

3.8 Sweden

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Sweden has pursued a systematic eradication strategy of Bovine Viral diarrhoea at a national level since 1993 (Norway, Denmark and Finland followed in 1994), with the declared goal of eradicating BVDV. Participation in the program is voluntary and is financed by the participating farmers. It is therefore all the more remarkable that 100% of all dairy farms and 99% of meat production farms collaborate [71]. The Scandinavians follow a non-vaccination strategy and instead concentrate on carefully monitoring and eliminating all PI animals. At the beginning of the eradication campaign seroprevalence in Sweden was 47%, by 2001 this was reduced to 5%. The entire eradication strategy is based on accurate knowledge of the epidemiological conditions in Sweden, whose most salient features are a relatively low population density and a below-average initial seroprevalence. The Swedish model consists of three steps [72]:

- (1) Classification of the population in infected and non-infected herds
- (2) Surveillance and certification of non-infected herds
- (3) Virus elimination from infected herds

1. The classification of the population in infected and non-infected herds is done by routine analysis of bulk milk samples or serum or milk samples of a small number of animals in a certain age group (so-called spot tests). The diagnostic means of choice is the antibody ELISA. The existence of PI animals can thereby be established indirectly (high antibody titres mean a recent infection whereas a low antibody titre means an infection several years past). The reliability of the spot tests is based on the high probability that other animals in the stable will seroconvert if there is a viraemic animal nearby. As a consequence, if seropositive animals are found, there must be a PI animal in the herd. A direct antigen (virus) analysis by means of RT-PCR is also possible, however, its reliability as to the infection status of the herd is lower, as a PI animal is not necessarily part of the animals that are milked. An identification of BVD-free farms is at least as important as the identification of infected herds, in order to protect them from an infection by information of the farmers concerned.

2. Certification: BVD-free farms are certified as such and are given licence to sell their animals with the label “BVD-free” without any individual tests. In order to obtain such a certification, two tests (bulk milk, pooled milk samples of 5-10 prima-gravida cows or individual blood serum-samples of 5-10 young animals of over 15 months) have to be negative within a minimal time span of seven months. Alternatively, all animals of a herd can be tested for virus and antibody twice within at least four weeks. The certification is confirmed annually by repeat tests. If animal movements are planned (e.g. sale of animals, exhibitions, the use of common grazing grounds), the last negative test must not be older than three months. If such repeat tests are positive, certification is immediately rescinded.

3. Elimination of the virus from infected herds: Before the virus can be eliminated from a farm its existence must be established. This is the case when a spot test in 6-9 months old calves is positive, a seroconversion is confirmed, a viraemic animal is found in the herd or when a PCR bulk milk test turns out to be positive. The owners of infected herds are persuaded not to sell any animals for the time being and avoid all contact to other herds. If the movement of animals is unavoidable the animals concerned must be tested for the presence of virus. Procedure: eliminating the virus on a farm

- (1) All animals in a herd are individually tested. Apart from PI animals seronegative fertile cows are sought out, as it is only the latter which can generate new PI animals. They can then be protected accordingly, for instance against PI animals that are born after the first test. Animals with a low or non-detectable antibody titer must be tested for the presence of virus. Animals that are positive must be tested a second time and if this second test turns out to be positive these animals must be eliminated.
- (2) All calves born subsequently are tested. As at the time of the test mentioned above there may be PI animals in utero within the herd the newly-born calves are tested once again for the presence of antibodies and virus after about ten weeks (at that age there is no longer any interference with maternal antibodies).
- (3) All cows that were negative in the initial test are subjected to a repeat antibody test 12 months after the beginning of the campaign in order to eliminate the possibility that during the previous 12 months PI animals or animals with an undetermined status (for early slaughter) were born.

In Sweden, information is given highest priority. Not all professional groups can be persuaded to participate in the eradication program with the same arguments. For this reason, information is tailored to motivate all groups concerned (farmers, vets, breeders, milk producers, etc.) to take an interest in BVD prevention. The focus is, naturally, on farmers as their decisions count regarding animal movements (purchase and sale, use of common grazing grounds) as well as biological safety on the farm.