

New opportunities for safer food Emergencies rule!

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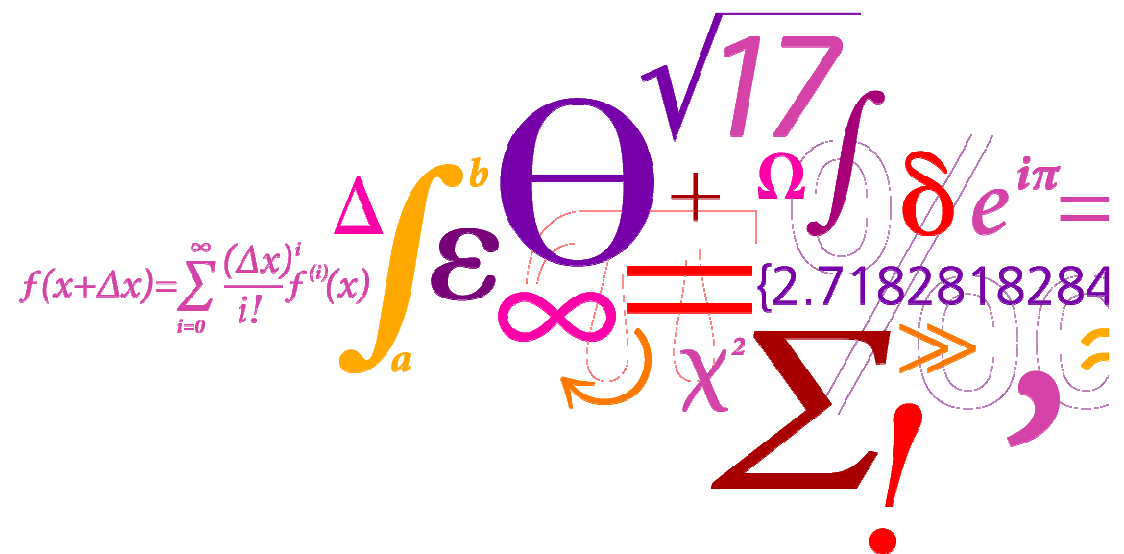
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Disease burden from Diarrhoea

Food- and Water-borne

Disease Incidence

approximately 4,000,000,000 cases per year

Deaths

approximately 1,800,000 per year (mostly children)

Remember

**Significant numbers of other food-borne diseases
(caused by both microorganisms and chemical substances)**

Global challenge of emerging foodborne diseases – lots of zoonoses

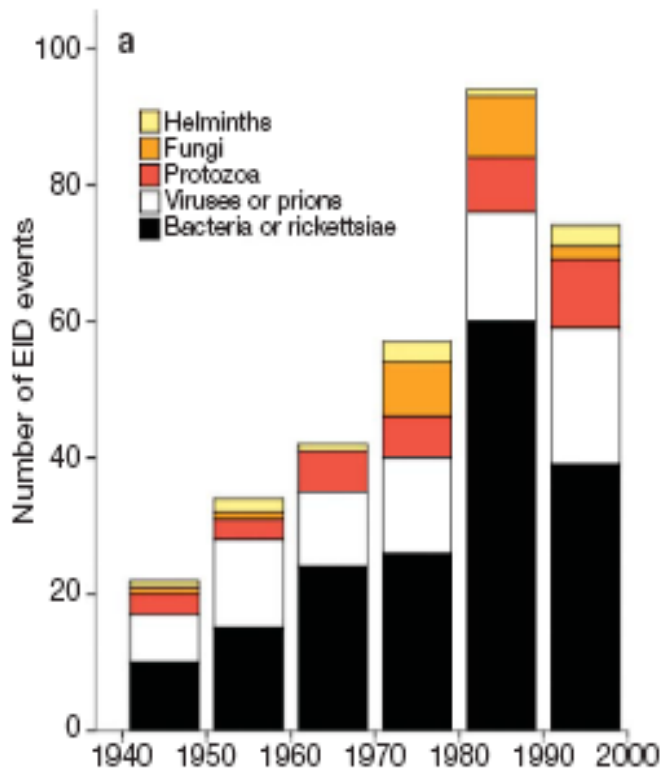
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LETTERS

Global trends in emerging infectious diseases

Ita G. Patel², Marc A. Levy³, Adam Storeygard^{3†}, Deborah Balk^{3†}, John L. Gittleman⁴

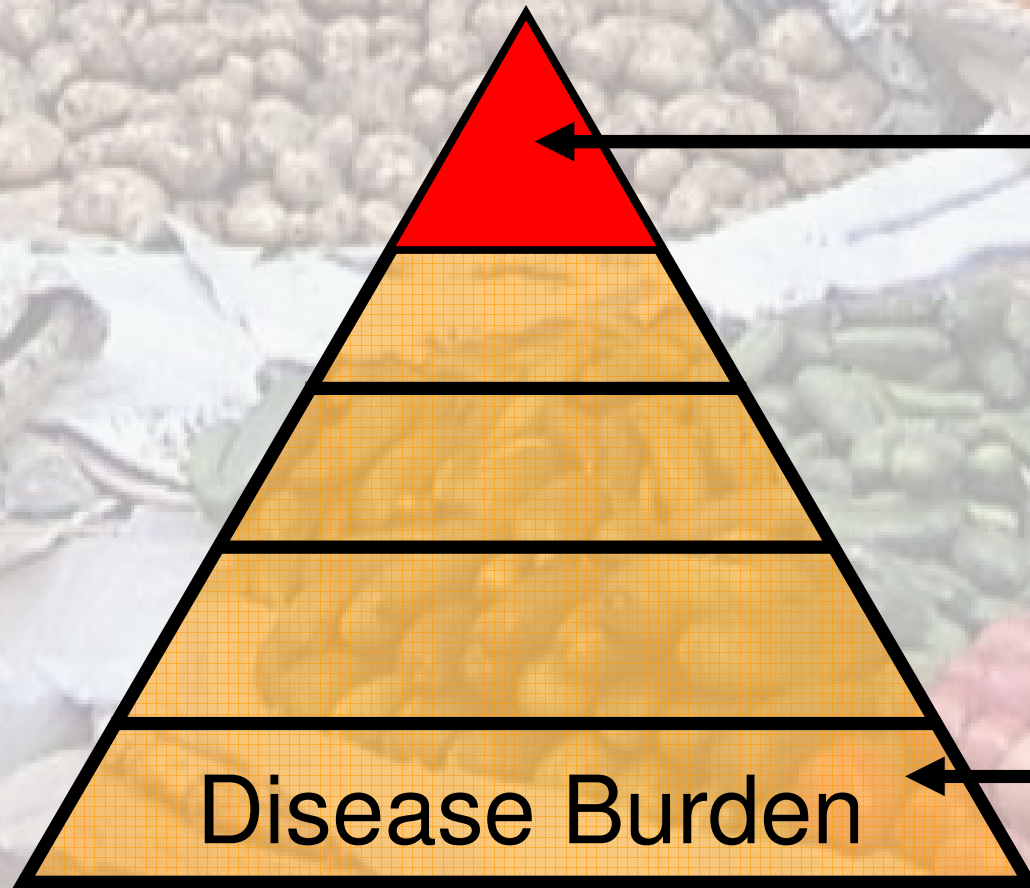


335 newly emerging infectious diseases:

- Approx. 75% zoonoses
- 95 pathogens transmitted through food (~27%)
- 50 (15%) due to "changes in agricultural or food industry"
- many resistant to antibiotics

(could be) Compounded by effects of climate change

SURVEILLANCE OF FOODBORNE DISEASE



WHAT WE KNOW
(reported cases)
incl. outbreaks

WHAT WE NEED
TO KNOW

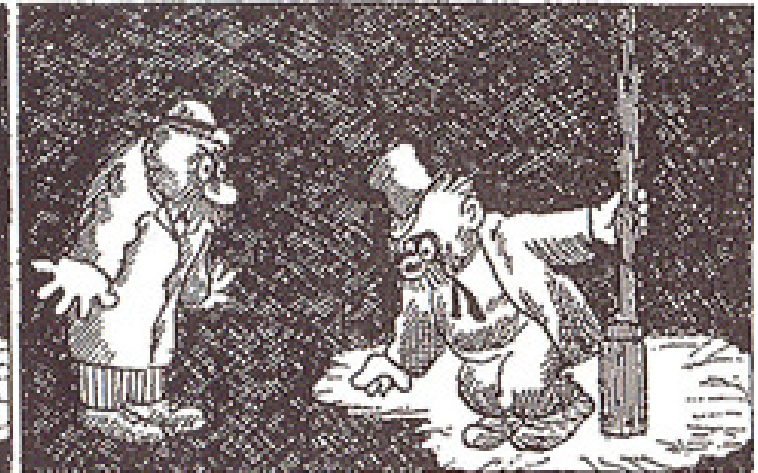
Looking where the data is in stead of Looking for the right data



— Har Herren tabt noget?
— Tjah — ah — min Port—ort—nøgle!



— Har De tabt den her?
— Næh — det var henne i den mørke Gade.



— Jamen, hvorfor søger De saa her?
— Jo — her staar en Lygte — her er betydeligt lysere.

Who is Driving the Food Safety Agenda?

- * WTO (Global Trade Agreements)
- * EU - USA - (Major trading blocks)
- * Global food supply chain
- * Science
- * Food Retailers
- * Consumer concerns



BUT EMERGENCIES RULE!!

Learning from Crises

‘But we can learn a lot from outbreaks!’

Not really

Let’s look at the O104 outbreak - did we learn something new?

O104 European outbreak



Is this really new?:

Outbreaks caused by zoonotic pathogens from veg's?

Outbreaks caused by VTEC from sprouts?

Outbreaks likely caused by (un)-intentional contamination of plants from animal manure?

None of this is new – we basically know what the problem is – and we know how to prevent it

So, action has been taken?

To prevent dangerous application of animal manure?

To strategically test seeds for sprouting?

To help developing countries improve production practices?

To strengthen or at least uphold international guidelines (Codex?, OIE?)

I don't think so ??

Crises prevention

After 9/11 the discussion in the USA re. prevention of terrorist events also focused on food safety

It was suggested to create a separate food safety control system for terrorist food safety events

In one discussion a smart guy (from CDC) likened this suggestion to a suggestion to have two fire-fighter forces: One for ordinary fires and one for arson

It does not make sense!

Crises prevention

More testing?

More vigilance?

Better communication?

....

Is not gonna work

It's the system - stupid

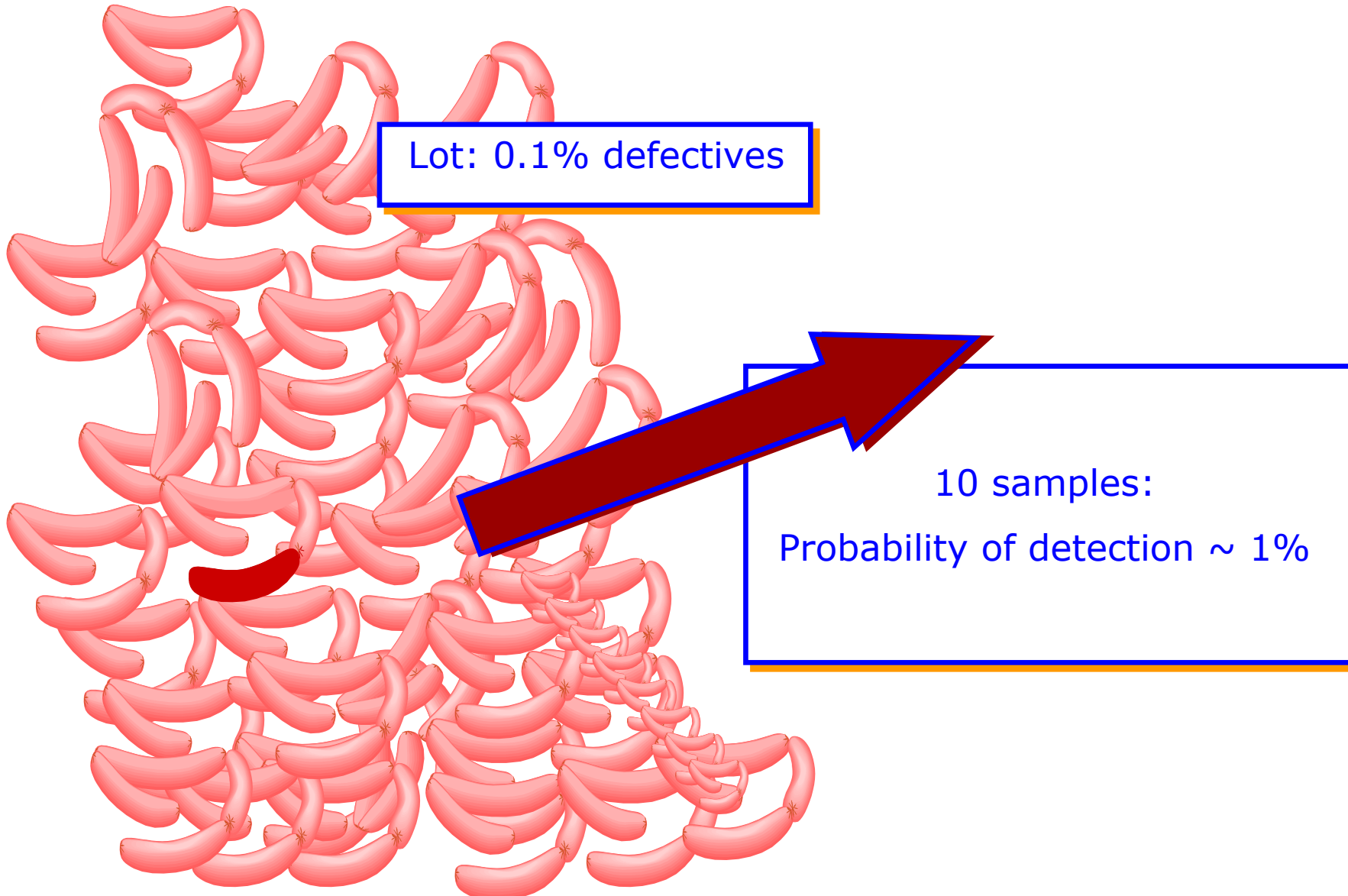
So – How do we improve the System?



1) We have to get rid of the blind faith in testing

Relying on the detection of (absence of) pathogens in the end product usually is inefficient, because it is impossible to test sufficient samples to avoid unacceptable health risks (Havelaar et al., 2010).

Safety cannot be achieved by senseless testing



2) Real prevention comes from integrated systems



Efficient prevention – of foodborne outbreaks – and of foodborne disease – depends on integrated systems

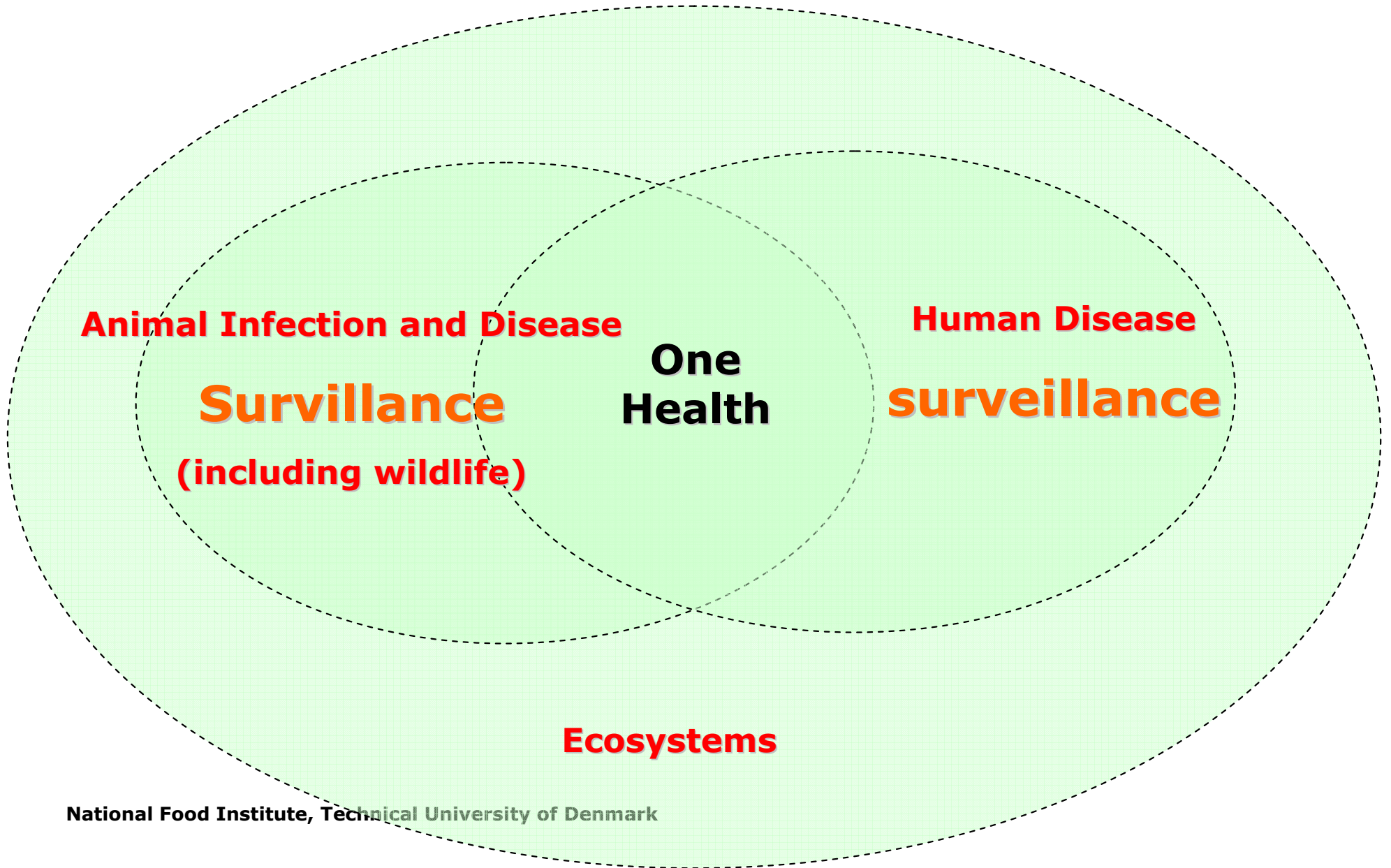
Efficient action, in case of outbreaks, depends on integrated systems

Do we have integrated systems?

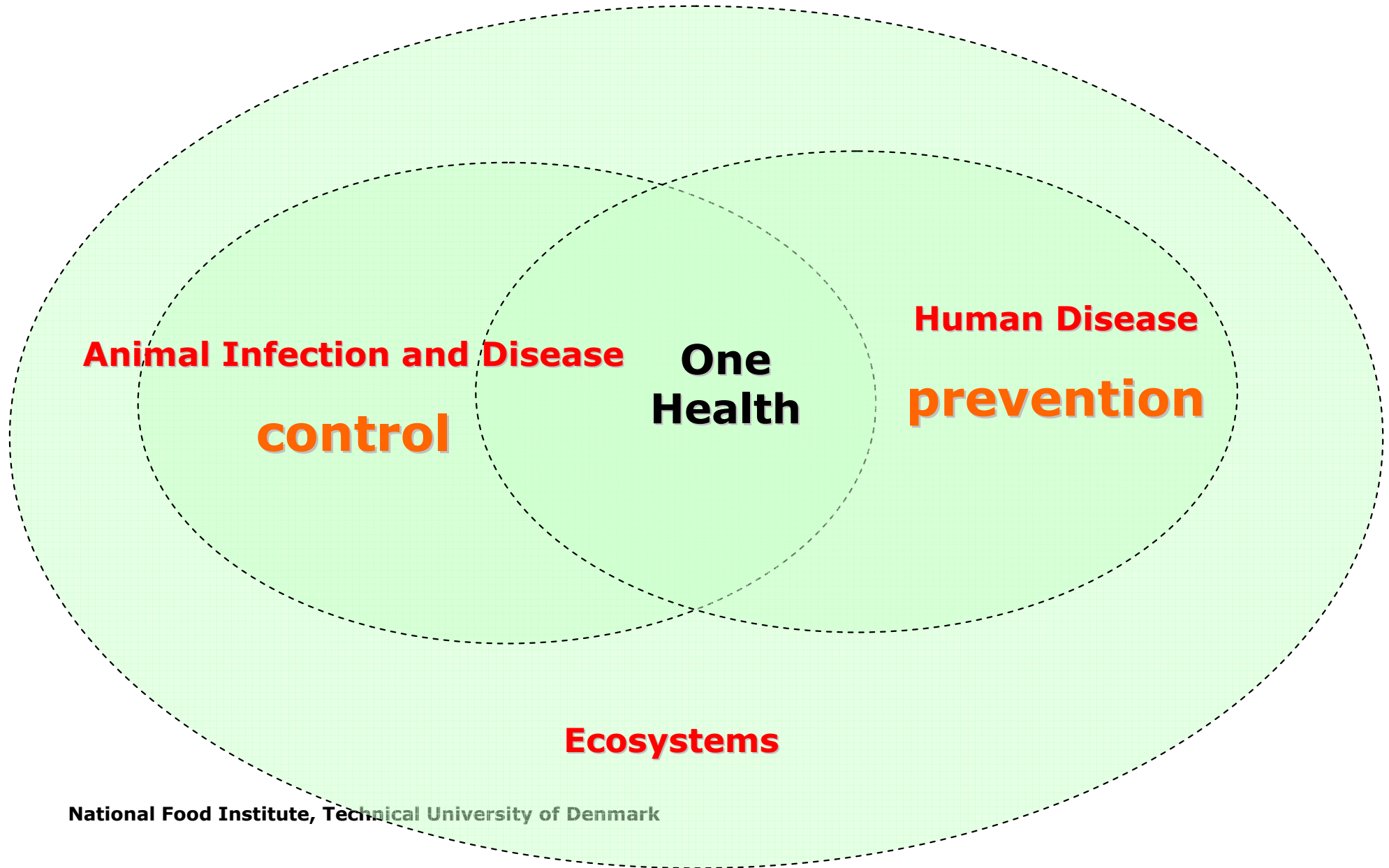
Yes, actually some countries have zoonosis centres:

(One Health)

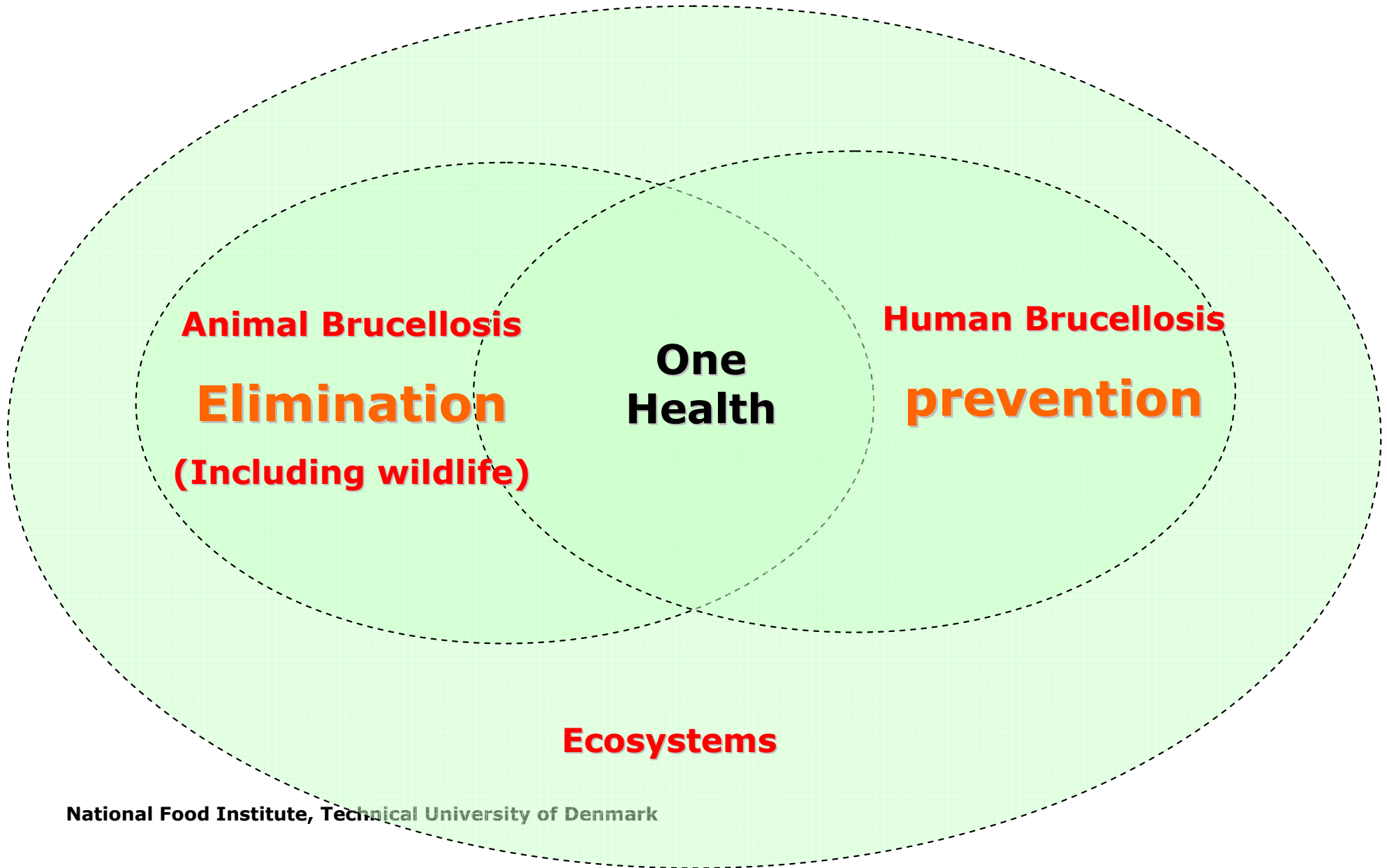
One Health: the interface in Infectious Disease Surveillance (not only Emerging Infectious Diseases)



One Health: the interface in Infectious Disease Control (not only Emerging Infectious Diseases)



One Health: the interface an example



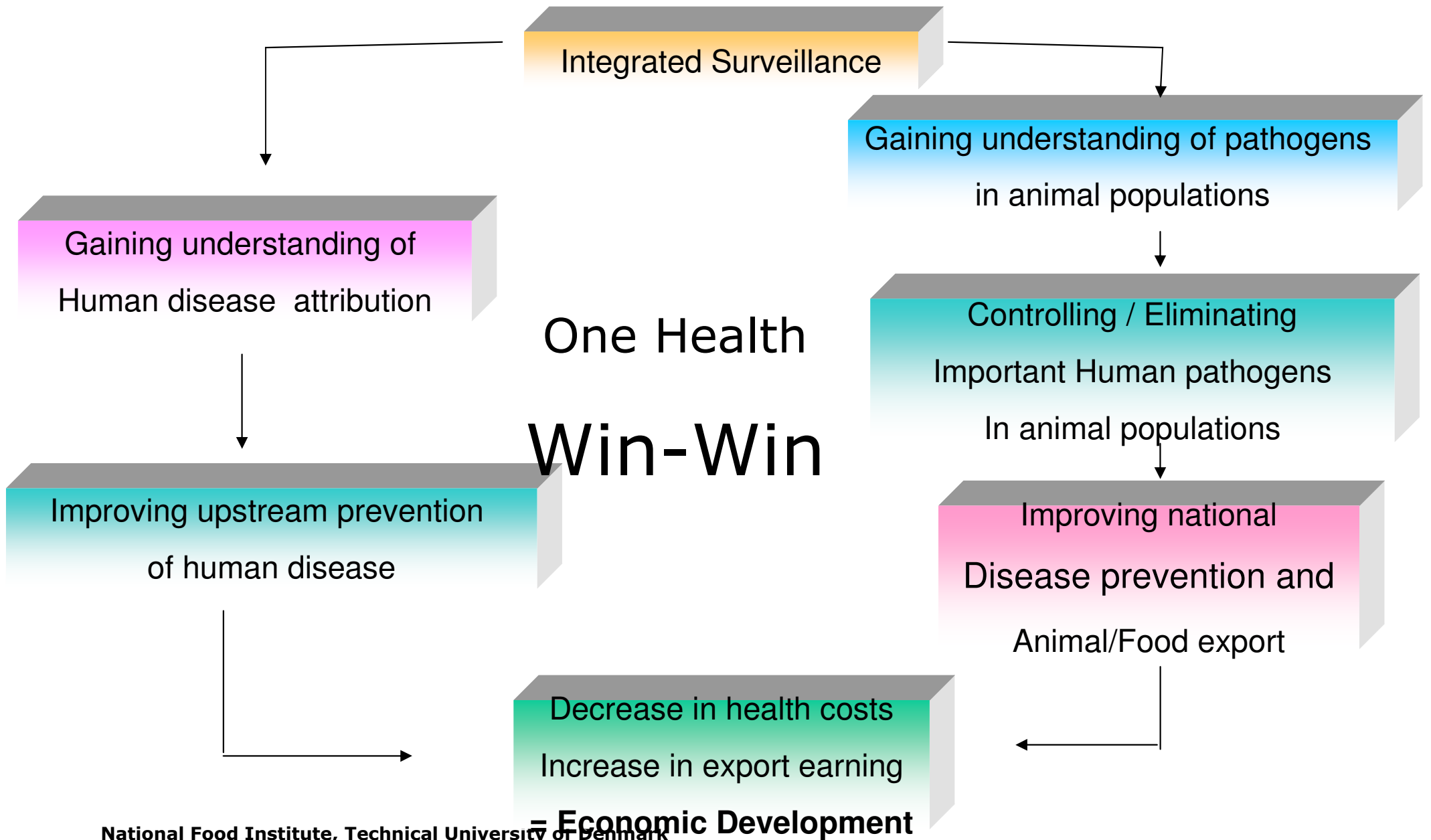
3) Food Safety New Directions:

Real prevention comes from Focused intervention

- Survey foodborne disease and food contamination
- Assess the risk and the main factors affecting it
- Isolate major foods linked to disease
- Define efficient intervention(s) and monitor effect

e.g. Salmonella in chicken – significant rise in disease in the last 20 years – some countries have now implemented action plans taking Salmonella prevalence in chicken down from 40-80% to lower than 1%, resulting in 40 fold decrease in human disease

One Health – Cost-Benefit



Future Food Safety

Evaluate disease metrics and attribute to food

Use new genetic fingerprinting to diagnose/link cases

Define interventions, monitor effect, share experience

Set targets – expecting continuous improvement

Involve Industry – should have common goals?

Detect more outbreaks

The novelty of the risk analysis concept is that risks are assessed throughout the food chain, combining qualitative and quantitative data of microorganisms with data from disease surveillance and food monitoring.

It is likely that future surveillance of microbiological foodborne disease will increasingly be based on molecular and gene sequence based subtyping, enabling the identification of widespread outbreaks, that was not recognized previously.

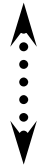
Sharing data over borders

New analytical methodology, as well as new and more efficient ways of sharing large bodies of lab data in real-time has the potential to dramatically improve future food safety – we need to prepare through structural and conceptual revisions of national – and international – food safety systems.

The Food safety Win-Win

Improved food safety

less illness, medical and social costs, poverty

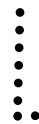


Improved Food trade

international trade capability
safe national trade

Improved health

less illness, medical and social costs,
poverty



Economic Development



Control of food-borne diseases

How do we learn from outbreaks

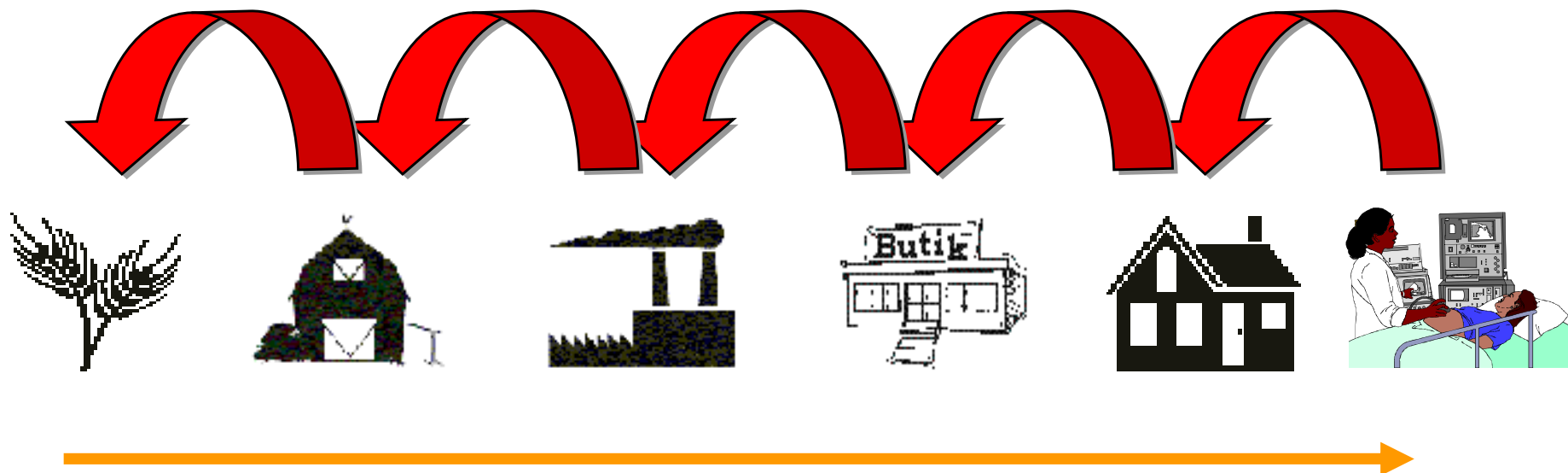
Information needed

- The source(s)
- The route(s) of transmission
- Efficient control strategies

Tools needed

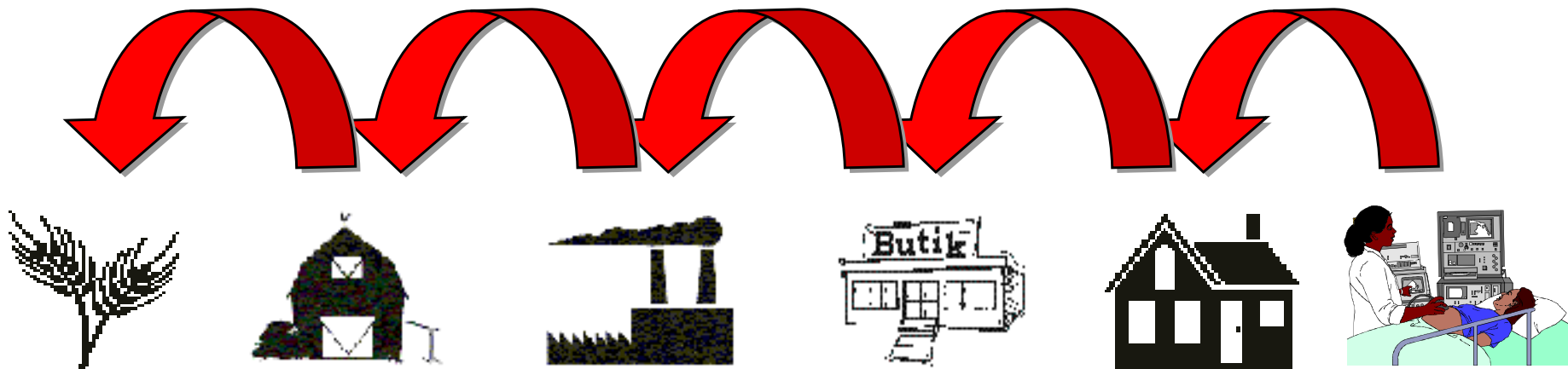
- Diagnostic/detection tools
- Bacteriological typing tools
- Epidemiological tools

Trace-back



Life is understood backwards - but must be lived forwards *(Kirkegaard 19th century)*

Trace-back



Global approach – Global improvement

- Lowering the global disease burden is possible through international standards based on health considerations
- Improving economic development is possible through international trade of safer food
- Help to developing countries should not be given in a way costing lives in importing countries (lowering standards) but in a way that improves food safety both in exporting and importing country (technical assistance as per WTO/SPS agreement (Sanitary and PhytoSanitary))

Prevention in one global food market

- Foodborne disease will not be prevented through end-product testing or through border control alone
- New – and more efficient - food safety systems could attempt a focus on preventative efforts as close to the source as possible
- New agricultural products will most likely affect both nutrition and food safety globally in the future

reinforcing the need to

Improve Food Safety Systems Globally