M. bovis infection in other livestock and domestic animals

***Mycobacterium bovis* (*M. bovis*) causes tuberculosis in cattle, but the bacterium can also infect livestock and domesticated animals such as camelids, sheep, goats, pigs, dogs and cats. This sheet summarises what we know about *M. bovis* infection in these species and the likely role they play in the epidemiology of bovine TB in GB.**

Are other species regularly tested for TB?

In the UK cattle are the only livestock subjected to regular statutory TB testing. In other livestock, TB is either identified in clinically ill animals or at slaughter, which may then result in restrictions and further testing being applied. Camelids, farmed deer and goats are also tested if they are co-located on (or contiguous to) farms with TB lesion or culture positive cattle herds.

South American Camelids (alpacas and llamas)

Llamas and alpacas are highly susceptible to *M. bovis* infection, often developing extensive TB lesions in their lungs and other organs [1]. There is evidence that TB can spread within and between camelid herds [2] and it seems likely that infected camelids are capable of transmitting infection to wildlife or other livestock. As camelid herds are still fairly uncommon in the UK countryside, any disease risk will be highly localised.

The tuberculin skin test is difficult to perform and has a very low sensitivity in camelids. In the last decade several diagnostic blood tests for TB have been validated and are now officially approved by Defra for private and statutory TB testing of camelids, in conjunction with the skin test. On their own these tests will detect 60-70% of infected animals in a herd, but the use of two or more tests increases the likelihood that infected animals are detected [3].

Sheep & Goats

Overall, a very small number of TB incidents in sheep [4] and goats [5] have been recorded in GB in recent years. Typically only a handful of infected animals (often less than 10) occur in these species annually, although large ‘explosive’ breakdowns involving hundreds of animals and leading to herd slaughters have occasionally been recorded on dairy goat farms in England [1]. Inspection of infected carcasses suggests that goats and sheep can shed *M. bovis* [1]. Any risk from sheep is likely to be low, as disease spread within flocks is quite limited and sheep are not very susceptible to infection. Goats appear to be more susceptible to TB than sheep and may have a greater ability to spread infection, as demonstrated by the occurrence of large breakdowns, as well as evidence of transmission between herds due to animal movements [5]. The tuberculin skin test is used whenever APHA considers it necessary to carry out TB screening of goat herds or sheep flocks.

Domestic pigs

Of the roughly 8 million pigs slaughtered annually in GB, around 20-40 are found to be infected with *M. bovis* at slaughter. Infection in pigs is typically located in the head lymph nodes[6], suggesting infection via an oral route (i.e. consumption of contaminated material). Although pigs are susceptible to *M. bovis*, it is believed that onward transmission is unlikely among domestic pigs in the UK (pigs are spillover hosts), as TB breakdowns in pig herds often affect only a handful of animals [6]. Close contact between domestic pigs and cattle is rare, and most cases of TB occur in outdoor-reared pig herds, which suggests environmental sources of infection (such as wildlife) [6]. The tuberculin skin test is used whenever APHA considers it necessary to carry out TB screening of pig herds.

Cats & Dogs

Incidence of TB caused by *M. bovis* in cats is low, with a small number of cases confirmed by culture each year, mainly in areas where the infection is endemic in cattle and badgers. Signs of *M. bovis* infection in cats may include poor body condition, infected bite wounds, non-healing ulcers and enlarged lymph nodes, often around the head [7, 8]. A cluster of infected cats in 2013 suggests that *M. bovis* can spread within cat populations [9], but is unclear whether infection can spread from cats to cattle.

The very low rates of TB in dogs (with only a handful of cases ever recorded in the UK) suggests that dogs are not very susceptible to infection, other than in exceptional circumstances. Recently (in 2016) an outbreak of TB was recorded at a hunting kennel resulting in the voluntary testing and euthanasia of 97 dogs [10]. This was a highly unusual case, believed to be the result of feeding offal from infected fallen livestock [10]. It is very unlikely that fox hounds or other domestic animals play a significant role in TB transmission in the UK.

Cattle are the main host for *M. bovis* in the UK. Other livestock are generally viewed as spill over or dead end hosts of infection in cattle and wildlife, although there could be a localised risk to cattle from infected goats or camelids. There is no evidence that TB is increasing in these other domestic species, and it is believed that measures to reduce the disease in cattle and wildlife will lead to a decline in TB cases in these other species.

Where can I find out more information?

For more information on other TB topics visit www.tbhub.co.uk. This sheet was produced as a part of a Knowledge Exchange project funded by NERC. For more information and to download the full list of fact sheets visit www.tbknowledgeexchange.co.uk

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