RESEARCH BRIEF: Improving the use of surveillance data: cryptosporidiosis as an exemplar zoonosis
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1. KEY MESSAGE

Synthesis of routine human health and livestock zoonosis surveillance data can provide novel insights, generate new directions for further research, and enhance our understanding of the epidemiology of common public health problems.

Dedicated resources are required, if the benefits that can be obtained from such syntheses are to be realised.

A team of people with a wide range of appropriate skills and expertise have to work together iteratively, in order to: fully understand the limitations of the data; transform them into comparable formats; identify appropriate analytical strategies, and to ensure robust interpretation of the outputs.

2. POLICY IMPLICATIONS

This exercise has clearly demonstrated the direct value to public health surveillance intelligence that can be derived from routine animal health surveillance activities through joint working.

Mechanisms need to be established and resources provided to enable such joint working to occur in an ongoing, consistent and sustainable manner, if human and veterinary zoonosis surveillance activities and the value of the resultant data are to be optimised in line with the stated aims in the UK approach to animal health surveillance (2019) and Scottish Public Health Microbiology Strategy for Scotland (2018).

3. OBJECTIVES

The aim was for EPIC Topic 3 researchers, based within SRUC (Scotland's Rural College), to liaise with staff from both HPS's Gastro-intestinal Zoonosis (GIZ) team and SRUC Veterinary Services (VS), in order to:
  -understand, analyse and interpret existing surveillance data for an exemplar zoonosis, and
  -determine whether additional value could be realised over and above current usage of the routine surveillance data.
The exemplar zoonosis jointly chosen was Cryptosporidiosis.

4. MAJOR FINDINGS

Additional value was realised from analysis of the human and veterinary data, as currently supplied to and held by HPS GIZ in accordance with a formal Memorandum of Understanding (Human data plus veterinary confirmed positive diagnoses).

Further additional value was realised from analysis of the full set of diagnostic veterinary data, held within SRUC VS.

EPIC T3 SRUC-based researchers, who were not embedded in the data sources but who had appropriate skills & knowledge, acted as third party intermediaries and analysts. This enabled both the HPS GIZ and SRUC VS teams to improve their understanding of the limitations and possibilities of the other sector's data.

While respecting issues of confidentiality, transformation of the raw data to agreed, meaningful, comparable formats and categories was required because the individual sectors have different priorities for data collection (e.g. time-date, spatial regions: health boards v. locations). This also applies to the need to use appropriate units of analysis (holding v. individual).

In the 10-year study period, there are insufficient positive diagnoses in any veterinary species other than cattle to warrant further analysis.

Seasonal patterns were observed:

    - in the cattle data

    These relate to the case definition for a positive diagnosis and to industry sector management practices.

    - in the human data

    These are associated with the species of Cryptosporidium diagnosed and known seasonal activities associated with risk, such as travel.

The spring peak of Scottish human confirmed cryptosporidiosis cases lags (i.e. occurs later than) the spring peak in Scottish cattle confirmed cryptosporidiosis cases by a four-week reporting interval.

Rates of Cryptosporidium in both cattle and humans vary considerably across the 14 NHS Boards in Scotland. There is some evidence for higher rates in rural health boards, supporting the zoonotic contribution to human infection; however, further investigation of the data is required to confirm this.

6. LINKS TO EXISTING PUBLICATIONS OR REPORTS

The UK approach to animal health surveillance January 2019
https://www.gov.uk/government/publications/uksf-uk-approach-to-animal-health-surveillance

Public Health Microbiology Strategy for Scotland November 2018
https://www.hps.scot.nhs.uk/web-resources-container/public-health-microbiology-strategy-for-scotland/

Presentation given to Scottish Government's Strategic Management Board for Veterinary Surveillance (30/05/2019) – On EPIC's SmartSheet system

7. POLICY COMMENTS/RESPONSE