

# AN OUTBREAK OF EQUINE INFLUENZA IN SWEDEN 1992/1993

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## ABSTRACT

In 1992/93, 22 racecourses and surrounding regions were affected by the most widespread outbreak of type A2 equine influenza ever recorded in Sweden. In total, 4,300 horses were isolated, 45% of which showed clinical signs of disease, although less than 9% were seriously or moderately affected, ie a lower proportion than in earlier outbreaks. Four yearlings died during the acute stage of the disease. No racecourse was forced to cancel any race meetings. Reasons for the spread of the disease, and its relative lack of severity, are discussed.

## INTRODUCTION

From November 1992 to May 1993 the Swedish horse population was struck by an outbreak of equine influenza, subtype A2, less than a year after a previous outbreak. Affected horses were mostly trotters. Between the 2 outbreaks there was discussion within the Swedish Trotting Association as to how such situations could be contained, occasioned mainly by high expectations of influenza vaccination held by many owners, trainers and veterinarians. The epidemiological investigation that followed the 1991 outbreak (Bendixen *et al.* 1993) proved that vaccination had been effective. Of horses exposed to the virus, 81% remained healthy or were only mildly infected. In contrast, in the 1980s there was no compulsory vaccination programme and only about 30% of horses were vaccinated. At that time, 15–20% were affected so seriously that they had still not returned to racing 6–12 months later.

## VACCINATION

It may not be possible to achieve a higher degree of protection than is provided by current vaccines. Nevertheless, the 1991 influenza investigation shows that benefits can be obtained by vaccination of all racehorses at 6-monthly intervals up to an age of 5 years. Thereafter, annual vaccinations might suffice. It might also be assumed that to start vaccinating horses at an early age (4–6 months) will give the entire horse population better protection.

## THE 1992/93 OUTBREAK

During November 1992 the incidence of acute respiratory disease primarily in animals  $\leq 3$  years increased at Jägersro Racecourse in southern Sweden. Only trotters were affected and initially no diagnosis was established. When visiting horses from other racecourses contracted the infection, it spread to several other courses. The disease was confirmed as type A2 equine influenza, which probably had been introduced into Sweden by yearlings returning from training in Czechoslovakia. It is important to bear in mind that, in future, a number of circumstances may affect the situation: 1) abolition of compulsory vaccination by the Swedish Trotting Association in March 1992; 2) new strain(s) of influenza; 3) institution of a 'local epizootic committee' at each racecourse; 4) a less restrictive isolation policy; 5) spread of the disease to regions not previously affected by influenza outbreaks.

Although the 1992/93 outbreak had time to become established in southern Sweden, it affected only a few horses, even at racecourses other than Jägersro, notably Halmstad and Kalmar. In December 1992 the disease reached Åby (Göteborg) and Mantorp (Linköping). Local epizootic committees worked energetically to prevent spread to unaffected racecourses. A change in isolation policy meant that stables housing infected and/or contagious horses would be isolated, while other stables in the same area could continue normal activities. A stable is not isolated until clinical signs of influenza are manifest but, at this time, all stables are isolated. Previously, the whole yard was isolated as soon as clinical signs of influenza were discovered on a racecourse. The new policy is obviously more risky.

## FURTHER SPREAD

During January 1993 the disease spread remarkably slowly, to Färjestad (Karlstad), Solvalla (Stockholm), Mantorp, Romme (Borlänge) and Gävle (Fig 1). Gävle had never previously been affected by influenza, which was worrying. However, its horse population was not affected to a noticeably greater extent than at other racecourses. During February the outbreak

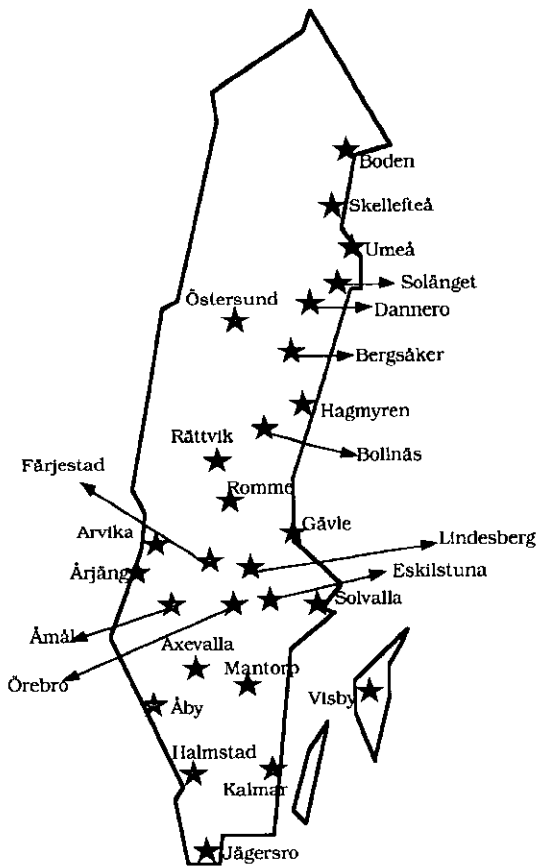


Fig 1: Map of Sweden showing racecourses. The 1992–93 influenza outbreak started at Jägersro in November 1992 and proceeded to Halmstad and Kalmar. In December 1992 Åby and Mantorp were affected followed in January 1993 by Färjestad, Solvalla, Mantorp (a second outbreak), Romme and Gävle, in February by Bollnäs, Örebro and Bergsåker and in March by Hagmyren, Dannero, Östersund, Solänget, Umeå, Skellefteå and Boden. In April Åmål and Årjäng were the last racecourses to be affected.

spread west and north to Bollnäs, Örebro and Bergsåker. Bollnäs and Bergsåker had not been affected by influenza outbreaks for many years. The general clinical picture was not alarming but, in certain regions, there were local deviations from this mild pattern, with severe disease requiring prolonged recuperation. In March 1993, Sundbyholm (Eskilstuna), Solvalla and Romme experienced recurrences. The influenza spread north to Hagmyren, Dannero, Östersund, Solänget, Umeå, Skellefteå and Boden. In April the outbreak subsided after again affecting Kalmar and Mantorp and striking Åmål and Årjäng. Thus Mantorp was affected for the third time in one outbreak, although each infection period was short (2 weeks). The periods for which each racecourse was affected varied and a significant difference existed between courses in the north and south of Sweden. In the south, the mean isolation

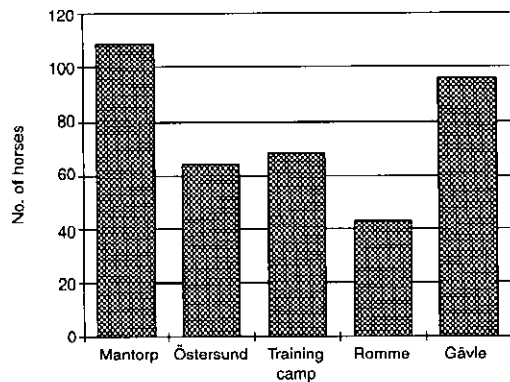


Fig 2: Location of 379 controlled horses (only Mantorp, Östersund, Romme, Gävle and a training camp outside Stockholm, supplied study material to the investigation).

period per racecourse was 2.17 weeks; in the north 3.15 weeks, ie a variation of 45%. Differences between racecourses in the north and south are: 1) A larger proportion of vaccinated horses in the south; 2) more experience of influenza outbreaks in the south; 3) probably a better immunity status in the south.

## RESULTS OF SURVEY

Although a large number of horses were affected by this outbreak, only 379 were included in the investigation because only Gävle, Romme, Mantorp and Östersund, and a training camp north of Stockholm, supplied material. However, the number of horses (Fig 2) was sufficient to provide basic data on which to undertake statistical calculations.

At each outbreak the same body temperature limits were used to determine health status (Table 1). Admittedly this means, especially in healthy horses and those with only mild symptoms, that another infection could be present. However, if the same limits are applied on every occasion there will be a comparable situation from one outbreak to the next - which is conceivable in the case of influenza - and such concomitant infections will be of little interest. In the 1991 outbreak, 19% of the horses were moderately or seriously infected whereas in 1992, despite abolition of the vaccination programme, the

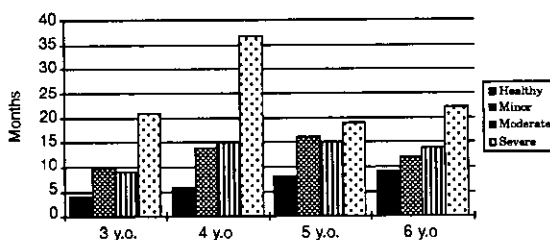


Fig 3: Interval between vaccination and the outbreak in each age group.

**TABLE 1: Body temperature limits applied when determining health status in each influenza outbreak in Sweden**

Healthy	≤ 38.0°C
Mild	≥ 38.1 ≤ 39.0°C on at least 2 days
Moderate	≥ 39.1 ≤ 40.0°C on at least 2 days
Severe	≥ 40.1°C

**TABLE 2: Percentage of moderately/severely sick horses at different locations in the 1992–93 outbreak**

Romme	2.3%
Training camp	2.9%
Östersund	7.7%
Mantorp	11.0%
Gävle	11.7%
Mean	8.2%

prevalence had decreased (Table 2). There are grounds to suspect that the percentages should be higher in the younger horses (≤ 3-year-olds) and, as shown in Table 3, this may be true. In a relatively young population, as at Mantorp, the proportion with moderate or serious symptoms is large, (11%; Table 2). Yet Gävle, with the smallest proportion of young horses, had the largest proportion with moderate or severe symptoms (11.7%) possibly because fewer than half had been vaccinated within 3 months before the outbreak (Table 4).

### **Vaccination interval**

Figure 3 shows that the longer the period between vaccination and the outbreak, the more serious the infection. Two-year-olds were excluded from the investigation because of the low number and because all had been inoculated within 10 months of the outbreak.

### **Recommendations**

This study does not suggest the need for changes in the present recommendation for vaccination issued by the Swedish Trotting Association, which are:

- Vaccination at 6 months of age, 1–2 months later and a third, booster dose after 6 months
- Revaccination every 6 months up to 5 years of age, and annually thereafter.
- No differentiation of protocols between different types of vaccine.

### **The Epizootic Committee for Equine Sports**

Non-notifiable diseases are monitored by the Epizootic Committee for Equine Sports. Run by the

**TABLE 3: Location of horses ≤ 3-years-old. Due to the weaker state of immunity, this younger group were studied separately.**

Romme	44%
Training camp	37%
Östersund	37%
Mantorp	71%
Gävle	27%

**TABLE 4: The reported location of vaccinated horses 3 months prior to the outbreak.**

Romme	24%
Training camp	100%
Östersund	15%
Mantorp	27%
Gävle	34%

Swedish Trotting Association, this has representatives from the Thoroughbred and trotting sports, the National Veterinary Institute, the Swedish Board of Agriculture and the Swedish Equestrian Federation. The Epizootic Committee is engaged in such matters as: information; education; vaccination control; sickness and treatment advice; communication with public authorities; international communication.

### **Local epizootic organisation**

Local epizootic committees decide on such matters as isolation at the local racecourses and their environments.

### **CONCLUSION**

This influenza outbreak added useful information, to that gained in earlier outbreaks. The Epizootic Committee for Equine Sports has discussed the epidemiology and consequences of the outbreak and decided to:

- recommend vaccination according to earlier reports.
- increase support to local epizootic committees.
- uphold wherever possible the isolation policy applied during this outbreak.
- permit an 'improvised' isolation policy, meaning that the actual epizootic situation should serve as a guide regarding necessary isolation measures.

### **REFERENCE**

- Bendixen, P. H., Emanuelson, U., Forssberg, P. and Silberberg, L. (1993) Analysis of status of vaccination and development of fever in trotters in Sweden during an outbreak of influenza type A2, (H3N8). *Prev. Vet. Med.* **16**, 95-102.