Mortality due to postweaning multisystemic wasting syndrome

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Introduction

Postweaning multisystemic wasting syndrome (PMWS):

- affects weaners and growers between 6 and 16 weeks of age
- causes increased mortality and reduced growth rate
- stays on affected farms for a long time
- has an unknown aetiology
- is complicated to diagnose

Mortality due to PMWS

- varies between farms and countries
- is a summary measure of morbidity and case-fatality
- can reach up to 50%
- is probably caused by gastric ulceration, unthriftiness, liver failure and respiratory diseases
- is apparently affected by hygiene, stress and secondary diseases
- is complicated to assess without a proper case-definition

Materials & Methods

Exploratory study into mortality and effects of management and environment

study design: cross-sectional
study population: 76 farms in England, Wales and Scotland with outbreaks of PMWS between 2000 and 2004
response variable: farmers' estimates of peak case-specific mortality
predictor variables: approximately 1400 variables collected through 3 questionnaires and on-farm observations
analysis: non-parametric univariate analysis. Creation of several new summary variables with the aim to create better predictors for the observed patterns of mortality

Results & Discussion

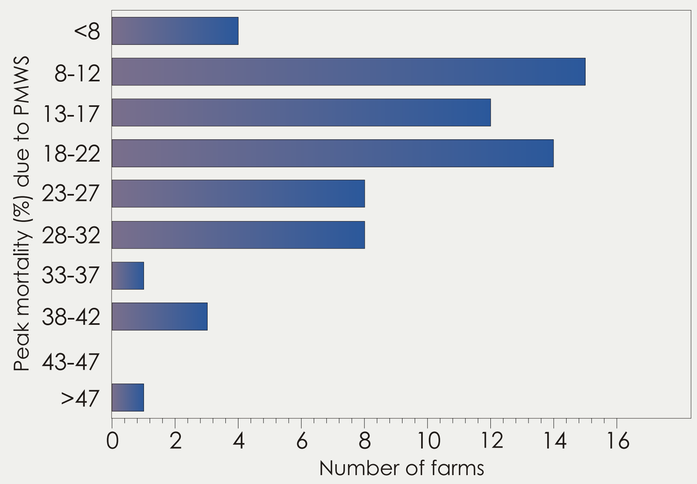

Figure 1: Peak mortality on 76 farms

PMWS has caused mortalities between 3 to 50%, which is a large increase from the 'normal' 3% weaner-to-grower mortality (Figure 1). The large variation in peak mortality might be caused by different management and environment and also reflects uncertainties in the estimates.

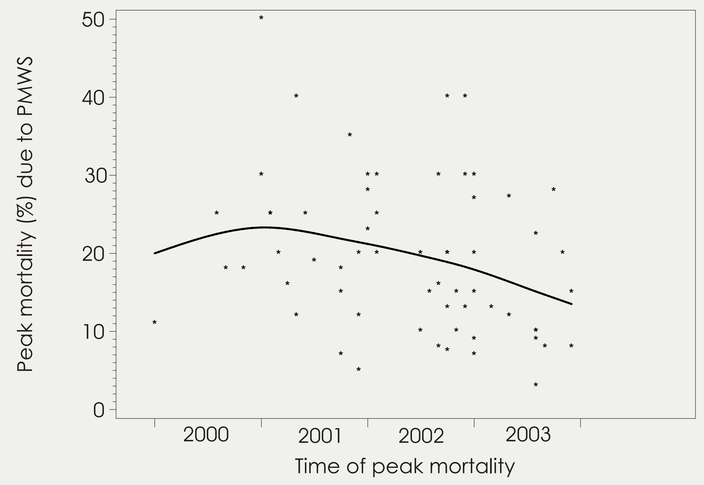

Figure 2: Decline in mortality over the years

Peak mortality has been decreasing since 2001 (Figure 2). Reasons might that the pathogen changes, farmers adapt their management or the most susceptible farms have been hit early in the epidemic.

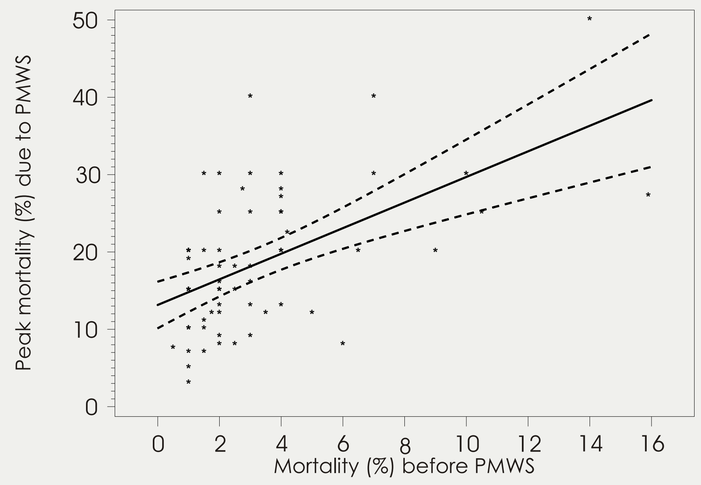

Figure 3: Mortality due to PMWS by pre-PMWS mortality

Farms with higher mortality *before* PMWS had higher mortality due to PMWS *during* the outbreak (Figure 3). This might indicate that hygienic standards are related to levels of mortality. Pigs that died of other causes might have been misclassified.

The univariate comparison of the effect of 1400 variables related to management and environment on peak mortality has so far resulted in 47 'significant' correlations ($P<0.05$). There was no obvious pattern that would allow us to point to 'bad hygiene' or 'stressed animals' as a reason for increased mortality. The challenge now is to summarize the variables in a way that allows to generate hypotheses and test them in a new data set.

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