

Technological advances in veterinary diagnostics: opportunities to deploy decentralised tests to detect pathogens affecting livestock

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Infectious livestock diseases pose important threats to sustainable food production, with viral diseases such as foot-and-mouth disease (FMD) amongst the most important. Accurate and rapid diagnostic tests are an essential component of contingency plans to detect, control and eradicate these threats. Diagnosis currently involves a pipeline that starts with clinical suspicion, followed by collection of samples, transport of specimens to a centralised laboratory setting (e.g. national / international reference laboratories), analysis of samples using a range of diagnostic tests and reporting of results. However, the transport of specimens from the field to the laboratory can be a lengthy process that can delay critical decision-making and severely affect the quality of the samples. Furthermore, many diagnostic tests require well-equipped laboratories, often problematic for endemic countries which lack infrastructure and financial resources for disease surveillance and diagnostics. These important limitations of centralised diagnostic testing have motivated the development of prototype tools for the rapid, simple detection of livestock pathogens, based on advancements in the development of technologies for personalised human medicine. However, many of these tests are not yet routinely used or commercially available. In this talk, I will discuss the most promising examples of such assays, and highlight the challenges that remain to transition these tests from applied research and development into routine use.