

A nationwide outbreak of vancomycin-resistant enterococci in Sweden, 2007-2008

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Abstract

A nationwide outbreak of vancomycin-resistant enterococci (VRE) is ongoing in Sweden, at least since July 2007. The outbreak was first detected in Stockholm county and has subsequently been reported from Västmanland, Halland and Uppsala counties. The reasons for the considerably extensive dissemination in the country and in the affected counties, respectively, are still unclear but under investigation. A national working-group has been formed and a strategy for coordination of epidemiological typing by the laboratories developed.

Background and Purpose

- Vancomycin-resistant *Enterococcus faecium* and *Enterococcus faecalis* are mandatory notifiable since year 2000 (both infection and carriage)
- 18 to 47 cases have been reported annually between 2000 to 2006
- In Sweden, only a few limited outbreaks have occurred previously
- Since July 2007 the reported number of VRE-cases has increased
- Here we describe the nationwide ongoing VRE-outbreak in Sweden

Methods

- Data was retrieved from the national notification system "SmiNet2" for the period 2007-07-01 to 2008-12-31
- The clinical notifications were actively completed
- Analysis of the clinical and laboratory notifications
- Genotyping and PFGE was performed at the local laboratories and at the Swedish Institute for Infectious Disease Control, respectively.

Table 1. Species and genotype for the domestic VRE cases. E.fm = *Enterococcus faecium*

County	Number of cases	E.fm, vanA	E.fm, vanB	Incidence *
Stockholm	450	93	356	20.9
Västmanland	83	1	82	33.2
Halland	86	-	86	29.3
Uppsala	13	-	12	4.0
Others, 6 counties	9	-	8	<1
Total	641	94	544	

* Number of domestic VRE cases per 100 000 population for year 2008

Figure 1. PFGE gel showing variants of pattern A of the *vanB*-carrying *Enterococcus faecium* causing outbreaks in Sweden. Lanes 1 and 8: DNA size standard NCTC8325; lanes 2 and 3: isolates from Halland; lanes 4 and 5: isolates from Västmanland; lanes 6 and 7: isolates from Stockholm

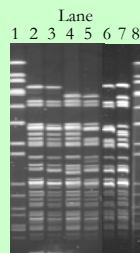
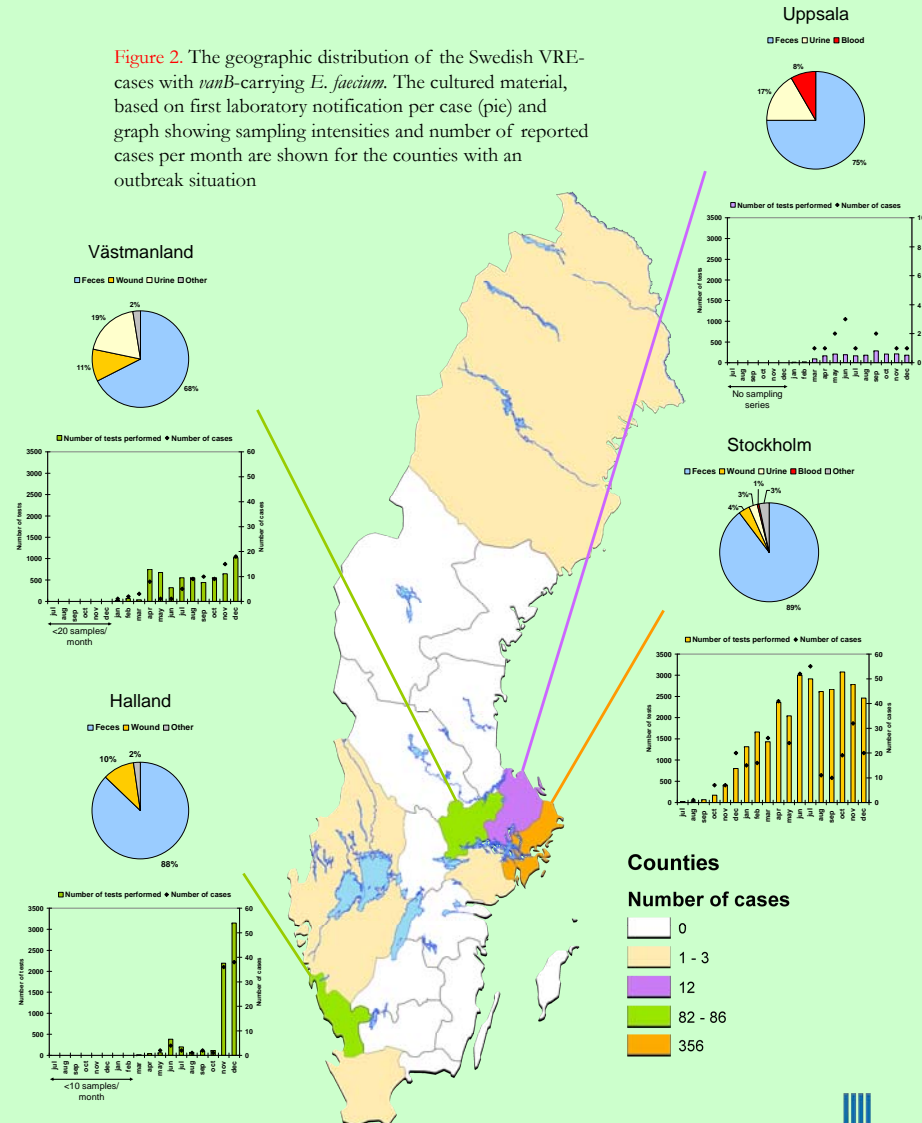


Figure 2. The geographic distribution of the Swedish VRE-cases with *vanB*-carrying *E. faecium*. The cultured material, based on first laboratory notification per case (pie) and graph showing sampling intensities and number of reported cases per month are shown for the counties with an outbreak situation



Results

- 641 cases had acquired VRE in Sweden and 18 cases abroad
- 95% (n=612) of the domestic cases were health-care related
- Results of genotyping of domestic cases are shown in Table 1
- According to the first laboratory confirmation of domestic cases:
 - 84% (n=545) were isolated from feces
 - 5% (n=33) from wounds
 - 5% (n=31) from urine
 - 3 cases (0.5%) isolated in blood
- The mean age for the domestic cases was 70 years (range 1-98 y.)

Conclusion

The reasons for the extensive nosocomial dissemination of VRE in Sweden, and in the affected county hospitals respectively, are still not known but under investigation. Efforts have been made in the respective county to control the outbreaks with increased awareness of hand hygiene, not only for staff but also for patients, withdrawing of food buffets from wards, extensive cleaning of the patient environment and use of probiotics. A national working-group has been formed and a strategy for laboratory coordination of typing developed.

This poster may be downloaded from: <http://www.smitskyddsinstytutet.se/in-english/activities/antibiotic-resistance>

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