The surveillance landscape in Europe

One World, One Health, One Surveillance?

One Surveillance, One Budget?
Questions often encountered

**Which surveillance option is the most effective?** Which surveillance option is the most cost-effective?

**Who pays, who gains?** Who should bear the costs? Who benefits from surveillance? Is surveillance a public or private good?

**Is surveillance worth it?** Should we do surveillance?

**Where should we focus our surveillance efforts?**

**Is my surveillance good (enough)?** How can I improve my surveillance?
Economics of surveillance

- Economic efficiency – resource allocation
  - Optimisation, acceptability, least-cost criteria
- Comparison of benefits or outcomes (e.g. production losses avoided, human disease avoided, ability to trade, reputation) with costs of surveillance
- Prioritisation
- Understanding of the system and human behaviour (→ risk factors)
Aim and objectives

To **characterise the context** within which **the development of animal health surveillance and evaluation frameworks and tools occurs**

By describing

- existing public and private surveillance systems (including sources of finance) for all species
- animal populations, trade flows and critical infrastructure
- how decisions about the allocation of resources to animal health surveillance are currently made
Data collection

- **13 Countries:** Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Spain, Sweden, and Switzerland

- **Sources:**
  - Scientific literature, internet pages, government reports, national statistics
  - EU Trade Control and Expert System, Eurostat
  - Interviews with decision-makers in 7 countries

- **Surveillance data:**
  - Public and private surveillance systems, all threats, types and species
  - Data collated to characterise these systems

- **Population and economic data:** livestock and bee holdings in Europe, human and animal populations, gross domestic product, farm values

- **Infrastructure data:** slaughterhouses, livestock markets, traders, transporters, feedmills, laboratories, veterinarians
Surveillance system components: Purpose and species

- 798 enhanced passive and active SSC recorded
- Main purposes:
  1) Early detection/warning
  2) To detect cases to allow specific action to be taken to facilitate control or eradication
  3) Surveillance to substantiate freedom from disease or infection
- Most frequently targeted species:
  1) Cattle (23%)
  2) Pigs (16%)
  3) Poultry (14%)
Surveillance system components: hazards

- Most frequently recorded:
  - Salmonellosis (16%)
  - Brucellosis (10%)
  - Avian influenza (8%)
  - Classical swine fever (4%)
  - Bovine tuberculosis (4%)
  - Bluetongue (4%)
  - Bovine spongiform encephalitis (2.5%)
How much does surveillance cost in these countries?
## Surveillance system components: Expenditures

<table>
<thead>
<tr>
<th>Species</th>
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<th>C4</th>
<th>C5</th>
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</table>

171/798 components with cost estimate = 21%
Surveillance system components: Private or public funding

- 100% Public
- 100% Private
- 50:50
- > Public
- > Private
- Unknown
Surveillance system components: Private or public funding – poultry only
Surveillance system components: Case definition

- Laboratory test for pathogen or toxin
- Gross pathology
- Indirect indicators
- Clinical signs
- Unknown
- Other
- Specified diagnostic criteria
- Risk factor(s)
Total animal health surveillance spend in Britain per year
£47.3m
Total animal health surveillance spend in Britain per year £47.3m

- Cattle
- Pigs
- Sheep and goats
- Poultry
Amount spent on surveillance per species

Cattle
£44.4m

Sheep and goats
£979k

Pigs
£1.01m

Poultry
£571k

Total annual surveillance spend
£47.3m
Sheep and goats £979k
Cattle £44.4m
Pigs £1.01m
Poultry £571k

Total annual surveillance spend £47.3m

Amount spent on surveillance per species in livestock units
Amount spent on surveillance per standardised livestock unit

Cattle: £4.39
Pigs: £0.75
Poultry: £2.05
Sheep and goats: £0.39

Average across all livestock sectors: £3.33
Comparison to economic value

- Surveillance expenditure in proportion to the economic contribution of each species to the UK economy?
- Surveillance expenditure by species compared to the economic value of each livestock sector

<table>
<thead>
<tr>
<th>Livestock sector</th>
<th>UK population size in 2011</th>
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<tbody>
<tr>
<td>Cattle</td>
<td>9,933,000</td>
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<tr>
<td>Sheep and goats</td>
<td>31,722,000</td>
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<tr>
<td>Pigs</td>
<td>4,441,000</td>
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<tr>
<td>Poultry</td>
<td>162,551,000</td>
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Decision-maker interviews

- Multitude of private-public partnerships
- Single most important decision criteria influencing surveillance
  - International legal requirement (including EU obligations)
  - National legal requirement
  - Cost-benefit measure, cost-effectiveness measure, and expected costs
- Disease situation in the country
- Impact related criteria
- Various needs for further information identified (e.g. epidemiological and economic information)
Opportunities

- Cost data an important element in understanding and informing resource allocation
- Data not easily accessible or available
- Practical cost calculation tool for surveillance
- Comparison of the economic value of livestock units to on-going surveillance efforts and the associated resource use
- Surveillance focusing on novel areas, in particular health-event based surveillance
- Making use of private-public partnerships
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