Eye of the Needle
United Kingdom Surveillance of Significant Occupational Exposures to Bloodborne Viruses in Healthcare Workers: December 2012
Surveillance scheme

- Set up in 1997 and collects reports on significant occupational exposures to bloodborne viruses in healthcare workers in England, Wales and Northern Ireland

- Incidents are reported to the HPA from Occupational Health Departments, GUM Clinics, Infection Control Nurses and Microbiologists and Virologists

- Incidents are actively followed-up by the HPA up to six months after the exposure
Eye of the Needle report and Surveillance Scheme objectives

- Collecting, and reporting on, exposure data on healthcare workers exposed to HBV, HCV and HIV
- Investigate type of exposures, occupation and circumstances surrounding the exposures
- Generate evidence base for policy development
- Monitor national policy (for example, HIV PEP)
- Education – raising awareness
Occupational exposures by virus and type of exposure, 2002-2011

1 PCE = percutaneous; these include injuries sustained by needles and other sharp instruments, human bites and human scratches.
2 Unknown & HCW on HIV PEP = source status was unknown for all three bloodborne viruses at the time of reporting; these reports did not start to be collected until 2000.
3 MCE = mucocutaneous; these include exposures to the mucous membranes (e.g. eyes, mouth) and non-intact skin (e.g. broken skin through cuts and abrasions or skin conditions).
HCW = healthcare worker  PEP = post-exposure prophylaxis
Occupational exposures by occupational group, 2002-2011

1 Nursing professions = nurses, midwives, healthcare assistants/auxiliary nurses and dental personnel (dental nurses/hygienists).
2 Professions allied to medicine = including phlebotomists, laboratory workers, paramedics, radiographers, operating department assistants, physiotherapists, general technician, dialysis technician, embalmer/mortuary technician, national vocational qualifications staff/trainees.
3 Ancillary staff = porters, security and housekeeping staff.
Occupational exposure by type of exposure and occupation, 2002-2011

Professions allied to medicine = including phlebotomists, laboratory workers, paramedics, radiographers, operating department assistants, physiotherapists, general technician, dialysis technician, embalmer/mortuary technician, national vocational qualification staff/trainees.

Ancillary staff = porters, security and housekeeping staff.

MCE = mucocutaneous; these include exposures to the mucous membranes (e.g. eyes, mouth) and non-intact skin (e.g. broken skin through cuts and abrasions or skin conditions).
Occupational exposures by location of exposure, 2002-2011

Year of exposure

Percentage of reports

Ward
Theatre
A&E
Intensive Care Unit
Community
Dental
Other

1 Other includes: laboratory; mortuary; other hospital departments; GUM; outpatient department; liver unit; minor treatment centre; incidents occurring in other parts of the hospital, such as the grounds, toilet, car park and post room; non-hospital based clinical settings, and a small number of incidents that occurred in another country but were reported in the UK, etc.
Factors\textsuperscript{1} contributing to accidental exposures, 2002-2011

The database allows up to two contributory factors to be listed per incident, and these second factors have been included in the denominator (although they are relatively few in number).\textsuperscript{2}

\textsuperscript{1} Standard (universal) infection control precautions.

\textsuperscript{2} The database allows up to two contributory factors to be listed per incident, and these second factors have been included in the denominator (although they are relatively few in number).
Hepatitis C seroconversions

- 20 cases reported (17 from England and three from Scotland)

- All percutaneous exposures

- Majority injured by hollowbore needles; mainly exposed to blood/blood-stained fluid

- 17 known to have cleared the virus

- 16 known to have received treatment; with 13 known to have achieved sustained virological response
HIV PEP status of healthcare worker after exposure to an HIV positive source patient\textsuperscript{1}, by type of exposure, 2002-2011

\begin{enumerate}
\item These include reports of dual/triple-infected source patient.
\item PCE = percutaneous; these include injuries sustained by needles and other sharp instruments, human bites and human scratches.
\item MCE = mucocutaneous; these include exposures to the mucous membranes (e.g. eyes, mouth) and non-intact skin (e.g. broken skin through cuts and abrasions or skin conditions).
\end{enumerate}

HCW = healthcare worker \quad PEP = post-exposure prophylaxis
Time elapsed (hours) between exposure to an HIV positive source patient\(^1\) and initiation of HIV PEP, 2002-2011

\(^1\) These include reports of dual/triple-infected source patients.

PEP = post-exposure prophylaxis
Length of time on HIV PEP, source HIV negative or of unknown HIV status, 2006-2011

HIV negative source patients
- 2006-2008: n=163
- 2009-2011: n=114

Source patients of unknown HIV status
- 2006-2008: n=42
- 2009-2011: n=20

Year group of exposure
- 1 day
- 2-3 days
- 4-7 days
- 8-14 days
- 15+ days

Percentage of reports
0% - 100%
HIV PEP regimens prescribed after exposure to an HIV positive source patient\(^1\), 2002-2011

1. These include reports of dual/triple-infected source patient.
2. Regimen change only due to contamination issue with Nelfinavir.
3. These include a small number of records where the original regimen prescribed was subsequently amended; all drugs taken have been included in this category.

HCW = healthcare worker    PEP = post-exposure prophylaxis
Healthcare worker hepatitis B vaccination status after exposure to a HBV positive source patient\(^1\), 2009-2011

These include reports of dual/triple-infected source patient.

\(^2\) Known non-responder to HB vaccine: anti-HBs<10mIU/ml 2-4 months post-immunisation.

\(^3\) Known responder to HB vaccine: anti-HBs>10mIU/ml.
Reported risk factors for infection, HCV and HIV positive source patients, 2005-2011

- People who inject drugs
- Country of origin high risk for BBVs
- Men who have sex with men
- Dialysis patient / chronic renal failure
- Liver transplant patient
- Haemophiliac
- Blood transfusions
- History of imprisonment
- Body piercing / tattoo
- Multiple sex partners
- Mother-to-child transmission
- Other

1 Does not include reports of dual/triple-infected source patient.
Between 2002 and 2011, 4381 significant occupational exposures were reported (increasing from 276 in 2002 to 541 in 2011).

Between 2008 and 2011, there were five hepatitis C nosocomial transmissions from patients to healthcare workers following percutaneous exposure injuries; three reported from England and two in Scotland.

Even though percutaneous injuries remain the most commonly reported occupational exposures in the healthcare setting, they have decreased over time as a percentage of all exposures (from 79%; 218/276 in 2002 to 67%; 363/541 in 2011).

The percentage of healthcare workers reporting percutaneous exposures that involved a hepatitis C virus infected source patient has declined from 38% (105/276) in 2002 to 32% (173/541) in 2011.
Key points (2)

 numerosly, between 2002 and 2011 most occupational exposures involved nursing professions.

 Occupational exposures in medical and dental professions increasing by 131% (100 to 231) between 2002 and 2011.

 In 2011, a similar number of occupational exposures were reported among medical and dental professions (231) than amongst nursing professions (237).

 Seventy two occupational exposures between 2002 and 2011 involved ancillary staff, a staff group with no direct involvement in patient care; of these, 81% (58/72) were due to percutaneous exposures, with 62% (36/58) of them caused by hollowbore needles. The majority of these exposures were due to non-compliance with standard infection control precautions for the handling and safe disposal of clinical waste.
Key points (3)

- The total number of hepatitis C virus seroconversions in healthcare workers reported between 1997 and 2011 now stands at 20; 17 cases reported in England and three in Scotland. Eight of the cases in England occurred after the immediate procedure and most could have been prevented with adherence to standard infection control precautions for the safe handling and disposal of clinical waste.

- The last cases of an HIV seroconversion in an occupationally exposed healthcare worker was reported in 1999.

- Of healthcare workers exposed to an HIV positive source patient between 2002 and 2011, 78% (1048/1336) began HIV-post exposure prophylaxis (PEP) after sustaining a significant exposure. Of these exposures, a third (34%; 221/645) had commenced HIV PEP within an hour of their exposure and nine in ten (89%; 577) within 24 hours.

- A minority of healthcare workers are remaining on HIV PEP drugs for longer than necessary in cases where the source has been shown to be negative.
Recommendations (1)

- In line with the EU Directive for the prevention of sharps injuries in the healthcare setting, Primary Care Trusts, Hospital Trusts, and any other relevant healthcare service, should adopt safety engineered devices in place of conventional devices in order to prevent needlestick injuries in healthcare workers.

- Primary Care Trusts (includes soon to be NHS Commissioning Boards and Clinical Commissioning Groups, Health Boards in Wales and Health and Social Care Boards in Northern Ireland) and Hospital Trusts should ensure that appropriate Occupational Health services are in place with an identified designated healthcare provider to whom healthcare workers can be referred urgently, following an occupational exposure.

- Local health policies should identify those staff responsible for: i) the management of occupational exposures; ii) the provision of PEP; and iii) clinical and serological post-exposure follow-up management.

- As part of local protocols, all healthcare workers are made aware of how to report an exposure, according to current national guidance.
Although much has already been achieved, the Health Protection Agency (HPA) Health Protection Services needs to sustain and continue to improve data collection by encouraging better reporting by existing centres, recruiting new centres and forging closer links with virology and microbiology colleagues.

Greater emphasis is needed on: i) conducting source and follow-up testing; ii) reporting of results at local and national level; and iii) alerting the surveillance programme to any occupational bloodborne virus exposures and outcomes including seroconversions.
Acknowledgements

We would like to thank:

All the nurses, clinicians, microbiologists, virologists, occupational health (OH) physicians and genitourinary medicine practitioners who contribute to the surveillance of occupational exposures to bloodborne viruses in healthcare workers.

Our colleagues in the Health Protection Agency Health Protection Services who contributed additional data to the programme.

Our colleagues in Health Protection Scotland for their contribution to the report.

Members of the Advisory Committee (listed in the report).