

# Presentation of WHO's work on foodborne diseases and estimates for 2025: From Data to Action

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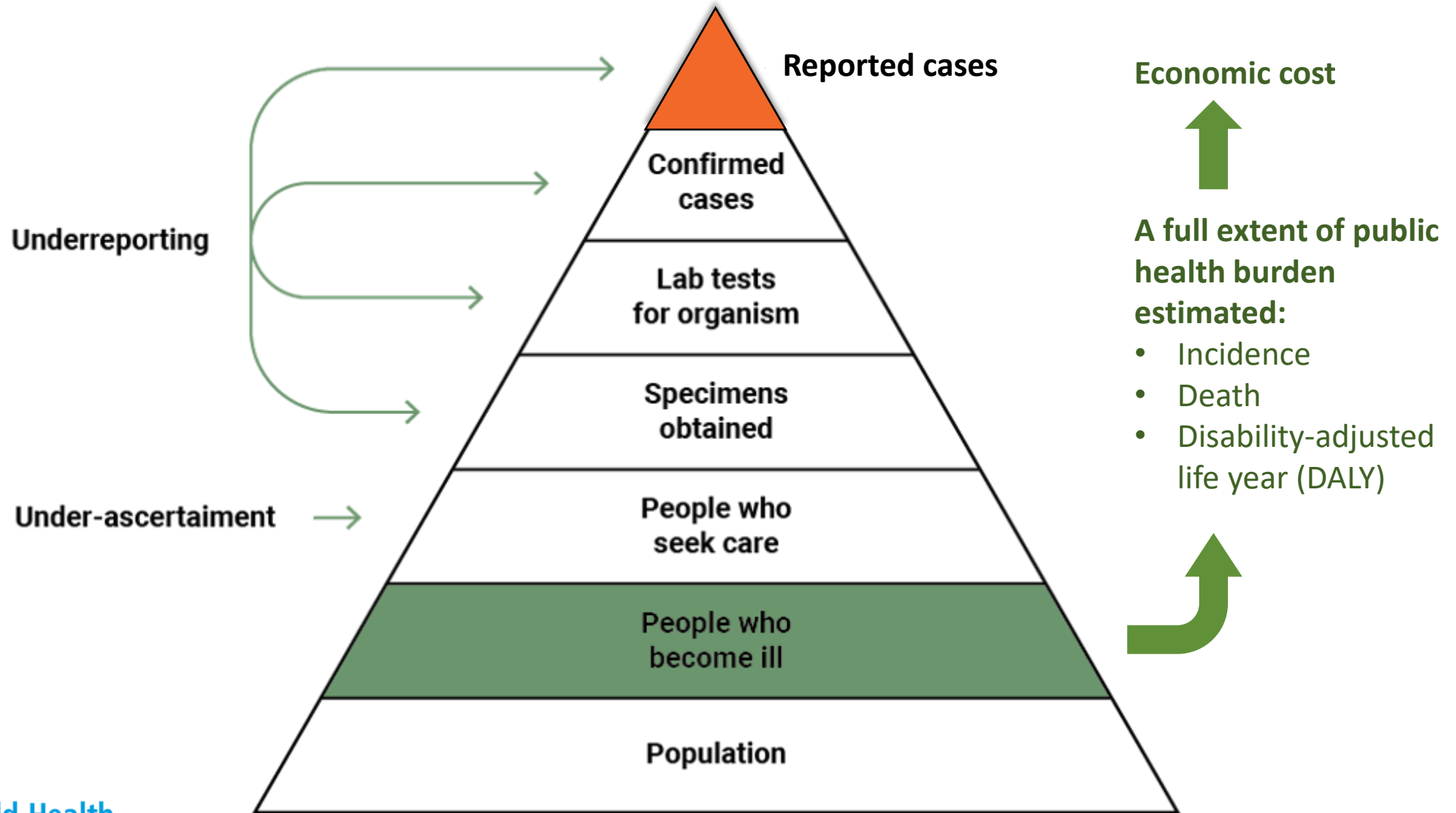
Monitoring and Surveillance Nutrition and Food Safety Unit

[Department of Nutrition and Food Safety](#)

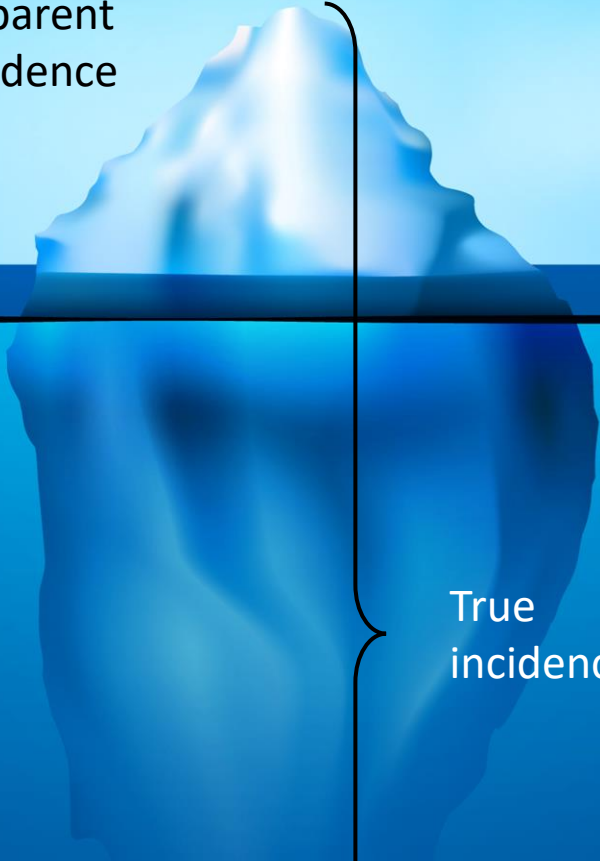
10:00-11:00 CEST | 4 September 2024 | European Burden of Disease Network [Webinar]



# Foodborne disease surveillance pyramid



Apparent incidence



True incidence



WHO ESTIMATES OF  
THE GLOBAL BURDEN  
OF FOODBORNE DISEASES

# The burden of foodborne diseases is substantial

Every year foodborne diseases cause:


almost  
**in 10**  
people to fall ill

**33 million**  
healthy life years lost

Foodborne diseases can be deadly, especially in children <5

  
**420 000**  
deaths

Children account for  
**1/3**  
of deaths from  
foodborne diseases



**US\$ 110 billion** in lost productivity and medical expenses annually  
(World Bank, 2019)

# The First FAO/WHO/AU International Food Safety Conference 2019, Addis Ababa, Ethiopia



# International Forum on Food Safety and Trade

WTO International Forum on Food Safety  
and Trade 2019, Geneva, Switzerland



# Seventy-third World Health Assembly (2020)



SEVENTY-THIRD WORLD HEALTH ASSEMBLY

WHA73.5

Agenda item 15.3

3 August 2020

## Strengthening efforts on food safety

The Seventy-third World Health Assembly,

Having adopted the written silence procedure through decision WHA73(7) (2020);<sup>1</sup>

Recalling resolutions WHA53.15 (2000) on food safety and WHA63.3 (2010) on advancing food safety initiatives, and acknowledging that the challenges outlined in these resolutions continue as the food safety systems of many Member States are under development and need significant improvements in their key components, such as regulatory infrastructure, enforcement, surveillance, inspection, laboratory capacity and capability, coordination mechanisms, emergency response and food safety education and training;

Recalling also the international conferences in 2019 on food safety convened by WHO, FAO, and WTO and the African Union in Addis Ababa and Geneva, which identified key actions and strategies to tackle current and future challenges to food safety globally;

Noting that food safety plays a critical role in the achievement of many of the Sustainable Development Goals and contributes to relevant areas of WHO's Thirteenth General Programme of Work, 2019–2023 and efforts to address universal health coverage;

Considering that WHO published estimates on the global burden of foodborne diseases for the first time in 2015, in which it estimated that more than 600 million cases of foodborne illnesses and 420 000 deaths could occur in a year;<sup>2</sup> and that the burden of foodborne diseases falls disproportionately on groups in vulnerable situations and especially on children under 5 years of age, with the highest burden in developing countries;

Recalling the World Bank study, *The safe food imperative: accelerating progress in low- and middle-income countries*,<sup>3</sup> which called upon national governments to increase investments in their food safety infrastructure, and which noted that foodborne diseases resulting from the consumption of unsafe foods cost low- and middle-income countries at least US\$ 110 billion in lost productivity and medical expenses annually;

<sup>1</sup> See also document A73/4.

<sup>2</sup> WHO estimates of the global burden of foodborne diseases: foodborne disease burden epidemiology reference group 2007–2015. Geneva: World Health Organization; 2015 ([https://www.who.int/foodsafety/areas\\_work/foodborne-diseases/fer/en/](https://www.who.int/foodsafety/areas_work/foodborne-diseases/fer/en/), accessed 4 February 2020).

<sup>3</sup> Jaffee S, Henson S, Unnevehr L, Grace D, Cassou E. The safe food imperative: accelerating progress in low- and

## New resolution mandated WHO to:

1. Regularly monitor and report to Member States on the global burden of foodborne and zoonotic diseases at national, regional and international level
2. Prepare an updated report by 2025 with up-to-date estimates of incidence, mortality and disease burden in terms of disability-adjusted life years (DALYs)

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# WHO global burden of foodborne diseases 2025 edition: Targeted launch in October 2025

## Metrics

- Incidence
- Death
- Disability-adjusted life years (DALYs)

## Aggregation

- By hazards
- By age
- By geographical categories (**National**, regional and global level)

## Reporting year

- Time series from 2000 to present\*

### **Forms of outputs:**

- WHO publications
- Global Health Observatory
- ~20 journal papers
- Data dashboard

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Strategic attributes of  
WHO FBD Estimates  
2025 edition

1

Distinctive

2

Robust

3

Comprehensive

4

Transparent

5

Versatile



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## Only global estimates

- Bound by the Assembly resolution agreed by 194 Member States
- Regular update and reporting mandated
- Standardized method across the globe
- Through the largest expert elicitation study for source attribution, by hazard and food
- Country engagement
- Enable reproducibility (input data, methods, codes to be made public)

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# Impartial scientific advice and support from the advisory group



## **Foodborne Disease Burden Epidemiology Reference Group (FERG) for 2021-2025**

- Advise WHO on the methodology to estimate the burden of foodborne diseases
- Advise WHO on the development of and the methodology to monitor food safety-related indicator(s)

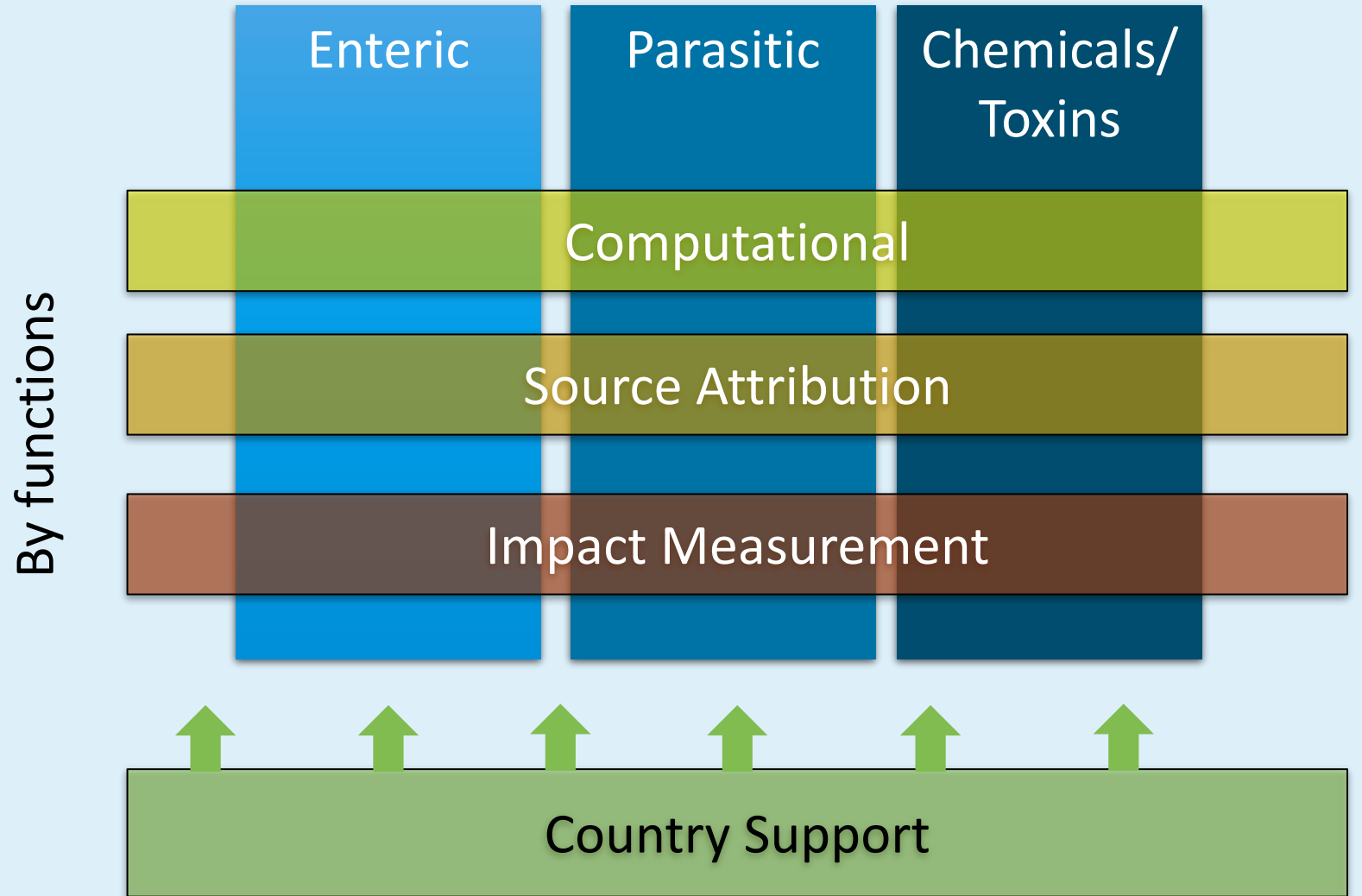
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7 Task Forces (sub-groups)  
within the FERG

- Enteric Disease
- Parasitic Disease
- Chemicals and Toxins
- Source Attribution
- Computational
- Impact Measurement
- Country Support



By hazard types



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# Robust data collection process

## Systematic Reviews

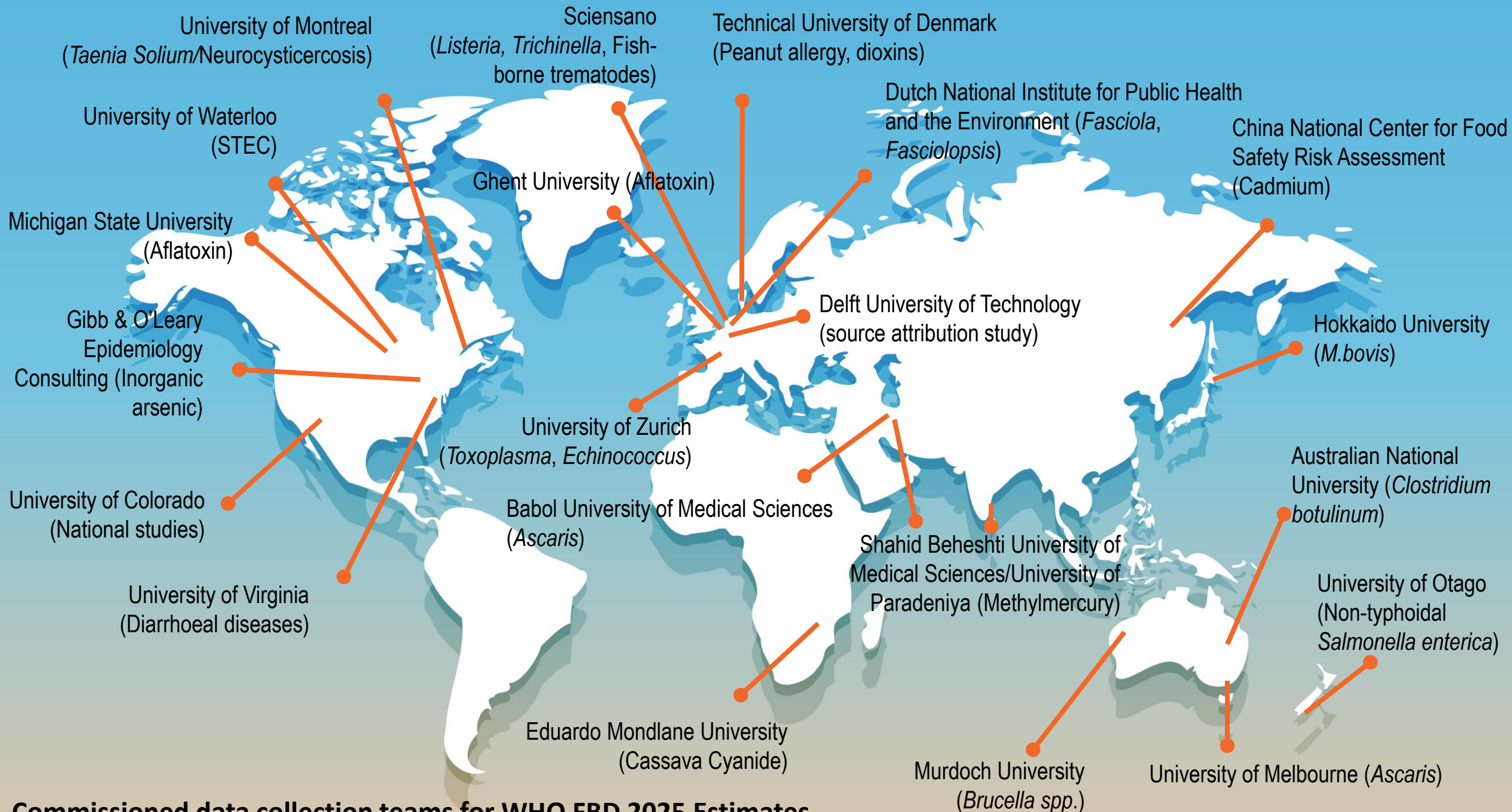
- Open call for experts
- Rigorous selection process
- PROSPERO protocols registration
- Coverage on non-English literatures
- Standardized data templates and approaches

## Scientific Collaboration

- Data support from the Institutes for Health Metrics and Evaluation (IHME)
- International Agency For Research on Cancer (IARC)
- World Organisation for Animal Health (WOAH)
- International coordination with WHO's Data Division

## Input from governments

- Voluntary data sharing from WHO Member States



**Commissioned data collection teams for WHO FBD 2025 Estimates**



ESURY  
LIFE SCIENCE

SUST-ZIWEI SHI

CFSA-LEI ZHANG

CFSA-SHOUNAN ZHANG



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# Hazards for which burden of foodborne disease estimates are being considered for 2025 Edition

Parasitic Diseases (12)	Chemicals and Toxins (9)	Enteric Diseases (non-diarrhoeal diseases) (8)	Enteric Diseases (diarrhoeal diseases) (14)
<p><i>Ascaris</i> spp.</p> <p><i>Echinococcus multilocularis</i></p> <p><i>Echinococcus granulosus</i></p> <p><i>Clonorchis sinensis</i></p> <p><i>Fasciola</i> spp.</p> <p>Intestinal flukes</p> <p><i>Opisthorchis</i> spp.</p> <p><i>Paragonimus</i> spp.</p> <p><i>Taenia solium</i></p> <p><i>Toxoplasma gondii</i></p> <p><i>Trichinella</i> spp.</p> <p><i>Trypanosoma cruzi</i></p>	<p>Aflatoxin B1</p> <p>Aflatoxin M1</p> <p>Cassava cyanide</p> <p>Dioxin</p> <p>Peanut allergens</p> <p>Inorganic Arsenic</p> <p>Cadmium</p> <p>Lead</p> <p>Methylmercury</p>	<p><i>Brucella</i> spp.</p> <p><i>Clostridium botulinum</i></p> <p>Hepatitis A virus</p> <p><i>Listeria</i> spp.</p> <p><i>Mycobacterium bovis</i></p> <p><i>Salmonella enterica</i> (invasive infections) non-typhoidal</p> <p><i>Salmonella enterica Paratyphi A</i></p> <p><i>Salmonella enterica Typhi</i></p>	<p><i>Campylobacter</i> spp.</p> <p><i>Cryptosporidium</i> spp.</p> <p><i>Cyclospora</i></p> <p><i>Entamoeba histolytica</i></p> <p>Enteroaggregative <i>E.coli</i> (EAEC)</p> <p>Enteropathogenic <i>E.coli</i> (EPEC)</p> <p>Enterotoxigenic <i>E.coli</i> (ETEC)</p> <p><i>Giardia</i> spp.</p> <p>Norovirus</p> <p>Rotavirus</p> <p><i>Salmonella enterica</i> non-typhoidal</p> <p><i>Shigella</i> spp.</p> <p>Shiga toxin-producing <i>E.coli</i> (STEC)</p> <p><i>Vibrio cholerae</i></p>

\*Newly added hazards for 2025 Edition

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# Health states (dependent on the individual hazard) to be included

Abdominopelvic problem	CNS echinococcosis	Living with peanut-induced allergy
Acute brucellosis	Diarrhoeal disease	Lung cancer
Acute hepatitis	End-stage renal disease	Male infertility
Acute illness	Epilepsy	Mild abdominopelvic problems due to ascariasis
Acute trichinellosis	Gastrointestinal bleed	Mild/moderate botulism
Alveolar echinococcosis	Guillain-Barré syndrome	Neurological sequelae
Ascariasis infestation	Haemolytic uraemic syndrome	Paratyphoid fever
Bladder cancer	Hepatic echinococcosis	Post acute illness
Cardiovascular diseases	Hepatocellular carcinoma	Pulmonary cystic echinococcosis
Central nervous system abnormalities	Hydrocephalus	Pulmonary problems
Central nervous system infection	Intellectual disability	Septicemia
Central nervous system problems	Intestinal perforation	Severe botulism
Chagas disease	Intestinal rupture	Severe wasting due to ascariasis
Cholangiocarcinoma	Intracranial calcification	Skin cancer
Chorioretinitis	Invasive salmonellosis	Tuberculosis
Chronic brucellosis	Ischaemic heart disease	Typhoid fever
Chronic kidney disease stage 4 and 5	Konzo	

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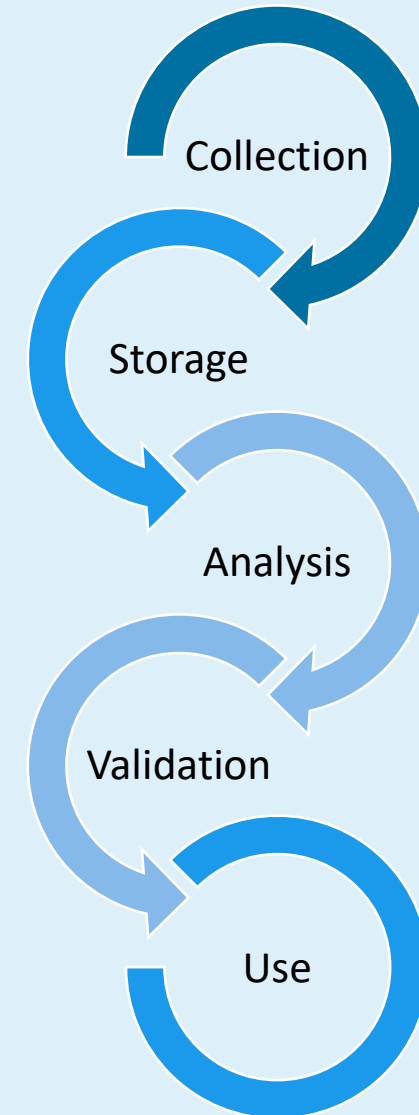
# WHO 5 Data Principles

These 5 data principles provide the foundation for continually reaffirming trust in WHO's information and evidence on public health with Member States and the public.

- 1 WHO shall treat data as a public good
- 2 WHO shall uphold Member States' trust in data
- 3 WHO shall support Member States' data and health information systems capacity
- 4 WHO shall be a responsible data manager and steward
- 5 WHO shall strive to fill public health data gaps



Engage countries in the full data journey



# Transparency and Trust



## TRANSPARENCY

- Use transparent models and methods

*Member States use a range of health indicators to monitor population health and guide resource allocations. However, challenges arise from the lack of data, inconsistent methods and often underdeveloped data governance and standards at all economic levels. WHO will therefore support Member States to generate coherent estimates (that may be based on disparate or incomplete sources of data) that are all **open to scrutiny, transparent, available to the public and have proven validity.***

- Apply international scientific data standards

*As a responsible data manager and steward, WHO shall abide by **applicable international scientific data processing standards** such as, among others, the FAIR Guiding Principles for scientific data management and stewardship and the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) for estimations.*



## TRUST

- Provide impartial and inclusive consultation

*Upholding Member States' trust in data requires an impartial and inclusive process for consulting with Member States prior to the use of their data by WHO. **Consultations with Member States will be transparent, predictable, proportionate, inclusive and coordinated processes with streamlined communication that allows Member States and WHO to easily prepare for, respond to and participate in discussions.***

- Secure storage and processing

*Ensure that data shared with WHO by Member States are **securely and confidentially stored and processed.***

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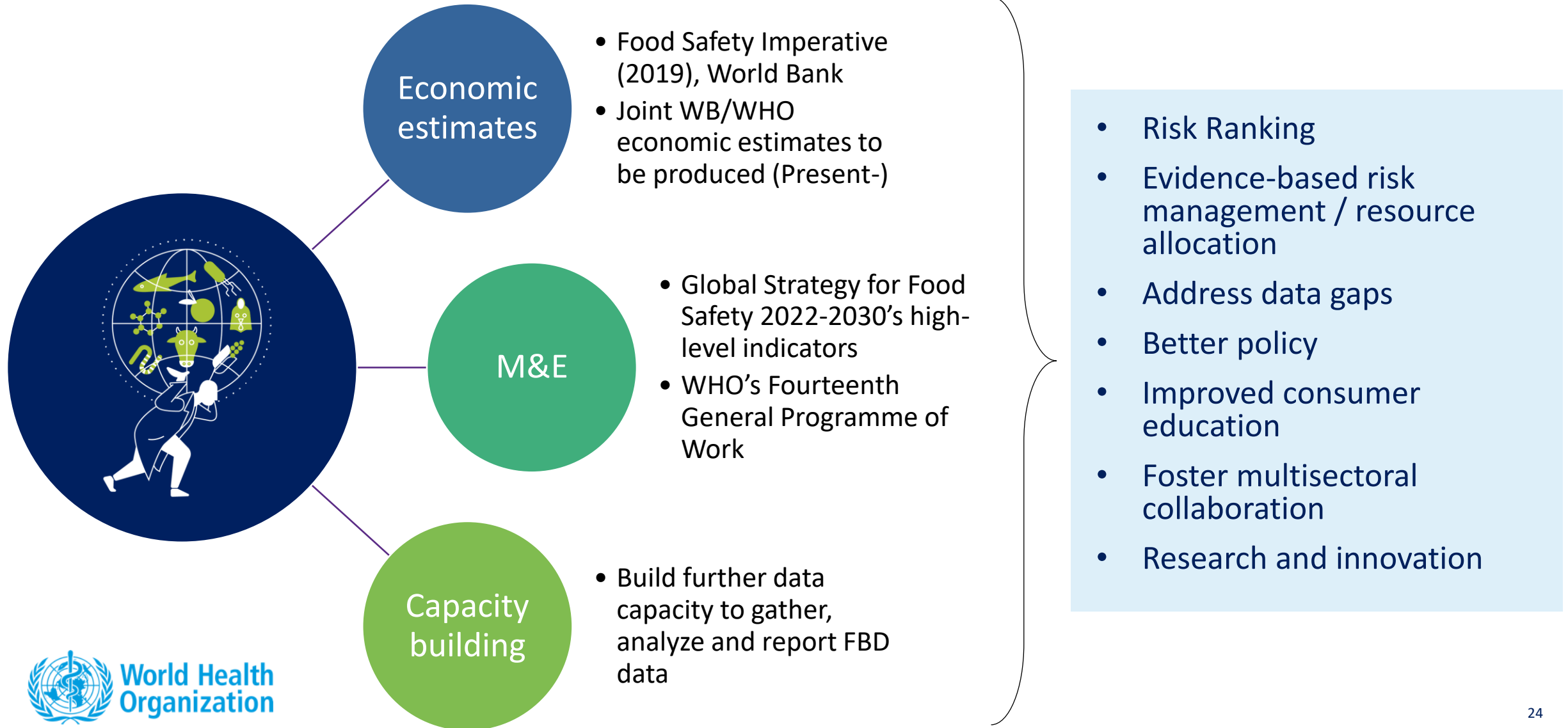
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# Applications of the WHO FBD Estimates





## Global Target by 2030

Indicator	Type	Source	Indicator as of 2022	Target by 2030
 <p>Foodborne diarrhoeal disease incidence estimated per 100 000 population</p>	Outcome indicator (impact)	WHO global estimates on foodborne disease burden informed by FERG <sup>8,9</sup>	4 154*	40% reduction in the global average
 <p>Multisectoral collaboration mechanism for food safety events</p>	Capacity indicator (progress)	International Health Regulations (2005): State Party Self-Assessment Annual Reporting Tool ( <a href="#">57</a> )	57% of countries with at least 80% capacity**	100% of countries with at least 80% capacity
 <p>Surveillance of foodborne diseases and contamination</p>		International Health Regulations (2005): Joint External Evaluation Tool <sup>10</sup>	1.5	Global average capacity score 3.5

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## Key messages

- The results of the research project informed the policy makers
- Policy makers recognized the importance
- All WHO Member States agreed that WHO shall regularly monitor the estimates
- To monitor continuously the estimates, international collaboration is essential
- Researchers play an important role throughout the estimation process and beyond
- Data is a key tool for multisectoral collaborations, for taking One Health approach
- The launch of the updated estimates is planned in October 2025

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# Acknowledgement

**FERG for 2021-2025:** all 25 members. Special thanks to the Chair Rob Lake and TF chairs, Shannon Majowicz, Tesfaye Gobena, Paul Torgerson, Lea Sletting Jakobsen, Antonio Agudo, Mirjam Kretzschmar, Sara Pires, Martyn Kirk, Sandra Hoffmann, Karen Keddy, Elaine Scallan Walter.

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**Collaborative institutions:** Institute for Health Metrics and Evaluation, International Agency for Research on Cancer, World Organisation for Animal Health, World Bank

**Commissioned data teams:** Australian National University, China National Center for Food Safety Risk Assessment, Eduardo Mondlane University, Ghent University, Gibb & O’Leary Epidemiology Consulting, Hokkaido University, Michigan State University, Murdoch University, National Institute for Public Health and the Environment, Sciensano, Technical University of Denmark, University of Colorado, University of Melbourne, University of Montreal, University of Otago, University of Virginia, University of Waterloo, University of Zurich

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# Thank you

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or [minatoy@who.int](mailto:minatoy@who.int)

For more information:

