frequent users of community based services. People with dementia have difficulties in expressing their wishes, opinions and needs, which, combined with their inevitable dependence, makes them one of the most vulnerable groups of people. For service providers, they represent a challenging group of clients. The aim of this study was to produce information on people with mild, moderate or severe dementia who are using day care services or residential care facilities:
(1) What was their state of well-being?
(2) How were their psychosocial and occupational needs met?
(3) What was the relationship between well-being, occupational involvement and behaviour?.

Methods

The study is based on systematic observation carried out using the dementia care mapping (DCM) method, combined with qualitative field notes. Six residential care units were involved: two dementia care units, two nursing home units for both people with dementia and other residents, a primary health care hospital ward and a psychogeriatric ward for special health care. In addition, two dementia day care centres participated in the study. A total of 85 people with dementia were observed. The observations took place in each unit over two sequential days and the observation period in each unit was 12 h (a total of 93 hours), that is six hours per day. All units were visited by two trained observers. In DCM, observations were recorded every five minutes and the data consisted of 6504 such time-frames (the range was 14–140 per client). The field notes consisted of some 30 000 words. The data was analysed quantitatively and qualitatively.

Results

The results show that, on average, the clients' well-being was moderate (range -0.2 to +3.8). However, the more severe the person's dementia is, the lower his/her well-being turns out to be (correlation coefficient 0.555, $P < 0.01$). The day care centres were able to meet the occupational and psychosocial needs of clients with mild or moderate dementia, but in residential care this happened more rarely. There were major differences between the residential care units in terms of the well-being of the residents ($P < 0.001$) and in how their occupational and psychosocial needs were met ($P < 0.001$). It was common that people with severe dementia spent most of their time sitting with nothing to do except in situations in which their basic physical needs were being met. The results revealed that all clients — whether they had mild, moderate or severe dementia—benefited greatly from sing-along sessions, physical exercise and other organized activities (OR 2.95, 3.09, 2.62, $P < 0.013$). These activities were very rare in all residential care units except one.

Conclusions

There were many situations in which clients were able to be active, but the more severe the dementia, the more seldom such situations arose. The results suggest that more attention should be paid to providing activities for people with moderate and severe dementia in order to improve their well-being. The differences between the units suggested that the way in which the entire care institution was organized and the work culture within the unit either supported or diminished the possibilities for the active involvement of the clients. Interaction with the client and adopting an empathetic approach were the main care development challenges in all of the units. The quantitative and qualitative results may prove useful to those developing services for people with dementia and in analysing the strengths and weaknesses of dementia care cultures.

3.5. Workshop: Measuring social mixing patterns and modelling their impact for the spread and control of infectious diseases

Chair: Dr John Edmunds
Health Protection Agency, UK
Organiser: Joel Mossong and Alessia Melegaro on behalf of the POLYMOD research group

There is currently great interest in predicting the epidemiology and control of infectious pathogens predominantly spread from person to person by the aerosol route such as pandemic influenza and SARS. The mathematical transmission models used for these purposes generally require estimates of contact rates between individuals in the population as the infections are passed on during these contacts. However, remarkably little is known about the mixing patterns relevant to the spread of such infections and thus the results of these models are heavily influenced by the assumptions made regarding underlying contacts. Although a number of large scale studies have been conducted to elucidate sexual contact patterns, only a few small studies in non-representative populations have been performed for social contact patterns. This workshop will present results from different participants of the EU-funded POLYMOD project which collected mixing data using large population-based contact surveys in eight European countries using a common paper diary approach. Presentations will include descriptions of the contact surveys as well as results from state of the art statistical and mathematical modelling approaches with a public health perspective.

Detailed programme (each talk to last 12 mins with 3 mins for questions):

1. Introduction to session
2. Social contact and mixing patterns relevant to the spread of infectious diseases: a multi-country population-based survey
3. Comparison of contact profiles across seven European countries and implications for modelling the spread of airborne infectious diseases
4. Estimating age specific transmission rates for infectious diseases: fitting a survey of contact patterns to seroprevalence data for varicella zoster virus and parvovirus B19
5. A comparison of heterogeneity in the acquisition of varicella zoster virus and parvovirus B19 for five different European countries
6. General discussion.

Social contact and mixing patterns relevant to the spread of infectious diseases: a multi-country population-based survey

Joel Mossong

J Mossong[1], M Jit[2], N Hens[3], P Beutels[4], K Auranen[5], R Mikolajczyk[6], M Massari[7], GP Scalia-Tomba[8], J Wallinga[9], M Sadkowska-Todys[10], M Rosinska[10], WJ Edmunds[2]
[1]Laboratoire Nationale de Santé, Luxembourg, Luxembourg
[2]Health Protection Agency, Colindale, United Kingdom
[3]Universiteit of Hasselt, Diepenbeek, Belgium
[4]University of Antwerp, Antwerp Belgium
[5]National Public Health Institute, KTL, Helsinki, Finland
[6]University of Bielefeld, Bielefeld, Germany
[7]Istituto Superiore de Sanità, Rome, Italy
[8]Uni Roma, Rome, Italy
[9]RIVM, Bilthoven, Netherlands and
[10]National Institute of Hygiene, Warsaw, Poland

Background

A large prospectively-collected population-based study of social contact patterns was conducted in Belgium, Germany,

Finland, Great Britain, Italy, Luxembourg, the Netherlands and Poland between May 2005 and September 2006.

Methods

Participants were recruited by random digit dialing, face-to-face interview or via population registers. Participants were asked to record on a paper diary the age, gender, duration, location, frequency and type of contact during a randomly assigned day. Main effects of covariates (age, sex, household size, country) on numbers of contacts were assessed using multiple negative binomial regression.

Results

A total of 7290 diaries were collected covering all age groups with a total of 97 940 recorded contacts (mean = 13 per participant per day). There was a consistent pattern of contact frequency by age, with a gradual rise in the number of contacts in children, a peak among 14–19 year olds, followed by a fall to a lower plateau in adults and a sharp decrease after 55 years of age. Larger household size and weekdays were associated with larger number of contacts. Longer duration and/or physical contacts were more stable in time and were often made in the home, school or leisure settings. Shorter duration contacts tend to be made less frequently, are less likely to involve physical contact and more likely to occur in work or other settings. The 2-dimensional 'who mixes with whom' age structure was dominated by diagonal pattern of participants preferentially contacting people in their own age group.

Conclusions

The overall pattern of number of contacts by age showed a remarkable consistency over the eight surveyed countries although the mean number of contacts differed by more than factor of 2 probably due to varying survey methodologies. The quantification of these mixing patterns represents a significant advance in our understanding of the spread of these infectious diseases.

Comparison of contact profiles across seven European countries and implications for modelling the spread of airborne infectious diseases

Mirjam Kretzschmar

M Kretzschmar, RT Mikolajczy
School of Public Health, University of Bielefeld, Bielefeld, Germany

Background

Within a network of the EU funded project POLYMOD we performed a survey of social contacts in seven European countries. The results concerning age-dependent contact frequencies and mixing will be used as an input for mathematical modelling of airborne infectious diseases.

Methods

Representative surveys were performed in seven countries to assess the number of social contacts, using a diary approach in which participants had to record individual contacts along with some additional information. We used the information on the reported numbers of contacts in six different settings (household, work, school, leisure, transportation and others) to define different contact profiles. The identification of the profiles and classification of respondents according to these profiles were conducted using a two-step cluster analysis algorithm as implemented in SPSS.

Results

We identified seven distinct contact profiles: respondents having (1) contacts predominantly at school, during transportation and leisure time, (2) contacts during leisure time, (3) contacts mainly in the household (large family), (4) contacts at work, (5) contacts solely at school, (6) contacts in other places and finally (7) respondents having a low number of contacts in any setting. Clusters of respondents were found for each profile in each of the countries separately and the fractions of respondents with any given profile were similar across the countries. There was a distinct age-dependence in the distribution of the population across contact profiles.

Conclusions

Clear patterns of how social contacts are distributed among various settings emerge from the analysis with implications for identifying mixing patterns among different population groups. The results will support the analysis of intervention measures for airborne infectious diseases using mathematical modelling.

Estimating age specific transmission rates for infectious diseases: fitting a survey of contact patterns to seroprevalence data for VZV and parvovirus B19

Alessia Melegaro

A Melegaro, M Jit, N Gay, J Edmunds
Modelling and Economics Unit, Health Protection Agency Centre for Infections, UK

Background

The aim of this work is to deepen our understanding of the contribution that different types of contacts may have on the spread of airborne infections and, thus, to improve parameterization of mathematical models.

Method

In this study, the authors estimated the age-specific transmission parameters by using data on social contacts pattern (POLYMOD) as well as seroprevalence data for VZV and B19 for the UK, Finland, Belgium, Poland and Italy. The importance of different types of contacts (i.e. physical/non-physical, long/short, household/school/workplace) was explored and transmission rates were compared for the different European countries.

Results

Four main results were achieved. Firstly, the model fit for both VZV and B19, significantly improved when contact data were stratified in the analysis. Secondly, estimates of the infectivity parameter for VZV were higher than the ones for B19, whatever stratification on contact data was used. Thirdly, skin-to-skin (or at least intimate) contact appeared to represent an essential element for disease transmission. Fourth, these general patterns were observed in each of the countries analysed, suggesting that there are consistent biological mechanisms at play.

Conclusions

This study greatly improves our understanding of the spread of these close-contact viruses. Although the viruses differ significantly in their overall infectivity, in both cases intimate contact seems to be particularly important for their spread. This has implications for the modelling of close-contact infectious diseases as these sorts of contacts tend to be more stable and more assortative (like-with-like) than other contacts. In addition, it has implications for the control of infectious diseases such as pandemic influenza via social distance measures.

A comparison of heterogeneity in the acquisition of varicella zoster virus and parvovirus B19 for five different European countries.

Niel Hens

N Hens[1], N Gay[2], Z Shkedy[1], M Aerts[1], J Edmunds[2]
[1]Center for Statistics, Hasselt University, Diepenbeek, Belgium and
[2]Health Protection Agency, Centre for Infections, London, United Kingdom

Background

For respiratory viruses the force of infection depends on the contact rate and the infectiousness of the pathogen. It has been shown that the contact rate depends on age through heterogeneity in mixing of individuals from different age-classes.

Under the assumptions of lifelong immunity and the epidemic being in a steady state, the force of infection can be estimated from antigen-presence in collected serum samples. For economic reasons, such serum samples are often tested for more than one antigen. These tests results allow for the estimation of unobserved heterogeneity. In a period of 2003–2006 test results on varicella zoster virus and parvovirus B19