

Future risk of becoming a 'Reactor' or having *M. bovis* diagnosed in cows subsequent to passing an inconclusive reactor retest using the single intradermal comparative tuberculin test.

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Introduction: In Ireland, the single intradermal comparative tuberculin tests (SICTT) is used to conduct field surveillance for bovine Tuberculosis (bTB). A SICTT "standard inconclusive reactor" (SIR) occurs when the bovine response is >2mm and 1-4mm greater than the avian response. Herd status is suspended pending clarification of the animal's status. The farmer then has three choices to manage the SIR,

1. to have the animal retested after a minimum period of 42 days, or
2. to slaughter the SIR and, if no visible lesion (NVL), have a herd test a minimum of 42-days after the SIR leaves the herd, or
3. to slaughter the SIR and subject target lymph nodes to lab examination.

Objective: The objective of this study is to follow the SIRs processed through option 1 above and test negative after 42-days, for the following 4 years to examine the future risk of failing the SICTT and/or having *M.bovis* at slaughter.

Materials and Methods: The study included all SIRs identified in 2005, in otherwise bTB free herds at tests that were clear at the subsequent inconclusive retest (option 1). To eliminate possible confounders the analysis was confined to cows that were not sold or exported from the core herd during the follow up period. Five control cows were randomly selected from each core herd. Animals were followed from the time of the inconclusive retest until the end of 2009. The outcome was whether the animal was subsequently diagnosed with bTB (SICTT or *post-mortem* positive). Animals were censored at slaughter or end of 2009.

Results and discussion:

- From 1,653 herds 2,216 case and 11,028 control cows were enrolled.
- More SIRs were slaughtered (51.4%) compared to non-SIRs (45.8%) $p < 0.001$
- Time to slaughter was significantly shorter for SIRs compared to non-SIRs ($p < 0.001$).
- 207 (9.3%) and 285 (2.6%) case and control animals, respectively, were diagnosed with bTB.
- The increase in the hazard ratio near study commencement is more pronounced for SIRs compared to the non-SIRs, then decreases for SIRs after circa 500 days.
- Cows deemed as inconclusive in 2005 were significantly more likely to become reactors and/or have *M.bovis* at slaughter compared to a cohort of their herd mates.
- SIRs had a 78% shorter time to being declared as a reactor or having *M. bovis* at slaughter compared to animals that were not declared as SIRs at the start of the study.

Conclusion: This analysis indicates that a number of SIRs were probably truly infected when first identified despite subsequently passing a SICTT at 42-days.