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Preliminary Analysis of Reports Carried out on Selected Herds Using the ER 76 Investigation Format.

J. O'Keeffe

Introduction
In 1991, the Tuberculosis Investigation Unit began a review of the investigation procedures in use by area Veterinary Inspectors. This review was initiated by E.R.A.D. management. The Unit was set the task of co-ordinating the developing an improved investigation format which would enhance the explanatory capabilities of data generated by investigations of breakdown situations. The task was undertaken in conjunction with Associate Members of the Unit, who were based in local DVO offices. The investigation format was published by Griffin, O'Keeffe and Dolan (1994).

This study was designed to:

(a) subject the format to a large scale field trial

and

(b) to collect data on a random sample of herds which had a confirmed disease episode, using the revised investigation format.

Herds were selected on the basis of having been restricted in 1993, and having had a minimum of two (2) standard tuberculin reactors with a concurrent lesion identified during the restriction.

On this basis of these selection criteria to date reports on 335 herds have been analysed and these form the basis for the preliminary study. As a sample of herds with confirmed infection in the Irish situation, these herds represent a group with the least bias of any group of herds whose investigation reports have been analysed to date.

Weighting each source according to predetermined criteria.
A major innovation introduced by this format is the concept of the investigating V.I. considering each possible source of disease as it relates to the breakdown, and then assigning a weighting to that source. The guideline document which is used with the investigation format, contains suggested cutpoints between the five weights used. These suggested definitions are presented with the results of the weights assigned to the various sources.

Previous investigation formats relied solely on the opinion of the investigating veterinarian as to the source most likely to have been causal. This approach is accurate when a herd presents with strong circumstantial evidence implicating one source above all others. The problem arises when there is evidence of multifactorial involvement. Previous investigation formats contained a category “Not Clearly Apparent” to deal with these multifactorial herds. Breakdowns with a complex aetiology represent a high proportion of breakdowns that have confirmed infection. In a previous study Griffin (1993), 23% of 504 investigations were reported as being “not clearly apparent”. Another study (Griffin and
Hahesy, 1992) reported that 35% of 3975 herd breakdowns were assigned a category which included non-specific infection, source unclear and source unknown. The herds in these studies were not a representative selection, however.

A reporting format which depends solely on the V.I.’s opinion as to the source of the breakdown has two major weaknesses:

(i) It is a subjective assessment which is impossible to standardise.

and

(ii) It can lead to oversimplifying a complex situation, as either one source is nominated ahead of competing sources due to the bias of the investigator or “not clearly apparent” is the nominated source.

Tuberculosis breakdowns are seldom conclusively attributable to a single source. In the present sample of 335 herds only 13 (3.9%) herds had evidence that justified the exclusive weighting of Probable source. While 124 (37%) of the herds in this study were classified as “Not Clearly Apparent” in the opinion of the V.I., in only four of these herds was the investigating V.I.'s unable to find at least one possible source which might be implicated in the breakdown. The remaining 120 herds which were assigned to the “Not Clearly Apparent” category had multiple causes identified as being possible factors. The weights will allow for correlation’s to be made in future between the source favoured by the investigating V.I., and the objective evidence collected during the investigation. This facility will enable a quality control system to be devised for the investigation procedure.

The weightings will add a new dimension to the possibilities for analysis previously unavailable. The use of weights allowed breakdowns with a complex aetiology to be described more accurately and facilitated a greater degree of comparative consistency between investigations.

References


Results and Discussion
The following is a summary of the preliminary analysis of the above reports.

Purchasing: 44% of the herds in this study were self-contained.

Where 2 or more older cattle or cows were purchased, purchasing was an important risk factor for those herds.

Fragmentation: Fragmentation was not a feature of the herds in this sample.

Contiguity: The average herd in the study had seven contiguous herds.

82% of herds in the study had at least one neighbour restricted at the same time.

Each of the herds in the study which had contiguous herds restricted at the same time, had an average of 2.4 such herds.

Residual: The risk from a residual animal source was high in herds where the current reactors were present at a previous confirmed breakdown.

There was no evidence in this sample that inconclusives, based either on standard or severe interpretation, had remained in herds or were an important source of further breakdowns.

50% of herds in this study were declared clear within 5.4 months of their being restricted.

Badgers: Breakdowns attributed to a badger source, based on the opinion of the investigating V.I. were no larger than are those attributed to alternate sources in this sample.

89% of herds in this study had badgers identified in their environment.

The extent of the presence of wildlife in the environment of all herds needs to be quantified, however, before this observation can be interpreted.

14.3% of the herds investigated had tuberculous badgers identified in association with the outbreak.

Snaring under licence was not undertaken in 69% of the locations where badgers were present.

Herd Size: Where disease was confirmed, herd size was not found to be a confounding factor.

Clustering: There was evidence of clustering of diseased herds around the herds in this study.