



Globalization and foodborne diseases: a WHO perspective



**World Health
Organization**

REGIONAL OFFICE FOR
Europe



**Organisation
mondiale de la Santé**

BUREAU RÉGIONAL DE L'
Europe



Weltgesundheitsorganisation

REGIONALBÜRO FÜR
Europa



**Всемирная организация
здравоохранения**

Европейское региональное бюро

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FAO/WHO World Declaration on Nutrition (1992)

‘...access to nutritionally adequate and **safe** food is a basic individual right.’



BUT - Foodborne diseases a challenge worldwide



Globally - 2.2 million estimated deaths from food and waterborne infections per year

Industrialized countries - Up to 20 per million die of foodborne infections per year

Globalisation: increasing risk of international food-safety crises



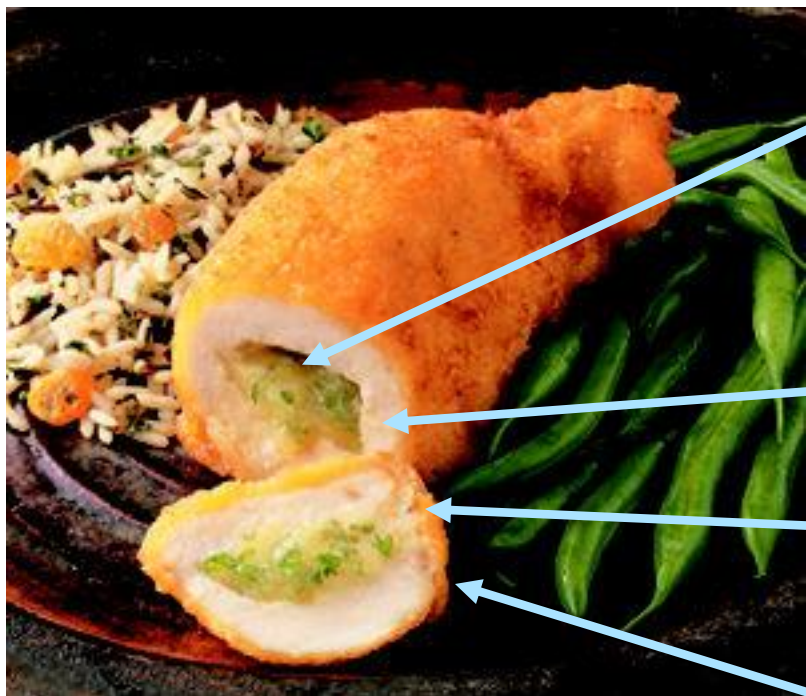
The world at my local grocery shop

St. Genis-Pouilly, France. Population: 8000



Globalisation of Trade :

“The World on your Plate”

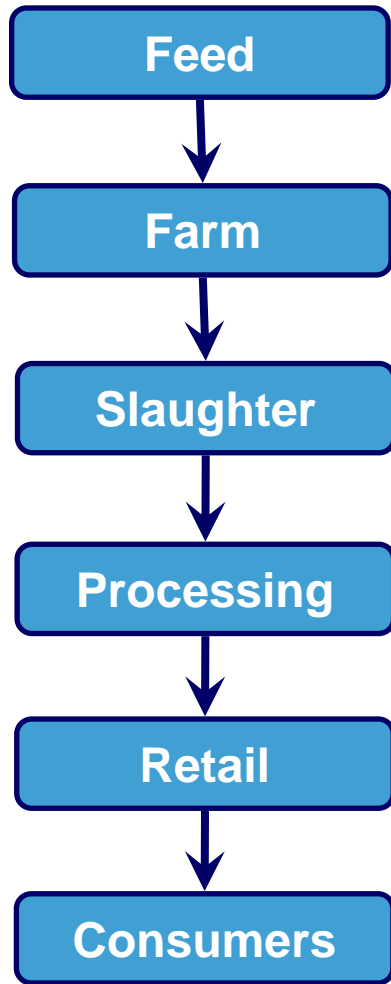


Chicken Kiev

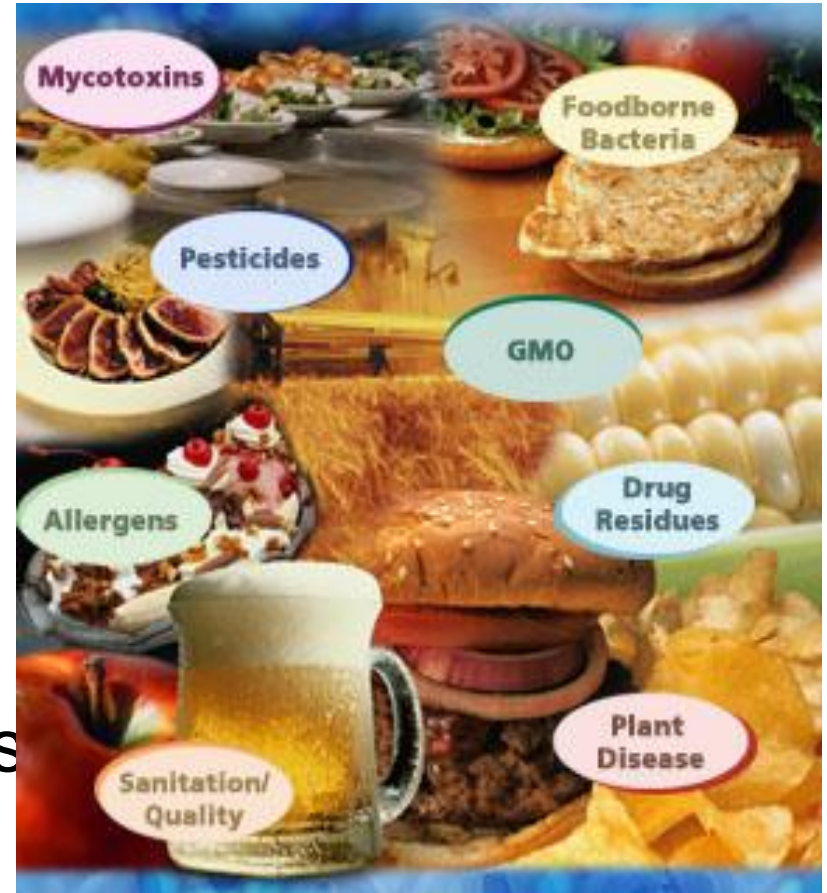
- | | | |
|------------------------|---------------|---------------------------------------|
| Herb Butter: | Salted butter | - Ireland |
| | Garlic puree | - China, USA, Spain |
| | Garlic salt | - China, USA, Spain |
| | Lemon | - USA |
| | Parsley | - France, UK |
| | Pepper | - Indonesia |
| | Water | - Ireland |
| Chicken Breast: | Chicken | - Ireland, Belgium
UK, France etc. |
| Batter: | Flour | - Belgium, France |
| | Water | - Ireland |
| Bread Crumb: | Bread crumb | - Ireland, UK |
| | Rape-seed oil | - EU, Australia,
Eastern Europe |

Courtesy A. Reilly, FSAI, Ireland

Food safety threats in modern, interconnected global food-chains

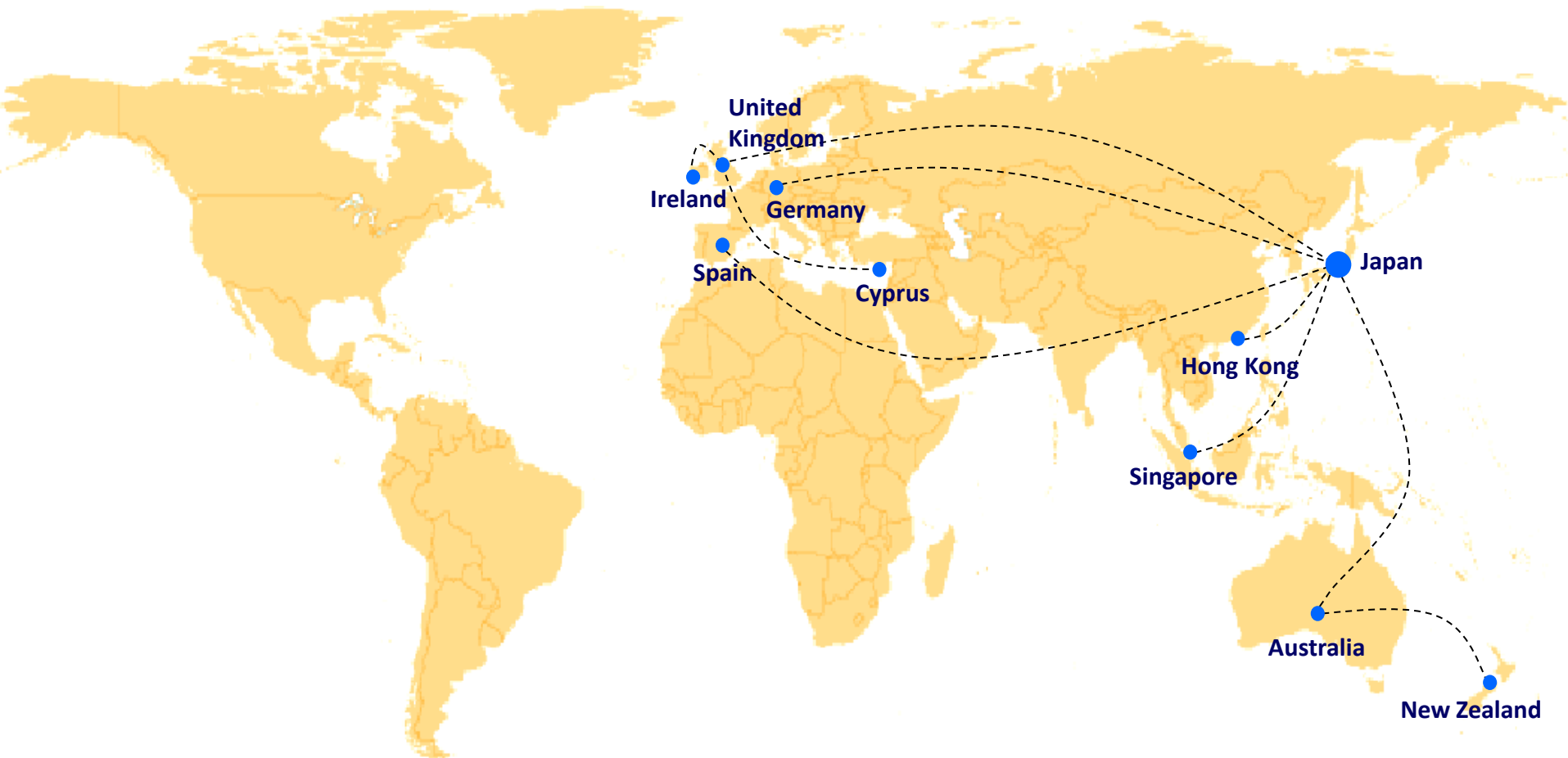


- Contaminants
- Chemicals
- Toxins
- Residues
- Microorganisms



Approach: Multisectoral, interdisciplinary

For instance: Thyrotoxicosis caused by the excess iodine in soy milk product originating in Japan



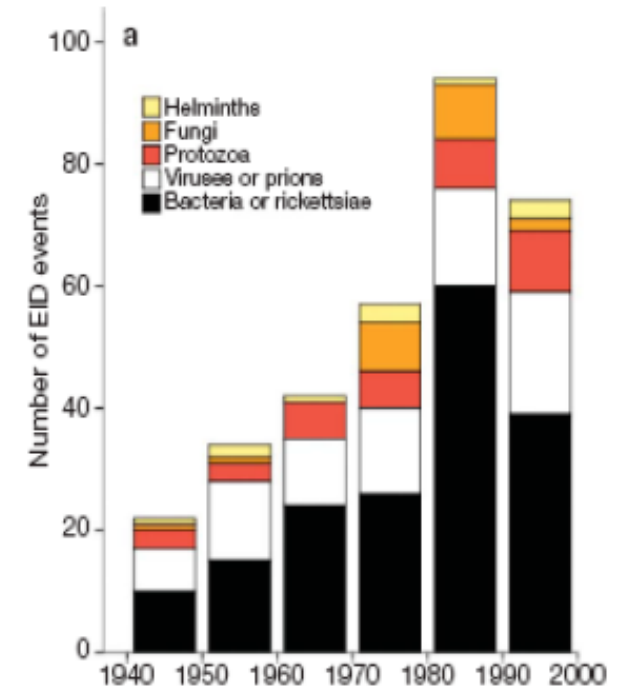
Foodborne outbreaks can have major economic/trade impacts



A Farmer stands in his field of lettuce while it is destroyed in Hamburg, Germany.

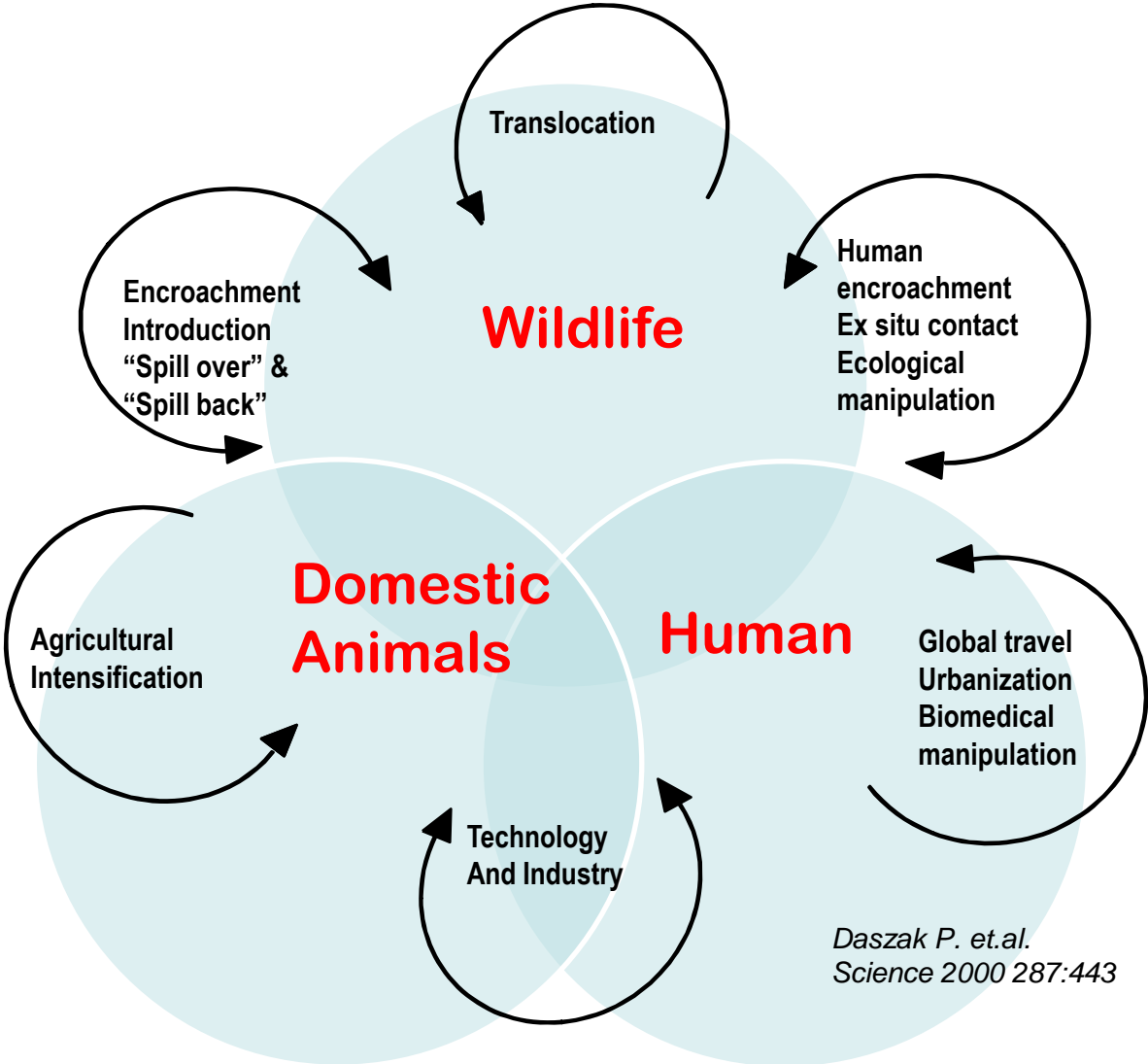
Global changes and emerging infectious diseases

- Frequency of all emerging infectious disease (EID) increased since 1940
- 335 newly identified EID
 - 60% zoonoses
 - 27% (95 pathogens) transmitted through food
 - Many resistant to antibiotics



Jones Patel, Levy 2008

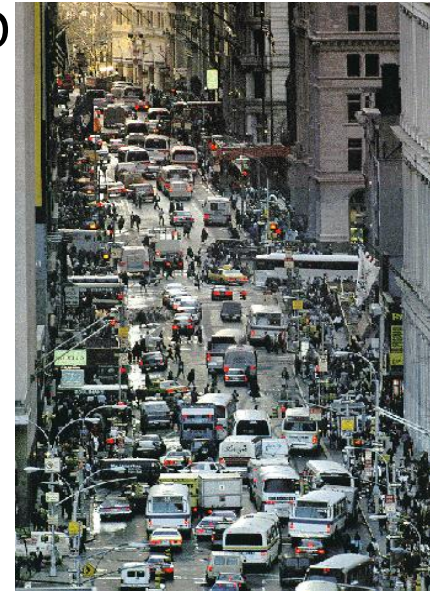
Changing environments and emerging infectious diseases



*Daszak P. et.al.
Science 2000 287:443*

Global changes and emerging food safety threats

- **Globalised food trade, travel and migration**
 - increased long-distance pathogen transmission
- **Changes in agriculture and food industry**
 - e.g handling of infected domestic and wild animals during food production - related to **15%** of new EID
- **Changing human population**
 - e.g vulnerable, aging population
- **Changing lifestyles**
 - e.g frequent consumption of food prepared outside the home (urban areas)



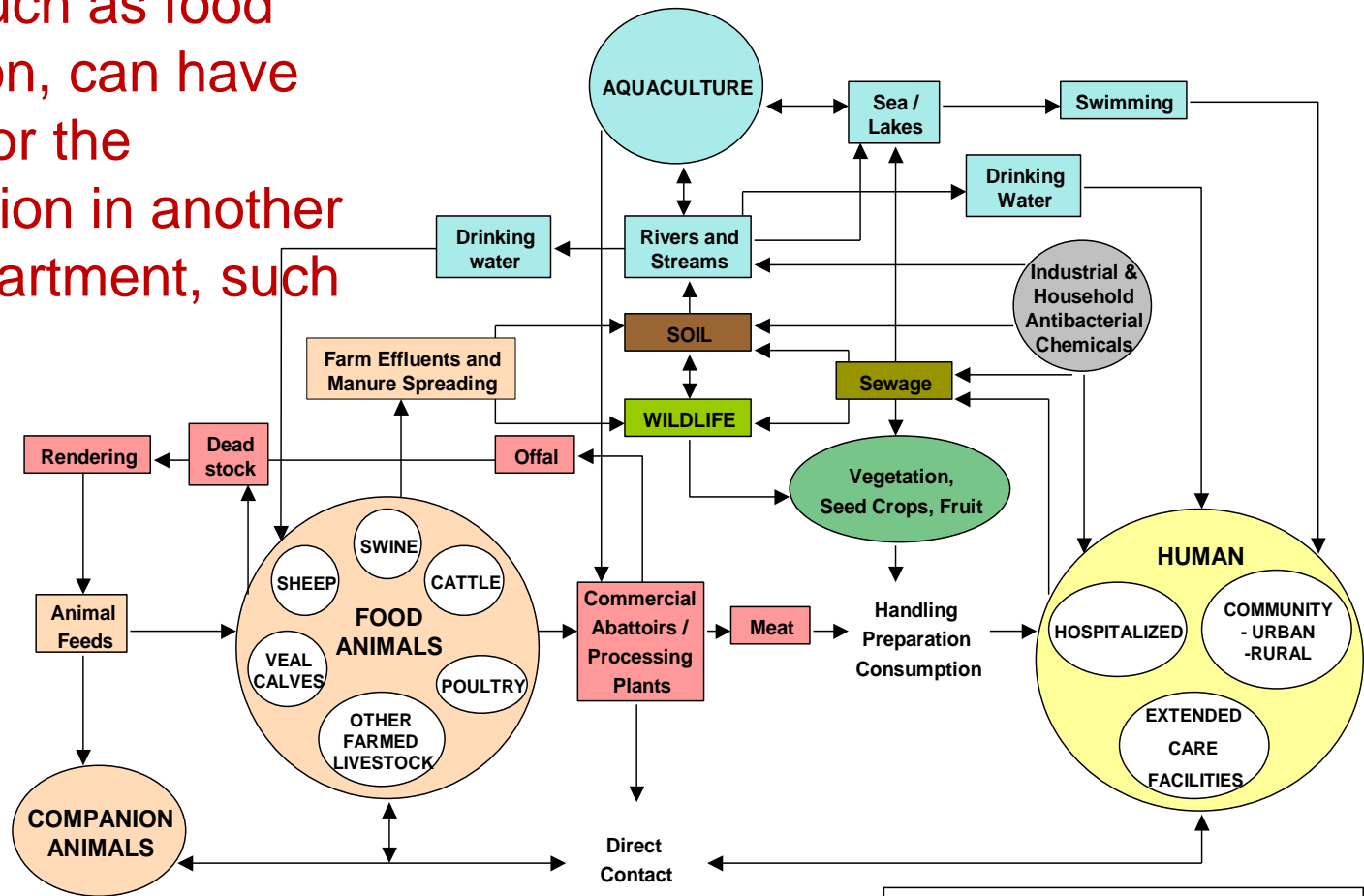
Complicating factor ... Climate change

- High temperatures
- Storms
- Flooding and contaminated water
 - used for irrigation, food preparation
 - spreading of contaminated waters from polluting sources, long range transport of persistent pollutants
- Droughts
- Population displacement
- Human behavior
- *Salmonella*
- *Vibrio cholerae*
- Protozoa
- Mycotoxins
- Biotoxins (algal blooms)



Complicating factors... Antibiotic Resistance

Antibiotic use in one ecological compartment, such as food animal production, can have consequences for the resistance situation in another ecological compartment, such as public health



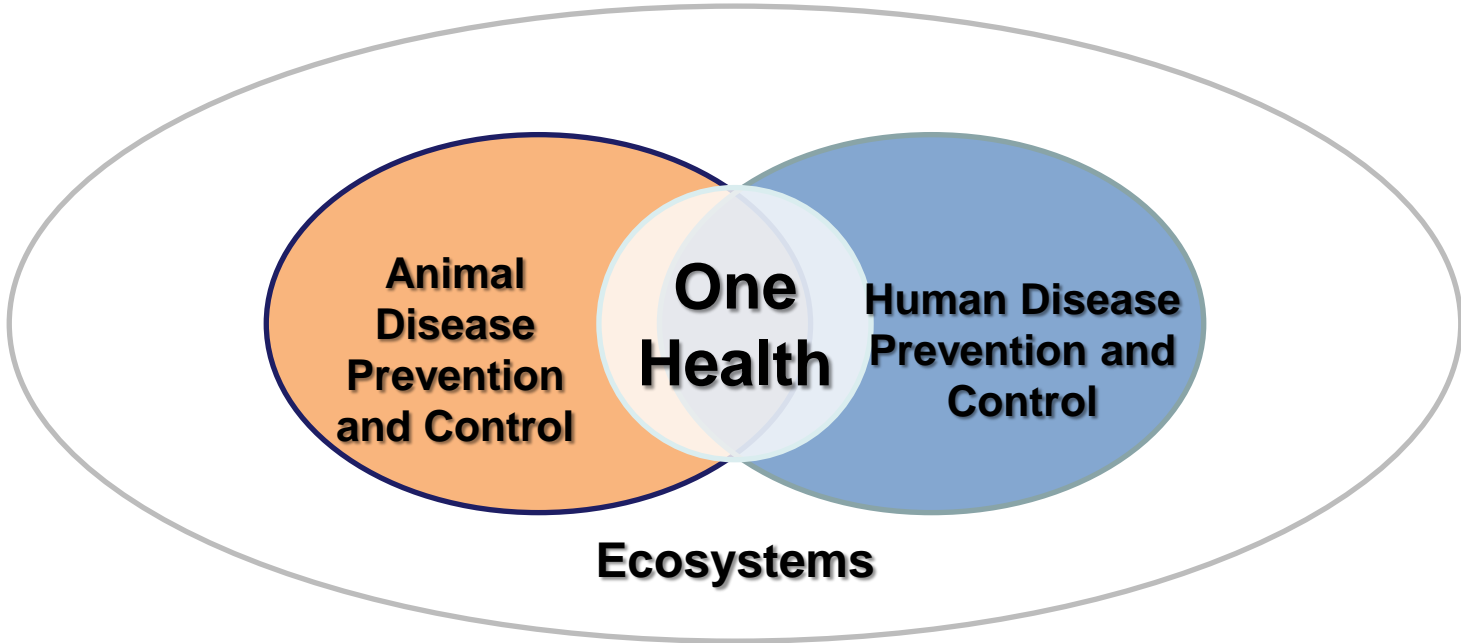
after Linton AH (1977), modified by Irwin RJ

Fighting antibiotic resistance is a priority for WHO

- Major global public health threat
- Global Action Plan on AMR
 - Draft for WHA, May 2015
- European Strategic Action Plan of Antibiotic Resistance, 2011-2016
 - **Action 5: Prevent and control the development and spread of antibiotic resistance in the veterinary and agricultural sectors**



One Health: The Infectious Disease Control Interface



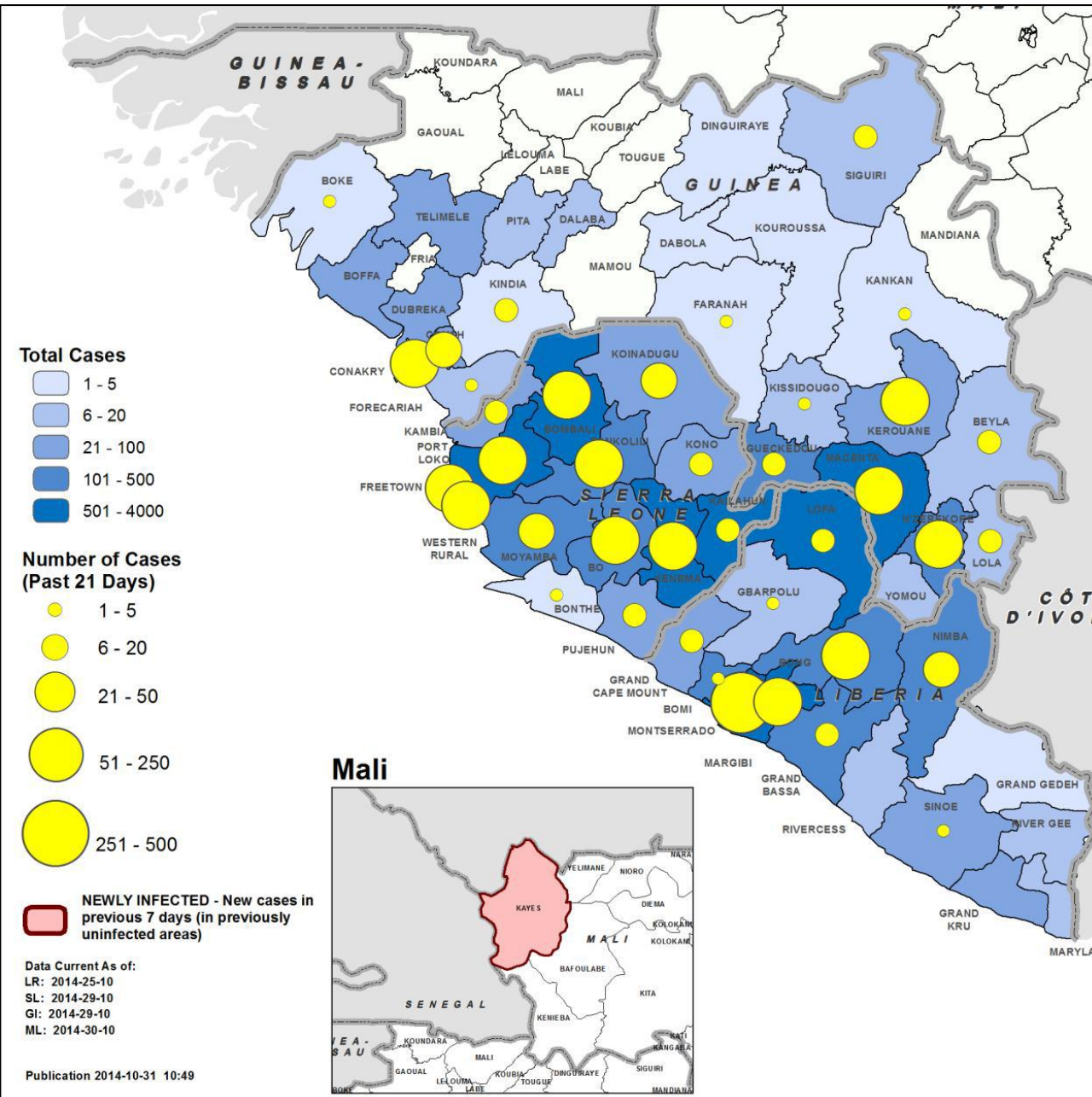
Middle East respiratory syndrome coronavirus

- MERS-CoV

- Globally, **885 laboratory-confirmed cases** of infection with MERS-CoV including at least **319 related deaths (36%)** have officially been reported to WHO as of 28 October 2014
- Data shows that people working closely with **camels**, e.g. farm workers, slaughterhouse workers and veterinarians, may be at higher risk of MERS-CoV infection
- Recent studies in Qatar show that MERS-CoV can be detected in **raw milk** from infected camels.
 - Whether camels excrete MERS-CoV in milk or the virus gets into the milk through cross-contamination during milking is unclear
 - Destroyed by pasteurization or cooking

Ebola outbreak – West Africa

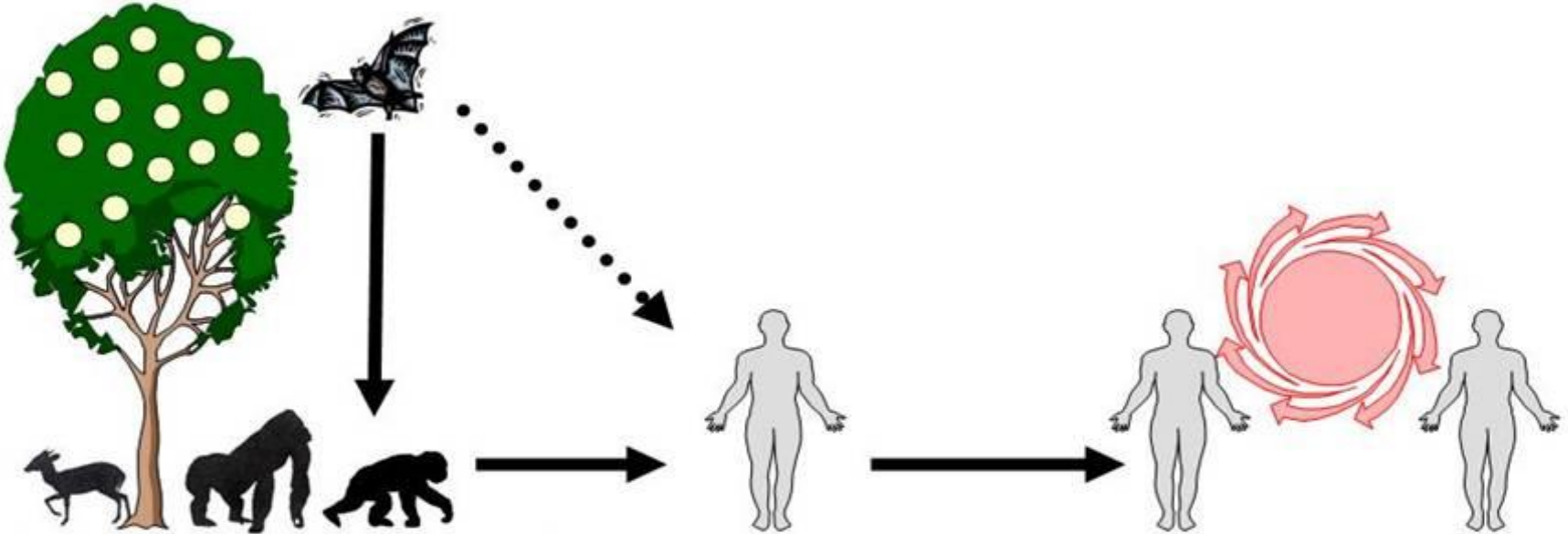
As of 29 October 2014, a **total of 13.703** (probable, confirmed and suspected) cases, including **4920 deaths**, have been reported by the Ministries of Health of Guinea, Nigeria, Liberia, Sierra Leone, Senegal (1 case), Mali (1 case), Spain (1 case) and USA (4 cases)



EBOLA

1. Virus reservoir : Fruit bats

The virus maintains itself in fruit bats. The bats spread the virus during migration.



2. Epizootic in primates

Infected fruit bats enter in direct or indirect contact with other animals and pass on the infection, sometimes causing large-scale epidemics in gorillas, chimpanzees and other monkeys or mammals (e.g. forest antelopes).

3. Primary human infection

Humans are infected either through direct contact with infected bats (rare event), or through handling infected dead or sick animals found in the forest (more frequent)

4. Secondary transmission

Secondary human-to-human transmission occurs through direct contact with the blood, secretions, organs or other body fluids of infected persons. High transmission risk when providing direct patient care or handling dead bodies (funerals).

Ebola virus and transmission via the food chain

- **Bush meat** consumption and handling a risk
- Thorough cooking, 100 °C, will destroy the virus
- Risk of transmission of Ebola virus via the food chain in Europe has been assessed by EFSA



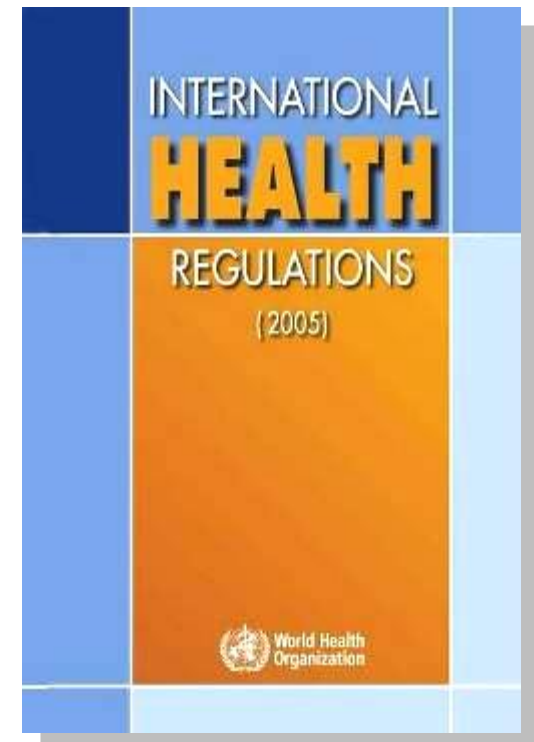
The Guardian. Photograph: Schalk Van Zuydam/AP

The International Health Regulations 2005

Preparedness requires international networks whereby national and international systems interact seamlessly → IHR 2005

Calls for:

- **Strengthened national capacity** for surveillance and control, incl in travel and transport
- **Prevention, alert and response** to public health emergencies of international concern, incl food safety threats
- **Global partnership** and international collaboration
- **Rights, obligations and procedures**, and progress monitoring



The International Health Regulations 2005



Under the IHR (2005), States Parties are required to assess public health events utilizing a decision instrument and notify WHO of all qualifying events within 24 hours of such an assessment.

Four criteria used in the decision instrument

- Seriousness
- Unusual or Unexpected
- Risk of international spread
- Risk of trade or travel restrictions

Key aspects of IHR for food safety

- Food safety events which could have international implications should be reported to WHO in accordance with the IHR
- Includes events due to imported foods, or events that are linked to domestic product known to have been exported abroad
 - Can help to confirm food vehicle if other countries observing same problem
 - Can help to avoid illnesses in other countries

What is unique about Food Safety Events?

- Requires collaboration of different partners in-country
- Requires different expertise than most infectious disease events
- Requires different types of questions to be asked
- Often multi-regional due to international distribution
- Sometimes treated with lower priority in the face of other infectious disease events
- Can have major economic and trade implications

Multi-disciplinary, Multi-sectoral, Integrated, Collaborative

INFOSAN

FAO-WHO joint International Food Safety Authorities Network



- Voluntary **Global network** of national food safety authorities from around the world (178 countries)
- Aims to prevent international spread of contaminated food and foodborne disease and strengthen food safety systems globally, by:
 - promoting the rapid exchange of information during food safety events
 - sharing information on important food safety issues of global interest
 - promoting partnership and collaboration between countries
 - helping countries strengthen their capacity to manage food safety risks

Outbreak of *S. Oranienburg* in Russia linked to internationally distributed powdered infant formula from Belgium – January 2012



INFOSAN Alert

- Russian media report (16 cases) picked up by WHO/Europe and relayed to INFOSAN Secretariat
- INFOSAN Secretariat contacted RASFF Secretariat and colleagues in Belgium
- Belgian Authorities subsequently launched an investigation into the Belgian producer
- Communicated to INFOSAN Secretariat that product was sent to additional countries
- INFOSAN notified national authorities in these countries

Food safety work-plan in WHO

Goal: All countries are adequately prepared to prevent and mitigate risks to food safety

3 major outcomes

1. Support the work of the **Codex Alimentarius Commission** to develop, and for countries to implement, food safety standards, guidelines and recommendations
2. **Multisectoral** collaboration to reduce foodborne public health risks, including those arising at the **animal–human interface**
3. Adequate national capacity to establish and maintain **risk-based regulatory frameworks** to prevent, monitor, assess and manage foodborne and zoonotic diseases and hazards

Conclusions



- Food-borne disease a considerable public health burden throughout the world
- Globalization increases the risk of widespread foodborne disease outbreaks
- WHO actions and partnerships seek to prevent, monitor, predict and respond to food safety threats

Thank you for your attention !

“Only if we act together can we respond effectively to international food safety problems and ensure safer food for everyone”

Dr Margaret Chan –
Director-General WHO

