

# Risk communication and community engagement readiness and response toolkit **yellow fever**



World Health  
Organization



Risk communication and  
community engagement  
readiness and response toolkit  
**yellow fever**

Risk communication and community engagement readiness and response toolkit: yellow fever

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## Abbreviations

<b>AEFI</b>	Adverse event following immunization	<b>SOP</b>	Standard operating procedures
<b>BI</b>	Behavioural insights	<b>UNICEF</b>	United Nations Children's Fund
<b>CSO</b>	Civil society organization	<b>WHO</b>	World Health Organization
<b>EYE</b>	Eliminate Yellow Fever Epidemics		
<b>GOARN</b>	Global outbreak alert and response network		
<b>IFRC</b>	International Federation of Red Cross and Red Crescent Societies		
<b>IHR</b>	International Health Regulations		
<b>IMST</b>	Incident Management Support Team		
<b>M&amp;E</b>	Monitoring and evaluation		
<b>MEL</b>	Measurement, evaluation, and learning		
<b>NGO</b>	Nongovernmental organization		
<b>PESTEL</b>	Political, economic, sociological, technological, environmental and legal		
<b>PHSM</b>	Public health and social measures		
<b>PMVC</b>	Preventative mass vaccination campaign		
<b>PRSEAH</b>	Prevention and reporting of sexual exploitation, abuse and harassment		
<b>RCCE</b>	Risk communication and community engagement		
<b>RVC</b>	Reactive vaccination campaign		
<b>SAGE</b>	Strategic Advisory Group of Experts on Immunization		
<b>SEAH</b>	Sexual exploitation, abuse, and harassment		

## Glossary

<b>Behavioural insights</b>	Information about variables that influence behaviours at the individual, community, and population level and can improve the design of policies and programmes, communications, and products and services to achieve better health for all.
<b>Behavioural science</b>	Behavioural science is a multidisciplinary scientific approach that deals with human action, its psychological, social and environmental drivers, determinants and influencing factors. It is applied in protecting and improving people’s health by informing the development of public health policies, programmes, and interventions.
<b>Community</b>	Refers to a group of people connected by common characteristics, such as geographic location, age, gender, profession, ethnicity, faith, shared vulnerability or risk, or shared interests and values.
<b>Community engagement</b>	The collaborative process that involves people in understanding the risks they face and includes communities in developing health and response practices that are acceptable and workable for them. The goal of community engagement is to empower communities and to develop shared leadership throughout the emergency response cycle.
<b>Collective Service for RCCE</b>	A partnership between the International Federation of Red Cross and Red Crescent Societies (IFRC), United Nations Children’s Fund (UNICEF), the World Health Organization (WHO) and the Global Outbreak Alert and Response Network (GOARN), and as well as key stakeholders from the public health and humanitarian sectors.
<b>Emergency</b>	A situation impacting the lives and well-being of a large group of people or a significant percentage of a population requiring substantial multi-sectoral assistance. For a WHO response, there must be clear public health consequences.
<b>Health emergency management cycle</b>	Spans the prevention, preparedness, readiness, response and recovery phases of health emergencies that all organizations and governments should follow to reduce the impact of disease outbreaks, health emergencies and disasters. Countries and communities may be engaged in different phases for multiple outbreaks and emergencies simultaneously.
<b>Outbreak</b>	Occurrence of cases of a disease in excess of what would normally be expected in a defined community, geographical area, or season.
<b>Partners</b>	International, non-governmental, or community organizations that work in a geographic area or health field.
<b>Readiness</b>	Refers to the ability of countries, communities and organizations to be able to respond quickly and effectively to health emergencies from any hazard. Operational readiness is a critical enabler of resilience in communities and health systems, helping them to withstand crisis. Fast-tracking, activating, testing or preposition specific functional capabilities are all important functions for enhanced readiness.
<b>Response</b>	Phase of a health emergency or outbreak activated once the hazard, risk or threat hits, with the implementation of life-saving public health and health interventions to save lives and protect the most vulnerable.
<b>Risk communication</b>	Real-time exchange of information, advice, and opinions between experts and people who are facing a risk or threat to their health, social or economic wellbeing. The purpose of risk communication is to provide people with accurate and timely information and to support them in making informed decisions to mitigate the effects of a threat or hazard.
<b>Stakeholders</b>	Governments and community leaders that have a vested interest in protecting the health of their own country, region, or community.



# Overview of the risk communication and community engagement readiness and response toolkit: yellow fever



## About the toolkit

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.

The toolkit contains:

- information about yellow fever;
- RCCE considerations for how to approach key issues during yellow fever outbreaks;
- tools for understanding the context in which yellow fever outbreaks occur;
- methods for collecting data to inform strategy development and bring evidence into planning and implementation of activities;
- guidance to support vector control and immunization campaigns; and
- links to existing RCCE tools and training.

It is one of a suite of toolkits on RCCE readiness and response to a range of disease and response areas.

### Literature Review

- An extensive review of existing literature, research papers, published documents and gray literature related to yellow fever, immunization, risk communication, community engagement, health emergencies and disease outbreak response was conducted.
- A structured search of online databases (PubMed, Institutional Repository for Information Sharing (IRIS), ReliefWeb, and Google Scholar) was conducted to identify publications related to yellow fever, immunization and risk communication and community engagement, specifically within the context of yellow fever outbreaks.

- Keywords supplied by the technical teams were used as the foundation of the search to identify relevant documents, from which other specific terms and keywords were extracted. Over 34 published documents were systematically reviewed for content on key thematic areas, methodologies and definitions relevant to the development of RCCE plans and strategies, including immunization campaigns. This included but was not limited to clinical information on yellow fever; behavioural science methodologies related to public health and outbreak response; understanding, preventing and addressing stigma and discrimination; stakeholder engagement and situational analysis; measurement, evaluation and learning frameworks and methodologies; and preventing and responding to sexual exploitation, abuse, and harassment (PRSEAH). Retrieved publications were assessed for relevance, uploaded to a database and logged into a tracking sheet, highlighting them for further consideration.

### Iterative Consultation

- The toolkit was reviewed and revised by technical and RCCE subject matter experts at country, regional and global levels through an iterative consultation process between March 2023 and December 2023.

### Pilot Testing

- Draft versions of the toolkits were tested during disease outbreaks and feedback collected on the toolkit's clarity, relevance, and usability.

### Peer review

- The toolkit was peer-reviewed by independent technical and RCCE experts. All external experts who reviewed the toolkit submitted a WHO declaration of interest form disclosing potential conflicts of interest that might affect, or might reasonably be perceived to affect, their objectivity and independence concerning the subject. WHO reviewed these and concluded that none could give rise to a potential or reasonably perceived conflict of interest related to the subjects reviewed.

## Readiness and response within the health emergency cycle

In recent years, WHO, Member States and partners have engaged in significant efforts to strengthen the architecture for health emergency prevention, preparedness, readiness, response and recovery. Readiness and response are closely connected. Readiness builds on the preparedness phase and is the interface between preparedness and immediate response to an emergency. For example, the approach of a high-risk season, an outbreak of a contagious disease in a neighbouring country, the hosting of a large international event or the declaration of a public health emergency of international concern (PHEIC) can all trigger operational readiness activities. Experience has shown us that countries that systematically ready their health and emergency systems can respond more quickly, cohesively and equitably to a threat or emergency, shortening their duration, curbing their impact and ultimately saving lives.

## The role of RCCE for health emergencies and disease outbreaks

Risk communication is the real-time exchange of information between decision-makers, experts and populations exposed to a hazard or imminent threat to their survival, health, or economic or social well-being.

Community engagement is the process of developing trusted relationships and structures that engage communities as important partners in the creation of emergency response solutions that are acceptable and applicable for those they impact.

Informed, engaged and empowered communities are the bedrock of successful readiness and response for outbreaks and emergencies. The principles of RCCE

are outlined in the [10 steps to community readiness package](#).

The desired outcome of effective RCCE is to mitigate the potential negative impact of health hazards before, during and after public health emergencies or unusual events (1). The ultimate goal of RCCE during health emergencies and outbreaks is to reduce morbidity and mortality by empowering communities to confidently participate in leadership, planning, and implementation of activities throughout the health emergency response cycle. This is the reason why risk communication is one of the core technical capacities under the International Health Regulations (IHR) (2005) (2, 3) and should be an integral part of all Incident Management Support Team (IMST) responding to a graded health emergency.

During infectious disease outbreaks, it is imperative to understand why people behave the way they do and what influences the behavioural drivers of disease transmission and risk. Effective RCCE should result in affected communities knowing how to protect themselves and others against the disease, how to seek care, testing, treatment, and vaccines; and to prevent, manage and avoid stigma and discrimination. To achieve this, communities at risk need to be included and consulted in developing strategies and plans and in the implementation of readiness and response activities to outbreaks (4).

## WHO response to yellow fever

Yellow fever is caused by an arbovirus, a virus transmitted by vectors such as mosquitoes, ticks, or other arthropods. It is a mosquito-borne, viral haemorrhagic fever that is endemic in tropical areas of Africa and in the Region of the Americas<sup>1</sup>. It primarily affects humans and monkeys and is transmitted via the bite of infected *Aedes*, *Sabethes*, and *Haemagogus* species mosquitoes. It can produce devastating outbreaks, which can be prevented and controlled by public health measures, including

<sup>1</sup>The countries with risk for yellow fever that are in the African Region: Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, Sudan, Togo and Uganda. In the Region of the Americas: Argentina, Bolivia (Plurinational State of), Brazil, Colombia, Ecuador, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago and Venezuela (Bolivarian Republic of).

vaccination, protection from mosquito bites, and vector control.

WHO first adopted the IHR at the World Health Assembly in 1969 to support international epidemiological surveillance and detect, reduce, or eliminate the international spread of specific communicable diseases (5). Within the original IHR six diseases were indicated for notification to the WHO, including yellow fever, and throughout the multiple updates to the regulations, yellow fever has remained a priority disease to prevent, protect against, control, and provide a public health response (2).

In 2006, WHO launched the Yellow Fever Initiative to secure global vaccine supply and boost population immunity through vaccination (6). The Initiative, supported by United Nations Children's Fund (UNICEF) and Member States, has a particular focus on endemic countries in Africa where the disease is most prominent. Since the Initiative was launched, significant progress has been made in West Africa to bring the disease under control. In the WHO Region of the Americas, the Organization has also provided continuous support and prepared guidelines for use at district and national levels including case definitions, instructions for specimen collection and laboratory referrals, and for managing control efforts.

In 2017, a comprehensive global strategy to eliminate yellow fever epidemics (EYE) was developed by a coalition of partners (The Vaccine Alliance (Gavi), UNICEF and WHO) to face yellow fever's changing epidemiology and the increased risk of urban outbreaks and international spread (7). The strategy was endorsed by all Member States in the WHO African Region during the 67th session of the WHO Regional Committee for Africa and by the Pan American Health Organization (PAHO) Regional Immunization Technical Advisory Group (RITAG). The EYE strategy is a comprehensive and long-term plan that aims at ending yellow fever epidemics by 2026 and consists of three strategic objectives: protect at-risk populations; prevent international spread; and contain outbreaks rapidly. It is expected that by the end of 2026, almost one billion people will be protected against yellow fever through vaccination.

WHO supports countries to strengthen their surveillance systems and improve laboratory capacity to detect outbreaks early. The Organization provides support for outbreak detection and response such as reactive vaccination campaigns (RVC), as well as providing technical support to governments in coordination with other partners for the roll-out of the preventive mass vaccination campaigns (PMVC) and for the implementation of other EYE Strategy activities.

RCCE plays an important role in outbreak management activities, but its importance extends beyond readiness and response, particularly with disease outbreaks of vaccine preventable diseases like yellow fever, with the planning and communication of mass vaccination campaigns and other prevention and preparedness activities.

## Purpose of the toolkit

The purpose of this toolkit is to guide RCCE practitioners, decision-makers, and partners on how to place affected communities at the centre of coordinated efforts to reduce the impact of the disease and end outbreaks of yellow fever. It provides strategies, best practices, and practical resources to: collect and analyse social and behavioural data; use collected insights to inform strategy and implementation; coordinate activities with partners and stakeholders, support the development and dissemination of accurate information to those at risk; build vaccine confidence and demand; address public concerns; and support the participation of communities as essential partners in yellow fever readiness and response efforts. These principles are vital for more tailored, equitable and inclusive health emergency programmes.

This toolkit is also designed to support the implementation of the [standing recommendations for yellow fever](#).

## Intended audience

This RCCE readiness toolkit has been designed for use by:

- decision and policy makers;
- national and local health authorities;
- emergency management authorities;
- UN agencies and other international nongovernmental organizations (INGOs);
- nongovernmental organizations (NGOs) and civil society organizations (CSOs); and
- community leaders.

## How to use the toolkit

The toolkit supports coordinated, inclusive and tailored RCCE, highlighting approaches that are essential for the successful management of yellow fever outbreaks and associated immunization campaigns. All tools require contextualization based on local epidemiology, social-behavioural data, available partners, capacity, community-specific needs, and the status of outbreak readiness and response activities. The resources in this toolkit should be used at the appropriate emergency management phase, reflecting current conditions.

All those interested in using these tools should coordinate to adapt them for their context using the following three steps:

### 1. Review all tools

This toolkit contains a range of tools with different aims and objectives. It can be used like a library of resources to meet existing country-level needs, however, not all tools will always be relevant or necessary for all settings. All provided tools should be reviewed and selected for use based on needs and the priorities outlined in the national yellow fever elimination and control plans.

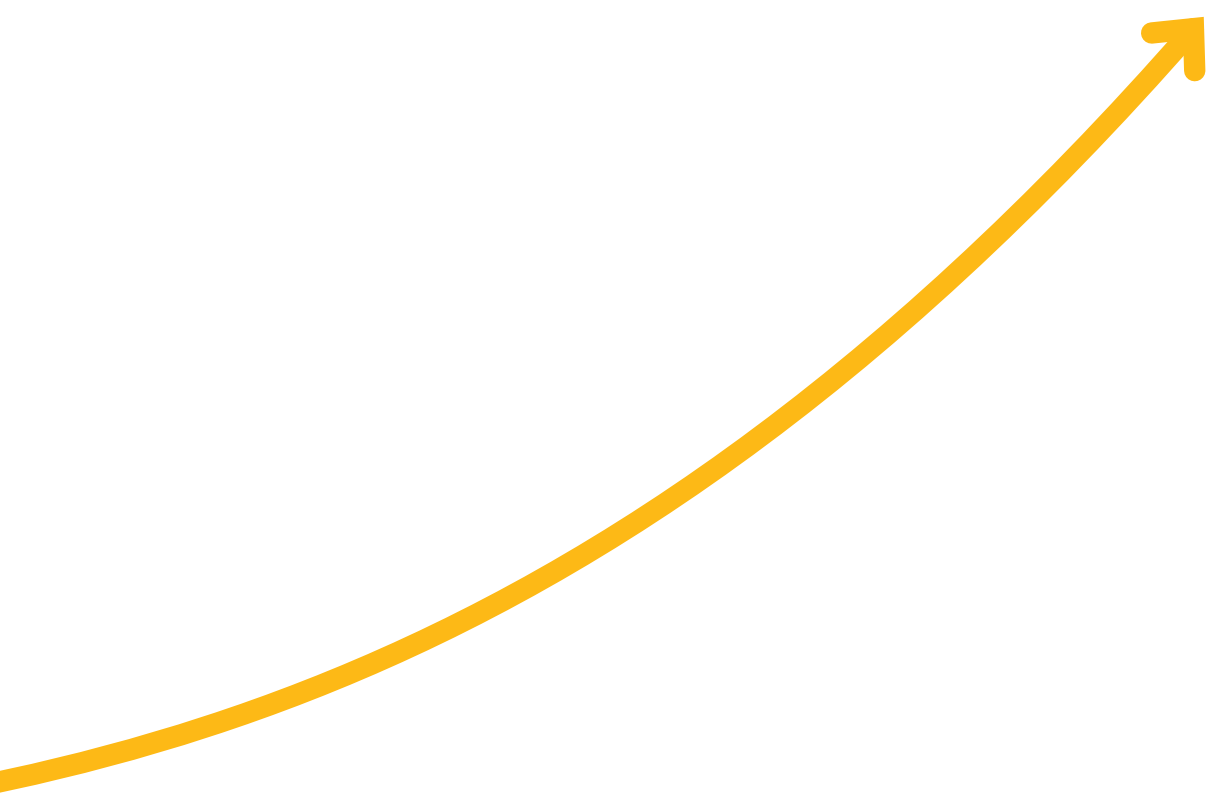
### 2. Adapt the relevant tools

This toolkit has been developed at a global level. All provided resources should be adapted to local contexts. This can be done by national decision-makers, RCCE practitioners or partners and in line with communities engaged in the response. Adaptations that may be needed include:

- **Language and audience:** Translate the tools into local languages and dialects. Considerations should be made to address literacy and accessibility needs.
- **User:** Adapt and refine the tools according to the needs of those who will be using them. Different stakeholders have different needs and capacities.
- **Yellow fever outbreak context:** Adapt the tools based on the current epidemiological situation and what is known about the context and behaviours of affected populations. Future adaptations may be needed as the situation evolves. RCCE activities are crosscutting and should be conducted in coordination with other outbreak response pillars such as surveillance, vaccination, clinical management for treatment and case management, infection prevention and control, vector control, and others.
- **Phase of the emergency:** How the tools in the toolkit are adapted and implemented will depend on the current phase of the health emergency cycle in the local context. Tool 5 (the RCCE readiness and response checklist for yellow fever outbreaks) can be used to identify different priorities within the different phases.
- **Existing national activities:** Selection and adaptation of tools should be guided by national action plans, strategies and ongoing activities to complement and enhance existing efforts.

### 3. Use and monitor

Once the tools are tailored to the local context, they can be used to inform strategy, planning and guide the implementation of RCCE activities. The resources within the toolkit provided should guide the work of WHO but are also valuable to other engaged partners and stakeholders, including community leaders, local NGOs, CSOs and other local actors to support their activities. The use of tools should be monitored and evaluated continuously to inform improvements.



# Background information on yellow fever



This background information is up to date as of November 2023. It is intended to provide RCCE decision-makers, practitioners and partners with the knowledge and understanding needed to effectively respond to yellow fever outbreaks (7,8). Up-to-date information about the local yellow fever situation should be sought from local yellow fever outbreak response leads to establish a full understanding of the local setting.

## Overview

Yellow fever is a mosquito-borne disease with the potential to cause large outbreaks and that can be prevented by vaccination. It is transmitted to humans by the bites of infected mosquitoes. It is transmitted to humans by the bites of infected *Aedes*, *Sabethes*, and *Haemagogus* species mosquitoes. Yellow fever is a high-impact, high-threat disease with the risk of international spread representing a potential threat to global health security.

## Transmission

Day-biting mosquitoes breed around houses (domestic), in forests or jungles (wild), or in both habitats (semi-domestic). There are three types of transmission patterns:

1. Sylvatic (or jungle) yellow fever spreads when monkeys are bitten by wild mosquitoes that pass the virus on to other monkeys and humans.
2. Intermediate yellow fever spreads when semi-domestic mosquitoes infect both monkeys and people. This cycle is the most common type of outbreak in Africa and can occur in rural villages and small towns, but large outbreaks have also occurred when infected people move between rural areas and urban centres.
3. Urban yellow fever can cause large epidemics as human-to-human transmission takes place when infected people introduce the virus into heavily populated areas with high mosquito density and areas with gaps in immunity where people have not previously been vaccinated or infected with the virus. Urban outbreaks are particularly

deadly and disruptive and are more likely to cause international spread. Occasionally, infected travellers can export cases to countries free of yellow fever, but this is contingent on specific climate conditions, the presence of a mosquito species able to transmit it, and the animal reservoir needed to maintain it.

## Symptoms

Yellow fever can present with a wide range of signs and symptoms and clinical presentation, from mild to severe. Once contracted, the yellow fever virus incubates in the body for three to six days. Many people do not experience symptoms, but when these do occur, the most common are fever, muscle pain with prominent backache, headache, loss of appetite, and nausea or vomiting. In most cases, symptoms resolve after three to four days.

A small percentage of patients enter a second, more toxic phase within 24 hours of recovering from initial symptoms marked by the return of a high fever, followed by liver and/or kidney failure. This phase is also marked by the development of jaundice, dark urine, and abdominal pain with vomiting. Bleeding can occur from the mouth, nose, eyes, or stomach. Half of these patients die within 7–10 days.

Yellow fever is difficult to diagnose, especially during the early stages. More severe cases can be confused with severe malaria, dengue, leptospirosis, viral hepatitis, other haemorrhagic fevers, and poisoning. Yellow fever infections can cause serious illness and can be fatal in severe cases.

## Who is at risk

As of 2023, forty-seven countries in Africa (34) and Central and South America (13) are either endemic for, or have sub-national regions that are endemic for, yellow fever. Urbanization, large population movements, climate change and increasing exposure of workers to infected mosquitoes in jungles and forests (such as those working in mining, oil extraction and forestry) are all contributing to increased spread and changes in transmission of the disease (5).



In endemic areas, unprotected individuals exposed to the bite of infected mosquitoes are at high risk of contracting yellow fever. There is also increased risk in more cities globally, particularly those with low population immunity, due to the spread of the *Aedes* species mosquito, which is the primary vector responsible for yellow fever urban outbreaks.

In addition, travellers who have not received the yellow fever vaccine are at risk of contracting the virus when traveling to high-risk countries, as well as then transmitting the disease to unprotected populations.

## Protective behaviours

Vaccination is the most important means of preventing yellow fever. Other individual protective measures include wearing of long-sleeved clothing and trousers to minimize skin exposure and the use of insect repellents (preferably containing diethyltoluamide, or “DEET”) to avoid mosquito bites. The use of insecticide-treated bed nets is limited by the fact that *Aedes* mosquitoes bite during the daytime.

Vector control is an important set of interventions to curb transmission in situations of urban outbreaks and epidemics. It includes, among others.

Eliminating potential *Aedes* mosquito breeding sites, such as water storage containers, tires, flowerpots, and other places where standing water collects.

- Eliminating potential *Aedes* mosquito breeding sites, such as water storage containers, tires, flowerpots, and other places where standing water collects.
- Applying larvicides to kill mosquito larvae and pupae in water sources that cannot be eliminated.
- Spraying insecticides to kill adult *Aedes* mosquitoes in and around houses.
- Engaging communities and raising awareness on ways to prevent mosquito bites and eliminate breeding sites.

## Prevention

Continuous and long-term investments should be made in building health literacy, increasing community awareness and knowledge about the disease and ways to prevent infection. This, along with immunization programmes, are essential to creating populations resilient against yellow fever.

The yellow fever vaccine is safe and affordable, and a single dose provides life-long immunity against the disease. The prevention of outbreaks can only be achieved if most of the population is immunized. Preventive mass vaccination campaigns (PMVCs) are the most efficient approach to rapidly increasing population immunity levels in high-risk areas and thereby reduce the risk of yellow fever epidemics (7,8). It is important to ensure that in countries where there is policy in place that efforts are made to increase yellow fever vaccination through routine immunization for a more sustainable and longer-term solution. For more information on building vaccine demand, please visit [WHO Essential Programme on Immunization: Confidence and demand](#).

Where there is low routine vaccination coverage and potential gaps from PMVCs, for example due to population movements, focused “catch-up campaigns” can be implemented for targeted populations. These campaigns help to close gaps in immunization coverage but are not a substitute for routine immunization that should reach all pockets of society.

## Treatment

There is currently no specific treatment for yellow fever, including anti-viral drugs, but specific care to treat dehydration, fever, liver and kidney failure improves outcomes. Associated bacterial infections can be treated with antibiotics under a clinician’s advice. Patients with yellow fever should be protected from further mosquito bites by staying under a mosquito net during the first couple of weeks of illness, so they do not contribute to the disease transmission cycle (8).

# Tools for yellow fever outbreaks



### 3.1: Gathering information and data

*The tools in Section 3.1: Gathering information and data are designed to support the collection, analysis and use of social-behavioural data and community insights to inform the development of evidence-based RCCE strategies and plans. The data and insights collected using these tools promotes better decision making and can allow for stronger risk assessments by bringing a community lens to the understanding of risk during an outbreak. By prioritizing the collection, analysis and use of social-behavioural data and community insights within and beyond RCCE, it is possible to bring broader response strategies and plans in line with community expectations, needs and priorities.*

#### Tool 1: Conducting a situational analysis: The PESTEL tool



*A situational analysis can be conducted in either the readiness or response phase to inform activities during an outbreak, or to strengthen prevention and preparedness efforts with regards to immunization. In any of these scenarios, the situational analysis should be regularly updated.*

The PESTEL tool is a framework for conducting a situational analysis that helps understand political, economic, sociological, technological, environmental, and legal factors that can influence public health efforts during an emergency, as well as other preventative activities for yellow fever.

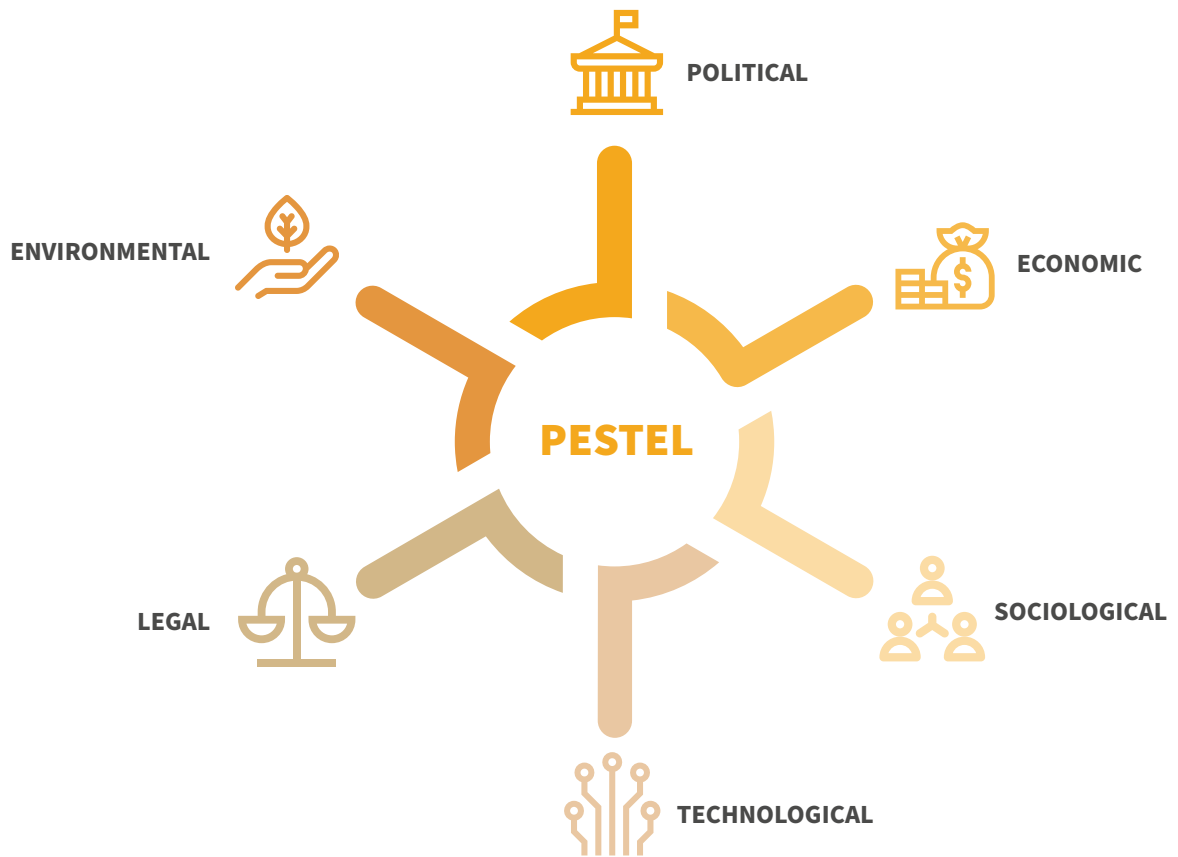
Data collected either directly or from existing sources can be used to gather insights into the six categories of the PESTEL analysis. Information can be collected through these and other sources:

- Community surveys, qualitative interviews and focus group discussions, including behavioural science research.
- Tools used under the IHR to evaluate country capacity, including intra-action reviews, after-action reviews, the Health Resources and Services Availability Monitoring System (HeRAMS), joint external evaluation (JEE) reports, etc.
- Lessons learned from previous outbreak responses.

- WHO IMST updates, situation reports, Disease Outbreak News, and daily reports.
- Peer reviewed journals.
- WHO country profiles.
- News reports from trustworthy sources.
- Government websites and official publications.

The information obtained from a PESTEL analysis should be used with detailed behavioural data from Tool 2 and local epidemiological data on the drivers of transmission.

Figure 1. PESTEL analysis framework



**Political considerations:**

- government and local policies.
- budgets for yellow fever readiness and response.
- previous governmental experiences with yellow fever outbreaks.
- levels of trust in government, partners and other influential voices.
- government and partner public communication activities and style, and
- upcoming elections or potential changes in leadership.

**Economic considerations:**

- capacity of citizens and communities to participate in economic life.
- access to and supply of health services, including vaccination and treatment, and
- income of citizens.

**Sociological considerations:**

- cultural dynamics and demographics.
- behaviours, beliefs and habits.
- religions and traditions, and
- literacy, languages and dialects.

**Technological considerations:**

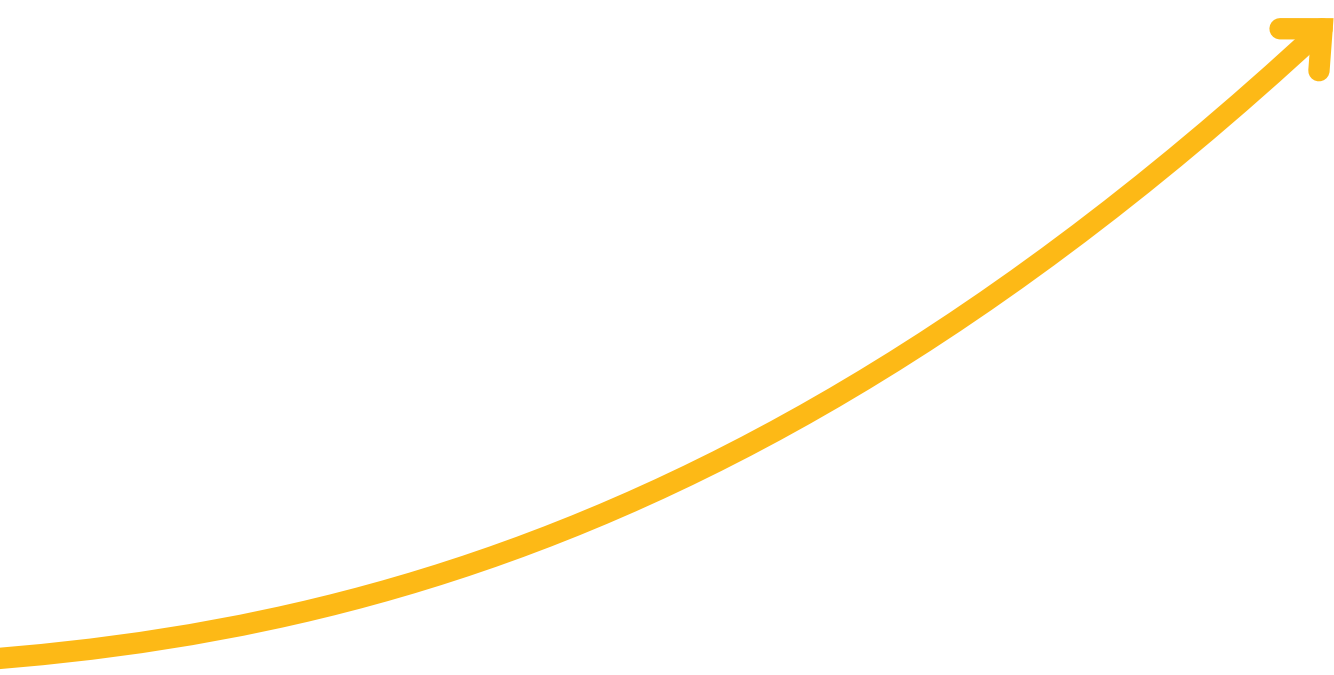
- level of access to information (print, broadcast or online media).
- mobile phone usage and level of penetration.
- social media usage.
- availability of internet access.
- digital literacy, and
- key online communication channels.

**Environmental considerations:**

- potential dangers and impacts of climate crisis, such as deforestation and human encroachment into animal habitats.
- natural disasters (floods, earthquakes, droughts, etc.), and
- environmental risk level.

**Legal considerations:**

- laws, rules and plans — including those related to ethics, such as the prevention of sexual exploitation, abuse and harassment (PSEAH).
- existence of treaties or binding legal instruments.
- multiple levels of governance.
- regulations that impact RCCE in emergency situations, and
- coordination and engagement of CSOs, NGOs and non-State actors.



## Tool 2: Behavioural analyses



*This tool can be used to identify and understand behaviours relevant to yellow fever outbreaks or pertaining to vaccine uptake and demand that inform and shape RCCE strategies, tools and tactics. Behaviours do not stay static through an outbreak or health emergency. High-risk behaviours are influenced by barriers and enablers that can be identified through social and behavioural data collection. These should be identified as early as the prevention phase and throughout the readiness and response phases, and regularly monitored to understand norms, trends and changes.*

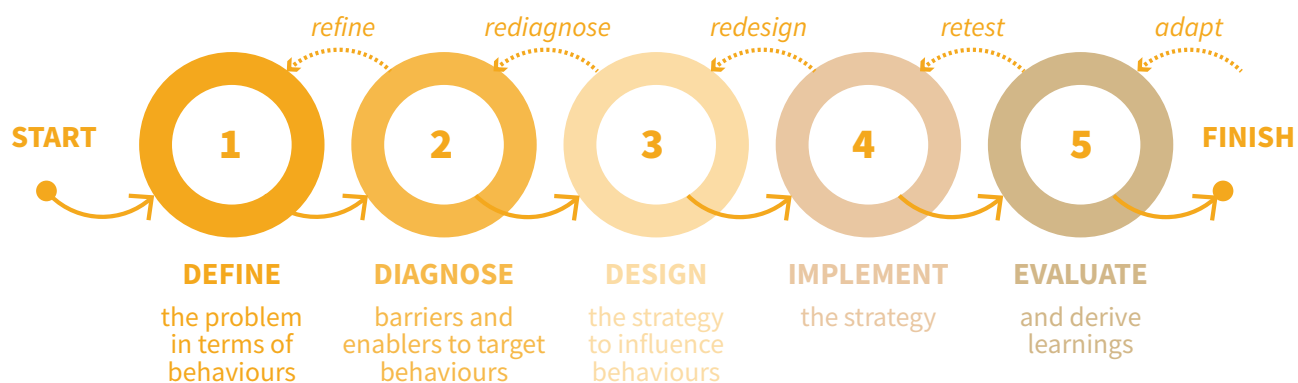
Used together, the findings from the situational and behavioural analyses can help assess how to engage with communities effectively and co-develop plans and strategies that support people to make well-informed decisions to protect themselves. The importance of including behavioural and social sciences in public health interventions was globally recognized by Member States at the [seventy sixth World Health Assembly in 2023](#), where WHO acknowledged the contribution of these disciplines in achieving improved health outcomes and called on the increased use of behavioural science to empower communities in understanding public health problems and designing and evaluating interventions to address them.

Behaviours are one factor that can influence transmission, uptake of protective actions and care-seeking practices in outbreaks and health emergencies. It is important to identify and understand risky and protective behaviours in the current context and to use these to shape RCCE strategy, plans and activities. It is crucial to note that changing behaviour is not the only answer to ending transmission; people need information and opportunities for engagement as well as access to prevention and care to help them make informed decisions that are applicable within the context of their daily lives, and which are practical and accessible.

The behaviours that are relevant to the risk and prevention of yellow fever transmission will vary depending on the local context (e.g. presence of disease vector, availability of vaccines, treatment for symptoms, etc.). This information should be obtained from a multidisciplinary team including behaviour change experts and epidemiologists working on the response and from your PESTEL analysis.

The Behavioural Insights (BI) checklist included below is designed to guide what data to review to inform RCCE strategy and which include inputs from the communities at risk. It is adapted from the [Technical note from the WHO Technical Advisory Group on behavioural insights and science for health](#). This technical note includes additional guidance on behavioural insights including advice on the principles and application of behavioural science. Please refer to the note for additional guidance. The BI checklist is based on the define, diagnose, design, implement and evaluate (DDDIE) steps (Figure 2).

Figure 2. DDDIE steps guide



**Step 1: Defining the problem in terms of behaviour: Is the yellow fever outbreak a problem of behaviours?**

Use the data sources available to answer the following questions and complete the table below (e.g. epidemiological data, knowledge from previous outbreaks or other countries, existing social-behavioural data).

1. Does the problem have a behavioural component? Consider factors such as:
  - What is driving transmission?
  - Are people seeking/accessing vaccination, if vaccines are available?
  - Are people practicing protective behaviours?
  - Are people practicing risky behaviours?
2. Which behaviour(s) must be changed to contribute to improving or attaining the desired health outcome(s)?
3. What is the target behaviour you are aiming for? Specify who needs to do what, when, where and how. Try to be as specific as possible about behaviours, whilst recognising that behaviours are interconnected and are likely to be part of a combination or sequence of behaviours from multiple key players, happening in different times and places and all contributing to transmission.

**Table 1. Problem and behaviour diagnosis**

<b>Step 1: Defining the problem in terms of behaviour</b>	
<b>Does the problem have a behavioural component? If yes, what?</b>	E.g. yes; affected communities are not receptive to immunization against yellow fever; rural communities are not practicing protective behaviours
<b>Which behaviour(s) must be changed to improve the desired health outcome?</b>	E.g. low vaccine uptake; inadequate use of repellents or insecticides; inadequate environmental management
<b>What is the target behaviour(s) you are aiming for?</b>	E.g. Increased number of individuals immunized against yellow fever; more people practicing protective behaviours, including engaging in local vector control activities
<b>Who needs to change their behaviour?</b>	E.g. individuals and communities
<b>What do they need to do differently?</b>	E.g. get vaccinated; cleaning household drains and covering water containers to reduce breeding sites for mosquitoes
<b>When does this behaviour occur?</b>	E.g. when vaccination is available; during the high seasons or active periods of time for mosquitoes
<b>Where does this behaviour occur?</b>	E.g. at local health facilities; in rural areas

**Step 2: Diagnose the barriers to and enablers of target behaviours**

A barrier is an obstacle or challenge that impedes the uptake or adherence to yellow fever interventions. Enablers are factors that facilitate or support the successful implementation of yellow fever preventive measures and RCCE interventions. Barriers and enablers of behaviours can be cognitive, psychological, social, cultural, environmental, religious, and linked to perceptions of self-efficacy, risk, and efficacy of interventions, as well as other factors.

Identifying and understanding the barriers and enablers of your desired target behaviour is essential to design interventions that are effective, practical, and culturally acceptable. Use social-behavioural science evidence to prioritize and determine what barriers and enablers will be explored further to inform the design of interventions.

It can also be useful to consider whether barriers and enablers are: 1) cognitive/psychological; 2) social/cultural; 3) environmental/ structural.

**Examples of barriers include:**

- Lack of awareness or knowledge about yellow fever symptoms, transmission and/or preventive measures (cognitive/psychological).
- Cultural beliefs and practices that contradict guidance or discourage people from adopting the desired behaviours (social/cultural).
- Limited access to health care resources, information or services required to follow the desired behaviours (environmental/structural).

**Examples of enablers include:**

- Strong community inclusion, support, and engagement in promoting interventions (social/cultural).
- Accurate RCCE interventions that provide information about yellow fever and the importance of immunization (environmental/structural).



- Positive social norms that encourage and support people to adopt desired and avoid risky behaviours (social/cultural).
- Engaging positive role models, such as community leaders and influencers, to advocate for and model the desired behaviours (social/cultural).
- Involvement of private sector to ensure that at-risk workforce is protected (environmental/ structural).
- Accessible and reliable health services to support the adoption of the desired behaviours (environmental/ structural).

**Table 2. Behaviour barriers and enablers**

Step 2: Diagnosing barriers and enablers		
Risky behaviour	Enablers	Barriers
E.g. Going to a traditional healer at the onset of symptoms.	<p>E.g. Accurate information about yellow fever symptoms, treatment and vaccination is readily available.</p> <p>E.g. Community health workers are a trusted source of information and provide guidance on where to seek medical care.</p> <p>E.g. Easy access to healthcare facilities is available.</p>	<p>E.g. Community health workers are not trained on yellow fever case definition.</p> <p>E.g. The community is not informed about yellow fever risk and prevention.</p> <p>E.g. There is no blood sampling available at the nearest healthcare facility.</p>

### Steps 3, 4 and 5: Design, implement and evaluate interventions to address barriers and encourage enablers of behaviours

Steps 1 and 2 provide insights and data that can then be used in steps 3 (design of evidence based RCCE approaches and interventions aimed at addressing the barriers identified), 4 (implementation of interventions aimed at addressing the barriers identified) and 5 (evaluation) to support yellow fever readiness and response efforts.

Design and implementation of interventions should be done in collaboration with behavioural scientists, health experts, communication specialists and, crucially, with affected communities and stakeholders, ensuring the design of effective and culturally sensitive interventions. Tools to support implementation are included in this toolkit.

Evaluation of interventions and of behaviour change is important to drive future learnings about the effectiveness of RCCE strategies. It is possible to measure the impact of interventions on behavioural outcomes using epidemiological data or direct observations of behaviours. If these data are not available, use self-reported information, such as adherence to preventive measures or uptake of vaccination (when available).

## Tool 3: Mapping and understanding communities



*This tool can be used to identify and record key information about communities affected by yellow fever and who should be included in outbreak response activities. This information should be used to inform RCCE strategy and action plans for the priority communities at risk of yellow fever infection.*

In order to have inclusive RCCE plans and strategies, it is imperative to involve communities in co-designing solutions and interventions aimed at protecting their health and wellbeing from an imminent threat. Individuals and communities experience outbreaks of yellow fever differently. Anything from where they live and work, to their varying levels of knowledge, awareness, perceptions of risk, or specific local contexts in which yellow fever outbreaks occur, can significantly impact their likelihood of falling sick.

Understanding these differences helps identify who is most at risk of the disease and who in the community is best placed to support engagement efforts.

The tool below helps to collect and organize information about key communities at risk and in combination with tools 1 and 2, provides a broader context to help tailor RCCE activities to the needs of the specific population.

**Table 3. Community assessment matrix**

	Priority community 1	Priority community 2	Priority community 3
<b>Demographic information</b> – age range, gender, languages spoken, literacy levels, education, occupations			
<b>Risk level</b> – based on epidemiology and findings from situational and behavioural research			
<b>Perceived risk level</b> – based on level of knowledge about yellow fever, immunization status, perception of personal and community risk, self and intervention efficacy.			
<b>Trusted information channels</b> – note that this may differ from frequently accessed channels			
<b>Community leaders</b> – advocacy groups, religious leaders, etc.			
<b>Influential voices</b> – celebrities, thought leaders, health workers, social media accounts, etc.			
<b>Access to key interventions</b> – vaccination, treatment, etc.			
<b>Rumours and misinformation</b>			
<b>Other</b>			

## Table 4. Stakeholder categories

*This tool looks at the various people and groups identified as important in yellow fever readiness and response activities or impacted by the outbreak. It helps to bracket and group their potential roles, capacities, and anticipated engagement to support collective efforts to prevent or respond to yellow fever outbreaks including immunization campaigns.*



A stakeholder analysis goes into more detail and builds on the findings of the PESTEL, behavioural analysis and community mapping. It should be adapted to the local context to provide a precise overview of different stakeholder roles, motivations,

anticipated involvement, and key milestones to maximize the impact of RCCE activities. There are four main categories into which stakeholders fall and an associated strategy for interacting with them.

**Table 4. Stakeholder categories**

Stakeholder category	Strategy
<b>Champion</b> Champions support your activities and do so actively and visibly. These groups/people agree with the proposed actions and goals and are already taking action on their own to support them i.e. other UN agencies.	With champions, continue engaging them in planning and implementation of activities, provide them with updates and information to ensure they are up to date, appreciate and acknowledge their contributions and support, and let them champion the cause.
<b>Silent booster</b> Silent boosters support the planned or proposed activities and goals but do so privately, with little to no public support. These stakeholders need additional motivation to become more active and supportive of the proposed actions.	With this group, the strategy is to educate, enable, inform and motivate. Energize these stakeholders by involving partners and champions they respect and normally engage with to help advocate for the planned activities and goals.
<b>Avoider</b> Avoiders don't necessarily support your cause but aren't vocal or visible about their lack of support. They silently oppose aspects of planned activities and passively disagree.	Inform or ignore. With avoiders, it is helpful to engage groups from the champions category to help influence them to support activities.
<b>Blocker</b> Blockers are groups who are visibly, publicly opposed to the planned activities and take action to encourage others to disagree as well. They pose an obstacle to the implementation of activities, depending on their influence.	Blockers pose a greater challenge if they are influential. If they are, the best approach is to counteract their action by continuing to enlist champions to advocate for your cause and provide facts. If they are not influential, the best strategy is to ignore this group. Regardless, keep track of who they are and who they are influencing.

**Table 5. Stakeholder matrix**

<b>Responsible officer:</b> <b>Date:</b> <b>Version:</b>											
Name of organization or individual	Area of work	Stakeholder type	Anticipated involvement or support	Anticipated challenges	Motivation, drivers	Expectations of exchange	Milestones	Activities	Responsible party	Date due	Status
		<i>(Champion, blocker, silent booster, avoider)</i>	<i>What level of involvement is expected and what type of support can this stakeholder contribute?</i>	<i>Known or potential issues, lack of capacities, etc.</i>	<i>Why is the stakeholder invested in the proposed activities?</i>	<i>What is the stakeholder's predicted input?</i>	<i>At what point of the response or planned activities is this stakeholder's involvement required?</i>	<i>What activities directly involve or impact the stakeholder?</i>	<i>Team member(s) responsible for engagement with the stakeholder</i>	<i>Task/ involvement needs to be met by:</i>	<i>Have all the agreed activities been implemented in the foreseen time frame?</i>

## 3.2: Strategy and planning

*The tools in Section 3.2: Strategy and planning are designed to support the development of evidence-based RCCE strategies and plans drawing on social-behavioural data, community insights, epidemiological data and priorities identified by other areas of the outbreak response or in support of immunization campaigns. Strong strategies and plans promote more effective implementation of activities in the long run and provide an opportunity to consider how to work with communities as core partners in all RCCE activities.*

### Tool 5: Readiness and response checklist



*This tool is designed to assist RCCE professionals and responders to update or develop yellow fever readiness and response plans. Drawing on the tools provided here it provides a comprehensive list of activities that should be considered during the readiness and response phases of an outbreak. Links to additional tools are found in section 3. If action planning and implementation begins during the response phase, items listed under readiness should also be referred to.*

This checklist is adapted from the following documents: [International Health Regulations \(2005\) – Third edition \(who.int\)](#), [COVID-19 Global Risk Communication and Community Engagement Strategy – interim guidance \(who.int\)](#), [Readiness and initial response for nCoV. Interim guidance](#), [RCCE 10 steps to community readiness](#), [HEPR \(Health Emergency Preparedness Response\) framework](#) and [Joint External Evaluation tool, Third Edition](#).

**Table 6. RCCE readiness and response checklist<sup>2</sup>**

Area of work	Steps	Activities
<b>Systems and coordination</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Establish or strengthen RCCE coordination mechanisms, including establishing an inter-agency task force or crisis communication centre, technical working groups for key areas of work, and ensure content clearance and information sharing protocols are approved.</li> <li><input type="checkbox"/> Review and update existing RCCE strategies and plans using intelligence from local surveillance, epidemiological and social-behavioural data (see tools 1 and 2). Ensure these are linked to broader EPRP and national yellow fever elimination and control plans.</li> <li><input type="checkbox"/> Set up or strengthen an RCCE team, define members' roles and responsibilities and how the team will link to other response pillars.</li> <li><input type="checkbox"/> Map RCCE expertise at all levels, with specific focal points within the Ministries of Health and local health authorities, including topics such as immunization.</li> <li><input type="checkbox"/> Conduct or update PESTEL situational analysis and stakeholder analysis</li> <li><input type="checkbox"/> Develop a budget, with funding options and a human resource plan, including plans for surge support if needed.</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Convene and coordinate the RCCE response with government, stakeholders, partners and across technical areas/pillars.</li> <li><input type="checkbox"/> Activate the inter-agency task force or crisis communication centre and ensure content clearance and information sharing protocols are followed.</li> <li><input type="checkbox"/> Revise and update RCCE strategies and plan according to need and current surveillance, epidemiological and social-behavioural data (see tools 2), new evidence or learnings and community insights.</li> <li><input type="checkbox"/> Implement approved operational budget and human resource plan, including deployment of surge staff.</li> </ul>
<b>Community data for action</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Conduct a review of social-behavioural data (see tools 1 and 2) and identify vulnerable populations (see tool 3), risk factors, priority behaviours and potential barriers and enablers for an effective response and/or immunization campaign (see tool 2). Use this knowledge to inform decision-making at all levels.</li> <li><input type="checkbox"/> Ensure mechanisms for community listening are established (both online and offline) and respond to rumours and misinformation proactively (see tool 6 to support tracking of rumours and misinformation).</li> <li><input type="checkbox"/> Analyse gaps in available social data. A mix of quantitative and qualitative data is best - including community feedback, social listening, polling, situational and behavioural analyses, PRSEAH and survey data to understand community knowledge gaps, perceptions, and behaviours. Commission appropriate research to fill in the identified gaps.</li> <li><input type="checkbox"/> Set up a framework for measurement, evaluation and learning to track the efficacy of RCCE activities and impact made. Use findings to tailor and adjust the RCCE strategy and plans accordingly.</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Continuously conduct data collection among at-risk and affected populations to track changes in knowledge, attitudes, perceptions, behaviours, and other social-behavioural variables.</li> <li><input type="checkbox"/> Regularly conduct community listening (see tool 7). Use the findings to develop, adjust and implement RCCE interventions that address concerns, misconceptions, rumours, and barriers to uptake of protective behaviours or vaccines. Address any unacceptable behaviours, including sexual misconduct. Include affected communities throughout this process.</li> <li><input type="checkbox"/> Continue to monitor the impact of response activities on communities (see tool 7). Ensure plans are in place to manage potential or unexpected impacts (changes to health seeking behaviours, impact on job and food security, other economic or social impacts) and update accordingly.</li> <li><input type="checkbox"/> Share data back to communities and update local response activities as new social, behavioural, and anthropological data becomes available.</li> </ul>

<sup>2</sup>EPRP: emergency preparedness and response plans; RCCE: risk communication and community engagement; PESTEL: political, economic, sociological, technological, environmental, and legal factors; PRSEAH: preventing sexual abuse and harassment; AEFI: adverse event following immunization; MEL: monitoring evaluation and learning; CSO: civil society organization.

Area of work	Steps	Activities
<b>Risk communication</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure that the highest levels of government are ready to release information to protect the public’s health in a rapid, transparent, and accessible manner.</li> <li><input type="checkbox"/> Create or review a repository of existing RCCE materials such as message banks, tools, products, and templates.</li> <li><input type="checkbox"/> Map and prioritize trusted and commonly used communication channels and platforms. Assess these for accessibility to people in remote areas, without digital skills or access, those with low literacy skills or who may not speak the dominant language, etc.</li> <li><input type="checkbox"/> Identify alternative communication channels to reach all pockets of society, such as street radio, mobile announcers, voice messages for health centres, etc, and partners who can potentially support dissemination of key messages through these methods.</li> <li><input type="checkbox"/> Identify focal points and media spokespeople for all key partners at all levels; list their areas of expertise in relation to the disease or health emergency threat; if necessary, train them.</li> <li><input type="checkbox"/> Coordinate communication activities and use standard operating procedures (SOPs) for clearance and sharing.</li> <li><input type="checkbox"/> Ensure that a crisis communication template is developed and there are clear protocols for reporting AEFI.</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> In collaboration with affected communities, continuously develop, adapt, and test messages based on the perception of risk and as the situation evolves.</li> <li><input type="checkbox"/> Update interventions and messaging, based on MEL framework, feedback from communities, and/or the effectiveness of the immunization campaign.</li> <li><input type="checkbox"/> Continue to build and deliver high-quality information to raise knowledge and manage risk perceptions related to the specific topic of interest, using trusted and commonly used channels.</li> <li><input type="checkbox"/> Engage regularly with and provide risk communication content to government, media and other partners to ensure public information is adapted and consistent with the latest science and current context.</li> <li><input type="checkbox"/> Activate spokesperson and influential individuals, including those from other agencies and stakeholders, to align messaging and to broaden the reach of RCCE activities.</li> <li><input type="checkbox"/> Provide guidance to media outlets on how to access reliable information and manage misconceptions.</li> </ul>

Area of work	Steps	Activities
<b>Community engagement</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Hold discussions with communities to understand sociocultural contexts and power dynamics of key audiences.</li> <li><input type="checkbox"/> Identify what type of engagement is safe, feasible and acceptable for different communities.</li> <li><input type="checkbox"/> Identify existing platforms (community leaders, CSOs, and key influencers, particularly those accessed by people at risk) and engage communities in decision-making processes.</li> <li><input type="checkbox"/> Establish or strengthen community feedback systems to ensure community beliefs, questions, concerns and suggestions are heard.</li> <li><input type="checkbox"/> Co-develop priority actions with affected groups to strengthen readiness and build trust and encourage uptake of protective behaviours and vaccines (risk and needs assessments, strategies, plans, guidance, messaging, etc.).</li> <li><input type="checkbox"/> Design and co-implement interventions and strategies with communities.</li> <li><input type="checkbox"/> Train community engagement teams including volunteers and establish surge capacity mechanisms.</li> <li><input type="checkbox"/> Ensure translation capacities are available to tailor all RCCE materials into local languages and dialects.</li> <li><input type="checkbox"/> Anticipate special information and engagement needs for people who are disabled, illiterate or marginalised.</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Update and co-implement RCCE interventions and strategies with communities.</li> <li><input type="checkbox"/> Ensure continuity of community feedback systems and close information gaps.</li> <li><input type="checkbox"/> Launch or strengthen an “alliance” of influencers and stakeholders who can listen, advocate, inform, address rumours and misinformation and promote health literacy using evidence and data.</li> <li><input type="checkbox"/> Ensure representation of civil society and vulnerable groups. Work closely with other committees and advisory groups.</li> <li><input type="checkbox"/> Engage relevant sectors (government, social and private sector) to manage service and supply needs, assess barriers and strengthen referral systems such as PRSEAH. Ensure affected communities are linked to referral systems.</li> </ul>
<b>Capacity building</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Conduct a rapid needs assessment, which includes mapping of existing RCCE human resource capacities and capabilities.</li> <li><input type="checkbox"/> Develop a capacity plan with stakeholders based on the result of the needs assessment.</li> <li><input type="checkbox"/> Build the capacity of RCCE teams and other key stakeholders based on the plan developed.</li> <li><input type="checkbox"/> Create SOPs to drive consistency and quality across RCCE interventions and collaboration with partners.</li> <li><input type="checkbox"/> Initiate a continuous peer-to-peer support system for community mobilizers, responders, and networks.</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Adapt capacity building tools as needed.</li> <li><input type="checkbox"/> Identify and train emergency RCCE staff and potential surge staff on plans and procedures.</li> <li><input type="checkbox"/> Provide refresher or on-the-job training for RCCE responders and spokespersons as interventions and strategies change.</li> <li><input type="checkbox"/> Continue to provide orientation to media professionals and communication networks as the response evolves.</li> </ul>



Area of work	Steps	Activities
<b>Measurement, evaluation and learning (MEL)</b>	<b>Readiness</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Develop/review the MEL framework including M&amp;E indicators based on the developed RCCE strategy, planned activities, and expected outcomes (see tool 8).</li> <li><input type="checkbox"/> Develop/strengthen a real-time monitoring system using existing/adapted tools such as mobile and manual data collection methods, interactive dashboards, and automated data analysis.</li> <li><input type="checkbox"/> Train the RCCE team on the use of relevant tools.</li> <li><input type="checkbox"/> Promote community participation in developing the measurement, evaluation, and learning process.</li> <li><input type="checkbox"/> Develop a system to effectively store, manage and share information and key data sets</li> </ul>
	<b>Response</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Continuously revise the MEL framework to ensure it is capturing the data needed to measure results and impact (see tool 9).</li> <li><input type="checkbox"/> Use established real-time and participatory monitoring and evaluations systems where possible such as mobile or application-based reporting.</li> <li><input type="checkbox"/> Generate evidence and data that allows regular assessment of strategy implementation and impact.</li> <li><input type="checkbox"/> Include CSOs in monitoring, reporting and joint accountability efforts to increase the likelihood of broad community uptake and responsibility for new interventions.</li> <li><input type="checkbox"/> Maintain and strengthen systems to effectively manage and share information, document lessons learned and gather best practices. Disseminate lessons and best practices widely.</li> </ul>

## Tool 6: Activities tracker



*This tool is designed to assist RCCE decision-makers, practitioners, and partners to track activities once identified using the readiness and response checklist (tool 5).*

**Table 7. Activities tracker**

Area of work	Task/ activity	Organiza- tion and individual responsi- ble	Budget / resources	Links	Deadline	Status
E.g. Com- munity engagement	Review suitability of existing community feedback system for yellow fever	E.g. Ministry of Health; name, email, phone number		E.g. to any working documents		E.g. complete, in progress, incomplete

### 3.3: Implementation

*The tools in Section 3.3: Implementation are designed to support activities conducted as part of evidence-based RCCE strategies and plans. While the projects and activities that need to be implemented will vary in each context based on needs and strategy, these tools offer ways to approach some key components of most RCCE plans. Communities should be considered key implementing partners for RCCE activities during yellow fever outbreaks or vaccination campaigns.*

## Tool 7: Community listening and feedback systems for yellow fever outbreaks



*This tool is designed to provide support for collecting and using community listening data including social listening and community feedback for yellow fever outbreaks.*

Community listening encompasses various approaches to collecting data to identify current narratives, questions, rumours, misinformation, levels of trust and other relevant factors from at-risk populations. It can help to track and monitor trends, changing attitudes towards health authorities and interventions, and identify newly emerging concerns.

On- and offline sources should be used for community listening. Offline sources of data can include community feedback systems, qualitative interviews, focus group discussions, findings from social-behavioural research, television and radio. Online sources can include social media, websites, chatrooms, etc. All community listening sources have advantages, biases and limitations which should be documented when reporting data.

To collect community feedback for yellow fever, identify community representatives that are closely involved with readiness, response, and immunization activities or who are from or represent affected communities. CSOs that are already involved in related health advocacy or service provision (i.e. setting up mobile immunization campaigns, development and distribution of information, education, and communication [IEC] materials) are good sources of community feedback as these groups can provide targeted input and help reach specific demographics more effectively.

Research conducted during the yellow fever outbreak in Ghana highlighted the central role of community information centres and health workers in the dissemination of information about a reactive vaccination campaign from December 2021 to March 2022. Almost 60% of those vaccinated reported

hearing about the campaign through health centres and workers, while in stark contrast, social media had a very small audience and less than 1% on those who were vaccinated received information via various social platforms (9). During a reactive vaccination campaign in South Sudan in 2020, even more diverse methods of sharing information were used. A primary method for mobilizing people for the campaign was a mobile announcer (vehicle or motorcycle mounted with a speaker) and a megaphone. These teams moved from village to village giving information about the yellow fever vaccination campaign and the eligible age groups. In total, over 23% of respondents found out about the campaign through this method, second only to community mobilizers (40%) and followed by community leaders (12%) (10).

To effectively use community listening in managing a yellow fever immunization campaign or an outbreak, health authorities and all involved partners should use the full range of on and offline tools to collect, monitor and analyse public narrative and conversations related to yellow fever. These tools may vary significantly from context to context and based on specific community needs, access and norms.

Setting up a dedicated online social listening system involves defining objectives, selecting relevant social media platforms, identifying yellow fever-related keywords and hashtags, setting up a taxonomy, monitoring these keywords using tools like Google Trends, conducting data analysis, and reporting the findings to stakeholders. The system should be regularly reviewed and adjusted based on the findings, such as adding new keywords, hashtags or identifying new platforms of concern.

The data sourced through both social listening and community feedback systems can be triangulated with epidemiological data, research and programme data to gain additional insights to inform strategy and planning.

The development of community listening and community feedback systems for yellow fever readiness and response will depend on existing platforms and resources but should be considered an essential part of any RCCE planning. The following resources can be used to inform these activities, as can the matrix below.

- [Community Engagement in Humanitarian Action Toolkit \(CHAT\)](#)
- [IFRC Community Feedback Kit](#)
- [WHO/UNICEF How to build an infodemic insights report in 6 steps](#)
- [WHO Infodemic management training 101 \(OpenWHO\)](#)
- [Infodemic Management: Defining a taxonomy for social listening \(OpenWHO\)](#)

**Table 8. Rumours, misinformation, and event tracker**

Issue / event / Date	Country of origin	Platform (print, web, social media, official statement, etc)	Level of risk (low or high)	Facts (what really happened, scientific explanations, etc)	Respond YES/NO	Initial response (IF YES) of WHO (key messages)	Cleared by:
							Date:
							Date:
							Date:

Negative messages about yellow fever vaccine(s) or their safety will continue to emerge and can include distorted, false, or misleading opinions, mis- and disinformation and expressions of anti-vaccine sentiment. However, not all messages warrant a response, but it is important to set clear protocols

to determine the relevance and impact as well as appropriate response of the Ministry of Health, WHO, or other partners if needed. You may wish to refer to the matrix above to standardize protocol of reporting rumours and misinformation and respond accordingly.

## Tool 8: Developing key messages and content



*This tool is designed to guide the development of key messages based on data collected, social-behavioural insights, epidemiological surveillance, and best practices. Key messages are the main points of information you want to convey to the audience so that they will understand and remember the risk of contracting yellow fever and the benefits of timely immunization.*

These should be clear and concise statements that explain key concepts and factual information in lay language. Key messages should also support your desired communication outcomes- the change we want to see in the behaviour of the affected population.

Key messages for yellow fever outbreaks should focus on key areas related to protection from mosquito bites, vector control, reducing risk of transmission, and immunization, including:

- signs and symptoms;
- how it is spreading in the area/community;
- who is at risk (both of catching it and of more serious symptoms);
- how to protect yourself and others;
- prevention and treatment;
- what to do if you get ill;
- benefits of immunization; and
- availability of/access to vaccines.

Key messages need to be adapted based on the local context (see Tool 1: Situational analysis: PESTEL), epidemiological surveillance, what is known about key audiences (see Tool 3: Mapping and understanding communities), enablers and barriers of key behaviours (see Tool 2: Behavioural analyses) and what is being learnt through community listening (see Tool 7: Community listening and feedback systems). Below, you will find a checklist with key considerations when developing messages for your audience. Additional information on how to test your messages can be found [here](#).

**Table 9. Yellow fever key messages template**

Process for developing key messages
<ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and target key behaviours and influences.                             <ul style="list-style-type: none"> <li>✓ Identify specific behaviours to target so there is a clear call-to-action for the public.</li> <li>✓ Draw on situational analysis (PESTEL), social-behavioural insights and other research to determine the key influences (cognitive, social, and environmental) on those target behaviours.</li> <li>✓ The messages should aim to utilize or address these key influences.</li> </ul> </li> <li><input type="checkbox"/> Test messages (key and supporting) with the public before releasing.                             <ul style="list-style-type: none"> <li>✓ If possible, conduct quantitative testing of messages to identify best performers before mass roll-out.</li> <li>✓ If time is limited, undertake rapid qualitative testing to optimize content and presentation and minimize risk of backfire.</li> </ul> </li> </ul>
Language and content of key messages
<ul style="list-style-type: none"> <li><input type="checkbox"/> Include a clear action that directly conveys what people should or should not do.                             <ul style="list-style-type: none"> <li>✓ This action should be prominent, so the reader knows what to do after a quick glance.</li> <li>✓ Use a “rule of thumb” or do’s and don’ts.</li> </ul> </li> <li><input type="checkbox"/> Make content easy for the public to understand.                             <ul style="list-style-type: none"> <li>✓ Use clear and simple words.</li> <li>✓ It is best to use as few words as possible, while still conveying the importance of the matter.</li> </ul> </li> <li><input type="checkbox"/> Draw on positive social framing, where appropriate.                             <ul style="list-style-type: none"> <li>✓ Use framing that encourages people to undertake a behaviour for the benefit of others. For example, framing the benefit of getting the vaccine as a way to ‘protect our livelihoods’.</li> </ul> </li> <li><input type="checkbox"/> Include a reason why people should do the desired behaviour.                             <ul style="list-style-type: none"> <li>✓ Provide a brief explanation or reason why a behaviour should be performed.</li> </ul> </li> <li><input type="checkbox"/> Translate materials into multiple languages, where appropriate.                             <ul style="list-style-type: none"> <li>✓ Provide multiple versions of messages in different languages that are spoken in the target population.</li> </ul> </li> </ul>

The section below provides an additional template to support development of messages that stick with your audience by preparing the main message and

three supporting messages/evidence to back up the point you are making.

**Table 10. Yellow fever key messages and supporting messages template**

<b>Key message</b>	A single dose of yellow fever vaccine provides a lifetime of protection
<b>Target behaviour</b>	Vaccine uptake
<b>Supporting message 1</b>	The yellow fever vaccine is safe, effective, and free.
<b>Supporting message 2</b>	There is no treatment for yellow fever disease – your best protection is vaccination.
<b>Supporting message 3</b>	If yellow fever is an endemic disease in your country, vaccination should be a part of your routine immunization programme.

## Tool 9: Measurement, evaluation, and learning (MEL)



*This tool will help enhance the accountability and effectiveness of RCCE through measuring, evaluating activities and constantly learning from your audiences how to improve or adapt interventions to achieve expected health outcomes.*

A measurement, evaluation, and learning (MEL) framework recognizes the importance of (1) measurement to collect evidence, (2) evaluation and systematic analysis of results and (3) learning to gain insights and new knowledge that can be applied in future planning and strategy. MEL should be used throughout all phases of the emergency management cycle and should include community participation to support sustainability, joint-accountability and ultimately increase the effectiveness of RCCE strategies, plans and interventions (11).

Once you have determined if the problem you are tackling is of a behavioural nature or if it is another type of barrier, such as environmental or structural, it is possible to design interventions. There are many different models that can help design and structure MEL framework, based on priorities or targeted behaviours. Within the MEL manual, WHO proposes the “Theory of Change” and “Program Logic Models.” For more detailed information on these tools, and others, access “The MEL Manual” [here](#).

The Theory of Change and Program Logic Models help logically explain how the intervention is expected to lead to the desired behaviour change and how to measure it along the way. The theory of change involves two key steps:

1. identification of all the possible interventions and/or stimuli that can lead to a change in a particular context, and
2. examination of the evidence and assumptions that support such beliefs.

The program logic model helps demonstrate the theory of change by linking activities with outputs, short-term and longer-term outcomes (See Table 11). The next step is to develop specific, measurable, achievable, realistic, and time-bound (SMART) objectives and indicators to measure the progress and impact of the intervention. Indicators should be identified and collected at each stage of RCCE activities and aligned with national yellow fever elimination and control plans to reflect priority actions and desired outcomes. The tools and examples provided below can be used to inform the identification of such indicators that are fit for the local context.

Below is a helpful template for structuring and planning your MEL framework.



**Table 11. MEL framework template**

The theory of change (programme logic model)						
e.g. People are unaware that there is a vaccine available for yellow fever	e.g. People are informed about key benefits or receiving the yellow fever vaccine	e.g. People form an opinion about the vaccine and feel empowered to get immunized	e.g. People are consistently engaged in online and offline conversation about yellow fever vaccine	e.g. People acknowledge the value of preventative and responsive immunization	e.g. People support immunization against yellow fever	e.g. People have received the yellow fever vaccine
What do you need to complete MEL (ex.)			When and how should you report on findings			
<ol style="list-style-type: none"> <li>1. Situational analysis (PESTEL)</li> <li>2. Behavioural analysis</li> <li>3. Community listening</li> <li>4. Stakeholder analysis</li> <li>5. Community feedback mechanisms</li> <li>6. Social listening reports</li> <li>7. Access to Google analytics or other analytic tools related to social media</li> </ol>			<p>Here you should briefly outline your reporting plan, including reporting intervals, format, general content and more.</p>			

What will you track		
Inputs	Metrics and indicators	Methods
<i>Data and insights collected through various proposed research can qualify as inputs</i>		
Activities	Metrics and indicators	Methods
<i>Producing and distributing RCCE products based on the collected data and insights</i>		
Outputs	Metrics and indicators	Methods
<i>Reaching and engaging audiences</i>		
(e.g.) reactive vaccination campaign launched	# of IEC materials developed	Log of materials in circulation (quantitative)
	# of announcements released	Log of radio and tv announcements (quantitative)
	# of posts on social media	Content analysis and social media reports (qualitative)
Short-term outcomes	Metrics and indicators	Methods
<i>Assessing audiences' initial reactions, response to RCCE activities</i>		
People form an opinion about the vaccine and feel empowered to get immunized		
Long-term outcomes	Metrics and indicators	Methods
<i>Evaluating what sustainable effects RCCE activities had on audiences</i>		
People acknowledge the value of immunization against yellow fever		
People support immunization against yellow fever		
Impact	Metrics and indicators	Methods
<i>Evaluating the results achieved, in full or in part, by RCCE activities</i>		
People have received the yellow fever vaccine		

The Collective Service has developed the [Risk Communication and Community Engagement Indicator Guidance for COVID-19](#), which provides useful support that can be applied to other disease areas, including yellow fever.

## Tool 10: Checklist for preventing and responding to sexual exploitation, abuse and harassment



*This tool is designed to assist RCCE decision-makers, practitioners and partners identify and include key activities for preventing and responding to sexual exploitation, abuse and harassment (PRSEAH) into planning and implementation. This tool should be used together with the principles for managing PRSEAH in Annex 2.*

Sexual misconduct such as sexual exploitation, abuse and harassment (SEAH) and sexual violence violate the rights and well-being of the people we serve and the people with whom we serve. Such behaviours are directly in opposition to WHO's values and our abiding responsibility to do no harm. To the WHO workforce and collaborators, these acts are prohibited, and therefore lead to disciplinary action.

WHO has zero tolerance for any form of sexual misconduct, for inaction and for retaliation against those who raise complaints or bear witness. Our work prioritizes the rights and needs of victims and survivors.

Sexual misconduct can occur in all communities. In the context of an outbreak of yellow fever, victims of sexual misconduct can face the additional threat

of exposure to HIV or any other infectious disease or condition.

Please note that it is your obligation to report any wrongdoing you become aware of or witness directly through established complaints mechanisms. Do not conduct the investigation yourself; only investigators are mandated and trained to do so.

If you work for WHO, please write directly to [investigation@who.int](mailto:investigation@who.int) or access the [integrity hotline](#).



**Table 12. PRSEAH checklist**

**For best results, RCCE practitioners should identify and coordinate with the PRSEAH focal point on the following activities:**

- 1. Contribute** proactively to the SEAH risk assessment and implementation of the risk mitigation plan.
- 2. Identify** trusted networks within communities to engage them in becoming more aware of and addressing sexual misconduct concerns.
- 3. Contribute** to the development and dissemination of clear and consistent PRSEAH messages adapted to local contexts and preferences. These must include: i) aid, including medical interventions and services is free and must not be exchanged for anything; ii) what to expect from development and aid workers, including health providers; iii) how to safely report any wrongdoing; and iv) how victims can access services.
- 4. Support** the dissemination of PRSEAH materials during RCCE interventions with and through CBOs, CSOs and public information stakeholders.
- 5. Ensure** sure prevention and response to sexual misconduct components are included in training curricula and other key materials.

# RCCE principles and considerations for yellow fever outbreaks



*This section contains additional considerations for RCCE strategy, planning and implementation during yellow fever outbreaks. More on RCCE principles can be found in the [10 steps to community readiness package from the Collective Service](#).*

## Addressing uncertainty and maintaining trust

Managing uncertainty is an important function of RCCE during outbreaks and health emergencies. The readiness phase of a yellow fever outbreak is an opportunity to gather data to understand how people who may be at risk of yellow fever understand the various modes of transmission and personal protective behaviours and are receptive to vector control measures and immunization. Settings or communities who have not previously experienced yellow fever outbreaks may experience higher levels of uncertainty.

During yellow fever outbreaks, there may be uncertainty about the route of transmission, risky behaviours, which communities are at risk, and access to vaccines and care. Approaches for managing and addressing uncertainty should be included in RCCE strategies and plans to maintain trust throughout the outbreak. Key steps for managing uncertainty include:

- assessing the situation to understand what is known and unknown;
- identifying key uncertainties that may impact community understanding and response;
- listening and responding to community concerns;
- identifying key behaviours that should be encouraged for personal protection as well as to support mosquito control and management of mosquito breeding sites;
- understanding what healthcare workers and the affected community thinks and expects regarding the efficacy of the control measures proposed or applied so far;
- identifying community resources that would enable the promotion of vaccination and effective vector control;

- providing relevant and up to date information to health workers and other involved partners in the response, who are trusted by the affected community;
- being transparent and honest;
- setting realistic expectations;
- acknowledging that what is known may change;
- explaining what has been done so far and what are the anticipated next steps; and
- being prepared to adapt (12).

Other potential uncertainties may include responding to specific events related to vaccination, including AEFIs. Side effects and AEFIs from yellow fever vaccination are rare, but it is inevitable that some people will make negative claims about the safety of yellow fever vaccines. The response should depend on the potential impact of the claim. Events that meet at least one of the following criteria will require a response:

- **The AEFI is genuine.** The primary role is to protect the health of the public. Responsiveness is essential. Dismissing people's safety concerns as mere 'anti-vaccination' can lead to harms at a population and clinical level if the AEFI is not taken seriously and investigated.
- **The event or story is gaining attention.** Based on evidence from community feedback or social listening, it is clear that the event is gaining attention and exposure, particularly in the population groups prioritized for yellow fever vaccination.
- **The alleged adverse event is unsubstantiated** but publicised by a group of individuals drawn together by a shared belief, for example, that the vaccine has negatively affected or impacted their life or the life of their loved ones in some way.

- **A respected opinion leader who is trusted in the community is advancing a view.** A major concern in vaccine safety is when a medically trained person publicly advances a theory. They may influence healthcare workers and their confidence in recommending vaccination, and thus have an impact on the wider community.
- **The confidence of healthcare workers is likely to be affected.** Vaccine safety concerns that amplify existing hesitancy in healthcare workers or trigger new concerns require a rapid response. Confident, committed doctors and nurses are vital for the success of vaccination programmes. In the case of yellow fever vaccines, they are both recipients, providers and champions of the vaccine.
- **The issue or event touches on moral foundations that highly influence vaccine acceptance.** For example, claims based on the religious beliefs are strongly correlated with vaccine rejection. This can include claims about the vaccine ingredients (purity/degradation) or where there is some level of coercion in vaccine programmes, either real or perceived (liberty).

The suggested approach to resolving possible public outrage driven by any of the above claims or issues is to apply the below principles and timetable.

**Table 13. Timeline for RCCE activities following AEFI report**

Timing	Action
<b>Before AEFI</b>	<ul style="list-style-type: none"> <li>• Conduct situational analysis (PESTEL), behavioural research, community listening, stakeholder analysis.</li> <li>• Develop “Rumours, misinformation and event tracker”.</li> <li>• Assemble background information about AEFIs.</li> <li>• Prepare materials (Q&amp;As, facts sheets, talking points, etc.).</li> <li>• Build relationships with media, partners and local health authorities.</li> <li>• Provide ongoing information to media about immunization plans, and</li> <li>• Train relevant staff and spokespersons.</li> </ul>

Timing	Action
<b>During AEFI</b>	<p>Immediately:</p> <ul style="list-style-type: none"> <li>Identify what has happened and verify the report.</li> <li>Gather information and analyse data.</li> <li>Alert other pillar leads from Incident management support team (IMST) and relevant partner focal points, and</li> <li>Decide level of risk whether to communicate forward.</li> </ul> <p>Within 24 hours:</p> <ul style="list-style-type: none"> <li>Prepare response with inputs from technical officers and Regional or headquarters colleagues.</li> <li>Prepare talking points and background data.</li> <li>Coordinate response with MOH, local health authorities, and partners as relevant, and</li> <li>Select the potential communication channel based on local context (radio, TV, print, etc.) .</li> </ul> <p>Within 72 hours:</p> <ul style="list-style-type: none"> <li>Consider a press release and</li> <li>Consider a joint-press conference (WHO, MOH, other involved partners).</li> </ul> <p>Ongoing:</p> <ul style="list-style-type: none"> <li>Provide information to health care workers, partners, media and public, and</li> <li>Update with interim information until definitive results available.</li> </ul>
<b>After AEFI</b>	<ul style="list-style-type: none"> <li>Evaluate communication approach and efficacy of applied protocols, adjust as needed, and</li> <li>Provide ongoing information to media and the public about the immunization programme.</li> </ul>



# Other tools and products for yellow fever outbreaks





Guidance	
<p><b><u>Eliminate Yellow Fever Epidemics (EYE) 2017 – 2026</u></b></p> 	<p>Describes the reasoning behind and need for an updated, long-term (2017-2026) and global strategy. The document is intended to be used at national, regional and global level by partners, donors, public health officers, national health authorities, and technical or non-technical experts seeking an overview of the EYE strategy. Available in English and French.</p>
Q&As, key messages and factsheets	
<p><b><u>General yellow fever Q&amp;A</u></b></p>	<p>Answers to the most frequently asked questions from the general public on yellow fever.</p>
<p><b><u>Yellow fever information</u></b></p>	<p>Information on overview, symptoms and treatment for yellow fever.</p>
<p><b><u>Yellow fever factsheet</u></b></p>	<p>Key information about yellow fever transmission, signs and symptoms, diagnosis, treatment and vaccination, self-care and prevention, outbreaks and WHO response.</p>
Vaccination	
<p><b><u>Vaccines and vaccination against yellow fever WHO Position Paper (June 2013)</u></b></p>	<p>Summarizes essential background information on yellow fever and vaccines, and concludes with the current WHO position concerning their use in the global context. This updated position paper on yellow fever vaccines and vaccination replaces the previous 2003 WHO position paper and summarizes recent developments in the field. Available in English and French.</p>
<p><b><u>Yellow fever vaccine: WHO position on the use of fractional doses – June 2017</u></b></p>	<p>This addendum to the 2013 position paper pertains specifically to use of fractional dose yellow fever (fYF) vaccination in the context of yellow fever vaccine supply shortages beyond the capacity of the global stockpile. Recommendations on the use of vaccine were discussed by SAGE in October 2016.</p>

Other reference tools	
<b><u>Managing Yellow fever epidemics</u></b>	An excerpt from the Managing epidemics: Key facts about major deadly diseases handbook. Although originally developed as guidance for WHO officials, this publication is available to a wide readership including all frontline responders - communities, government officials, non-State actors and public health professionals – who need to respond rapidly and effectively when an outbreak is detected.
<b><u>Yellow fever- Risk Communication and Social and Community Mobilization</u></b>	Guidelines for the communication design of preparedness and response in case of yellow fever outbreaks in the Americas, but can be adapted for other settings.
<b><u>Communication and social mobilization in yellow fever mass vaccination campaigns: 10 points from field experience</u></b>	Provides evidence-based guidance on conducting practical social mobilization and communication for a yellow fever vaccination campaign, either preventive or reactive. Information is also given on the monitoring and evaluation of communication and social mobilization techniques
<b><u>Yellow fever outbreak toolbox</u></b>	Clear guidance on case definitions, data collection, laboratory confirmation, and response tools and resources, as well as trainings.

# Yellow fever training resources



Training	Overview
<p><b><u>OpenWHO Yellow fever introductory training</u></b></p>	<p>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, and is also available in French.</p>
<p><b><u>OpenWHO Pandemic and epidemic-prone diseases</u></b></p>	<p>This introductory level online course aims to equip frontline responders with the latest know-how to manage outbreaks of known and emerging epidemic-prone diseases in the 21st century. It offers the most relevant scientific, technical and operational knowledge through video presentations and self-tests. The course is available in English and French</p>
<p><b><u>SocialNet: Empowering communities before, during and after an infectious disease outbreak</u></b></p>	<p>This comprehensive online training includes modules on community engagement, data collection and analysis, considerations for interventions, risk communication and interpersonal skills.</p> <p>This course aims to equip all frontline responders with the knowledge they need to better contain disease outbreaks and manage health emergencies.</p>

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# Annexes



## Annex 1: Guidance for practitioners on the prevention and response to sexual exploitation, abuse and harassment

*This guidance is a rapid reference point for RCCE practitioners working before and during health emergencies. For more in-depth resources, please refer to the WHO PRSEAH webpage [Preventing and responding to sexual exploitation, abuse and harassment \(who.int\)](#). Please work closely with the country focal point for PRSEAH for context-specific guidance.*

- Refresh your knowledge and understanding of PRSEAH prior to your engagement with communities.
- Engage with communities based on need and without any discrimination based on gender, sexual orientation, nationality, ethnicity, religion, age, or political affiliations.
- Ensure clear communication with community members on the reporting mechanisms at their disposal. Make it clear that reporting will not prevent them from receiving the support they are entitled to and that victims/survivors of sexual misconduct have a right to services regardless of their willingness to cooperate with an investigation.
- Be aware that victims and survivors of SEAH are afraid and often ashamed of reporting and may be at risk of further harm or stigmatization. Therefore, whenever possible make sure RCCE work includes the identification of trusted community networks, organizations or leaders, especially women's networks that can provide safety and support to those at risk or those who have already experienced SEAH.
- In your RCCE work gather intelligence on trusted channels of communication, the languages and literacy levels and preferences of those most at risk and integrate such intelligence in designing awareness campaigns and other PRSEAH actions.
- Your actions as an RCCE practitioner must be guided by the principles of do no harm, confidentiality, transparency, accountability and duty to report, prevention, non-discrimination and equality. Treat the populations you serve with respect and protect them from sexual exploitation, abuse and harassment by development and aid workers both during and outside working hours.
- Responders cannot demand or accept any sexual favours from community members or as a condition for employment, or in exchange for assistance due to communities. If you are working for or on behalf of WHO, comply with WHO's policy on preventing and addressing sexual misconduct at all times.

Country focal points for PRSEAH will, in many cases, also have information about local contexts including dedicated hotline numbers for reporting sexual misconduct established by the United Nations Country Team.



## Annex 2: Questions and answers: yellow fever

### Where does yellow fever occur?

Yellow fever occurs in 47 endemic countries in Africa in Central and South America. Around 90% of cases reported every year occur in Sub-Saharan Africa.

Infected travellers from areas where yellow fever occurs can export cases to countries that are free of yellow fever, but the disease can only spread easily if that country has the mosquito species able to transmit it, specific climatic conditions and the animal reservoir needed to maintain it.

### How do you get yellow fever?

The yellow fever virus is transmitted by infected mosquitoes, most commonly from the *Aedes* species – the same mosquito that spreads the Zika, Chikungunya and Dengue virus. *Haemogogus* mosquitoes also spread yellow fever and are mostly found in the jungle. Mosquitoes become infected with the virus when they bite an infected human or monkey. The disease cannot be spread by contact from one person to another.

Mosquitoes breed in tropical rainforests, humid, and semi-humid environments, as well as around bodies of still water in and close to human habitations in urban settings. Increased contact between humans and infected mosquitoes, particularly in urban areas where people have not been vaccinated for yellow fever, can create epidemics.

Outbreaks of the disease are of particular concern when they occur in overcrowded settings with inadequate water supply and waste management services that allow the mosquitoes to breed easily.

### What are the symptoms?

Once contracted, the yellow fever virus incubates in the body for three to six days. Symptoms usually present themselves in two phases.

The first, "acute", phase usually causes fever, muscle pain with prominent backache, headache, shivers, loss of appetite, and nausea or vomiting. Most patients improve and their symptoms disappear after three to four days.

However, a small percentage of people enter a second, more toxic phase within 24 hours of the initial remission. They will experience high fever, jaundice, and abdominal pain with vomiting and deteriorating kidney function. Bleeding can occur from the mouth, nose, eyes or stomach, with blood appearing in vomit and faeces. Half of the patients who enter the toxic phase die within 10 to 14 days, the rest recover without significant organ damage.

### How is it treated?

There is no specific treatment for yellow fever but good supportive treatment of symptoms, such as dehydration, fever and infection, improves survival rates. Associated bacterial infections can be treated with antibiotics. Yellow fever can be prevented by an extremely effective vaccine that is protective for life.

### How is it diagnosed?

Yellow fever is difficult to diagnose (especially during the early stages) because its symptoms can be confused with other common diseases such as malaria, dengue, leptospirosis and Zika virus, as well as with poisoning. Doctors or clinicians who see a sick patient may not be able to tell that they have yellow fever from their symptoms alone, especially if they are in an area where many of these diseases are occurring at the same time.

To confirm a suspected diagnosis of yellow fever, laboratory tests need to be done. Blood tests can detect antibodies produced in response to yellow fever, proving that the person has been infected or vaccinated. Several other techniques are used to identify the virus in blood specimens or liver tissue collected after death. These tests require highly trained laboratory staff and specialized equipment and materials.

### **How can it be prevented?**

Vaccine is the most important means to combat yellow fever. The yellow fever vaccine is safe and affordable, and a single dose provides life-long immunity against the disease. To prevent outbreaks in affected regions, vaccination coverage must reach at least 80% of the population at risk.

Mosquito control can also help to prevent yellow fever, and is vital in situations where vaccination coverage is low or the vaccine is not immediately available. Mosquito control includes eliminating sites where mosquitoes can breed, and killing adult mosquitoes and larvae by using insecticides in areas with high mosquito density. Community involvement through activities such as cleaning household drains and covering water containers where mosquitoes can breed is a very important and effective way to control mosquitoes.

### **Is the vaccine effective and safe?**

Vaccination is the single most important measure for preventing yellow fever. The vaccine has been used for many decades and is safe and affordable, providing effective immunity against yellow fever within 10 days for more than 90% of people vaccinated and within 30 days for 99% of people vaccinated. A single dose provides lifelong protection and costs less than US\$ 2.

Side effects of the yellow fever vaccine are generally mild and may include headaches, muscle aches, and low-grade fevers. There have been rare reports of serious side-effects.

### **Who should be vaccinated?**

In countries where yellow fever occurs, WHO strongly recommends routine vaccination for everyone older than nine months. During an epidemic, when a mass vaccination campaign is underway, the vaccine is given to everyone over the age of six months (when the risk of disease is higher than an adverse event from the vaccine).

WHO recommends vaccination for all travellers (with few exceptions) visiting areas where there is risk of yellow fever. Travellers, who have medical grounds for not being vaccinated, must have those grounds certified by the appropriate authorities.

Many countries require proof of vaccination against yellow fever before they will issue a visa, particularly if travellers come from or have visited a country where yellow fever occurs. Make sure to keep your yellow fever proof of vaccination safe and bring it with you when you travel to another country.

### **Who should not be vaccinated?**

Some people should not be routinely vaccinated, including:

- infants aged less than nine months (or less than six months during an outbreak, where the risk of disease is higher than an adverse event from the vaccine)
- pregnant women (unless during an outbreak)
- people with severe allergies to egg protein; and
- people with severe immunodeficiency

**Am I protected from yellow fever immediately following vaccination?**

In general, it takes 10 to 14 days from the date of vaccination for a person to develop immunity to the yellow fever virus. Additional personal protection measures from mosquitoes are critically important during this 10-14 day period in yellow fever endemic areas. These include wearing protective clothing, sleeping under insecticide treated bed nets even during the day and using recommended repellents. The vaccination certificate for yellow fever is valid from 10 days after administration of the vaccine for recipients.

**Is eradication of yellow fever possible?**

Eradication of yellow fever is not feasible since we are unable to control the virus in the natural animal hosts.

**Who manages the vaccine supply for yellow fever outbreaks?**

In an emergency situation it is often difficult to get enough vaccine doses to protect the entire population at risk due to the limited global vaccine supply. The emergency stockpile is managed by the International Coordinating Group on Vaccine Provision for Yellow Fever Control which was created in 2001. The role of the ICG is to verify that eligibility criteria are met by countries applying for outbreak support from the stockpile and to decide on the amount of vaccine to be shipped.

**Who manages the yellow fever vaccine supply for routine immunization and preventative mass campaign?**

WHO and UNICEF have the oversight role in tracking and supplying yellow fever vaccine for routine immunization. The YF Initiative (YFI) led by WHO and UNICEF coordinates yellow fever control at the global level. The goals of the Initiative are to prevent yellow fever outbreaks and to secure the supply of yellow fever vaccines. The Yellow Fever Initiative monitors the yellow fever activities at global level and identifies priorities in routine immunization, preventive campaigns, and outbreaks, including yellow fever vaccine supply issues.

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