Hepatitis B immunization policies, HCV in prisoners and acrylamide

Occupational infection with hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) is well recognized in healthcare workers (HCWs) [1]. HBV is more infectious than HCV, which is more infectious than HIV. HBeAg-positive individuals are highly infectious. Most transmissions to HCWs occur with needlestick or sharps injuries, followed by mucocutaneous exposure. Various interventions reduce HBV transmission including standard precautions, elimination of sharps or the use of safety devices. The introduction of HBV vaccines in the 1980s has prevented many HBV infections [2]. Under current European Union (EU) legislation, employers must perform a risk assessment to identify HCWs exposed to HBV and offer vaccination at commencement of exposure. A cross-sectional survey of HBV vaccination policies in 25 EU member states (MS) plus Norway and Switzerland found variation in how EU legislation is implemented in practice in 17 countries [3], representing 90% of HCWs in the EU-25. HBV vaccination was mandatory for medical, nursing and other paramedical staff in five countries and recommended in all other countries. HBV vaccination was mandatory for medical and nursing students in five and recommended in nine countries. Checking of HBV markers at vaccination was done in six countries. The 0-, 1- and 6-month vaccination schedules are most often used. Combined vaccine (hepatitis A virus/HBV) was used in 10 countries. Post-vaccination serology was performed in 14 countries. HBV vaccination coverage was estimated at 85–93% of HCWs in 11 MS.

Prisons are important settings for blood-borne virus control because of the high prevalence of HCV and HBV infections and risk behaviours among prisoners. Data from Health Protection Agency’s sentinel surveillance of hepatitis testing from 24 sentinel laboratories in England [4,5] was used to investigate anti-HCV, hepatitis B surface antigen (HBsAg) and anti-HBc testing in English prisons between 2005 and 2008 [6]. Sentinel surveillance confirmed that between 2005 and 2008, only 2.4% of prisoners from 39 prisons in England were tested with an estimated 311 000 not being tested for anti-HCV. Overall, 22.4% of prisoners tested positive for anti-HCV and the proportion testing positive decreased significantly from 26% in 2005 to 23% in 2008. In total, 13.9% of people tested positive for anti-HBc and 2.4% of 4433 of the 5151 people tested for anti-HBc were also HBsAg positive. There was no significant change in the proportion testing HBsAg positive over the period. More testing is required to identify infected prisoners and refer them for appropriate treatment.

Acrylamide (CH$_2$=CHCONH$_2$, CAS Registry Number 79-06-1) is used mainly in the production of polymers used in water treatment, oil drilling, papermaking and mineral processing. The use as monomer is limited to cross-linking agents, adhesives and grouts. Acrylamide was evaluated by the International Agency for Research on Cancer (IARC) in 1994 as ‘probably carcinogenic to humans (IARC Group 2A)’ [7] on the basis of bioassay results in mice and rats, supported by evidence of its genotoxic metabolite, glycidamide. The epidemiological evidence was evaluated as inadequate, based on early reports of two occupational studies. A further critical review and meta-analysis of studies of exposure to acrylamide and cancer shows summary pooled relative risks for an increase of 10 µg/day of acrylamide intake were close to unity for all the cancers considered, ranging from 0.98 for oesophageal cancer to 1.01 for colon, endometrial, ovarian and kidney cancer [8]. None of the estimated were significant with lack of an increased risk of most types of cancer from exposure to acrylamide. Renal cancer is an association that requires further monitoring.

Peter Noone

References