Evaluation of Swiss Abattoir Data for Integration in a Syndromic Surveillance System

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Objective

We evaluate Swiss abattoir data for integration in a national syndromic surveillance system for production animals. More specifically, we identify gaps in the current federal meat inspection database and provide suggestions for its improvement.

Introduction

The monitoring of whole or partial carcass condemnations can constitute a valuable indirect indicator of herd health (1). Nevertheless, systematic collection and use of such data for epidemiological surveillance is scarce within the European Union (2).

Methods

We analysed the meat inspection data recorded by the Federal Veterinary Office between 2007 and 2012 for cattle, pigs and small ruminants (sheep/goats) slaughtered in Switzerland. We investigated patterns in the activity of slaughterhouses and the number of animals slaughtered and condemned; the reasons invoked for whole carcass condemnations; reporting biases and regional effects.

Results

The slaughterhouse landscape is very heterogeneous with a few large slaughterhouses dominating the market. A strong seasonality was observed in the number of slaughterhouses operating (and animals slaughtered) with a peak in December (March for cattle) and a trough in July.

Whole carcass condemnation rate was fairly uniform (1-2‰) over time and between the different types of production animals. The number of condemnations peaked in December for both cattle and pigs. This pattern is congruent with the hypothesis that individuals of lower quality are sent for slaughter in winter when hay and food are limited and when certain diseases are more prevalent. No seasonality was detected for small ruminants. The numbers of condemnations were not significantly linked to fluctuations in the meat market, even though we may have expected animals of lower quality being sent for slaughter when commodity prices were high.

Each type of production animal was associated with a different profile of condemnation reasons. The most commonly reported one was "severe lesions" for cattle, "abscesses" for pigs and "pronounced weight loss" for small ruminants. These reasons could constitute valuable syndromic indicators as they are unspecific clinical manifestations of a large range of animal diseases (as well potential indicators of animal welfare).

Differences were detected in the rate of carcass condemnation between cantons. A large percentage (64-79%) of slaughterhouses operating never reported a single condemnation between 2007 and 2012, a potential indicator of widespread non-reporting bias in our database.

Conclusions

The current data collection system offers several interesting opportunities. First of all, because reporting is compulsory, the monitoring of particular health events does not necessitate additional work on the part of the meat inspector. Furthermore, traceability of each condemnation to its farm of origin is possible through the linking of the animal identity number to the national animal movement database. Last but not least, this database covers the entire population and offers simultaneous coverage of cattle, swine and small ruminants (despite the reporting biases observed). However, the current lack of timeliness (30-60 days delay between condemnation and notification) limits the use of the data for early-detection. The numbers of condemnations were significantly linked to the total number of animals slaughtered, highlighting the fact that it will be important in the future to offset the condemnation data by this denominator. However, while the date on which a condemnation is made is available, the denominator is often only communicated at the end of the month so that, in practice, condemnations can only be monitored on a monthly basis. Furthermore, because the carcass condemnation rate (and reasons for condemnation) will depend, among other things, on the age distribution of the animals slaughtered, it would be very useful in the future to record further information, including the age category, for each carcass.

Keywords

Meat inspection; veterinary public health; syndromic surveillance

References

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