



HEALTH PROTECTION AGENCY NORTH WEST

# **Inoculation Injury in the Community Setting**

**Guidance for healthcare professionals**

**November 2009**

**(Review Date: November 2011)**

There are other national guidelines available.  
This is recommended for use in the North West.

[www.hpa.org.uk](http://www.hpa.org.uk)

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## **Definitions**

Community inoculation injuries are incidents involving members of the public. These are distinct from inoculation injuries sustained by community healthcare staff which need to be managed through their local occupational health service arrangements.

Inoculation injuries are defined as follows:

- (i) Needle-stick or sharps injury:  
These may be caused by any sharp instrument e.g. needles, scalpels, razor blades, broken glass: fragments of bone and teeth may also pose a risk;
- (ii) Human bites and scratches which break the skin, blood visible;
- (iii) Contamination of the conjunctiva and mucous membranes (eyes, nose, mouth) with blood or body fluids e.g. by splashing.
- (iv) Contamination of any open wound or skin lesion e.g. eczema or psoriasis with blood or body fluids. (All Wales Guidance)

For Human Bites, please see HPA NW guidance on human bite injuries on the north west section of the HPA national website at <http://www.hpa.org.uk>

## **Aims of the guidance**

This guidance has been produced to provide healthcare professionals with a framework to assist them in undertaking risk assessments when dealing with enquiries relating to needle-stick injuries affecting members of the public. Further assistance and guidance should be sought from the local health protection unit, infectious diseases physician(s) or consultant virologists.

## **Introduction**

The risk of transmission of blood-borne viruses (BBVs) from discarded needles is believed to be very low. When these incidents do occur they can promote a lot of anxiety in those who have sustained the injury or, in the case of young children, their parents.

As each incident must be subject to an individual risk assessment, standard guidance cannot be produced on how to handle individual incidents.

Hazards from these types of injuries include:

- Localised infections e.g. wound infection
- Tetanus spores e.g. if the needle had been contaminated by earth/dirt
- Blood-borne viruses – Hepatitis B, Hepatitis C and HIV.

## Advice on the Initial Management of the Injury

Use appropriate first aid measures when an inoculation injury has been sustained.

- (a) In the event of a contaminated needle-stick or sharps injury instruct recipient to:
  - immediately go to the nearest hand basin and encourage bleeding from the puncture wound for 5 minutes;
  - avoid sucking, scrubbing or rubbing the injury site.
  - wash area with soap and warm water only<sup>a</sup> and dry.
  - cover area with waterproof dressing if necessary.
- (b) If bitten or scratched, or if skin lesions or wounds become contaminated with blood or body fluids instruct recipient to:
  - thoroughly wash the area with soap and water and cover with a waterproof dressing.
- (c) If contamination of the conjunctiva or mucous membranes instruct recipient to:
  - immediately irrigate the area with copious amounts of normal saline or water (for eye, both before and after removing any contact lenses).
- (d) Ensure that source of sharp is located to prevent further injury.
- (e) Ensure that spillages of blood/body fluids are cleaned up promptly and surfaces disinfected.
- (f) Recommend the recipient seeks immediate advice from a GP or A&E department.

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<sup>a</sup> antiseptics and skin washes should not be used – there is no evidence of their efficacy, and their effect on local defences is unknown

## Advice to Healthcare Professionals on Assessing the Risk

### 1. *Is this the appropriate guidance?*

For occupational exposures, refer to the relevant occupational health guidance.

For bite injuries, see HPA NW guidance on Human Bite Injuries.

For incidents involving children in a school setting – further guidance currently in preparation at time of printing.

### 2. *Obtain details of the incident*

1. Name, address, date of birth of recipient
2. GP and practice address
3. Date and time of incident
4. Place of incident
5. Any witness to incident
6. Type of incident
7. Source of needle/sharp
8. First aid applied

(Appendix D has a suggested form for recording these details).

### 3. *Was the instrument potentially contaminated with body fluids prior to this incident (or during this incident if more than one person involved)?*

Testing of needles or 'sharps' for presence of BBVs is not recommended.

### 4. *Was this a significant exposure?*

**significant exposure** = high risk material + significant injury

#### a) Significant & non-significant injuries:

**Significant** injuries include (DH 2008):

- percutaneous injury (from needles, instruments, bone fragments, significant bites which break the skin)
- exposure of broken skin (abrasions, cuts, eczema etc)
- exposure of mucous membranes including the eyes
- sexual exposure (not addressed further in this guidance see BASHH guidance (Fisher et al 2006) – also refer to the Greater Manchester Sexual Health Network Guidance for both GPs & Provider Organisations on 'Post Exposure Prophylaxis after Sexual Exposure' (July 2009).

**Non-significant** injury would be:

- superficial graze not breaking the skin
- exposure to intact undamaged skin
- exposure to sterile or uncontaminated sharps

b) High and Low Risk Materials:

**High-risk** materials (i.e. with significant risk of transmission of infection) are blood, amniotic fluid, CSF, human breast milk, pericardial fluid, peritoneal fluid, pleural fluid, synovial fluid, unfixed human tissues and organs, exudate or other tissue fluid from burns or skin lesions, vaginal secretions, semen, any other body fluid containing visible blood, and saliva in association with dentistry.

**Low risk** materials (i.e. no significant risk of transmission of) include urine, vomit, saliva, faeces unless blood is visible. (DH 2008)

c) Volume of risk material:

Higher risk is likely from higher volume of material.

5. ***The source***

If known source:

Are they known to be infected with a BBV?

Risk assess source, based on factors outlined below

Request sample from source for testing\*.

Informed consent is required from the source.

If consent obtained then blood sample to be taken for rapid testing for BBV\*.

\* Obtaining consent & taking of blood sample for BBV testing should be undertaken by an appropriate third party colleague, **not** by the person who has sustained the injury.

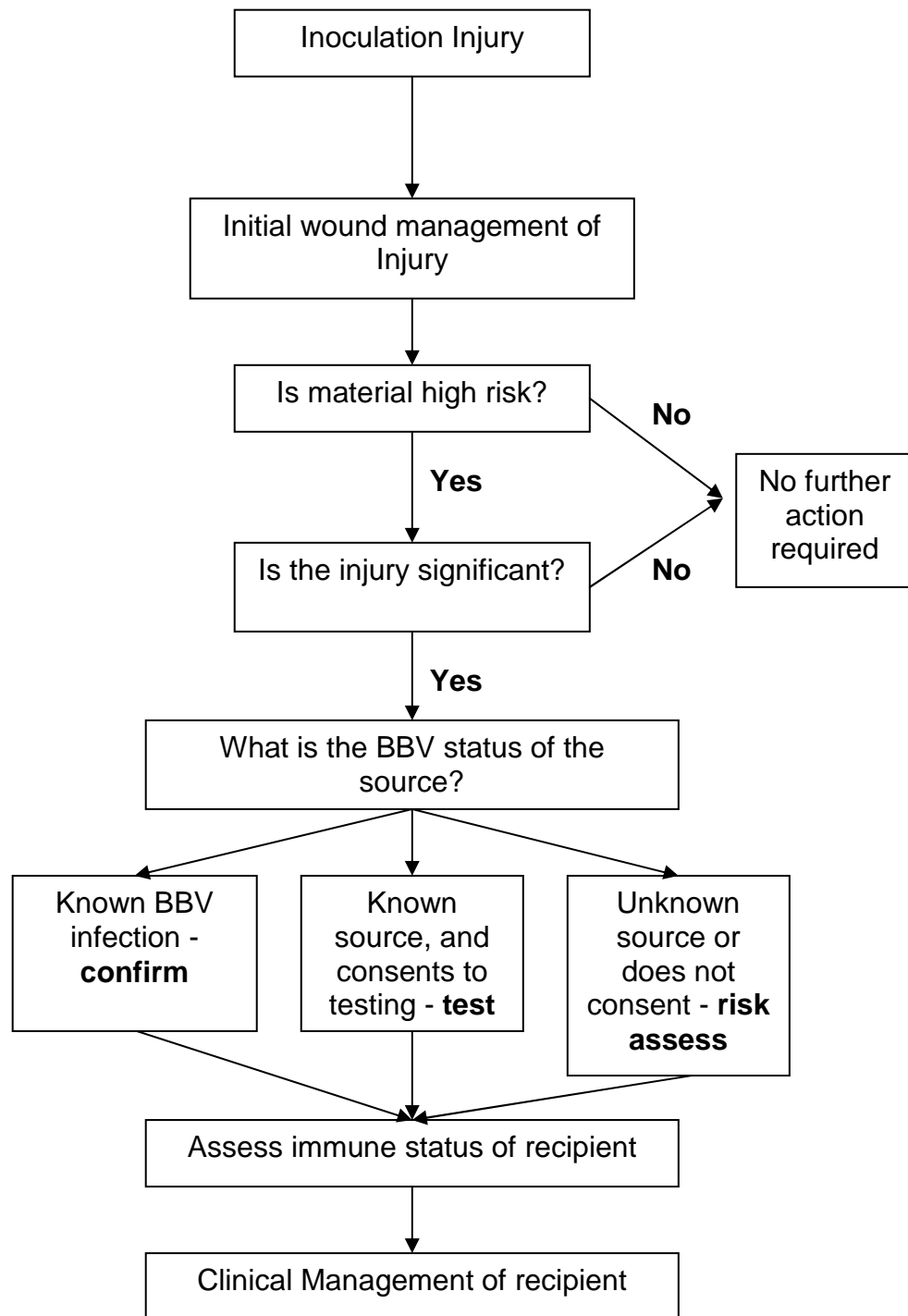
If source is unknown or known but refuses testing:

Risk assess based on any knowledge of source (see factors below) and material involved.

6. ***The recipient***

Is the recipient of the injury fully vaccinated against tetanus and hepatitis B?

**Summary of Guidance:**



## Information to Assist the Risk Assessment:

*Estimated Prevalence of BBV infections in the North West (n.b. these are seroprevalence figures only and do not reflect numbers with active infection or high infectivity)*

### Summary Table

Type of BBV	General Public	IDUs <sup>b</sup>
HBV	3/1,000 <sup>c</sup>	290/1,000
HCV	5/1,000 <sup>d</sup>	600/1,000
HIV	1.27/1,000 <sup>e</sup>	10/1,000

### Approximate Risk of Transmission in Healthcare Settings

These risk estimates are based on percutaneous injury with a hollow bore needle contaminated with fresh blood from a known actively infected source, with a fully susceptible recipient (EAGA 2008)

<b>HBV</b>	3 in 10
<b>HCV</b>	3 in 100
<b>HIV</b>	3 in 1000

(Risks in the community are generally less than these, as outlined in Appendix B)

### Options for Action:

If the degree of risk is assessed as significant, all or some of the following actions should be considered:

#### *Hepatitis B Risk and Prophylaxis*

Due to the safety profile of Hepatitis B vaccine and the infectivity of hepatitis B, a low threshold for initiating hepatitis B immunisation is recommended.

The Green Book outlines post exposure prophylaxis for hepatitis B as in table below.

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<sup>b</sup> HPA CfI. Supplementary data tables of the Unlinked Anonymous Prevalence Monitoring Programme: data to the end of 2007. Surveillance Report 2008.

[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1229070420947](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1229070420947)

<sup>c</sup> Gay et al 1999

<sup>d</sup> HPA Hepatitis C in England: An update 2006. London: Health Protection Agency Centre for Infections, December 2006

<sup>e</sup> HPA CfI. HIV in the United Kingdom: 2008 Report

[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1227515298354](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1227515298354)

In the North West Hepatitis B immunoglobulin is available at any time from the Health Protection Agency Laboratory, Manchester Royal Infirmary, and from the Microbiology Laboratory, University Hospital Aintree (for contact details please see Appendix C)

**An accelerated course of hepatitis B vaccine involves doses at 0, 1 and 2 months with a further booster at 12 months for those with ongoing risk.**

*Summary of Immunisation against Infectious Diseases ('Green Book', 2006) for Hepatitis B exposure risk*

HBV status of person exposed	Significant exposure			Non-significant exposure	
	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).

For this table, the following definitions apply: (PHLS Hepatitis Subcommittee 1992)

A significant exposure is one from which HBV transmission may result. It may be:

- (i) percutaneous exposure (needlestick or other contaminated sharp object injury, a bite which causes bleeding or other visible skin puncture)
- (ii) mucocutaneous exposure to blood (contamination of non-intact skin, conjunctiva or mucous membrane)
- (iii) sexual exposure (unprotected sexual intercourse).

### **Hepatitis C Risk**

No prophylaxis available.

Treatment of early infection is very effective, so if high risk check for possible early infection 4-6 weeks after exposure by HCV PCR testing.

## **HIV Risk**

Where it is not possible to identify the source patient (e.g. needlestick injury caused by a discarded needle), a risk assessment should be conducted to determine whether exposure was significant. This will be informed by considering the circumstances of the exposure and the epidemiological likelihood of HIV in the source. The use of Post Exposure Prophylaxis (PEP) is unlikely to be justified in the majority of such exposures (EAGA).

If a known HIV patient is the source, refer urgently to A&E to consider initiation of post exposure prophylaxis with a 28 day course of anti-retrovirals.

PEP should be initiated as soon as possible after the exposure, ideally within an hour, following a careful risk assessment. PEP is now *generally* not recommended.

**For adults** the PEP regimen for starter packs has been revised and simplified: Truvada (300mg tenofovir and 200mg emtricitabine (FTC)) once a day plus Kaletra (200mg lopinavir and 50mg ritonavir) twice a day is now recommended.

**For children**, consult a paediatrician or infectious diseases consultant who is experienced in the treatment of children with HIV.

Detailed guidance is available from Department of Health. *HIV Post-Exposure Prophylaxis: guidance from the UK Chief Medical Officers' Expert Advisory Group of AIDS*. London: Department of Health, September 2008.

Available at:

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_088185](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_088185)

## Tetanus

Summary of Immunisation against Infectious Diseases (Green Book, 2006):  
Tetanus (Salisbury et al 2006)

IMMUNISATION STATUS	CLEAN WOUND	TETANUS-PRONE WOUND	
	Vaccine	Vaccine	Human tetanus immunoglobulin
Fully immunised, i.e. has received a total of five doses of vaccine at appropriate intervals	None required	None required	Only if high risk (see p 379)
Primary immunisation complete, boosters incomplete but up to date	None required (unless next dose due soon and convenient to give now)	None required (unless next dose due soon and convenient to give now)	Only if high risk (see p 379)
Primary immunisation incomplete or boosters not up to date	A reinforcing dose of vaccine and further doses as required to complete the recommended schedule (to ensure future immunity)	A reinforcing dose of vaccine and further doses as required to complete the recommended schedule (to ensure future immunity)	Yes: one dose of human tetanus immunoglobulin in a different site
Not immunised or immunisation status not known or uncertain	An immediate dose of vaccine followed, if records confirm the need, by completion of a full five-dose course to ensure future immunity	An immediate dose of vaccine followed, if records confirm the need, by completion of a full five-dose course to ensure future immunity	Yes: one dose of human tetanus immunoglobulin in a different site

**Tetanus-prone wounds** include:

- wounds or burns that require surgical intervention that is delayed for more than six hours
- wounds or burns that show a significant degree of devitalised tissue or a puncture-type injury, particularly where there has been contact with soil or manure
- wounds containing foreign bodies
- compound fractures
- wounds or burns in patients who have systemic sepsis.

**High risk** is regarded as heavy contamination with material likely to contain tetanus spores and / or extensive devitalised tissue.

Patients who are immunosuppressed, or otherwise immunocompromised may not be adequately protected against tetanus, despite having been fully immunised. They should be managed as if they were incompletely immunised.

For those whose immunisation status is uncertain, and individuals born before 1961 who may not have been immunised in infancy, a full course of immunisation is likely to be required.

Td/IPV is the vaccine of choice for those **over 10 years** of age. For those **under 10 years** of age refer to 'The Green Book' (2006) at:

[http://www.dh.gov.uk/en/PublicHealth/HealthProtection/Immunisation/Greenbook/DH\\_4097254](http://www.dh.gov.uk/en/PublicHealth/HealthProtection/Immunisation/Greenbook/DH_4097254)

## **Antibiotics**

Prophylactic antibiotics are not routinely recommended for needlestick injuries, although each wound should be assessed individually. They may be indicated for extensive bite wounds.

Follow up of Recipient:

Initial baseline blood sample on first attendance (for storage)

If there is evidence of acute infection, refer for specialist management e.g. possible combination therapy for HCV.

### **Summary of post exposure testing for recipient**

Time after exposure*	Hepatitis B	Hepatitis C		HIV
		RNA Testing	Ab testing	Ag/Ab testing
Baseline		Storage		
6 weeks		✓		✓
12 weeks	✓	✓	✓	✓
24 weeks	✓		✓	(✓)

- if HIV PEP was taken, the follow up tests should be 12 weeks after cessation of PEP.

## **Recording the Incident**

The details of the incident should be recorded, and a suggested form is available in appendix D.

## **Appendix A:**

### **Additional background to aid risk assessment:**

#### ***Hepatitis B***

Nationally, it is estimated that 0.3% of those aged 15 to 44 have chronic hepatitis B (Gay et al 1999).

Chronic hepatitis B infection is associated with being born in Africa or Asia. Some migrant groups are at increased risk of chronic hepatitis B. In a study of the Liverpool Somali population, 5.7% were hepatitis B carriers, with the highest prevalence in adults aged 20 to 44 years (9.4%) (Aweis et al 2001). Migrants will have the risk associated with their country of origin, but younger persons may also have been immunised as a child as part of that country's childhood immunisation programme.

The carrier rate varies from 0.1 to 20% in different populations around the world (WHO 2002, Lavanchy 2004).

In sub-Saharan Africa, the Pacific, and particularly Asia, HBV infection is highly endemic, with the majority of individuals becoming infected during childhood.

Outside of the endemic areas, regions with high rates of chronic HBV infection include the southern parts of Eastern and Central Europe, the Amazon basin, the Middle East, and the Indian subcontinent. In western and northern European countries and North America, HBV infection is relatively uncommon and acquired primarily in adulthood (Lavanchy 2004).

#### ***HIV***

In 2007 the prevalence of HIV (both diagnosed and undiagnosed), was 127 per 100,000 population in the UK (170 per 100,000 men and 84 per 100,000 women) (HPA Cfl 2008).

Groups at increased risk include:

- men who have sex with men,
- those from countries with a high prevalence of HIV
- intravenous drug users.

In the North West in 2006, 0.09% of pregnant women were HIV positive on antenatal screening (varying between 0.14% for Cheshire and Merseyside and 0.02% for Cumbria and Lancashire) (HPA NW 2007).

#### ***Hepatitis C***

Among those aged 15 to 59 years in England and Wales, the prevalence of chronic hepatitis C is estimated at 0.53% (HPA Cfl 2006).

Risk is associated with intravenous drug use.

The HPA Commissioning template uses an estimate of prevalence among non IDUs aged 15-59 of 0.08% (Immunisation Department, Cfl, HPA 2007).

## Appendix B: Factors Modifying Risk

Hazard	Rationale
<i>Instrument</i>	Increased risk associated with large gauge, hollow bore needles
<i>Contaminant</i>	Contamination with urine, nasal secretions, saliva, sweat or tears if not visibly contaminated with blood are considered to represent a negligible risk of HIV, or hepatitis B or C transmission.
	Contamination with blood, semen, vaginal secretions, rectal secretions, breast milk or any body fluid that is visibly contaminated with blood represent a risk of HIV, hepatitis B and hepatitis C if the source is known to be infected.
	Larger volumes of blood are associated with greater risk
<i>Source</i>	Higher viral loads are associated with increased risk of infection
	The presence of e antigen is associated with increased risk of hepatitis B transmission
	For sources that are children of unknown status, the prevalence of blood borne viruses is generally low. Rates of hepatitis B are higher in children born in endemic countries or from communities with links to such countries
<i>Time</i>	Risk reduces as time since contamination increases. Hepatitis B is more resistant than the other 2 viruses
<i>Injury</i>	Deep percutaneous injuries are associated with increased risk.
	Hepatitis B is more transmissible. Transmission may occur with little or no injury
<i>Receptor</i>	Hepatitis B vaccination reduces the risk of acquiring HBV from an infected source.

Inoculation injuries from 'sharps' contaminated with soil are more likely to pose a tetanus risk.

## **Appendix C:**

### **Contact details of Laboratories:**

Manchester Medical Microbiology Partnership  
PO Box 209 Clinical Sciences Building  
Manchester Royal Infirmary  
Oxford Road  
Manchester M13 9WZ

Tel: 0161 276 8853 **in hours**

Tel: 0161 276 1234 **out of hours** – ask for Consultant Virologist on-call

Microbiology Laboratory  
University Hospital Aintree  
Longmoor Lane  
Liverpool L9 7AL

Tel: 0151 525 5980

## Appendix D: Suggested Form for recording incident

<b>SECTION A: Details of the Recipient</b>			
First Name:			
Surname:			
Date of Birth:			
Job title / Post:			
Home address:			
Home telephone number			
Mobile telephone number:			
GP:			
GP address and telephone number			
<b><i>Hepatitis B Status</i></b>			
Has recipient been immunized against Hepatitis B virus?	Yes	No	N/K
If Yes:			
Date of completion of course?			
Date of last vaccination booster?			
Was antibody blood test done?	Yes	No	
Result:	Immune/ Partially immune/ non responder		
<b>SECTION B: Details of Source</b>			
Is the source patient known?	Yes	No	
If Yes:			
First Name:			
Surname:			
Date of Birth:			
Address:			
Home telephone number:			
Mobile telephone number:			
GP:			
GP address and telephone number			

<b>SECTION C: Assessment of exposure risk</b>			
<b>1. Nature of the incident:</b>			
Date of incident:			
Time of incident:			
Place of incident:			
Name and contact details of witness:			
Nature of material:			
Significant:		Yes	No
Nature of injury:			
Significant:		Yes	No
Overall, is Exposure Significant?		Yes	No
<b>2. Assessment of source infectivity (tick appropriate section)</b>			
Virus type	Known Positive or known high risk	Known negative or known low risk	Unknown risk
Hepatitis B			
Hepatitis C			
HIV			

<b>SECTION D: Investigations checklist</b>	
	Done
Has first aid treatment been given?	
Blood taken from recipient, test requested for anti HBs and serum storage?	
Request for bloods to be taken from source patient (with informed consent) and tests requested as necessary?	

<b>SECTION E: Post exposure prophylaxis treatment record</b>	
Has HBIG been given?	Yes / No
Has hepatitis B vaccination been given?	Yes / No
Has PEP been offered?	Yes / No
Has PEP been accepted?	Yes / No
Has written consent been obtained?	Yes / No
Has PEP been given?	Yes / No
Time between exposure and receiving PEP:	
Drugs prescribed for PEP:	

**SECTION F: Details of follow-up arrangements**

*To include:*

*Follow up arrangements for receiving test results and continuing vaccinations;*

*Precautions advised during follow up period;*

*Any persons who have given advice and the advice given;*

*The action taken to prevent recurrence;*

*Compliance with medication prescribed;*

*Potential adverse effects of drugs;*

*Results of any follow-up testing.*

## Appendix E: Key Additional Resources

Atenstaedt R (2006). All Wales Inoculation Injury guidelines for Primary Care. NPHS Wales.

[http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/7c21215d6d0c613e80256f490030c05a/d47969ec4a9de0bf802573790053fce/\\$FILE/Innoculation%20Injury%20Guidelines.pdf](http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/7c21215d6d0c613e80256f490030c05a/d47969ec4a9de0bf802573790053fce/$FILE/Innoculation%20Injury%20Guidelines.pdf)

CDC (2005) Antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States: recommendations from the U.S. Department of Health and Human Services. *MMWR* 54(No. RR-2)

Department of Health (2008) HIV post-exposure prophylaxis: Guidance from the UK Chief Medical Officers' Expert Advisory Group on AIDS. London, DH. [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_088185](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_088185)

PHLS Hepatitis Subcommittee (1992). Exposure to hepatitis B virus: guidance on post-exposure prophylaxis. *CDR Review* 2(9):R97 <http://www.hpa.org.uk/cdr/archives/CDRreview/1992/cdr0992.pdf>

Ramsey ME (1999). Guidance on the investigation and management of occupational exposure to hepatitis C. *Communic Dis Pub Health*; 2(4).

Salisbury D, Ramsay M and Noakes K (eds) (2006) *Immunisation against Infectious Disease* (the Green Book). London, DH. <http://www.dh.gov.uk/en/PublicHealth/Healthprotection/Immunisation/Greenbook/index.htm>

Tudor-Williams G, Hamadache D, Foster C. Post-Exposure Prophylaxis (PEP) Guidelines for children exposed to blood-borne viruses. July 2009. CHIVA. Last accessed 16<sup>th</sup> November 2009. <http://www.chiva.org.uk/guidelines/2009/pdf/PEP-ref09.pdf>

UNAIDS (2007). AIDS epidemic update: December 2007. UNAIDS. [http://data.unaids.org/pub/EPISlides/2007/2007\\_epiupdate\\_en.pdf](http://data.unaids.org/pub/EPISlides/2007/2007_epiupdate_en.pdf)

UNAIDS/WHO/ UNICEF (2008) Epidemiological fact sheets on HIV and AIDS. UNAIDS <http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epifactsheets.asp>

WHO 2002 Global distribution of hepatitis A, B and C, 2001. *Weekly Epidemiological Record*, 6 [www.who.int/docstore/wer/pdf/2002/wer7706.pdf](http://www.who.int/docstore/wer/pdf/2002/wer7706.pdf)

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[http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/7c21215d6d0c613e80256f490030c05a/d47969ec4a9de0bf802573790053fce/\\$FILE/Innoculation%20Injury%20Guidelines.pdf](http://www2.nphs.wales.nhs.uk:8080/VaccinationsImmunisationProgsDocs.nsf/7c21215d6d0c613e80256f490030c05a/d47969ec4a9de0bf802573790053fce/$FILE/Innoculation%20Injury%20Guidelines.pdf)

Aweis D, Brabin BJ, Beeching NJ, Bunn JEG, Cooper C, Gardner K, Iriyagolle C, Hart CA (2001). Hepatitis B prevalence and risk factors for HbsAg carriage amongst Somali households in Liverpool. *Commun Dis Public Health*; 4(4):247-52

CDC (2005) Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis *MMWR* 54 (RR09);1-17  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm>

CDC (2005) Antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States: recommendations from the U.S. Department of Health and Human Services. *MMWR* 54(No. RR-2)

Department of Health (2008) HIV post-exposure prophylaxis: Guidance from the UK Chief Medical Officers' Expert Advisory Group on AIDS. London, DH.  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_088185](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_088185)

Fisher M, Benn P, Evans B, Pozniak A, Jones M, Maclean S, Davidson O, Summerside J, Hawkins D; Clinical Effectiveness Group (British Association for Sexual Health and HIV) (2006). UK Guideline for the use of post-exposure prophylaxis for HIV following sexual exposure. *Int J STD AIDS* 17(2):81-92.

Gay NJ, Hesketh LM, Osborne KP et al. (1999). The prevalence of hepatitis B infection in adults in England and Wales. *Epidemiology and Infection* 122:133-8.

Global Advisory Committee on Vaccine Safety 2008. Hepatitis B [Online] Last accessed 16<sup>th</sup> November 2009  
[http://www.who.int/vaccine\\_safety/topics/hepatitisb/en/index.html](http://www.who.int/vaccine_safety/topics/hepatitisb/en/index.html)

Greater Manchester Sexual Health Network, July 2009, Guidance for the use of HIV Post-Exposure Prophylaxis after Sexual Exposure (PEPSE) – Guidance for GPs.

Greater Manchester Sexual Health Network, July 2009, Guidance for the use of HIV Post-Exposure Prophylaxis after Sexual Exposure (PEPSE) – Guidance for Provider Organisations.

Health Protection Agency – Centre for Infections (2007) National Monitoring of Antenatal Infection Screening. Report on 2005 data [online] Last accessed 16<sup>th</sup> November 2009.

[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1203084356649](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1203084356649)

Health Protection Agency North West- Regional Epidemiology (October 2008). Antenatal Screening of Infectious Diseases in the North West: Annual Report 2007. HPA NW. [online] Last accessed 16<sup>th</sup> November 2009.

[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1216883814012](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1216883814012)

Immunisation Department, Cfl, HPA 2007 Commissioning template for estimating HCV prevalence by PCT and numbers eligible for treatment [Online] Last accessed 16<sup>th</sup> November 2009

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