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<td>O'Keeffe, James</td>
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The Revised Methodology and Reporting Format for Investigating Outbreaks of Tuberculosis in Cattle (ER76A, ER76B)

J. O’Keeffe

Introduction

All investigations carried out by Department of Agriculture, Food and Rural Development (DAFRD) staff on herds found to contain animals positive to the Single Intradermal Comparative Tuberculin Test (SICTT) are completed using a specially designed reporting format. Called the ER76 methodology, this process was previously described in an earlier publication (Griffin, O’Keeffe and Dolan, 1994). The data generated during investigations are computerised at the Veterinary Epidemiology and Tuberculosis Investigation Unit (VETIU) for analysis.

A review of the ER76 methodology and reporting formats was carried out during 1999. Certain limitations were identified at this review, while elements of the procedures needed to be amended. Recent advances in Information Technology (IT) now permit the use of alternate means of data handling which, if applied, could result in the more efficient use of DAFRD staff time. The ER76 process was deemed to be unsatisfactory in its old form as it proved difficult to micro-manage at local level, regional level or HQ level. The entire process spanned numerous activities which were taking place over a minimum of 6-8 months, yet a completed report at the end was the only output which was possible to monitor.

Conversion to a 2-stage process was decided as the optimal, from an efficiency perspective. At the commencement of the breakdown episode, field staff will in future collect certain data and these will be computerised locally. At some uniform point after the episode has been resolved, data required by the investigating veterinarian to finalise his/her conclusions in relation to the source(s) of the breakdown will be made available in an ‘on-screen’ form and the report finalised at that point. These modifications required new field reporting forms, ER76A and ER76B (see Appendix 1), to be developed and IT channels linking DAFRD offices and the VETIU to be established. It also afforded the opportunity to update the data collected during investigations so as to maintain the process as relevant to the needs of the various stakeholders whether they be farmers, DAFRD staff or researchers.

Stage 1: Initial Breakdown

Each new breakdown will be visited, as happens currently, but a report will be required following the visit. Data on the past history of any introduced reactor animals are also required, which is an additional query. The format of the two new reports were drafted by a committee chaired by the Veterinary Manager of a local District Veterinary Office (DVO) and was comprised of veterinary staff from local offices and from HQ. Staff from the VETIU participated in the process, as did outside consultants.
Major revisions to the data reported by investigating veterinarians were made in Sections 3, 4, 5, 6 and 7 of the ER76B, with a complete record of movement and testing history for each reactor required to be entered in the ER76A.

Section 3
Data on the Prior Herds and Movement Details that are available on cattle passports will be computerised from the data on each reactor animal's I.D. The investigator must first confirm that these data are comprehensive and he/she must specifically verify that the last herd listed on a reactor animal's I.D. is in fact the last herd the animal resided in. With direct farm sales and the current movement windows, animals can presently move between herds without being pre-movement tested. These data, when coupled with information on the VETIU central database, will provide a complete disease history for each herd from which tuberculosis reactors originated. This will be made available to the investigators at the end of the process to allow conclusions/weightings to be assigned.

Section 4
Analysis of ER76 reports has shown that 60 percent of herds with breakdowns (O'Keeffe and O'Driscoll, 1997) have had a previous breakdown. The revised section, which focuses on the prior breakdown, collects data relating to the specific risk factors at that breakdown, which need to be considered in assessing any contribution to the current episode.

Section 5
The Contiguous Herd Data is targeted at those herds whose cattle may have been infected by infected cattle in the index herd. Animals in the index herd are considered to have been at risk if they co-mingled or were housed with reactors during the 9 months preceding the breakdown. Lands farmed as part of the index farm but which were never grazed by at risk animals are considered safe from a contiguous herd perspective. It is intended that, when applied, these definitions will generate a list of contiguous herds, all of which will have had a significant exposure from known infected animals. The contiguous herds so identified will form the basis of the data which it is intended to be used at the Unit to carry out evaluations of the degree to which clustering of tuberculosis is occurring.

Section 6
The previous format attempted to collect quantitative data on the Type of Contact between neighbouring herds. This revised section expands on the detail sought in the earlier version; the specific criteria used by investigators to classify contact are now sought.

Section 7
The data used to assess the likelihood that badgers share a common environment with infected cattle have also been expanded. Using the definition 'affected fragment' derived at Section 5, the data on badgers are divided into that relating to Affected Fragments, Adjoining Affected Fragments, Non-Affected Fragments and Adjoining Non-Affected Fragments. A variety of badger related variables are sought and findings will be weighted, depending on whether or not they have been verified by the investigator.

The ER76A and ER76B forms will be computerised locally to a networked folder, which will facilitate data transfers to take place between the VETIU and local DVOs. The data collected during
the farm visit and the data entered on ER.76A will pass to the VETIU at the time it is collected. These will form the basis of reports containing data compiled from the VETIU database and will be returned to those carrying out the investigation when investigations are due to be finalised. Disease histories from outside DVOs will no longer be required to be pursued, nor will a number of other administrative tasks that are currently dealt with by limited DVO resources.

Stage 2: Finalising the investigation
The sections in the old format where the investigators assigned Weights to each possible source, and where opinions as to the source of the breakdown were nominated, will in future become a screen-based exercise. Between 3 and 6 months following a herd being returned to a trading status, a prompt will issue to have the report finalised. On screen, the investigator will be provided with all the data necessary to arrive at final conclusions, in as much as this ever possible. Data on the disease histories of herds, which reactor animals had passed through prior to being identified as a SICTT-positive, will be available on screen, allowing investigator to assign a weighting to purchasing as a source of the breakdown. Similarly, summaries of the disease history of contiguous herds will be available on screen for the investigator's information. The contiguous herd information that is returned will be based on information supplied following the initial farm visit. Finally, the returns on badgers sampled in relation to breakdown, as well as the summarised results of badgers sampled in a wider area around the herd, will be presented in a yet to be finalised format. When final weights are assigned and the VI opinion has been entered, the report will be signed off and an electronic copy forwarded to the VETIU database.

References

# Farm Visit Report Form: (Tuberculosis Epidemiology)

**Herd Number**

**Date of Visit**

**Keeper’s Name/Address**

**Phone No.**

## 1. Farm Enterprise(s):  
**Is Farmer fulltime** Y/N  
**Registered dealer** Y/N  
**Livestock haulier or Agricultural contractor** Y/N  
**Factory agent** Y/N  

### (a) Cattle Enterprise Herd Profile  
(give numbers in each category)

- **Cows:**
  - Heifers > 1yr
  - Males > 1yr
  - Others < 1yr
- **Dairy**
- **Suckler**
- **Fattener**

### (b) Other Livestock Enterprises:  
(enter number of each species or zero if there are none)

- **Number of Deer**
- **Goats**
- **Sheep**
- **Pigs**
- **Poultry**

## 2. Farm Structure:

- **Area farmed** Hectares (1 hectare = 2.5 acres)
- **Area grassland**
- **Other**

(i.e. grassland to include pasture or aftergrass but excludes stubble ground.)

## 3. Cattle Purchases:

No. of animals introduced during the year prior to the breakdown

*The following section is only relevant where reactors were introduced into the index herd.*

Where animal(s) failed their first test in the index herd, does the mart information on the card(s) suggest that the animal(s) may not have been tested while in their last herd(s)?

(i) are there two or more mart stamps dated later than the last test on the animal.

or

(ii) was the animal acquired later than the last mart stamp. Y/N

If yes to either the above, then enter the relevant details in columns 1 to 4 of the table below.

If any reactors were purchased by direct farm to farm sale enter details in columns 1, 2 and 5.

<table>
<thead>
<tr>
<th>Tag No.</th>
<th>Date acquired</th>
<th>Mart</th>
<th>Lot No.</th>
<th>Herd No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Col. 2</td>
<td>Col. 3</td>
<td>Col. 4</td>
<td>Col. 5 (Direct farm sales)</td>
</tr>
<tr>
<td></td>
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</table>

Comments on investigation into purchases:
4. Prior Breakdowns:

Is there a record of a previous Class H breakdown on file? Y/N □

If No proceed to section 5, if Yes continue.

In relation to the last H breakdown, when were the last reactor(s)/animal(s) with confirmed lesions removed / / 

Housing

Were reactors housed during the previous Class H breakdown Y/N □

If no proceed to section 5, if yes continue.

Date disinfection was last carried out (mth./year) / /

Beginning date current reactors were last housed (mth./year) / /

Slurry/Manure

Was slurry or dung from the prior H class episode spread on grassland Y/N □

If no proceed to section 5, if yes continue.

(a) Date slurry spread (mth./year) / 

(b) Date dung spread (mth./year) / 

Date pasture first grazed by current reactors (mth./year) / 

For office use only

(a) Do you consider that residual factors from the prior episode served as a possible source for the present breakdown Y/N □

If yes tick any of the following that apply: Slurry □ Manure □ Buildings □ Other □

(b) Give reasons:

5. Cattle Groups and Land Fragments utilised:

For the purposes of this section a group is defined as animals which co-mingled or were housed together (i.e. in a common air space) during the 9 months preceding the breakdown. Furthermore, a clear group should comprise animals that were never grazed or housed with reactors during the preceding 9 months.

Number of groups of cattle constituting the herd □ Number of clear groups □

Total no. of farm fragments □ No. of frags. associated only with clear groups* □

(*Include fragments never grazed by cattle in this section).

Details of fragments* not grazed, or only grazed by clear groups, if any were established:

(*Herds contiguous to lands entered below will be flagged on the contiguous herd information in Nixdorf.)

<table>
<thead>
<tr>
<th>Address</th>
<th>Land Parcel ID as per Area Aid map</th>
<th>For office use: Initial when amended on computer</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

Locations (i.e. address/land parcel ID number) of the fragment(s) where it is most likely the outbreak commenced
6. Assessment of Herds Contiguous to at risk fragments:

Please give details, in the table below, of the contiguous herds whose degree of contact with the affected fragments is either low or medium. If all the contiguous herds qualified as being "high" (see definition) please proceed to section 7:

<table>
<thead>
<tr>
<th>Contiguous herd number</th>
<th>Degree of contiguity if Medium or Low</th>
<th>Give criteria used if Medium or Low assigned</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

7. Badgers:

Previously, at Section 5, affected fragments were identified and any non-affected fragments were flagged on Nixdorf. Please complete the following table, using Y, N or UNKnown, such that all the boxes in each of the relevant columns are assigned a value as appropriate.

<table>
<thead>
<tr>
<th>Badger related variables</th>
<th>Affected Fragments</th>
<th>Adjoining Land, Bog or Forestry</th>
<th>Non-Affected Fragments</th>
<th>Adjoining Land, Bog or Forestry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Badger Setts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Activity (passes/latrines)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sightings</td>
<td></td>
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<tr>
<td>Verified by VI</td>
<td></td>
<td></td>
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<tr>
<td>Any recent disturbance to badgers</td>
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</tbody>
</table>

For office use only

- Were badgers snared in the area previously Y/N [ ] If yes, give licence number [ ].
- Were Tb positive badgers (snared or road casualties) discovered in the area Y/N [ ].
- If there is an existing licence give licence no. [ Lic.No./Yr ] [ ] / [ ].
- Is a licence to sample badgers required Y/N [ ] Is a licence applied for Y/N [ ].

8. Non-Bovine Animal Species

<table>
<thead>
<tr>
<th>Non-Bovine Animal Species</th>
<th>Present Y/N</th>
<th>No. Examined</th>
<th>PME Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Deer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmed Deer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Water supply:

Streams Y/N [ ] Stagnant ponds Y/N [ ] Own well Y/N [ ] Mains supply Y/N [ ]

Free standing troughs Y/N [ ] raised less than 28ins. Y/N [ ] more than 28ins. Y/N [ ]

Do you consider water supply is involved as a source of infection for the herd Y/N [ ]

If yes comments: [ ]
10. Mechanical Sources:

Might any of the following mechanical means of transferring infection from confirmed outbreaks in other herds have relevance to this outbreak? (Tick boxes as appropriate)

- Personnel: [ ] Full-time [ ] Part-time/FRS
- Slurry: [ ] Own Slurry spreader [ ] Contractor [ ] Aerosol in area
- Dung: [ ] Own Dung spreader [ ] Contractor
- Haulage: [ ] Own transport [ ] Cattle haulier
- Shared facilities: [ ] Shared cattle crush [ ] Rented housing
- Associated Herds: [ ] Shared management [ ] Shared equipment
- Contacted with: [ ] Cattle break-ins [ ] Contact at roads
- Infected cattle: [ ] Contact across boundaries or fences

On the basis of the above questions did you establish possible mechanical sources? Y/N

Comments

11. Humans:

Was there any evidence of a human source at the breakdown? Y/N

12. Assessment of Keeper's profile: (see guidelines)

Comments/Advice discussed with Keeper

Keeper's Declaration (not obligatory, but should always be requested)

The information I have provided is, to the best of my knowledge, correct and I have noted the above advice. Signed:

Keeper's Comments
Prior History of Reactor Animals which were bought-in or introduced:

For Administrative use only

Details of reactor animals bought-in or introduced to the herd should be transferred from the animal I.D./Passport to the table below. Allow a blank row between individual animals. When completed, column 4 should have only two entries in respect of each individual tag no. (i.e. the date the animal was purchased/introduced into this, the index herd and the date the animal was born in it's herd of origin).

<table>
<thead>
<tr>
<th>Tag. Number</th>
<th>Herd No.</th>
<th>Date Last Test</th>
<th>Date Acquired/ and date born</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1</td>
<td>Col. 2</td>
<td>Col. 3</td>
<td>Col. 4</td>
<td>Col. 5</td>
</tr>
</tbody>
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