

# Descriptive analysis of bovine tuberculosis restricted herd incidents in the period from 2005 to 2012 in Northern Ireland

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## Introduction

Despite the implementation of a comprehensive eradication scheme since 1959, bovine tuberculosis (bTB) remains endemic in Northern Ireland. This study aims to characterise bovine tuberculosis herd incidents in Northern Ireland during the period 2005 to 2012. From the initial analysis, a selection of bTB herd incidents defined as 'chronic' was made. The study then compared characteristics of chronic incidents to all incidents which occurred during 2005 to 2012.

## Methodology

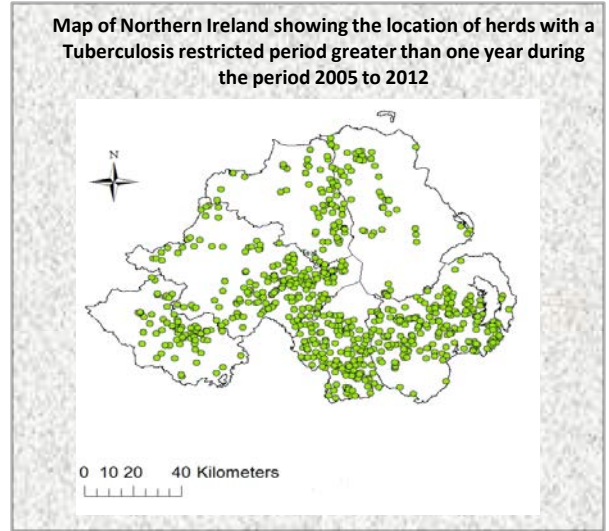
1. The first part of the study was a descriptive analysis of all Northern Ireland tuberculosis restricted herd incidents in the period 2005 to 2012.
2. A subset of herd incidents in the 2005 to 2012 period was then selected based on the length of the restricted period. This selected group was defined as the 'chronic' subset.
3. For the purpose of the chronic incident definition in this study, a restricted period duration of one year was used.
4. This provided a 5% cut off point of all incidents and incorporated 821 incidents made up of 758 herds into the selected **chronic** dataset.
5. A descriptive analysis of the selected chronic herd breakdowns was carried out comparing their characteristics to those of non-chronic incidents.

## Results

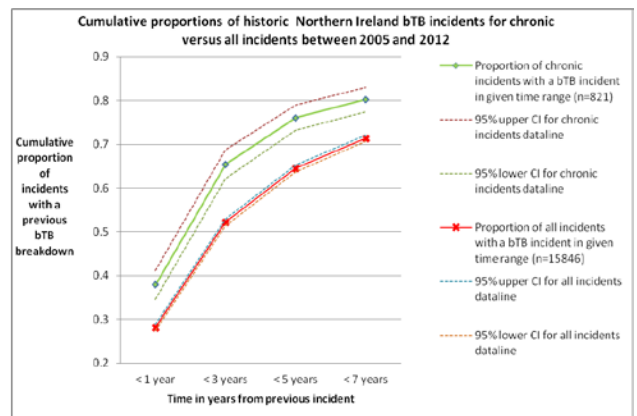
1. The dataset relating to the chronic herds study contained 15846 observations (9352 herds) representing bTB restricted periods starting between 01/01/2005 to the 31/12/2011.
2. The mean duration of a restricted period for all incidents in the 2005 to 2012 period was 166.4 days (95% CI 164.7-168.2).
3. The average number of other incidents a breakdown was linked to is 2.46 (95% CI: 2.43-2.48) in the whole dataset. The selected dataset incidents were linked to 2.84 (95% CI: 2.72-2.96) others.
4. The median herd size at the herd test closest to the restriction start was 86 (IQR: 38-172) in the whole dataset but 126 (IQR: 59-231) in the selected dataset.
5. The percentage mean incidence for bTB in the locality of all herd incidents was found to be 5.82% (95% CI: 5.50-6.15) while for the selected herds in the 'chronic' dataset it was 7.35% (95% CI: 6.94-7.77).
6. The results shown in the table below showed that mean purchase intensity (number of animals purchased per day) for both datasets before and after a restricted period remain very stable, but were at a higher rate in the 'chronic' dataset.

	Movement intensity into a herd 120 days prior to restriction (Number of animals moved per day)	Movement intensity into a herd 120 days post restriction removal (Number of animals moved per day)
Mean movement intensity for all bTB incidents during period 2005 to 2012 (n=15846)	0.230 (95% CI: 0.215-0.244)	0.228 (95% CI: 0.213-0.243)
Mean movement intensity in chronic dataset for bTB incidents during period 2005 to 2012 (n=821)	0.347 (95% CI: 0.283-0.411)	0.393 (95% CI: 0.303-0.484)

7. When incidents involving dairy herds are considered these make up a greater proportion of those in the chronic dataset than the whole: 29% vs. 26% (P<0.05).



8. In the dataset of all incidents, 28.1% (CI 95%: 27.4-28.8) had a previous incident within one year. This compared to 37.9% (95% CI: 34.6-41.2) in the 'chronic' dataset (see chart below.)



9. The number of skin reactors at the disclosing bTB test and during the incident were 1.9 (95% CI 1.86-2.00) and 3.6 (95% CI 3.48-3.80), respectively, for all incidents. For the same measures in the chronic dataset, the number of skin reactors were 4.3 (95% CI 3.67-4.92) and 16.8(95% CI 14.76-18.78), respectively.

## Conclusion

The overall picture generated of Northern Ireland tuberculosis herd incidents selected in the 'chronic' dataset was of incidents involving larger herds, present in areas of higher bTB incidence and purchasing larger numbers of cattle per unit time. These herds were also more likely to have a historical link to a previous bTB incident at all time points in the previous seven years and were also more likely to disclose with larger numbers of skin reactors and total reactors during a restricted period. Additionally, herd incidents in the 'chronic' dataset are also more likely to have a lesion at routine slaughter linked to the restricted period.