



# **Strengthening surveillance of and response to foodborne diseases: Launch of the updated WHO manuals**

# Welcome



**Dr Elaine Borghi, Unit Head,  
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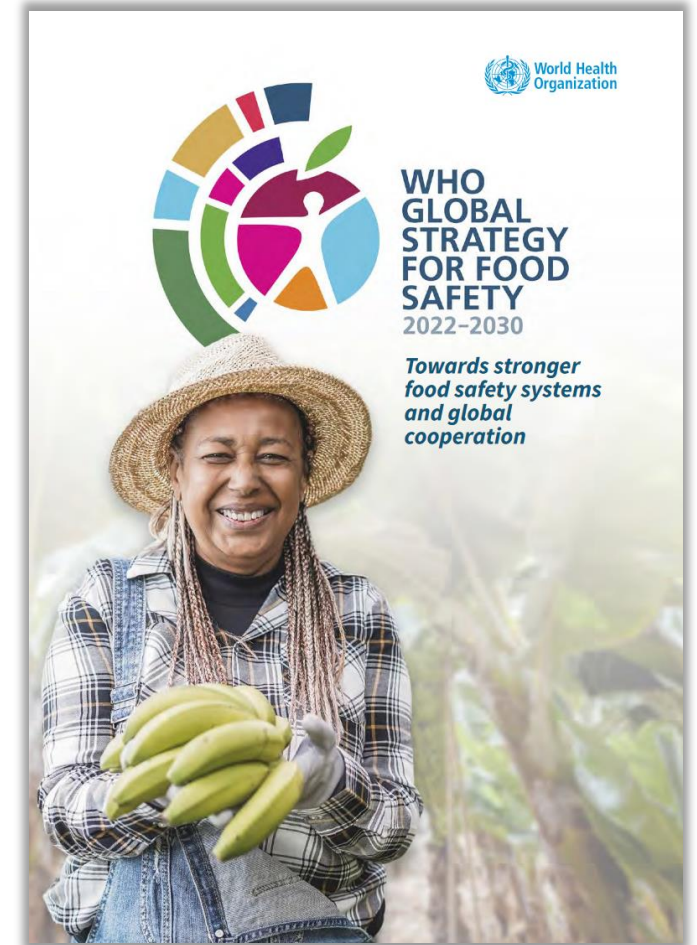
# The importance of foodborne disease surveillance for preparedness and response



**Dr Carmen Joseph Savelli**  
Scientist, Food Safety Action  
Nutrition and Food Safety  
World Health Organization

# Introduction

- Access to sufficient amounts of safe and nutritious food is key to sustaining life and promoting good health
- Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes more than 200 diseases – ranging from diarrhea to cancer; millions of cases each year; hundreds of thousands of deaths
- **Establishing and strengthening national foodborne disease surveillance systems globally is critical for understanding and ultimately reducing the burden of foodborne diseases, in line with WHO's Global Strategy for Food Safety**



# 10 reasons

why foodborne disease  
surveillance and response  
is so important



# 1. Protect public health

- **Prevent illness and death:**
  - Foodborne diseases are **preventable** and can be controlled through an effective food safety system that addresses hazards from the place of production to the point of consumption
- **Limit and control outbreaks:**
  - Prompt response to identified cases can help contain **outbreaks**, preventing widespread transmission and protecting public health



# 2. Preserve economic interests

- **Minimize negative economic impact:**
  - FBDs can lead to significant economic losses due to healthcare costs, loss of productivity, and impacts on the food industry
- **Protect trade:**
  - International food trade has expanded and will continue to grow; FBDs impact trade when restrictions are applied to countries identified as sources of contaminated food; Surveillance provides the opportunity to identify and address these issues promptly, thereby safeguarding trade interests
- **Support travel and tourism:**
  - Travel and tourism industries are particularly vulnerable to health, safety, and environmental concerns, including foodborne diseases; effective surveillance and response contribute to maintaining the health and safety standards that are crucial for these industries



# 3. Understand the effects of climate change

- **Adapt to emerging threats:**
  - Climate change alters environmental conditions and may accelerate the evolution and emergence of new foodborne pathogens as microorganisms adapt to these changes
  - Continuous surveillance helps in understanding these emerging threats
- **Prevent disease amplification:**
  - Higher temperatures and changing precipitation patterns caused by climate change create ideal conditions for the proliferation of many foodborne pathogens
  - Surveillance allows for timely responses to these changes, preventing amplified disease transmission



# 4. Break the cycle of malnutrition and foodborne diseases

- **Address nutritional deficiencies and prevent exacerbation of malnutrition:**
  - Malnutrition weakens immune systems, making individuals more susceptible to foodborne diseases
  - Foodborne diseases can lead to malabsorption of nutrients, further exacerbating malnutrition
  - Timely interventions help interrupt this cycle, promoting better health outcomes



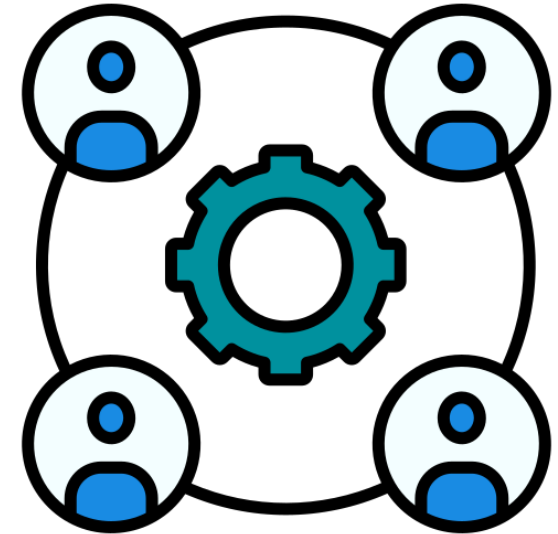
# 5. Contribute to global food security

- **Support safe food supply chains:**
  - Monitoring food supply chains provides information about contamination; enabling corrective measures to be implemented which is critical for global food security
- **Facilitate international trade:**
  - Ensuring food safety through robust surveillance and response mechanisms supports international trade, benefiting global economies



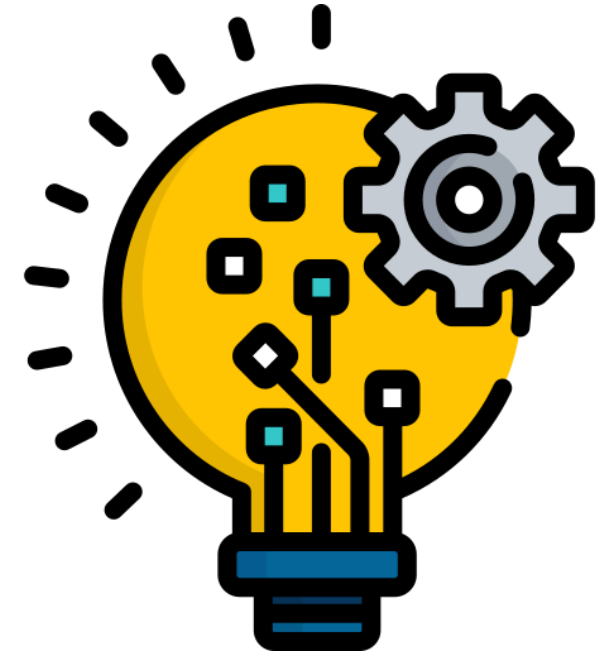
# 6. Enhance multisectoral collaboration and one health approach

- **Facilitate cooperation:**
  - Surveillance and response efforts require collaboration between various sectors, including human health, animal health, and environmental agencies, fostering a holistic One Health approach to food safety
- **Leverage resources:**
  - Collaborative efforts allow for better resource allocation and utilization, enhancing the effectiveness of foodborne disease control programs



# 7. Promote scientific understanding and innovation

- **Foster research:**
  - Continuous monitoring of foodborne diseases contributes valuable data for scientific research, leading to better understanding and development of innovative solutions to address them
- **Improve public health policies:**
  - Data from surveillance informs public health policies, leading to more effective strategies for foodborne disease prevention and control



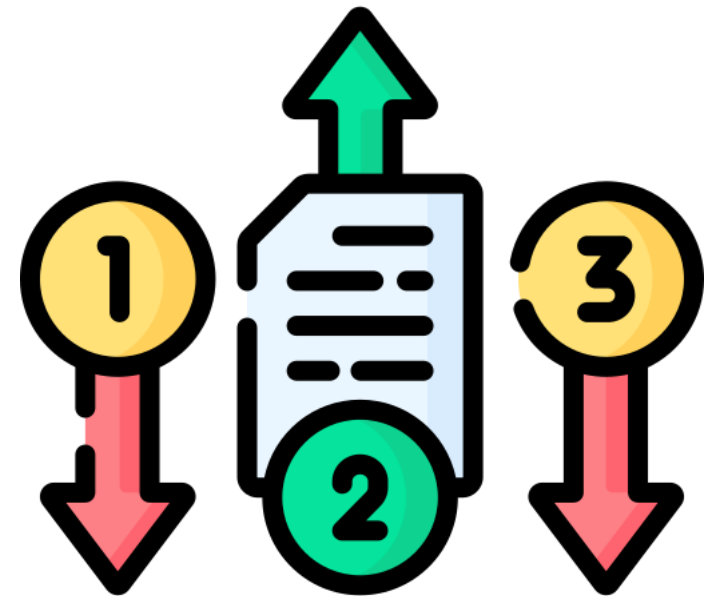
# 8. Support community health education

- **Raise awareness:**
  - Surveillance programs often linked to public education components that raise awareness about foodborne diseases and preventive measures
- **Empower communities:**
  - By educating the public about food safety practices, communities are empowered to take proactive steps in preventing foodborne illnesses



# 9. Support foodborne disease burden estimation studies

- **Inform public health priorities:**
  - Surveillance data is crucial for estimating the burden of foodborne diseases, helping to identify the most affected populations and the most common sources of illness
  - This information is essential for prioritizing public health interventions and resource allocation
- **Guide policy and funding decisions:**
  - Accurate burden estimates help policymakers, and funding agencies make informed decisions about where to focus efforts and invest resources to achieve the greatest impact on reducing foodborne illnesses



# 10. Contribute to global health security

- **Strengthen international collaboration:**

- Surveillance efforts can foster international cooperation, helping countries to share information, resources, and strategies to combat foodborne diseases collectively
- This collaboration enhances global health security by facilitating a united front against outbreaks

- **Prevent cross-border transmission:**

- Identifying and responding to foodborne diseases promptly helps prevent the spread of pathogens across borders, contributing to global health security (including participating in the FAO/WHO International Food Safety Authorities Network INFOSAN)

- **Support global health initiatives:**

- Surveillance data can support global health initiatives and programs, such as the WHO Alliance for Food Safety, aimed at reducing the burden of foodborne diseases, aligning with broader goals of improving global health security



# Foodborne disease surveillance in the context of global health security



**Dr Esther Hamblion**  
**Unit Head, Public Health Intelligence**  
**WHO Health Emergencies**  
**World Health Organization**

# Food safety incidents: a global health security priority



## Underestimated

Foodborne illness is an overlooked global public health burden that receives limited political attention.

## IHR relevance

Delayed national reporting slows coordinated recall.

## Global impact

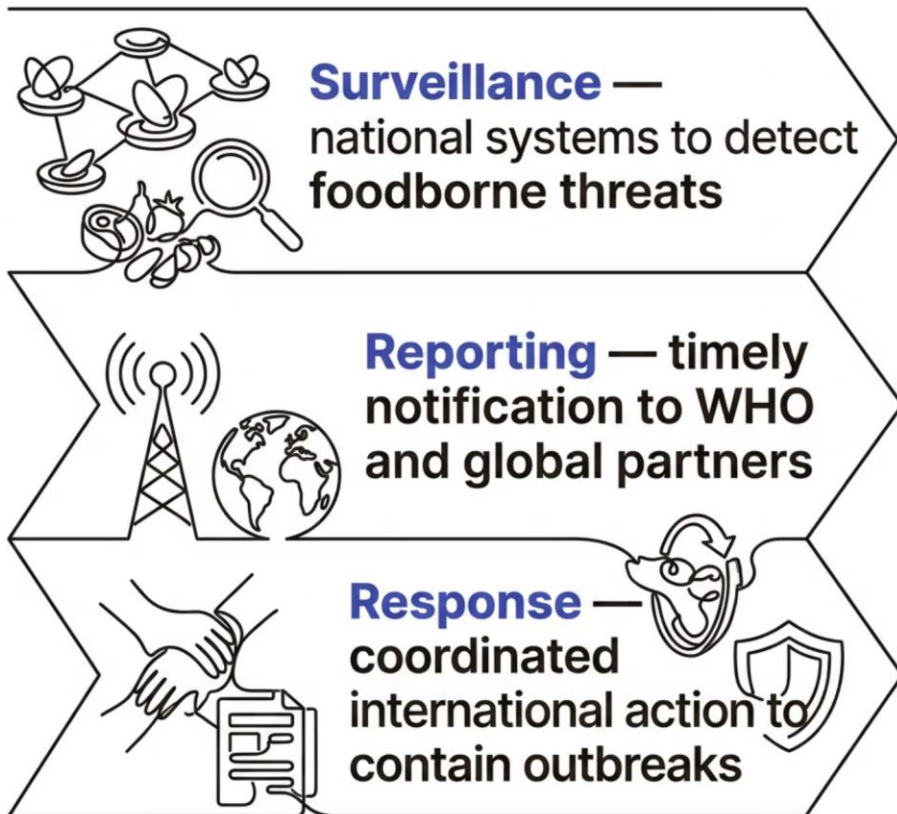
Interconnected supply chains: a single contamination event in one production facility can cross borders rapidly.

## Economic disruption

Food safety incidents may lead to reduced productivity, increased healthcare costs, and trade disruptions.

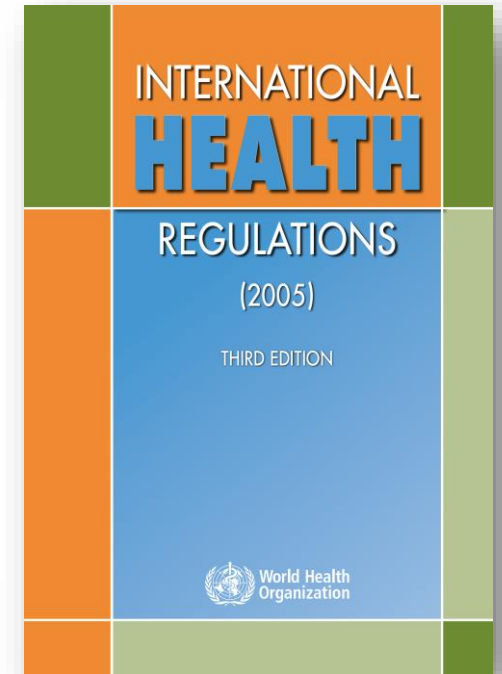
# The IHR 2005: A Global Framework for Health Security

- legally binding framework adopted by 196 countries,
- requires nations to build capacities to detect, assess, report, respond to potential public health events of international concern — including those originating from food.



Any event of potential international public health concern that meet two of the criteria;

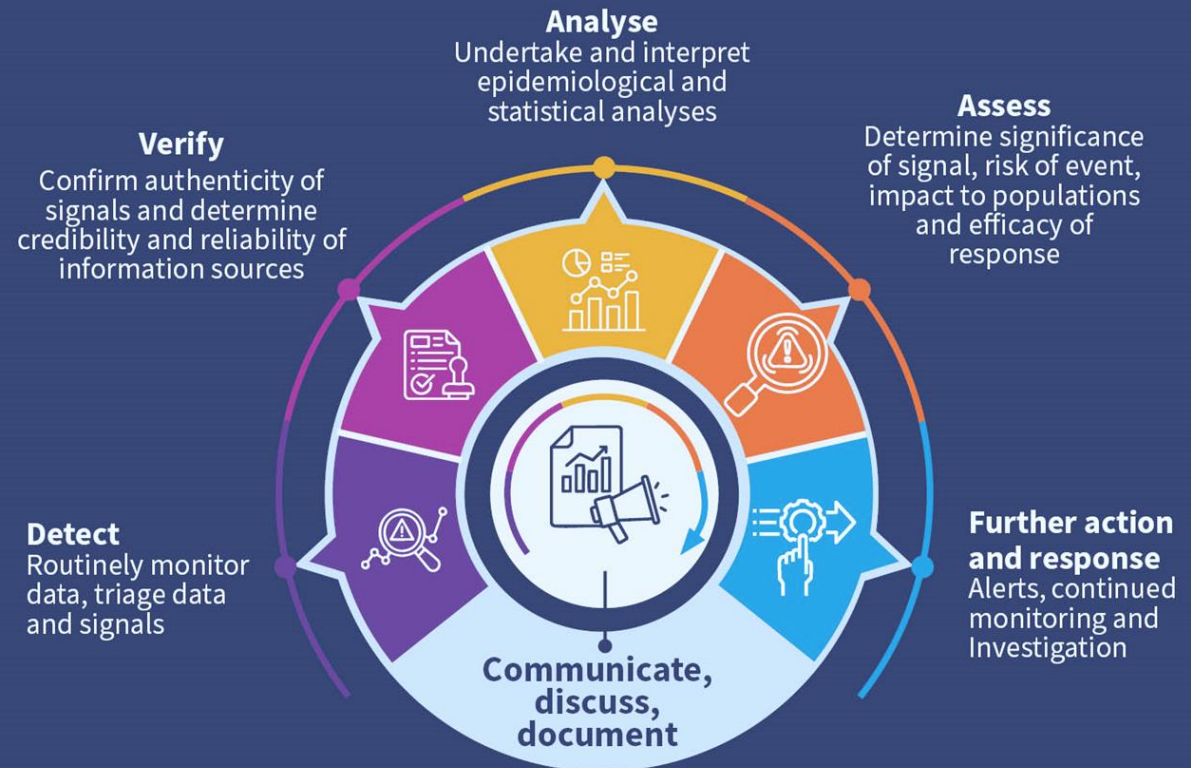
- Is the public health impact of the event serious?
- Is the event unusual or unexpected?
- Is there any significant risk of international spread?
- Is there any significant risk of international travel or trade restrictions?



# Public Health Intelligence - Detecting and assessing foodborne disease threats

*“...a core public health function responsible for identifying, collecting, connecting, synthesizing, analyzing, assessing, interpreting and generating a wide range of information for actionable insights and disseminating these for informed and effective decision-making to protect and improve the health of the population.” (UN Terms)*

## A simplified representation of the Public Health Intelligence (PHI) process



# INFOSAN & IHR synergy during FB disease events

	INFOSAN	IHR 2005
<b>Primary Scope</b>	Food Safety Authorities / Technical	Public Health Emergency (PHEIC)
<b>Contact Points</b>	Emergency Contact Points	National IHR Focal Points
<b>Reporting</b>	Voluntary rapid information exchange	Legally binding notification of risks
<b>Synergy</b>	Joint assessment of foodborne events with potential international spread.	

# Examples of internationally coordinated foodborne disease responses



World Health Organization

Home / Disease Outbreak News / Item / Listeriosis – South Africa

## Disease Outbreak News

### Listeriosis – South Africa

28 March 2018

#### Description of the situation

In South Africa, an outbreak of listeriosis, a serious foodborne disease, has been ongoing since the start of 2017. Between 1 January 2017 through 14 March 2018, 978 laboratory-confirmed listeriosis cases have been reported to the National Institute for Communicable Diseases (NICD) from all provinces. The majority of cases have come from three provinces: 581 (59%) from Gauteng, 118 (12%) from Western Cape and 70 (7%) from KwaZulu-Natal provinces, with the remaining cases coming from the other provinces in South Africa. The outcome of illness is known for 674 patients, of whom 183 (27%) of them died; this case fatality rate is comparable to other recorded listeriosis outbreaks worldwide. Most of the cases are persons who have higher risks for a severe disease outcome, such as neonates, pregnant women, the elderly and immunocompromised persons. In this outbreak, 42% of the cases are neonates who were infected during pregnancy or delivery.



World Health Organization

Home / Disease Outbreak News / Item / Multi-country outbreak of Salmonella Typhimurium linked to chocolate products – Europe and the United States of America

## Disease Outbreak News

### Multi-country outbreak of Salmonella Typhimurium linked to chocolate products – Europe and the United States of America

27 April 2022

#### Situation at a glance

On 27 March 2022, the United Kingdom notified WHO of a cluster of cases with monophasic Salmonella Typhimurium sequence type 34 infection. Investigations linked the outbreak to chocolate produced in Belgium, which have been distributed to at least 113 countries. A global alert was released by INFOSAN on 10 April, initiating a global product recall. To date, a total of 151 genetically related cases suspected to be linked to the consumption of the implicated chocolate products have been reported from 11 countries. The risk of spread in the WHO European region and globally is assessed as moderate until information is available on the full recall of the products.



World Health Organization

Home / Disease Outbreak News / Item / International food safety event: Infant formula and products containing arachidonic acid oil contaminated with cereulide toxin - Multi-country

## Disease Outbreak News

### International food safety event: Infant formula and products containing arachidonic acid oil contaminated with cereulide toxin - Multi-country

13 March 2026

#### Situation at a glance

Multi-country recalls of infant formula and other products have been initiated after cereulide toxin, was detected in batches of multiple internationally distributed brands. Investigations have identified arachidonic acid (ARA) oil, used as an ingredient in the implicated products, as the source of contamination. However, the full root cause analysis and complete traceability of all affected batches remains under investigation. Contaminated formulae, nutritional products, and oil mixes have been distributed to 99 countries and territories across six WHO Regions, with the first product recalls initiated on 10 December 2025. Between 1 January and 25 February 2026, 144 suspected and confirmed cases were reported across ten countries in three WHO Regions, with investigations ongoing. Based on the available information, WHO assesses the overall public health risk as moderate due to the vulnerability of the affected population (infants), the ongoing uncertainty regarding the full extent of distribution and exposure, and remaining gaps in case detection and root cause information.

# The 2026 global infant formula recall

Emerging evidence in 2026 highlighted **critical gaps** in the the global infant formula supply chain, where contamination carries uniquely severe consequences for the for the world's most vulnerable.

## Complex manufacturing

Multi-step processes with numerous contamination entry points.

## International sourcing

Ingredients sourced across dozens of of countries and suppliers

## Vulnerable population

Infants with no alternative nutrition nutrition source & immature immune systems

## Incident

Contaminated ARA oil used in infant formula production.

## Detection

INFOSAN enabled rapid alert after initial clusters were verified.

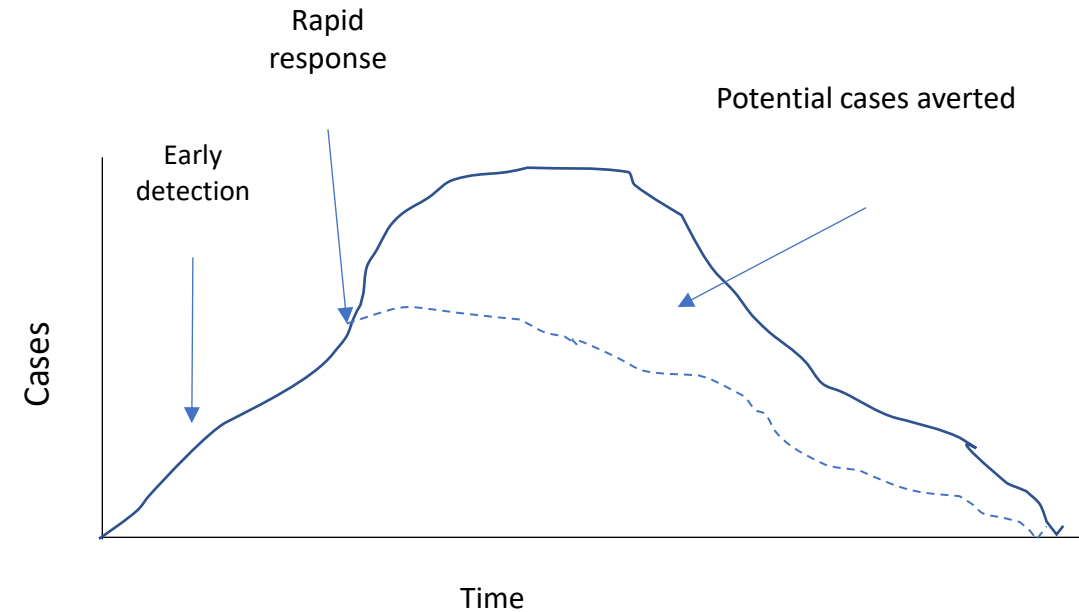
## Impact

Coordinated international response prevented thousands of exposures.

- Contaminated formulae, nutritional products, and oil mixes distributed to 100+ countries and territories.
- Product recalls initiated on 10 December 2025.
- 144 suspected and confirmed cases across ten countries between January and February 2026.
- Overall public health risk assessed by WHO as **moderate** due to:
  - vulnerability of the affected population.
  - ongoing uncertainty regarding the full extent of distribution and exposure.
  - remaining gaps in case detection and root cause information.

# Strengthening preparedness through faster detection and coordination

- Strengthen national systems: integrated surveillance, lab capacity and food chain data.
- Enhance international collaboration: maintain active INFOSAN and regional network participation.
- Invest in technologies that speed up detection and source attribution (e.g. WGS, digital traceability).
- Embed food safety as a core element of health security strategies and IHR implementation.



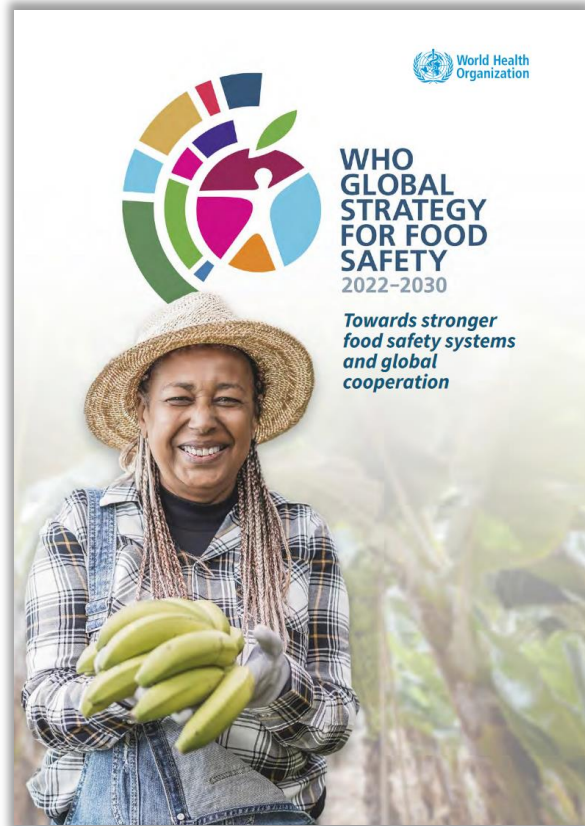
# Overview of the new WHO foodborne disease surveillance and response manuals



**Lusubilo Mwamakamba**  
Regional Advisor for Food Safety  
World Health Organization,  
Regional Office for Africa



# WHO's Global Strategy for Food Safety



## Strengthening national food control systems

### STRATEGIC PRIORITY 1

#### → Strategic objective 1.5: Strengthen food monitoring and surveillance programmes


- Food monitoring and surveillance systems are necessary components of national food control programs
- However, capacities for foodborne disease surveillance globally are limited

# Capacities for foodborne disease surveillance globally are limited

Surveillance-related indicator when the strategy was launched in 2022 was at 1.5/5; as of now it's up to 2.8/5; still below the target



**FBD surveillance indicator and target from the WHO Global Strategy for Food Safety**

Indicator	Type	Source	Indicator as of 2022	Target by 2030
 Surveillance of foodborne diseases and contamination	Capacity indicator (progress)	International Health Regulations (2005): Joint External Evaluation Tool <sup>10</sup>	1.5/5	Global average capacity score 3.5/5

**Assessment of the progress indicator on FBD surveillance**

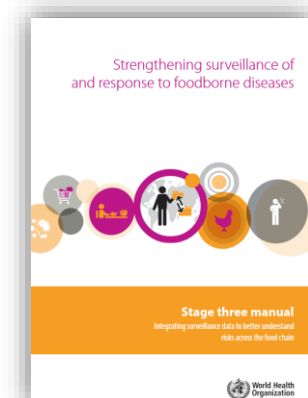
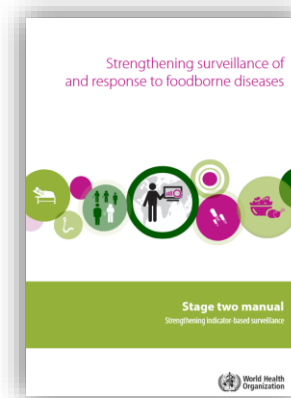
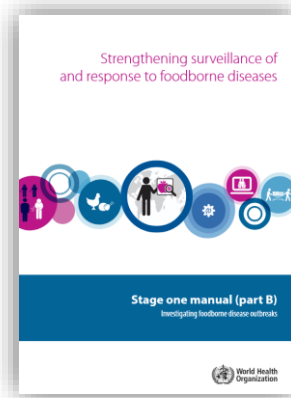
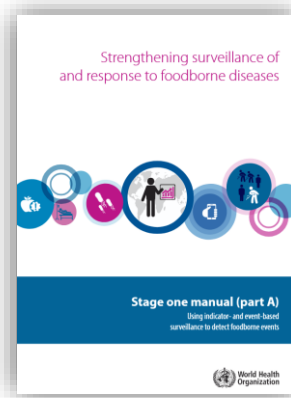
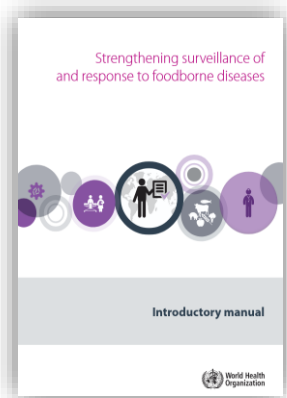
Scores	IHR (2005) food safety indicator (P.6.1) under JEE assessment criteria for surveillance of foodborne diseases and contamination
<b>1- No capacity</b>	No or very limited surveillance system in place for FBDs or for food contamination (chemical and microbiological) monitoring.
<b>2- Limited capacity</b>	Country has IBS <sup>14</sup> or EBS <sup>15</sup> and monitoring system in place to monitor trends and detect foodborne events (outbreak or contamination).
<b>3- Developed capacity</b>	IBS or EBS system includes laboratory analysis to assign etiology for FBDs or origin of contamination event and investigate hazards in foods linked to cases outbreaks or events.
<b>4- Demonstrated capacity</b>	Country has capacity to undertake rapid risk assessments of acute foodborne events at the national and subnational levels.
<b>5- Sustainable capacity</b>	Country has a surveillance system in place that integrates information from the entire food chain, including timely and systematic information exchange, to enable a better understanding of risk and mitigation possibilities.

Improving country capacities for FBD surveillance is a priority for WHO



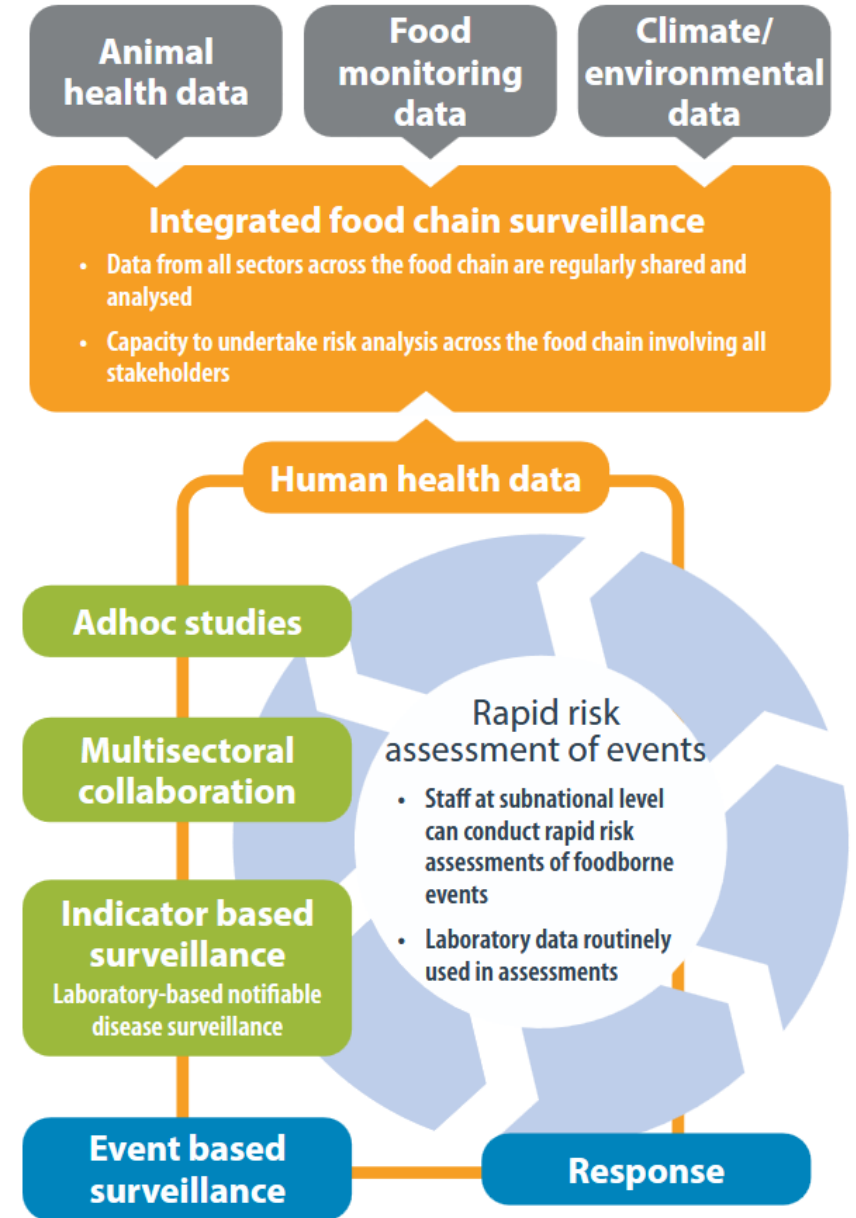
# Strengthening surveillance and response to foodborne diseases

- The updated manuals explain how countries can strengthen their current foodborne disease surveillance and response activities and integrate them into existing national surveillance and response systems required by the International Health Regulations (IHR)
- Across five manuals in three stages, comprehensive guidance is provided to enable countries to conduct a self assessment, identify gaps, and then manage implementation of required steps to build surveillance capacities

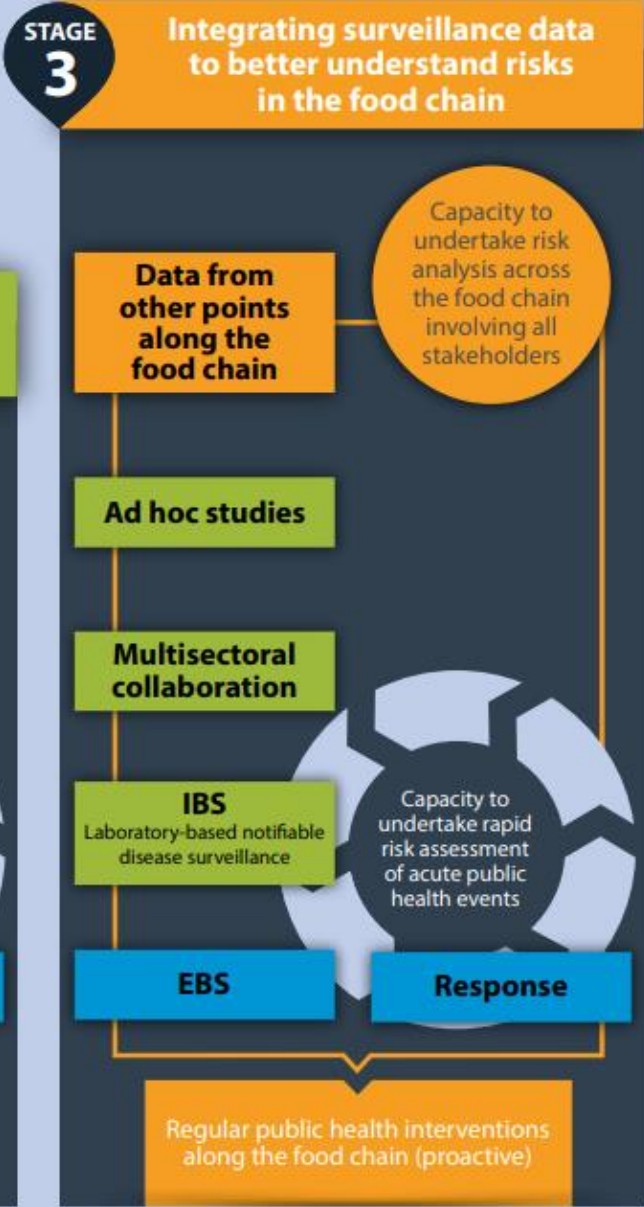
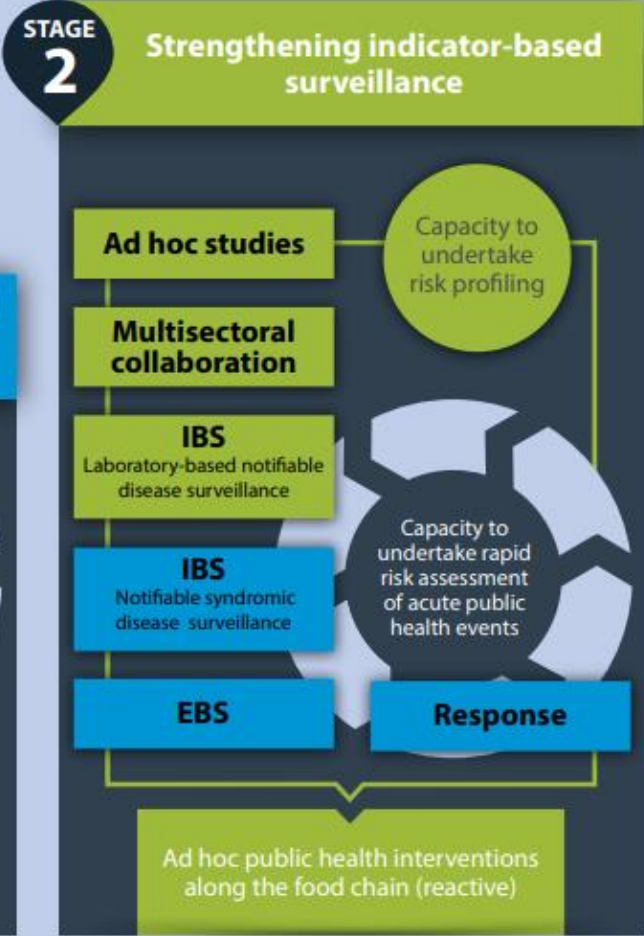
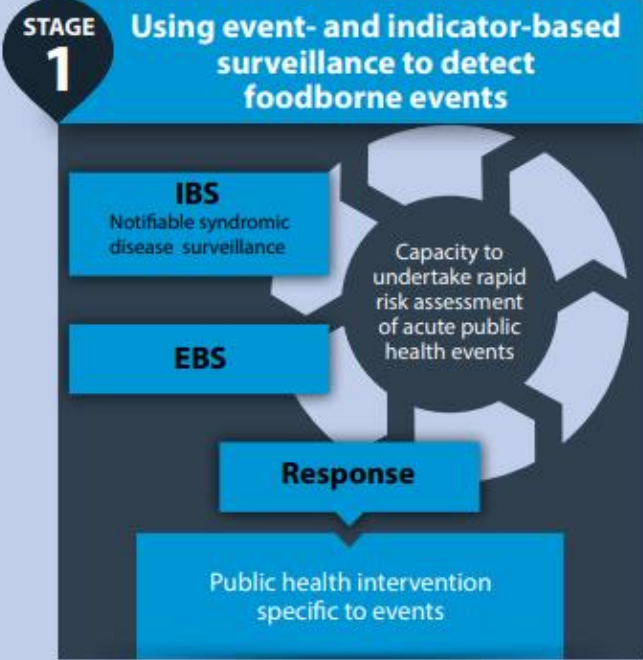


# Framework for strengthening surveillance of and response to foodborne diseases

- EBS and IBS are both essential at all stages for timely outbreak detection and effective surveillance
- As systems mature, IBS enables trend detection, risk profiling, and integration with AMR testing
- Rapid risk assessment and response are core capabilities at every stage of FBD surveillance
- With maturity, response actions shift from reactive outbreak control to proactive prevention along the food chain, such as targeted inspections or removal of contaminated products
- Multisectoral collaboration is required across all surveillance stages
- Ad-hoc studies help close knowledge gaps by providing context for surveillance data, supporting risk communication, and guiding prioritization of control measures



The manuals provide a stepwise framework to help countries progressively strengthen national FBD surveillance systems, depending on which stage they are at



EBS= Event-based surveillance IBS= Indicator-based surveillance

# Practical guidance provided at each stage

## Minimum requirements

The capacities required for a country to enter the stage being described.

## Objectives

The objectives of the surveillance and response system for foodborne diseases at the stage being described.

## Vision

A statement about how the surveillance and response system should perform when all the capacities needed for the stage are in place. A list of the strategic goals to be achieved to obtain the vision in this stage is also included. A diagram shows the capacities to be strengthened in the stage.

## Components and risk-based processes

A description of the key components and the risk-based processes: the text sets out a series of logical steps to be taken to develop capacities in each component and process, and includes tools for use by countries.

## Case studies

These are used throughout to provide examples of actions taken in different countries to strengthen surveillance and response for foodborne diseases.

## Managing implementation

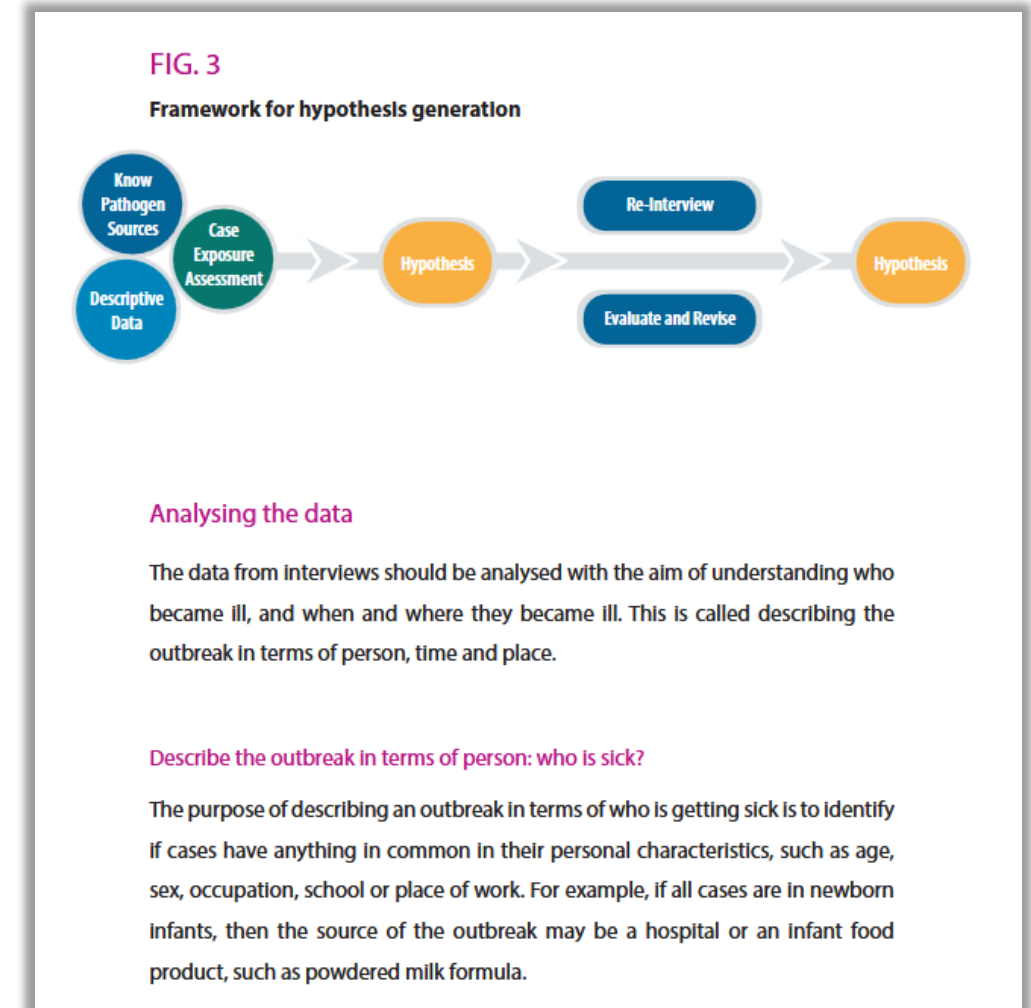
a template allows countries to document their current capacities and helps identify priorities for strengthening surveillance and response to foodborne diseases. The completed template could be attached to existing strategic plans for strengthening the national surveillance and response system.

## Monitoring and evaluation

examples are provided of monitoring indicators and attributes that can be evaluated to assess the performance of the surveillance and response system in relation to foodborne diseases.

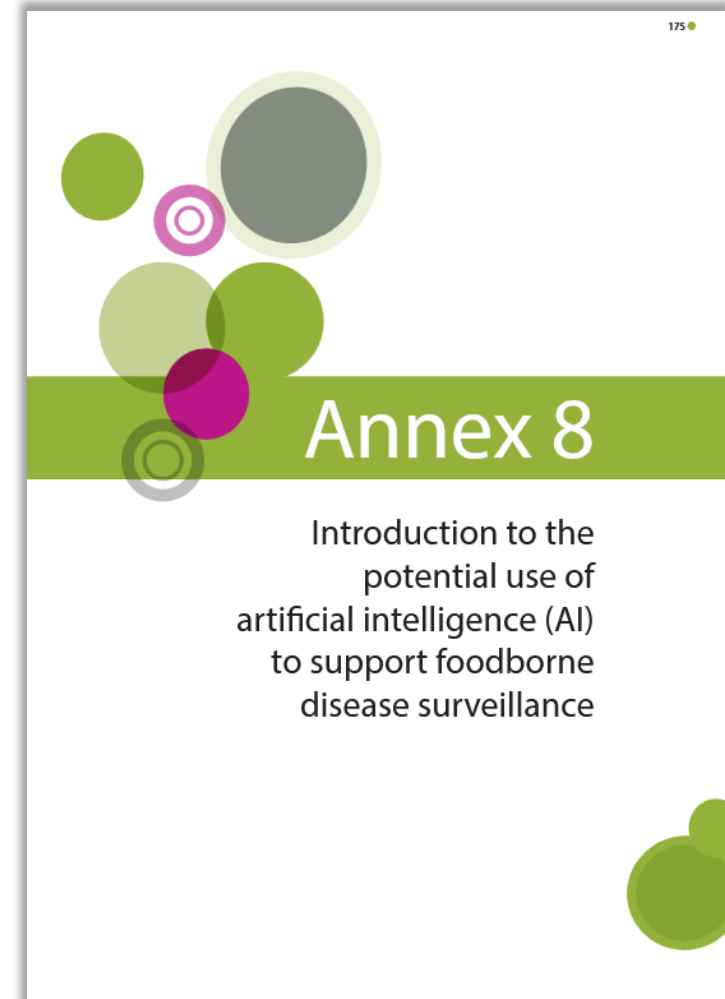
# What's new in this edition

- Aligned with major new WHO and One Health frameworks, including the WHO Global Strategy for Food Safety 2022–2030 and Quadripartite guidance
- Expanded focus on the importance of foodborne disease surveillance and response, now framed around 10 key reasons and 10 guiding principles
- Stronger integration of One Health, multisectoral collaboration, and links with IHR (2005) implementation
- Updated decision trees and strategic goals across the manuals for greater coherence and usability
- New tools and practical guidance for outbreak investigation, including structured hypothesis generation and use of the WHO Outbreak Toolkit



# What's new in this edition

- Added case studies, surveillance examples, evaluation questions, and practical implementation guidance throughout
- New content on climate and environmental health considerations in foodborne disease surveillance
- New annex introducing the potential role of artificial intelligence in strengthening foodborne disease surveillance systems
- Greater emphasis on translating surveillance data into action, including risk management, policy, and prevention
- Updated terminology and web resources, references and cross-references

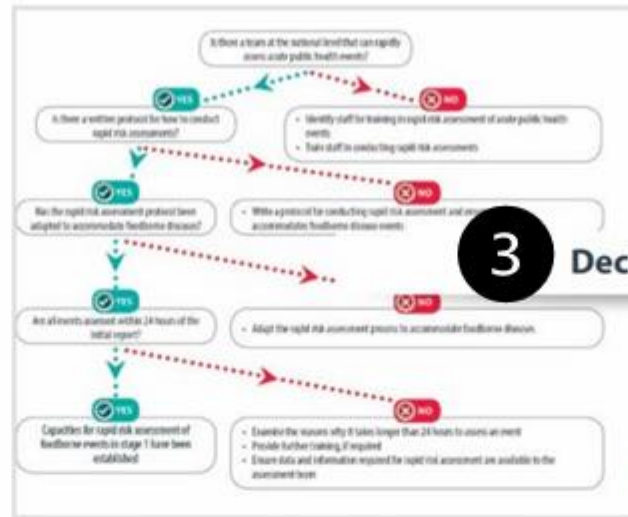


# How to use the manuals

Stage 1 assessment

Indicator	Yes	Partially	No	Description of what is in place for this indicator	Description of what is not in place for this indicator
<b>Strategic goal 1:</b> An indicator based surveillance system that can monitor trends of disease syndromes and identify outbreaks of foodborne diseases					
A surveillance system for notifiable diseases that collects syndromic data from the local level, and collates the data at the national level on a regular basis					
Inclusion in the surveillance system of diseases and syndromes that may indicate foodborne disease (eg diarrhoea)					
A database to store the surveillance data					
Capacity to analyse surveillance data on a regular basis to assess risk					

## 1 Country self-assessment



## 3 Decision trees

## 2 Specific guidance in the text

**Identifying diseases and syndromes already under surveillance that might indicate a foodborne disease**

Foodborne diseases have many different symptoms and possible causes. The syndromes that often form part of the notifiable disease surveillance system and might indicate foodborne diseases are shown in Table 1. This list is not intended to be exhaustive. A more extensive list is given in Annex 2. For notifiable diseases, diarrhoea should be included in the notifiable disease surveillance system.

In some countries, it will not be possible or desirable to include all of the syndromes listed in Table 1 in the notifiable disease surveillance system. The existing notifiable disease surveillance system should be fully functional before any new syndromes are added. If new syndromes are being considered for addition to the list, a prioritization exercise should be carried out first. Annex 2 contains guidance on syndrome prioritization for countries in stage 1.

## 4 Mapping the next steps

Capacity	Capacity exists (yes/no)	Priority for implementation*			Action	Timeframe	Person responsible
		Impact	Resources	Ease of implementation			
<b>Indicator-based surveillance</b>							
	Diarrhoea is a notifiable						
<b>Surveillance system</b>							
	Other syndromes relevant to foodborne diseases are notifiable						
	A database exists to store data on notifiable diseases and syndromes						
	A data dictionary exists to support the database						
	A surveillance log exists to document changes in the surveillance system						

# Using the manuals to assess and strengthen national systems



**Dr Eva Inam Kayed Al Zein**  
**Regional Advisor for Food Safety**  
**World Health Organization,**  
**Regional Office for the Eastern**  
**Mediterranean**

# A system level reality

*“ The challenge is not absence, but connection!”*

Foundational elements are present



- 1.Laboratory capacity
- 2.Epidemiology functions
- 3.Food safety authorities
- 4.Reporting mechanisms



Yet, in practice



1. Information may exist, but is not consistently shared
2. Signals may be detected, but roles and response pathways are not always clear

# Strengthen step by step: no country starts from zero

*“This is where the WHO manuals come in!”*



## STAGE 1

### **Detect & investigate**

Indicator and event based surveillance. Investigate outbreaks with structured tools.

- Early signals
- Outbreak toolkit
- Field investigation templates



## STAGE 2

### **Strengthen routine surveillance**

Improve data quality, coverage and timeliness. Expand laboratory confirmation and reporting.

- Better data flows
- Lab confirmation
- Trend monitoring



## STAGE 3

### **Integrate across the food chain**

Link human, animal, food and environmental data. Use evidence for risk-based decisions.

- One Health linkage
- Risk assessment
- Whole genome sequencing



# Ready to use tools : not just guidance

*“What you get inside!”*



## Self-assessment tool

Score your system against 16 strategic goals.



## Decision trees

Step-by-step paths to the right next action.



## Templates & questionnaires

Line lists, food-frequency, report outlines.



## Outbreak toolkit

WHO toolkit and national toolkit example.



## Case studies

Real country examples to learn from.



## Climate & emerging risks

New material on environmental drivers.

# The self-assessment tool

*Annex 3 of the Introductory Manual*



## A structured country-owned evaluation

*Evidence-based scoring  
Mapped to IHR core capacities*



### **Takes stock**

Structured questions across 3 stages. Countries answer with evidence — laws, reports, lab records — not aspiration.



### **Scores capacities**

Each indicator is rated as existing, partially existing, or not existing, producing a validated national capacity profile.



### **Maps to manual chapters**

Scores are directly cross-referenced to manual content, generating specific, chapter-linked recommendations.



### **Builds the roadmap**

The output is a prioritized, realistic action plan — not a list of unachieved indicators, but a path countries own and drive.

# Aligning with what is already measured

*Strengthening foodborne disease surveillance directly strengthens your IHR core capacities, JEE scores, and national food safety and health security priorities*



**Policy and legal**



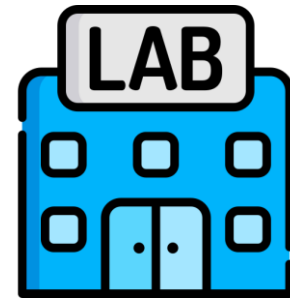
**Surveillance**



**Coordination**



**Human Resources**



**Laboratory**

# What country assessments reveal?



## **The process is the product**

The act of completing the assessment together with MoH, food safety, labs, animal health and environment creates multisectoral dialogue that didn't exist before.

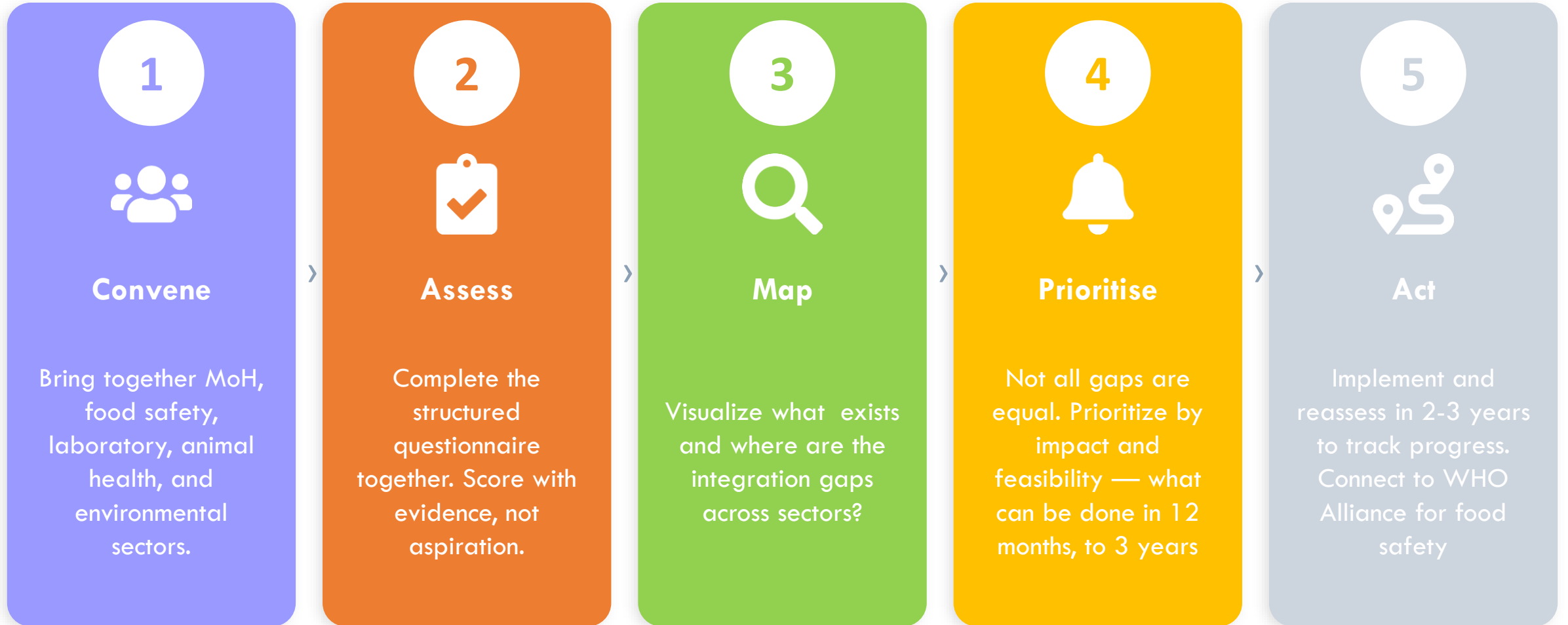


## **Realistic, owned action plans**

A prioritised, time-bound roadmap anchored to national context not a report filed and forgotten.

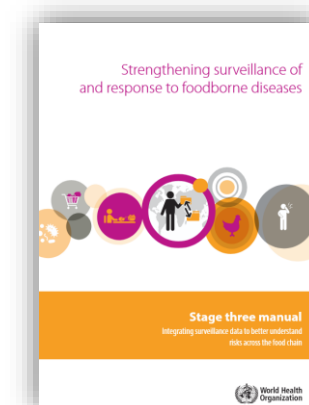
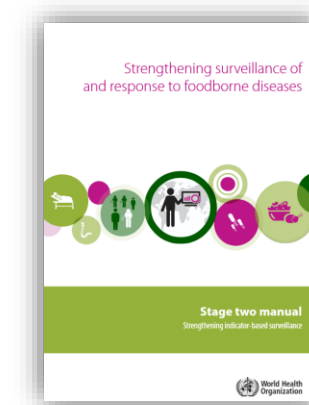
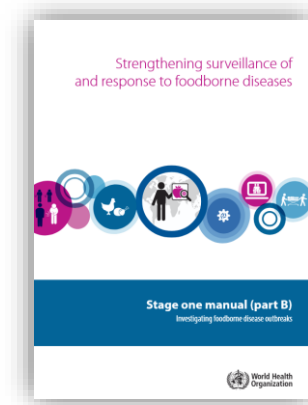
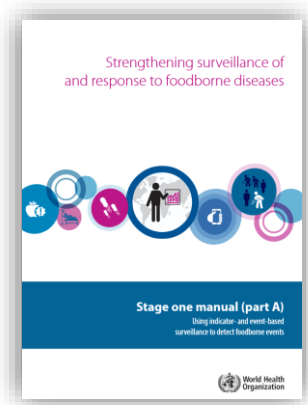
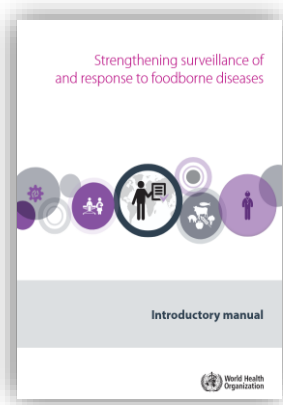
# How countries use the tool

*WHO provides workshops, remote guidance, peer-learning networks, and annual reviews aligned to IHR benchmarks — throughout all phases.*





We invite you to review the manuals and start working towards strengthened foodborne disease surveillance in your country today!





# Thank you!

**Contact the WHO Secretariat  
for more information:**

**[fos-alliance@who.int](mailto:fos-alliance@who.int)**

**From burden  
to solutions  
safe food everywhere**



[#WorldFoodSafetyDay](https://www.instagram.com/WorldFoodSafetyDay)