

Pork antimicrobial residue surveillance in Northern Ireland

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Why was the review carried out?

Around 1.5 million pigs are slaughtered each year in Northern Ireland

There are currently 2 residue sampling schemes used to test these pigs:-

- **National Residue Control Plan (NRCP)** - statutory under EC Directive 96/23/EC . Number of samples allocated to Northern Ireland is determined annually by relative Northern Ireland and Great Britain production figures

- **Pig Testing Scheme** (restricted to Northern Ireland)

- Set up to reduce in-feed antimicrobial abuse in 1989
- Stratified (by producer) random sampling scheme (Phase 1) with positive herds subject to increased testing (Phase 2)
- Accounts for a third of total residue surveillance budget
- There has been a reduction in positives from 10% in 1989 to currently <1% per annum

Question: Is increased sampling under Pig Testing Scheme justified?

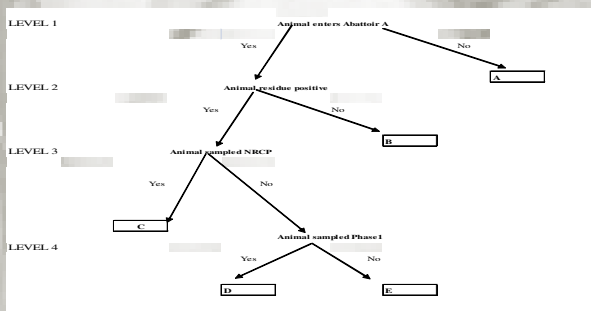
Review findings

1) Descriptive results

- In 2010 0.3% [n=4713] of pigs were sampled at slaughter => 6 pigs from 5 herds tested positive
Animal level apparent prevalence was 0.13% (95%CI 0.03-0.23)
- 0.01% [n=219] of pigs were sampled for the NRCP Group B1 substances(antimicrobials) => 0 pigs positive

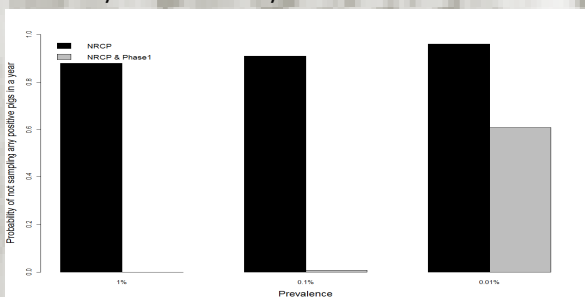
2) Simulation of abattoir sampling using sampling without replacement

- 4 pig abattoirs in Northern Ireland
- Calculated probabilities of 4 outcomes (A:D) given 3 design animal prevalences (1%, 0.01% and 0.001%) for each abattoir



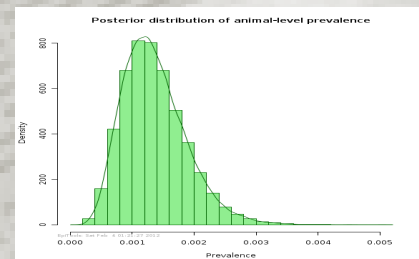
RESULTS

- Animal level sensitivity estimates NRCP = 0.0003 Phase 1 = 0.03
- Surveillance system sensitivity



3) Calculation of “true” prevalence of slaughter pigs positive for antimicrobials

The “true” prevalence was estimated using a Bayesian method with a Gibbs sampler (as described by Joseph et al. (1995) using <http://epitools.ausvet.com.au>)



“True” prevalence estimate = 0.1% (95%CI <0.1-0.3)

Joseph L et al. 1995. *Am. J. Epidemiol.* **141**: 263-272.

Recommendations

- The Pig Testing Scheme substantially improves on the NRCP sampling surveillance for antimicrobials but at a significant cost
- Need to explore the feasibility of a targeted sampling approach based on an integrated herd level database of laboratory results, production and abattoir data, veterinary medicine usage and cross compliance records
- Review diagnostic tests carried out to adjust for current antimicrobial usage patterns and risks