



Salmonella Surveillance in Great Britain

**Advisory Committee on the
Microbiological Safety of Food**
31st January 2013

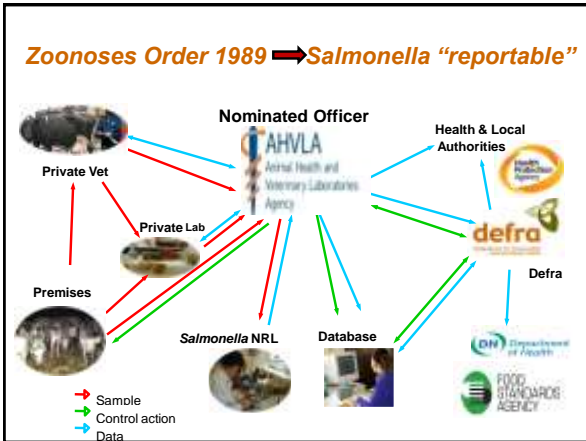
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Background

- EU legislation
 - Directive 2003/99/EC
 - Regulation (EC) No. 2160/2003
- National legislation
 - The Zoonoses Order 1989
 - Control of *Salmonella* in Poultry Orders
- Objectives of *Salmonella* surveillance:
 - Protect public health
 - Detect new and emerging strains
 - Mitigate threat to animal health and welfare and reduce economic burden to farming community
 - Monitor trends








Data sources

Salmonella surveillance based on data collection from:

1. Endemic disease surveillance programme: submission of clinical diagnostic samples to network of Government veterinary laboratories (AHVLA)
2. Outbreaks of clinical disease in livestock
3. Voluntary industry monitoring activities
4. Statutory *Salmonella* National Control Programmes in chicken and turkey sectors
5. Structured surveys, research projects
6. Government investigations
7. Incidental findings


➔ Collated into central database



Statutory *Salmonella* Programmes




Regulation (EC) No. 2160/2003 → *Salmonella* National Control Programmes in chickens and turkeys:

- All commercial UK poultry flocks tested for *Salmonella* - minimum harmonised sampling requirements
- Number positive flocks = numerator
- Number of flocks in production = denominator
 - AHVLA database and GBPR
 - Monthly returns from Defra approved laboratories
 - Industry data
- Prevalence estimate – 'flock based'



Passive surveillance - non statutory

- Mainly cattle, sheep, pigs
- Examinations carried out to diagnose clinical disease
- Reports by private vets/laboratories & submissions to AHVLA/SAC
- Reported as '**incidents**'
 - = the first isolation and all subsequent isolations of the same *Salmonella* serovar from an animal, group of animals or their environment on a farm within a defined time period (usually 30 days)
- Lacking reliable denominator

Other monitoring



→ Voluntary industry monitoring:

- Voluntary monitoring by the duck industry sector (assurance schemes)
- Chickens and turkey : voluntary monitoring using non NCP sample types
- Most incidents in poultry are not associated with clinical disease but subclinical carriage of *Salmonella*



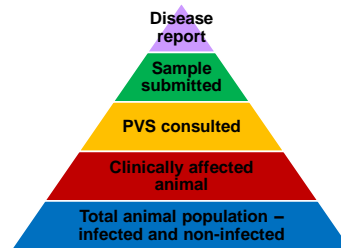
→ Surveys

- EU *Salmonella* baseline surveys
- National survey of *Salmonella* in pigs at slaughter
- Future repeat abattoir survey?

Limitations (1)



1. The surveillance pyramid
2. Sampling bias
3. Defining a suitable denominator!!



Limitations (2)



Defining a suitable denominator.....

Options include:

- I. Submission data
 - total number of samples submitted
 - submissions in syndrome
- II. Number submissions tested for a specific disease
- III. Population data
 - number of animals/farms
 - number of submitting farms

Pros and cons to each option

Limitations (3)



I. Use of submission data:

- Submission rate affected by:
 - Clinical presentation
 - Economic factors
 - Animal species
 - Increased awareness/ individual PVS
 - Changes in population /apparent population at risk over time
- Adjusting for submission rates – impact when submission rates change due to real change in disease occurrence.
- Private laboratories also testing – no access to number of submissions

Limitations (4)

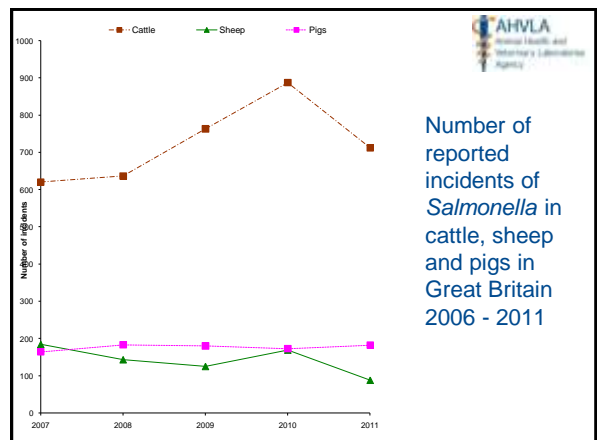


II. Test based denominator:

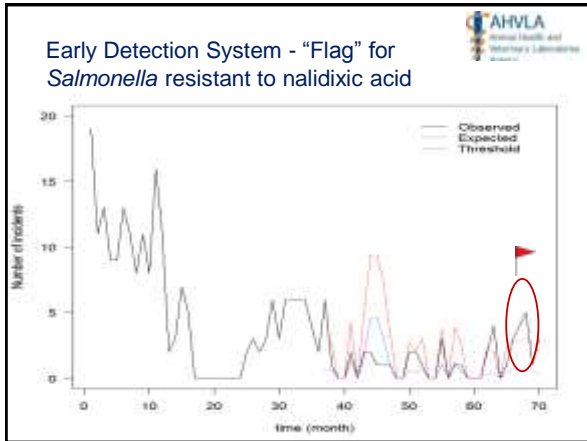
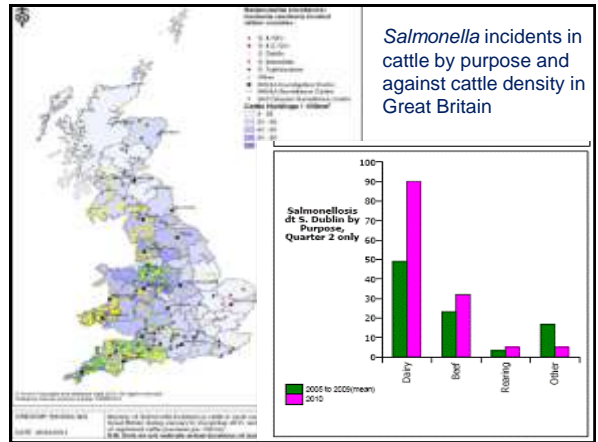
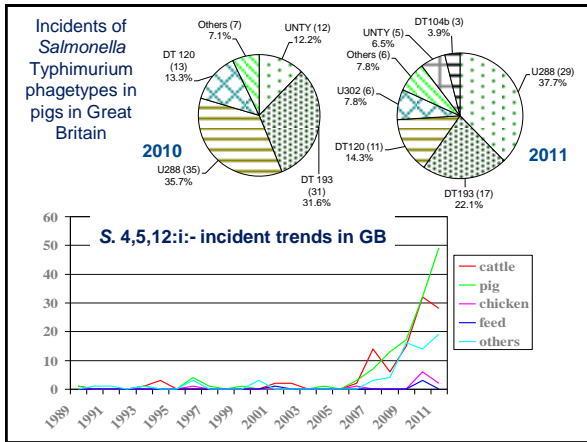
- difficult to maintain due to the requirement to continually update the definition of submissions at risk as the diagnostic tests used change
- significant potential to mask changes in disease incidence (denominator ~ numerator)
- no access to number private lab tests carried out

III. Farms/animal population as denominator:

- could provide biased estimates of disease incidence if submission rates change.
- number farms submitting samples could provide a good method of adjusting disease occurrence for submission levels



Number of reported incidents of *Salmonella* in cattle, sheep and pigs in Great Britain 2006 - 2011



- Summary**
- Livestock species subject to *Salmonella* NCPs relatively reliable prevalence data limited only by:
 - Test sensitivity issues
 - Access to reliable population data
 - Non-NCP species no reliable prevalence data but:
 - Look at trends over time
 - Monitor changes in total number of incidents/ serovars/ phage types and relative changes
 - Monitor differences in populations (age groups, industry sectors etc)
 - Cluster detection
 - EDS system to raise flags for new and emerging strains

- The future**
- Structured surveys best for obtaining representative data plus denominator (cost!!)
 - Incorporation of assurance scheme monitoring data to national *Salmonella* surveillance data?
 - Refine data analysis/presentation to limit likelihood of misrepresentation
 - Future access to submission data from private laboratories/ other sources of information
 - Where practical, use of test based denominator or number of farms submitting samples as denominator with suitable quality statements

- National *Salmonella* surveillance data published annually:
- UK Trends and Sources report (<http://www.efsa.europa.eu/en/zoosescomsumrep.htm>)
 - UK Zoonoses report (<http://www.defra.gov.uk/animal-diseases/zoonotic/>)
 - *Salmonella* in livestock production in Great Britain report (http://via.defra.gov.uk/reports/rep_salm_rep11.htm)
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