Project funded in 2003 - Strand 2: Health Threats

DIVINE-NET - Prevention of emerging (food-borne) enteric viral infections: diagnosis, viability testing, networking and epidemiology

Description

Enhancing the capability of responding rapidly and in a co-ordinated fashion to health threats

Area of activity

This project will help build capacity across Europe for national and transnational surveillance of outbreaks due to Noroviruses, particularly outbreaks associated with contaminated foods, water, and environmental exposures. This information is essential for acute control and long term prevention of norovirus outbreaks and to inform and promote best practice. In contrast to other disease specific networks, the EC cannot rely on data aggregation of laboratory test reports from individual sick patients at the national level, because methods for norovirus detection are not used routinely in many countries. While epidemiological criteria can be used to identify outbreaks of illness due to noroviruses (as piloted in the FBVE project), the lack of underpinning laboratory data would result in a surveillance activity of little value for early warning purposes. Timely strain characterisation is essential for detection of emerging novel viral strains and to provide an early warning of the emergence of more aggressive strains.

Therefore, this project seeks to build on the highly successful collaboration achieved by the Food Borne Viruses in Europe (FBVE) project in which national expert virology and epidemiology combined to strengthen competence in norovirus outbreak detection and control, and develop the necessary laboratory tools and databases. In this proposal we will seek further partners in existing member states and applicant countries, so extending EU surveillance and will build competence through training in surveillance epidemiology and in viral diagnostic methods.

Summary

To maintain and enhance the quality and coverage of the existing surveillance network in order to provide a state of the art monitoring system that informs about the magnitude of health threats caused by antimicrobial resistance in Europe.

• To identify norovirus outbreaks of EU public health importance associated with traded foods and tourism.
• To use this information for short-term control.
• To use this information to inform longer term policy for norovirus outbreak control at local, national and EU level, with regard to food harvesting and hygiene and with regard to the tourism sector for water, sanitation and environmental hygiene.
• To develop a sustained norovirus outbreak surveillance system within the EU and applicant countries across Europe.
• To ensure the quality of this network by providing proficiency testing.
• To provide an open networked virtual center for integrated collection of epidemiological and virological data.
• To provide access to a network of experts covering a wide spectrum of faecal- orally transmitted viruses.

Financing

Leader organisation
National Institute of Public Health and the Environment
PO BOX 1
3720 BA
NL-3720 Bilthoven
THE NETHERLANDS
Tel: 00.31.30.274.9111
Fax: 00.31.30.274.2971
E-mail: info@rivm.nl

Contact Person
Erwin Duizer
Tel: 00.31.30.274.41.42
Fax: 00.31.30.274.2971
E-mail: Erwin.Duizer@rivm.nl

More info...
Associated beneficiaries

- Public Health Laboratory Services established in UK
- National Public Health Institute established in Finland
- Statens Serum Institute established in Denmark
- Swedish Institute for Infectious Disease Control established in Sweden
- University of Dijon established in France
- University of Valencia established in Spain
- University of Barcelona established in Spain
- Instituto de Salud Carlos III established in Spain
- University of Ljubljana established in Slovenia
- Istituto Superiore di Sanita established in Italy
- Robert Koch Institute established in Germany
- National Disease Surveillance Centre established in Ireland
- Norwegian Institute of Public Health established in Norway

Starting date and duration of project
- 01/06/2004
- 36 months

Total cost
- 942,370.40 €

Subsidy from the Commission
- 471,185.20 €

Outcomes

Optimisation and harmonisation of laboratory diagnosis of norovirus through QC test reports: disseminated individually to participants, and to commission in annual report.
QC test reports for strain typing and its use in source tracing: disseminated individually to participants, and to commission in annual report.
A sustained web-based outbreak reporting system for data entry and analysis will be granted to all participants
Monthly reports on norovirus outbreaks during the seasonal peak, and quarterly reports the rest of the year.
Reports will be published in Eurosurveillance and on Promed.
Alerts via e-mail of unusual outbreaks that require further attention.

More info

Statement of project aim(s) and objectives

Food-related illness is common world-wide, and bacterial pathogens have historically been associated with this mode of transmission. In recent years, however, it became clear that the majority of such outbreaks are caused by viruses, especially the human caliciviruses belonging to the genus Norovirus (NV, previously named Norwalk-like viruses). Transmission of these viruses is primarily from person to person, but numerous examples illustrate that NV are efficiently transmitted via food, water, or contaminated environmental surfaces.
NV similar but not identical to the human strains have been found in cattle and in pigs. Different variants co-circulate in the community, but occasionally shifts occur, in which a single variant dominates. It was found that norovirus outbreaks occur internationally, and that (international) food and waterborne transmission may play an important role in the dissemination of new variants. The detection of 4 novel (recombinant) viruses in the course of the past 3 years, associated with increased burden of illness, and in the absence of robust control measures for viral contamination of food and water, stresses the need for surveillance.

Overall aims:
- To develop sustained surveillance and early warning for outbreaks of illness due to noroviruses, including food-, and waterborne outbreaks, and based on the framework developed through the “Foodborne viruses in Europe research network” (QLK1-CT-00594).
- To enhance the capability of the EC to respond to new and emerging enteric viral diseases.

Specific objectives are:
- To identify norovirus outbreaks of EU public health importance associated with traded foods and tourism.
- To use this information for short-term control.
- To use this information to inform longer term policy for norovirus outbreak control at local, national and EU level, with regard to food harvesting and hygiene and with regard to the tourism sector for water, sanitation and environmental hygiene.
- To develop a sustained norovirus outbreak surveillance system within the EU and applicant countries across Europe.
- To ensure the quality of this network by providing proficiency testing.
- To provide an open networked virtual center for integrated collection of epidemiological and virological data.
• To provide access to a network of experts covering a wide spectrum of faecal-orally transmitted viruses.

**Methods**

Under the 5th framework programme we built a basic network of laboratories and epidemiologists involved in detection of outbreaks of viral gastro-enteritis in Europe in 1999 (the food-borne viruses in Europe network, FBVE). Through this project, we developed virological detection and typing methods for norovirus, worked on harmonisation of these methods, and developed a web-based outbreak reporting tool which aggregates and integrates epidemiological and virological data. Since then, several groups in several countries have initiated work in this field. With the rapid expansion of the laboratory network, renewed attention for harmonisation is of utmost importance. In the proposed project, we will proceed to develop the routine surveillance activities that had been initiated through the work of the FBVE network. We will invite the newly started groups to join in the activities of this network, and provide them with the current consensus protocols for norovirus outbreak investigations and laboratory testing, and the central database developed the FBVE network. The strengths and weaknesses of the existing set-up will be reviewed and discussed with epidemiologists familiar with other disease specific networks, especially for enteric pathogens (enternet, SOFIE). A specific aspect of this interaction is to avoid duplications in data collection and reporting that otherwise may occur in some countries. In countries with limited norovirus activities in the National Institutes, we will try to help strengthen this capacity by providing protocols and access to the central database. Monthly reports will be prepared during the (winter) outbreak season, and quarterly reports in the rest of the year. These will be provided to participants and to the commission. Alerts will be issued when appropriate for unusual outbreaks that require further investigation.