

SURVEILLANCE OF INFECTIOUS DISEASES

IN ANIMALS AND HUMANS IN SWEDEN 2022

*Chapter excerpt:
Infectious bovine rhinotracheitis*



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Reporting guidelines: Reporting guidelines were introduced in 2018 for those chapters related to purely animal pathogens. The guidelines build on experiences from several EU projects, and have been validated by a team of international experts in animal health surveillance. The aim is to develop these guidelines further in collaboration within the global surveillance community and they have therefore been made available in the form of a wiki on the collaborative platform GitHub (<https://github.com/SVA-SE/AHSURED/wiki>). Feel free to contribute!

Layout: The production of this report continues to be accomplished using a primarily open-source toolset. The method allows the source text to be edited independently of the template for the layout which can be modified and reused for future reports. Specifically, the chapter texts, tables and captions are authored in Microsoft Word and then converted to the LaTeX typesetting language using a custom package written in the R software for statistical computing. The package uses the pandoc document conversion software with a filter written in the lua language. Most figures and maps are produced using R and the LaTeX library pgfplots. Development for 2022 has focused on generalising the R package to accommodate conversion into formats other than LaTeX and PDF, with a focus on markdown files which can be published as HTML websites using the Quarto publishing system. The report generation R package and process was designed by Thomas Rosendal, Wiktor Gustafsson and Stefan Widgren.

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Infectious bovine rhinotracheitis

BACKGROUND

Infectious bovine rhinotracheitis (IBR) is caused by bovine herpes virus 1. The same virus can affect different organ systems causing respiratory, abortive, genital or conjunctival disease. Transmission is mainly by aerosol for the respiratory form and by venereal transmission for the genital form.

Examination of Swedish bulk milk samples during the early 1990s showed the presence of a small number of seropositive herds. No signs of clinical disease were present in these herds. An eradication programme was initiated in 1994 and the last seropositive animal was found in 1996.

DISEASE

The incubation period of IBR is 3–21 days, but the virus can be silently present in the host animal and be reactivated by stress or immunosuppression. The clinical picture varies by subtype of the virus but also with the environmental and management factors. Several manifestations of the disease can be present during the same outbreak in the same herd. However, the clinical signs are typically concentrated either to the respiratory tract, reproductive organs or the eyes.

LEGISLATION

IBR is a listed disease (category C, D and E) in the Animal Health Law, (EU) 2016/429. Sweden is officially free from the disease in accordance with (EU) 2021/620 and surveillance to demonstrate freedom from IBR is implemented in accordance with (EU) 2020/689. IBR is notifiable on clinical suspicion as described in SJVFS 2021/10 (K12).

SURVEILLANCE

During 2022 all diagnostic testing was performed at the National Veterinary Institute (SVA). Milk samples were analysed for the presence of antibodies using an indirect ELISA (ID screen IBR Milk indirect, Innovative Diagnostics, Grabels, France), and serum samples were analysed with a blocking ELISA (IDEXX BHV1 gB AB test kit x3, IDEXX Laboratories, Westbrook, Maine, United States). Positive milk and serum samples were confirmed with an indirect ELISA (SVANOVIR IBR-Ab, INDICAL Sweden AB, Uppsala, Sweden), in accordance with the WOAHP manual. Semen and organ samples were tested with a real-time PCR (Wang et al., 2007). A positive case is defined as an animal with a positive PCR result or a confirmed positive serological reaction for IBR.

Passive surveillance

Suspicious based on clinical signs must be reported to the Swedish Board of Agriculture and will be subsequently investigated.

Active surveillance

The purpose of the surveillance is to document freedom from IBR. The Swedish Board of Agriculture is responsible for the surveillance, which is implemented by Växa, Sweden's largest cattle farmer association, through their milk quality control programme and is synchronised with the programmes for bovine viral diarrhoea and enzootic bovine leucosis. The surveillance also includes serum samples from beef cattle, collected at abattoirs. The sample size for dairy herds is calculated based on a herd design prevalence of 0.2% and a confidence level of 99%, and for beef cattle on a herd design prevalence of 0.2%, an animal design prevalence of 10% (beef cattle) and a confidence level of 99%.

In addition to the official active surveillance programme, bulls are tested within health schemes at semen collection centres and all cattle (and other potentially susceptible ruminants) are tested before export and import.

RESULTS

Within the active surveillance in 2022, 4020 bulk milk samples and 5685 serum samples from beef cattle were examined. Of these, 36 serum samples and 3 bulk milk samples tested positive in the screening test but negative in the confirmatory test. In addition, 159 cattle and 1 European bison were tested as part of health schemes or prior to export or import. All samples were negative.

No clinically suspected cases of IBR were reported in 2022.

DISCUSSION

In summary, no herd or individual animal was diagnosed with IBR infection during 2022. This supports Sweden's IBR-free status.

REFERENCES

Wang J, O'Keefe J, Orr D, Loth L, Banks M, Wakeley P, West D, Card R, Ibata G, Van Maanen K, Thorén P, Isaksson M, Kerkhofs P (2007) Validation of a real-time PCR assay for the detection of bovine herpesvirus 1 in bovine semen. *J Virol Methods* 144:103–108