very large burden of disease, the costs of which, to society, to enterprises, and to the individual are high.

Knowledge and attitudes towards genetic testing, a 2 year follow-up study in patients with asthma, diabetes, and cardiovascular diseases
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Background
Scientific knowledge on genetics is growing fast, resulting in far-reaching implications for the possibilities and choices in health care and in daily life. Especially for patients with chronic diseases that (partially) have a genetic aetiology, such as asthma, diabetes mellitus (DM), and cardiovascular diseases (CVD), and their families and offspring. Adequate knowledge regarding the genetic component of diseases, as well as personal attitudes towards DNA-testing, are major determinants of optimal utilization of genetic testing.

Methods
Patients with asthma, DM (type II) and CVD were selected from the Panel of Patients with Chronic Diseases. In the first survey on genetic testing (April 2002) data from 577 patients could be analysed. Of these patients, 398 also participated in the second survey on genetic testing in April 2004.

Results
Most genetic knowledge relates to associations between genes and diseases, least is known about associations between genes, chromosomes, cells, and body. Multivariate regression analyses revealed a younger age, a higher educational level, and the perception of own illness as hereditary as most important determinants of factual knowledge. Their perceived knowledge on DNA-testing has not been increased since 2002. Attitudes towards genetic testing hardly changed either. Most positive are patients about general subjects covered by rather distant statements, many patients, however, are still worried about the consequences for taking out insurances. Less perceived medical genetic knowledge and more perceived social genetic knowledge results in a more reserved attitude towards genetic testing.

Conclusions
Advanced developments in scientific knowledge in the field of medical genetics are not accompanied by increased knowledge in patients with asthma, DM type II, and CVD. Their attitudes towards DNA-testing have also hardly changed in a period of 2 years. The finding that more perceived knowledge of social consequences results in a more reserved attitude can be considered an indicator for the necessity of a social debate on these possible consequences.

Track 8: Workshop: Towards improved prevention and control of infectious disease using enhanced communication technologies

Chairpersons: Chakib Kara-Zaitri*, Jelle Doosje
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The emergence of new diseases and bio-terrorism threats have re-emphasised the urge for novel methods for harvesting and acting upon appropriate and timely surveillance data using intelligent information systems based on enhanced communication technologies. The aim is to explore recent advances in information systems and communication technologies for the Prevention and Control of Infectious Disease (PCID) in the European Union (EU). It will focus on how current and future systems would meet the dynamic needs of EU Public Health Professionals (PHP) in (non) governmental agencies for improved surveillance on recent ICT systems in PCID. Included are discussions on systems, which will help PHP and IT providers reduce the risk and expense of negotiating upon Infectious Data exchange mechanisms on an *ad hoc* basis, by developing and publishing open data exchange standards.

The latest research from the WHO, The Robert Koch Institute, HL7.org.UK, and the Health Protection Agency in the United Kingdom will be presented.

SurvNet@RKI—a distributed database management system for the German surveillance of infectious diseases
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Background
In 2001, a new law named 'Protection against Infections Act' regarding infectious diseases was introduced in Germany to promote the collection of detailed epidemiologic data based on standardised case definitions.

Methods
Case-based data in the German notifiable diseases reporting system are captured and forwarded electronically via a distributed relational database management system developed by the Robert Koch Institute (RKI). Outbreak reporting is integrated into this system by linking individual cases to groups of related cases. On the group level, standardised descriptive data are entered describing the source of the given outbreak and the associated evidence that had led to the identification of such an outbreak. The initial notification of each case is provided by a physician or a microbiological laboratory to the local health authority. Other anonymised data are transmitted from the local health authorities of each county in Germany via the states to the RKI and hence the distributed database management system facilitates the dynamic changes of the underlying data model.

Results
Since 2001, $\sim$300 000 cases of 55 notifiable infectious diseases are transmitted per year. Additionally, data of $\sim$8000 outbreaks per year complete the dataset. Detailed data is freely available via http://www3.rki.de/survstat.

Conclusions
A detailed, weekly updated dataset is available by the help of the electronic reporting system. The dataset gives extensive insight into the regional and seasonal distribution of cases of infectious diseases and the occurrence of outbreaks. Based on this data, an outbreak alert system will be implemented in the near future.

A centralized information system for infectious disease (CISID) at the World Health Organisation
Mark Falvo

MA Falva
World Health Organization

Background

The role of data and information for action cannot be over-emphasised in the field of communicable disease prevention and control. Without a continuous structured collection and analysis, it becomes impossible to obtain a foundation for robust recommendations and control strategies. The ability to collect data is only one component of the overall challenge. The dissemination of this information to the relevant individuals for analysis is also essential.

Methods

Under the WHO Division of Technical Support, a project entitled 'Reducing Disease Burden' (DTR) has resulted in the implementation of a web browser-based tool using cutting-edge technology to help improve the prevention and control of communicable disease. The Centralized Information System for Infectious Disease (CISID) tool uses the latest technology to capture, analyse, present, and disseminate data on communicable diseases and, therefore, provides a powerful system for public health professionals everywhere.

Results

CISID has already proven its value by facilitating the collection, analysis, and, dissemination of information from all 52 Member States. Frequencies of data collection vary from annual to weekly updates, and the data can be queried in real-time over the web 24 h a day. CISID enables programmes, organizations, and member states to store, disseminate and analyse data on infectious diseases quickly and accurately. A recent success story has been the recent Polio Eradication effort made by the Vaccine Preventable Diseases and Immunization Programme (VPI). In June 2002, the WHO/EURO successfully eradicated Polio in the European region, thanks in part to CISID. VPI uses CISID to collect weekly data on Acute Flaccid Paralysis for all 52 member states. In the same manor, WHO/EURO plans to use CISID to aid in the achievement of several other important goals such as the elimination of measles and rubella, control of diphtheria, and malaria, and the reduction of the burdens of tuberculosis, HIV, and several other infectious diseases.

Conclusions

The member states of the European Region have committed to the prevention and control of infectious diseases. CISID is working to ensure that all member states have the surveillance and rapid response capabilities to fulfil this commitment. Detection, containment, and prevention of ongoing infectious diseases, as well as new and resurgent illnesses in the European Region are currently being tracked and analysed using CISID.

HL7 and the National Programme for Information Technology (NPfIT) for the prevention and control of infectious disease in the United Kingdom
Hugh Glover

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Background

The real world of health care information systems in general and infectious disease in particular is an unpredictable assemblage of multiple systems from multiple vendors, each with their own set of data collection, presentation, analysis, and/or transmission capabilities. There is an urgent need for systems that promote integration, interoperability, and compatibility of existing tools. The need extends to systems that focus on the interface requirements instead of imposing a standard for database structure, inline with the UK e-Government Interoperability Framework and the National Programme for Information Technology in the United Kingdom.

Methods

Health Level 7 (HL7) is the *de facto* standard for communicating health data in the form of electronic messages. HL7 has been successfully implemented in a number of health care applications throughout the world but not specifically to the Prevention and Control of Infectious Disease (PCID). This paper explores the use of HL7 messaging in PCID allowing public health professionals make better use of systems already in place, connecting seamlessly with partner organisations in health and other sectors. The paper focuses on examples of how structured messaging can dramatically improve surveillance and intelligence in PCID.

Results

The paper discusses Use Cases to help define requirements for the interoperable exchange of Public Health data or components thereof, by creating scenarios for identifying and sharing disease, condition, case, and outbreak data, and other related information using HL7 protocols. The systems presented show how full advantage can be taken of existing HL7 messaging protocols in Patient Care, Electronic Health Record, Medication, Clinical Decision Support, and Vocabulary.

Conclusions

The use of HL7 in PCID will help to develop open data exchange standards to promote convergence, interoperability, and compatibility of existing and future Public Health information systems covering data definitions, coding structures, and messaging protocols. It will enhance Public Health surveillance and response activities including detection, investigation, management, and reporting of cases and outbreaks, as well as organisational learning.

Real-time Intelligence for Prevention and Control of Infectious Disease
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Background

A number of information systems have been developed to support Public Health professionals at the local, regional, national, and international levels, but none of these systems are integrated to the extent that intelligence can be carried out efficiently or in real-time. Current issues include disparities in the various databases across the health sector generally and infectious disease especially due to a lack of common case definitions and guidelines, and the associated wasted effort in data re-entry into the various surveillance systems.

Methods

Two application software modules using XML open standards, have been developed as part of HPZone: a web browser-based decision support tool for Health Protection in the United Kingdom.

(i) HP-Connect—a non-intrusive XML web service application, which extracts appropriate trigger data automatically from related disparate databases whose owners have agreed to share data in exchange for not having to re-enter the same data elsewhere. Trigger data include confirmation of a case or a lab result with an agreed data polling frequency.

(ii) HP-Sniffer—a data mining application, which persistently analyses the data and provides alerts given from a protocol of rules. Mining activities include the detection of coincidences of events (time, place, and scenario), associations (infection versus seasonal parameters), sequential patterns (behavioural trends), and *ad hoc* queries. Rules can be entered on an individual, team, unit, regional or national level with individual users being able to subscribe to specific alerts.

Results

HP-Connect and HP-Sniffer have been applied to a number of disparate TB information systems in the United Kingdom with positive results including the discovery of relationships, which were not obvious. The open data exchange tools developed for HP-Connect will accelerate the adoption of HL7 messaging in the wider context of infectious disease.

Conclusions

Immediate gains from the two modules include an efficient early warning function for problems that are 'bubbling away', and the capture of individual, regional, and national wisdom using easily sharable rules and protocols for enhanced intelligence in health protection.

Track 9: Man-made ecological, traffic, and psychosocial disasters

The relationship between predisaster psychological problems and health problems after a man-made disaster
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Background

In May 2000, a fireworks depot exploded in a residential area in The Netherlands, resulting in 22 deaths and ~1200 residents who lost their homes. Most studies on the health consequences of disasters lack predisaster data. The present study did include actual predisaster data and aimed to investigate the relationships between victims' predisaster psychological problems and their post-disaster functioning.

Methods

After the disaster two types of studies were implemented. Firstly, victims of the fireworks disaster were examined using self-report questionnaires (i.e. Symptom Checklist-90; SF-36) 3 weeks and 18 months after the disaster. Secondly, a longitudinal monitoring using the electronic medical records of the victims' general practitioners (GPs) was started. Information on predisaster health status was also available. Results are presented for victims who filled in both questionnaires and were registered at the GPs as well ($n = 994$).

Results

Victims presenting psychological problems to their GP in the year before the disaster reported significantly more post-disaster anxiety, depression, sleeping, and somatic problems (SCL-90), and they scored worse on social functioning, bodily pain, and general health (SF-36) when compared with victims without predisaster psychological problems. They also presented more psychological problems (68 versus 39%; $\chi^2 = 32.97$, $P < 0.001$) and musculoskeletal problems (54 versus 34%; $\chi^2 = 17.21$, $P < 0.001$) to their GP in the first year post-disaster.

Conclusions

Victims with predisaster psychological problems appear at risk for both psychological and physical problems after the disaster. Having predisaster and controlled data is very important in order to draw correct conclusions regarding the health impact of a disaster and to identify high-risk groups as soon as possible.

Air pollution and cause-specific mortality
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Background

Cohort studies relating the long-term effects of components of air pollution to mortality have found an effect on all cause-specific mortality. There are few studies that have exposure data over long time as these are expensive to collect and studies have mostly compared few residential sites. In this study we wanted to estimate risk of cause-specific death from average exposure to air pollutants at neighbourhood level over a period of 4 years.

Methods

Data were obtained by linking census information on neighbourhood residency to the death registry. Deaths were from 1992–1998. The study population was based on all men and women inhabitants living in Oslo in 1 January 1990 aged 50–89 years, (110 681 with complete data). Area definition was based on area codes in 1990 (electoral wards). The Norwegian Institute for Air Research (NILU) has estimated average concentrations of air pollutants monthly in the period 1992–1995. Concentrations ($\mu g/m^3$) of nitrogen oxides (NO_2), particulate pollution (PM10 and PM2,5) were measured hourly in this period. An AirQUIS-system developed at NILU was implemented in order to estimate the concentration of pollutants in 469 neighbourhoods in the city based on meterological data, geographical information, and traffic density. Average values by neighbourhood were calculated over the period.

Results

The correlation between NO_2, PM2,5, and PM10 ranged between 0.86 and 0.97. Hazard ratios across quartiles of NO_2 and all causes of death showed an increasing effect in both men and women in both age groups and sexes. In the cause-specific analysis we found a larger effect in chronic obstructive pulmonary disease [HR 1,18 (1.05–1.32) for each quartile increase in NO_2] than in cardiovascular causes [HR 1.05 (1.01–1.09)] and lung cancer [1.05 (0.95–1.14)]. After adjusting for socio-economic variables (education and occupational class), the risk estimates were only attenuated to a small degree.

Conclusions

Results from this study suggest that average estimates of NO_2, PM2,5, and PM10 over a period of 4 years have an effect on mortality from all causes and by causes of death. Data were obtained by all individuals from the population registries, which did not include information on smoking history.

Chronic diseases of victims and controls before and after disaster
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Background

The aim is to quantify chronic diseases and to assess possible risk factors for developing chronic diseases during the 4 years