CONTENT

ANTICIPATORY ACTION AND HEALTH

Anticipatory action and health

Why anticipatory action and health?

Disease outbreaks and epidemics cause widespread human suffering and loss while also generating significant social and economic consequences. Not everyone is affected equally: some people may have better access to healthcare, clean water, functioning sanitation systems, or be less susceptible to infection. The COVID-19 pandemic further underscored the importance of understanding different vulnerabilities, and how these can be unequally intensified when multiple hazards, such as epidemics and climate change, coincide.

Our ability to predict outbreaks of some high-burden, endemic diseases is improving, as we improve our understanding of the underlying drivers of transmission and have more high quality historic data over many years from which to identify associations. For certain, 'climate-sensitive' infectious diseases (i.e. diseases which respond to small changes in the climate), it may even be possible to harness the use of climate and weather forecasts to better anticipate the risk of future outbreaks. These developments are creating new possibilities to design, implement, and scale anticipatory action in health, including efforts to prepare for infectious disease outbreaks.

A working group on anticipatory action and health

The Red Cross Red Crescent Working Group on Anticipatory Action and Health brings together colleagues from across the RCRC Movement to advance efforts to anticipate and prevent negative health and nutrition outcomes before they escalate. Open to staff working in disaster risk reduction, health, WASH, anticipatory action and related fields, the group serves as a platform for stronger collaboration, knowledge exchange and the development of practical tools and approaches. Building on the extensive experience of National Societies, particularly in outbreak preparedness and response, the working group seeks to strengthen the evidence base for anticipatory action in health and nutrition and support the development of early action protocols for specific health risks. A key milestone in this work was the publication, in October 2024, of the working paper *Applying Anticipatory Action Ahead of Disease Outbreaks and Epidemics: A Conceptual Framework for the International Red Cross and Red Crescent Movement* and a scientific publication *Integrating anticipatory action in disease outbreak preparedness and response in the humanitarian sector* (see toolbox below) on which the following guidance is based. Hence, if you want to know more please refer to those two resources.

Approaches to anticipatory action for disease outbreaks and epidemics

Four main approaches are emerging for the development of anticipatory action triggers for disease outbreaks, reflecting the different types of data, forecasts and risk information available in your contexts. These approaches range from the use of real-time surveillance data and climate or weather forecasts to combinations of observed risk factors and more advanced modelling to predict disease outbreak risk. The variety of possible trigger approaches offers a practical framework for selecting trigger systems suited to specific diseases, settings and operational capacities. Click on the approaches to learn more!

Approach A: Using real-time surveillance data

Real-time surveillance data can be used to trigger rapid outbreak responses when predefined thresholds are met, whether in affected communities, nearby cross-border regions, or during the emergence of new pathogens. Linking these triggers to automatic early funding could speed up action, improve detection, and help contain transmission before outbreaks escalate.

Approach B: Using forecasts of extreme climatic events

Weather forecasts can be used as early warning triggers for certain disease outbreaks because there is evidence that floods, cyclones, drought, or heat can create conditions that are conducive to increased disease transmission. The core idea is to use a forecast of an extreme weather event (as is used for hydro-meteorological hazards) to implement low- to no-regrets health related actions that are aimed at preventing disease transmission , especially in places where past evidence shows a strong link between specific climatic events and diseases such as cholera or diarrheal illness. This approach can help reduce outbreak risk in advance and can later be paired with real-time surveillance to guide more targeted response if cases appear. This approach is already implemented in many EAPs.

Approach C: Using observations of environmental and socioeconomic risk factors in combination with real-time surveillance data

Observed environmental and socioeconomic risk factors can be combined with real-time disease surveillance data to trigger phased early action before outbreaks escalate. The main idea is that factors such as flooding, displacement, overcrowding, or conflict can increase disease transmission risk, and potentially give a few days to weeks (depending on the disease) lead time in which to act. Disease surveillance data can then be used confirm whether cases are emerging or increasing and where should be targeted for more intensive action to interrupt transmission. Using these signals together allows your National Society to ideally receive funding earlier, start broad low-regret preventive measures when risk is increasing, and then shift to more targeted outbreak control once suspected or confirmed cases appear.

Approach D: Using data-driven approaches for outbreak forecasting

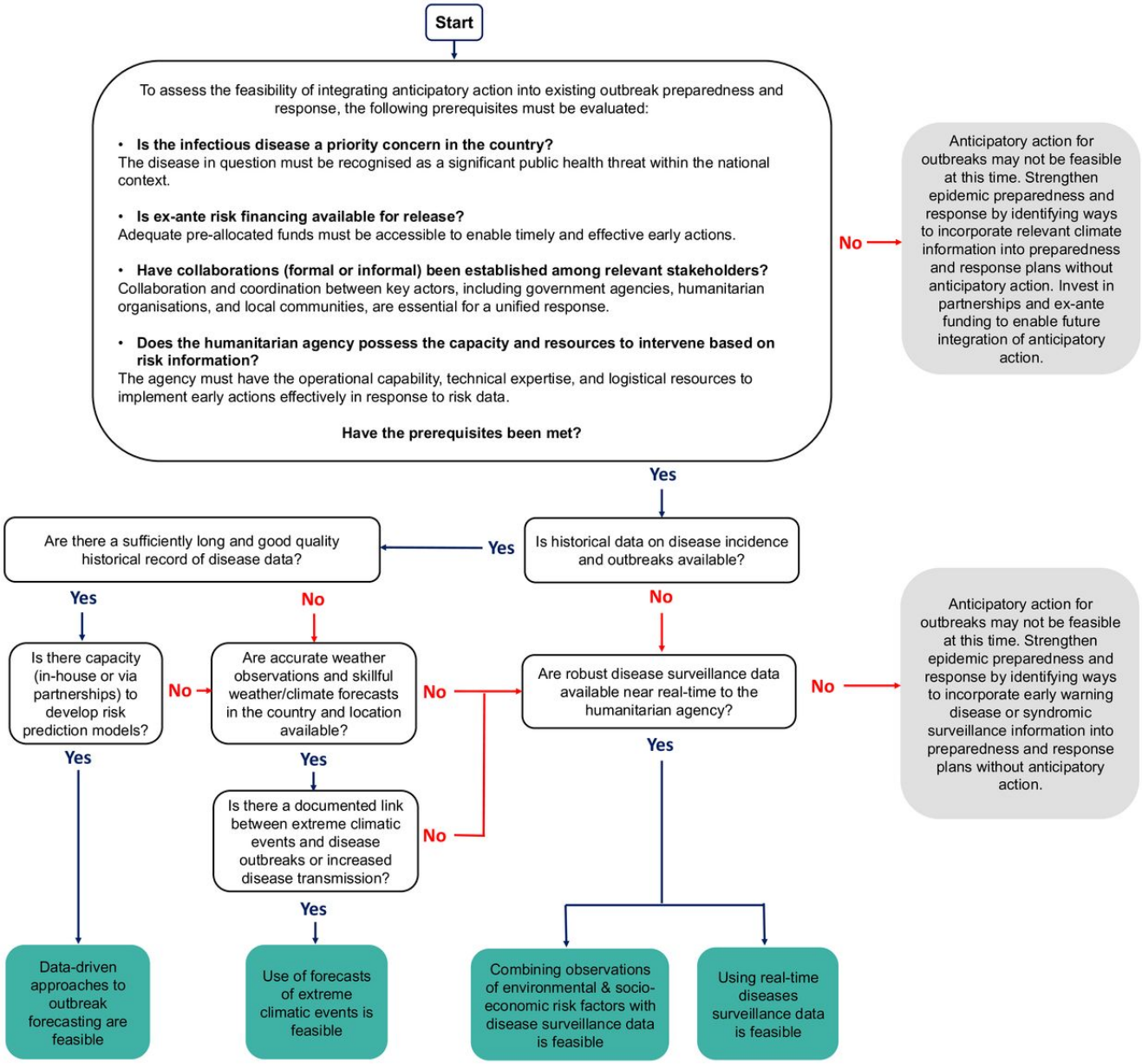
Depending on the availability of historic disease data, in some cases it is possible to invest in the development of mathematical models for disease outbreak prediction on when and where outbreaks are likely to occur. The development of such models requires substantial historical disease, climate, environmental, and ideally demographic data (>10 years of weekly or monthly disease cases or incidence in addition to the same amount of climate, environmental and demographic data) as well as modelling, epidemiological, statistical, and disease specific expertise. Models can be developed that identify associations between the disease data and available climate and environmental data. For example, an outbreak of a disease may be associated with increased rainfall that happened 2 months prior to the outbreak. The model can therefore use observed rainfall to predict the likely occurrence of an outbreak 2 months later. If a forecast of rainfall is used in the model instead of the observed rainfall, this can potentially extend the lead time for early actions by more than 2 months. The model forecasts can then be turned into trigger thresholds for anticipatory action, helping to release funding and start preventive measures potentially weeks to months in advance. These trigger thresholds can be combined with real-time surveillance data to increase the release of emergency funding and target breaking the transmission chain if cases do emerge as predicted as a means to bridge to full-scale response.

The Mozambican Red Cross as an example of using weather forecasts to trigger early action for waterborne diseases (Approach B)

The Mozambican Red Cross Cyclone EAP shows how weather forecasts can be used to trigger early actions to reduce the risk of diarrheal disease following tropical cyclones. In line with the national level Standard Operating Procedures for cyclones issued by the government agency for disaster risk management (INGD), the protocol uses a windspeed forecast with an activation threshold of expected landfall winds of at least 119 km/h, issued 72 hours in advance by Mozambique's national meteorological service, as the trigger for action. Because events of this magnitude are expected to cause substantial damage to water and sanitation infrastructure, the lead time is used to implement early actions such as refresher training for community volunteers on water treatment and hygiene materials, alongside the distribution of WASH supplies including buckets, mugs, jerrycans, soap, and water purification tablets. These actions are intended to reduce the risk of waterborne disease transmission before the cyclone makes landfall.

A decision tree to support discussions on anticipatory action for disease outbreaks and epidemics

In the publication *Integrating anticipatory action in disease outbreak preparedness and response in the humanitarian sector* by Alcayna et al. you find a decision tree intended to help National Societies and other organizations to assess whether anticipatory action for epidemics is appropriate in a specific context. It can help you identify which approach is likely to work best based on the disease of interest, the availability of relevant data, and the presence of partners, such as ministries of health or academic institutions, that may already be involved in early warning for disease outbreaks.



Source: Alcayna et al. (2025)

Funding for AA and epidemics under the IFRC-DREF

Anticipatory action for epidemics is not currently eligible under the Imminent DREF. However, funding for epidemic preparedness may be available through the response pillar. In such cases, the IFRC health team reviews the request and determines whether it should be approved as preparedness support or as a response intervention. Depending on the context and available evidence, requests may draw on forecast information, government surveillance data, and other relevant sources.