



IMPACT OF SIX-MONTHLY TESTING ON BOVINE TB INCIDENCE IN CHESHIRE

Background

The County of Cheshire is in the Edge Area for bovine tuberculosis (TB) risk in England, between the High Risk Area and the Low Risk Area. Cattle herds in Cheshire have been subject to six-monthly routine tuberculin skin testing for bovine tuberculosis (TB) partially since 2015 and in the whole county since 2018*. Previously, surveillance testing was annual.

Prior to 2000, there had been fewer than 10 TB incidents per year during the previous decade. Since 2002 (following the moratorium in TB testing during the Foot and Mouth Disease outbreak in 2001), the number of herd TB incidents continued to increase, to 160 in 2020. Cheshire has also seen a large increase in the proportion of TB incidents confirmed with evidence of infection from post-mortem testing, such as the observation of visible lesions and/or isolation of *Mycobacterium bovis* (*M. bovis*).

AIM OF STUDY: to evaluate whether six-monthly routine testing has led to a reduction in TB incidence rates in Cheshire. We predicted that increased surveillance would result in an initial increase in the number of incidents and the incidence rate, but over time show a decline, where infection is being detected earlier and has less time to spread.

Methods

Date period for inclusion: The study population included all herds that had at least one TB test during all calendar years between 1 January 2013 and 31 December 2020.

*Herds were categorised as:

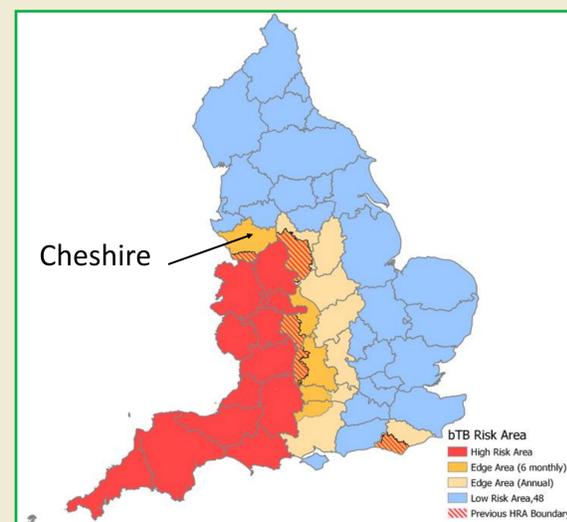
- those subject to six monthly testing from 2015, that have always been in the Edge Area for TB risk
- those subject to six monthly testing from 2018, that previously had been in the High Risk Area (HRA) and were incorporated into the Edge Area in 2018.

Classification of TB incidents: Officially TB Free –Withdrawn (OTF-W; where infection with *M. bovis* is confirmed through the observation of lesions typical of TB in one or more cattle during post-mortem inspection in the slaughterhouse, or *M. bovis* is cultured from a tissue sample) and OTF-Suspended (OTF-S; where one or more skin test reactors or interferon-gamma positive animals are detected in a herd, but no lesions typical of TB are found at post-mortem inspection, and the culture results are negative for *M. bovis*.)

Ratio of OTF-W to OTF-S incidents=Total OTF-W incidents/ Total OTF-S incidents (as indication of burden of disease).

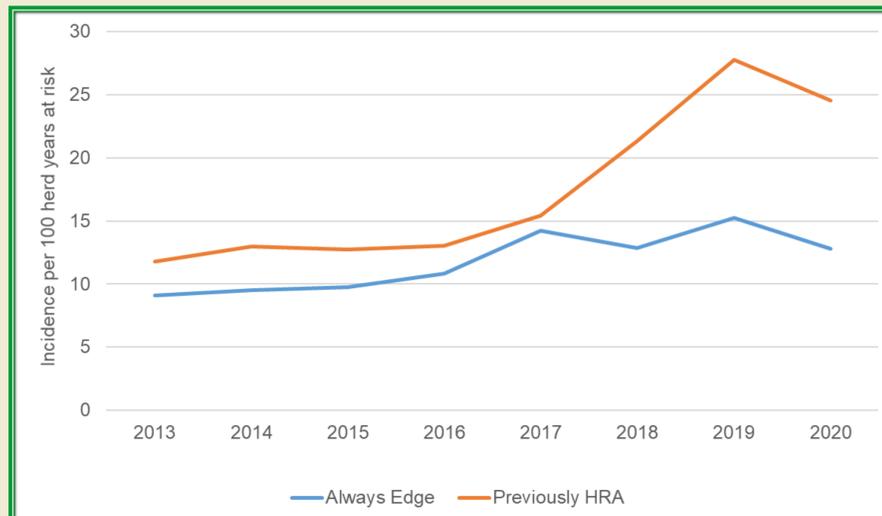
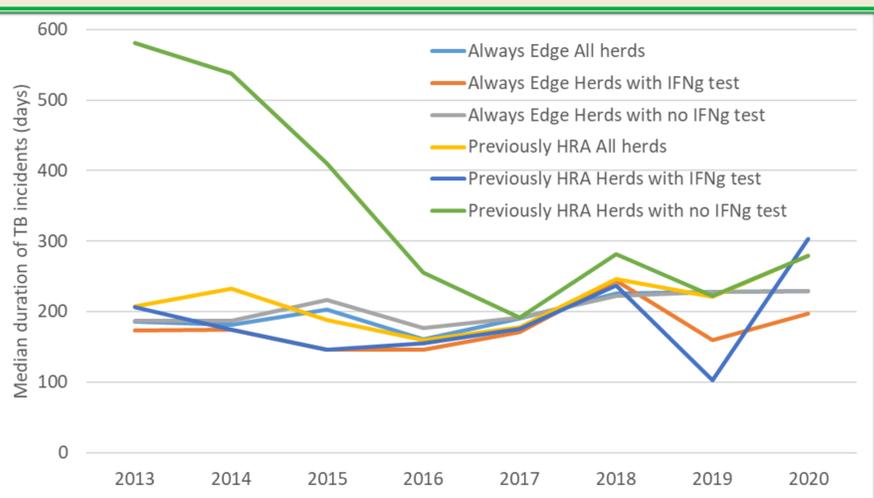
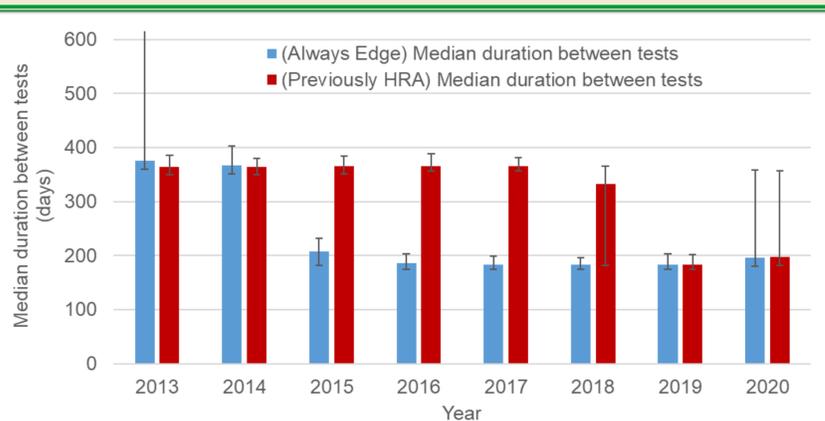
A descriptive analysis looking at trends over time was carried out. Variables considered included: herd size, production type, number of TB tests and test type, number and duration of TB incidents and number of reactors to either the single intradermal comparative cervical tuberculin (SICCT) test or the interferon-gamma (IFN- γ) test.

Main outcome measure: TB incidence rate per 100 herd years at risk (HYR)



	Six monthly testing since 2015	Six monthly testing since 2018
	Ratio of OTF-W to OTF-S incidents	
2013	1.4	1.2
2014	1.9	1.5
2015	1.9	2.2
2016	1.6	2.9
2017	1.9	3.1
2018	1.8	3.2
2019	2.1	2.0
2020	1.0	1.9

Results



Conclusion and further work

There has been a recent decrease in incidence rates in Cheshire but it does not appear to be associated with implementation of six-monthly routine surveillance testing. Further investigation is needed to understand the underlying drivers for infection including the contribution of local reservoirs of infection in wildlife. Trends may need to be observed for longer to determine if there has been success in reducing the burden of TB infection where transmission is not likely to be driven by a local reservoir.

Further work: a case-control study to assess the risk factors for TB in 2020 and the effect of six-monthly testing is in progress.

Reference for map: <https://www.gov.uk/government/publications/bovine-tb-epidemiology-and-surveillance-in-great-britain-2020>

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