Two outbreaks of norovirus infections associated with the consumption of imported frozen raspberries, Denmark, May-June 2005

B Korsager [1], S Hede [2], H Bøggild [3], B Böttiger [4], K Mølbak [5]

1. Department of Clinical Microbiology, Aalborg Sygehus, Denmark.
2. Regional Food Inspectorate, Northern Jutland, Aalborg, Denmark.
3. Medical Officer of Northern Jutland County, Aalborg, Denmark.
4. Department of Virology, Statens Serum Institut, Copenhagen, Denmark.
5. Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark.

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On the weekend of 21-22 May, it was reported that 101 patients and 76 employees at the two Aalborg Hospitals, South and North, in Nothern Jutland, were ill with vomiting and diarrhoea. In the following four days, a further 43 patients and 52 employees, as well as 4 relatives, were reported to be ill. Because of simultaneous outbreaks in the two physically separated hospitals, a foodborne source of infection was suspected. Cohort isolation of the sick patients was implemented, and some admissions, as well as a total of 43 operations, were cancelled. Sick employees were requested not to turn up for work until they had been well for at least 24 hours (48 hours for kitchen staff). In order to reduce the risk of infection, kitchen areas were disinfected and cleaning staff were instructed in disinfection of toilet areas. Infection control nurses and the Regional Food Inspectorate provided disinfection guidelines, for which a disinfectant that is active against norovirus was used.

Case-control studies were conducted among a total of 120 employees and inpatients at the hospitals. The studies showed that the sick employees had all been at work on Thursday (odds ratio (OR) 15; 95% confidence interval (CI) 3.4 to 71) and that the consumption of a 'fromage blanc' (fresh cheese) dessert containing frozen pieces of raspberries in the canteen that day was associated with an increased risk of disease (OR infinite, lower CI 3.4). Consumption of the same dessert with raspberries was also associated with illness in patients (OR 6.2; 95% CI 1.6 to 26). The suspicion of a norovirus infection was confirmed by the results of investigation of faecal specimens.

Outbreak on Sjaelland

From 3 June, several cases of gastrointestinal infection were also registered among the elderly in several areas in Sjaelland, and in the Greater Copenhagen area. The patients had received food from one particular food caterer supplying 12 municipalities with a 'meals on wheels' service as part of a home nursing scheme. On the basis of the experience from Aalborg, the possibility that this was another norovirus outbreak was thought to be likely, and the most likely source of infection a raspberry dessert that had been served to around 1100 people between Wednesday 1 June and Friday 3 June. The frozen raspberries used were bought from the same importer that supplied the raspberries implicated in the outbreak in the Aalborg Hospitals.

As of 23 June, there appear to be at least 289 cases associated with this second outbreak. Several stool specimens collected from patients at Sjaelland were found positive for norovirus.

Discussion

This is a preliminary report of large foodborne outbreaks of norovirus infections associated with consumption of desserts made from frozen raspberries. The overall extent of these outbreaks, including secondary transmission, will be elucidated in ongoing investigations. Microbiological analyses of the raspberries as well as further analyses of stool specimens, including genotyping of norovirus, are also in progress. Preliminary results suggest that there may be more than one genotype involved.

It is important to note that the source of infection was recognised rapidly due to the swift response from the Medical Officer of Health, the Regional Food Inspectorate and the infection control department at Aalborg Hospital. Unfortunately, immediate withdrawal of the frozen raspberries from the market was not immediately implemented, and this delay resulted in another outbreak in Sjaelland that has afflicted at least 289 people in a very vulnerable age group. This outbreak could have been prevented by a more efficient recall.

After the cases at Sjaelland, the Danish Veterinary and Food Administration reinforced the recall, and the Danish importer has now withdrawn all similarly sourced raspberries from the market. The raspberries were imported from Poland, and were not distributed to ordinary retail outlets. It is not known if the raspberries were distributed to other countries. Immediately after the recognition of the outbreak in Aalborg, the Food-borne viruses in Europe network (FBVE, http://www.eufoodborneviruses.co.uk) was informed, and international warnings were sent through both the European Early Warning and Response System (EWRS) and the Rapid Alert System for Food and Feed (RASFF, http://europa.eu.int/comm/food/food/rapidalert/index_en.htm).

Raspberries have previously been associated with outbreaks of norovirus, most recently in March, when a French school was affected [1]. However, the same producer was not involved as in the Danish outbreaks, and the strain in the outbreak in France (genogroup I genotype 5; Musgrove strain) has not been found so far in the recent Danish outbreaks.

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Short reports

World Stop TB Day 2005: tuberculosis care providers and monitoring of treatment outcome in Europe

A Infuso, D Falzon

EuroTB, Institut de Veille Sanitaire, Saint-Maurice, France

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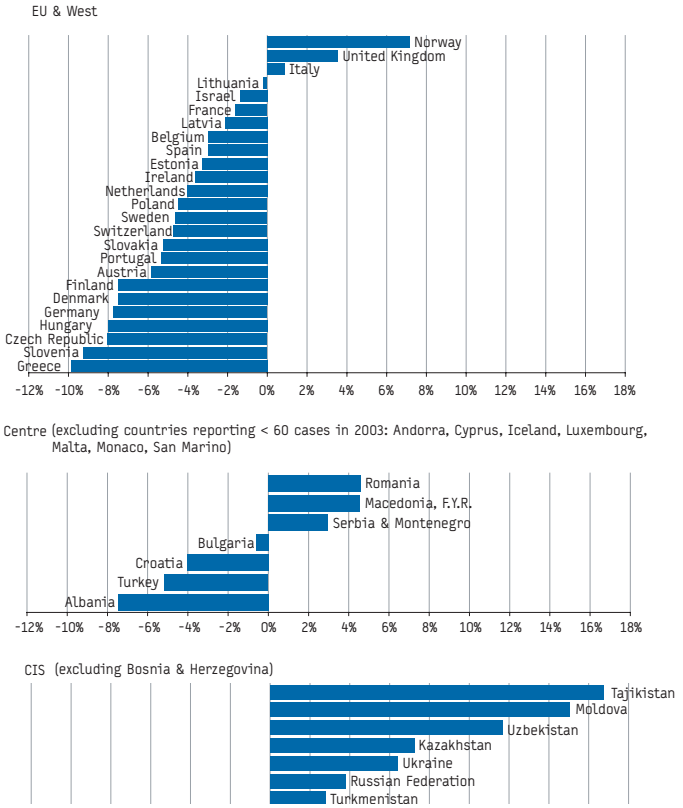
Tuberculosis (TB) is still a major global disease threat. Each year, there are over 8 million estimated cases and over 2 million deaths. In the World Health Organization European Region in 2003, 416 085 TB cases were reported. There were different trends in three distinct areas of the Region (Figure 1). In most countries of the Commonwealth of Independent States of the former Soviet Union (CIS), notification rates continued to increase and exceeded 100 cases per 100 000 population in 2003. In the centre (Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Macedonia, Serbia & Montenegro, Romania, Turkey), the overall rate was stable at around 50 cases per 100 000, with the notable exception of Romania (142 per 100 000 in 2003). In the European Union plus Andorra, Iceland, Israel, Monaco, Norway, San Marino and Switzerland (EU & West), there has been an overall decrease in annual cases from 18.1 per 100 000 in 1995 to 13.6 in 2003, but numbers have been stable in recent years in several countries. The proportion of cases of foreign origin is increasing steadily (31% in 2003).

FIGURE 1

Mean annual percentage change in tuberculosis notification rates, WHO European Region 1999-2003



This year, the theme of the World Stop TB Day (24 March) is focused on the role of care providers in the fight against TB. Prompt diagnosis and adequate treatment of active cases are the main ways of controlling TB. The long duration of standard anti-TB treatments (at least 6 months) makes good case management essential to improve adherence and ensure successful completion. WHO has set a treatment programme completion performance target of 85% for new pulmonary sputum smear positive TB cases. Monitoring treatment outcomes is essential for assessing the effectiveness of TB control and case management and international guidelines have been issued for this [1,2].

Treatment outcomes across Europe

Many European countries have started to monitor treatment outcome in recent years. Outcome information is usually collected for all definite pulmonary TB cases notified within a given period of time (cohort). The first outcome observed within 12 months of starting treatment or diagnosis is reported by clinicians and linked to case notification data. Aggregate data or, since 2002, anonymous individual TB case report data are reported to EuroTB.

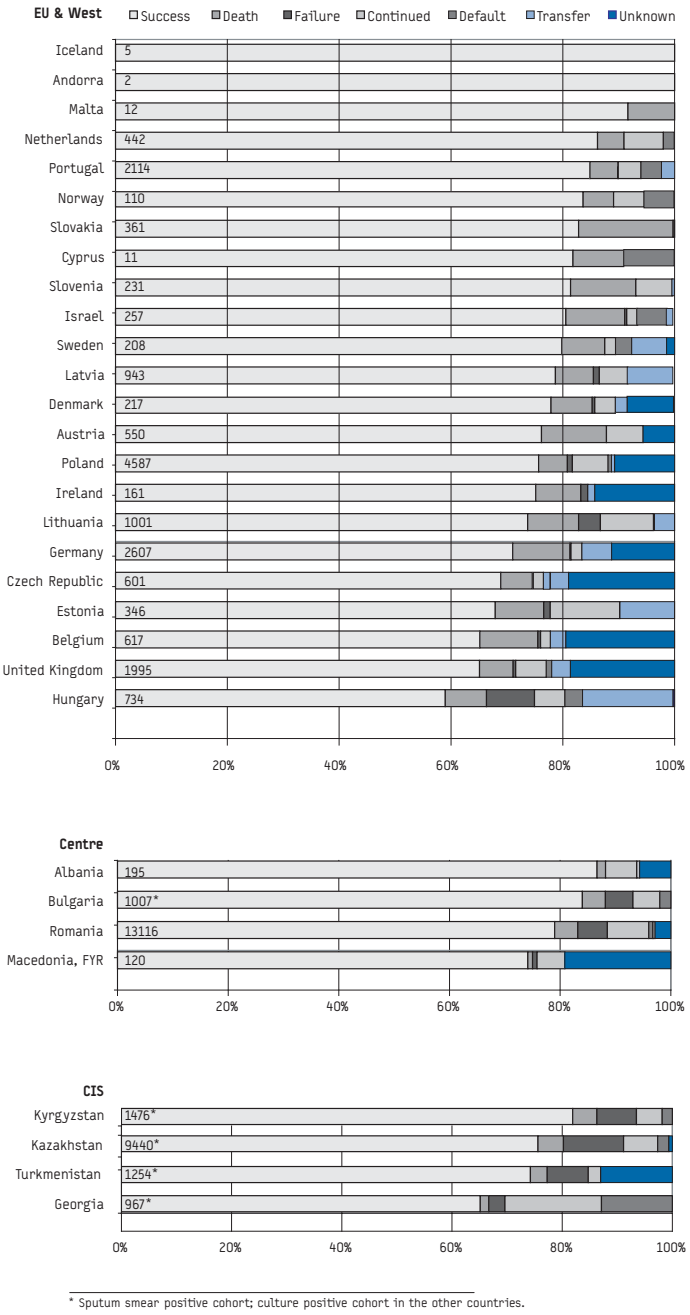
Current outcome categories are treatment success, death, failure, default, transfer, continued treatment at 12 months and unknown. Outcomes are categorised differently in different countries, so international comparison is still difficult.

Preliminary treatment outcome data for definite TB cases notified in 2002 were available from 42 of the 52 countries in the WHO European Region, of which 21 provided individual data. Thirty-one countries provided data on complete cohorts, which included more than 99% of the confirmed cases notified nationwide (n=61 319).

The mean success rate among new cases (n=45 707) was 76% (median: 78%; country range: 59-100%). There were no real regional differences (Figure 2). Only six countries reached the 85% success target. In the EU & West (23 countries) and in the centre (4 countries), success among new cases was 80% or higher in 12 of the 16 countries where less than 2% cases had unknown outcomes. Exceptions were the three Baltic states (68-79%), where 7-10% cases, most of them with initial multidrug resistance, failed or continued treatment; and Hungary (59%) where 26% failed or continued treatment. In the countries where over 2% of outcomes were unknown, success rates ranged from 65% to 79%. In the four countries of the CIS, lower success rates were associated with frequent treatment failures (3-11%) and with high proportions of default, transferred or unknown outcomes in two countries. Death was less frequently reported in the CIS and in the centre (4%) than in the EU & West (7%), where the proportion of elderly cases, with higher mortality, is large.

FIGURE 2

Cohort size and treatment outcome, new definite cases of pulmonary tuberculosis, WHO European Region, 2002



* Sputum smear positive cohort; culture positive cohort in the other countries.

The outcome of re-treated cases (n=13 864, not shown) was less favourable, with an overall success rate of 55% (median 68%; range 36-100%), and higher proportions of deaths (9%), failures (11%), defaulters (13%) and continued treatments (5%).

Treatment outcome data are available from an increasing number of countries in Europe. In spite of remaining differences in category definitions, these data are informative and enable the description of some outcome determinants such as age or drug resistance.

In the EU & West, incomplete information, high mortality among the elderly and prolonged treatments appear to cause low success rates. Decentralised TB care implies active follow-up of clinicians to obtain complete outcome data and makes this monitoring labour-intensive. Being vigilant for TB in high risk groups and improving patient management and completeness of data collection should enable most EU countries to reach the 85% treatment completion target.

In the Baltic States, the relatively high prevalence of primary multidrug resistance [3] definitely contributes to lower success rates, and most patients failing or continuing treatment have initial multidrug resistant TB.

In the countries of the CIS, high proportions of failures among new cases are also probably contributed to by primary drug resistance, although available data do not enable description of other factors. In this area, TB programmes should urgently address diagnosis and care of multidrug resistant TB and strengthen case management.

It is expected that ongoing efforts in standardising methods of treatment outcome monitoring, including the active involvement of TB care providers, will further improve inter-country comparisons and assist the progress towards TB control targets in Europe.

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New communicable disease notification system launched in Turkey

Y Bayazit, V Buyurgan, S Tumay

Saglik Bakanligi, Temel Saglik Hizmetleri Genel Müdürlügü, Bulasici ve Salgin Hastaliklar Daire Baskanligi Sihhiye (Department of Communicable Diseases and Epidemic Control, Ministry of Health), Ankara, Turkey

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At the beginning of 2005, a new and completely revised communicable disease notification was launched nationwide in Turkey.

The communicable diseases situation in Turkey varies greatly by region, and depends on the level of development and healthcare services provided there. These differences were taken into account when devising the new communicable disease surveillance system.

As in other countries, the total number of infections notified in Turkey is underrepresentative of the true burden of disease, and case definitions also vary.

Recent changes in disease epidemiology and developments in diagnostic capability meant that the notifiable diseases and the surveillance methods in the Turkish communicable disease notification system needed to be overhauled. In 2001, a committee of almost 60 academics and representatives from the Ministry of Health began a review of the national communicable disease notification system with a view to launching a new system. The committee will continue to meet every two years to revise the system.

The following factors were considered when making the list of notifiable diseases:

- Is the disease a significant public health problem in Turkey, or could it be one in the future?
- Does the diagnostic capability exist?
- Are special surveillance or prevention programmes already being carried out?

During the first stage of the review, standard case definitions for important communicable diseases were devised. During the second stage, the need for disease surveillance was considered. At the third stage, the diagnostic capacity for different diseases was reviewed. At the fourth stage, the notification system and the forms used for notification were examined and re-drafted.

To summarise, the new system consists of:

1. An updated list of mandatorily notifiable diseases.
2. Standard case definitions of mandatorily notifiable diseases.
3. A new system of disease surveillance systems.
4. Systems for immediate and standard notification for each notifiable disease.

The new list of mandatorily notifiable diseases consists of 51 diseases, divided into four groups.

Group A mandatorily notifiable diseases

Data must be notified to the regional health authorities by all healthcare institutions, including primary healthcare. Most patients with these infections initially present to primary healthcare, and the physician diagnoses and notifies the infection according to the standard case definition. If diagnostic capacity is limited, the patient is referred or refers themselves to a state hospital. The state hospital must then notify the case to the regional health authorities, so that necessary contact tracing can be undertaken, and the source of the infection investigated, with the support of the provincial health directorate.

The diseases in group A are:

- Acute bloody diarrhoea
- Acute viral hepatitis
- AIDS
- Anthrax
- Brucellosis
- Cholera
- Cutaneous leishmaniasis
- Diphtheria
- Gonorrhoea
- HIV
- Malaria
- Measles
- Meningococcal meningitis
- Mumps
- Neonatal tetanus
- Pertussis
- Poliomyelitis
- Rabies and suspected rabies exposure
- Rubella
- Syphilis
- Tetanus
- Tuberculosis
- Typhoid fever

Group B mandatorily notifiable diseases

Diseases in group B have either never been seen in Turkey or not been present for a long time. However, they are still present in some regions of the world, have high transmission potential and mortality, and three of the diseases, smallpox, yellow fever and plague, are required to be reported according to the International Health Regulations. Any healthcare institution that encounters a possible case must directly notify the Turkish Ministry of Health immediately.

The Ministry of Health is then responsible for reporting these at an international level as well as implementing control measures.

The diseases in Group B are:

- Epidemic typhus