnel in the public sector with relevant training gaps (Y/N/NA?)	
• Send a minimum of two surveillance officers from the public sector to either frontline or advanced FETPs each year (Y/N/NA?)	
Advance a national research agenda and maintain a registry of relevant research and best practices for dissemination to key workers (biennially) (Y/N/NA?)	
• Biennially host a VHF research symposium with funded participation for key identified public sector personnel in the PHEOC (Y/N/NA?)	
• Biennially host a VHF research symposium with funded participation for key public sector personnel in the PHEOC (Y/N/NA?)	
Notes and resources	A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Develop an agreed set of ethical compliance standards ('health and safety standards') for all involved in VHF preparedness**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Safe and scalable care → Protection of health workers and patients → Patient and workforce safety during health emergencies
Preparedness pillar(s)	Leadership, coordination and partnership management
Steps/(sub-)components	
Put in place mental health and psychosocial support (MHPSS) mechanisms that are reassessed biennially or when an outbreak occurs (Y/N/NA?)	
• Train key staff in psychological first aid (PFA): equip staff with skills to provide initial psychosocial support (Y/N/NA?)	
• Develop rotation protocols: ensure staff time off during response for rest and duty rotation (Y/N/NA?)	
• Implement counselling services: set up independent and anonymous counselling services (Y/N/NA?)	
• Establish self-referral systems: for staff and affected communities in the event of an outbreak (Y/N/NA?)	
• Stress management training: educate staff on stress management and self-care techniques (Y/N/NA?)	
• Develop peer support groups: foster a supportive environment among staff (Y/N/NA?)	
• Post-deployment follow-up care: implement systems for care after deployment (Y/N/NA?)	
• Scale up psychosocial support networks: train trainers for community-based psychosocial support (Y/N/NA?)	
• Document MHPSS needs: create a system for anonymously documenting MHPSS needs with action plans (Y/N/NA?)	
Ensure PRSEAH and PSEA is considered as a foundational tenet of all preparedness activities including for VHFs (and reassessed annually or when an outbreak occurs) (Y/N/NA?)	
• Develop a code of conduct: train all staff in a clear code of conduct (Y/N/NA?)	
• Conduct regular training: ensure ongoing refresher training and certification courses (Y/N/NA?)	
• Community-based complaints mechanisms: allow safe and culturally appropriate reporting by community members (Y/N/NA?)	
• Partner with local organizations: promote PRSEAH and PSEA in all operations (Y/N/NA?)	
• Allocate resources for PSEAH and PSEA measures: commit necessary resources for effective implementation (Y/N/NA?)	
• Implement whistle-blower mechanisms: enable safe and confidential reporting for survivors and witnesses (Y/N/NA?)	
• Independent review panel: set up a body to assess and examine allegations (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Develop an agreed set of ethical compliance standards ('health and safety standards') for all involved in VHF preparedness**
• Educate communities on their rights: hold sessions on standards to expect from aid workers (Y/N/NA?)	
• Define disciplinary measures: establish clear actions for misconduct (Y/N/NA?)	
• Conduct risk assessments: regularly identify potential areas of concern (Y/N/NA?)	
In all VHF preparedness activities, consider and consult key and vulnerable groups (voices of disability, LGBTQIA+, refugees, indigenous persons, etc.) (Y/N/NA?)	
Notes and resources	A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable
Measure	**Develop and maintain robust maps for epidemiological and operational readiness with consideration of relevant VHF risks**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Collaborative surveillance → Collaborative approaches to event detection, RA and response monitoring → Information and data visualization for interpretation	
Preparedness pillar(s)	Surveillance	
Steps/(sub-)components		
Base maps: develop detailed base maps of the country, including remote and hard-to-reach areas, reviewed at least biennially (Y/N/NA?)		
Health facilities: map health facilities with details on capacity and suitability for VHF isolation and treatment, reviewed at least biennially (Y/N/NA?)		
Critical infrastructure: include mapping of schools, ports, medical stores, warehouses and public gathering places, reviewed at least biennially (Y/N/NA?)		
Security considerations: map 'no go' areas due to insecurity and safe routes, reviewed quarterly with security services or more frequently as required (Y/N/NA?)		
Laboratory mapping: identify laboratories capable of VHF sample processing with their capacities, reviewed at least biennially (Y/N/NA?)		
Key demographic information: map religion, ethnic makeup, political affiliations, languages, mobility patterns, relevant vaccination coverage, etc., reviewed at least biennially (Y/N/NA?)		
• Include consideration of population movement in and out of at-risk areas (Y/N/NA?)		
• Include consideration of areas of formal and informal trade of animals (Y/N/NA?)		
Facilities for response teams: identify suitable hotels, mass vaccination sites and voluntary quarantine facilities in high-risk regions, reviewed biennially (Y/N/NA?)		
Ensure maps are available at the PHEOC, to all RRT members, and at the district level (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable
Measure	**Design and implement comprehensive points of entry monitoring systems with capacity to stand up contact tracing if necessary**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Community Protection → Population and Environmental Public Health Interventions → Public Health and Social Measures
Preparedness pillar(s)	Points of Entry
Steps / (sub-)components	
Ensure that a contingency plan is in place at designated PoEs (airports, ports and ground crossings) (Y/N/NA?)	
Identify referral health care facilities for each PoE relevant to VHF risks (Y/N/NA?)	
Develop an SOP to safely identify, manage and refer potential VHF cases from PoEs to designated facilities (Y/N/NA?)	
Ensure distribution of the contact information of nearest surveillance officers and the regular review of same (including when there are staff changes) (Y/N/NA?)	
Identify trained PoE teams, proportional to the volume and frequency of travellers, to detect, assess and correctly manage any potential VHF cases (Y/N/NA?)	
Ensure simplified case definitions for all relevant VHFs are made available to PoE staff (Y/N/NA?)	
(Ebola and Marburg only) Develop an SOP for implementing exit screening in the event of a confirmed outbreak (Y/N/NA?)	
Ensure each PoE has immediate access to equipment and supplies (such as PPE, infrared thermometers, cleaning and disinfecting products, vector control and observation facilities) (Y/N/NA?)	
Review and regularly test current communication systems between PoE competent authorities and conveyance operators (Y/N/NA?)	
Review and regularly test current communication systems between PoE competent authorities and national health surveillance systems (Y/N/NA?)	
Sensitize public health authorities and relevant stakeholders at PoEs on relevant VHF risk factors and the need to immediately notify PoE health authorities of suspected VHF cases (Y/N/NA?)	
If a filovirus outbreak in Africa, engage cross-border mechanisms to secure passenger lists and screen/contact trace inbound travellers from affected regions (Y/N/NA?)	
Notes and resources	WHO's Handbook for public health capacity-building at ground crossings and cross-border collaboration is a useful resource.[47] A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable
Measure	**Regularly (re)assess and, if necessary, revise key VHF tools, including case definitions, in line with WHO standards**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Collaborative surveillance → Strong national integrated disease, threat and vulnerability assessment → Strong public health surveillance	
Preparedness pillar(s)	Surveillance; leadership, coordination and partnership management	
Steps/(sub-)components		
Regularly (re)assess case definitions for relevant VHFs and adapt as needed (Y/N/NA?)		
• Arrange an annual call with WHO AFRO and Africa CDC to discuss existing case definitions and any changes that may be advised (Y/N/NA?)		
• Ensure clear clearance processes are in place for approval of case definitions for active use (Y/N/NA?)		
• Ensure updates are made available and known to the PHEOC and RRTs, and at the district level (Y/N/NA?)		
Regularly (re)assess VHF case investigation forms (CIFs) and line list forms for relevant VHFs (Y/N/NA?)		
• For Ebola and Marburg, regularly (re)assess definitions for high-risk versus low-risk contacts for targeted contact management (Y/N/NA?)		
• Arrange an annual call with WHO AFRO, US CDC and Africa CDC to discuss existing case definitions and any changes that may be advised (Y/N/NA?)		
• Ensure clear clearance processes are in place for approval of case definitions for active use (Y/N/NA?)		
• Ensure updates are made available and known to the PHEOC and RRTs, and at the district level (Y/N/NA?)		
For any ongoing or planned vaccination campaigns using experimental products, regularly (re)assess participant information sheets and consent forms (Y/N/NA?)		
For any ongoing or planned clinical trials (including for rapid response), regularly (re)assess participant information sheets and consent forms (Y/N/NA?)		
Develop and agree a standardized reporting format for simulation exercises, tabletop exercises, and after-action reviews (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable
Measure	**Regularly conduct simulation exercises, readiness assessments and associated after-action reviews to ensure readiness**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Public health and emergency workforce
Preparedness pillar(s)	Leadership, coordination and partnership management (et al.)
Steps / (sub-)components	
Design simulation exercises (SimEx) of various types according to VHF risks: to include full simulations of VHF outbreaks, pillar-specific simulations, and tabletop exercises (Y/N/NA?)	
• Ensure simulation exercises include tactical issues (for example, PPE breach) and strategic issues (for example, cross-border communication) (Y/N/NA?)	
• Consider relevant factors in your country that could challenge rapid response (such as insecurity, urban versus rural, riverine or other hard-to-reach areas, etc.) (Y/N/NA?)	
Regularly conduct simulation exercises (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for all VHFs: in the absence of an outbreak, conduct a full SimEx (including RRT activation) at least annually (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for all VHFs except filoviruses: conduct annual case management drills at district referral hospitals (in the absence of cases) (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: conduct annual case management drills at the national HLIU (in the absence of cases) (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: conduct annual refresher drills for the RRT to practise rapid response (Y/N/NA?)	
• In all countries: conduct annual tabletop exercises (TTX) on cross-border coordination, and annual SimEx on PoE screening, isolation and contact tracing of inbound travellers (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for all VHFs: conduct annual simulation exercises on community-based surveillance (CBS) systems (Y/N/NA?)	
For each exercise, systematically conduct AARs, including real-time documentation of the exercise, a curated list of key challenges, and clear action points (Y/N/NA?)	
Create a consolidated repository of AAR and readiness assessment findings, to be assessed at least monthly between all pillars and RRT members at the PHEOC (Y/N/NA?)	
From the consolidated repository of AAR findings, create a prioritized, costed and budgeted action plan (Y/N/NA?)	
• Begin to resolve 'low hanging fruit' within seven days of the AAR (Y/N/NA?)	
• Begin to resolve high-priority action points within seven days of the AAR (with accelerated scheduling) (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Regularly conduct simulation exercises, readiness assessments and associated after-action reviews to ensure readiness**
• Begin to resolve lower priority action points within 60 days of the AAR (Y/N/NA?)	
• Where necessary, integrate changes to the national VHF contingency plan during its revision (Y/N/NA?)	
Notes and resources	The annex of this document includes some ideas for possible simulation exercises. A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Assess surveillance system capacity to detect relevant VHF risks and advance capacity training in line with national systems**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Collaborative surveillance → Strong national integrated disease, threat and vulnerability analysis → Strong public health surveillance	
Preparedness pillar(s)	Surveillance	
Steps/(sub-)components		
Assess and enhance routine surveillance ensuring consideration of VHF risks (Y/N/NA?)		
• Assess and improve data management and IDSR for effective data handling and reporting (Y/N/NA?)		
• Establish community-based surveillance in high-risk areas for early detection and rapid response and ensure district oversight (Y/N/NA?)		
• Conduct active case finding at the district level in areas with routine or endemic cases of VHF (Y/N/NA?)		
• Routinely map health resources and risks to understand the spread and impact of VHFs (Y/N/NA?)		
• Regularly update and maintain databases and information management systems for accuracy and reliability (Y/N/NA?)		
• Ensure PoE surveillance is active and actively reporting to the national surveillance system (Y/N/NA?)		
• Improve the primary health care system and encourage the reduction of financial barriers to enhance health-seeking behaviour and passive surveillance (Y/N/NA?)		
If not already in place, within 12 months, establish a national call and messaging centre for community reporting of alerts/rumours, including on relevant VHF risks (Y/N/NA?)		
• Choose and cost a suitable location for the call centre and work with both surveillance and RCCE teams to ensure effective communication amongst staff (Y/N/NA?)		
• Ensure all calls and messages to the centre are collect/free of charge to the end user (Y/N/NA?)		
• Ensure robust linkages to the national surveillance system and community-based surveillance systems (Y/N/NA?)		
• Work with RCCE teams to develop public awareness campaigns to socialize the system (Y/N/NA?)		
• Biannually report to the PHEOC leadership on the volume, geography and nature of calls, including gap analysis of under-reporting areas or issues (Y/N/NA?)		
• Ensure alignment with other data systems and norms, including data protection (Y/N/NA?)		
Regularly (re)assess and, if necessary, revise key VHF tools, including case definitions, in line with WHO standards and ensure their availability at the district level (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Assess surveillance system capacity to detect relevant VHF risks and advance capacity training in line with national systems**
Provide specific training to RRT members and district-level surveillance staff on the use of VHF case definitions and tools for investigation and contact tracing (Y/N/NA?)	
• Establish immediate lines of reporting for potential VHF cases (dead or alive) with clear authority for such actions (Y/N/NA?)	
Test the functionality of the VHF surveillance systems through routine simulation exercises (Y/N/NA?)	
• Test existing VHF surveillance systems, identify gaps and implement corrective actions where necessary (ensuring alert processes take <24 hrs) (Y/N/NA?)	
Integrate routine surveillance capacities for VHFs across disease and threat-specific verticals (including with a One Health approach) (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1.

Y = Completed; N = Not; NA = Not applicable

Measure	**Establish robust monitoring and evaluation systems for VHF preparedness measures**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Emergency coordination → Strengthening health emergency preparedness, readiness and resilience → Implementation, monitoring and review	
Preparedness pillar(s)	Leadership, coordination and partnership management	
Steps / (sub-)components		
Develop a robust M&E system for VHF interventions (Y/N/NA?)		
• Set up a framework for measurement, evaluation and learning to track the efficacy/impact of VHF measures, including indicators based on the contingency plan (Y/N/NA?)		
• Create tailored M&E plans with budgets specifically dedicated to VHF preparedness (Y/N/NA?)		
• Conduct specialized training for staff in M&E data collection, analysis and reporting (Y/N/NA?)		
Implement targeted programme monitoring for VHFs (Y/N/NA?)		
• Develop a system to effectively store, manage and share information and key data sets (Y/N/NA?)		
• Maintain VHF-specific databases for data storage and analysis related to VHFs (Y/N/NA?)		
• Regularly evaluate VHF interventions to assess their effectiveness and impact (Y/N/NA?)		
• Leverage VHF surveillance data to monitor ongoing risks and preparedness levels (Y/N/NA?)		
Foster M&E partnerships focused on VHFs (Y/N/NA?)		
• Coordinate with VHF-focused entities for effective M&E system management (Y/N/NA?)		
• VHF-centred M&E frameworks for consistent assessment of VHF interventions (Y/N/NA?)		
• Promote M&E within the VHF context: through targeted communication and education (Y/N/NA?)		
Ensure data quality in VHF preparedness (Y/N/NA?)		
• Develop/strengthen real-time monitoring systems using existing/adapted tools (for example, mobile methods, dashboards and automated analysis) (Y/N/NA?)		
• Conduct VHF-specific data supervision to maintain integrity in VHF data collection (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish robust monitoring and evaluation systems for VHF preparedness measures**
• Use data to inform VHF strategies, ensuring decisions are based on accurate, timely information (Y/N/NA?)	
Develop KPIs aligned with VHF preparedness: tailor KPIs to VHF preparedness goals, ensuring they reflect critical aspects of VHF preparedness (Y/N/NA?)	
Include add. VHF-specific considerations (e.g., VHF-rel. data collection by partners to ensure alignment with overall plan, and standardised monitoring tools) (Y/N/NA?)	
Notes and resources	There is a list of key resources in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Develop national protocols for staff safety and security including as related to VHF-related field activities**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Safe and scalable care → Protection of health workers and patients → Patient and workforce safety during health emergencies
Preparedness pillar(s)	Leadership, coordination and partnership management
Steps/(sub-)components	
Regularly (re)assess the operational terrain for security risks (depending on context, or when there is a known change to relevant security factors) (Y/N/NA?)	
• As part of routine intersectoral engagements, regularly engage the security sector (Y/N/NA?)	
• (Re)assess high-risk areas, including 'red zones' and routes with known security risks and establish travel protocols for these areas (Y/N/NA?)	
• Understand local dynamics, including local militias, non-state armed groups, and public trust issues to inform engagement strategies (Y/N/NA?)	
• Coordinate with airlift services and establish readiness agreements and MoUs for urgent travel where road travel is not viable in the event of an outbreak (Y/N/NA?)	
Establish clear policies for safety and security for field deployments and for deployable staff (for example, those on RRTs) (Y/N/NA?)	
• Establish clear safety and security policies including guidelines for the use of armed escorts, the provision of security for accommodations, and the management of check-points (Y/N/NA?)	
• Set evacuation thresholds for conditions under which non-essential staff should be evacuated from high-risk areas (Y/N/NA?)	
• Ensure clear communication channels are in place, known, and regularly tested for communication between RRT staff and the PHEOC and security services (Y/N/NA?)	
o Provide secure and effective communication tools for all field and deployable staff (Y/N/NA?)	
• Ensure safe, assessed accommodation and well-maintained vehicles with trained drivers are available to field and deployable staff (Y/N/NA?)	
• Develop and implement a system for staff movement tracking for safety and coordination (tested regularly) (Y/N/NA?)	
• Ensure access to appropriate PPE where necessary (Y/N/NA?)	
• As part of readiness planning in the case of an outbreak, plan for rest and recuperation of key workers to maintain their health and morale (Y/N/NA?)	
Advance WHO's National civil-military health collaboration framework for strengthening health emergency preparedness (Y/N/NA?)	
Assess whether national conditions require specialized 'safety and security in the field' training for RRT and other key VHF-relevant staff (Y/N/NA?)	

Continued...

		Y = Completed; N = Not; NA = Not applicable
Measure	**Develop national protocols for staff safety and security including as related to VHF-related field activities**	
•	Identify essential staff requiring specialized training and (re)assess this list biannually (Y/N/NA?)	
•	Develop a core list of trained staff; routinely assess it against the essential staff list; and ensure untrained staff have dedicated time off to pursue training (Y/N/NA?)	
Notes and resources	A list of key resources can be found in Annex 1.	

Y = Completed; N = Not; NA = Not applicable

Measure	**Establish and enhance health information management (HIM) systems that are sensitive to relevant VHF risks**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Collaborative surveillance → Collaborative approaches to event detection, RA and response monitoring → Tools for data collection, analysis and sharing	
Preparedness pillar(s)	Surveillance	
Steps/(sub-)components		
Establish and enhance health management information systems (HIM) (Y/N/NA?)		
• Data warehousing: create centralized databases for storing diverse health data sets that include VHFs (Y/N/NA?)		
• Visualization features: implement data visualization tools to aid understanding and decision-making, and ensure this includes VHFs (Y/N/NA?)		
• APIs and interfaces: develop capabilities for interfacing with other health systems, laboratories and databases (Y/N/NA?)		
• Dashboard development: create intuitive dashboards for real-time data access and monitoring, and ensure the dashboards can select for VHFs (Y/N/NA?)		
• Real-time analysis: enable the analysis of data in real-time for quick decision-making (Y/N/NA?)		
• Data quality controls: implement measures to ensure the accuracy and reliability of data (Y/N/NA?)		
• Standardized data exchange formats: support standard formats and protocols for data exchange (Y/N/NA?)		
• Reporting systems: develop efficient systems for data reporting and dissemination (Y/N/NA?)		
• Data governance frameworks: establish frameworks to manage data access, privacy and security (Y/N/NA?)		
Integrate social science data and community insights (Y/N/NA?)		
• Community engagement: include local insights on cultural practices, beliefs and community dynamics in data systems (Y/N/NA?)		
• Mobility and migration patterns: understand population movements to predict and manage the spread of VHFs were outbreaks to occur (Y/N/NA?)		
• Community training: involve community members in data collection for localized insights (Y/N/NA?)		
Provide regular training for staff on data systems, mapping tools and information management, refreshed annually (Y/N/NA?)		
Ensure there is a system for regular updates and maintenance (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Establish and enhance health information management (HIM) systems that are sensitive to relevant VHF risks**
• System updates: ensure the data systems and maps are regularly updated to reflect the latest information (Y/N/NA?)	
• Maintenance: establish protocols for routine maintenance and upgrading of data systems and mapping tools (Y/N/NA?)	
Intersectoral collaboration: encourage data sharing and collaboration between different sectors and organizations (Y/N/NA?)	
Cross-border data sharing: establish mechanisms for sharing data with neighbouring countries for regional preparedness (Y/N/NA?)	
Notes and resources	A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable
Measure	**Implement robust logistics to ensure availability/deployment of essential supplies and other cross-functional support for VHF-related activities**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Access to countermeasures → End-to-end health emergency supply chains → Resilient logistics and distribution
Preparedness pillar(s)	Operations support and logistics; leadership, coordination and partnership management
Steps/(sub-)components	
Implement OSL components (supply chain management; operational support and health logistics) at the PHEOC and within relevant subnational coordination structures (Y/N/NA?)	
Cross-check that OSL elements are in place to provide cross-functional support for VHF-related activities in the national contingency plan (quarterly) (Y/N/NA?)	
Identify and train the human resources required to ensure all activities can be implemented (supply chain, operations support and health logistics) (Y/N/NA?)	
Identify and ensure all emergency supply chain and health logistics and security requirements are met across all components (according to needs) (Y/N/NA?)	
Ensure supply chain management readiness	
• Create contingency stocks based on risk assessment (with essential VHF items such as PPE, Laboratory supplies and consumables, medicines/therapeutics, and equipment) (Y/N/NA?)	
• Identify storage capacities in high-risk areas and capital levels (Y/N/NA?)	
• Identify local suppliers of standard essential items and gaps in local supply (Y/N/NA?)	
• Develop concrete agreements with local suppliers to fill identified gaps where possible (Y/N/NA?)	
• Identify international suppliers of standard essential items that cannot be sourced locally (Y/N/NA?)	
• Ensure suppliers are assessed biannually for delivery capacity/time and pre-supply agreements explored and put in place where necessary (Y/N/NA?)	
• Develop 'worst case scenario' scale-up plans for a rapid increase in procurement and supply needs in case of an outbreak (Y/N/NA?)	
Ensure operations support readiness	
• Provide countries with technical advice and guidance for developing national operational plans. (Y/N/NA?)	
• Identify accommodations and a PHEOC for the emergency teams (Y/N/NA?)	
• Identify the means of transport required (WHO, MoH, partners, etc.) (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Implement robust logistics to ensure availability/deployment of essential supplies and other cross-functional support for VHF-related activities**
Ensure health logistics readiness	
• Develop and disseminate technical guidance and standards on VHF structures (Y/N/NA?))	
• Disseminate technical guidance and standards on ultra-cold chains and VHF vaccination equipment (Y/N/NA?)	
• Develop and disseminate guidance and standards for SDB (Y/N/NA?)	
• Ensure the availability of technical expertise and standards for waste management, including disposal of GeneXpert cartridges (Y/N/NA?)	
• Ensure the availability of technical guidance on operational rationale and templates to help countries develop logistics and operational plans (Y/N/NA?)	
• Provide operational support for field operations and rapid deployment of the OSL health specialist (Y/N/NA?)	
Identify and train the human resources needed to implement OSL activities (including supply chain staff, warehouse staff, *etc.*)	
Notes and resources	Ensure alignment with district preparedness measures. A list of key resources can be found in Annex 1.

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Develop key training materials of relevance to VHF risks**
VHF relevance	All
Priority level relevance	Baseline
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Public health and emergency workforce
Preparedness pillar(s)	All
Steps/(sub-)components	
Develop and implement training of trainers (ToT) programmes for the rapid scale-up of key activities (where required), to be (re)assessed biennially (Y/N/NA?)	
• Develop and assess rapid response plans and holistically consider the range of necessary activities (Y/N/NA?)	
• Develop scenario plans that include escalation of larger-scale outbreaks if RRTs are not able to fully contain an outbreak in line with the 7-1-7 target (Y/N/NA?)	
o Identify gaps between scenario plans and RRT capabilities that would require the rapid training of new personnel (Y/N/NA?)	
• Develop a ToT for the rapid training of logisticians and HR, finance and administration personnel (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: develop a ToT for the rapid training of community-based SDB teams (Y/N/NA?)	
• Develop a ToT for the rapid training of sample transportation teams(Y/N/NA?))	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: develop a ToT for the operation of ambulances and hearses (Y/N/NA?)	
• Develop a ToT for vehicle management and staff movement tracking and support (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Ebola and Marburg: develop a ToT for the training of RECO community contact tracing personnel (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: develop a ToT for the rapid training of household and vehicle decontamination personnel. (Y/N/NA?)	
Develop other key training and learning programmes (to be regularly reassessed and revised) (Y/N/NA?)	
• Develop a 'VHF 101' course adjusted to relevant VHF risks and distributed to HCWs in at-risk areas (Y/N/NA?)	
• Develop a 'VHF 101' course for schools and community outreach activities, in line with RCCE plans (Y/N/NA?)	
• In Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: deliver an IPC and PPE refresher course for HCWs in at-risk areas (Y/N/NA?)	
• Prepare for AI and predictive analytics tools (Y/N/NA?)	
Develop relevant infographics (to be regularly reassessed and revised) and ensure they are made available at all relevant locations (Y/N/NA?)	
• Develop infographics overviewing laboratory processes and make them available at all relevant laboratories (Y/N/NA?)	

Continued...

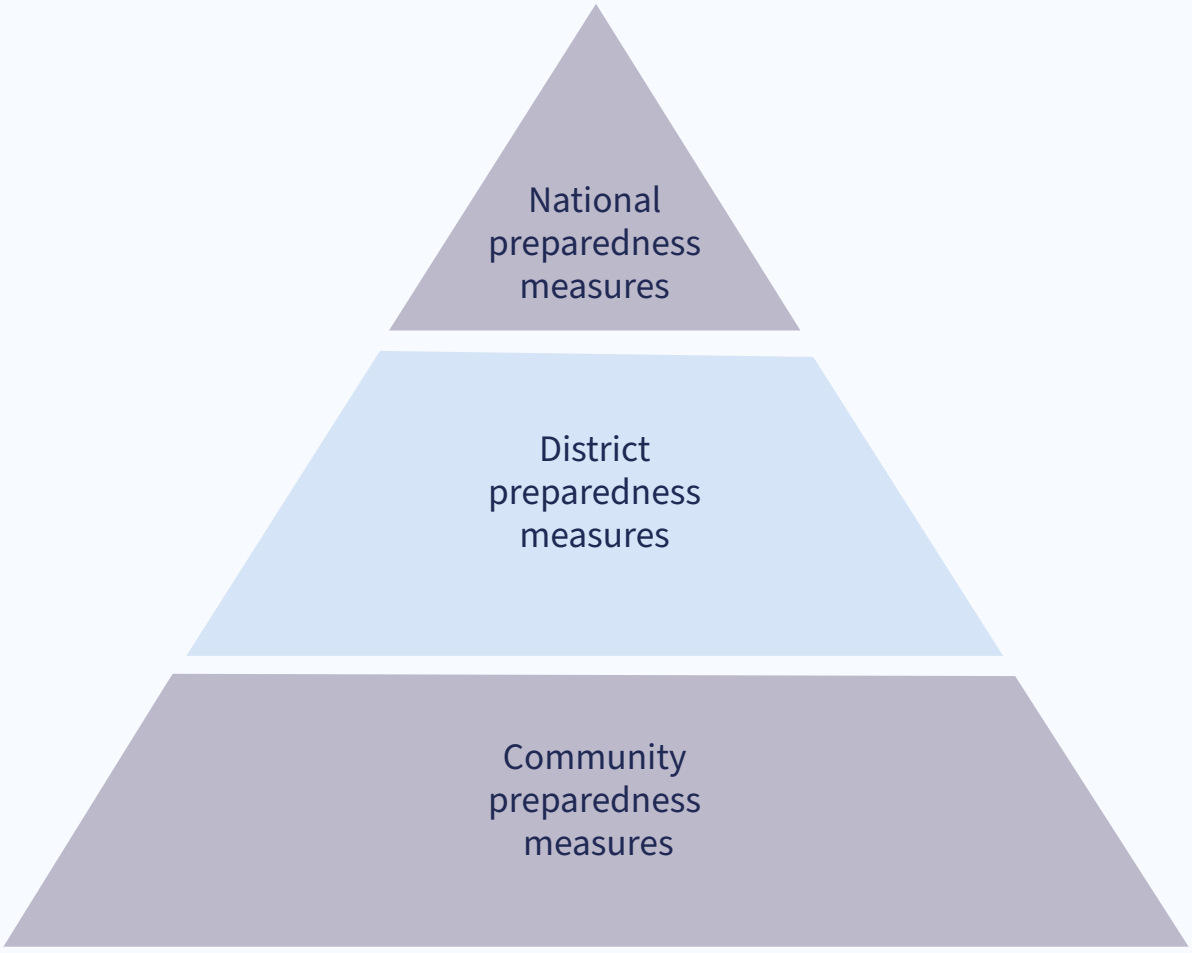
Measure	Develop key training materials of relevance to VHF risks	Y = Completed; N = Not; NA = Not applicable
	• Develop infographics overviewing donning and doffing of PPE and make them available at all district treatment centres and at the national VHF referral centre (Y/N/NA?)	
	• Develop infographics of the PHEOC and IMS organograms including personnel contact information and make them available to the district level (Y/N/NA?)	
	• Develop infographics for waste management (Y/N/NA?)	
	• Develop infographics on screening, triage and alerts for suspected cases and make them available at all PoEs and health centres in the country (Y/N/NA?)	
	• Develop infographics illustrating when and how CBS personnel can raise alerts related to suspected VHF cases within the CBS system (Y/N/NA?)	
Notes and resources	The annex of this document includes a checklist of different SOPs and protocols and plans and MoUs requiring regular reassessment and revision. A list of key resources can also be found in Annex 1.	

		Y = Completed; N = Not; NA = Not applicable
Measure	**Ensure holistic, robust and sustainable financial planning for the national VHF contingency plan and associated interventions**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Emergency coordination → Strengthening health emergency preparedness, readiness and resilience → Resource mapping and mobilization	
Preparedness pillar(s)	Leadership, coordination and partnership management; operations support and logistics	
Steps/(sub-)components		
Routinely cost all elements of the national VHF contingency plan, including resources, equipment and personnel needs for each rapid response plan scenario (Y/N/NA?)		
• For Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: pre-agree and ensure readiness to distribute hazard pay (Y/N/NA?)		
• In Priority 1 and Priority 2 countries: liquid petty cash for a minimum of seven days from rapid response activation (and related accounting systems) (Y/N/NA?)		
• Identify the legal framework that allows for the spending of emergency funds and the transfer of funds from central level to (sub-)district level (Y/N/NA?)		
• Ensure regular auditing of all financial processes and spending on the plan (Y/N/NA?)		
As part of the development process of the national VHF contingency plan, consider factors that can minimize VHF preparedness costs (Y/N/NA?)		
• Maximally integrate preparedness with the existing public health system (Y/N/NA?)		
• Implement real-time stock monitoring to avoid unnecessary procurement or waste from expiring countermeasures (Y/N/NA?)		
• Engage partners that can deliver core components of the contingency plan in a sustainable way and localize activities to the extent possible (Y/N/NA?)		
In accordance with the costed national VHF contingency plan and wider national health plans, mobilize resources against the costed plan (Y/N/NA?)		
• Regularly assess and revise gap analyses and prioritizations, diversifying funding sources to the extent possible, including through donors and partnerships (Y/N/NA?)		
• Generate and deliver clear business cases for increasing public financing for health, focusing on the known cost savings of preparedness versus response (Y/N/NA?)		
Develop financial plans to make select preventive and reactive VHF measures free of charge to end users (Y/N/NA?)		
• For Priority 1 and Priority 2 countries for dengue, yellow fever and Ebola: develop financial plans to ensure that all vaccination programming is free (Y/N/NA?)		
• For Priority 1 and Priority 2 countries for Ebola and Marburg, develop a livelihood repl. package for voluntarily quarantined persons (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Ensure holistic, robust and sustainable financial planning for the national VHF contingency plan and associated interventions**
• For Priority 1 and Priority 2 countries for Ebola and Marburg: develop a livelihood replacement package for voluntarily quarantined persons (Y/N/NA?)	
• For Priority 1 and Priority 2 countries for Ebola and Marburg: develop a package for personal effects destroyed by decontamination (Y/N/NA?)	
• Ensure that calls to the national call centre are collect and do not incur costs on those reporting alerts, rumours, or asking questions (Y/N/NA?)	
• For Priority 1 and Priority 2 countries for Ebola and Marburg: develop financial plans to ensure that survivor care is free of charge (Y/N/NA?)	
• For Priority 1 and Priority 2 countries for Lassa, CCHF, Ebola and Marburg: develop financial plans to ensure that all VHF treatment is free of charge (Y/N/NA?)	
Annually liaise with the Ministry of Finance to ensure they are prepared for potential system-wide consequences of reasonable VHF risks (for example, trade, tourism, etc.) (Y/N/NA?)	
Participate in national processes involving the Ministry of Health's financial planning and advise on the introduction of measures to reduce relevant VHF risks (Y/N/NA?)	
• Generally improve the public health system and reduce financial barriers to encourage health-seeking behaviour and thus passive surveillance (Y/N/NA?)	
• Encourage the introduction of market-based initiatives to reduce the cost of WASH items, bed nets and other VHF-preventive countermeasures (Y/N/NA?)	
Notes and resources	A list of key resources can be found in Annex 1.

7. District level preparedness measures



	Y = Completed; N = Not; NA = Not applicable →
Measure	**Conduct regular social mobilization campaigns focused on promoting specific risk reduction and health protection from VHFs**
VHF relevance	All
Priority level relevance	Priority 1 and Priority 2 only
'Five Cs' component(s)	Community protection → RCCE and infodemic management to guide priority actions and strengthen community resilience → RCCE
Preparedness pillar(s)	Risk communication and community engagement
Steps / (sub-)components	
Conduct regular training of staff responsible for community sensitization and mobilization in the district (Y/N/NA?)	
Develop an annual district-wide outreach campaign focusing on risk reduction and health protective behaviours against relevant VHFs (for example, hand washing) (Y/N/NA?)	
• Define a geographical extension of the outreach programme, focusing on areas most at risk (Y/N/NA?)	
• Identify what type of engagement is safe, feasible and acceptable for different communities (Y/N/NA?)	
• Co-design interventions with communities to raise awareness about symptoms, testing, treatment and vaccines if relevant and available (Y/N/NA?)	
• Collaborate with surveillance teams to promote early detection and reporting among at-risk and vulnerable groups, including as part of CBS (Y/N/NA?)	
• Anticipate special information and engagement needs for people who are disabled, illiterate, or otherwise marginalized (Y/N/NA?)	
• Ensure alignment with nationally-agreed RCCE messages and operating procedures related to VHF risks (Y/N/NA?)	
○ Work with national/provincial authorities to identify risk groups and risk behaviours and adapt them to the local context (Y/N/NA?)	
○ Include information on VHF risks, risk behaviours, early symptom recognition, and individual/community control measures (Y/N/NA?)	
• Cost and secure financial resources for the outreach programme (Y/N/NA?))	
Annually (re)launch the district campaign in line with the district plan (Y/N/NA?)	
Put monitoring and evaluation and feedback systems in place to improve the campaign in real-time and inform subsequent outreach activities (Y/N/NA?)	
Notes and resources	This measure should be in line with national RCCE plans and coordination mechanisms, as well as nationally-agreed RCCE messaging. A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable
Measure	**Identify and capacitate a district-level referral hospital for the treatment of severe cases of relevant VHFs not including filoviruses**	
VHF relevance	Rift Valley fever, dengue, yellow fever, Lassa fever, and CCHF	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Safe and scalable care → Scalable clinical care during emergencies → Scalable infrastructure for safe clinical surge	
Preparedness pillar(s)	Case management; infection prevention and control (including decontamination)	
Steps/(sub-)components		
Biannually (re)assess the existing capacity of tertiary hospitals at the district level to treat severe cases of relevant VHFs (Y/N/NA?)		
• Assign at least one hospital in each district as the district referral hospital for severe cases of relevant VHFs, with a minimum of three focal points (Y/N/NA?)		
• Assess the hospital-based screening and triage services and ability of the facility to detect suspected VHF cases (Y/N/NA?)		
○ Assess its hospital-based surveillance capacity and compliance with mandatory and immediate reporting of relevant VHFs (Y/N/NA?)		
• Assess the facility's IPC readiness for relevant VHFs, including decontamination and waste management (Y/N/NA?)		
○ Where Lassa and CCHF are risks, pre-position and routinely resupply the facility with IPC and household decontamination kits (Y/N/NA?))		
• Where Lassa and CCHF are risks, annually (re)assess the facility's high-level isolation unit (HLIU) for infectious hazards (Y/N/NA?)		
• Assess links between the facility and laboratories capable of processing suspected VHF samples (Y/N/NA?)		
• Assess healthcare providers at the facility on their early diagnosis, case management, and supportive treatment knowledge (Y/N/NA?)		
Biannually, identify gaps in the assessment (as above) and develop a costed action plan to build capacities over time (Y/N/NA?)		
• Design and annually provide refresher training courses where necessary (for example, for new staff or as new technologies become available (Y/N/NA?)		
In line with relevant VHF risks and case management guidelines, ensure a ready supply of key medical countermeasures and therapeutics (Y/N/NA?)		
• Ensure national protocols and SOPs on critical care management are available at the facility (Y/N/NA?)		
• Ensure alignment with national and district procurement strategies and have systems in place for stock monitoring, resupply and pre-positioning of supplies (Y/N/NA?)		
Where relevant, vaccinate all willing health care workers at the facility against Ebola virus (mitigating risks from VHF mischaracterization) (Y/N/NA?)		

Continued...

	Y = Completed; N = Not; NA = Not applicable
Measure	**Identify and capacitate a district-level referral hospital for the treatment of severe cases of relevant VHFs not including filoviruses**
Develop clear referral pathways from lower levels to higher levels of care (Y/N/NA?)	
• Ensure the availability of at least one facility-associated ambulance (Y/N/NA?)	
• Assess and enhance referral pathways between the district referral facility and primary/secondary health care facilities (with criteria for referral) (Y/N/NA?)	
• Assess and enhance referral pathways to higher-level care facilities (such as the national referral hospital) for the most complex cases (with criteria for referral) (Y/N/NA?)	
Conduct an annual SimEx simulating the arrival of a suspect patient at least three months before known seasonal occurrence (Y/N/NA?)	
Notes and resources	Treatment for filoviruses requires separate consideration and preparedness measures, detailed elsewhere in this document. This activity is implemented at the district level but requires alignment with the national level. A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish/enhance routine surveillance for all relevant VHFs**	
VHF relevance	All	
Priority level relevance	Priority 1, Priority 2, and Priority 3 only	
'Five Cs' component(s)	Collaborative Surveillance → Strong National Integrated Disease, Threat, and Vulnerability Analysis → Strong Public Health Surveillance	
Preparedness pillar(s)	Surveillance	
Steps/(sub-)components		
Obtain standard national case definitions for relevant VHFs and make them available at the district level (assessed for updates annually) (Y/N/NA?)		
Disseminate case definitions to all health centres (use the standard case definition for routine surveillance) (and re-disseminated when case definitions are revised) (Y/N/NA?)		
Conduct active case finding in areas with endemic or routine cases of VHF (Y/N/NA?)		
• Ensure district surveillance officers systematically search for possible/suspected VHF cases during supervisory visits (Y/N/NA?)		
• If historical cases are identified that did not trigger an alert within the national surveillance system, provide rapid refresher training to triage personnel (Y/N/NA?)		
Ensure systems are in place at all health centres for mandatory case reporting of suspected VHF cases and for sample collection at patient location (Y/N/NA?)		
Regularly report district-level data to higher levels for informed decision-making, as integrated with the national HMIS (Y/N/NA?)		
Ensure contact information for the PHEOC, RRT, VHF reference laboratory, and district VHF treatment centre is available at the district level (Y/N/NA?)		
Work with environmental and vector control experts at the district level to incorporate vector surveillance and control into routine surveillance systems (Y/N/NA?)		
Oversee the development and administration of a community-based surveillance system that considers relevant VHF risks (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

Y = Completed; N = Not; NA = Not applicable

Measure	**Establish a minimum of one rapid response team (RRT) at district level capacitated in VHF response**	
VHF relevance	All	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Health emergency corps	
Preparedness pillar(s)	Leadership, coordination and partnership management (et al.)	
Steps/(sub-)components		
Identify and assign team leaders and multidisciplinary team members (Y/N/NA?)		
• RRT members are rostered and a contact list generated and disseminated to key facilities throughout the regional/county/district level (Y/N/NA?)		
• District team: case management, laboratory, IPC, surveillance, social mobilization, OSL, and vaccination if relevant, plus access to burial teams if relevant (Y/N/NA?)		
Ensure clear lines of responsibility for the activation and coordination of the RRT in response to potential VHF cases (Y/N/NA?)		
• Align plans with the national-level RRT (Y/N/NA?)		
• Develop a clear rapid response plan according to VHF risks (Y/N/NA?)		
• Liaise with OSL to ensure logistical readiness (including financial mechanisms for rapid cash) for rapid response (Y/N/NA?)		
• Develop clear ToRs, operational guidelines and SOPs for the RRT in line with national-level RRT initiatives (Y/N/NA?)		
Assemble and supply the RRT with standardized kits (including contact details, case definition, case investigation forms, SOPs, etc.) (Y/N/NA?)		
• If no other system in place, train the RRT on EWARS, and ensure "EWARS in a box" is available to all RRTs (Y/N/NA?)		
Provide the required training to the RRT, including on case management, specimen acquisition and transport, surveillance and contact tracing, decontamination, etc. (Y/N/NA?)		
Equip the RRT with an ambulance that can deploy within 48 hrs (Y/N/NA?)		
Establish a functional transport mechanism and ensure that a designated driver is readily available for deployment of RRTs (Y/N/NA?)		
An outbreak template (IDSR) for the initial index case investigation report is available at the regional/county/district level (Y/N/NA?)		
Ensure a functional communication linkage between the alert system and the RRT at the regional/county/district level; likewise with the national-level RRT (Y/N/NA?)		
Plan refresher drills (based on rapid response plans) for RRTs in the event of no VHF case (Y/N/NA?)		

Continued...

Y = Completed; N = Not; NA = Not applicable	
Measure	**Establish a minimum of one rapid response team (RRT) at district level capacitated in VHF response**
Map the emergency workforce (all routine public health workers), with the identification and rostering of staff to be repurposed/relocated for surge, for readiness and response (Y/N/NA?)	
Notes and resources	WHO's Early Warning, Alert and Response System (EWARS) is an effective package of interventions for RRTs where there is no other system in place.[46] The annex of this document includes a draft rapid response plan to guide the development of national plans, if they do not already exist. A list of key resources can be found in Annex 1. This intervention should be carried out in close coordination and conjunction with national-level RRTs.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Implement a system for the collection, packaging, storage and shipment of VHF specimens to capacitated laboratories**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Collaborative surveillance → Effective diagnostic and laboratory capacity for pathogen and genomic surveillance → Decentralized point-of-care testing capacity	
Preparedness pillar(s)	Laboratories; case management; OSL; surveillance	
Steps / (sub-)components		
Make sure sample collection materials and personal protective equipment (PPE) are available at the district level (Y/N/NA?)		
Be aware of and apply guidelines[51] for the collection, packaging, storage and shipment of specimens collected from suspected cases of relevant VHFs (Y/N/NA?)		
• Ensure systems are in place for robust management of case investigation forms (CIF)/case report forms (CRF) assigned to all samples (Y/N/NA?)		
Make sure adequate boxes and receptacles are available for the packaging of specimens collected from suspected cases of relevant VHFs (Y/N/NA?)		
Make sure the exact address and contact information of the nearest capacitated laboratory is readily available and known by all SDB teams (if relevant) (Y/N/NA?)		
Make sure the exact address and contact information of the nearest capacitated laboratory is readily available and known at Level 2 and 3 health centres (Y/N/NA?)		
With the nearest capacitated laboratory, develop a pathway for sample transportation, considering insecurity, the rainy season, and other relevant challenges (Y/N/NA?)		
Systematically inform the national reference laboratory of any suspected VHF case (Y/N/NA?)		
Systematically inform the nearest district or national VHF referral centre of any suspected VHF case (Y/N/NA?)		
Notes and resources	Ensure adherence to guidelines on sample packaging and transportation.[51] A list of key resources can be found in Annex 1.	

Y = Completed; N = Not; NA = Not applicable

Measure	Complement community-based vector control through sustainable vector management strategies	
VHF relevance	RVF, dengue, YFV, Lassa, CCHF	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vector control	
Preparedness pillar(s)	Surveillance	
Steps/(sub-)components		
Develop a sustainable district-level vector management plan aligned with national vector control plans (updated biennially) (Y/N/NA?)		
• Align and integrate with community-based surveillance where possible (Y/N/NA?)		
• Work with the surveillance pillar to analyse relevant data to identify high-risk areas and populations for targeted interventions within the plan (Y/N/NA?)		
• Include elements of RCCE, surveillance and monitoring, environmental management, chemical and biological control, and integrated vector management (Y/N/NA?)		
Organize community-based action groups trained in local measures for vector control; and monitor, advise and support these groups from the district level (Y/N/NA?)		
Conduct regular training of staff responsible for monitoring, advising and supporting community-based action groups (Y/N/NA?)		
Systematically monitor community adherence and receptivity to public health guidance, and report annually to national levels to help develop RCCE plans (Y/N/NA?)		
Notes and resources	This measure coordinates community-based activities. It should be harmonized with national vector control plans. It is closely related and should be aligned with other measures promoting routine public health, including WASH, as well as regular social mobilization campaigns focused on promoting risk reduction and protective behaviours against VHFs. A list of key resources can be found in Annex 1.	

		Y = Completed; N = Not; NA = Not applicable
Measure	**Consider holistic health system approaches to improve community health and health-seeking behaviours relevant to VHF risks**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Public health and social measures	
Preparedness pillar(s)	Leadership, coordination and partnership management	
Steps/(sub-)components		
Annually (re)assess and continually improve community WASH (where relevant enhanced WASH) to mitigate infectious hazards including contagious VHFs (Y/N/NA?)		
Annually (re)assess and systematically improve routine IDSR, with an explicit focus on relevant VHF risks (Y/N/NA?)		
Support the advancement of a package of enhanced IPC measures in facilities in areas deemed to be at high risk (Y/N/NA?)		
Induce community demand for VPD vaccination through community-based RCCE interventions, including for relevant VHFs (for example, dengue and YFV) (Y/N/NA?)		
Monitor financial initiatives to reduce the cost of WASH items, bed nets and other VHF preventative countermeasures at the community and household levels (Y/N/NA?)		
Support national efforts to improve the primary health care system to enhance health-seeking behaviour and therefore passive surveillance for relevant VHFs (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

		Y = Completed; N = Not; NA = Not applicable
Measure	**Build district-level RCCE capacity that includes consideration of VHF risks and community data for action**	
VHF relevance	All	
Priority level relevance	Baseline	
'Five Cs' component(s)	Community protection → RCCE and infodemic management to guide priority actions and strengthen community resilience → RCCE	
Preparedness pillar(s)	Risk communication and community engagement	
Steps/(sub-)components		
Conduct a needs assessment analysis, including a mapping of existing RCCE HR capacities and capabilities, including among stakeholders and partners (Y/N/NA?)		
Conduct a situational analysis to better understand the local context in which a VHF outbreak may occur (updated annually) (Y/N/NA?)		
Conduct an annual review of social and behavioural data and identify vulnerable populations, risk factors, priority behaviours, and potential barriers and enablers re-lated to VHFs (Y/N/NA?)		
Identify target audiences and conduct general surveys (community perception surveys, KAP surveys, FGDs, etc.) to assess trust, access to information, and knowledge (Y/N/NA?)		
Develop an RCCE capacity-building plan (updated annually) and deliver training courses in relevant areas based on the results of the needs assessment analysis (see below) (Y/N/NA?)		
• Align with national RCCE plans (Y/N/NA?)		
• Train community engagement teams including volunteers and establish surge capacity mechanisms (Y/N/NA?)		
• Initiate a continuous peer-to-peer support system for community mobilizers, responders and networks (Y/N/NA?)		
• Set up systems for community listening and two-way communication, including ways to collect on and offline data (Y/N/NA?)		
o Ensure such systems include mechanisms for social media listening, including rumour and mis/disinformation trackers (Y/N/NA?)		
• Link with community-based surveillance (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish district-level stockpiles of key countermeasures including PPE**	
VHF relevance	All	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Safe and scalable care → Scalable clinical care during emergencies → Stockpiles and supply chain for clinical care during emergencies	
Preparedness pillar(s)	Operations support and logistics	
Steps/(sub-)components		
In Priority 1 and Priority 2 countries, establish district-level stockpiles of key countermeasures and associated systems following national-level steps (Y/N/NA?)		
• Develop tools and provide guidance on quantification of VHF supplies		
• Align supply with national stockpiling and logistical readiness (Y/N/NA?)		
• Where possible, identify local suppliers and assess them biannually for delivery capacity/time; pre-supply agreements are explored and advanced where nec-essary (Y/N/NA?)		
• Ensure there is a minimum of one logistician at the district level to support ongoing VHF preparedness measures (Y/N/NA?)		
Ensure robust transportation and supply chain links between national warehousing and district-level stockpiling (tested quarterly) (Y/N/NA?)		
• Ensure availability of expertise for appropriate sample transportation		
• Ensure routes are assessed for inaccessibility due to insecurity and any other reason, cross-checked against consolidated operational mapping (Y/N/NA?)		
Establish OSL KPIs for VHF readiness and provide regular reports on progress regarding preparedness		
Conduct a feasibility study for establishing an emergency telecommunication system at the district level (if necessary) (Y/N/NA?)		
Ensure relevant SOPs are retrieved from the national level and updated regularly (Y/N/NA?)		
Notes and resources	Core steps for this measure are outlined for the national level. A list of key resources can be found in Annex 1.	

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure the availability of a subnational reference laboratory in at-risk areas or the existence of a sample transfer system to the national laboratory < 24 hours**
VHF relevance	All
Priority level relevance	Priority 1 and Priority 2
'Five Cs' component(s)	Collaborative surveillance → Effective diagnostic and laboratory capacity for pathogen and genomic surveillance → Expanded laboratory capacity and collaboration, including genomics
Preparedness pillar(s)	Laboratories; operations support and logistics
Steps/(sub-)components	
As part of the national assessment process, conduct an annual needs assessment (Y/N/NA?)	
• If unfeasible to put a subnational reference laboratory in place, ensure systems exist for the safe transport of samples to the national laboratory within < 24 hours (Y/N/NA?)	
• Identify laboratory requirements, including key infrastructure, personnel, equipment and consumables required for sample management and processing (Y/N/NA?)	
• Stakeholder engagement: collaborate with health officials, scientists and potential users to understand their needs and expectations (Y/N/NA?)	
• Assess current laboratories against the identified needs (Y/N/NA?)	
Based on identified gaps, create and annually revise a national laboratory development plan in line with national standards (Y/N/NA?)	
• Identify equipment needs and appropriate vendors, and procure and install equipment with necessary calibration (Y/N/NA?)	
In line with national systems, put in place a supply chain management system for reagents, countermeasures and all other consumables (Y/N/NA?)	
• Establish a system for managing reagent inventory, including storage conditions and expiration tracking (Y/N/NA?)	
• Develop relationships with multiple suppliers to ensure consistent supply and contingency options (Y/N/NA?)	
• Develop a plan for the safe and efficient transport and storage of sensitive reagents and countermeasures (Y/N/NA?)	
With the national level, conduct financial planning and secure funding for the annual development plan, including for recurring costs (Y/N/NA?)	
Recruit and train laboratory technicians, scientists and support staff, and build their capacity through ongoing training (Y/N/NA?)	
• Adjusted to VHF risks, provide specialized training in detection methods, including serological and molecular techniques (Y/N/NA?)	

Continued...

	Y = Completed; N = Not; NA = Not applicable →
Measure	**Ensure the availability of a subnational reference laboratory in at-risk areas or the existence of a sample transfer system to the national laboratory < 24 hours**
Conduct quality control and assurance (Y/N/NA?)	
• Implement national SOPs for all laboratory processes and ensure all laboratories follow standardized testing protocols (Y/N/NA?)	
• Implement the national quality management system to monitor and improve laboratory performance (Y/N/NA?)	
• Work with the national level to secure laboratory accreditation by relevant bodies and conduct internal and external audits on an agreed timeline (Y/N/NA?)	
Ensure health and safety protocols are in place, including biosafety and plans for dealing with accidents, spills and related emergencies (Y/N/NA?)	
Ensure the laboratory is integrated with the national laboratory information system (LIS) for efficient data management and reporting (Y/N/NA?)	
Ensure a system for real-time integration of laboratory data into national surveillance systems including rapid reporting of VHF results (Y/N/NA?)	
Regularly reassess and update diagnostic technologies as they improve to enhance detection accuracy and reduce turnaround times (Y/N/NA?)	
Notes and resources	Core steps for this measure are outlined for the national level.

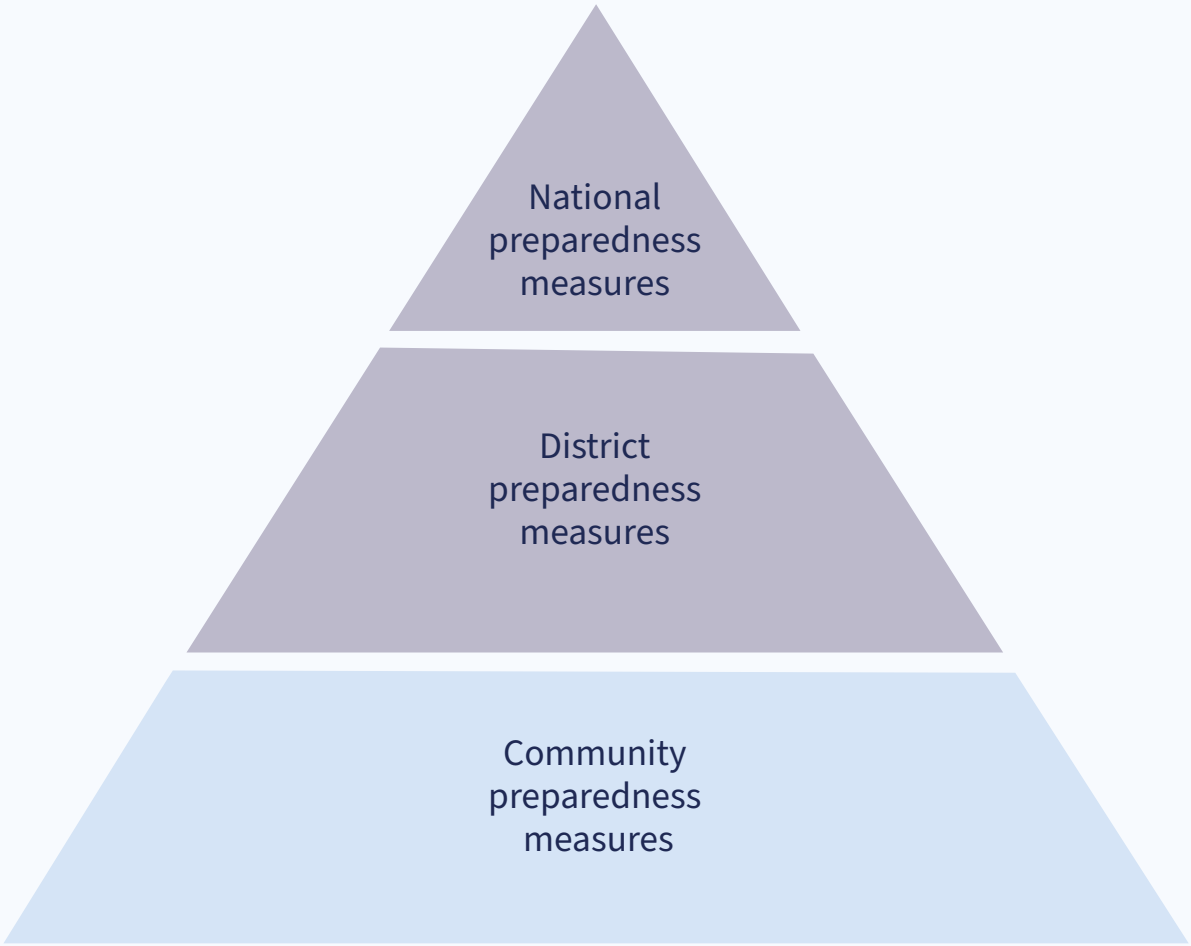
	Y = Completed; N = Not; NA = Not applicable →
Measure	**Establish an SDB team at the district level**
VHF relevance	Ebola and Marburg only
Priority level relevance	Priority 1*
'Five Cs' component(s)	Emergency coordination → Strengthened workforce capacities for health emergencies → Public health and emergency workforce
Preparedness pillar(s)	Safe and dignified burials
Steps/(sub-)components	
Retrieve updated SOPs from the national level on conducting SDB including decontamination processes and ensure they are operational (Y/N/NA?)	
Assemble at least one burial team (Y/N/NA?)	
• Equip a hearse for the safe transportation of human remains (Y/N/NA?)	
• Equip the burial teams with all necessary supplies, including additional PPE, body bags, disinfectants, and telecommunications (Y/N/NA?)	
Provide comprehensive training to these teams to ensure they are well-prepared for their roles (Y/N/NA?)	
• Ensure burial team members are trained on case definitions for relevant VHFs (Y/N/NA?)	
• Ensure strict compliance with IPC and disinfection protocols for relevant VHFs (Y/N/NA?)	
Identify and secure an appropriate burial ground for cases, ensuring it meets all safety standards and has the agreement of the local community (Y/N/NA?)	
Ensure that burial teams have reliable access to grave diggers and potential security support during the burial process to maintain safety and order (Y/N/NA?)	
Establish a comprehensive system for reporting and documenting all procedures related to the transportation and burial of human remains (Y/N/NA?)	
• Ensure the system is systematically linked with the surveillance system and that all deaths are reported immediately (Y/N/NA?)	
• Ensure the system is systematically linked with nearby laboratories capable of sequencing relevant VHFs (Y/N/NA?)	
Liaise biannually with district-level logisticians to ensure a ready supply of key equipment and materials in the absence of cases (Y/N/NA?)	
Notes and resources	* Only for districts previously reporting cases, or for districts bordering districts previously reporting cases. A list of key resources can be found in Annex 1.

		Y = Completed; N = Not; NA = Not applicable →
Measure	**Enhance oversight of IPC in facilities in high-risk areas**	
VHF relevance	Lassa fever, CCHF, Ebola and Marburg only	
Priority level rele-vance	Priority 1 and Priority 2 only	
'Five Cs' compo-nent(s)	Safe and scalable care → Maintain essential health services → Resilient infrastructure and workforce for health service delivery	
Preparedness pillar(s)	Infection prevention and control (including decontamination)	
Steps/(sub-)components		
Retrieve national-level mapping that includes all health centres in the district (Y/N/NA?)		
Retrieve national IPC protocols and ensure any updates to national protocols are routinely cascaded to the district level (Y/N/NA?)		
Make updated protocols available at all health facilities, and have relevant VHF SOPs (inclusive of flow charts) disseminated with just-in-time training (Y/N/NA?)		
At least annually, conduct WASH-FIT assessments in health centres and ensure minimum requirements are met (targeting at least 80% of public health centres) (Y/N/NA?)		
• Also target as many private facilities as reasonably possible		
• Identify and assess potential isolation structures in respect to IPC and adequate isolation possibilities, waste management, water, and power supply (Y/N/NA?)		
○ Ensure linkages with surveillance systems (Y/N/NA?)		
• Ensure safe injection practices and sterilization of sharp medical equipment systems are fully in place (Y/N/NA?)		
• Ensure health centres have IPC/WASH governance structures (Y/N/NA?)		
• Ensure health centres can quickly identify infectious risks and promptly implement IPC and WASH measures appropriate to relevant VHF risks (Y/N/NA?)		
• Make sure that basic hospital-acquired infection control materials (gloves, masks, gowns) and hygiene supplies (soap, alcohol, etc.) are available (Y/N/NA?)		
• Check for aide-memoires and other relevant infographics (Y/N/NA?)		
Immediately report WASH-FIT assessments to the national level (for example, on a rolling basis) (Y/N/NA?)		
Hold annual meetings with the national level to discuss gaps identified in WASH-FIT assessments and develop plans for addressing those gaps (Y/N/NA?)		
• With the national level, identify relevant partners to support capacity-building plans (Y/N/NA?)		

Continued...

Measure	Enhance oversight of IPC in facilities in high-risk areas	Y = Completed; N = Not; NA = Not applicable
Liaise with district logisticians to ensure IPC materials are available through district-level stockpiling and warehousing (Y/N/NA?)		
Notes and resources	WHO's recent IPC guideline for filoviruses is a useful tool when assessing needs related to clinical management of VHFs capable of being transmitted person-to-person (Ebola and Marburg, though the measures apply similarly to Lassa and CCHF).41 This measure is not related, though, to IPC for the clinical care of these VHFs, but rather, the routine improvement of IPC in health centres in the most at-risk areas. A list of key resources can be found in Annex 1.	

8. Community level preparedness measures



		Y = Completed; N = Not; NA = Not applicable
Measure	**Implement community-based vector control plans that include consideration of VHF risks**	
VHF relevance	Rift Valley fever, dengue, yellow fever, Lassa fever, CCHF	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Vector control	
Preparedness pillar(s)	Surveillance; risk communication and community engagement	
Steps/(sub-)components		
Establish community-based action groups trained in local measures for vector control (Y/N/NA?)		
• Establish district-level coordination teams to monitor, advise and support community-based action groups (Y/N/NA?)		
Organize community clean-up drives to eliminate potential mosquito breeding sites like stagnant water in containers, tyres, and clogged drains (Y/N/NA?)		
Organize community clean-up drives to eliminate rodent habitats, including cluttered and unsanitary areas where rodents can breed (Y/N/NA?)		
Develop and implement an outreach campaign promoting good household practices relevant to mitigating VHF risks (Y/N/NA?)		
• Promote the covering of water containers, using mosquito nets, and wearing protective clothing (Y/N/NA?)		
• Safe food storage and handling, blocking household entry points, and maintaining cleanliness and hygiene (Y/N/NA?)		
• Promote the use of larvicides, adulticides and rodenticides in a safe and environmentally responsible manner (Y/N/NA?)		
• Ensure alignment with ongoing community WASH interventions (Y/N/NA?)		
• Ensure alignment with regular social mobilization campaigns focusing on promoting risk reduction and protective behaviours against VHFs (Y/N/NA?)		
Notes and resources	This measure is coordinated by the district level. It should be harmonized with national vector control plans and district-level interventions. It is closely related and should be aligned with other measures promoting routine public health, including WASH, as well as regular social mobilization campaigns focused on promoting risk reduction and protective behaviours against VHFs. A list of key resources can be found in Annex 1.	

		Y = Completed; N = Not; NA = Not applicable
Measure	**Advance a package of enhanced WASH services in areas deemed to be at high risk**	
VHF relevance	Lassa fever, CCHF, Ebola and Marburg only	
Priority level relevance	Priority 1 and Priority 2 only	
'Five Cs' component(s)	Community protection → Population and environmental public health interventions → Community access to water, sanitation and hygiene	
Preparedness pillar(s)	WASH	
Steps / (sub-)components		
Decide on minimum standards for an 'enhanced WASH package' for facilities (reassess biennially) (Y/N/NA?)		
Decide on minimum standards for household WASH kits (reassess biennially) (Y/N/NA?)		
Biennially – or after any significant change – (re)map all health facilities, schools and mass gathering sites (Y/N/NA?)		
Biennially – or after any significant change – (re)assess all health facilities for WASH facilities and identify gaps (Y/N/NA?)		
Create a costed plan to fill identified gaps and secure financial resources as required, including partner commitments (Y/N/NA?)		
• Align with district-level IPC plans for high-risk areas (Y/N/NA?)		
• Identify and engage partners involved in WASH activities to support the costed plan (Y/N/NA?)		
• Ensure this includes community health extension workers (CHEWs) and village health teams (VHTs) or similar (Y/N/NA?)		
Develop a rapid WASH scale-up plan for different VHF scenarios, ensuring quick deployment of resources in outbreak situations (Y/N/NA?)		
Link enhanced WASH outreach activities to RCCE plans to encourage improved healthy behaviours including hygiene practices (Y/N/NA?)		
Advance market-based initiatives to reduce the price of household WASH goods and services (Y/N/NA?)		
Freely and sustainably provide household WASH kits to households in slum areas, liaising with UNICEF for reasonable targets and strategies (Y/N/NA?)		
Notes and resources	A list of key resources can be found in Annex 1.	

9. Conclusion

This document (including the associated online companion tool) has systematically laid out necessary steps and strategies to enhance preparedness capabilities across the Region, acknowledging the significant threat VHFs pose to public health, security, and economic stability. By assigning priority levels, outlining baseline preparedness measures, and delving into VHF-specific measures, this guide serves as a critical tool for decision-makers, health professionals, and partners in the fight against these relentless diseases.

The collaborative effort to consolidate and advance existing guidance, incorporating the latest scientific breakthroughs and lessons learned from recent outbreaks, signifies a positive shift towards proactive and informed public health emergency management. The emphasis on a unified approach, integrating WHO's HEPR framework, underscores the complexity and interconnectivity of the health challenges we face. As countries utilize this document to compare their capacities and develop tailored contingency action plans, it is expected that the gaps in preparedness will close, thereby enhancing the overall resilience of health systems against VHFs.

Moving forward, it is crucial for all stakeholders, including WHO country offices, Ministries of Health, public health emergency operation centres and external partners, to remain vigilant, adaptive and collaborative. Preparedness is not a one-time effort but a continuous process of learning, investing and improving. As the Region faces the threat of emerging and re-emerging VHFs, the guidelines and measures outlined in this document should be iteratively reviewed and updated to reflect new knowledge, technologies and changing landscapes. Ultimately, the collective aim is to fortify the WHO African Region against VHFs, ensuring swift detection, effective response, and minimal impact on the lives and livelihoods of its people. Together, with sustained commitment and cooperation, we can aspire to a future where VHFs are no longer a formidable threat, but a manageable aspect of our resilient public health systems.

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Annexes

A1 Other key resources

Table 4: Other key resources

Other key resources		
Title	**Year**	**Scope**
WHO resources		
Strengthening the global architecture for health emergency prevention, preparedness, response and resilience[39]	2023	Expanding on the Director-General's report to the World Health Assembly in May 2023, this paper provides a two-part summary of the initiatives that are now underway to strengthen the global HEPR architecture. Part I provides an overview of the Member-State driven processes to reform the governance of HEPR at the global level; new mechanisms to secure sustainable financing for health emergency preparedness and response; and introduces a new concept – the five Cs – that will guide the strengthening of the national, regional and global operational systems of HEPR. Part II provides a more detailed exploration of each of the five Cs, and the next steps that we must take to accelerate the implementation of the HEPR framework at the national level, in order to meet the pressing needs of communities affected by and at risk of health emergencies now and in the years to come.
Infection prevention and control guideline for Ebola and Marburg disease, August 2023[41]	2023	The newly published WHO Infection prevention and control guideline for Ebola and Marburg disease contains the Organization's most up to date recommendations for IPC measures to be implemented in all health facilities when caring for people with, or managing outbreaks of, Ebola or Marburg disease.
Consolidated Ebola Virus Disease preparedness checklist[55]	2015	The Checklist aims to assist countries assess and test their level of readiness, and be used as a tool for identifying concrete actions to be taken by countries and identifying potential gaps. It outlines 11 key components and tasks for both countries and the international community that should be completed within 30, 60 and 90 days, respectively, from the date of assessment.
Eliminate yellow fever epidemics (EYE) strategy 2017-2026[44]	2017	The comprehensive global strategy to eliminate yellow fever epidemics (EYE) has been developed by a coalition of partners (Gavi, UNICEF and WHO) to face yellow fever's changing epidemiology, resurgence of mosquitoes, and the increased risk of urban outbreaks and international spread.
Risk communication and community engagement readiness and response toolkit: yellow fever[56]	2024	This toolkit is a comprehensive set of practical tools and resources designed to support country-level risk communication and community engagement (RCCE) practitioners, decision-makers, and partners to plan and implement readiness and response activities for yellow fever outbreaks.

Continued...

Other key resources		
Title	**Year**	**Scope**
Technical handbook for dengue surveillance, outbreak prediction/detection and outbreak response[57]	2016	This handbook was produced by TDR together with WHO's Neglected Tropical Diseases (NTD) Department and WHO regional offices in the context of a European Union-financed research programme, the International Research Consortium on Dengue Risk Assessment, Management and Surveillance (IDAMS), to develop an evidence-based handbook for the early outbreak detection and management of dengue fever outbreaks.
Guidance and tools for conducting an early action review (EAR): rapid performance improvement for outbreak detection and response[58]	2023	The Guidance for conducting an early action review (EAR) is designed to optimize early detection, timely notification, and swift response actions during public health emergencies. An EAR serves as an agile performance enhancement methodology. It scrutinizes the efficiency of initial detection measures and subsequent responses to public health events, irrespective of their scale. Its implementation fosters adaptive changes in workflow strategies and actions.
Managing epidemics: key facts about major deadly diseases, 2nd edition[59]	2023	The purpose of the Managing epidemics handbook is to provide expert guidance on those responses. Building on the first edition, the second edition provides concise and basic up-to-date knowledge with which public health officials can respond effectively and rapidly at the very start of an outbreak. Part I of the handbook provides insights on epidemics of the 21st century and offers context on the upsurge of recent epidemics. Part II has been updated and offers 10 key facts about 19 deadly diseases including tips on the interventions required to respond. Part III presents various Tool boxes that summarize guidance on several important topics. The handbook focuses on practical and indispensable things to know about infectious diseases that are most important for national, political and operational decision-makers; it also links readers to more exhaustive WHO guidance.
Ebola and Marburg virus disease epidemics: preparedness, alert, control, and evaluation[60]	2014	The main target audience of this document are district-level health-care workers (doctors, nurses, and paramedics), as well as intermediate- and central-level health-care workers responsible for epidemic control, and International Health Regulations (IHR) National Focal Points (NFPs). The objective of this document is to describe preparedness, prevention, and control measures that have been implemented successfully during previous epidemics. These measures must be implemented during the following four phases: (1) Pre-epidemic preparedness (2) Alert (identify, investigate, evaluate risks) (3) Outbreak response and containment operations (4) Post-epidemic evaluation.
Integrated Disease Surveillance and Response Technical Guidelines[43]	2019	The Integrated Disease Surveillance and Response (IDSR) framework makes surveillance and laboratory data more usable, helping public health managers and decision-makers improve detection and response to the leading causes of illness, death, and disability in African countries.

Continued...

Other key resources		
Title	**Year**	**Scope**
Guidance on regulations for the transport of infectious substances 2021-2022[51]	2021	This publication offers practical guidance to facilitate compliance with applicable international regulations for the transport of infectious substances by all modes of transport and includes the changes that apply from 1 January 2021. The document provides information for classifying, identifying, packaging, marking, labelling, documenting and refrigerating infectious substances for transportation and ensuring their safe delivery. The current revision replaces the document issued by the World Health Organization (WHO) in 2019 (document WHO/WHE/CPI/2019.20). When using this publication, reference must be made to the applicable national and international regulations.
Laboratory biosafety manual, 4th edition[61]	2020	The WHO Laboratory Biosafety Manual (LBM) has been in broad use at all levels of clinical and public health laboratories, and other biomedical sectors globally, serving as a de facto global standard that presents best practices and sets trends in biosafety. LBM encouraged countries to accept and implement basic concepts in biological safety and to develop national codes of practice for the safe handling of biological agents in laboratories within their geographical borders.
How to conduct safe and dignified burial of a patient who has died from suspected or confirmed Ebola or Marburg virus disease[62]	2014	This protocol provides information on the safe management of dead bodies and burial of patients who died from suspected or confirmed Ebola or Marburg disease. These measures should be applied not only by medical personnel but by anyone involved in the management of dead bodies and burial of suspected or confirmed Ebola or Marburg patients. Twelve steps have been identified describing the different phases Burial Teams have to follow to ensure safe burials, starting from the moment the teams arrive in the village up to their return to the hospital or team headquarters after burial and disinfection procedures.
Yellow Fever: Vaccine Preventable Diseases Surveillance Standards[63]	2020	The purpose of this document is to provide World Health Organization (WHO)-recommended standards for conducting surveillance for vaccine preventable diseases (VPDs). VPD surveillance provides vital information to help countries understand disease burden and epidemiology to inform vaccine policy and strategy. This document is intended to provide a set of standards that countries should consider in establishing and improving existing VPD surveillance. Countries may adapt these standards based on local epidemiology, policy, disease control objectives and strategies. While the primary audiences of this document are country programme managers, it is important to recognize that standardized global surveillance data are useful for developing global vaccination policy.

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Other key resources		
Title	**Year**	**Scope**
Strategic toolkit for assessing risks: a comprehensive toolkit for all-hazards health emergency risk assessment[64]	2021	The Strategic Tool for Assessing Risks (STAR) offers a comprehensive, easy-to-use toolkit and approach to enable national and subnational governments to rapidly conduct a strategic and evidence-based assessment of public health risks for planning and prioritization of health emergency preparedness and disaster risk management activities. This guidance describes the principles and methodology of STAR to enhance its adaptation and use at the national or subnational levels.
Dengue guidelines, for diagnosis, treatment, prevention and control[65]	2009	This document makes widely available to health practitioners, laboratory personnel, those involved in vector control and other public health officials, a concise source of information of worldwide relevance on dengue. The guidelines provide updated practical information on the clinical management and delivery of clinical services; vector management and delivery of vector control services; laboratory diagnosis and diagnostic tests; and surveillance, emergency preparedness and response. Looking ahead, some indications of new and promising avenues of research are also described. Additional and more detailed specific guidance on the various specialist areas related to dengue are available from other sources in WHO and elsewhere, some of which are cited in the references.
Crimean-Congo haemorrhagic fever: Introduction[66]	2018	This course provides a general introduction to CCHF and is intended for frontline responders engaged in preventing and managing outbreaks.
Introduction to Marburg Virus Disease[67]	2018	This introductory course provides an overview of the signs, symptoms, transmission routes, diagnosis, and epidemiology of the disease. It also discusses prevention and control strategies.
Introduction to Dengue[68]	Nd	This course provides an introduction to dengue. It provides an overview of the epidemiology, transmission, symptoms, diagnosis, treatment, and prevention of the disease.
Ebola: Introduction[69]	Nd	This introductory session explains basic principles of Ebola disease and ways to protect yourself and others. By the end of this lecture, you should be able to: describe Ebola disease and how it is transmitted, recall basic measures to prevent Ebola disease and list key public health concerns during an Ebola outbreak.
Lassa fever: Introduction[70]	Nd	This course provides a general introduction to Lassa fever and is intended for personnel responding to outbreaks in complex emergencies or in settings where the basic environmental infrastructures have been damaged or destroyed.
Yellow fever: Introduction[71]	2018	This course provides a general introduction to yellow fever and is intended for personnel responding to outbreaks in complex emergencies or in settings where the basic environmental infrastructures have been damaged or destroyed. It includes materials that can be accessed in both English and Kanuri.

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Other key resources		
Title	**Year**	**Scope**
Rift Valley fever: Introduction[72]	2017	This course provides a general introduction to RVF and is intended for incident managers and personnel working for the United Nations, international organizations and NGOs.
Rift Valley fever factsheet[18]	2018	This WHO Fact Sheet on Rift Valley fever, covering transmission, clinical features, diagnosis, treatment and vaccines, and prevention and control.
Early detection, assessment and response to acute public health events: implementation of early warning and response with a focus on event-based surveillance[73]	2014	The IHR expand usual infectious disease notification to include surveillance of public health events from various origins (e.g. nuclear, chemical or unknown), and prompts Member States to develop the capacities of their surveillance systems to detect, assess, notify and respond to all acute health events or health risks that may constitute a threat to human health. As noted, "To comprehensively meet the early warning and alert requirements of the IHR, there is a need to strengthen and develop both routine, or indicator-based, surveillance and event-based surveillance". This document assists with this objective by advocating for the implementation of early warning and response with a focus on event-based surveillance.
Risk communication and community engagement (RCCE) considerations for the Ebola response in the Democratic Republic of the Congo[74]	2018	This document was developed by the World Health Organization's Health Emergencies Programme as a resource for the response to the Ebola Virus Disease (Ebola) outbreak in the Democratic Republic of the Congo in May 2018. It is intended to be used to guide risk communication and community engagement (RCCE) work which is central to stopping the outbreak and preventing its further amplification. Unlike other areas of response, RCCE draws heavily on volunteers, frontline personnel and on people without prior training in this area. As such, the document provides basic background information, scopes the socio-economic and cultural aspects (that are known at the time of publication), and provides the latest evidence-based advice and approaches based on WHO's Guideline: Communicating Risk in Public Health Emergencies, 2018. The document also annexes a checklist for RCCE considerations in all pillars of the response, from surveillance and contact tracing to clinical care and safe and dignified burials.
Handbook for Public Health Capacity-Building at Ground Crossings and Cross-Border Communication[47]	2020	This handbook follows a comprehensive approach to health system strengthening at borders in order to support IHR national focal points and other national agencies in developing and implementing evidence-based action plans for IHR capacity development at ground crossings. The approach includes the movement of travellers and baggage, cargo, containers, conveyances, goods and postal parcels across ground crossings, as well as the interaction with adjacent border communities.

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Other key resources		
Title	**Year**	**Scope**
WHO AFRO resources		
Surveillance and control of arboviral diseases in the WHO African region: assessment of country capacities[75]	2022	The Special Programme for Research and Training in Tropical Diseases (TDR), the WHO department of control of Neglected Tropical Diseases (NTD) and the WHO Regional Office for Africa conducted a cross-sectional survey to determine the current capacity of countries in the African Region. A self-administered questionnaire covering seven relevant domains was used to measure capacity. All 47 countries in the African Region contributed to the survey, and all the results for each dimension at regional and sub-regional levels are reported in this publication.
Mapping the Risk and Distribution of Epidemics in the WHO African Region[36]	2016	Carefully assembled surveillance data at the highest possible spatial resolutions also permit the understanding of the burden of epidemics, their co-occurrence and the key biological, ecological, economic, health system and governance determinants. It is for this purpose that WHO-AFRO commissioned this report. The overarching objective was to develop a comprehensive spatially defined database of outbreaks and epidemics and delineate the ecological zones of diseases that are classified as Public Health Emergency of International Concern (PHEIC) according the International Health Regulations (IHR) 2005 and malaria.
Framework for the integrated control, elimination, and eradication of tropical and vector-borne diseases in the African Region 2022-2030[76]	2022	This consolidated regional framework harmonizes the implementation frameworks for the neglected tropical disease road map, the Global vector control response 2017–2030 (AFR/RC69/9) and the updated Global technical strategy for malaria 2016–2030 (AFR/RC66/14) in the WHO African Region. The integrated framework builds on progress made in the last two decades in the control, elimination and/or eradication of tropical and vector-borne diseases and addresses major programme deficiencies that drive the persistently high burden of these diseases and the lost momentum towards the 2030 targets.

Continued...

Other key resources		
Title	**Year**	**Scope**
Regional Strategy for Health Security and Emergencies 2022-2030[12]	2022	This strategy, that incorporates lessons learnt from COVID-19, aims to reduce the health and socioeconomic impacts of health emergencies. The strategy emphasizes building responsive health systems to effectively manage health emergencies while ensuring continuity of essential services. Aligned with strategies for achieving the health-related Sustainable Development Goals (SDGs) and WHO's General Programme of Work (GPW 13), it underscores the implementation of recommendations of recent global reviews.
Integrated disease surveillance and response in the African region: a guide to establishing community based surveillance[77]	2014	In some communities structures are not functional or are still to be built to detect, prevent and respond to public health events, despite the fact that the first edition of the Integrated Diseases Surveillance (IDS) in the African Region advocated for countries to establish Community-based Surveillance (CBS) systems since 2001. Community representatives and health workers with instructions on how to recognise certain diseases or health conditions were to be used as contact persons in the community for the purpose of detecting and reporting suspected cases to the health facility.
Integrated disease surveillance and response in the African region: Community-based Surveillance (CBS) Training Manual[78]	2015	The guide has two main objectives: (a) To help countries build and strengthen the capacity of communities to conduct effective surveillance and response activities in line with Integrated Disease Surveillance and Response (IDSR) (2010) strategy; and (b) To improve the flow of surveillance information between the community and the local health facilities.
Other resources		
Trends in public health emergencies in the WHO African Region: an analysis of the past two decades public health events from 2001 to 2022[4]	2023	This paper presents an exploratory analysis of public health events data collected the past 22 years in the WHO Africa region, to explore patterns and trends that can inform public health strategies, policy changes and develop appropriate tools to improve disease surveillance, preparedness and response to public health emergencies. A suite of exploratory data analysis methods combining time series analysis, summary statistics, temporal visualisations, geographic information system (GIS) mapping, trend analysis and statistical tests were used to derive patterns and trends from the data. An in-depth analysis of zoonotic disease outbreaks by geography and time was explored. The analysis also focused on whether these outbreaks were viral haemorrhagic related or had other characteristics.
Consensus report: Preventive measures for Crimean-Congo hemorrhagic fever during Eid-al-Adha festival[79]	2015	This consensus report focuses on the variable practices regarding animal handling in different regions and possible preventative measures to reduce the incidence of CCHF. Environmental hygiene and personal protection are essential parts of prevention. There is a need for international collaborative preparedness and response plans for prevention and management of CCHF.

Continued...

Other key resources		
Title	**Year**	**Scope**
Viral Haemorrhagic Fevers Preparedness and Response Plan[80]	2017	With the aim of eliminating or minimising the risk of transmission to frontline workers and others coming into contact with an infected person, this document has been developed to provide clear guidance to frontline workers and health authorities involved in patient care and management as well as the response to VHF outbreaks in Nigeria. Much of this guidance is relevant to other country contexts as well.
7-1-7: Rapid improvement for early disease detection and response[81]	2021	The resource describes the 7-1-7 target, whereby every suspected outbreak is identified within 7 days of emergence, reported to public health authorities with initiation of investigation and response efforts within 1 day, and effectively responded to—as defined by objective benchmarks—within 7 days (appendix p 1). This 7-1-7 target can provide a global basis for accountability, be applied at country level to assess and improve performance, and can also be applied locally to promote equity in detection and context-appropriate response capabilities.
Safe and Dignified Burial: An Implementation Guide for Field Managers[82]	2020	Safe and dignified burials (SDB) for people who die during disease outbreaks help prevent further transmission of deadly viruses and ensure that the personal wishes of bereaved families and communities are considered and included. This IFRC guide provides practical and easy-to-follow guidance on how to establish and run SDB programmes, with a particular focus on Ebola and Marburg. It is also a useful resource for emergency preparedness in countries at risk from these deadly diseases.

A2 Table of VHFs affecting humans not limited to those in the WHO African Region

Table 5: VHF-causing viruses affecting humans not limited to those in the WHO AFRO region

VHF-causing viruses affecting humans not limited to those in the WHO African Region			
Virus	**Acronym**	**Causes**	**Affect African Region**
***Arenaviridae* family**			
Reservoir: Rodents			
Chapare virus	CHPV	Chapare hemorrhagic fever	N
Guanarito virus	GTOV	Venezuelan hemorrhagic fever	N
Junin virus	JUNV	Argentine hemorrhagic fever	N
Lassa virus	LASV	Lassa fever	Y
Lujo virus	LUJV	Lujo hemorrhagic fever	N*
Lymphocytic choriomeningitis virus	LCMV	Lymphocytic choriomeningitis	N*
Machupo virus	MACV	Bolivian hemorrhagic fever	N
Sabia virus	SABV	Brazilian hemorrhagic fever	N
Bunyaviridae family			
Reservoir: Athropods and rodents			
Crimean-Congo hemorrhagic fever virus**	CCHFV	Crimean-Congo hemorrhagic fever	Y
Dobrava-Belgrade virus	DOBV	Hemorrhagic fever with renal syndrome	N
Hantaan virus	HTNV	Hemorrhagic fever with renal syndrome	N
Puumalavirus virus	PUUV	Hemorrhagic fever with renal syndrome	N
Rift Valley fever virus**	RVFV	Rift Valley fever	Y
Saaremaa virus	SAAV	Hemorrhagic fever with renal syndrome	N
Seoul virus	SEOV	Hemorrhagic fever with renal syndrome	N
Sin Nombre virus	SNV	Hantavirus pulmonary syndrome	N

Continued...

VHF-causing viruses affecting humans not limited to those in the WHO African Region			
Virus	**Acronym**	**Causes**	**Affect African Region**
Severe fever and thrombocytopenia syndrome virus	SFTSV	Severe fever and thrombocytopenia syndrome	N
Tula virus	TULV	Hemorrhagic fever with renal syndrome	N
Filoviridae* family** **Reservoir: Bats and non-human primates			
Bundibugyo virus	BDBV	Bundibugyo virus disease	Y
Marburg virus	MARV	Marburg disease	Y
Sudan virus	SUDV	Sudan virus disease	Y
Taï Forest virus	TAFV	Taï Forest virus disease	Y
Ebola virus	EBOV	Ebola virus disease	Y
***Flaviviridae* family** **Reservoir: Arthropods**			
Dengue virus	DENV	Dengue fever	Y
Kyasanur forest disease virus	KFDV	Kyasanur forest disease	N
Omsk hemorrhagic fever virus	OHFV	Omsk hemorrhagic fever	N
Yellow fever virus	YFV	Yellow fever	Y

Notes: * See footnote c on page 14; ** Also transmitted by livestock; *** See note †† on page 21.

A3 Methodology and resources used for prioritisation

In most cases, the 2016 WHO AFRO document *'Mapping the risk and distribution of epidemics in the WHO African Region: a technical report'* was used to assign priority levels.36 This was supplemented and adjusted by other resources as described and justified below:

- **Rift Valley fever:** Supplemented by US CDC risk mapping.83 Where risk is assessed as higher in one document compared with the other, the higher priority level is given.

- **Dengue:** There is no adjustment. However, note that 2023 into 2024 has seen unusually significant morbidity and mortality from dengue in the African Region.[84] Therefore, it is critical that countries developing a national VHF contingency plan reassess their dengue priority levels according to the rapidly developing situation. The priority levels used in this document reflect a more typical baseline, that is to say, they do not specifically consider ongoing outbreaks as reported by WHO AFRO.[84]

- **Yellow fever:** Yellow fever is ranked internally by WHO AFRO and is up to date as of 2023. For relevant resources, refer to the WHO document as well as US CDC risk mapping.[35]

- **Lassa:** Supplemented by US CDC risk mapping.[86]

- **CCHF:** Several countries were upgraded to Priority 1 ('complete presence') due to US CDC risk mapping.[87] Where risk is assessed as higher in one document compared with the other, the higher priority level is given.

- **Ebola:** Supplemented by US CDC risk mapping,[88] as well as outbreaks post-2016. Fruit bat range supplemented from a Nature article.[89] Sierra Leone and Liberia are qualitatively assessed to be Priority 1, due to the proximity of local transmission from Meliandou, Guinea, and the presence of large numbers of Ebola survivors. Côte d'Ivoire would be Priority 1 due to an outbreak in 1994, but in this document, only countries experiencing local transmission during or after the year 2000 are graded in this way (but are then, at least, still graded as having suitable ecology for transmission). Similarly, South Africa has had one case of local transmission from one imported case, but this was in 1996, and therefore it is graded as Priority 3 rather than Priority 2.[33] Countries with both suitable ecology and proximity to a Priority 1 country are graded as Priority 2.

- **Marburg:** Supplemented by US CDC risk mapping, as well as outbreaks post-2016. Also adjusted to align with ecological vector risks indicated for Ebola in the 2016 WHO document, which were not identical in the report despite shared ecological risks. As with Ebola, fruit bat range was supplemented from a Nature article.[89] South Africa, Zimbabwe and Kenya have had their priority levels adjusted due to outbreaks occurring prior to the year 2000 (though as with Ebola, they are nevertheless still assessed to have suitable ecology for transmission). Countries with both suitable ecology and proximity to a Priority 1 country are graded as Priority 2.

A4 Organization of the preparedness measures in this document

A4.1 Level of intervention

Within a given country, preparedness measures can be categorized as occurring at one of three overarching levels of intervention. The levels are summarized in Figure 2 on page 13 and are justified at greater length below.

National level: Advancing preparedness measures at the national level for VHF outbreaks involves a strategic, overarching approach that integrates and supports initiatives at both the operational and community levels. Unlike the more localized efforts at the lower levels, preparedness at the national level encompasses the development and implementation of comprehensive policies, guidelines and programmes that provide the framework for coordinated preparedness and ensures that local and district efforts are well supported and aligned with broader public health objectives. This includes building capacity within nationwide surveillance systems to monitor and track VHF outbreaks, setting standards for diagnosis and treatment, and ensuring equitable distribution of resources like frontline workers, diagnostic tools and treatments across various regions in a given country. By creating a robust national infrastructure for disease control, governments can more effectively mitigate the impact of VHF outbreaks, protect public health, and enhance the resilience of their health systems against future health threats.

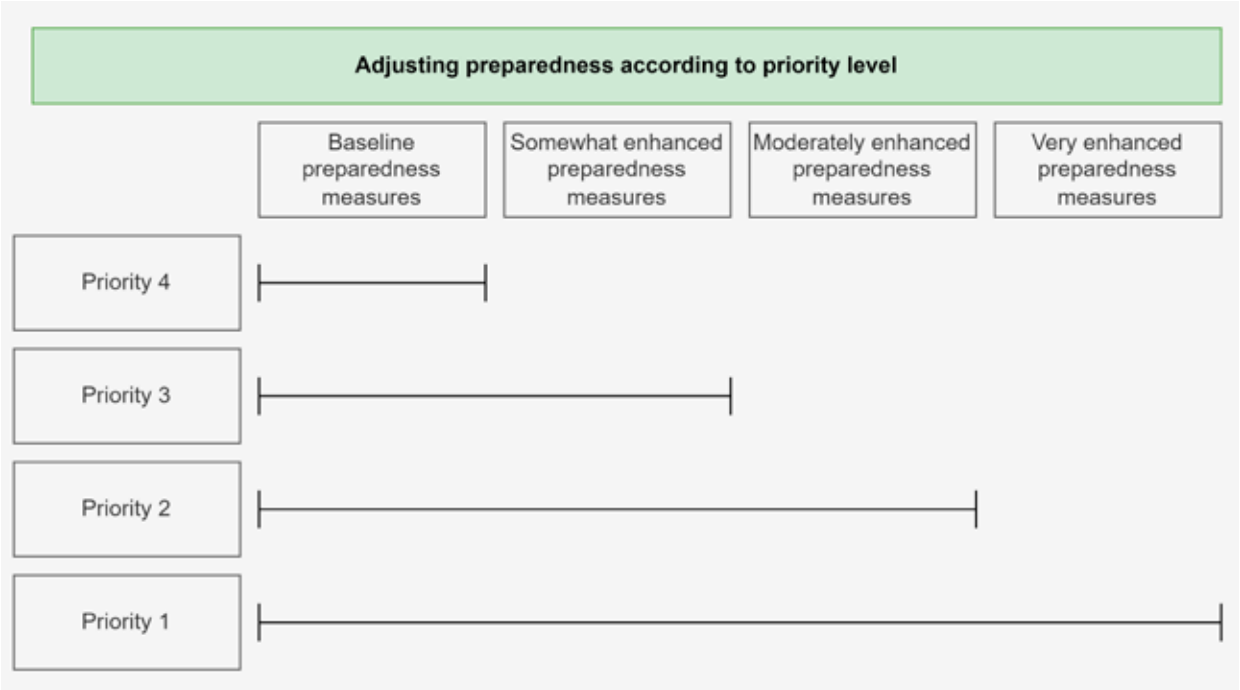
District level: Advancing preparedness measures at the operational level of implementation focuses on coordinating and optimizing local health care resources, enhancing disease surveillance, and implementing targeted public health interventions. Unlike the broader, policy-driven strategies at the national level or the grassroots initiatives at the community level, operational preparedness involves a more localized, detailed management of health services and response mechanisms. It means establishing effective communication channels between health care facilities, ensuring the availability and proper distribution of medical supplies and personnel, and training health care and other frontline workers in the timely recognition and treatment of VHFs. The operational level is pivotal in collating data from community health workers and feeding this information into the larger national surveillance systems, thus acting as a crucial link in the chain of disease monitoring and response. Its importance lies in its ability to rapidly mobilize and direct resources where they are most needed, based on an intimate understanding of the local context. By strengthening health systems at the operational level, it is possible to significantly enhance the overall preparedness capacity to manage VHF outbreaks, ensuring a swift, coordinated and effective response that bridges the gap between local needs and national strategies.

Community level: Advancing preparedness measures at the community level is a vital aspect of mitigating the impact of health emergencies, including VHF outbreaks. This grassroots approach involves empowering local communities to take proactive steps in understanding, identifying and managing the risks associated with VHFs. Unlike measures at the other levels, which often focus on broader policy implementation, resource allocation and large-scale surveillance systems, community-level preparedness hinges on the direct engagement and education of individuals and local groups. It means equipping community members with the knowledge and tools to identify and eliminate mosquito breeding sites, recognize early symptoms of the disease, and to understand the importance of seeking prompt medical care. This level of preparedness fosters a sense of ownership and responsibility among community members, leading to more immediate and effective responses to outbreaks. The importance of this approach cannot be overstated: by enhancing local capacity and resilience, communities can act as the first line of defence, significantly reducing the spread of VHFs and lessening the burden on higher health system levels. In essence, community-level preparedness embodies the principle of ‘prevention is better than cure’, turning every household and neighbourhood into an active participant in public health efforts.

A4.2 Priority level

Prioritization is necessary because—in addition to the baseline preparedness measures—there are specific measures that may not be relevant for all countries. For example, countries facing higher risks of an outbreak of a given VHF should consider more robust preparedness than those assessed to be at lower risk (Fig. 6).

Fig. 6. Adjusting preparedness according to priority level



As presented in the prior chapter of this document (page 4), an assessment and assignment has been made (relevant as of December 2023) to assist relevant authorities. Relevant authorities at the country level are encouraged to use this to guide their assessment and assignment of priority levels, rather than to define it, especially as risks will change over time. The methodology is described in the annex (page 108).

A4.3 The Five Cs of HEPR

The WHO document 'Strengthening the global architecture for health emergency prevention, preparedness, response and resilience (HEPR)'[39] is a framework for categorizing health emergency preparedness and response interventions around developing core capabilities in the health system as they interface with other sectors. Within the health system, preparedness should focus on strengthening five core components, referred to as the 'five Cs' of HEPR: Collaborative surveillance; Community protection; Safe and scalable Care; Access to Countermeasures; and Emergency Coordination). These five interlinked systems encompass and complement all the core capacities required by the International Health Regulations (2005),[42] and are explicitly multistakeholder and whole-of-government systems that extend into every area of HEPR. Each of the 'five Cs' contains numerous sub- and sub-subcomponents. These are outlined in the linked document. For each preparedness measure in this document, the components are indicated.

A4.4 Pillars and elements of VHF preparedness

VHF preparedness measures are implemented by various 'pillars' of VHF preparedness (these are summarized in Figure 7 on page 112).

> ***Note:*** *the exact formulation and organization of the pillars may differ slightly from country to country—those indicated here are intended to reflect the typical range.*

Nevertheless, all countries, in some way, shape, or form, need to consider and activate the pillars reflected here to advance a full package of VHF preparedness measures as part of a national VHF contingency plan.

> ***Note:*** *not all pillars will be relevant for all VHFs (for example, vaccination is only relevant for vaccine-preventable VHFs, and safe and dignified burials is only relevant for VHFs capable of being transmitted person-to-person with documented evidence of transmission from deceased patients)with documented evidence of transmission from deceased patients).*

Additionally, any preparedness measure will be comprised of various 'elements' (summarized in Figure 8 on page 104). In many cases, a preparedness measure will be comprised of all or almost all of these elements. To assist with understanding this differentiation, using the example of an Ebola virus vaccination campaign, the relevant pillars and elements are described (Table 6).

Table 6. Differentiating between pillars and elements using the example of an Ebola virus vaccination campaign

Pillars versus elements using the example of an Ebola virus vaccination campaign	
Relevant pillars	**Relevant elements**
The most relevant pillar is vaccination. The intervention will also likely require the support of the Leadership, coordination and partnership management pillar; the RCCE pillar; and the OSL pillar.	To conduct an Ebola virus vaccination campaign, teams must consider issues of: governance; resources, countermeasures, logistics and infrastructure; leadership, coordination and accountability; data systems, information management and mapping; community relations; systems and processes; financing; health and safety assurance; and monitoring and evaluation. Circumstantially, the campaign may also involve partnerships and networking (if elements of the campaign are performed by partners) as well as safety and security (if the area is insecure in any way for the frontline workers conducting the campaign). To be fully prepared, teams will have to have previously considered training, learning and practice; the vaccines were developed using research and innovation (and the campaign may be used for further research); and the campaign should also be sensitive to and aligned with routine public health interventions in the Region.

Fig. 7. Pillars of VHF preparedness

Pillars of VHF preparedness			
Leadership, Coordination, and Partnership Management	This pillar ensures strategic direction and unified response efforts, coordinating activities across organizations and sectors. Effective leadership aligns national and international resources, while partnerships enhance the scope and scale of the response, ensuring a cohesive approach to managing the outbreak.	**Infection, Prevention and Control (including decontamination)**	This pillar is crucial for preventing the spread of VHFs within healthcare facilities and communities. It includes decontamination, the use of PPE, and facility-based IPC measures. Ensuring these practices are in place protects health workers and the community, reducing secondary transmission.
WASH	Access to clean water, proper sanitation, and hygiene practices is fundamental in controlling the spread of VHFs. WASH reduces the risk of transmission in communities and healthcare settings, providing a basic defense against the spread of infectious diseases.	**Vaccination**	Where relevant, vaccination is a critical component in controlling outbreaks. It provides direct protection to individuals and contributes to herd immunity, potentially curbing the spread of the disease and offering a long-term preventative strategy.
Safe and Dignified Burial	Where relevant, ensuring burials are conducted safely and with respect is key in controlling VHF transmission. This pillar focuses on protocols that prevent exposure during funerals while respecting cultural practices, which is crucial in maintaining community trust and cooperation.	**Laboratories**	Robust laboratory services are essential for timely diagnosis and surveillance. They provide the backbone for understanding the spread and characteristics of the virus, informing response strategies including surveillance and case management.
Surveillance	This pillar involves the ongoing collection, analysis, and interpretation of health data to plan, implement, and evaluate public health practices. Where relevant, it also includes contact tracing, to ensure that at-risk contacts are monitored and quickly isolated if unwell.	**Case Management**	Effective case management ensures that patients receive timely and appropriate medical care, improving survival rates. It includes the clinical management of cases, which may be complex and require novel therapeutics depending on the VHF at hand.
Risk Communication and Community Engagement	Transparent communication and community involvement are vital for ensuring public understanding and cooperation. This pillar focuses on disseminating accurate information and engaging communities as active participants in the response, fostering trust and compliance with health measures.	**Contact management and support**	Where relevant, the monitoring of contacts of confirmed cases using voluntary quarantine (described in the annex) can effectively prevent further transmission and also ensure that contacts are able to access care in a timely manner if they develop symptoms.
Operational Support and Logistics	This pillar encompasses the management of resources, including supply chains for medical and protective equipment, transportation, and personnel. Efficient logistics are crucial for a sustained and effective response.	**Points of Entry**	Where relevant, monitoring and controlling points of entry (such as airports, borders) is crucial for reducing the international spread of VHFs. This involves health screenings, travel restrictions, and quarantine measures as necessary to prevent the disease from crossing borders.

Fig. 8. Elements of VHF preparedness

Elements of VHF preparedness			
Governance	To include laws, frameworks, and regulations. This element provides the legal and policy framework necessary for an effective response, ensuring that roles, responsibilities, and authorities are clearly defined. Good governance is crucial for coordinating a streamlined and rights-based approach to managing health crises.	**Systems and processes**	To including assessment tools, plans, SOPs, protocols, guidelines, checklists, et cetera. They are fundamental for ensuring a timely, organized, and effective operational response to outbreaks.
Resources, countermeasures, logistics, and infrastructure	This encompasses the availability and management of physical resources, medical supplies, countermeasures like vaccines and treatments, and infrastructure. Preparing logistics systems ensure these resources are distributed effectively where they are most needed, ensuring a swift and adaptable response.	**Financing**	Adequate and flexible financing is critical to support and sustain preparedness efforts, ensuring timely procurement of resources and personnel. Efficient financial management is crucial for uninterrupted and effective action in preparedness, and also helps ensure mechanisms are in place if and when response is required.
Partnerships and networking	Collaborations with various stakeholders, including international agencies, NGOs, and community organizations, enhance the response capacity through shared resources, expertise, and coordinated efforts. Strong partnerships are vital for a unified and effective response, leveraging diverse strengths and resources.	**Safety and security**	This ensures the protection of responders and communities, including measures for physical safety, psychological well-being, and safeguarding against secondary threats. A focus on safety and security is vital to maintain trust, morale, and the continuous operation of response activities.
Leadership, coordination, and accountability	Strong leadership and clear coordination mechanisms are necessary for guiding the response and ensuring all actors work harmoniously towards common goals. Accountability ensures that ethical standards are upheld, and resources are used effectively and transparently.	**Routine public health**	To include vaccination, vector control, et cetera. These are actions taken to prevent the spread of disease routinely, which also helps prepare for response to VHF outbreaks. Effective public health interventions are crucial for controlling transmission and minimizing the impact of outbreaks.
Training, learning, and practice	Regular training and exercises for responders and healthcare workers ensure preparedness and the ability to act quickly and effectively in a crisis. Continuous learning and practice are essential to maintain a state of readiness and adapt to new challenges.	**Research and innovation**	Research (encompassing both medical/clinical and social sciences) provides insights, new tools, and new strategies for response. This element is crucial for advancing understanding and enhancing the effectiveness of interventions, including in the preparedness phase.
Data systems, information management, and mapping	Robust information systems are essential for the collection, analysis, and dissemination of data to guide decision-making and inform the public and stakeholders. Effective information management is critical for understanding the scope of the outbreak and coordinating a tailored response.	**Health and safety assurance**	To include MHPSS, PRSEAH, occupational health and safety, legal and ethical compliance, support systems for staff, whisteblower systems, et cetera. Ensuring health and safety is fundamental to maintaining the resilience and dignity of individuals during the stress of an outbreak.
Community relations	Engaging with and earning the trust of local communities ensures their involvement and cooperation in response measures. Strong community relations are essential for effective communication, understanding cultural contexts, and implementing interventions that are accepted and followed by the community.	**Monitoring and evaluation**	Ongoing assessment of the response's effectiveness helps in understanding what works well and what needs improvement. This continuous feedback loop is crucial for refining strategies and ensuring that the response adapts to changing circumstances and lessons learned.

A5 Process of developing a national VHF contingency plan

Developing and implementing a preparedness plan for managing health emergencies including VHFs is a structured and multifaceted process, vital for safeguarding public health in the WHO African Region.

At a very high level (Figure 9, page 115), this process begins with a preparedness capacity assessment, a critical step for understanding current capabilities and identifying areas for improvement. Tools such as the Strategic Toolkit for Assessing Risk (STAR),[64] the Joint External Evaluation (JEE),[90] and the Universal Health & Preparedness Review (UHPR)[91] are instrumental in this phase. These assessments, along with other tools like Risk Assessments (RA)[92] and States Party Self-Assessment Annual Reporting (SPAR),[93] provide a comprehensive overview of a country's preparedness status, highlighting strengths and revealing gaps in the health system's readiness to tackle VHFs.

Following the assessment phase, the next general step is to conduct a threat and vulnerability analysis. This stage involves a thorough evaluation of the potential risks and impacts of VHFs, including an analysis of vulnerabilities and coping capacities. It also entails mapping hazards that are likely to require a coordinated response, allowing health authorities to understand the nature and scale of the threats they might face. This analysis is key to developing strategies that are tailored to specific risks and vulnerabilities within the Region.

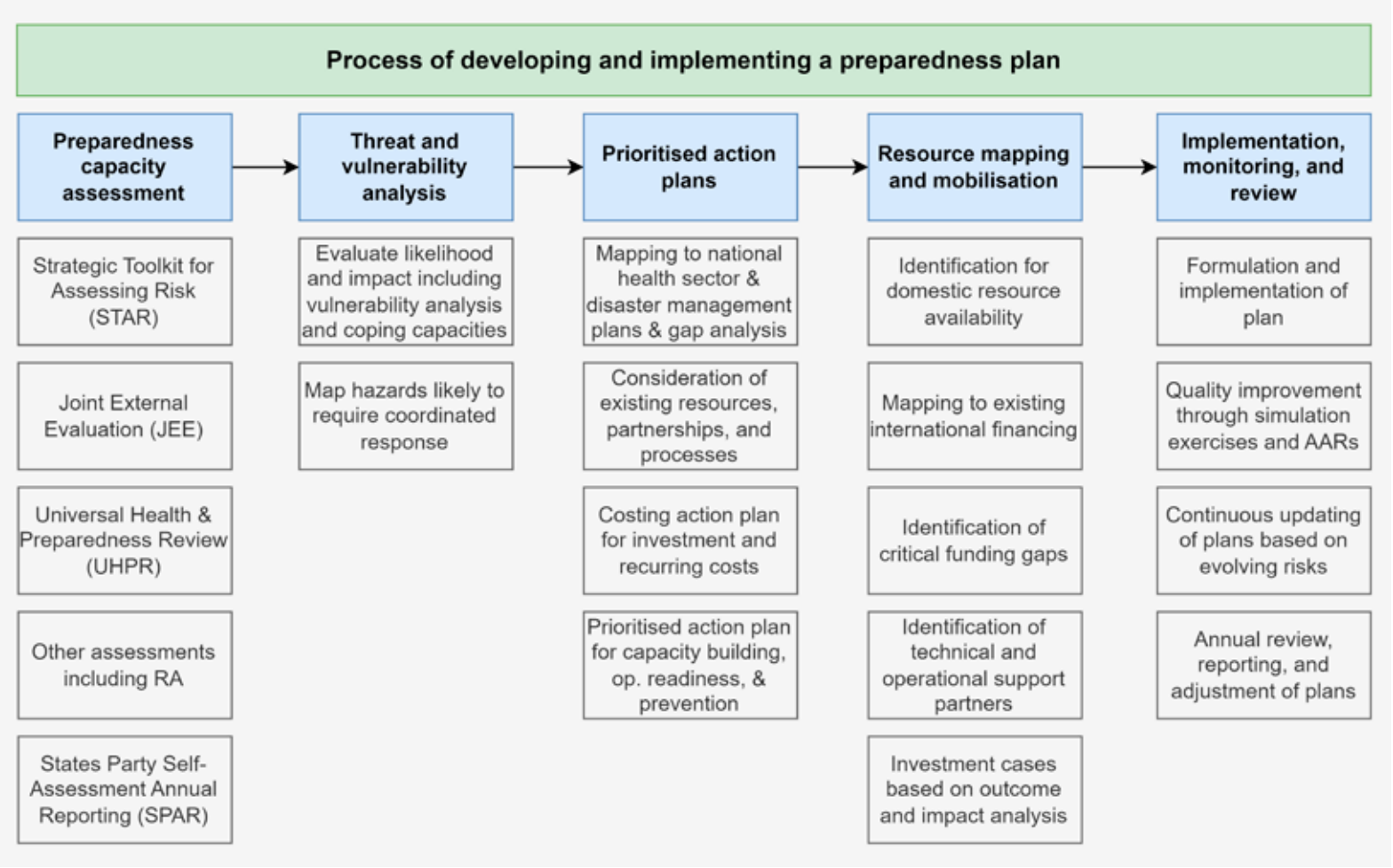
The third step involves developing prioritized action plans. This is where the insights gained from assessments and analyses are translated into concrete strategies and actions. Action plans are aligned with national health sector and disaster management plans, incorporating gap analyses to address identified deficiencies. These plans also consider available resources, partnerships and processes, ensuring that they are feasible and effective. Costing the action plan for investment and recurring costs is vital for budgeting and resource allocation. Prioritizing the action plan is essential for focusing on capacity building, operational readiness, and prevention measures.

Resource mapping and mobilization is the fourth general step. It involves identifying domestic resources and aligning them with existing international financing mechanisms. This step also includes identifying critical funding gaps and partners who can provide technical and operational support. Developing investment cases based on outcome and impact analyses is crucial for securing the necessary funds and resources.

The final stage is implementation, monitoring and review. This involves rolling out the preparedness plan, followed by continuous monitoring and quality improvement. This phase often includes simulation exercises and after-action reviews to refine and enhance the effectiveness of the plan. It is also important to continuously update plans based on evolving risks and to conduct annual reviews, reporting and adjustments to ensure that the plans remain relevant and effective.

In summary, developing and implementing a preparedness plan is a comprehensive process that requires a systematic approach encompassing assessment, analysis, planning, resource management and continuous improvement.

Fig. 9. Process of developing and implementing a preparedness plan



A6 Examples and ideas for different simulation exercises

For each simulation, it is crucial to incorporate the following considerations: lessons learned from past outbreaks, cultural competency, and local health systems and community leaders. Regularly updating and adapting these exercises based on evolving VHF landscapes and feedback from participants will be essential for maintaining preparedness in the WHO African Region.

Rift Valley fever

- In-person simulation: conduct a mock vaccination campaign in a rural setting, focusing on livestock vaccination strategies, community engagement, and safe handling practices.
- Tabletop exercise: scenario planning for an outbreak during the rainy season, focusing on surveillance, vector control, and public health messaging.

Dengue

- In-person simulation: organize a community clean-up drive to eliminate mosquito breeding sites, combined with a door-to-door fever surveillance drill.
- Tabletop exercise: crisis management exercise focusing on urban outbreak response, including hospital surge capacity, vector control, and international travel-related case management.

Yellow fever

- In-person simulation: conduct a rapid vaccination drill in an urban area, focusing on cold chain management, mass vaccination strategies, and adverse event monitoring.
- Tabletop exercise: policy development exercise on integrating yellow fever vaccination into routine immunization programmes and emergency vaccination campaigns during an outbreak.

Crimean-Congo haemorrhagic fever (CCHF)

- In-person simulation: PPE donning and doffing drill in a health care setting, focusing on safe handling of patients and specimens.
- Tabletop exercise: multisectoral response scenario discussing animal and human health interface and target population and community awareness campaigns.

Lassa fever

- In-person simulation: set up a mock isolation ward and conduct a patient management exercise focusing on infection prevention and control measures.
- Tabletop exercise: resource allocation exercise focused on diagnostics, therapeutics and health care facility preparedness during a surge in cases.

Ebola virus disease

- In-person simulation: conduct a full-scale mock outbreak response, including case identification, contact tracing, community engagement, and safe and dignified burial practices.

- Tabletop exercise: strategic planning for cross-border collaboration focusing on surveillance, data sharing and coordinated response strategies.

Marburg disease

- In-person simulation: conduct a drill simulating a patient being transported from a remote area to a treatment centre, focusing on patient safety and infection control.
- Tabletop exercise: scenario-based planning for a sudden outbreak in a densely populated area, focusing on urban response strategies, public communication, and frontline worker safety.

A7 Recommended interventions for common preparedness gaps

Table 7. Recommended interventions for common preparedness gaps

Recommended interventions for common preparedness gaps	
Common gap	**Recommended intervention**
Limited surveillance in humans and inadequate diagnosis and case notification	
No routine VHF surveillance	Integrate VHF surveillance into the national work package with a dedicated (projected) budget
Limited confirmation of suspected and positive cases	Increase laboratory resources (technical, logistical and human), and prioritize regional collaboration for quality control testing in the absence of a reliable domestic laboratory
Limited case reporting	Comply with the guidelines for integrated disease surveillance and response,43 and make reporting of all major VHFs mandatory
Insufficient number of well-qualified human resources	Recruit new qualified staff and/or develop a training plan for training and retraining available staff
Poor vector surveillance and control	
Limited programme or structure dedicated to vector control	Integrate VHF vector control activities into the same national work package for malaria and other vector-borne diseases
Lack of national guidelines on vector surveillance and control	Conduct a national needs assessment for vector control with a tool such as the one developed by WHO and TDR,[94] and use the report to generate a national vector control strategic plan in line with the Global vector control response.95 Refer to WHO guidance documents[96,97]
Lack of expertise in entomology and control of mosquitoes	Fellowships for non-academic entomologists and ensure a clear career pathway for entomologists and other environmental experts to arouse their interest
Limited collaboration among public health and research institutes and the Ministry of Health on vector surveillance and control	Implement and promote a multisectoral approach using the conceptual framework developed by WHO and TDR[98]
Inadequate management of cases and severe cases of VHF	
Limited guidelines on clinical management of VHF cases	Refer to the clinical management strategies for VHFs that are routinely developed and reviewed by WHO
Lack of health care infrastructure and essential medicines at lower levels	Lobby legislators and domestic and external funders to cover the resources gap
High turnover of health care workers	Recruit and train new health care staff in integrated management of VHF prevention and control
Lack of community sensitization and engagement on VHFs	
Absence of outreach programme on VHFs	Establish outreach programmes on or including VHFs, at least at the district level
Absence of national educational and reference materials for community sensitization and education	Refer to WHO guidance on community engagement and other document[s99–101]
Limited number of community health workers	Recruit new, qualified community health workers and/or train existing staff
Inadequate epidemiological surveillance of VHFs	
Lack of a specific national programme on or including surveillance of VHFs	Assess the implementation of IDSR in the country and ensure case definitions for relevant VHFs are available at the district level

Continued...

Recommended interventions for common preparedness gaps	
Common gap	**Recommended intervention**
No collection or analysis of outbreak risk factors	Integrate collection and analysis of risk factors for VHF disease outbreaks into the activities of other departments
Limited collaboration between public health bodies and Ministry of Health in the surveillance of VHFs	Implement and promote a multisectoral approach with the conceptual framework developed by WHO and TDR[98]
Inadequate preparedness for VHF outbreaks and epidemics	
No contingency plan	All countries should have a contingency plan,102 the creation of which this guiding document is intended to facilitate
No preparedness for events	Develop a business case for VHF preparedness, and use it to involve the private sector in activities and financing for outbreak preparedness
Limited collaboration among national and regional instances/bodies	Implement and promote a multisectoral approach using the conceptual framework developed by WHO and TDR[98]
Difficulty in community sensitization and mobilization	Refer to WHO guidance on community engagement and other documents[99–101]

A8 Principles of voluntary quarantine

For filoviruses in particular, contact tracing is widely understood to be a key control measure, consisting of the identification and listing, tracing, and regular follow-up of identified contacts. The aim is to limit the spread of infectious diseases by offering early support and care, as well as the efficient isolation of the contact if infected, thereby reducing social and physical contact with uninfected individuals. Accordingly, contact tracing is routinely implemented as a core component of the surveillance pillar.

However, contact tracing can be very resource-intensive and become extremely challenging and impractical beyond the early stages of large and rapidly expanding outbreaks, during which time the number of contacts grows exponentially and overwhelms the capacity to respond.[103]

Accordingly, one tool that has been used in some (but not all) filovirus outbreaks is quarantine. In principle, quarantine reduces the difficulty of contact tracing by ensuring contacts remain in one place, making their monitoring throughout the incubation period straightforward. In the past, some countries have gone so far as to make quarantine a mandatory public health measure (enforced by police or military presence outside of quarantined homes).

However, the success of enforced quarantine for filovirus outbreaks in the African Region has been very limited. For example, during the West Africa Ebola epidemic in Liberia, poor contact tracing performance was identified as one of the principal weaknesses of the response.[104] Contact tracing was successfully performed for only 26.7% of all Ebola cases in Liberia, leading to the detection of just 3.6% of new cases.[105] This is despite the fact that quarantine was enforced through the presence of army and police personnel, which theoretically ensured that contacts remained in place at all times.[106] This enforced quarantine was likely counterproductive and may have led to negative public health behaviours, such as hiding bodies or sick persons, and not seeking health care. This suggests that epidemic control interventions rooted in RCCE, social acceptance and local practices may be a more effective alternative.[107–109]

Equally, however, research from recent outbreaks has suggested that having no confinement policies whatsoever can also result in contact tracing and contact monitoring delays, as well as increase the number of contacts lost to follow up—overall, leading to a higher number of deaths amongst contacts and a greater number of secondary cases.[9]

Accordingly, in a recent outbreak in the Democratic Republic of Congo, a community-based contact isolation strategy (i.e., voluntary quarantine) was implemented. The intervention was neither mandatory nor enforced, but nevertheless encouraged the voluntary quarantining of high-risk contacts. Psychosocial support, WASH and RCCE interventions, alongside daily contact monitoring, were key. The findings demonstrate the importance of a community-based and voluntary approach in implementing voluntary quarantining. They also have relevance for policy choices regarding whether to isolate contacts or quarantine entire populations, which is particularly pertinent in resource-limited settings.

Box 1. Voluntary quarantine versus enforced quarantine

Voluntary quarantine versus enforced quarantine

Community-based voluntary quarantine is different from enforced quarantine. Quarantine is usually understood to be an enforced mechanism, whereby a legal obligation is impressed on a contact that may go on to develop infection. This can also include police or military enforcement, either through spot checks or on-site guarding. The concept of community-based voluntary quarantine (as used in this document), on the other hand, is a voluntary mechanism, where contacts are advised, encouraged, supported and even incentivized— but not obliged—to self-quarantine.

A voluntary quarantine strategy should be in line with various principles:[110]

- **Acceptance through community engagement:** All affected families were actively engaged and the rationale for contact quarantining and measures being taken explained (that is, isolation and prompt treatment of suspected patients, vaccination of contacts, protection of other family members and compensatory measures in terms of lost economic gain at the family level). Influential family members, local government or religious leaders were engaged to support this engagement.
- **Listen to and act on the needs and concerns expressed by communities:** The strategy was guided by community feedback, adapting the implementation of activities accordingly (for example, daily meal menus were suggested by contacts themselves and supported by the intervention team). The choice of the voluntary quarantine site was not imposed. Communities were welcome to express any concerns about voluntary quarantine, and the strategy could be adapted accordingly.
- **Flexibility: The strategy was adapted based on:** local conditions (for example, urban vs rural villages); the relative availability of contact voluntary quarantine sites (especially in urban areas); and consideration of the choice of people to confine.
- **Improved living conditions:** Transmission of Ebola often occurs in areas with poor access to water, sanitation and hygiene. Therefore, the strategy sought to improve these conditions by providing additional latrines and water supply to voluntary quarantine sites in line with infection prevention and control protocols.
- **Implementation by local staff:** All work involved in setting up and/or adapting the voluntary quarantine sites (including construction of toilets, installation of water tanks, installation of electrical panels, construction of fences and guarding of sites) was entirely performed by local staff, who were financially compensated for their work.

A9 Example of rapid response plan

The following table (Table 8) is an *example* of a rapid response plan that is specific to an outbreak of Ebola virus disease.

Therefore, not all elements are relevant for all VHFs:

- If responding to a VHF that is not contagious, the following are not relevant and can be ignored:
    - safe and dignified burials;
    - very strict infection prevention and control measures during case management;
    - household and community decontamination measures;
    - contact tracing;
    - point-of-entry and exit measures;
    - voluntary quarantine facility management; and
    - vaccination (except for outbreaks of Rift Valley fever, for which vaccination of livestock may be a relevant tool considered by national health authorities).

- If responding to a VHF that is contagious but not vaccine-preventable, vaccination is not relevant and can be ignored.

The indicated timeline over which different interventions take place—that is, how quickly certain measures should be in place—will differ depending on a country's relative priority level. For example, a country graded as Priority 1 for Ebola outbreaks should have systems in place to respond more rapidly to a suspected case of Ebola virus than a Priority 4 country. The timeline presented here represents a kind of 'best-case scenario' in line with the 7-1-7 framework.[12] On these bases, this rapid response plan is intended as an illustrative example to guide country-specific development of rapid response plans.

Table 8. Sample rapid response plan for countries facing an outbreak of a contagious but not vaccine-preventable VHF

Sample rapid response plan for countries facing an outbreak of a contagious but not vaccine-preventable VHF	
Pillar	**Activity**
	Before notification
Leadership, coordination and partnership management	Implement enhanced cross-border communication and coordination
	Full RRT readiness of relevant teams, including financial readiness
	Full-scale simulation exercises
IPC (including decontamination)	Enhanced IPC in areas of elevated risk
Vaccination	Vaccinate key staff, and be prepared to rapidly vaccinate 500 persons
Safe and dignified burials	Position a minimum of one biohazard hearse in at-risk regions
Laboratories	Activate ability to process samples within 12–24 hours (including through mobile laboratories if required)
Surveillance and points of entry	Implement enhanced border screening at points of entry
	Implement focused contact tracing at points of entry
	Active case finding at facility level in areas of high cross-border mobility
Case management	Establish standby high-level isolation treatment units in areas of elevated risk
	Activate ability to provide optimized supportive care to all patients, and initiate specific treatments if available
RCCE	Enhanced RCCE in areas of elevated risk

Continued...

Sample rapid response plan for countries facing an outbreak of a contagious but not vaccine-preventable VHF	
Pillar	**Activity**
Contact management and support	Place voluntary quarantine facility on standby
OSL	Implement enhanced border-region stockpiling for seven days of full operations
	All OSL support as required for pre-notification capacity-building
	All OSL support as required for rapid response preparedness
Notification of suspected case	
By 3-6 hours	
Leadership, coordination and partnership management	Place relevant rapid response teams on full readiness standby
By 6-12 hours	
Leadership, coordination and partnership management	Notify the relevant domestic authorities
Laboratories	Collect and deliver samples to the nearest capable laboratory
Contact management and support	Safely isolate the suspect patient or corpse
Case management	Provide symptomatic/supportive care to the patient, if still alive
OSL	Assist the relevant RRT staff members with necessary transportation
By 12-24 hours	
Leadership, coordination and partnership management	Hold first face-to-face meeting with key community leaders
Vaccination	Prepare vaccines for delivery to the appropriate location (possibly via mobile laboratory)
RCCE	Initiate reactive RCCE in the affected area to ensure that all activities being initiated at this stage are understood
Laboratories	Begin processing the sample and confirm pathogen within 24 hours
Surveillance	Activate contact monitoring of household and health facility contacts
	Conduct preliminary case investigation and case report
Case management	Prepare therapeutics for delivery to the appropriate location
Contact management and support	Activate precautionary and voluntary household quarantine
OSL	Assist the vaccination, case management and contact management and support pillars in preparatory stages
Confirmation of case **Approximately 24 hours after notification**	
On confirmation (approximately 24 hours after notification of suspected case)	
Leadership, coordination and partnership management	Fully activate the PHEOC
	Notify relevant domestic and international authorities
	Conduct initial press briefing
Safe and dignified burials	Conduct a safe and dignified burial if relevant
IPC (including decontamination)	Decontaminate the affected household
	Decontaminate vehicles used to transport the patient/corpse
Surveillance	Conduct a thorough case investigation including full case report
	Begin contact tracing of all identified contacts
Case Management	Begin treating the patient with appropriate therapeutics
OSL	Assist the leadership and coordination, SDB, and decontamination pillars

Continued...

Sample rapid response plan for countries facing an outbreak of a contagious but not vaccine-preventable VHF	
Pillar	**Activity**
	By 72 hours
Leadership, coordination and partnership management	Activate daily coordination and AAR meetings
	Fully activate cross-border coordination
IPC (including decontamination)	Full IPC intervention in facilities visited by the patient
Laboratories	Ensure nearby laboratory is fully operational with adequate OSL support to process all samples within 24 hours
Vaccination	Vaccinate HCWs in facilities visited by the patient, and all frontline workers working in the response
	Vaccinate all Ring 1 contacts
	Begin vaccinating Ring 2 contacts
Points of entry	Fully activate border exit screening, monitoring and contact tracing
Surveillance	Inform all regional health facilities of the situation to ensure their readiness to screen arriving patients
	Ensure robust contact tracing and begin tracing unseen contacts
Leadership, coordination and partnership management	Engage key partners to participate in daily coordination and AAR meetings
RCCE	Fully activate RCCE plan tailored to the relevant VHF
	Provide psychosocial support to affected family/families
	Assist in coordinating the first face-to-face meeting with community leaders
OSL	Assist the leadership and coordination, IPC, vaccination, and surveillance pillars
	By 7 days
Leadership, coordination and partnership management	Ensure a system for regular situation updates and press briefings is in place
	Secure emergency financial mobilization in support of all RRT activities
IPC (including decontamination)	Reassess and enhance: regional health facility triage and isolation
	Reassess and enhance: key countermeasures including PPE
	Deliver rapid IPC refresher training to all HCWs
Vaccination	Vaccinate volunteering traditional healers
	Vaccinate frontline workers in affected regions
Safe and dignified burials	Train and activate at least three additional local burial teams
Surveillance	Reassess and enhance facility-based surveillance at the regional level
Contact management and support	Fully activate the voluntary quarantine facility
	Move household quarantined persons to the voluntary quarantine facility
OSL	Assist the IPC, vaccination, SDB, and contact management and support pillars
	Submit supplier requests to replenish all stock and medical countermeasures

A10 Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision

The following table (Table 9, page 125) includes a number of different standard operating procedures (SOPs), protocols, plans and memoranda of understanding (MoUs) that may be required to effectively advance VHF preparedness measures. Many measures are not always relevant (such as vaccination, when considering Marburg virus). The table is also not intended to be comprehensive—rather, it is intended to help guide reflection on key items that may not have yet been developed, or have been developed, but have not been reviewed and revised in some time (with a suggested review period of two years and not more than five). Figure 10 provides guidance on how a reader might choose to use the checklist.

Fig. 10. How to use the checklist

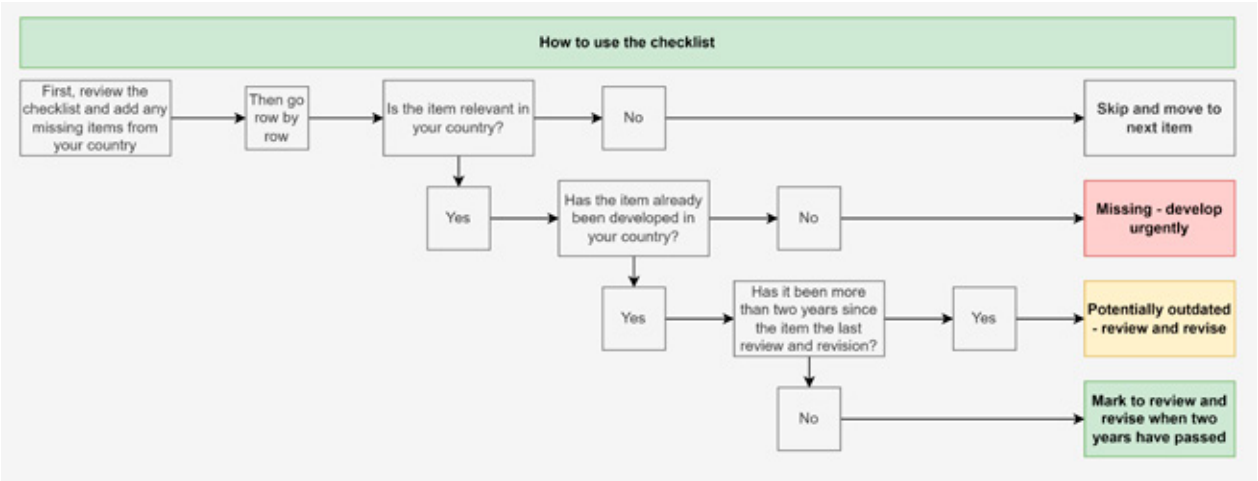


Table 9. Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
SOPs and protocols				
Case management SOPs and protocols				
• Suspect or confirmed case transfer/management				
• Clinical care (adjusted to VHF, patient grouping, and vulnerabilities)				
• Discharge and survivor follow-up				
• Sample collection and transport to appropriate laboratory				
• Health facility visitation protocols for visiting family members				
• If, when, and how to stand up standby treatment units				

Continued...

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
Leadership, coordination and partnership management SOPs and protocols				
• Protocols for IHR adherence				
• If, when, and how to use armed escorts or make other MACA requests				
• Thresholds and mechanism to activate RRTs				
• Thresholds and mechanism for activating and operating a media centre if there is an outbreak				
• Thresholds and mechanism for activating a call centre				
• Standardized tools for post-incident after-action review				
• Standardized systems for data retention across all pillars, including data security measures				
• Procedure for repatriation of a contagious VHF-positive patient or corpse from a foreign country				
Laboratories SOPs and protocols				
• Sample collection, testing, disinfection, waste management				
• When to submit samples to biobank				
• Laboratory positive case notification procedures				
Vaccination SOPs and protocols				
• Vaccine administration including safety and waste management				
• Vaccine adverse affects protocols				
• Vaccine eligibility and prioritization				
• SOP on how to avoid waste of soon-to-expire vaccines (that is, by vaccinating key populations)				
• Vaccine (re)procurement procedures				
Infection prevention and control (including decontamination) SOPs and protocols				
• Donning and doffing of appropriate PPE				
• Frontline worker PPE breach protocols				
• Household decontamination after confirmed case				
• Ambulance and hearse decontamination				
• Health facility decontamination following admission of patient later found to be VHF-positive				
• Health facility waste management				
• Health facility decontamination after confirmed case of Lassa, CCHF, Ebola, or Marburg				
• Waste management for expiring stockpiled goods and medical countermeasures				

Continued...

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
Contact Management and Support SOPs and protocols				
• If, when, and how to activate voluntary quarantine facilities				
• Voluntary quarantine facility visitation protocols				
• Managing voluntarily quarantined persons including the pregnant, sick, elderly, *et cetera*				
• Preliminary voluntary quarantine procedure following notification of a first suspect case (pre-VQF)				
Surveillance SOPs and protocols				
• If and when to preliminarily and voluntarily quarantine close contacts following notification of a first suspect case				
• Alerts management protocol(s)				
• Conducting a case investigation SOP (broken down by VHF type and country context)				
• Contact tracing SOP (broken down by VHF type and country context)				
Safe and dignified burial SOPs and protocols for filoviruses				
• Corpse collection and transportation SOP				
• Safe and dignified burial SOP				
• Hearse decontamination SOP				
Risk communication and community engagement SOPs and protocols				
• Pre-developed procedures for town hall meetings and community dialogues in case of an outbreak				
• Operation of community engagement hotline and rumour tracking				
Points of entry SOPs and protocols				
• Exit monitoring procedures (if an already-affected country) including destination notification				
• Entry monitoring procedures including screening, isolation and notification of the surveillance pillar				
Plans				
Case management plans				
• Isolation and treatment facilities and all related systems				
• National EMT operational plan including activation and de-activation				

Continued...

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
Leadership, coordination and partnership management plans				
• Joint action planning for partner support				
• Notification of key authorities after notification of positive case				
• Cross-border engagement and information sharing				
• Continuity, recovery and resilience plans for sectors and services likely to be disrupted, including health				
• Contingency for hard-to-reach areas (such as riverine areas, island communities, *etc.*)				
• Contingency for 'no go' areas due to insecurity				
• If, when, and how to communicate and work with non-state armed groups (NSAGs)				
• RRT rapid response plan				
• If, when, and how to regulate and restrict mass gatherings				
• If, when, and how to regulate and restrict schooling				
• If, when, and how to employ restriction of movement; if, when, and how to regulate and restrict tourism				
• Reactive resource mobilization and scale-up in case of an outbreak				
Vaccination plans				
• YF vaccination campaigns (where relevant)				
• Dengue vaccination campaigns for select populations (where relevant)				
• RVF vaccination campaign with specific animal targets				
• Ebola vaccination campaign with specific targets				
Contact management and support plans				
• Voluntary quarantine facility and related systems				
• Livelihood replacement for voluntarily quarantined persons				
Surveillance plans				
• Contingency for hard-to-reach areas (such as riverine areas, island communities, etc.)				
• Contingency for 'no go' areas due to insecurity				
Safe and dignified burial plans				
• Contingency for hard-to-reach areas (such as riverine areas, island communities, *etc.*)				

Continued...

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
• Contingency for 'no go' areas due to insecurity				
Risk communication and community engagement plans				
• RCCE '72-hour' and '30-day' plans				
• Rumour tracking				
Laboratories				
• Ensure sample transportation plans are in place to ensure sample processing within 24 hours				
Operations support and logistics				
• Strategic stockpiling and warehousing in urban centres and hard-to-reach areas				
• Reactive procurement scale-up in case of an outbreak				
MoUs				
Case management MoUs				
• Health facilities with identified isolation and treatment capacities				
Leadership, coordination and partnership management MoUs				
• Supporting partner or private sector organizations				
• Cross-border collaboration and information sharing				
• NSAGs and militias, if relevant and if engaging				
• PHEOC delegation of authority during public health emergency and activation				
• If not housed at MoH, universities conducting IRB reviews				
Vaccination MoUs				
• Vaccine hubs to maintain buffer stocks and rapidly scale-up in the event of a new outbreak				
• Facilities with capacity to act as mass vaccinatinon sites				
Contact management and support				
• Facilities willing to operate as voluntary quarantine facilities				
• Key suppliers on standby to support activated voluntary quarantine facilities				

Continued...

Checklist of SOPs and protocols, and plans and MoUs requiring regular reassessment and revision, as organized by pillar of VHF preparedness				
Item	**Relevant Y/N**	**Developed Y/N**	**Year last updated**	**Year next update**
Safe and dignified burial MoUs				
• Burial sites and cemetaries				
• Pre-crisis agreement with religious leaders on supporting SDB				
Points of entry MoUs				
• Port authorities for entry/exit regulations				
• Airline and common carriers for contact tracing purposes				
OSL MoUs				
• Key suppliers of goods and services, including for rapid scale-up in the event of a new outbreak				
• Accomodation facilities in strategically located areas with the capacity to quickly house RRT personnel				

The WHO Regional Office for Africa

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