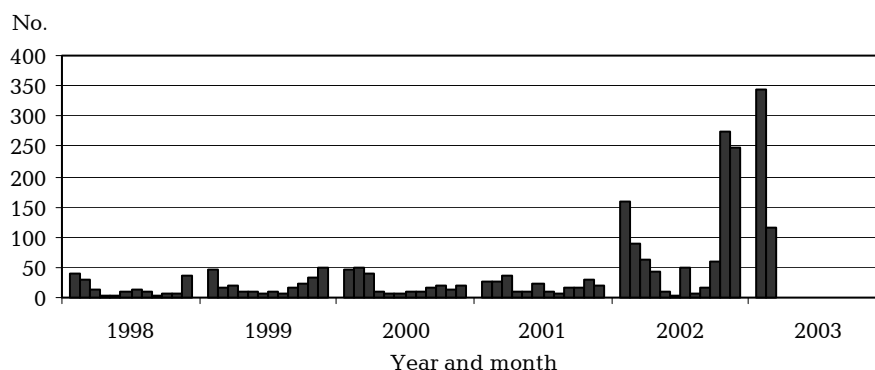


## NOROVIRUS

No. 15, 2003

Fig. 1. Specimens with norovirus per month 1998-2003, Dept. of Virology, SSI



Norovirus, formerly known as Norwalk-like virus, is the most important cause of what is known in Denmark as "Roskilde disease". It belongs to the human calicivirus family and is a little, resistant virus, which survives at temperatures of up to 60-70° C.

The virus can survive for several days at 4° C and 20° C. Sensitivity to disinfectants such as alcohol is poor, while chlorine-based and peroxygen disinfectants are efficacious.

Norovirus can be divided into genogroups I and II, both of which include several subtypes. Different subtypes circulate in the environment simultaneously, but usually with a single prevalent subtype. In recent years, subtype "Lordsdale" has been the most common, having been detected in hospital and institution environments in particular.

### Diagnostics

Norovirus can be detected in faeces specimens by ELISA and PCR methods, the latter being by far the most sensitive. Some subtypes cannot be detected with either of the two methods, for which reason electron microscopy can be used as a supplementary test on special indication. Norovirus detected by PCR can be typed at SSI by hybridisation or sequencing, which are used in connection with surveillance and contact tracing.

### Routes of infection

Infection occurs either through contact with objects, surfaces or hands that are contaminated with virus from vomitus or faeces, or by contaminated foodstuffs, EPI-NEWS 4/02.

A dose of 10-100 virus particles is enough to cause illness, which is a very small inoculum, seen in the light of the fact that 10<sup>6</sup> virus particles can be secreted per gram of faeces or vomitus. Often, more than 50% of those exposed become ill.

### Clinical features

After an incubation period of 1-2 days, the patient suddenly becomes ill, with explosive vomiting and/or diarrhoea. Accompanying symptoms may include fever, headache and abdominal pain. In adults, the disease usually passes quickly, while small children often have diarrhoea for up to a week. New studies have shown that, particularly in children, the virus is secreted in faeces for up to a month. Immunity after infection is transient and subtype-specific.

### Incidence

"Roskilde disease" in institutions and closed environments appears particularly in November-March, but outbreaks also occur in summer, for example in camps with many people living close together.

The disease affects all age groups, but the incidence is higher in children and elderly over the age of 65. From the start of November 2002 to March 2003, SSI received an increased number of specimens for the detection of norovirus, which was found in approx. 800 patients, Fig 1. The patients came from all over the country and were in all age groups, but most were over 65 years (82 %). The increase in the number of diagnosed cases is partly due to improved diagnostics on changing from electron microscopy to PCR at the turn of the year 2001-2002, but reports also exist of a high incidence of "Roskilde disease" in the same period. Thus, voluntary reports from the hospitals' hygiene organisations in November-December 2002 showed outbreaks in at least 46 wards, distributed over 22 hospitals and affecting 330 patients and 194 members of staff. The outbreaks began already in October, which is early in relation to previous seasons. The same pattern has been observed in Norway and Sweden. There have also been reports of repeated outbreaks in the same institutions.

### Comments

Outbreaks of gastroenteritis caused by viruses have in recent years been an increasing and recurrent problem in hospital and institution environments. Apart from norovirus, known causes of similar outbreaks are rotavirus and astrovirus. Hospital outbreaks have predominantly affected medical, orthopaedic surgery and geriatric wards, as well as certain wards with immunocompromised

patients. Widespread illness among staff is also typical. The risk of outbreaks is apparently less if the patients are self-reliant and mobile. In the event of an outbreak, it is important that the hygiene organisation and hospital management be informed.

### Prevention of spread in hospitals and institutions

The most important measures are:

- Isolation of patients with gastroenteritis and of exposed patients.
  - Staff is assigned to the care of patients accordingly.
  - Patients should not be transferred to other wards.
  - Specimen-taking: approx. five specimens per outbreak (one specimen per patient).
  - Barrier nursing: use of gown/plastic apron and gloves on patient contact.
  - Washing of hands after each patient contact.
  - Cleaning and disinfection of possibly contaminated surfaces, e.g. handles, handrails, walking aids, etc.
  - Help with hand hygiene for patients before meals and on visits to the toilet.
  - Any food buffets or similar are closed; patients must have their food served to them.
  - Staff training, including those who work with tasks involving crossover between wards, e.g. cleaning.
  - Patients and staff are considered to be infectious until two days after they become symptom-free.
- (B. Böttiger, Department of Virology, E. T. Jensen, Department of Antibiotic Resistance and Hospital Hygiene)

EPI-NEWS will not be published in the week commencing 14 April. The staff of the Department of Epidemiology wishes readers a happy easter.

## Serum specimens positive for *Mycoplasma pneumoniae* by complement fixation test

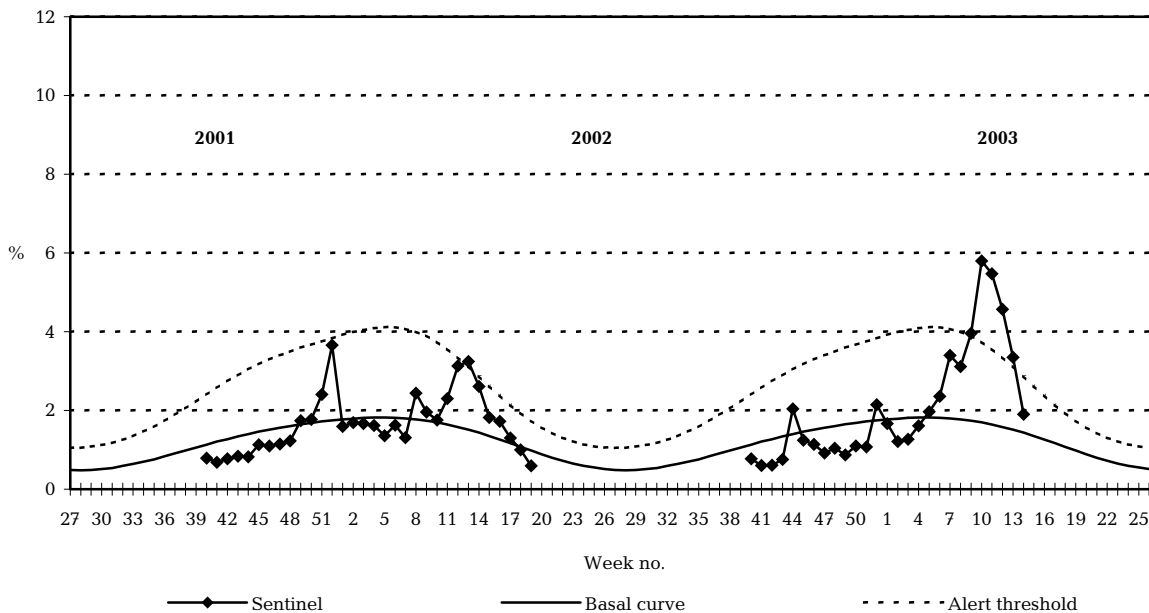
1st quarter of 2003 compared with 1st quarter of 2002 and, average for 1st quarter of 1998-2002

	January	February	March
Positive specimens during 1st quarter of 2003	107	60	63
Positive specimens during 1st quarter of 2002	93	85	58
Positive specimens, average 1st quarter of 1998-2002	134	92	64

(Dept. of Respiratory Infections, Meningitis and STIs)

## Sentinel surveillance of influenza activity

Weekly percentage of consultations, 2001/2002/2003



- Sentinel:** Influenza consultations as percentage of total consultations  
**Basal curve:** Expected frequency of influenza consultations under non-epidemic conditions  
**Alert threshold:** Possible incipient epidemic

(Dept. of Epidemiology)