

Necropsied cattle data in Switzerland: Comparison of on-farm clinical and mortality data, and implications for surveillance

I. Zühlke^{1,2}, J. Berezowski², S. Küker², F. Rinaldi³, A. Göhring³, M. Bodmer⁴, C. Gurtner¹ & C. Faverjon²

¹Institute of Animal Pathology, Department of Infectious Diseases and Pathobiology, Vetsuisse Faculty, University of Bern, Bern, Switzerland; ²Veterinary Public Health Institute, University of Bern, Bern, Switzerland; ³Institute of Computational Linguistics, University of Zurich, Zurich, Switzerland; ⁴Clinic for Ruminants, Herd Health Division, Department of Clinical Veterinary Medicine, Vetsuisse Faculty, University of Bern, Bern, Switzerland



INTRODUCTION

Necropsy reports contain detailed information on the cause of disease and death, and provide information on pathological changes. They can be of value for animal health surveillance by providing information about the pathology seen in different species, age classes, seasons, and geographical areas¹. However, the real representativeness of these data in terms of cause of death or diseases observed in the field remains unknown. In order to assess this aspect, we collected necropsy data across Switzerland and compared it with on farm mortality and clinical data.

MATERIAL & METHODS

Pre-processing, cleaning and alignment of data in R

THREE DATA SOURCES (2012 – 2017)

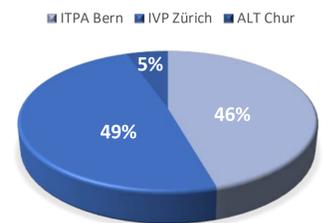
Mortality data (ATD)
Animal Tracing Database: mandatory reporting of every on-farm death & abortion occurring in Switzerland



Clinical data (ASR)
Association of Swiss Cattle Breeders; voluntary reporting of illness and treatment; contains only three breeds



Necropsy data
Data from 3 necropsy laboratories: ITPA Bern, IVP Zurich, ALT Chur



AIMS

- Describe cattle necropsy data from 3 main Swiss diagnostic veterinary laboratories
- Compare necropsy data to on-farm mortality and clinical data
- Discuss the value of these data for animal health surveillance and disease control

FIVE AGE GROUPS

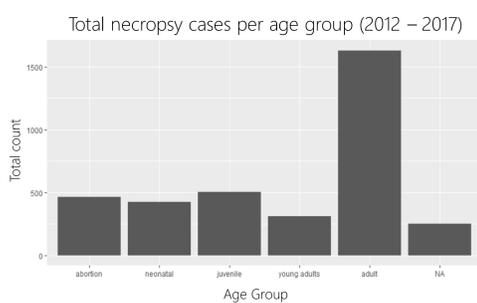
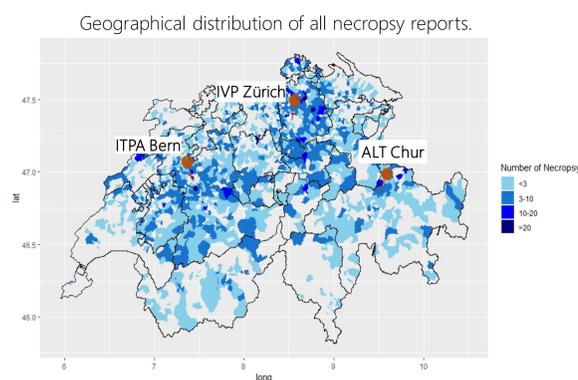
ABORTIONS (incl. Stillbirth), NEONATAL (< 28 days), JUVENILE (1 – 6 month), YOUNG (6 month – 2 years), ADULT (> 2 years)

COMPARISON OF DATA

Analysis at the individual animal and farm level

PRELIMINARY RESULTS

DESCRIPTIVE ANALYSIS

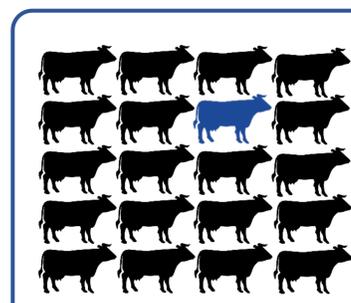


FARM
Total farms with necropsied animals
1978

Mean number of necropsies per farm
1.8

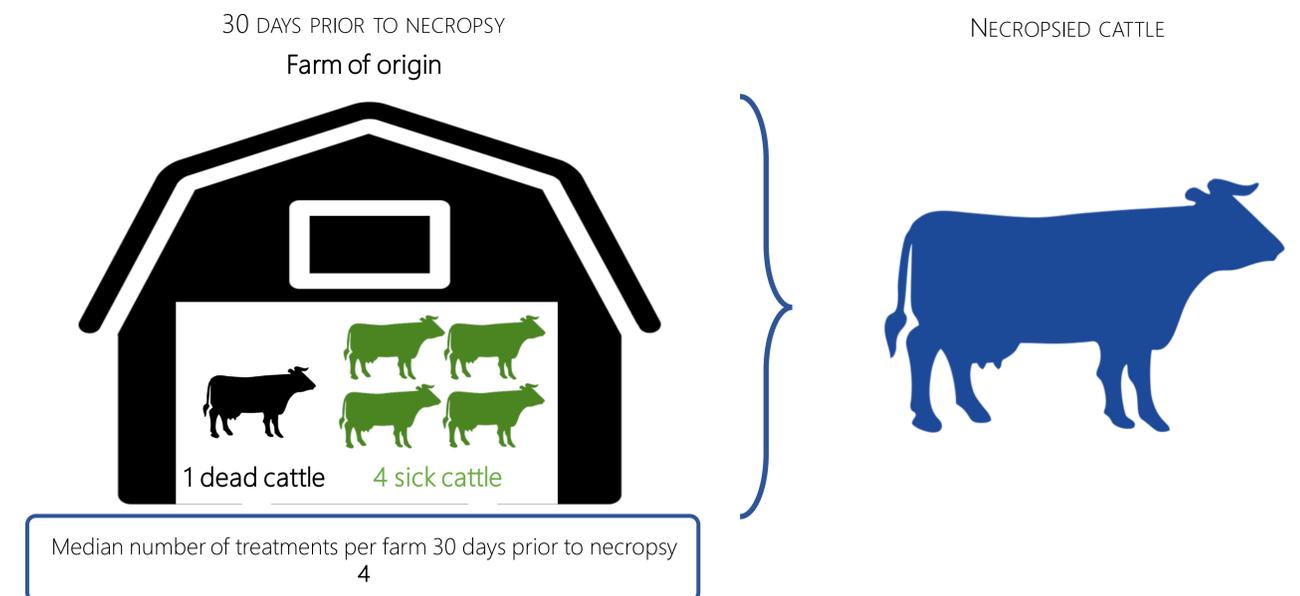
COMPARATIVE ANALYSIS

Ratio of necropsied cattle to on-farm dead cattle



- On average, at least 1 in 100 on-farm dead cattle is sent for a necropsy in Switzerland (*not all veterinary pathology laboratories are included in this study: the higher ratio may be higher!*)
- BUT the ratio dependent on age group:
 - highest ratio → ADULTS (2.4 %)
 - lowest ratio → NEONATAL (0.3 %)
- Ratio of other age groups: 0.3 % (JUVENILE) & 0.8 % (YOUNG ADULT)

On-farm disease prior to post-mortem examinations



DISCUSSION

- Having more than one affected animal on a farm where there was a necropsied animal may indicate a problem at the herd level suggesting that a necropsied animals may be indicators of disease on a larger scale (i.e. the farm).
- Necropsy data could be used for surveillance due to its geographic coverage & high amount of information, but is limited to certain age groups (*more adult cattle necropsied than young*).
- Clinical data: not completely representative of whole population (*only three breeds & not all farmers included in the data*).

CONCLUSION

- Comparing necropsy reports, with on-farm mortality and clinical data, provide valuable information to assess the value of necropsy data for disease surveillance.
- Cattle necropsies may be used to estimate the main causes of on-farm deaths in Switzerland, and to support disease surveillance and disease control at herd level.

NEXT STEPS

- Compare the number of treatments of necropsied to non-necropsied animals
- Focus on abortions sent to necropsy and compare them to the mortality & on-farm clinical data
- Evaluate reasons for necropsy submissions

