6.4 INFECTION AND ENVIRONMENT

Chair: Prof. Cairns Smith, UK

O6-4.1 USING CROSS-SECTIONAL EPIDEMIOLOGICAL DATA TO INFORM NATIONAL HEALTHCARE ASSOCIATED INFECTION POLICY

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A National Point Prevalence Survey of Healthcare Associated Infection (HAI) was carried out in Scotland in 2005/2006 at the request of the Scottish Government. The point prevalence survey included 13754 patients and reported that 9.5% of patients in acute care hospitals and 7.3% of patients in non-acute care hospitals had a HAI at the time of survey. The inpatient cost to the National Health Service in Scotland was estimated to be £183 million.

The results from this cross-sectional survey were used to make evidence-based recommendations on priority areas for interventions to prevent HAI and priority areas for targeted incidence surveillance programmes in Scotland. These recommendations were based on risk, volume, potential for prevention and potential for cost savings.

The results from the survey were used to provide an epidemiological evidence base that informed the Scottish Government's HAI Task Force Delivery Plan for 2008—2011. The plan included deliverables relating to interventions to reduce HAI in priority areas, education for National Health Service staff, surveillance of HAI and antimicrobial prescribing and development of guidance and standards for priority areas.

The results from this epidemiological survey have been used to effectively prioritise and target national initiatives to prevent and control HAI in Scottish hospitals and to target incidence surveillance programmes to priority areas. A second national survey will be carried out at the end of 2011 and will inform future strategies and policy.

O6-4.2 HIV MORTALITY AND INFECTION IN INDIA: ESTIMATES FROM NATIONALLY REPRESENTATIVE MORTALITY SURVEY OF 1.1 MILLION HOMES

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Introduction To determine the rates of death and infection from HIV in India in a nationally-representative survey of deaths among 1.1 million homes.
Methods Survey of 123 000 deaths at all ages from 2001 to 2003. Main outcome measures HIV mortality and infection.
Results HIV accounted for 8.1% (99% CI 5.0% to 11.2%) of all deaths among adults aged 25—34 years. In this age group, about 40% of deaths from HIV were due to AIDS and 26% were due to tuberculosis. Nationally, HIV infection accounted for about 100 000 (59 000 to 140 000) deaths or 3.2% (1.9% to 4.6%) of all deaths among people aged 15—59 years. Deaths from HIV were concentrated in the states

and districts with higher HIV prevalence and in men. The mortality results imply an HIV prevalence at age 15—49 years of 0.26% (0.13% to 0.39%) in 2004, comparable to results from a 2005/2006 household survey that tested for HIV (0.28%). Collectively, these data suggest that India had about 1.4—1.6 million HIV infected adults aged 15—49 years in 2004—2006, about 40% lower than the official estimate of 2.3 million for 2006. All cause mortality in men aged 25—34 years in the states with higher HIV prevalence has declined since 2002. HIV mortality and prevalence may have fallen further since our study as prevalence among young women attending antenatal clinics has declined from 2000 to 2007.
Conclusion HIV attributable death and infection in India is substantial, although it is lower than previously estimated.

O6-4.3 POLIOMYELITIS EPIDEMIC IN POINTE-NOIRE, OCTOBER—DECEMBER 2010: TROUBLED TIMES AHEAD FOR GLOBAL POLIO ERADICATION?

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Introduction On 4 November 2010, the Ministry of Health of the Republic of Congo declared a poliomyelitis outbreak in Pointe-Noire, the eastern economic capital. We conducted an outbreak investigation to describe the epidemic and estimate vaccination coverage to better understand virus spread.
Methods We collected clinical, demographic and geographic data about cases and vaccination policies from local health authorities. Cases were defined as residents of Pointe-Noire of any age, diagnosed with acute flaccid paralysis since 1 October 2010. We implemented a cross-sectional survey in a socially heterogeneous affected neighbourhood (representing 9.5% of the city population), selected from the Loandjili district (highest district attack rate: 71.6 cases per 100 000) following expert consultation.
Results From 1 October to 20 December 2010, 446 cases of acute flaccid paralysis were reported to health authorities (case fatality ratio: 41.3%). Males accounted for 68% of the cases, and 57.4% were between 15 and 24 years of age. Vaccination coverage in the surveyed population for one or more doses of oral polio vaccine was 55.5% on average and decreased with age to 33.5% for individuals older than 30. Sanitary conditions were poor to medium with latrines commonly shared between households (57.4%).
Conclusion Poor vaccination coverage led to a large susceptible population, particularly in young adults and spread was further facilitated by poor sanitary conditions. Moreover, polio causes more severe clinical symptoms among older age groups, which explains the high case-fatality ratio. To prevent similar outbreaks in other countries, supplementary vaccination activities should punctually target older age groups.

O6-4.4 FIFTEEN YEARS OF TESTING THE NATION: THE ROLE OF BLOOD DONOR INFECTION SURVEILLANCE IN INFORMING THE SAFE SUPPLY OF BLOOD

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Introduction Surveillance of infections in UK blood donors and recipients commenced in 1995 with the aim of informing donor

selection and testing policies and hence minimising the risk of transfusion transmitted infections. The surveillance programme has evolved to include information on new tests, horizon scanning for emerging infections and microbiological screening of antenatal samples.

Methods Applications of surveillance data for the 15-year period were reviewed. The role in informing transfusion and public health policies, epidemiology and natural history of infections are described.

Results Annual estimates of and trends in incidence and prevalence of infection among donors, donor behaviours associated with infections, non-compliance with selection criteria, and estimates of the risk of transfusion-transmitted infection were determined. These data were used to evaluate and inform policy on microbiological testing and donor selection such as the introduction of nucleic acid testing and the associated risks of changes to deferral criteria. The surveillance programme has expanded into other areas: cohort studies of HCV and HTLV infected patients, look-back studies of transfusion recipients, collaborative work on genotyping and sero-surveillance, and assessments of donor health such as heart disease. The unit also contributes to national surveillance programmes through the notification of infections and informs antenatal screening policy with work on rubella.

Conclusion Blood donors are a sentinel population and surveillance provides a regular and valuable source of epidemiological information about a low-risk population providing opportunities for additional work into the nature of infection. Surveillance programmes within blood services are essential to evaluate and optimise blood safety.

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Background The New Zealand epidemic of campylobacteriosis increased steadily from 1989 onwards, peaking in 2006 with a national rate of over 380 notified cases per 100 000 population. At the peak there were an estimated 120 000 cases a year in the community, and 800 hospitalisations. This rate was markedly higher than that reported by other developed countries. Interventions were introduced to lower contamination levels in fresh chicken meat, notably mandatory monitoring and reporting of Campylobacter in broiler flocks and carcass rinsates, and mandatory Campylobacter carcass performance targets.

Methods National notification and hospitalisation data for the period 1997 to 2008 were analysed to describe disease incidence and distribution. Source attribution techniques based on bacterial typing of Campylobacter isolates from human cases and environmental sources were also used to examine the decline.

Results Directly following implementation of the regulatory measures, the 2008 campylobacteriosis notification rate declined by 54% and the hospitalisation rate by 56% (compared to the average annual rates for 2002—2006). Source attribution studies suggested an approximate 70% decline in human disease with chicken meat as the source.

Conclusions These marked reductions in disease incidence directly followed the introduction of regulatory interventions to reduce Campylobacter contamination of chicken meat. Measures aimed at lowering contamination of raw food appeared far more effective than educational approaches aimed at improving food handling by consumers. Changes to established food production and processing

methods may initially be resisted by the food industry, highlighting the need for science-based public health advocacy and regulation. High quality public health surveillance of disease and hazards can also help drive improvements in food safety.

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Introduction In Scotland, legislation was implemented in March 2006 prohibiting smoking in all wholly or partially enclosed public spaces. We investigated the impact on NHS prescriptions for nicotine replacement therapy (NRT) and smoking prevalence.

Methods We analysed monthly data on the gross ingredient cost of all NRT prescribed in Scotland 2003—2009. The Scottish Household Survey provided quarterly data on self-reported smoking status between January 1999 and March 2010. We developed time series models for both datasets using Box-Jenkins autoregressive integrated moving averages.

Results NRT prescription costs were significantly higher than expected over the 3 months prior to implementation of the legislation. Prescription costs peaked at £1.1 million in March 2006; £231 753 (95% CI £200 800 to £262 707, p<0.001) higher than the monthly norm. Following implementation of the legislation, costs fell exponentially by around 22% per month (95% CI 13% to 32%, p<0.001). Twelve months following implementation, the costs were not significantly different to monthly norms. Smoking prevalence fell by 6.0% overall, from 31.3% in January 1999 to 25.3% in March 2010. In the quarter prior to implementation of the legislation, smoking prevalence fell by 2.4% (95% CI 0.4% to 4.4%, p=0.019) more than expected from the underlying trend.

Conclusions Prescriptions for NRT increased in the 3 months prior to Scotland's smoke-free legislation, resulting in a fall in smoking prevalence but neither were sustained. We argue that the early benefits may have been sustained for longer, if the high profile media awareness and education campaigns that preceded the legislation had continued post-legislation.

6.5 METHODOLOGY AND EPIDEMIOLOGY

Chair: Dr. Robert West, UK

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Introduction The Global Burden of Disease (GBD) disease classification system, based on ICD-10, is mostly based on hospitalised patients and medically-certified causes of death in developed countries. However, most deaths in developing countries occur at home, without medical attention. Classification systems specific to verbal autopsies are thus needed. The GBD includes ICD codes that cannot be applied to community deaths which often lack detailed clinical