

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.

06-4.5 REGULATION WORKS: CONTROLLING NEW ZEALAND'S CAMPYLOBACTERIOSIS EPIDEMIC CAUSED BY CONTAMINATED CHICKEN MEAT

doi:10.1136/jech.2011.142976b.82

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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.

06-4.6 IMPACT OF SCOTTISH SMOKE-FREE LEGISLATION ON USE OF NICOTINE REPLACEMENT THERAPY AND ADULT SMOKING PREVALENCE

doi:10.1136/jech.2011.142976b.83

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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

06-5.1 MILLION DEATH STUDY MORTALITY CLASSIFICATION (MDS-MC) SYSTEM FOR VERBAL AUTOPSIES

doi:10.1136/jech.2011.142976b.84

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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