



EFSA *Salmonella* in pigs QMRA:

Update on progress

EFSA RA consortium:

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Overview

- Background
- Aims and objectives
- Methodology
 - Selection of case study Member States
- Summary

Background

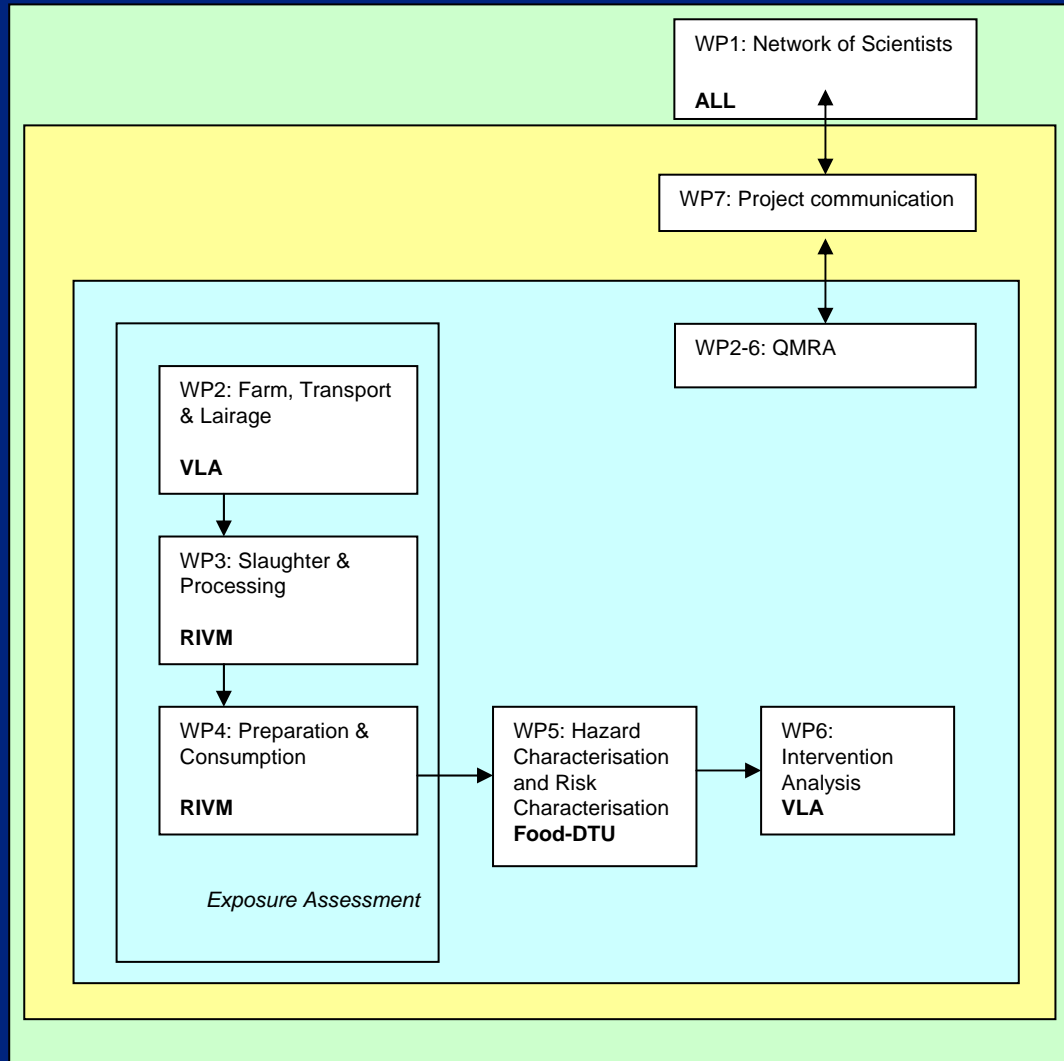
- Consortium is made up of three European institutes
 - VLA (UK, lead)
 - RIVM (The Netherlands)
 - Food-DTU (Denmark)

- Project started in January 2008
 - Breeder finisher survey results due in May 09
 - First preliminary results due to Working Group end June 09

Aims and objectives of EFSA QMRA

- To estimate the relative effect of interventions (and hypothetical reductions) in reducing the risk of human illness attributable to pig meat consumption in the EU
 - Endpoint: either reduction in human cases or prevalence at retail
- To describe the difference in the effect of interventions/reductions across the EU as much as possible
 - Given data/resources
- Use the baseline surveys for parameter estimation or validation
- Provide risk assessment as input for Scientific Opinion to be produced by EFSA Working Group
- Provide input for EC Cost Benefit Analysis

Organisation of work



Interventions/reductions

- Agreed with EFSA Working Group and EC
 - Now in discussion with CBA team to sync interventions to be modelled
- Hypothetical reductions:
 - Effect of x% reduction in prevalence at slaughter
 - Effect of x% reduction in prevalence at end of carcass processing
 - Effect of 1,2,3 log reduction in concentration at end of carcass processing
- Interventions:
 - Farm:
 1. Reduction of feed contamination
 2. Supplier status
 3. Improved hygiene/biosecurity
 - A. Within farm: increased cleaning, longer downtime
 - B. Outside farm: External contamination
 4. Increased resistance (wet feed, vaccination, organic acids)
 - Transport:
 1. Increased cleaning
 2. Logistic slaughter (i.e., one batch, one vehicle)
 - Slaughter:
 1. Reducing/preventing faecal leakage
 2. Logistic slaughter (process high-risk pigs at end of day)

Methodology

- Risk assessment must:
 - Describe EU
 - Describe differences between pig meat products
 - Include all interventions/ToRs
- However, only limited data/resources/time...
- Therefore:
 - Select case study MSs that differ from one another sufficiently to describe varying effect of interventions
 - Select three product types to describe differences in processing of products
 - Develop framework which incorporates all salient points for intervention

Methodology

Framework & products

Input:

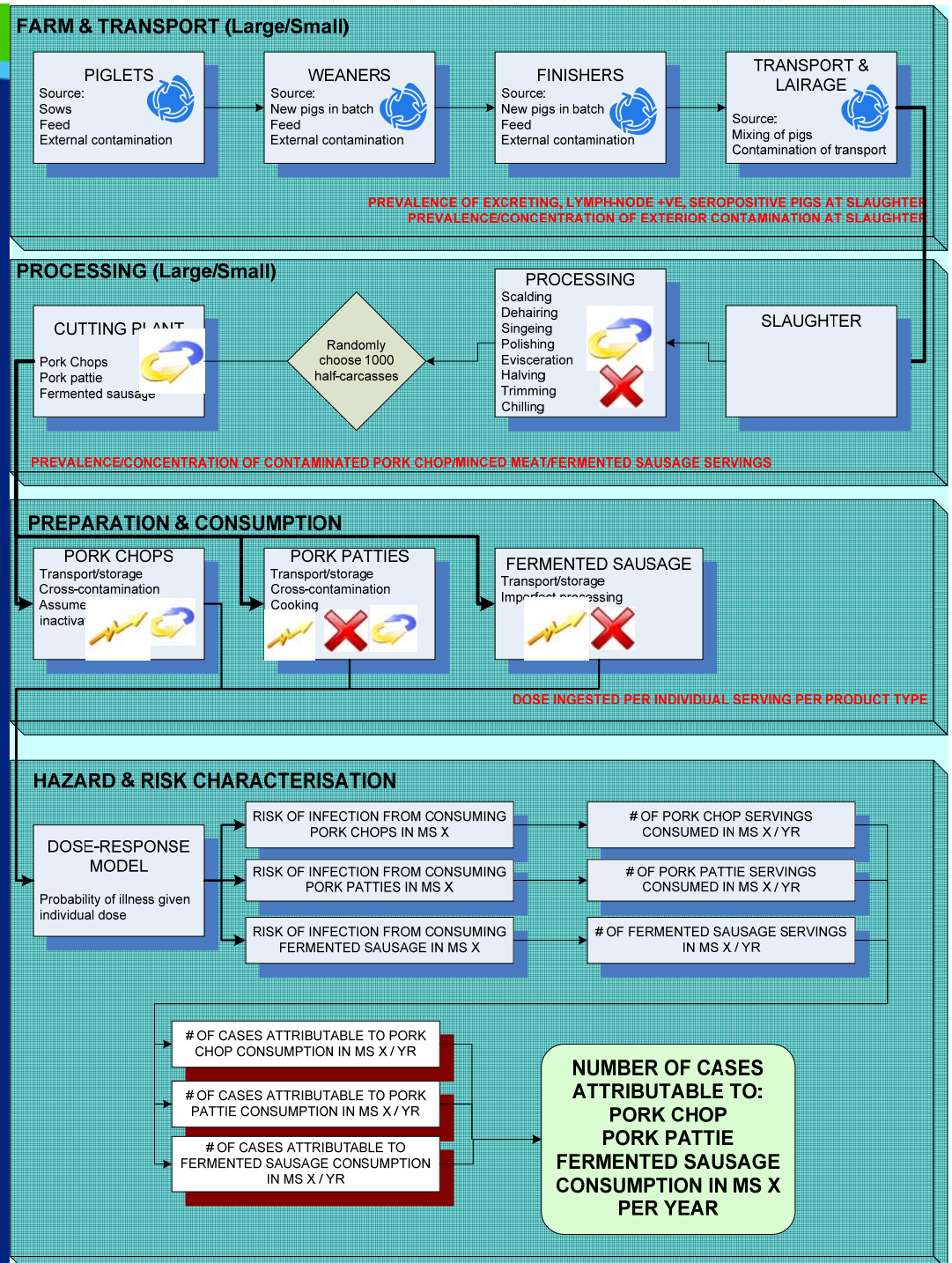
- Management system of farm
- Sources of infection:
 1. Sows/new pigs
 2. Feed
 3. External contamination

Product types:

- Pork chops
- Pork patties
- Fermented sausage

Outputs:

- Number of cases attributable to product type in case study MS x per year
- *Relative effect of interventions/reductions for MS*
- *NOT at EU level*



Methodology (cont'd)

- Selection of case study Member States
 - Group EU MSs by relevant criteria
 - Choose criteria: should represent production practices across EU that are assumed to affect *Salmonella* risk
 - Use cluster analysis methods (k-means) to allocate each MS to groups as **objectively** as possible
 - Pick a case study MS from each grouping
 - Base on amount of data available
 - Aims to give examples of how the effect of interventions might change according to production practice etc throughout EU

Methodology (cont'd)

- **Original criteria**
 - Should be based on production characteristics that we assume affect Salmonella risk

CRITERIA	UNIT	Comments
1. Farm type – slaughter pigs		
1.1 All-in all-out intensive	% of all pigs/farms	
1.2 Continuous intensive	% of all pigs/farms	
1.3 Free-range	% of all pigs/farms	
1.4 Backyard	% of all pigs/farms	For own production on farm
2. Slaughter & processing		
2.1 In-line slaughter	% of pigs	
2.2 Floor slaughtering	% of pigs	
3. Processing - location		
3.1 Cutting plants	% of produced pork	
3.2 Supermarkets	% of produced pork	
3.3 Butcher shops	% of produced pork	
4. Retail – distribution		
4.1 Kept in a cold chain	% of distributed pork	
4.2 Kept out of cold chain	% of distributed pork	e.g. at markets
5. Consumption – product types		
5.1 Minced pork	% of bought pork	
5.2 Whole cuts	% of bought pork	
5.3 Sausages	% of bought pork	Fermented, smoked, etc., but not cooked

Data lacking!

Methodology (cont'd)

- **Grouping of MSs**

- **Surrogate criteria**

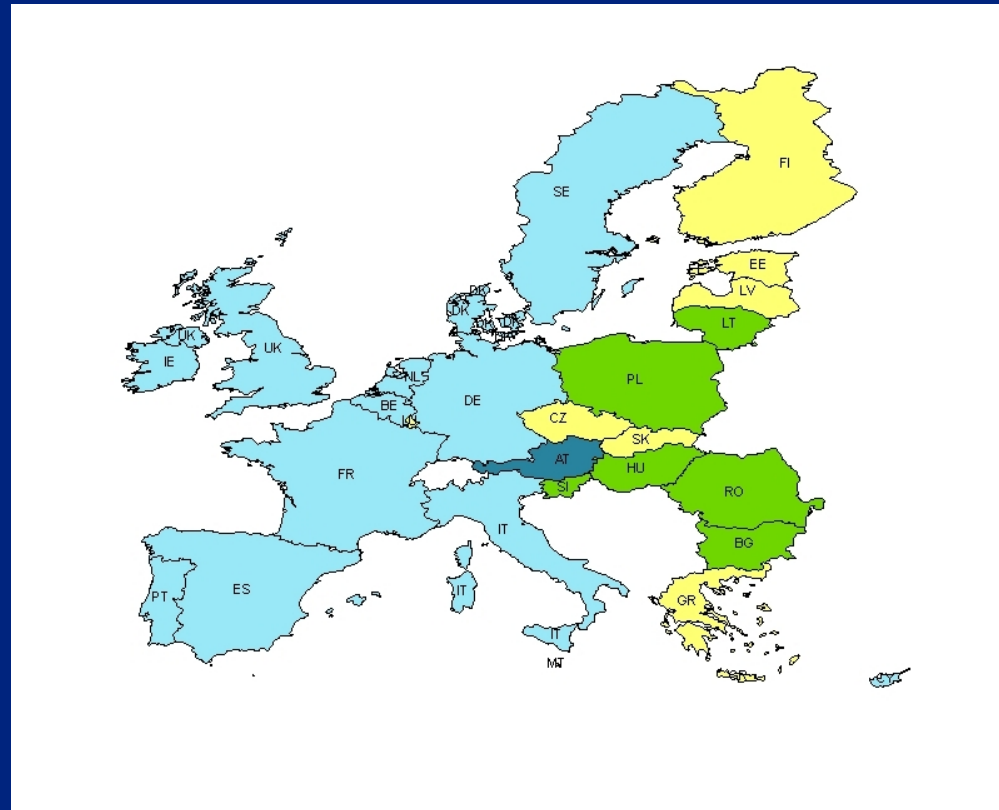
1. Have NOT used salmonella prevalence

Criteria	Data available	Value used in the cluster analysis	Data source
Production	Size of holdings (heads)	Ratio of big holdings/small holdings	EuroStat
Slaughter	Slaughterhouse capacity (heads)	Ratio of output from big SH / small SH	EU baseline study
Consumption	Pig meat consumed per capita Relative consumption of sausages	Amount pig meat consumed per capita (kg) Relative consumption of sausages	FAOSTAT EuroStat

Methodology (cont'd)

- Picking a MS from Grouping 1 means that it should produce pig meat of different risk to a MS in Grouping 2, 3 or 4.
 - E.g. UK should have different risk to any non-blue MS
 - (Does *not* mean UK has same risk as blue MSs)

- Case study MSs chosen:
 - UK
 - Austria
 - Poland
 - Czech Republic



Representing the EU

- Risk assessment model has been developed to provide best balance between representing EU and producing realistic results
 - Data/resource issues
- 4 MS case studies provide examples of how intervention effects (on human risk) might vary according to different production practices across EU
- Risk assessment model has been designed to be flexible
 - If desired, each MS will be able to modify/add to model to best reflect intervention results in their own country

Summary and update

- Models in good progress
 - Interventions chosen
 - Case study MSs chosen
 - 1. Now collecting data for specific MSs
 - Framework complete
 - Implementation of models in progress

- Extension requested to include breeder survey results into risk assessment
 - Delivery of final report to Working Group by November 09?

- Risk communication
 - Consortium have given update to EFSA Working group at their meetings

 - Consortium invited each MS through EFSA taskforce to workshop in Copenhagen to discuss approach to risk assessment and data needs

 - Risk assessment has been presented at number of meetings (including this one) to gain opinion and comment

 - Consortium will be in direct discussion with EC Cost Benefit Analysis team to ensure we provide sensible input to their project