



THE REPUBLIC OF UGANDA

MINISTRY OF HEALTH

**A NATIONAL REPORT FOR IDENTIFICATION OF PRIORITY
AREAS FOR MULTI-SECTORAL INTERVENTIONS (PAMIS)- FOR
CHOLERA ELIMINATION IN UGANDA**

MINISTRY HEALTH

Po. BOX 7272

KAMPALA, UGANDA

05th SEPTEMBER 2025

Table of Contents

List of Figures	iii
List of Tables	iv
Acknowledgements.....	v
Abbreviations and Acronyms	vi
Executive Summary.....	vii
I. B a c k g r o u n d.....	1
Previous Identification of Cholera hotspots and PAMIs	1
Status of NCP Development and Country Targets	2
Cholera Epidemiology and Control Efforts in Uganda.....	3
Surveillance and Laboratory.....	6
Case management	6
Logistics	7
Risk communication and Community Engagement.....	7
Water Sanitation and Hygiene (WASH).....	7
Supplementary Use of Oral Cholera Vaccines to Prevent and Control outbreaks	7
Coordination and Monitoring.....	7
Cholera Surveillance System.....	8
Standard case definitions	8
Defining alert/suspected outbreak and cholera outbreak.....	9
Cholera Testing Strategy	9
Justification of the PAMI Identification Exercise	12
II. Methods.....	13
Planning of PAMIS.....	13
PAMI Data Collection	13
Country Context and Profile.....	14
Administrative Level of NCP Operational Geographical Unit.....	16
Description of vulnerability factors and data sources.....	16
PAMI Identification and Validation	19

Calculation of the Priority Index	20
Calculation of the Vulnerability Index	20
Quality Assurance	21
Stakeholder Validation of PAMIs.....	22
III. R e s u l t s	23
Description of confirmed cholera outbreaks, 2020 -2024	23
Vulnerability index threshold and justification for the threshold	25
Description of initial and additional PAMIs	26
IV. W a y f o r w a r d	32
References	33
Annex A: Attendance List	xxxvii
Annex B: R4-Table PAMIs export of the GTFCC Excel-based tool.....	xxxix

List of Figures

Figure 1: Cholera cases in Uganda, 1971 to 2023	3
Figure 2: A Map Showing Cholera Hotspots in Uganda as of 2017	4
Figure 3: Oral cholera vaccination in cholera hot spots	5
Figure 4: Map of Uganda showing the current districts	15
Figure 5: Trends of Reported Cholera Events in PAMIs, Uganda (2020–2024).....	23
Figure 6: Cholera Cases and Deaths in the Initial PAMIs, 2020-2024.....	25
Figure 7: Geographic Distribution of PAMIs in Uganda.....	28
Figure 8: Geographic Distribution of PAMIs in Uganda.....	29
Figure 9: Geographic Distribution of PAMIs in the Central Region of Uganda	29
Figure 10: Geographic Distribution of PAMIs the Northern Region of Uganda	30
Figure 11: Geographic Distribution of PAMIs in the Western Region of Uganda	30

List of Tables

Table 1: Vulnerability Factors and Sources	16
Table 2: Sub-County Level Cholera Cases, Deaths, and Vulnerability in Uganda.....	24
Table 3: R2 Vulnerability Index Summary.....	27
Table 4: R4-Table PAMIs export of the GTFCC Excel-based tool	31
Table 5: Attendance list	xxxvii
Table 6: Initial and Additional PAMIs Identified.....	xxxix

Acknowledgements

The Ministry of Health, as the lead sector in cholera preparedness, control, and elimination, acknowledges with profound gratitude the invaluable support from all stakeholders who contributed to the successful completion of the national cholera PAMI identification exercise. The Ministry of Health extends special appreciation to the Office of the Prime Minister, Ministry of Water and Environment, District Local Governments, Urban Authorities, and esteemed partners, including Africa CDC, UNICEF, and the Infectious Disease Institute among others.

Special recognition goes to the World Health Organization (WHO) AFRO, particularly the Nairobi Hub, and the WHO Country Office for their unwavering financial and technical support throughout this process. The Ministry of Health also expresses its deepest gratitude to WHO for their pledge to support the review of the National Cholera Plan, a crucial step towards guiding cholera elimination efforts in Uganda. The Ministry of Health looks forward to continued collaboration and partnership in its pursuit of a cholera-free Uganda.

Special appreciation also goes to the PAMI report compilation committee below,

S/N	Name	Role
1	Dr. Allan Muruta	Chairperson
2	Dr. Godfrey Bwire	Co- chairperson
3	Dr. Solome Okware	Co- chairperson
4	Dr. Makanga Kizito Douglas	Secretary
5	Dr. Bonny Kintu	Secretary
6	Dr. Anne Nakinsige	Member
7	Dr. Emmanuel Ochien	Member
8	Richardson Mafigiri	Member
9	Duncan Kabiito	Member
10	Salmah Wanale	Member

Abbreviations and Acronyms

AMR	Antimicrobial Resistance
CDC	Centres for Disease Control and Prevention
DHT	District Health Team
DLG	District Local Government
DMO	Division Medical Officer
DPO	Disaster Preparedness Officer
DRC	Democratic Republic of Congo
DTF	District Task Force
GTFCC	Global Task Force on Cholera Control
HMIS	Health Management Information System
IDPs	Internally Displaced Persons
IDSR	Integrated Disease Surveillance and Response
IES&PHE	Integrated Epidemiology Surveillance and Public Health Emergencies
IFRC	International Federation of Red Cross and Red Crescent Societies
KCCA	Kampala Capital City Authority
KM²	Square Kilometres
LIMS	Laboratory Information Management System
MOLG	Ministry of Local Government
MOFPED	Ministry of Finance, Planning and Economic Development
MOH	Ministry of Health
MWE	Ministry of Water and Environment
NCP	National Cholera Plan
NMS	National Medical Stores
NTF	National Task Force
OHCO	One Health Co-ordination Office
OCV	Oral Cholera Vaccine / Vaccination
OPM	Office of the Prime Minister
PAMI(s)	Priority Areas for Multi-sectoral Interventions
PCR	Polymerase Chain Reaction
PHEOC	Public Health Emergency Operations Center
R2	Round 2 (Vulnerability Index Summary Output)
RDS	Result Dispatch System
RDT(s)	Rapid Diagnostic Test(s)
SMO	Senior Medical Officer
UBOS	Uganda Bureau of Statistics
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive Summary

Uganda's Journey towards Cholera Elimination

Uganda stands at the threshold of a cholera-free future; it is imperative to seize this momentous opportunity to accelerate progress towards disease elimination. Uganda has made significant progress in reducing the burden of cholera, with annual cases declining from over 2,000 in 2016 to less than 200 in 2021, and no cases reported in 2022. However, cholera remains a significant public health threat in the country, especially in border districts, fishing communities, and refugee settlements where vulnerabilities in water, sanitation, and hygiene (WASH) still persist.

Completion of PAMI Identification

In August 2025, Uganda successfully completed the cholera Priority Areas for Multi-Sectoral Interventions (PAMI) identification process, identifying 254 PAMIs, representing 18.9% of the national population of 45.9 million people. This milestone achievement, supported by the World Health Organization (WHO), provides a critical foundation for targeted interventions for cholera elimination by 2030.

Revising the National Cholera Plan

With the completion of PAMI identification, Uganda is now well-positioned to revise its National Cholera Plan (NCP) that will drive the country towards cholera elimination. The revised NCP will guide a consolidation of interventions, including enhanced WASH infrastructure development, strengthened disease surveillance and outbreak response, improved access to healthcare services, community engagement and education, and strategic deployment of Oral Cholera Vaccines (OCVs).

Accelerating Progress towards a Cholera-Free Uganda by 2030

Uganda's progress aligns with the WHO GTFCC Global Roadmap to ending cholera by 2030. The revised NCP will provide a roadmap for accelerating progress towards cholera elimination and protecting the health and well-being of its citizens. By supporting Uganda's efforts, we can collectively achieve a cholera-free future.

I. Background

Uganda has made tremendous progress in controlling cholera; however, the disease continues to be a public health threat (1). The disease affects communities with inadequate access to safe water, sanitation, and hygiene (WASH) (2–4). Communities along porous international borders are disproportionately affected (5–7) thus underscoring the urgent need for targeted interventions.

In unwavering commitment to global health security and in alignment with the Global Task Force on Cholera Control (GTFCC) and the World Health Organization (WHO) roadmap for cholera elimination (8), Uganda has embarked on strategic initiatives, including identification of priority areas for multi-sectoral interventions (PAMIs) (9,10). This report provides a critical examination of current trends, interventions, and outcomes, yielding actionable insights to inform evidence-driven strategies that will accelerate Uganda's progress toward reducing the cholera burden and ultimately achieving its elimination.

Previous Identification of Cholera hotspots and PAMIs

In 2017, the WHO released guidance to support countries in developing National Cholera Control Plans. In order to prioritise interventions and have maximum impact, there was a need to identify areas that were most at risk for cholera. Uganda conducted a hotspot mapping exercise in 2017 to identify areas as targets for the National Cholera Control Plan, in line with the WHO's 2017 guidance. The country analysed cholera incidence and mortality data, geo-spatial data, population density, and precipitation over the 6-year period of 2011–2016. In addition, vulnerability factors associated with access to safe water sanitation and hygiene were assessed to identify high risk areas (11).

Data was analysed using binomial regression modelling to identify categories of districts at different risk level, utilising SaTScan. Hotspots were defined at district level and further stratification of high- risk sub counties within the districts were identified through stakeholder engagement. Twenty-two districts were identified as high risk for cholera, of which 13 were near the border with the Democratic Republic of Congo (DRC), while 9 districts were near the border with

Kenya. Of the 22 districts, 11 were prioritised for supplementary preventive Oral Cholera Vaccination (1,11). This information guided the development of the 2017-2022 National Integrated Comprehensive Cholera Prevention and Control Plan, in line with the GTFCC roadmap for cholera elimination (8).

Status of NCP Development and Country Targets

Uganda's journey to cholera elimination was boosted in 2017 with the development of the National Integrated Comprehensive Cholera Control Plan (NICCP), (2017-2022). The objective of the plan was to reduce the incidence and mortality due to cholera by 50% by June 2022 (1). This plan was envisioned to be a precursor for cholera elimination in Uganda. By the end of this period, the annual number of reported cases had reduced from 2316 (with 64 deaths) in 2016 to 173 (with zero deaths) in 2021 (12,13). There were no cases reported in 2022. The main objective of the plan was achieved.

The National Cholera Plan (2017-2022) expired in June 2022(1). The country immediately embarked on its revision using the previous methodologies (11). The conclusion of this exercise would lead to the development of the 2023-2030 plan. This process was in advanced stage in the year 2023 when the GTFCC/WHO recommended the PAMI approach for the development of the national cholera control or elimination plans (9,10).

The process of revising the plan using PAMIs started in November 2024 and has been concluded in the month of August 2025. PAMI identification was carried out using five-year cholera data collected for the period 2020 to 2024 to reflect recent national achievements. The geographical area of analysis was chosen to be the sub-county (admin level 2). The subcounty is the most optimal administrative level for planning and effective allocation of resources. This level has a well-established government structure and Human resource, both administrative and technical, to monitor implementation of government programs.

An analysis of the data using the PAMI tool for cholera elimination identified 24 geographical units to have reported cholera outbreaks during the study period. The proportion of geographical areas that reported cholera outbreaks corresponds to 1.1% between January

2020 and December 2024, which qualifies Uganda to develop the NCP for cholera elimination. Subsequent analysis for cholera elimination identified 254 PAMIs out of 2,196 geographical areas, distributed across all the four regions of Uganda. This represents 11.6% of all the geographic units and 18.6% of Uganda’s total population of 45.9 million people.

Following the PAMI identification, the country is set to revise the draft NCP (2025-2030) for cholera elimination in line with the WHO recommended guidelines.

Cholera Epidemiology and Control Efforts in Uganda

The first case of cholera was reported in Uganda in 1971 (14). Since then, Uganda has registered frequent cholera outbreaks, especially along international borders, water bodies and refugee settlements (3,12,15–17). The frequency of outbreaks increased during the 1990’s, peaking in 1998 as a result of the El-nino rains experienced that year. The initial cases in 1971 corresponded to the return of pilgrims.

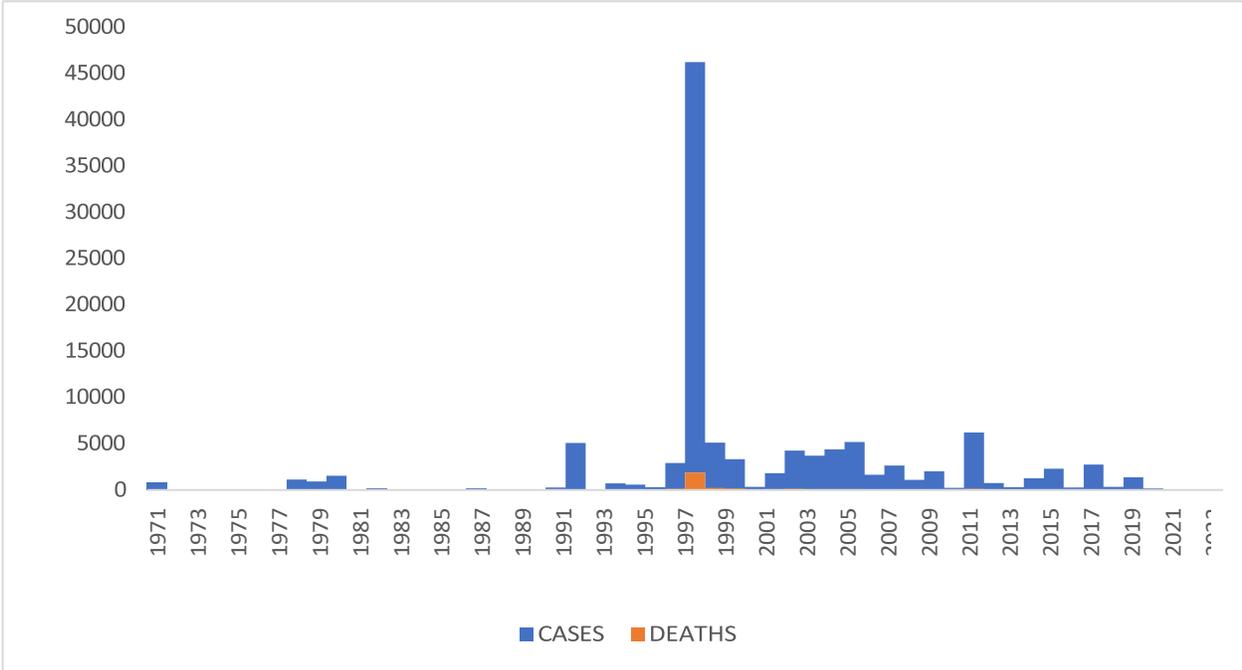


Figure 1: Cholera cases in Uganda, 1971 to 2023

Thereafter, the country experienced several outbreaks, the largest of which was recorded in 1998 with 46,236 cases and 1901 deaths in 43 out of 45 districts at that time. The outbreak started in a fishing

community in eastern Uganda and thereafter spread to other districts in the country with Kampala registering the highest number of cases. This was attributed to heavy rains during the El-nino that greatly affected WASH in the affected areas (18).

Between the years 2001 to 2006, cholera outbreaks were reported among Internally displaced persons (IDPs) in Northern Uganda. These outbreaks ceased once the IDPs returned to their districts of origin (1). From 2007 to 2011, Uganda registered a total of 7615 cholera cases with 181 deaths. The number of cases varied from year to year with the highest incidence occurring in 2008 following heavy rainfall and flooding in eastern Uganda (19). From 2012 to 2016 most of the cholera outbreaks occurred in 22 districts classified as ‘hotspots’ (1,11). These districts were along international borders and among fishing communities (5–7,15). Below is a map of cholera hot spots as of 2017(13).

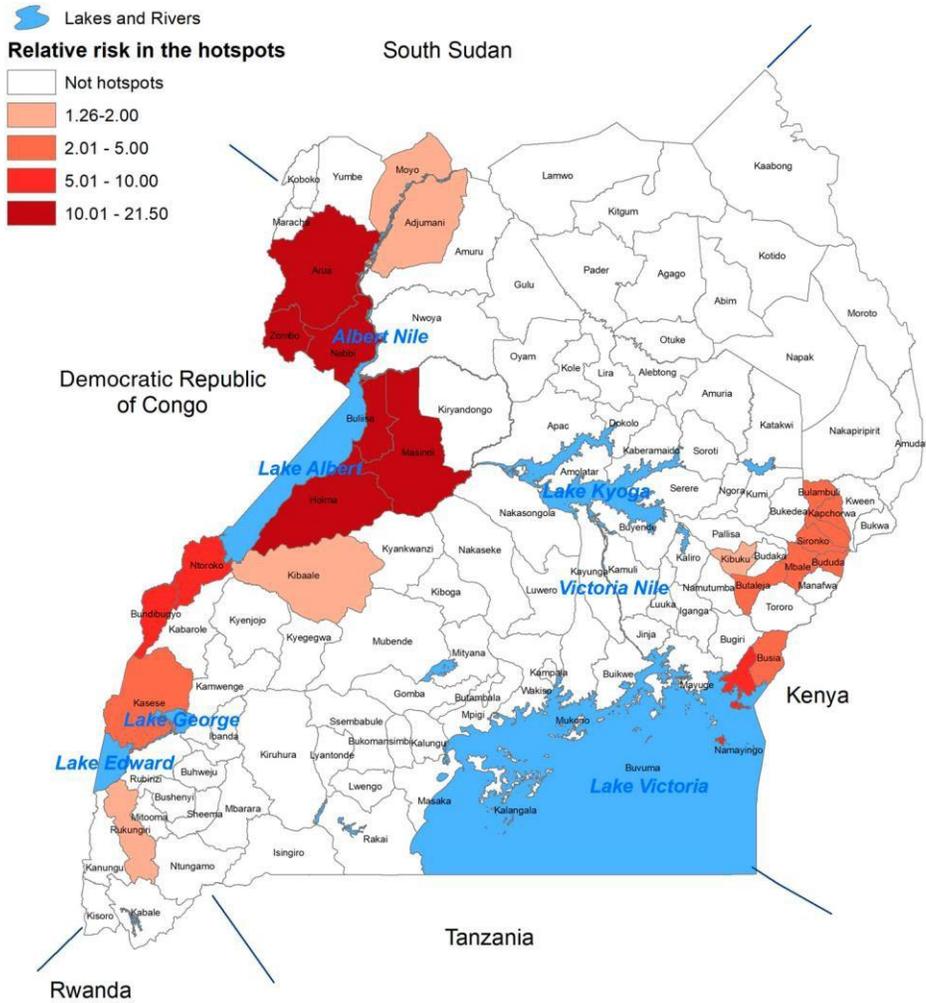


Figure 2: A Map Showing Cholera Hotspots in Uganda as of 2017 (Bwire G et al, 2023)

In 2018, the country experienced another peak which is the largest outbreak over the past ten years, with a total of 2,754 cases (12,13). About 50% of these cases were among refugee populations in the western part of the country. Reactive Oral cholera vaccination was introduced in the country and was part of the control measures employed to control these outbreaks. Subsequently preventive OCV was used in the 10 hotspot areas (Nebbi, Obongi, Madi-Okolo, Namayingo, Ntoroko, Kasese, Pakwach, Zombo, Busia and Buliisa), that had been prioritised for this intervention(20). Additionally reactive OCV was utilised in the control of four outbreaks in Hoima, Bududa, Isingiro and Moroto districts (21–23).

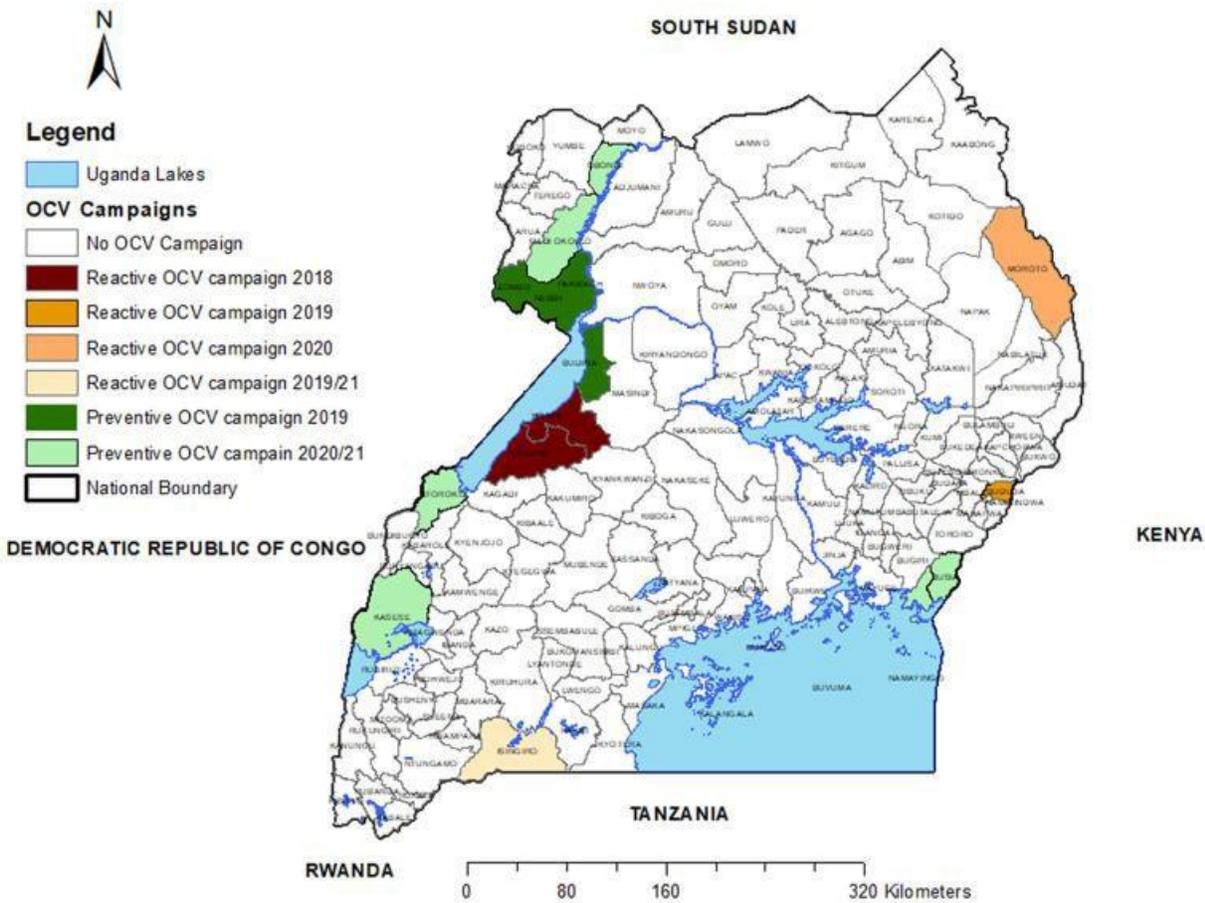


Figure 3: Oral cholera vaccination in cholera hot spots

From 2019 to date, the magnitude of the outbreaks has been smaller, sparsely distributed across the country, and occurring in non-cholera endemic areas. The cases have mainly been reported from refugee-hosting and districts along the international borders. Figure 5 shows districts that have reported cholera cases 2020 to

2024.

In Uganda, cholera outbreaks have mainly affected communities with the least access to safe water and sanitation. Children under five years of age remain the most vulnerable, often experiencing severe dehydration when infected. Adults in fishing communities and border areas as well as refugees living in settlements, are also frequently affected. In some outbreaks, mobile groups such as pastoralists have been involved, especially in places where insecurity has disrupted service delivery. The country implemented several multi-disciplinary and multi sectoral measures to control these outbreaks as outlined below.

Surveillance and Laboratory

Control efforts include a robust surveillance system to promote early detection and reporting of cholera, thus enabling timely intervention. Rapid response teams have been trained at national and district levels, while a surge RRT is mobilizable at the national level. Standard case definitions have been developed and disseminated to all levels of the health system. A mechanism for reporting has been established to enable reporting to the next level of the health system to initiate response actions. Rapid Diagnostic Tests (RDTs) have been made available in targeted health facilities based on risk assessment to enable screening for cholera. The country has established a functional 'Hub' system that supports the transportation of samples from lower facilities to regional and national level laboratories where specialised testing capacity like PCR and genomic testing has been established to support the confirmation of outbreaks.

Case management

Case management capacity has been developed at all levels of the health system to enable prompt management of cases. Orientation of health workers is done before and during outbreaks, while simulation exercises are routinely conducted as part of preparedness to keep the case management teams abreast with any changes in the guidelines. A national cholera guideline has also been revised and disseminated (24).

Logistics

The country has established a supply chain mechanism supporting health logistics for all districts/ local governments. Cholera supplies are integrated into the routine health supplies and are procured and distributed by the National Medical Stores (NMS), government entity charged with handling medical logistics for all public health facilities. These logistics are monitored routinely and through response, and additional supplies are provided based on need.

Risk communication and Community Engagement

Risk communication messages on cholera prevention, and early care seeking behaviour have been developed with engagement of the communities. These messages are tailored to district-specific context by the District Health Team (DHT).

Water Sanitation and Hygiene (WASH)

The country has also made improvements in WASH especially in some of the previous hotspot areas. Despite these improvements, variations in WASH indices across the different communities continue to contribute to cholera vulnerability.

Supplementary Use of Oral Cholera Vaccines to Prevent and Control outbreaks

These control efforts were supplemented by oral cholera vaccination in areas at high risk of cholera following a comprehensive risk assessment as a preventive measure or in the areas that were experiencing outbreaks as a stop gap measure reactive campaign.

Coordination and Monitoring

The country has established coordination mechanisms at national and subnational levels. At the national level, the National Task Force (NTF) coordinates stakeholder participation in response. The NTF is chaired by the Director General of Health Services and co-

chaired by the WHO. It is a multisectoral-Multidisciplinary platform with participation of Key Partners such as UNICEF, and the IFRC through their country level society. A similar structure also exists at the subnational level through the District Task Force (DTF). In the event of an outbreak, the DTF takes lead in coordination of the response, with support from the NTF. The country has adopted the 7-1-7 timeliness metric as a standard for monitoring outbreaks to ensure effective control of outbreaks as quickly as possible, and minimize mortality, morbidity and associated socio-economic impact

Cholera Surveillance System

Uganda adapted the Integrated disease surveillance and response framework (IDSR), which facilitates both aggregate and case-based reporting early warning and response system at all levels of the health system(25). Information about cholera cases (suspect and/or confirmed) is captured through health facility reporting, laboratory confirmation and through community or event-based surveillance.

Standard case definitions

Standard case definitions have been developed and disseminated to the various stakeholders, to enable early detection, thus facilitating quick intervention and control of outbreaks. These case definitions are defined below:

A suspected case (where an outbreak is not declared): Any person aged 2 years and above presenting with acute watery diarrhoea with or without dehydration OR a death from acute watery diarrhoea.

A suspect case: (where an outbreak is declared): Any person aged 2 years and above presenting with acute watery diarrhoea with or without dehydration OR a death from acute watery diarrhoea. For children below 2 years, we suspect cholera if a household member has been suspected /confirmed with cholera.

A probable case is any suspected cholera case who tests positive on Rapid Diagnostic Test (RDT).

A confirmed cholera case is a suspected or probable case with *V. cholerae* O1 or O139 confirmed by culture or PCR.

Defining alert/suspected outbreak and cholera outbreak

A suspected cholera outbreak (cholera alert) is defined by the detection of at least one of the following:

- a) two or more people aged two years or older with acute watery diarrhoea and severe dehydration, or dying from acute watery diarrhoea, from the same area, within one week.
- b) one case of acute watery diarrhoea testing positive for cholera by rapid diagnostic test (RDT) in an area that has not yet detected a confirmed case of cholera (including areas at risk for extension from a current outbreak).
- c) one or more confirmed cholera cases with NO evidence of local transmission.

Cholera outbreak: This is defined as the occurrence of at least one confirmed case of cholera with evidence of local transmission.

Cholera Testing Strategy

Uganda's cholera testing strategy is guided by the national cholera control guidelines, (24) which aims to test all persons meeting the suspect case definition. It follows a standardised testing algorithm: use of RDTs for screening of all suspected cases, confirmation by either PCR and/or, culture, and genomic sequencing for molecular characterization of strains.

Antimicrobial Resistance (AMR) gene detection and epidemiological mapping of outbreaks.

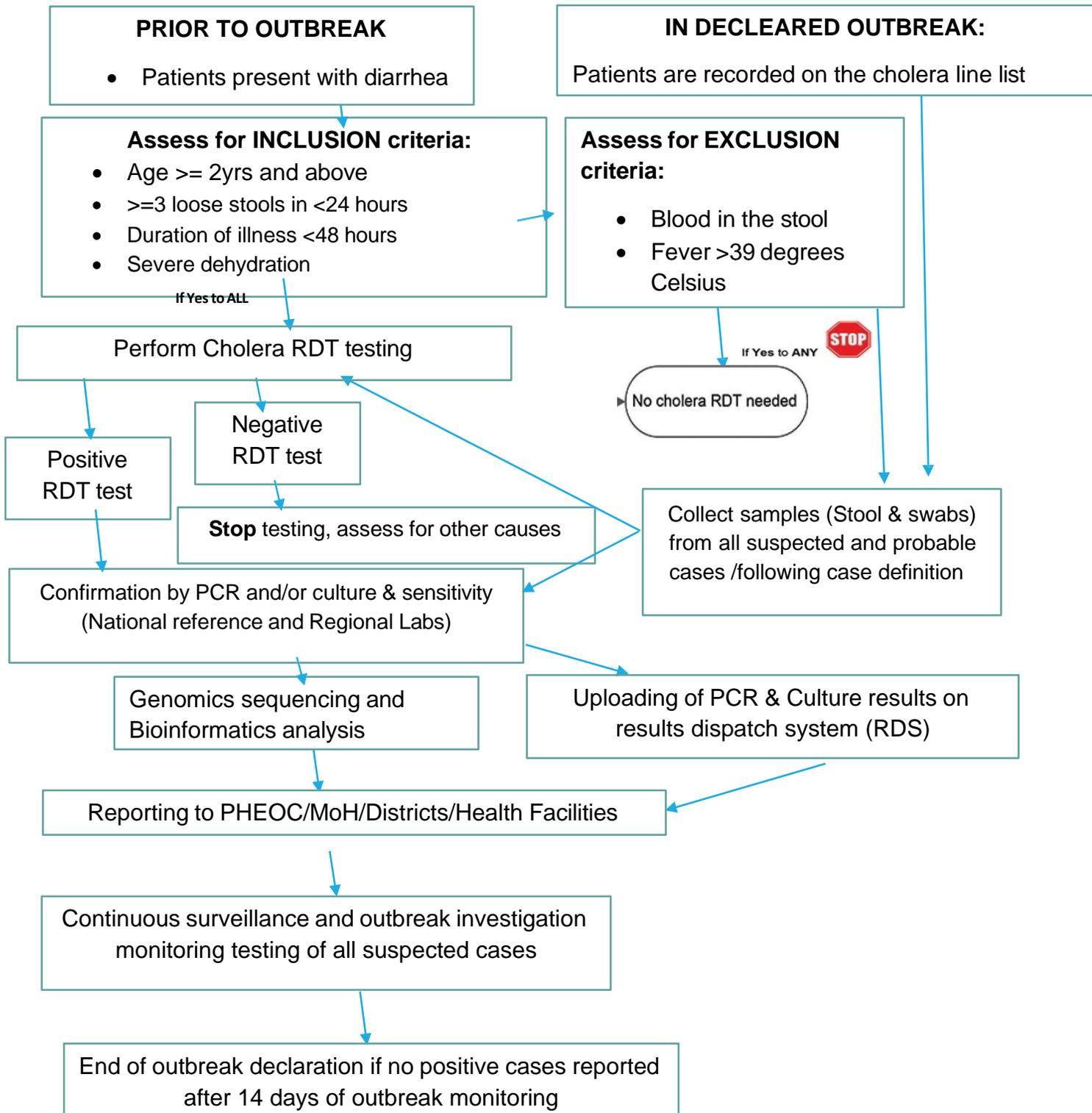
Uganda has built robust cholera diagnostic capacity over the years, with the establishment of sample management, transport and testing capacity across the different levels of the health system. A national laboratory network has been established with a National Microbiology Reference Laboratory capable of conducting molecular testing. Genomic sequencing is also conducted at National Reference laboratory, which is also a centre for multi-country cholera genomic testing under the seven-member Africa CDC CholGEN project.

Most importantly in the recent past, the laboratory capacity for culture and sensitivity testing for cholera and other common causes of diarrhoeal disease has also been enhanced at all the seventeen (17) regional referral hospital laboratories distributed across the country. Four general hospitals in previous cholera hotspots have also been enhanced to perform culture and sensitivity for cholera.

Additionally, RDTs and transport media have been prepositioned in health centres in targeted districts based on risk. For samples requiring referral to the testing laboratories, Uganda has a streamlined mechanism, the Hub System, for sample collection, packaging storage and transportation to the testing centre. Test results are relayed to clinicians by use of the online Laboratory Information Management System (LIMS)/ Result Dispatch System (RDS).

Laboratory confirmation is carried out for all suspected cases throughout the outbreak period. The end of outbreak is declared based on the zero (0) laboratory confirmed cases identified over two incubation cycles.

National Cholera Testing Algorithms



Justification of the PAMI Identification Exercise

Uganda has significantly reduced the cholera burden over the past decade. However, the disease remains a threat in border districts, fishing communities, and refugee settlements where WASH indicators are poor or with areas at risk of importing cases from neighbouring jurisdictions with high cholera transmission. Earlier hotspot mapping provided important guidance, but evolving epidemiology shows that outbreaks are now more sporadic and often occur outside traditional hotspots. This shift called for an assessment framework to capture both historical burden and emerging vulnerabilities.

The PAMI approach addresses this by combining surveillance data over a specified period (in this case the five-year period from 2020 to 2024), with multisectoral vulnerability factors at sub-county level in order to identify areas for priority intervention. Through this process, Uganda would be able to prioritise high-risk areas, improve resource allocation, and strengthen accountability across sectors. The exercise also ensures alignment with the GTFCC roadmap for cholera elimination and provides a solid foundation for finalising the National Cholera Plan (2025-2030).

II. Methods

The methodology used to identify PAMI were according to the WHO/GTFCC recommendation (9,10). The process commenced in November 2024 with the orientation of the national teams and partners on the concept of PAMIs for buy-in.

Planning of PAMIS

Following the orientation, a national PAMI co-ordination team was identified to steer the entire process. The team consisted of Ministry of Health and WHO technical officers. A road map was then developed to guide the PAMI identification process. The country then embarked on the data collection process. This started with online orientation of the national PAMI coordination team on PAMI processes and the data collection tools in June 2025. The orientation was attended by officials from the Office of the Prime Minister, Ministry of Health, WHO country office, UNICEF and supported through the WHO regional office for Africa.

The national team conducted an online orientation in June 2025 for the data collection team composed of two officers from each of the local governments, and technical officers from the Regional Emergency Operation Centres. This joint team supported data collection at the sub-county level from each of the 146 local governments. The data collection process started from 30th June to 21st July 2025 and was overseen by two national supervisors for every ten local governments.

PAMI Data Collection

Data were collected using the digitized GTFCC excel tool that was also uploaded onto the Kobo Collect. This was to ease data entry and to minimise errors in data collection. The tool collected data on;

- a. Administrative units, as sub-counties.
- b. Sub-county population.
- c. Cholera surveillance data (cases and deaths) from 2020 to 2024.
- d. Vulnerability factors; areas with high population density or overcrowding, major population gatherings, location along major

travel routes with transportation hubs, location adjacent to cross-border affected area or identified PAMI, areas with high-risk population, hard to access populations, population received oral cholera vaccine more than three years, areas at high risk for extreme climate and weather conditions, areas affected by complex humanitarian emergencies, areas with more than 30% of the population using un-improved water facility type, areas with more than 50% of the population using unimproved sanitation facility type, areas with more than 50% of the population with n hand washing facility on premises.

All the 12 generic vulnerability factors within the GTFCC tool were considered relevant for each of the local governments. There was no modification or addition of any factors.

Analysis Period: The analysis period was selected as the five-year period from 2020 to 2024 to reflect the most recent changes in the national cholera control efforts. The five-year period was agreed upon so as to provide the most recent and accurate data to provide a clear baseline to inform planning. Additionally, this period coincided with the end of the previous NCP, thus informing the development of the 2025-2030 NCP.

Country Context and Profile

Uganda is a landlocked country in Eastern Africa located between 1 °N and 4 °N latitude and 30 °E and 35 °E longitude. The country is bordered by the Republic of South Sudan to the North, Republic of Kenya to the East, United Republic of Tanzania and Republic of Rwanda to the South, and Democratic Republic of Congo to the West.

The Country's geography is highly diverse. It mostly comprises of plateaus with volcanic hills, mountains, lakes, rivers and forests. It has a total land cover area of 241,550.7 km squared with 36,902.6 km squared covered by open water bodies and 7,325.7 km squared covered by permanent and seasonal wetlands. The country has an average altitude of 900 m above sea level. It has an equatorial climate with high humidity. The mean annual temperature is 16°C in the southwest highlands, 25°C in the northwest, and often exceeds 30°C in the northeast. There are two rainfall patterns: bimodal and unimodal. Most parts of the country experience two rainy seasons:

March to June and mid-August to December. Other regions, such as Karamoja, experience one rainy season from April to October.

Administrative Structure

Administratively, as of July 2023, the country had 146 local governments (135 districts and 11 cities). Kampala is the capital of Uganda. Local governments operate under a decentralized governance system and are spread across four statistical regions, that is Northern, Eastern, Central, and Western (Figure 1). There are traditional kingdoms and chiefdoms that enjoy some degree of cultural autonomy.

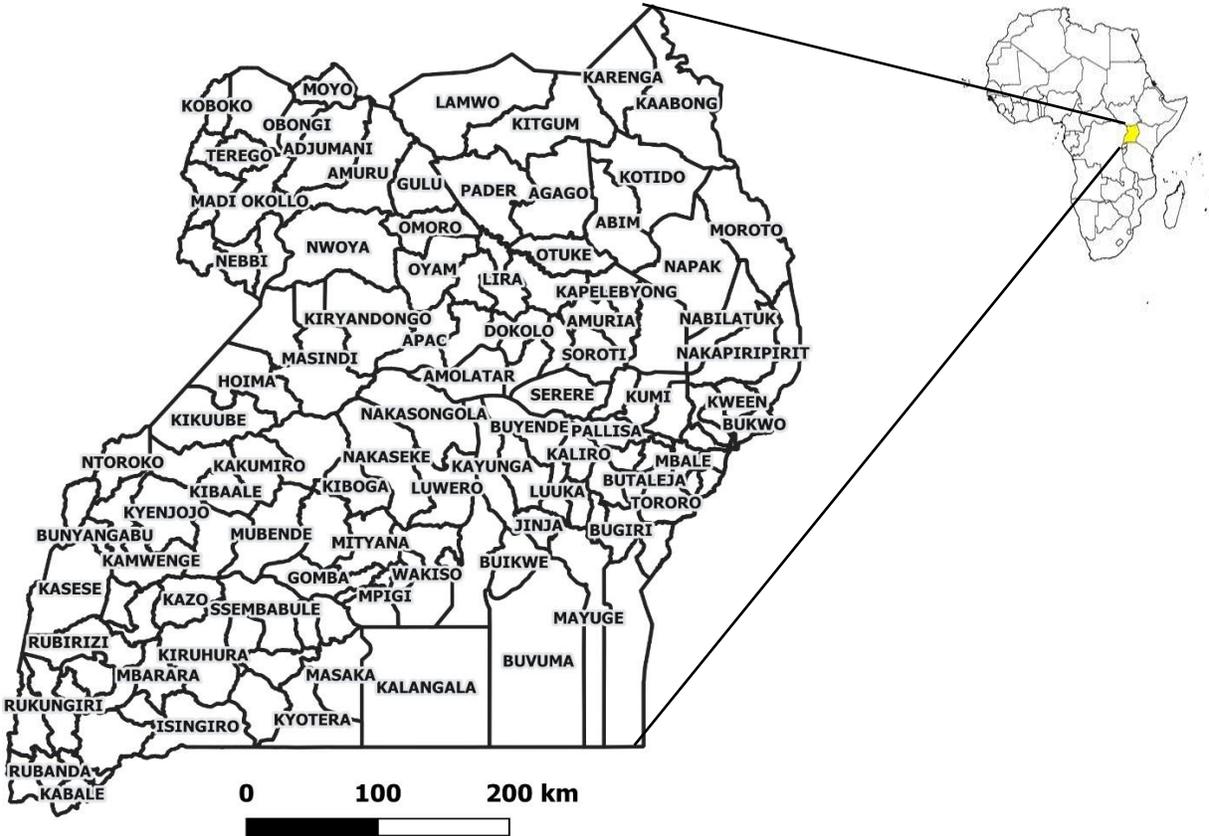


Figure 4: Map of Uganda showing the current districts (26).

These 146 local governments are further subdivided administratively into sub counties, then parishes and finally villages. The district leadership provides administrative oversight to the lower levels.

Demographically, the country population is 45,905,417 persons (UBOS, 2024) (27), with an average annual growth rate of 2.9%. The average household size is 4.2 persons, with a sex ratio of 94.6 males per 100 females. An estimated 71.4% of the population lives in rural areas, compared to 28.6% in urban centres. The country has a young population with seventy-one point four (71.44%) of Uganda ‘s population is under the age of 30 years.

Administrative Level of NCP Operational Geographical Unit

The geographical unit was defined as the subcounty level. This level corresponds to the lowest administrative level with leadership, infrastructure, a functional multisectoral engagement framework, and personnel, where resources are allocated and decisions are made.

Description of vulnerability factors and data sources

Table 1 is a data documentation table highlighting the definition of each vulnerability factor and the sources of data that the assessing teams consulted.

Table 1: Vulnerability Factors and Sources

Indicator	Definition	Data Source
Location adjacent to cross-border cholera-affected areas or identified PAMI.	Aims to consider the probability of cholera cases in an NCP operational geographic unit from neighbouring units in other countries. It reflects cross-border transmission risk due to proximity to cholera-affected areas or previously identified priority areas for multisectoral interventions (PAMIs).	<ul style="list-style-type: none"> – MOH, HMIS (2020 – 2024) – Africa CDC, Epidemic Intelligence Weekly Report(2020 – 2024) – WHO, Africa Region Epidemiological Bulletin(2020 – 2024) (28).

Indicator	Definition	Data Source
Location along major travel routes with transportation hubs.	This indicator evaluates the probability of cholera introduction into an NCP operational geographic unit along major transportation networks. It considers geographic units connected by high-traffic travel routes and hubs, facilitating population movement and potential disease spread.	– MOFPED, Uganda Bureau of Statistics 2024 (UBOS)
Major population gatherings	This indicator assesses the risk of cholera transmission during large events like religious pilgrimage, large scale seasonal markets with potential for draw people from across districts and/or international borders, pastoralist. e.g i. Uganda Martyrs' Day: Africa's Largest Christian Pilgrimage (event attracts between 2.5 to 3 million people) ii. Pastoralist Gatherings In the Karamoja region	– MOLG, District Planning Department 2024
Areas with high population density or overcrowded settings defined as sub-counties with population density	High population density / crowded settings may amplify cholera transmission without good WASH service levels. The indicator identifies settings	– MOFPED, UBOS 2024 – OPM 2023

Indicator	Definition	Data Source
>220 people/km ²	where poor WASH services and crowding amplify cholera transmission such as in urban slums and refugee settlements.	
Areas with high-risk populations (e.g., seasonal workers/fishermen/artisanal miners in informal settlements)	Targets informal settlements with vulnerable groups lacking adequate WASH services. Areas with High-Risk Populations in Uganda often include informal settlements where vulnerable groups, live and work. These communities typically lack adequate Water, Sanitation, and Hygiene (WASH) services, making them particularly susceptible to cholera	– MOLG, District Planning Department 2024
Hard-to-access populations.	Highlights areas with limited access to health services due to terrain, insecurity, or regulatory barriers.	– MOFPED, UBOS 2024 – MOLG, District Planning Department 2024
The population received oral cholera vaccine more than three years ago (two two-dose campaigns with at least 70% coverage for both 1 st and 2 nd rounds)	Identifies previously vaccinated populations with waning immunity and persistent vulnerability.	– MOH, HMIS 2021

Indicator	Definition	Data Source
Areas at high risk for extreme climate and weather conditions (e.g., heavy rains, floods, drought)	Assesses vulnerability due to floods, droughts, or heavy rains that disrupt WASH and health services.	<ul style="list-style-type: none"> – MWE, Meteorological Authority of Uganda. (2020 – 2024) – OPM, National risk and vulnerability Atlas 2022
Areas affected by complex humanitarian emergencies	Flag regions with governance breakdowns and limited surveillance or response capacity.	<ul style="list-style-type: none"> □ OPM 2024
Areas with more than 30% of the population using unimproved water	This indicates elevated cholera risk due to unsafe water access.	<ul style="list-style-type: none"> □ MWE, District Water Atlas 2024
Areas with more than 50 % population using unimproved sanitation	Highlights vulnerability due to poor sanitation and open defecation practices.	<ul style="list-style-type: none"> – MOH, Annual Performance Report (2020 – 2024) – MWE, Annual Program (2020 – 2024) Performance Report – MOLG, District Planning Department(2020 – 2024)
Areas with more than 50% population with no handwashing facility	Assesses hygiene-related vulnerability in households without soap and water.	<ul style="list-style-type: none"> – MOH, Annual (2020 – 2024) Performance Report – MWE, Annual Program (2020 – 2024) Performance Report – MOLG, District Planning

		(2020 – 2024)Department.
--	--	--------------------------

PAMI Identification and Validation

Following data collection, a workshop was convened from the 4th to the 8th of August 2025 at the Source of the Nile Hotel in Jinja City. The main objective was to identify priority areas for multi sectoral intervention (PAMI) and subsequently validate these by the multi-sectoral team. During the validation workshop, participants reviewed, verified and validated the data collected to support the identification of Priority Areas for Multisectoral Interventions (PAMIs). Stakeholders from across the country were organized into groups, each responsible for reviewing and verifying data collected from all the sub-counties within each of the 135 districts and 11 cities nationwide. Group composition was based on participants' familiarity, experience, and professional engagement in specific regions, ensuring that members from the same region worked together.

The assessment process involved reviewing each NCP operational geographic unit sequentially within the assigned districts. A standardized list of vulnerability factors and clear definitions for each indicator were provided and discussed in plenary sessions to ensure consistent understanding across all groups. Teams then conducted the assessment by reviewing the presence or absence of each vulnerability factor, assigning a score of “Yes” or “No” accordingly

Calculation of the Vulnerability Index

The data were analysed using 2023 GTFCC PAMI cholera elimination Excel tool. All geographical areas that had reported an outbreak of cholera were considered as initial PAMIs. Outbreaks were defined as per GTFCC guidance of more than one case with evidence local

transmission in an operational geographic area. A vulnerability index threshold of 6 was chosen to identify additional PAMIs. A vulnerability index threshold of 6 was selected based on the following:

- (i) To ensure that all geographical units at highest risk of having cholera outbreaks were included,
- (ii) Geographic units with high vulnerability factors and a high chance of large outbreaks were identified,
- (iii) To ensure that the current trend observed over the last 5 years, with outbreaks occurring beyond the previously endemic areas/ hotspots, is considered.

Therefore, all sub-counties that had reported outbreaks in the 5-year period and those that had a vulnerability index equal to or greater than 6 were added to the final list of PAMIs.

A map was generated using QGIS to visualize the spatial distribution of the final list of PAMIs. The shapefiles used to generate the map were obtained from the UBOS as published on the Humanitarian Data exchange website (29).

Quality Assurance

National and district teams were oriented on data collection tools. The Kobo Collect tool was used to ensure data quality by employing strict data validation rules. Field supervisors checked the completeness of the data before submitting it to the national coordinator. Data cleaning was done at all stages; in the field the supervisors did random sampling of the submitted data to check for errors and missing data. Data cleaning and verification meetings were held with field supervisors following field data collection. The field supervisor shared cleaned data with the National PAMI coordination committee prior to the Data Analysis workshop. Actions were taken to address the identified gaps. During the analysis, additional data cleaning and validation were performed by both the national and subnational teams. If any sub-county had missing data, the subnational teams consulted with the local teams and the correct data was then incorporated before final analysis. Any missing data were incorporated before the final analysis.

Management of missing data

Initial validation checks helped identify gaps and inconsistencies.

There was no missing information from data collected. We ensured accuracy and consistence through counter-checking with the districts officers via phone and/or review of available documents. Collaboration with data custodians, including District health units, and helped validate assumptions and preserve the integrity of the

analysis.

Stakeholder Validation of PAMIs

The country held a stakeholder validation workshop from 4 August to 8 August 2025 at the Source of the Nile Hotel in Jinja. It comprised a diverse array of multi-sectoral and multidisciplinary and included representatives from the Office of the Prime Minister, Ministry of Health, Ministry of Water and Environment, Local Government authorities, Urban councils and authorities, the World Health Organization (Regional and Country offices), Africa CDC, and UNICEF; (see Annex A for attendance list).

During this validation exercise, the results were presented in a plenary session followed by discussions and agreement. Stakeholder validation of the PAMIs ensured contextual relevance, local ownership, and consensus on the final PAMIs.

Criteria for PAMI selection

- Initial PAMIs: sub-counties with reported cholera outbreaks in the period under review
- Additional PAMIs: Sub-counties with vulnerability index value > vulnerability index threshold

III. Results

Description of confirmed cholera outbreaks, 2020 - 2024

From January 2020 to December 2024, there were a total of 1,767 cholera cases and 9 deaths reported across 24 PAMI geographical units in 13 districts and one city, Mbale.

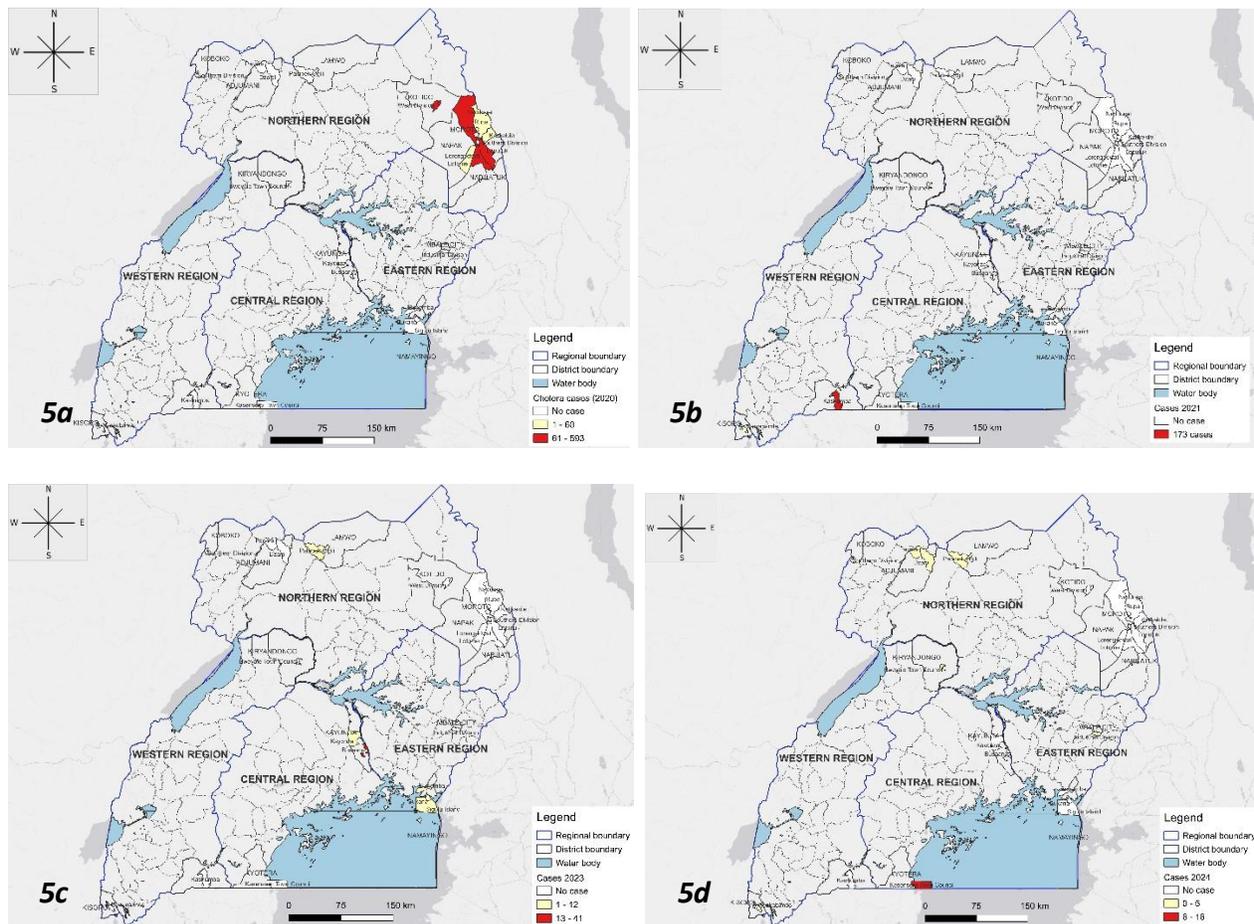


Figure 5: Trends of Reported Cholera Events in PAMIs, Uganda (2020–2024). 5a: 2020; 5b: 2021; 5c: 2023; 5d: 2024.

The largest of these outbreaks was recorded in 2020 in Northern Uganda, in the districts of Moroto, Nabilatuk, Napak, and Kotido, accounting for 59.9% of all cases reported in the period. The outbreak started in the Loputuk sub-county in the Moroto district following cross-border importation of the index case. The outbreak spread to three other neighbouring districts and was amplified by multiple vulnerabilities, particularly suboptimal WASH indices and the general

response strategy.

This outbreak occurred during the COVID-19 pandemic, which greatly affected institution of outbreak control measures due to limitations in movement as part of the quarantine measures in response to the pandemic. It was also a complex emergency as this area experienced insecurity during that time. The affected community is highly mobile (nomadic) with unique cultural practices.

In 2021, two outbreaks were reported in Kisoro and Isingiro districts which are refugee reception and hosting districts respectively. The outbreaks were limited to incoming refugees. In 2023, three outbreaks were reported in Kayunga, Namayingo and Lamwo districts. Lamwo is both a border and refugee hosting district, and the outbreak occurred in the refugee settlement. Namayingo is both a border district and a fishing community and Kayunga are fisher folk communities. In 2022, no outbreak was recorded in Uganda. Below is an analysis report outlining sub counties/ town councils that reported cholera cases 2020-2024.

Table 2: Sub-County Level Cholera Cases, Deaths, and Vulnerability in Uganda

Initial 24 PAMIs - Cholera Cases, Deaths and Vulnerabilities (2020-2024)

S/N	Subcounty (District)	Cases (Deaths) 2020	Cases (Deaths) 2021	Cases (Deaths) 2022	Cases (Deaths) 2023	Cases (Deaths) 2024	Key Vulnerability / Risk Setting
1	Dzaipi (Adjumani)	-	-	-	-	4 (0)	Refugee Settlement / Border community
2	Pachara (Adjumani)	-	-	-	-	3 (0)	Refugee Settlement / Border community
3	Kashumba (Isingiro)	-	173 (0)	-	-	-	Refugee Settlement
4	Busaana (Kayunga)	-	-	-	41 (3)	-	Fishing Community
5	Kayonza (Kayunga)	-	-	-	2 (0)	-	Fishing Community
6	Bweyale Town Council (Kiryandongo)	-	-	-	-	5 (0)	Refugee Settlement / Border community
7	Nyakabande (Kisoro)	-	7 (0)	-	-	-	Refugee Reception / Border community
8	South Division (Koboko)	-	-	-	3 (0)	-	Border Community
9	Central Division (Kotido)	291 (2)	-	-	-	-	Climate Risk
10	West Division (Kotido)	92 (0)	-	-	-	-	Climate Risk
11	Kasensero Town Council (Kyotera)	-	-	-	-	16 (0)	Cross-border / Fishing
12	Ogili (Lamwo)	-	-	-	12 (0)	4 (0)	Refugee Settlement / Border community
13	Industrial Division (Mbale City)	-	-	-	-	5 (0)	Urban Density / Transport Hub
14	Northern Division (Moroto)	3 (0)	-	-	-	-	Border Community
15	Southern Division (Moroto)	53 (0)	-	-	-	-	Border Community
16	Katikekile (Moroto)	4 (0)	-	-	-	-	Border Community
17	Loputuk (Moroto)	147 (0)	-	-	-	-	Border Community
18	Nadunget (Moroto)	223 (2)	-	-	-	-	Border Community
19	Rupa (Moroto)	40 (0)	-	-	-	-	Border Community
20	Lorengedwat (Nabilatuk)	593 (2)	-	-	-	-	Border Community
21	Sigulu Islands (Namayingo)	39 (0)	-	-	3 (0)	-	Fishing / Border Community
22	Bukana (Namayingo)	-	-	-	2 (0)	-	Fishing / Border Community
23	Buhemba (Namayingo)	-	-	-	1 (0)	-	Fishing / Border Community
24	Lotome (Napak)	-	-	-	-	1 (0)	High-risk Population

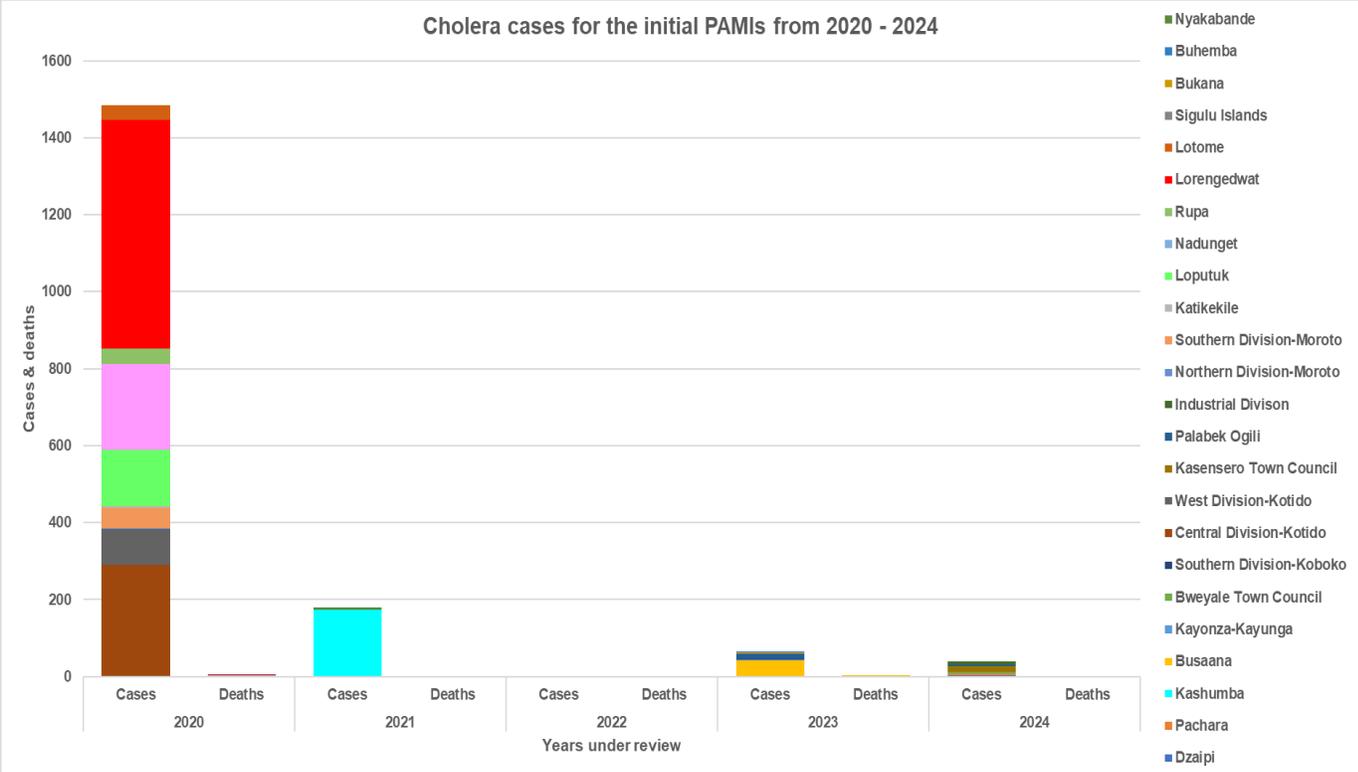


Figure 6: Cholera Cases and Deaths in the Initial PAMIs, 2020-2024

Vulnerability index threshold and justification for the threshold

After careful deliberation and considering various contextual factors, stakeholders agreed to establish the vulnerability index threshold at **6**. This decision allowed for the identification of sub-counties with a vulnerability index value of **6 and above** as **Additional PAMIs**. The country selected a vulnerability index threshold of 6 so as to ensure all geographic units at highest risk of registering cases and/or potential for exponential amplification were included in the prioritisation. This approach also ensured that the sporadic nature of outbreaks observed in non-endemic areas during the period under review was taken into account. By focusing on these specific areas, we aim to effectively allocate resources and implement targeted interventions that will significantly enhance public health outcomes.

Following extensive discussion, the team agreed that the commensurate 18.9% of the national population targeted for intervention was comparable to the population targeted in the previous NCP and would therefore be feasible to implement. It was

Below is the analysis summary output R2.

Table 3: R2 Vulnerability Index Summary

Vulnerability index values	Number of geographic units	Cum. number of geographic units	Rel. % of the num. of geographic units	Cum. % of the num. of geographic units	Total population	Rel. % of total population	Cum. % of total population
Initial PAMI	24	24	1.1%	1.1%	736,881	1.6%	1.6%
11	2	26	0.1%	1.2%	17,693	0.0%	1.6%
10	19	45	0.9%	2.0%	319,607	0.7%	2.3%
9	20	65	0.9%	3.0%	643,113	1.4%	3.7%
8	45	110	2.0%	5.0%	2,611,716	5.7%	9.4%
7	67	177	3.1%	8.1%	2,537,347	5.5%	15.0%
6	77	254	3.5%	11.6%	1,802,340	3.9%	18.9%
5	170	424	7.7%	19.3%	3,718,010	8.1%	27.0%
4	222	646	10.1%	29.4%	5,485,381	11.9%	38.9%
3	508	1154	23.1%	52.6%	9,251,567	20.2%	59.1%
2	318	1472	14.5%	67.0%	6,284,276	13.7%	72.8%
1	402	1874	18.3%	85.3%	7,288,679	15.9%	88.7%
0	322	2196	14.7%	100.0%	5,208,807	11.3%	100.0%
Grand Total	2196		100.0%		45,905,417	100.00%	

The final PAMIs are visualised as below.

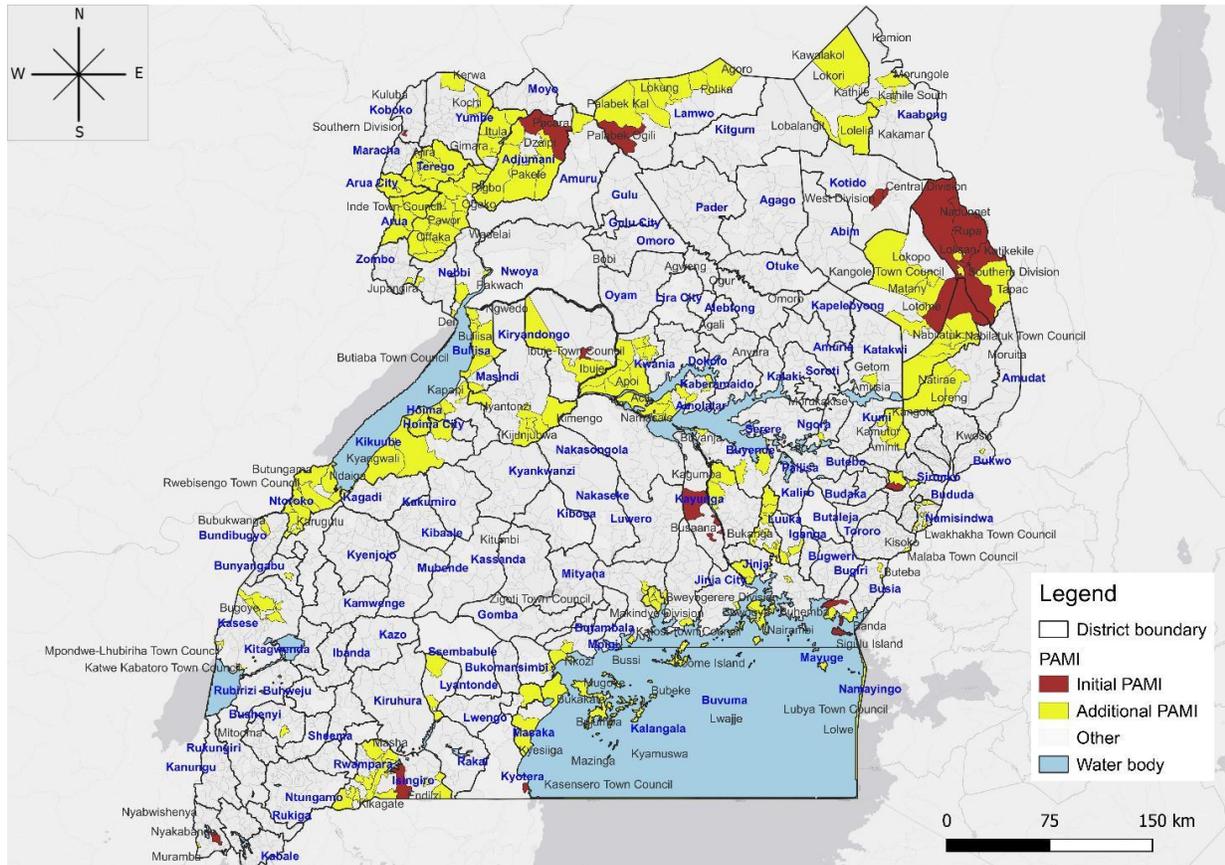


Figure 7: Geographic Distribution of PAMIs in Uganda

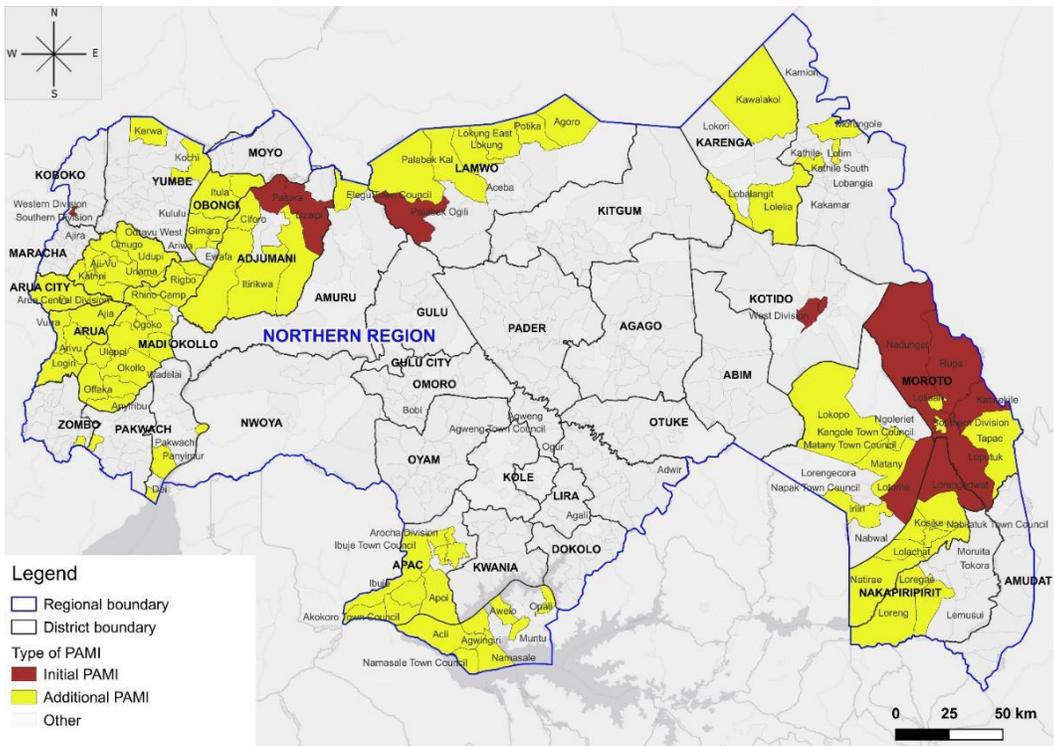


Figure 10: Geographic Distribution of PAMIs the Northern Region of Uganda

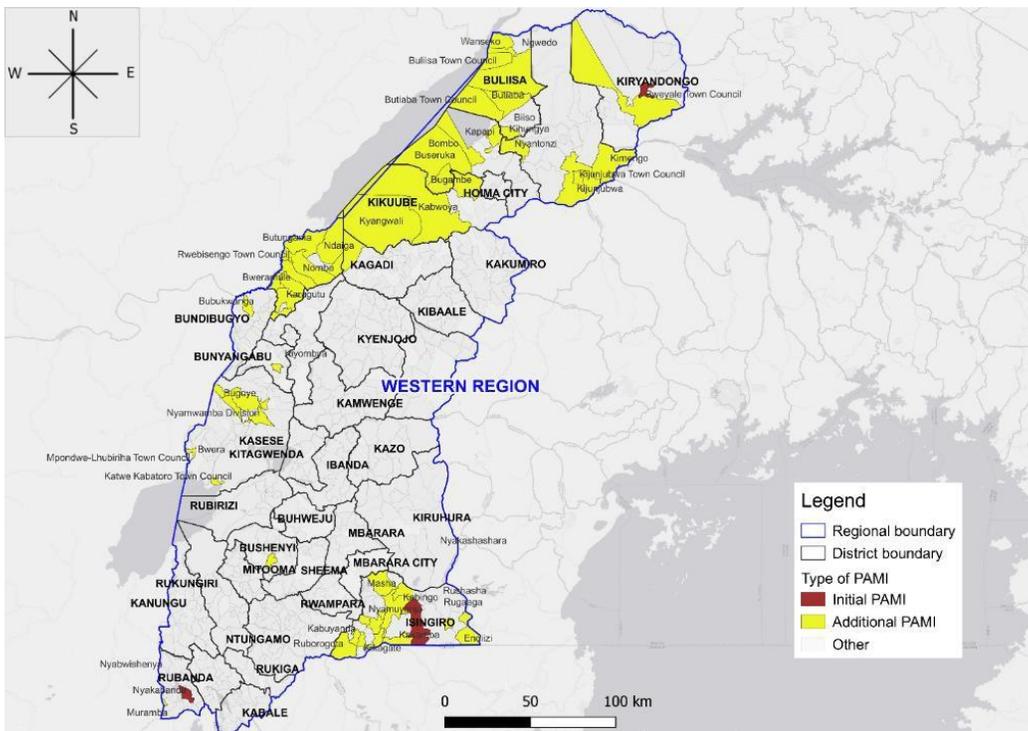


Figure 11: Geographic Distribution of PAMIs in the Western Region of Uganda

Table 4: R4-Table Initial PAMIs export of the GTFCC Excel-based tool

unique_id	admin_1	admin_2	pop	VF_01_chol_otbk	VF_02_chol_import	VF_03_chol_proximity	VF_04_mov_pathw	VF_05_pop_gathering	VF_06_overcrowded_set	VF_07_high_risk_pop	VF_08_hard_to_acc_risk_pop	VF_09_ocv	VF_10_climate_event	VF_11_comp_humanit_emerg	VF_12_unimprov_water	VF_13_unimprov_sanitat	VF_14_limited_hygien	Number_of_missing_values	Priority_index
18	Adjumani	Dzaipi	20189	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	0	Initial PAMI
20	Adjumani	Pachara	14068	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	0	Initial PAMI
566	Isingiro	Kashumba	20330	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	0	Initial PAMI
937	Kayunga	Busaana	38987	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes	0	Initial PAMI
942	Kayunga	Kayonza-Kayunga	74395	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	0	Initial PAMI
1030	Kiryandongo	Bweyale Town Council	58489	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	0	Initial PAMI
1061	Kisoro	Nyakabande	38287	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	0	Initial PAMI
1111	Koboko	South Division-Koboko	26314	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	0	Initial PAMI
1125	Kotido	Central Division-Kotido	19295	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	0	Initial PAMI
1126	Kotido	West Division-Kotido	14419	Yes	No	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	0	Initial PAMI
1277	Kyotera	Kasensero Town Council	4053	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	0	Initial PAMI
1281	Lamwo	Ogili	9613	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No	No	Yes	0	Initial PAMI
1479	Mbale City	Industrial Divison	125203	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	0	Initial PAMI
1529	Moroto	Northern Division	13773	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No	No	No	No	0	Initial PAMI
1530	Moroto	Southern Division	6401	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	0	Initial PAMI
1531	Moroto	Katikekile	10158	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	0	Initial PAMI
1532	Moroto	Loputuk	19419	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	0	Initial PAMI
1534	Moroto	Nadunget	11205	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	0	Initial PAMI
1536	Moroto	Rupa	15292	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	0	Initial PAMI
1598	Nabilatuk	Lorengedwat	15680	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes	0	Initial PAMI
1640	Namayingo	Sigulu Islands	13841	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	0	Initial PAMI
1641	Namayingo	Bukana	11113	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	0	Initial PAMI
1709	Napak	Lotome	16472	Yes	No	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No	0	Initial PAMI

IV. Way forward

Following PAMI identification, the country has outlined its next steps and timelines as below.

- I. Update and finalise the current draft national cholera elimination plan 2025-2030 by September 2025. The Responsible entities are Ministry of Health and World Health Organisation.
- II. Approval and launch of the national cholera elimination plan 2025-2030 by December 2025.
- III. Conduct wide stakeholder identification and mapping for implementation of the updated National Cholera Elimination Plan 2025-2030, immediately following its launch. Responsible entity shall be Ministry of Health and other stakeholders

References

1. Ministry of Health Uganda. National Integrated Comprehensive Cholera Prevention and Control Plan, Fiscal Years (2017/18-2021/22) [Internet]. 2017 [cited 2025 Aug 12]. Available from: <https://library.health.go.ug/file-download/download/public/336>
2. Kamukama A, Nuwamanya Y, Namulondo E, Baliruno LN, Kyamwine IB, Nansikombi HT, et al. Cholera outbreak associated with drinking contaminated river water in Kayunga District, Uganda, June - August 2023. *BMC Infect Dis* [Internet]. 2025 Dec 1 [cited 2025 Aug 12];25(1):1–10. Available from: <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-025-11219-4>
3. Monje F, Ario AR, Musewa A, Bainomugisha K, Mirembe BB, Aliddeki DM, et al. A prolonged cholera outbreak caused by drinking contaminated stream water, Kyangwali refugee settlement, Hoima District, Western Uganda: 2018. *Infect Dis Poverty* [Internet]. 2020 Dec 1 [cited 2025 Aug 12];9(1):154. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7640409/>
4. Eurien D, Mirembe BB, Musewa A, Kisaakye E, Kwesiga B, Ogole F, et al. Cholera outbreak caused by drinking unprotected well water contaminated with faeces from an open storm water drainage: Kampala City, Uganda, January 2019. *BMC Infect Dis* [Internet]. 2021 Dec 1 [cited 2025 Aug 12];21(1):1–9. Available from: <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-021-07011-9>
5. Ssemanda I, Kibwika B, Namusoosa R, Kwesiga B, Bulage L, Migisha R, et al. Evaluation of response to a cholera outbreak in January 2024 using the 7–1–7 timeliness metrics: a case study of Elegu Point of Entry, Uganda. *BMC Public Health* [Internet]. 2024 Dec 1 [cited 2025 Aug 12];24(1):1–9. Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-20886-y>
6. Bwire G, Mwesawina M, Baluku Y, Kanyanda SSE, Orach CG. Cross-Border Cholera Outbreaks in Sub-Saharan Africa, the Mystery behind the Silent Illness: What Needs to Be Done? *PLoS One* [Internet]. 2016 Jun 1 [cited 2025 Aug 12];11(6):e0156674. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0156674>
7. Abubakar A, Bwire G, Azman AS, Bouhenia M, Deng LL, Wamala JF, et al. Cholera Epidemic in South Sudan and Uganda and Need for International Collaboration in Cholera Control. *Emerg Infect Dis* [Internet]. 2018 May 1 [cited 2025 Aug 12];24(5):883. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5938777/>

8. WHO. Ending Cholera, A Global Roadmap to 2030 [Internet]. Geneva; 2017 [cited 2025 Aug 12]. Available from: <https://www.gtfcc.org/wp-content/uploads/2020/09/ending-cholera-a-global-roadmap-to-2030.pdf>
9. WHO. Identification of Priority Areas for Multisectoral Interventions (PAMIs). 2025 [cited 2025 Aug 12]. Identification of Priority Areas for Multisectoral Interventions (PAMIs) for cholera control – GTFCC. Available from: <https://www.gtfcc.org/resources/identification-of-priority-areas-for-multisectoral-interventions-pamis-for-cholera-control/>
10. WHO. Priority Areas for Multi-Sectoral Intervention. 2025 [cited 2025 Aug 12]. Guidelines & technical documents – GTFCC. Available from: <https://www.gtfcc.org/page-resources/guidelines-technical-documents/>
11. Bwire G, Ali M, Sack DA, Nakinsige A, Naigaga M, Debes AK, et al. Identifying cholera “hotspots” in Uganda: An analysis of cholera surveillance data from 2011 to 2016. *PLoS Negl Trop Dis* [Internet]. 2017 Nov 1 [cited 2025 Aug 8];11(12):e0006118. Available from: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0006118>
12. Bwire G, Orach CG, Aceng FL, Arianitwe SE, Matsetse D, Tumusherure E, et al. Refugee Settlements and Cholera Risks in Uganda, 2016–2019. *Am J Trop Med Hyg* [Internet]. 2021 Apr 7 [cited 2025 Aug 12];104(4):1225–31. Available from: <https://www.ajtmh.org/view/journals/tpmd/104/4/article-p1225.xml>
13. Bwire G, Sack DA, Lunkuse SM, Ongole F, Ngwa MC, Namanya DB, et al. Development of a Scorecard to Monitor Progress toward National Cholera Elimination: Its Application in Uganda. *Am J Trop Med Hyg* [Internet]. 2023 May 1 [cited 2025 Aug 12];108(5):954. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10160876/>
14. WHO. WHO report on global surveillance of epidemic-prone infectious diseases [Internet]. 2000 [cited 2025 Aug 13]. Available from: <https://www.who.int/publications/i/item/WHO-CDS-CSR-ISR-2000.1>
15. Bwire G, Munier A, Ouedraogo I, Heyerdahl L, Komakech H, Kagirita A, et al. Epidemiology of cholera outbreaks and socio-economic characteristics of the communities in the fishing villages of Uganda: 2011-2015. *PLoS Negl Trop Dis* [Internet]. 2017 Mar 13 [cited 2025 Aug 13];11(3):e0005407. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5370135/>
16. Oguttu DW, Okullo A, Bwire G, Nsubuga P, Ario AR. Cholera outbreak caused by drinking lake water contaminated with human faeces in Kaiso Village, Hoima District,

- Western Uganda, October 2015. *Infect Dis Poverty* [Internet]. 2017 Oct 10 [cited 2025 Aug 13];6(1):146. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5634859/>
17. Bwire G, Malimbo M, Maskery B, Kim YE, Mogasale V, Levin A. The Burden of Cholera in Uganda. *PLoS Negl Trop Dis* [Internet]. 2013 [cited 2025 Aug 13];7(12):e2545. Available from: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0002545>
 18. Bwire G, Malimbo M, Maskery B, Kim YE, Mogasale V, Levin A. The Burden of Cholera in Uganda. *PLoS Negl Trop Dis* [Internet]. 2013 [cited 2025 Aug 12];7(12). Available from: <https://pubmed.ncbi.nlm.nih.gov/24340106/>
 19. Bwire G, Malimbo M, Makumbi I, Kagirita A, Wamala JF, Kalyebi P, et al. Cholera surveillance in Uganda: An analysis of notifications for the years 2007-2011. *Journal of Infectious Diseases*. 2013 Nov 1;208(SUPPL. 1).
 20. Bwire G, Kisakye A, Amulen E, Bwanika JB, Badebye J, Aanyu C, et al. Cholera and COVID-19 pandemic prevention in multiple hotspot districts of Uganda: vaccine coverage, adverse events following immunization and WASH conditions survey. *BMC Infect Dis* [Internet]. 2023 Dec 1 [cited 2025 Aug 13];23(1):1–16. Available from: <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-023-08462-y>
 21. Orishaba P, Opollo MS, Nalwadda C, Muruta A, Makumbi I, Kabali K, et al. Cholera epidemic amidst the COVID-19 pandemic in Moroto district, Uganda: Hurdles and opportunities for control. *PLOS Global Public Health* [Internet]. 2022 Oct 1 [cited 2025 Aug 13];2(10 October):e0000590. Available from: <https://journals.plos.org/globalpublichealth/article?id=10.1371/journal.pgph.0000590>
 22. Aceng FL, Kintu B, Habumugisha J, Kayanja S, Wanyoto F, Asiimire M, et al. Navigating water crisis, cholera, and refugee context: Lessons from Nakivale refugee settlement, Isingiro District, Uganda. *PLOS Global Public Health* [Internet]. 2025 Feb 4 [cited 2025 Aug 13];5(2):e0004201. Available from: <https://journals.plos.org/globalpublichealth/article?id=10.1371/journal.pgph.0004201>
 23. Bwire G, Tumuhairwe I, Kwagonza L, Wetaka MM, Nakinsige A, Arinitwe ES, et al. Rapid cholera outbreak control following catastrophic landslides and floods: A case study of Bududa district, Uganda. *Afr Health Sci* [Internet]. 2023 Dec 27 [cited 2025 Aug 13];23(4):203–15. Available from: <https://pubmed.ncbi.nlm.nih.gov/38974278/>

24. MOH Uganda. Ministry of Health Repository. 2025 [cited 2025 Aug 28]. Prevention, Control and Elimination of Cholera; Operational Guidelines for National and District Health Workers and Planners. Available from:
https://health.go.ug/download/prevention-control-and-elimination-of-cholera-operational-guidelines-for-national-and-district-health-workers-and-planners_2025/
25. Ministry of Health, Ministry of Health. National Technical Guidelines for Integrated Disease Surveillance and Response Third Edition [Internet]. Geneva, Kampala; 2021 Sep [cited 2025 Aug 8]. Available from:
https://www.afro.who.int/sites/default/files/2021-09/2_Uganda%203rd%20IDSR%20Tech%20Guideline_PrintVersion_10Sep2021.pdf
26. Electoral Map of Uganda | Electoral Commission [Internet]. [cited 2025 Sep 2]. Available from: <https://www.ec.or.ug/electoral-map-uganda>
27. National Population and Housing Census (NPHC) 2024 Census - Uganda Bureau of Statistics [Internet]. [cited 2025 Aug 28]. Available from:
<https://www.ubos.org/nphc-2024-census-page/>
28. Weekly bulletins on outbreaks and other emergencies | WHO | Regional Office for Africa [Internet]. [cited 2025 Aug 28]. Available from:
<https://www.afro.who.int/health-topics/disease-outbreaks/outbreaks-and-other-emergencies-updates>
29. Uganda - Subnational Administrative Boundaries | Humanitarian Dataset | HDX [Internet]. [cited 2025 Sep 2]. Available from: <https://data.humdata.org/dataset/cod-ab-uga>

Annex A: Attendance List

Table 5: Attendance list

S/N	Name	Institution	Designation
1	Aggrey Byaruhanga	MOH	Senior Epidemiologist
2	Allan Muruta	MOH	Commissioner IES&PHE
3	Anne Nakinsige	MOH	Principal Epidemiologist
4	Asimire Moureen	MOH	Monitoring and Evaluation Officer
5	Atek Kagirita	MOH	Manager PHEOC
6	Carolyne Nyamor	MOH	OHCO
7	Charles Wagoli	MOH	Data Manager
8	Doreen Ruth Akuno	MOH	SNO Vaccines and Immunisation
9	Duncan Kabiito	MOH	Biostatistician
10	Ebong Moses	MOH	Principal Medical Officer/POE Focal Point
11	Emmanuel Ochien	MOH	Epidemiologist
12	Godfrey Bwire	MOH	Assistant Commissioner IES&PHE
13	Harriet Mayinja	MOH	Research Officer
14	Job Kyakakasibwa	MOH	Epidemiologist
15	Katarawa Phillip	MOH	Communications Officer
16	Kintu Bonny	MOH	SMO
17	Kithula Haggai Sunday	MOH	SMO
18	Kizito Douglas Makanga	MOH	SMO
19	Lunkuse Stella Maris	MOH	Senior Epidemiologist
20	Munganga Maria Gorret	MOH	SNO
21	Oundo Humphrey	MOH	PHI
22	Richardson Mafigiri	MOH	Epidemiologist
23	Uragiwenima Vallenge	MOH	Principal Environmental Health Officer
24	Wanale Salmah	MOH	Sociologist
25	Ongole Francis	MOH/NHLDS	Medical Laboratory Scientist
26	Joshua Kayiwa	MOH PHEOC	Information Analyst
27	Olony Paul	Adjumani DLG	District Surveillance Focal Person
28	Kirungi Raymond	DPO	OPM
29	Innocent Mugume	Fortportal REOC	Epidemiologist
30	Opaade John Francis	Hoima DLG	District Health Officer
31	Hadubi Godfrey	Kalangala DLG	SEHO
32	Businge Olive	Kayunga DLG	ADHO-MCH
33	Walyomo Richard	KCCA	DMO
34	Brian Odaga	KMA EOC	Epidemiologist
35	Mugonyi Moses	MBALE CITY	City Health Officer
36	Ederu Harriet	MWE	Environment Health Officer

37	Martha Naigaga	MWE	Senior Environmental Health Officer
38	Herbert Isabirye Kiirya	NPHEOC	Epidemiologist
39	Dr. Radjabu Birgirimana	AFRICA CDC	AVoHC Program Manager
40	Neema William Kamara	AFRICA CDC	EPR Officer
41	Mahlet Tsegaye Kidan	AFRICA CDC	EPR Admin Assistant
42	Solome Okware	WHO	Technical Officer – Surveillance
43	Dr. Fred Kapaya	WHO	Senior Epidemiologist - Cholera Lead
44	Dr Miriam Nanyunja	WHO	Regional Advisor – Preparedness
45	Joyce Nguna	WHO	Epidemiologist
46	Tendai Makamure	WHO	IPC Specialist

Annex B: R4-Table PAMIs export of the GTFCC Excel-based tool

Table 6: Initial and Additional PAMIs Identified



R.4 Table PAMIs
export.pdf

(Double click to view)