GUIDELINES FOR MANAGEMENT OF NEEDLESTICK INJURY

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PURPOSE

This guideline will provide direction for management of needle stick injury in health professional and improving health and safety risks.

SCOPE

These guidelines are for health professionals to help them in management of health and safety risks, clinical management and complications of needle stick injury.

Contents of guidelines

- Needle Stick Injury
- Surveillance systems
- Prevention of exposure
- Management of exposure
- Post exposure prophylaxis

RECOMMENDATIONS

Following steps should be considered in management of needle stick injury.

- Risks assessment of health professionals must be done before assigning clinical duties.
- All health professional at risks will have training of safe practice.
- Use personal protective equipment to prevent needle stick injury.
- Regular monitoring of clinical practice must be done.
- Documentation of all incidents must be done with time and date for medico legal reasons.
- Management of post exposure events will be done as per protocol.

Introduction

The major blood-borne pathogens of concern associated with needlestick injury are:

- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV).

However, other infectious agents also have the potential for transmission through needlestick injury. These include:

- Human T lymphotrophic retroviruses (HTLV I & II)
- Hepatitis D virus (HDV or delta agent, which is activated in the presence of
- HBV) hepatitis G virus (GB virus or GBV-C)
- Cytomegalovirus (CMV)
- Epstein Barr Virus (EBV)
- Parvovirus B19
- Transfusion-transmitted virus (TTV)
- West Nile Virus (WNV)
- Malarial parasites
- Prion agents such as those associated with transmissible spongiform
- Encephalopathies (TSE).

When a blood or body fluid exposure incident occurs in the context of an „ exposure-prone procedure, the possibility

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of transmission of infection from healthcare worker to patient must be considered, as well as from patient to healthcare worker.

"Exposure-prone procedures" are those where there is a risk that injury to the healthcare worker could result in the patient"s blood or open body tissue being exposed to the blood of the healthcare worker. In practice these include surgery, midwifery, dentistry and physical contact with trauma patients who may have open fractures or glass-contaminated wounds.

Needlestick or sharps injuries occur when a needle or other sharp instrument accidentally penetrates the skin. This is called a percutaneous injury. If the needle or sharp instrument is contaminated with blood or other body fluid, there is the potential for transmission of infection, and when this occurs in a work context, the term occupational exposure (to blood, body fluid or blood-borne infection) is used.

When blood or other body fluid splashes into the eyes, nose or mouth or onto broken skin, the exposure is said to be mucocutaneous.

The risk of transmission of infection is lower for mucocutaneous exposure than for percutaneous exposures but still significant. Other potential routes of exposure to blood or other body fluids include bites and scratches.

Reporting incidents

One of the major problems associated with the management of needlestick incidents, identified, is the lack of hard evidence relating to the actual numbers of incidents in trusts. This is due to the under-reporting of exposure incidents, which some studies have identified as being as high as 85 per cent.

Employers have a responsibility to ensure that there are local systems in place for reporting all needlestick injuries. Employees should be encouraged to report exposures promptly, following local reporting arrangements This is important for five reasons:

- It ensures appropriate management to reduce the risk of blood-borne virus transmission.
- It documents the incident and the circumstances, which is essential for the
- subsequent investigation of occupational injury or infection.
- It provides accurate surveillance, so that collective data analysis can inform measures to reduce the risk of further exposures.
- It provides data to monitor and review the effectiveness of measures introduced to reduce the risk of further exposures.

Preventing Exposure

Employer responsibilities

Employers are responsible for managing the risks and preventing exposure to biological hazards, or reducing the risks of exposure as far as possible.

Strategy and policy

The organisation should have a strategic aim or direction to reduce sharps related injuries and commitment should be secured from senior management to put necessary funding and resources into the prevention of sharps injuries.

The organisation should have suitable policies and procedures for managing the risks and preventing exposure to biological

hazards.

Employees and Safety Representatives should be consulted and fully involved in all discussions to reduce sharps related injuries.

Local partnership working and good communication between health and safety, infection prevention and control, occupational health, clinical leads and procurement staff and workers representatives is key to the effective prevention and management of sharps injuries.

Assessing the risk

Employers are responsible for assessing risks and preventing exposure to biological hazards, or reducing the risk as far as possible. Below is a five step guide to sharp risk assessments based on the HSE"s Five Steps to Risk Assessment.

Step 1 - Identify the Hazards

In most hospital and healthcare environments there will be varying degrees of exposure to blood borne viruses (BBVs). The main BBVs of main concern are hepatitis B, hepatitis C, hepatitis D and HIV.

Accidental injury by a sharp implement, such as a hollow bore needle, contaminated with a blood borne virus can lead to the transmission of BBVs.

Sharps injuries are therefore a hazard which can lead to the risk of blood borne viruses. Whilst the risk of infection may be relatively low, the anxiety of having to go through blood tests and possible treatment can cause the worker a great deal of stress.

Step 2 – Decide who might be harmed and how

There are many types of health care and hospital work which can expose individuals to the risk of sharps injuries these include:

- Clinical work - clinical procedures such as phlebotomy, cannulation, vaccination, acupuncture and surgical procedures.
- Ancillary services – cleaning, portering, hospital laundry and sterile supplies.
- Diagnostic and laboratory work
- Mortuary work.

Groups who carry out the majority of procedures using sharps are those most at risk. These include nurses, Operating theatre technologist (OTT), phlebotomists, physiotherapists, doctors and laboratory technicians. In addition cleaning staff will have a high exposure risks if sharps are not properly disposed of. Community based, as well as acute staff, may be injured by inappropriate use or non disposal of sharps.

Injury can occur with a wide range of items but those which have a higher risk of injury include needles, IV cannulae, winged steel needles („butterfly") and phlebotomy needles.

Existing data on sharps injury reports can be used to identify areas who report high numbers of sharps. However, there is often under reporting of sharps injuries within organisations so this may not be a reliable use of data. In reality, whenever a needle or other medical sharp is used on a patient there is a potentially serious occupational safety risk. Universal application of preventative measures, including training, safe working procedures and safety-engineered devices, is therefore necessary.

Step 3 – Evaluate the risks and decide on precautions

Every effort should be made to avoid blood and body fluid exposures occurring, through safe systems of work.

One of the measures to avoid exposure to blood-borne viruses is:

- Immunisation against hepatitis B

The wearing of gloves and other protective clothing, the safe handling and disposal of sharps, including the provision of medical devices incorporating sharps protection, and measures to reduce risks during surgical procedures.

The principle of following Standard (Universal) Precautions means never assuming that there is no risk. If every patient is assumed to be potentially infected with a blood-borne infection, the same precautions to prevent exposure should be used for every procedure.

Needles should never be re-sheathed. Re-sheathing needles is a common cause of needlestick injury. The ink mark on an index finger or thumb after inaccurate re- capping of a pen illustrates how easily re-sheathing needlestick injuries occur.

Cuts and grazes should be covered with waterproof dressings. Non-intact skin is a potential route of entry for blood-borne transmissible agents through contact with infected body fluids.

Personal protective equipment should be worn when dealing with blood or body fluids. The easiest way to start step 3 is to compare what you are doing now with good practice. Firstly you should consider whether you can get rid of the hazard altogether and if not how the risks can be control so that harm is unlikely.

The World Health Organisations „hierarchy of controls" on the prevention of sharps injuries is a way of implementing best practice. The hierarchy below is adapted from the WHO hierarchy and presented in order of priority:

Elimination of hazard – complete removal of a hazard from the work are is the most effective way to control hazards; this approach should be used whenever possible. Examples include:

- Removing sharps and needles when possible e.g. substituting jet injectors for needles and syringes or using needlesless intravenous systems.)
- Eliminating all unnecessary injections
- Eliminating unnecessary sharps such as towel clips.

Engineering controls – These are used to isolate or remove a hazard from a workplace; examples include:

- Adequate numbers of easily accessible sharps disposal containers.
- Use of sharps protection devices for all procedures (devices with needles that retract, sheathe or blunt immediately after use).

Administrative controls – These are policies such, which aim to limit exposure to the hazard. Examples include:

- Health and safety responsibilities of all staff are clear, well co-ordinated and adequately resourced.
- Sharps injury prevention committee (may be part of health and safety committee)
- A sharps policy which covers exposure prevention as well as treatment and follow up

- Reference to sharps injury prevention in infection control and procurement policies
- Removal of all unsafe devices
- Safe systems of work particularly in high risk areas such as theatres,
- Obstetrics and emergency care
- Environmental factors including good lighting and adequate space to carry out the procedure
- Consistent information and training which include safe systems of work, correct use and disposal of sharps, the use of medical devices
- Incorporating sharps protection mechanisms, measures to be taken in the event of a sharps injury, how to use any PPE provided.
- Promotion of a no blame culture
- Incident reporting procedures and investigations which include feedback
- To staff/staff groups involved
- Vaccination programmes and follow up procedures.

Work Practice Controls – These controls to change the behaviour of workers to reduce exposure to occupational hazards. Examples include:

- No needle recapping or resheathing
- Safe construction of sharps containers
- Placing sharps containers at eye level and within arms" reach
- Disposing of sharps immediately after use in designated sharps containers
- Sealing and discarding sharps containers when they are three quarters full
- Establishing means for the safe handling and disposal of sharps devices before the beginning of a procedure.

Sharps should never be passed hand to hand and handling should be kept to a minimum. All sharps should be disposed of carefully at the point of use. This means that suitable sharps containers should be portable enough to take to the site of a procedure, and designed specifically to allow needles and sharp instruments to be disposed of easily and safely at the point of use. It is not acceptable, particularly for cost reasons, to reduce the number of sharps bins to such an extent that staff are forced to carry used needles to the sharps bin to dispose of them.

This should also reduce the number of incidents resulting from incorrect disposal or non-disposal of sharps, for example in clinical waste bags, bed linen and laundry, or on floors and other surfaces.

Ideally sharps bins should be designed to prevent overfilling and accidental spillage of contents. They should be easy to close temporarily and permanently, and there should be no risk of puncture of the container. Cardboard sharps bins should not be used. Care is needed to ensure portable sharps bins are not left unattended in areas where non-healthcare workers (especially children) can access them. Syringes/cartridges should be disposed of intact.

In the pressurised work environment of healthcare, staff may be tempted to take short cuts, to save time. This can increase the risk of needlestick injury. It is important that healthcare workers receive continuously updated education and training about safe systems of work with sharps and body fluids. This will ensure that safety becomes embedded into organisational culture and that safe working practices become second nature.

Staff require regular specific training in this

key area, not just at induction.

Personal Protective equipment – These provide barriers and filters between the worker and the hazard. They will prevent exposures to blood splashes but will not prevent needle stick injuries. Examples include:

Gloves - Although a needle or sharp instrument can easily penetrate a glove, the risk of transmission of infection is significantly reduced. The glove material will remove up to 86 per cent of the blood on the outside of a needle.5 An inner glove will remove most of blood not removed by the outer glove. Double gloving therefore substantially reduces the risk of blood-borne virus transmission from a sharps injury.

Eye protection - This is important wherever blood or other body fluids could splash into the eye. Ordinary prescription spectacles offer some, but inadequate, protection, as they are not generally designed for this purpose. Eye protection should therefore be worn routinely not just in operating theatres, delivery suites and endoscopy suites, but also in accident and emergency departments and any other clinical areas where pressure may lead to spurting or splashing of body fluids, such as when unblocking or irrigating lines and tubes.

Blood may become aerosolised due to surgical drilling techniques, such as those used in orthopaedic surgery, and mucous membrane exposure may not always be recognised.

There are many designs of safety spectacles now available, many of which will fit over prescription lenses and frames.

Independent studies show that a combination of training, safer working practices and the use of medical devices incorporating sharps protection mechanisms can prevent more than 80 per cent of needlestick and sharps injuries.

Step 4 – Record your findings and implement them

The findings of the risk assessment should be documented and should form part of the action plan to reduce the risks of injury. Such action plans should be time sensitive.

The results of the risk assessment should be shared with all workers identified as being at risk.

Performance indicators can be used to ensure that risk assessments are being implemented e.g. increase in the number of safety devices being purchased.

Step 5 – Monitor performance and review

Steps should be taken to periodically review the effectiveness of the risk assessment and control measures in place. This could be reactive e.g. following an incident report or proactive e.g. an audit or workplace inspection or looking at performance indicators eg. the number of devices being purchased. It is recommended that a review date is set for a risk assessment.

Risk assessments should also be reviewed if changes take place to work practices or new equipment is introduced.

Managing Exposure

Management of blood and body fluid exposure incidents

First aid treatment

If the mouth or eyes are involved, they should be washed thoroughly with water.

If skin is punctured, free bleeding should be gently encouraged and the wound should be washed with soap or chlorhexidine and water, but not scrubbed or sucked.

If there is any possibility of HIV exposure, urgent advice should be sought about the relative indications for anti-retroviral post-exposure prophylaxis.

Unfortunately, under-reporting of exposure incidents is widespread. Every effort should be made to encourage and facilitate local reporting. The reporting process should be easily accessible, straightforward and confidential. Depending on local arrangements, body fluid exposures in a healthcare setting may be managed by a number of different departments including occupational health, accident and emergency, infection control, infectious diseases, genito-urinary medicine, sexual health, HIV services, microbiology or virology.7

Assessment of the risk of blood-borne virus (BBV) transmission

Average estimated seroconversion risks from published studies and reports are:

- 0.3 per cent for percutaneous exposure to HIV-infected blood
- 0.1 per cent for mucocutaneous exposure to HIV-infected blood
- 0.5-1.8 per cent for percutaneous exposure to HCV-infected blood with detectable RNA
- 30 per cent for percutaneous exposure of a non-immune individual to HBeAg positive source.

Factors that may increase the risk, and influence management of the incident are:

- Percutaneous injury rather than mucous membrane or broken skin exposure
- Injury with a device from a source patient"s artery or vein
- Blood exposure rather than exposure to blood-stained fluid, diluted blood (for example in local anaesthetic solution) or other body fluid
- Injury from hollow bore rather than solid bore needle
- Injury from wide gauge rather than narrow gauge needle
- Deep rather than superficial injury
- Visible blood on the device
- No protective equipment used (like gloves, double gloves, eye protection)
- First aid measures not implemented (washing, bleeding)
- HCV RNA detectable in source patient on most recent blood test
- High viral load of HIV in source patient
- HBeAg detectable in source patient blood
- Exposed person not, or inadequately, immunised against hepatitis B
- Source patient co-infected with more than one BBV.

When a body fluid exposure occurs and is reported, the first priority is to assess how likely it is that the incident will result in blood-borne virus transmission, and then take steps to reduce that risk as far as possible. The initial assessment and management has to be based on the information available at the time.

Relevant information to consider

The source patient

1. Known or unknown?
2. If unknown, is there any indication of

the origin of the device or body fluid? For example, was the device from a unit or area with patients known to have hepatitis B or C or HIV?

3. If known, is the source patient known to be infected with hepatitis B, hepatitis C or HIV? The validity of negative results varies depending on how long ago the tests were done and current risks factors.
4. If the source patient is not known to carry any of these infections, do they have any risk factors for them?
5. The risk of being infected with HIV is increased in people intravenous drug users, people with HIV-infected mothers or with HIV- infected sexual partners.
6. The risk of being infected with hepatitis C is increased by receipt of blood or untreated plasma products sharing of injecting equipment while misusing drugs; sharps injury or mucous membrane splash exposure to blood from patients known to be infected, or at risk of infection with hepatitis C; involvement as a healthcare worker or a patient in invasive medical, surgical, dental or midwifery procedures in parts of the world where infection controlprecautions may have been inadequate; or with populations with a high prevalence of hepatitis C infection (like Egypt).
7. The risk of being infected with hepatitis B is increased in intravenous drug users, and in people with hepatitis B-infected mothers or hepatitis B-infected sexual partners.
8. If the source patient is known to be infected with HCV, is HCV RNA detectable on most recent test?
9. If the source patient is known to be infected with HIV:

- Has there been a recent/current seroconversion illness?
- Are they terminally ill with HIV-related disease? If so viral load may be high.
- What is the most recently recorded viral load?
- Are they taking anti-retroviral drugs?
- Is there any evidence of viral drug resistance?

10. If the source patient is known to be infected with hepatitis B, are they:

- HBsAg positive?
- HBeAg positive?

The exposed person

Hepatitis B immune status:

- Unvaccinated?
- One, two, three or more doses of hepatitis B vaccine?
- Date of last booster?
- Most recent HBsAb result and date?
- HBcAb positive (natural immunity)?

Protocol for management of exposures

In all cases:

1. A blood sample from the exposed person should be sent to a virology or microbiology laboratory for testing this sample for blood-borne viruses at this stage. The purpose of this sample is to be able to show that, in the unlikely event of subsequent seroconversion, the member of staff was not infected at the time of the exposure, and therefore the infection was occupationally acquired. As occupational acquisition of blood-borne virus infection is fortunately rare, in the majority of cases this sample is never tested.

2. The exposed person should be given time to talk about their concerns following the incident and discuss the available information about risks from the

exposure.

Counselling of the exposed person should include information about:

- Statistics regarding seroconversion risks
- Risks involved in this particular incident
- Steps to reduce the risk of BBV transmission
- Follow-up procedure and rationale behind it
- Window period" if the source patient has ongoing risk factors for BBV infection
- Infection control precautions (ie safe sex) and no blood donation during follow-up period, but no additional work restrictions
- Establishing support networks: friends, family and so on
- Allowing time to express anxieties and concerns and to answer questions
- HIV and HCV follow-up tests (and HBV if not immune)
- Confidentiality

3. Follow-up to confirm that occupational blood-borne virus transmission has not occurred.

Approaching source patients for blood-borne virus testing

It can be very helpful to test source patients, with their informed consent, for HIV, HBV and HCV, regardless of risk factors, unless very recent results are available.

Managing exposures from unknown sources
What should be done about an injury from a used needle of unknown source? The principle for any needlestick injury is to assess the risk of blood-borne virus transmission, and then aim to minimise that risk as far as possible. It"s important to keep this principle in mind, as it"s easy to get lost in the detail when confronted with a scenario that is often accompanied by a measure of anxiety.

Systematic assessment of the risk from any incident involves consideration of three categories of information: the circumstances of the exposure, the source of the exposure and the exposed individual.

About the circumstances of the exposure, it is important to establish whether exposure has indeed occurred. Was the skin actually breached by the needle? There is no evidence to suggest that blood-borne viruses can be transmitted across intact skin, or from a needle that has not been used. Deep injury from a large, hollow bore needle with visible, fresh blood will carry a higher risk than one from a superficial scratch from an old, blunt, solid or subcutaneous small needle through protective clothing. However, it is important to note that the absence of visible blood on a needle should not create a false sense of security. Minute quantities of blood are all that"s needed to transmit deadly viruses. This much blood is frequently present in used hypodermic needles and often the blood is not visible to the naked eye. First aid measures such as washing and bleeding the wound (but not scrubbing or sucking it) will help to minimise the risk.

Some like to consider an estimate of the approximate statistical risk of transmission and are reassured by this, while others find statistics baffling and distressing. Published studies have calculated from reported cases, the average risk of transmission from a source known to be infected. Combining this with the risk of the source being infected (for example the background population prevalence of infection, or the prevalence in intravenous drug users if that seems the

	UK Population Prevalence*	Prevalence in UK IVDUs *	Average seroconversion risk after percutaneous exposure to known infected source
HIV	0.08%	London 3% Elsewhere 0.5%	0.3%
HCV	0.4-0.5%	41%	0.5-1.8% (if detectable RNA)
HBV	0.5% HBsAg carriers	22%	30% (non-immune individual exposed to HBeAg positive source)
*Source: HPA			

likely source of the needle) makes the overall likely risk relatively small. The HPA website is a useful source of up to date epidemiological data.

Unless there are clues about the possible origin of the needle (for example, found in the surgery waiting room after a diabetic clinic), a discarded needle may well have been used to inject illicit intravenous drugs. However, blood in the bore of the needle is probably diluted with injection material, and viral load should diminish as it dries. Blood on the outside of the needle is likely to have been wiped by contact with grass, soil, clothing and so on. All this reduces the likely risk of HIV transmission from a needle of unknown source to no more than 1 in 30,000. This does not justify the risks of post-exposure prophylaxis with anti-retrovirals in most cases. Although HIV is often the greatest fear, in fact hepatitis C and hepatitis B are more common and more transmissible. Hepatitis C seroconversion

has been documented following injury from a needle in a hospital waste bag. However, hepatitis C transmission is unlikely in the absence of detectable HCV RNA, and similarly many chronically-infected hepatitis B carriers are also of low infectivity.
If the source patient is infected with HIV

In the case of definite exposures to blood or other high-risk body fluids known or considered to be at high risk of HIV infection, post-exposure prophylaxis (PEP) should be offered as soon as possible, preferably within one hour of the incident.

It may still be worth considering up to 72 hours after the exposure, but the relative benefit of prophylaxis diminishes with time.

The current standard recommended regimen for PEP is a 28-day course of:

- Truvada (Tenofovir disoproxil 245mg/ Emtricitabine 200mg) one tablet twice a day
- Kaletra (Lopinavir200mg/Ritonavir50mg) 2 tablets bd

Anti-emetics such as metaclopramide, domperidone, cyclizine, ondansetron, and anti-motility drugs, such as loperamide, are often co-prescribed for the side effects.
Anti-retroviral drugs are not licensed for PEP, so must be prescribed on a „named patient" basis by a doctor. The regimen may need to be modified if there is evidence that the source patient is infected with a virus that is resistant to any of these drugs. In this case, specialist advice should be sought from the HIV physician treating the source patient.

Anti-retroviral drugs have side effects including: nausea, vomiting, abdominal pain, lethargy, fatigue, diarrhoea, headache, bone-marrow suppression, rashes, liver-function disturbance, pancreatitis, peripheral neuropathy, glucose intolerance (protease inhibitors) and renal calculi.

The exposed person may have relative contraindications to consider, like pregnancy, breast feeding, a history of anaemia, neutropenia, hepatic or renal failure. There are many possible drug interactions to be considered, so check carefully with available information from a specialist pharmacist about any potential interactions with medications the exposed person may be taking.

Exposed persons should be counselled about the side effects and the potential risks and benefits of PEP, so that staff can make an informed choice whether to take PEP or not. Expert advice may be required. In some cases it may be appropriate to approach the source patient for urgent out-of-hours HIV testing if there are relative contraindications to PEP.

If there is doubt and anxiety, it may be reasonable for the exposed person to take the first dose of PEP (unless there are contraindications). This takes away the need for an urgent decision and allows time for further consideration.

In view of the recommendation to start PEP as soon as possible, starter packs containing enough drugs for 5 days (to cover weekends and public holidays) should be made available to avoid delay due to dispensing a prescription. However, the cost-benefit balance will need to be carefully considered. The drugs are expensive and starter packs must be checked regularly to ensure expiry dates are not exceeded.

The exposed person should be followed up weekly while taking PEP for:

- Repeat prescriptions for the drugs
- Psychological support
- Blood samples:
- Biochemistry (urea and electrolytes)
- Liver function tests (including gamma GT and amylase)
- Haematology (full blood count)
- Monitoring of side effects.

The exposed person should return for testing (with informed consent) for HIV antibodies at three months after completing post-exposure prophylaxis.

If the exposed person tests positive for HIV antibodies, it will be necessary to test the stored baseline sample and refer them to a specialist in HIV medicine. See

If the source patient is infected with HCV

There is no prophylaxis available for hepatitis C. Blood should be taken and serum sent for saving and storage. Transmission is unlikely from HCV RNA negative sources.

The exposed person should return for blood tests for:

If the source patient is infected with HBV

If the exposed person is not immune to hepatitis B, the patient"s HBsAg status should be requested urgently. Follow-up blood testing will only be necessary if the exposed person was non-immune at the time of the incident. Test for HBsAg at:

- six weeks
- three months
- six months
- and save serum at the time of the incident.

	HCV Antibodies	HCV RNA (PCR)	Serum save
Baseline			*
6 weeks		*	
3 months	*	*	
6 months	*		

Table-I: Summary of follow-up blood tests for staff member exposed to HCV

	Significant exposure			Non-significant exposure	
HBV status of person exposed	HBsAg positive source	Unknown source	HBsAg negative source	Continued risk	No further risk
≤ 1 dose HB vaccine pre-exposure	Accelerated course of HB vaccine* HBIG × 1	Accelerated course of HB vaccine*	Initiate course of HB vaccine	Initiate course of HB vaccine	No HBV prophylaxis. Reassure
≥ 2 doses HB vaccine pre-exposure (anti-HBs not known)	One dose of HB vaccine followed by second dose one month later	One dose of HB vaccine	Finish course of HB vaccine	Finish course of HB vaccine	No HBV prophylaxis. Reassure
Known responder to HB vaccine (anti-HBs > 10mIU/ml)	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	No HBV prophylaxis. Reassure
Known non-responder to HB vaccine (anti-HBs < 10mIU/ml 2–4 months post-immunisation)	HBIG × 1 Consider booster dose of HB vaccine A second dose of HBIG should be given at one month	HBIG × 1 Consider booster dose of HB vaccine A second dose of HBIG should be given at one month	No HBIG Consider booster dose of HB vaccine	No HBIG Consider booster dose of HB vaccine	No prophylaxis. Reassure

*An accelerated course of vaccine consists of doses spaced at zero, one and two months. A booster dose may be given at 12 months to those at continuing risk of exposure to HBV.
Source: PHLS Hepatitis Subcommittee (1992).

Table 2: HBV prophylaxis for reported exposure incident 15

If the source patient is unknown or testing cannot be done

These cases are considered on an individual basis. As much detail about the exposure as possible should be obtained.

There will usually be no follow-up other than the initial serum save and check for HBV immunity (if required) for the exposed person, unless there are particular reasons for concern (for example, a patient strongly suspected to be infected with a blood-borne virus).

If the exposed person is very anxious, follow-up testing for HIV, HCV and HBV (if not immune) may help alleviate their anxiety. Hepatitis C PCR testing is not appropriate in these circumstances.

If blood test results are given over the telephone, it will be necessary to first confirm identity and ensure confidentiality is maintained.

Preventing further incidents

Consideration of the circumstances of individual exposures should prompt further investigation of working practice and/or equipment with a view to minimising the risk of future incidents.

MANAGEMENT OF NEEDLE STICK INJURY

Risk of Seroconversion after percutaneous exposure.

HIV	HCV	HBV
0.3%	0.5-18%	30%

Prevention of Needle Stick Injury

- Immunization against hepatitis
- Do not Resheath Needles
- PPE Personal Profective equipment
- Proper Disposal of sharps
- Handle Sharps with care

Post Exposure Management

- Assessment of Incidence
- Assessment of fluid exposed
- Assessment of source

High Risk Exposure Incident:
* Needle stick scratch.
* Body fluid on broken skin.
* Body fluid on mucous membrane (eye, nose, mouth)

High Risk Body Fluids:
* Blood Amniotic Fluid.
* Human Breast Milk
* CSF, Pleural, Pericardial, Peritoneal Fluid.
* Saliva, Semen or Vaginal Secretion.
* Unfixed Tissue.

High Risk Source
* HIV Postive
* HCV Positive
* IV Brug Mouser

First Aid Management

- If mouth or eyes involved, wash thoroughly with water.
- If skin puncture, free bleeding encouraged wash with soap, Povidone Iodine.
- Report

HIV +ve Source	HCV +ve Source	HBV +ve Source
Serum HIV Antibody 3 month Anti HIV test	Base line _ Serum HCV 6 Weeks _ HCV (RNAPCR) 3 Months _ HCV (RNAPCR) HCV Antibodies 6 Months _ HCV Antibodies	Base line _ Serum HBs Ag 6 Weeks _ HBs Ag 3 Months _ HBs Ag 6 Months _ HBs Ag
Post exposure prophylaxis (within 72 hours) Truvada 1xBD. (Tenofovir/Emtricitabine) Xaltera 2xBD (Iopinavir/Ritonavir)	Post exposure prophylaxis Not Required	Post exposure prophylaxis **Non immunized** Accelerated course of vaccine **Immunized** HBTGx1 Booster Dose

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