

## VEROCYTOTOXIN-PRODUCING E. COLI 1997 - 2000

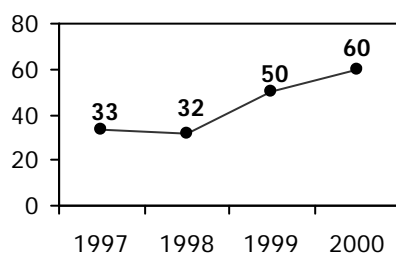
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Verocytotoxin-producing *E. coli* (VTEC) infection is a fairly common zoonosis. VTEC infections present a broad clinical spectrum, from an asymptomatic course through mild diarrhoea to severe bloody diarrhoea. Fever and vomiting are frequently seen. In about 10% of cases, chiefly in children under 5 years of age, the infection is complicated by haemolytic uraemic syndrome (HUS), characterized by acute renal failure, microangiopathic haemolytic anaemia and thrombocytopenia.

### Laboratory-diagnosed cases

After a relatively low incidence with few cases per year before 1997, the annual number of laboratory-diagnosed VTEC infections has risen from 37 in 1997 to 60 in 2000, [Fig. 1](#).

**Fig. 1. Annual no. of laboratory-diagnosed VTEC infections, 1997-2000**



Half the patients were children below the age of 5 years. The rise is presumably not real, but reflects an ongoing improvement in diagnostic procedures. In 2001, 21 cases have been registered up to 1 June. During the period 1997-2000 a total of 168 isolates were characterized, [Table 1](#).

O157 was the commonest serotype,

**Table 1. Most frequently occurring VTEC O groups, 1997-2000**

O group	No.	(%)	eaе*
O157:[H7]	44	(26)	+
O26	23	(14)	+
O103	20	(12)	+
O145	12	(7)	+
O117	12	(7)	-
O121	7	(4)	+
O91	6	(4)	-
Other serotypes (eaе pos.)	20	(12)	+
Other serotypes (eaе neg.)	24	(14)	-
<b>Total</b>	<b>168</b>		

\* The eaе gene is an important virulence factor in VTEC

accounting for 26% of cases. Hence most (74%) of the isolates were not O157, and these comprised over 30 different O:H serotypes.

### County distribution

The geographical distribution of VTEC infections is shown in [Fig. 2](#) overleaf. The incidence was highest in Aarhus, Funen, Ribe, Storstrøm and Roskilde Counties and in the Municipality of Copenhagen. Regional differences may result from the use of more sensitive diagnostic methods in the regions showing the higher incidences.

### Sources of infection

VTEC is principally found in ruminants, whence they may spread to foods on slaughter and further processing, but also to the environment, especially water. The infective dose is low, which explains why person-to-person transmission is relatively frequent. Most infections occur in the early summer and in September. About a quarter of the patients acquired the infection while travelling abroad. Contact with infected but otherwise healthy animals can lead to infection. It is therefore prudent to observe the Food Directorate's recommendations on tourist or holiday farms, which include special rules for children under 5 years of age and their admission to stabling areas, contact with objects contaminated with manure, use of protective clothing and access to handwashing facilities. Visitors must not be offered unpasteurized milk or products derived from it.

### Interview study

As there is no certain knowledge of infective sources in Denmark, all patients from the period 1997-2000 were interviewed. 45% of the patients had bloody diarrhoea, only 47% of these cases being related to O157. 56 patients were admitted to hospital. 16 (29%) of these had HUS, 12 (75%) of whom were less than 5 years old. O157 was isolated from nine (56%) of the HUS patients and non-O157 from seven (44%): two cases of O145 and one case each of O26, O103, O111, O137 and O165. The study indicated many possible sources of infection. 49 (40%) of the patients stated that they knew of

other cases of diarrhoea, typically one to four, 26 (53%) of such cases occurring in the same household. None of these other cases were tested for VTEC.

### Notified cases

VTEC infections and HUS were made individually notifiable from 1 May 2000. In the period up to 31 December 2000, 46 VTEC cases were notified to the Department of Epidemiology. Four patients were notified with HUS, one of whom was diagnosed on clinical grounds. Reminders had to be sent for 30% of the notifications. In 2001, 21 cases of VTEC infection have been notified up to 1 June, three of these with HUS. The National Board of Health has prepared guidelines on the management of these infections. (F. Scheutz, Dept. of G-I Infections, S. Samuelsson, Dept. of Epidemiol.)

### OUTBREAK OF SALMONELLA BOVIS-MORBIFICANS

Over the past 6 months there has been a prolonged outbreak of gastroenteritis due to *Salmonella Bovismorbificans*. The outbreak accelerated after February 2001, with 63 registered cases, seven of these in week 24. The cases have occurred throughout the country without obvious differences in sex or age distribution and have not been related to foreign travel. This suggests that the source of infection is foodstuff that is distributed throughout the country. The serotype responsible for the epidemic has not been found previously in Danish animals or food.

During the last 6 weeks two interview studies have been undertaken, which have not, however, pointed to a possible infective source. A revised case-control study is starting in week 26. To elucidate the cause of the outbreak and improve the reliability of the study, it is important to interview a large number of patients soon after the onset of illness. Over the next two weeks physicians are asked to send in stool samples taken early in the course of illness from patients with possible infectious gastroenteritis acquired in Denmark. (P. Gerner-Smidt, Dept. of G-I Infections, J. Neimann, Danish Zoonosis Centre)

**Fig. 2. Geographical distribution of laboratory-diagnosed VTEC infections in Denmark, 1997-2000.**

No. of diagnosed VTEC infections and average incidence per year, by county.

