Health Protection Surveillance Centre
Lárionad Faire um Chosaint Sláinte

emi TOOLKIT

www.emitoolkit.ie

Report of the Scientific Advisory Committee of the Health Protection Surveillance Centre

Dr Lelia Thornton

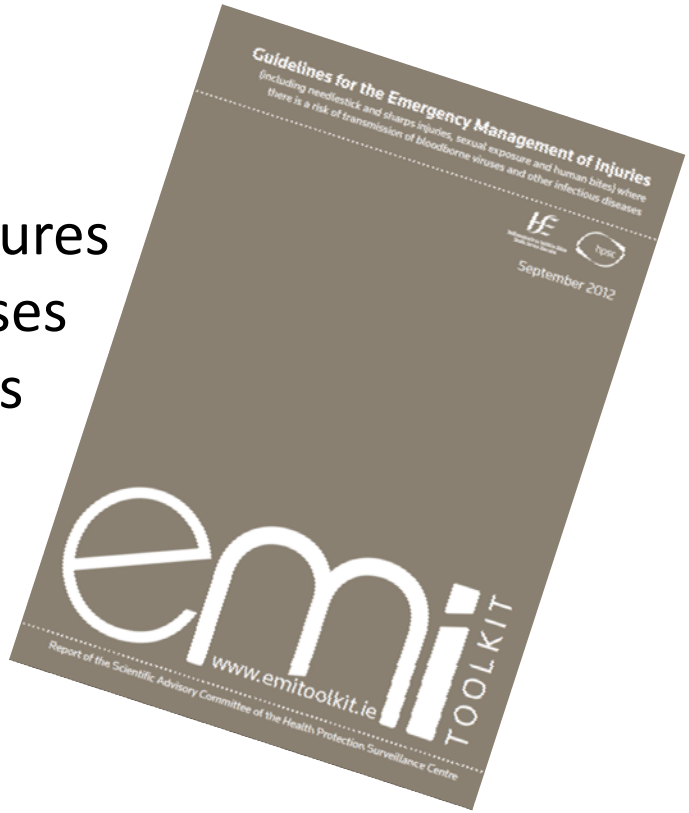
Health Protection Surveillance Centre

National PEP Conference 19 April 2013

Available at www.emitoolkit.ie

Standardised guidelines on the management of injuries

- such as needlesticks, bites, sexual exposures
- where there is a risk of bloodborne viruses
- that could be used in all relevant settings
- based on best available evidence and expert opinion



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Garda HIV infection 'as likely as asteroid strike'

Ray Managh

THE risk of a garda contracting diseases from infected drug addicts is as likely as being struck by an asteroid, a High Court judge was told in a test case to define the real risk in 'spit and bite' incidents.

Ms Justice Mary Irvine said the way to allay garda fears of catching Hepatitis or HIV infection was through education.

The State has paid out more than €30m in the past two years for psychological distress and other injuries suffered by gardai on duty.

Judge Irvine, in a judgment on three "fear of disease" test claims, said over-testing by doctors and the imposition of sex restrictions often caused unnecessary anxiety. The risk of being killed driving was much greater than the risk of contracting HIV or Hep C after an assault.

A search of medical literature produced only three cases where HIV had been transmitted by a bite.

Yesterday, she made awards in the three cases of €6,000, €7,000 and €15,000 respectively, saying the gardai had been maliciously assaulted. One had been spat upon and the other two bitten.

Justice Irvine, High Court, 2010

(in the matter of An Garda Síochána (Compensation) Acts 1941)

"there are a number of factors contributing to the increasing prevalence of fear of disease claims…..

(i) A lack of up-to date knowledge regarding the HIV and HCV viruses and their susceptibility to treatment;

(ii) An absence of a real understanding as to the circumstances in which blood testing and/or the imposition of restrictions on unprotected sexual relations are warranted following potential exposure; and

(iii) A grossly inflated view of the possible risk of transmission of these viruses"

EMI Guidelines Working Group

Public Health Medicine

Dr. Lelia Thornton(Chair)
Dr. Anthony Breslin
Dr. Coilin O'hAiseadha

Emergency Medicine

Dr. Tomás Breslin
Dr. Una Kennedy

Infectious Diseases

Dr. Susan Clarke
Dr. Jack Lambert

Infection Prevention & Control Nursing

Ms. Mary Clare Kennedy

Occupational Medicine

Dr. Deirdre Fitzgerald
Dr. Oghenovo Oghuvbu
Dr. Alex Reid

Dentistry

Dr. Tom Feeney

Administrative Secretary

Ms. Aoibheann O'Malley - HPSC

Clinical Microbiology

Dr. Brendan Crowley

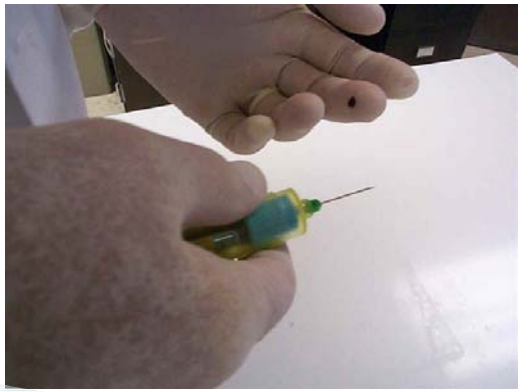
Existing protocols/guidelines in Ireland

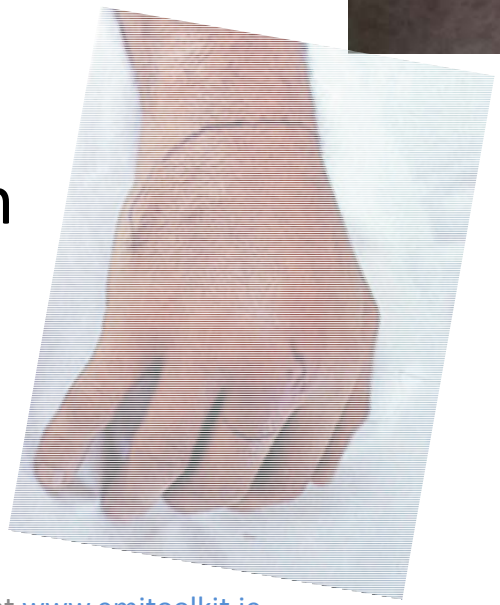
Differed in:

- **Scope and setting** - Occupational/non-occupational; type of injuries covered, which BBVs
- **Recommendations for recipient BBV testing**
  - which tests,
  - store or test baseline,
  - follow-up tests up to 3/12, 6/12, 12/12,
  - HCV testing at 2, 4, 6 weeks
- **Approach to testing source** – if incompetent or refuses
- **Information about quantifying risk**
- **Recommendations on post-exposure prophylaxis** (PEP) for HIV or hepatitis B

Type of injuries covered

- Needlestick or other sharps
- Sexual exposure
- Human bites
- Exposure of broken skin or mucous membranes





Presentation of guidelines

On-line version

Print version

On-line toolkit www.emitoolkit.ie

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Guidelines for the **Emergency Management of Injuries** (including needlestick and sharps injuries, sexual exposure and human bites) where there is a risk of transmission of bloodborne viruses and other infectious diseases

About EMI Guidelines

These guidelines are intended for use in emergency medical settings where a patient first presents with an injury (including needlestick or other sharps injury, sexual exposure, human bite, exposure of broken skin or of mucous membranes) where there is a risk of transmission of infection, in particular bloodborne viruses (BBV).

These guidelines are relevant to injuries occurring to members of the public in a community setting and also to injuries sustained occupationally (such as to healthcare workers (HCW) or members of the Garda).

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Feedback and suggestions

We welcome feedback from users on ways in which we can improve the guidelines and the toolkit. Please email info@hpsc.ie with your suggestions.

>> Quick guide (Flow chart)

- >> Needlestick injury
- >> Mucous membrane exposure
- >> Sexual exposure
- >> Human bite
- >> PEP and PEPSE
- >> Forms
- >> Blood testing
- >> Leaflets and letters
- >> Epidemiology of HBV/HCV/HIV
- >> Useful contacts

Full EMI Guidelines

Overview of EMI Guidelines

Appendices

Slide sets and articles

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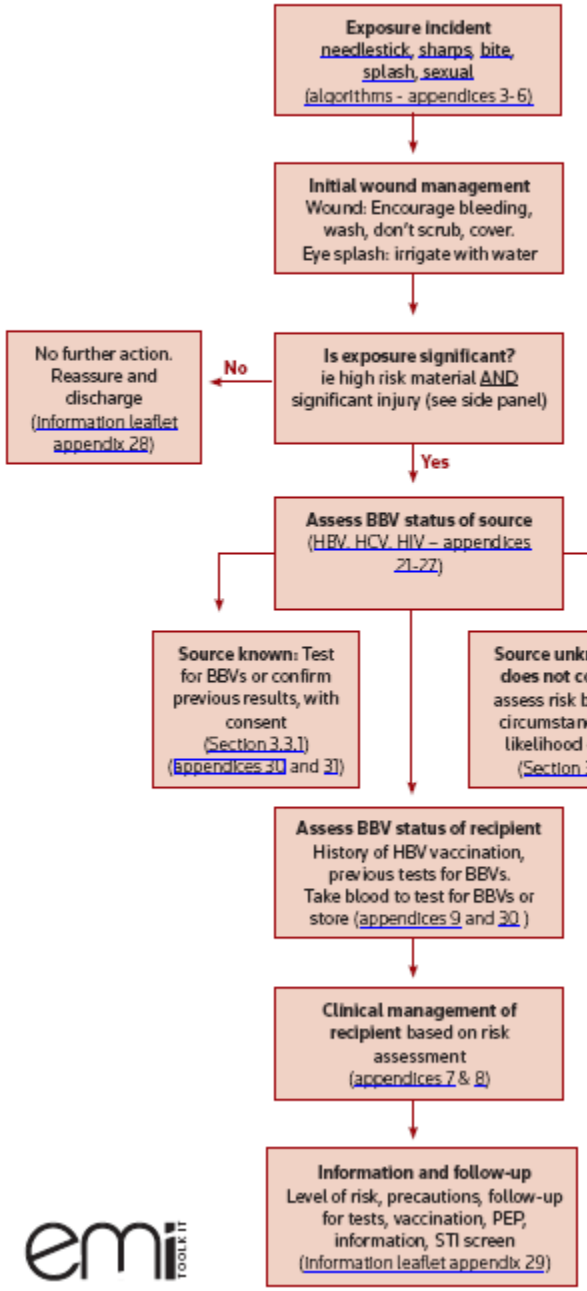

High risk materials: blood, semen, vaginal secretions, body fluids with visible blood

Low risk materials: urine, nasal secretions, saliva*, sputum, faeces, vomit, sweat, tears – unless visible blood

Significant injury: percutaneous, human bite* with skin broken, exposure of broken skin or mucous membrane to blood or body fluids, sexual exposure (unprotected)

*If human bite with no visible blood, only risk is HBV.

Non-significant injury: superficial graze, exposure of intact skin, exposure to sterile sharps

Source testing: HBsAg, anti-HCV, HIV Ag/Ab. If HBsAg positive, test HBeAg, anti-HBe and viral load. If anti-HCV positive, test HCV RNA and viral load. If HIV positive, test viral load

Recipient testing: HBsAg, anti-HBc, anti-HCV, HIV Ag/Ab, ±anti-HBs

Clinical management of recipient may include: HBV PEP (vaccine ± HBIG); HIV PEP; Emergency contraception; tetanus; antibiotics

Follow-up/referral may be: GP, Occupational Health, ID, SATU, STI/GUM

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Complete patient management form (appendix 1)

Wound management: encourage bleeding, wash

Was the exposure significant – i.e. skin breached and a high risk material? (Section 2.4)

NO

No risk of HBV/HCV/HIV transmission. Reassure. Give patient information leaflet (appendix 28) **and discharge letter** (appendix 36). **Advise GP/occupational health follow-up** (Section 2.4.7)

YES

Assess BBV risk of source (Section 3.3). **If source known, test for BBVs or confirm previous results (with consent). If source unknown or does not consent, assess risk based on circumstances and likelihood of BBV**

Assess BBV status of recipient (HBV vaccination, previous BBV tests, baseline bloods (Section 3.4 and appendix 9)**). Clinical management of recipient based on risk assessment** (Section 4)

HBV

See HBV PEP table (appendix 8)

HIV

HIV PEP is recommended if the source is **known HIV+ with a detectable viral load**, and the injury is within the past 72 hrs. If PEP indicated: see appendix 7, and follow checklist on patient management form appendix 1.

HIV PEP may also be ***considered*** where the following criteria are met:

- Source is unknown but from a high prevalence group or area (e.g. needle and syringe discarded in a location where IDUs are known to inject)(see appendices 7 & 19 for factors associated with increased risk)
- Injury within the past 72 hrs
- There is a high likelihood that the needle has been left there in the past couple of days

In such rare circumstances, and only if all the above criteria are met, should PEP be considered. In this situation, a two-drug PEP is more appropriate, i.e. Truvada alone.

If these criteria are not met, HIV PEP is NOT indicated.

If there is no information available about the likely source of the needle or how long it was there, PEP would not be routinely recommended, but could be discussed with the recipient & consider Truvada alone.

HCV

There is currently no PEP available for HCV, but if seroconversion occurs, early treatment is highly effective (appendix 14)

Information and Follow-up

Level of risk, precautions, follow-up for further testing (appendix 9), vaccination, PEP. Give information leaflets (appendices 29 & 32)

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BBV testing of recipient where a significant exposure has occurred		
Time of test	**Status of source**	
	1. BBV status unknown OR 2. Negative but high-risk OR 3. Positive for HBV, HCV or HIV	**Negative for HBV, HCV and HIV AND not high-risk**
Baseline*	HBsAg† Anti-HBc Anti-HCV HIV Ag/Ab	Testing of recipient not required
6 weeks	HBsAg† Anti-HCV HCV Ag or RNA HIV Ag/Ab	
3 months	HBsAg† Anti-HCV HCV Ag or RNA HIV Ag/Ab‡	

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Hepatitis B post-exposure prophylaxis

Hepatitis B vaccine is highly effective in preventing acute infection after exposure if given within 7 days and preferably within 48 hours.
Hepatitis B immunoglobulin (HBIG) is only indicated where the source is known HBsAg positive, or where the recipient is a known non-responder to HBV vaccine and the source is known to be high risk. HBIG should ideally be given within 48 hours but not later than 7 days after exposure.

Exposure type	**1. Needlestick injury** **2. Bite with breach of skin** **3. Sexual exposure** **4. Mucosal exposure to blood or body fluids containing blood**				
Recipient vaccination status	**Recipient unvaccinated against HBV**	**Recipient not fully vaccinated against HBV (<3 doses)**	**Recipient fully vaccinated against HBV but anti-HBs unknown[4]**	**Recipient documented non-responder to HBV vaccine**	**Recipient known responder to HBV vaccine, ie anti-HBs≥10 mIU/ml**
Source known to be HBsAg positive	Give HBIG[1] Start accelerated[2] HBV vaccine course Recommend vaccination be completed	Give HBV vaccine dose. **Test recipient** anti-HBs urgently Consider HBIG[1] if <10 mIU/ml (Urgent consult to ID/GUM specialist) Recommend vaccination be completed	Give HBV vaccine dose. **Test recipient** anti-HBs urgently Consider HBIG[1] if <10 mIU/ml (Urgent consult to ID/GUM specialist)	Give HBIG[1] plus HBV vaccine dose Urgent ID/GUM referral for alternative vaccination strategy	No need for further vaccine dose
Source HBV status unknown but potential high risk, ie from country of high or intermediate prevalence[3]	**Make every effort to test source** Start accelerated[2] HBV vaccine course Recommend vaccination be completed	**Make every effort to test source** Give HBV vaccine dose Recommend vaccination be completed	**Make every effort to test source** Give HBV vaccine dose	**Make every effort to test source** Give HBV vaccine dose Consider HBIG[1] (Urgent consult to ID/GUM specialist) Urgent ID/GUM referral for alternative vaccination strategy	No need for further vaccine dose
Source HBV status unknown - no high risk features, ie normal population risk[5]	Start accelerated[2] HBV vaccine course Recommend vaccination be completed	Give HBV vaccine dose Recommend vaccination be completed	Give HBV vaccine dose	**Make every effort to test source** Give HBV vaccine dose Urgent ID/GUM referral for alternative vaccination strategy	No need for further vaccine dose
Source HBsAg negative	Routine (opportunistic) HBV vaccination course	Routine (opportunistic) HBV vaccination course	No need for further vaccine dose	Routine ID/GUM referral for alternative vaccination strategy	No need for further vaccine dose

[1]For bite with no visible blood, risk assess or seek urgent ID specialist advice re giving HBIG

[2]An accelerated vaccine course consists of doses at 0, 1 and 2 months. A booster dose is given at 12 months to those at continuing risk. The standard course is 0, 1 and 6 months.

[3]Africa, Asia, Central and South America, Central and Eastern Europe. Refer to CDC map: http://wwwnc.cdc.gov/travel/yellowbook/2012/chapter-3-infectious-diseases-related-to-travel/hepatitis-b.htm or appendices 21 & 22

[4] If the recipient was fully vaccinated as an infant, no further testing or booster dose of HBV vaccine is required. Universal infant HBV vaccination commenced in Ireland in September 2008.

[5] Injecting drug users in Ireland have only a 2% risk of being HBsAg positive and are thus not considered to be high risk. The prevalence in the general population is ≤0.1%

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Management of BBV risk following sexual exposure

Complete BBV patient management form (appendix 1)

Consider need for emergency contraception (appendix 16) / SATU referral (appendix 37)/risk of other STIs

Was the exposure significant? (ie exposure to blood/semen/vaginal secretions)

NO

No risk of HBV/HCV/HIV transmission. Reassure. No further follow-up required. Give patient info leaflet (appendix 28) and discharge to GP (appendix 36)

YES

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See HBV PEP table (appendix 8)

HIV - PEP

Table adapted from BASHH 2011

Do not give/consider PEP if more than 72 hours since the exposure

EXPOSURE TYPE	HIV positive viral load detectable	HIV positive viral load undetectable	Unknown from high prevalence group/area	Unknown from low prevalence group/area
RECEPTIVE ANAL SEX	RECOMMEND	RECOMMEND	RECOMMEND	NOT RECOMMENDED
INSERTIVE ANAL SEX	RECOMMEND	NOT RECOMMENDED	CONSIDER*	NOT RECOMMENDED
RECEPTIVE VAGINAL SEX	RECOMMEND	NOT RECOMMENDED	CONSIDER*	NOT RECOMMENDED
INSERTIVE VAGINAL SEX	RECOMMEND	NOT RECOMMENDED	CONSIDER*	NOT RECOMMENDED
FELLATIO WITH EJACULATION	CONSIDER*	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED
FELLATIO WITHOUT EJACULATION	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED
SPLASH OF SEMEN INTO EYE	CONSIDER*	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED
CUNNILINGUS	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED	NOT RECOMMENDED

*Discuss with ID/HIV specialist

Follow appendix 7 for details on HIV PEP and use the management checklist in the patient management form (appendix 1). Outside of these recommendations, HIV PEP should not be prescribed without discussion with an ID/HIV specialist, where it may be considered in rare extreme cases.

HCV

There is currently no PEP available for HCV, but if seroconversion occurs, early treatment is highly effective (appendix 14)

Information and Follow-up

Advise patient to attend GUM/ID clinic in approx 2/52 for STI screen and further follow-up. Safe sex advised until after the window period. Give information leaflets (appendices 29 & 34)

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HIV POST-EXPOSURE PROPHYLAXIS (PEP)

Key points

1. Only consider PEP if within 72 hours of exposure
2. Assess risk based on type of exposure and what is known about source (consider risk of HBV and HCV also – see relevant appendices)
3. Test source if feasible
4. Discuss with senior doctor in emergency medicine or infectious diseases if unsure how to proceed
5. If PEP indicated:
   a. Counsel
   b. Test blood and urine
   c. Prescribe starter pack
   d. Arrange ID clinic appointment before starter pack runs out
   e. Advise no unprotected sex for 3 months
6. Complete the patient management form (appendix 1) – it will serve as a checklist

Introduction

The use of post-exposure prophylaxis (PEP) against HIV infection dates back to the early 1990s, when only limited antiviral treatment for chronic infection was available. Prophylaxis was primarily used after occupational exposures.[1] A case–control study published in 1997 showed that health care workers who received zidovudine after needlestick exposures were 81% less likely to undergo seroconversion to positivity for HIV.[2] Generally, combination therapies are prescribed nowadays, so current HIV PEP may be more effective. However, PEP is not a guarantee of protection.

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>> Leaflets and letters

>> Epidemiology of HBV/HCV/HIV

>> Useful contacts

Full EMI Guidelines

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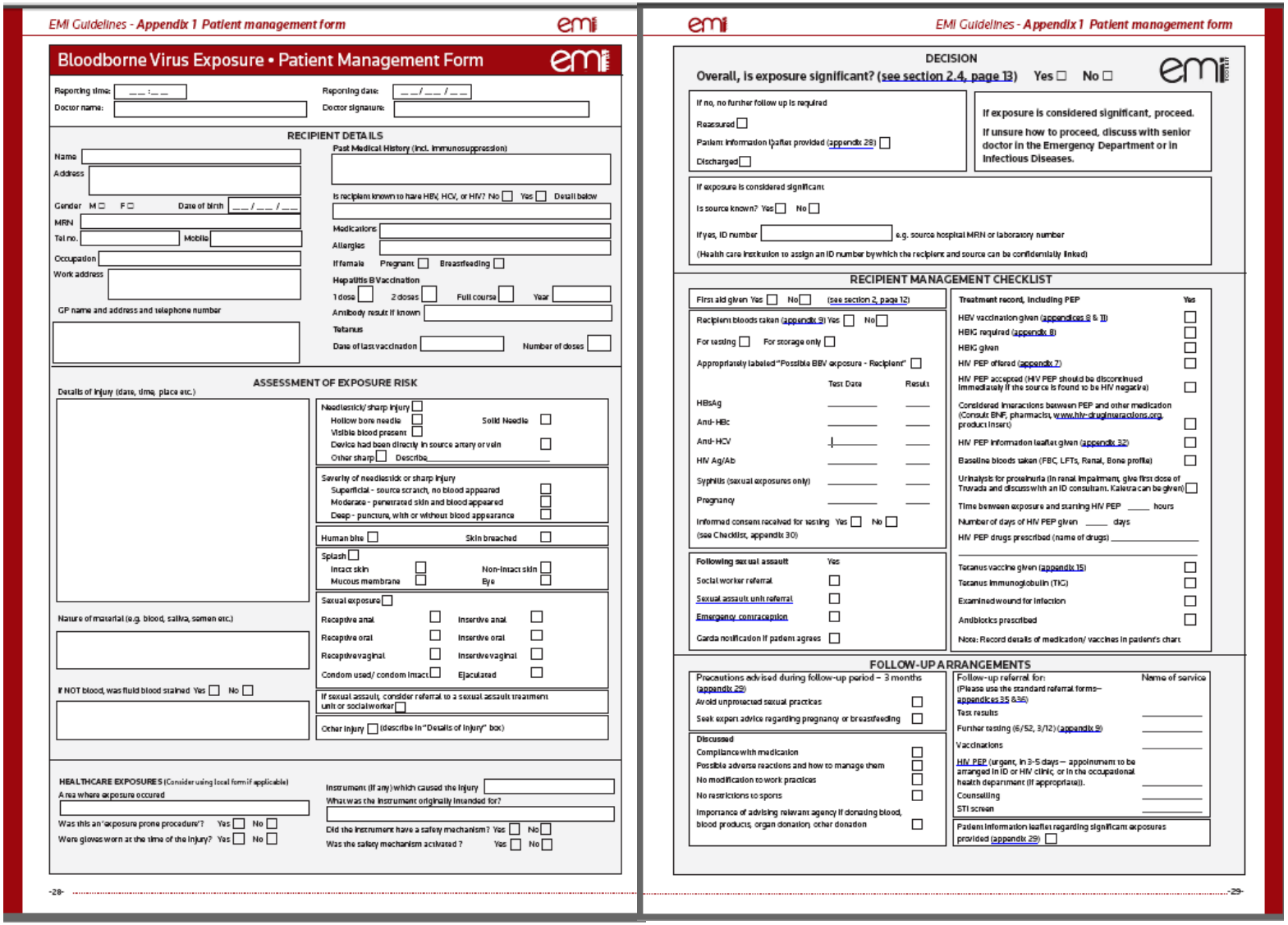
Patient Management Form



EMI Guidelines - Appendix 1 Patient management form

Bloodborne Virus Exposure • Patient Management Form

Reporting time: __:__ Reporting date: __/__/__

Doctor name: Doctor signature:

RECIPIENT DETAILS

Name:

Address:

Gender M☐ F☐ Date of birth: __/__/__

MRN:

Tel no.: Mobile:

Occupation:

Work address:

GP name and address and telephone number:

Past Medical History (incl. immunosuppression):

Is recipient known to have HBV, HCV, or HIV? No☐ Yes☐ Detail below:

Medications:

Allergies:

If female Pregnant☐ Breastfeeding☐

Hepatitis B Vaccination

1 dose☐ 2 doses☐ Full course☐ Year:

Antibody result if known:

Tetanus

Date of last vaccination: Number of doses:

ASSESSMENT OF EXPOSURE RISK

Details of injury (date, time, place etc.)

Nature of material (e.g. blood, saliva, semen etc.)

If NOT blood, was fluid blood stained Yes☐ No☐

Needlestick/ sharp injury☐

Hollow bore needle☐ Solid Needle☐

Visible blood present☐

Device had been directly in source artery or vein☐

Other sharp☐ Describe:

Severity of needlestick or sharp injury

Superficial - source scratch, no blood appeared☐

Moderate - penetrated skin and blood appeared☐

Deep - puncture, with or without blood appearance☐

Human bite☐ Skin breached☐

Splash☐

Intact skin☐ Non-intact skin☐

Mucous membrane☐ Eye☐

Sexual exposure☐

Receptive anal	☐	Inserstive anal	☐
Receptive oral	☐	Inserstive oral	☐
Receptive vaginal	☐	Inserstive vaginal	☐
Condom used/ condom intact	☐	Ejaculated	☐

If sexual assault, consider referral to a sexual assault treatment unit or social worker☐

Other injury☐ (describe in "Details of injury" box)

HEALTHCARE EXPOSURES (Consider using local form if applicable)

Area where exposure occured:

Was this an "exposure prone procedure"? Yes☐ No☐

Were gloves worn at the time of the injury? Yes☐ No☐

Instrument (if any) which caused the injury:

What was the instrument originally intended for?

Did the instrument have a safety mechanism? Yes☐ No☐

Was the safety mechanism activated ? Yes☐ No☐

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EMI Guidelines - Appendix 1 Patient management form

DECISION

Overall, is exposure significant? (see section 2.4, page 13) Yes☐ No☐

If no, no further follow up is required

Reassured☐

Patient information leaflet provided (appendix 28)☐

Discharged☐

If exposure is considered significant, proceed.

If unsure how to proceed, discuss with senior doctor in the Emergency Department or in Infectious Diseases.

If exposure is considered significant

Is source known? Yes☐ No☐

If yes, ID number: e.g. source hospital MRN or laboratory number

(Health care institution to assign an ID number by which the recipient and source can be confidentially linked)

RECIPIENT MANAGEMENT CHECKLIST

First aid given Yes☐ No☐ (see section 2, page 12)

Recipient bloods taken (appendix 9) Yes☐ No☐

For testing☐ For storage only☐

Appropriately labeled "Possible BBV exposure - Recipient"☐

	Test Date	Result
HBsAg		
Anti-HBc		
Anti-HCV		
HIV Ag/Ab		
Syphilis (sexual exposures only)		
Pregnancy		

Informed consent received for testing Yes☐ No☐ (see Checklist, appendix 30)

Following sexual assault Yes

Social worker referral☐

Sexual assault unit referral☐

Emergency contraception☐

Garda notification if patient agrees☐

Treatment record, including PEP	Yes
HBV vaccination given (appendices 8 & 11)	☐
HBIG required (appendix 8)	☐
HBIG given	☐
HIV PEP offered (appendix 7)	☐
HIV PEP accepted (HIV PEP should be discontinued immediately if the source is found to be HIV negative)	☐
Considered interactions between PEP and other medication (Consult BNF, pharmacist, www.hiv-druginteractions.org, product insert)	☐
HIV PEP information leaflet given (appendix 32)	☐
Baseline bloods taken (FBC, LFTs, Renal, Bone profile)	☐
Urinalysis for proteinuria (In renal impairment, give first dose of Truvada and discuss with an ID consultant. Kaletra can be given)	☐
Time between exposure and starting HIV PEP ____ hours	
Number of days of HIV PEP given ____ days	
HIV PEP drugs prescribed (name of drugs) ____	
Tetanus vaccine given (appendix 15)	☐
Tetanus immunoglobulin (TIG)	☐
Examined wound for infection	☐
Antibiotics prescribed	☐
Note: Record details of medication/ vaccines in patient's chart	

FOLLOW-UP ARRANGEMENTS

Precautions advised during follow-up period – 3 months (appendix 29)

Avoid unprotected sexual practices☐

Seek expert advice regarding pregnancy or breastfeeding☐

Discussed

Compliance with medication☐

Possible adverse reactions and how to manage them☐

No modification to work practices☐

No restrictions to sports☐

Importance of advising relevant agency if donating blood, blood products, organ donation, other donation☐

Follow-up referral for: (Please use the standard referral forms– appendices 35 &36)	Name of service
Test results	
Further testing (6/52, 3/12) (appendix 9)	
Vaccinations	
HIV PEP (urgent, in 3-5 days – appointment to be arranged in ID or HIV clinic, or in the occupational health department (if appropriate)).	
Counselling	
STI screen	

Patient information leaflet regarding significant exposures provided (appendix 29)☐

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emiTOOLKIT

Guidelines for the **Emergency Management of Injuries** (including needlestick and sharps injuries, sexual exposure and human bites) where there is a risk of transmission of bloodborne viruses and other infectious diseases

About EMI Guidelines

These guidelines are intended for use in emergency medical settings where a patient first presents with an injury (including needlestick or other sharps injury, sexual exposure, human bite, exposure of broken skin or of mucous membranes) where there is a risk of transmission of infection, in particular bloodborne viruses (BBV).

These guidelines are relevant to injuries occurring to members of the public in a community setting and also to injuries sustained occupationally (such as to healthcare workers (HCW) or members of the Garda).

The terms "recipient" and "source" will be used throughout these guidelines:
Recipient: the person who sustains the injury.
Source: The source of the potentially infected material, eg the person on whom the sharp was used, the person who bites, or the source of the blood or body fluid.

The BBVs considered in these guidelines are hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV).

Feedback and suggestions

We welcome feedback from users on ways in which we can improve the guidelines and the toolkit. Please email info@hpsc.ie with your suggestions.

>> Quick guide (Flow chart)

- >> Needlestick injury
- >> Mucous membrane exposure
- >> Sexual exposure
- >> Human bite
- >> PEP and PEPSE
- >> Forms
- >> Blood testing
- >> Leaflets and letters
- >> Epidemiology of HBV/HCV/HIV
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Hepatitis B virus: epidemiology and transmission risks

Hepatitis B virus (HBV) infection is a serious and common infectious disease of the liver, affecting millions of people throughout the world. The incubation period for HBV is 45-180 days, most commonly 60-90 days.[1]

Clinical information

Acute infection is clinically recognised in only a small proportion of cases; less that 10% of children and 30-50% of adults show icteric disease. In those with clinical illness, the onset is usually insidious, with anorexia, vague abdominal discomfort, nausea and vomiting, sometimes arthralgia and rash, often progressing to jaundice. Following acute HBV infection, the risk of developing chronic infection varies inversely with age. Chronic HBV infection occurs among about 90% of infants infected at birth, 25-50% of children infected at 1-5 years of age and about 1-10% of persons infected as older children and adults. An estimated 15-25% of persons with chronic HBV infection will die prematurely of either cirrhosis or hepatocellular carcinoma.[1]

Vaccination

HBV can be effectively prevented by vaccination. A safe and effective vaccine has been available since the 1980s. The complete vaccine series induces protective antibody levels in more than 95% of infants, children and young adults. After age 40, protection following the primary vaccination series drops below 90%. Protection lasts at least 20 years and should be lifelong.[2] Since 2008, hepatitis B vaccine has been included in the childhood immunisation programme in Ireland, alongside the targeted immunisation programme for those individuals who are at increased risk of HBV because of their occupation, lifestyle or other factors. These include healthcare workers (HCW), prison and security personnel, contacts of cases, injecting drug users, people with certain medical conditions, clients in learning disability centres, people with multiple sexual partners, men who have sex

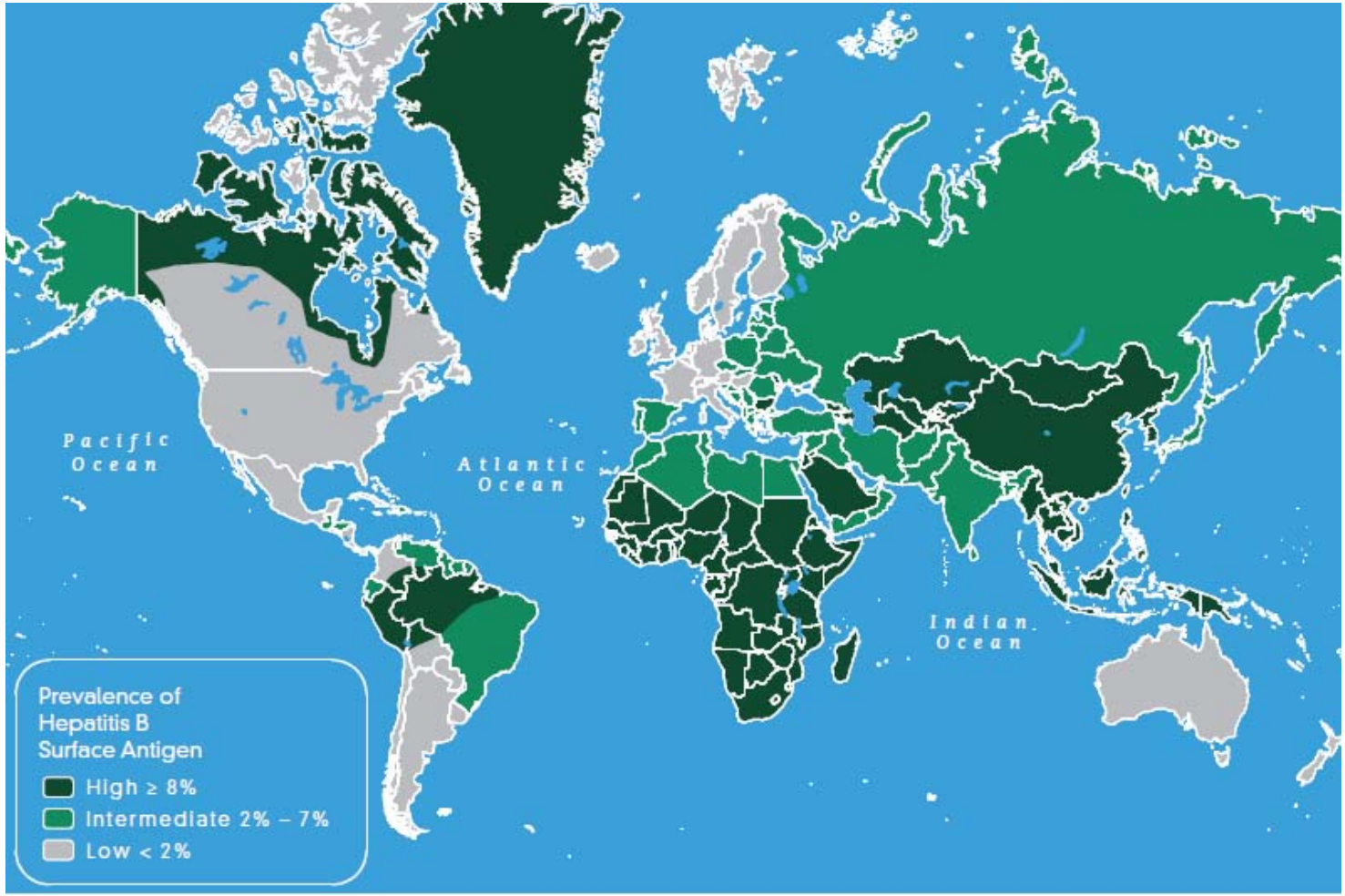
HIV transmission risk by exposure type

Exposure		Risk per exposure (unless otherwise stated)
Needlestick	Healthcare setting, source patient (serology) known	0.1-0.36%.[131-133] Increased risk if large gauge needle, hollow needle, deep injury, visible blood on the device, needle was in patient's artery/vein, or if the source patient has AIDS (or terminal illness). Post-exposure prophylaxis reduces transmission by 81%[132]
	Healthcare setting, source patient unknown, or unable to test source	Risk assessment required
	Community needlestick	Low risk. Risk assessment required. For instance, the risk per intravenous drug injection ranges from 0.63-2.4% [134], but the risk from a community needlestick injury with an unknown source is estimated to be 0.003-0.05% (if local IDU seropositivity is approximately 1%).[48] Note: HIV prevalence in IDUs in Ireland is higher - see epidemiology section
Mucous membrane exposure to blood		0.09% [131]
Intact skin exposure to blood		No risk[133]
Human bite		Very low risk.[138] Risk assessment required. Only risk if blood in the mouth of the biter, and significant injury. No risk if no blood in mouth of biter, and exposure to saliva only. Case report suggests that if source co-infected with HCV, HCV transmission more likely than HIV transmission.[104]
Sexual exposure	Heterosexual exposure (general)	If source on antiretroviral agents - transmission rate = 0 (if viral load < 400 copies/ml)[152] If source not on anti-retroviral agents, estimated transmission rate 0.0007/coital act (95% CI 0.0006-0.011).[145] Increased risk if source patient has recently seroconverted[148], eg within 2.5 months of seroconversion risk of transmission is estimated to be 0.0082/coital act (95% CI 0.0039-0.015).[145] Increased risk if STI.[159]
	Receptive vaginal intercourse	0.1-0.2% per episode.[149] Increased risk if cervical ectopy, presence of intrauterine device, genital tract trauma [160], menstruation [149], GUD (in either partner), infectious syphilis, pregnancy.[148]
	Insertive vaginal intercourse	0.01-0.14% per episode.[148, 149] Increased risk if GUD (in either partner), infectious syphilis[148], menstruation.[149] Lack of male circumcision increases risk of HIV transmission to HIV negative male.[148]
	MSM unprotected receptive anal intercourse	0.1-3% per episode.[149] Increased risk if ejaculation within the rectum.[148, 153]
	MSM unprotected insertive anal intercourse	0.06 (154)- 0.62%.[153] Increased risk if uncircumcised.[153]
	Orogenital contact	Very low risk.[155] Insertive oral sex 0% risk per act[148], and receptive oral sex- 0-0.04% risk of transmission per act[154]

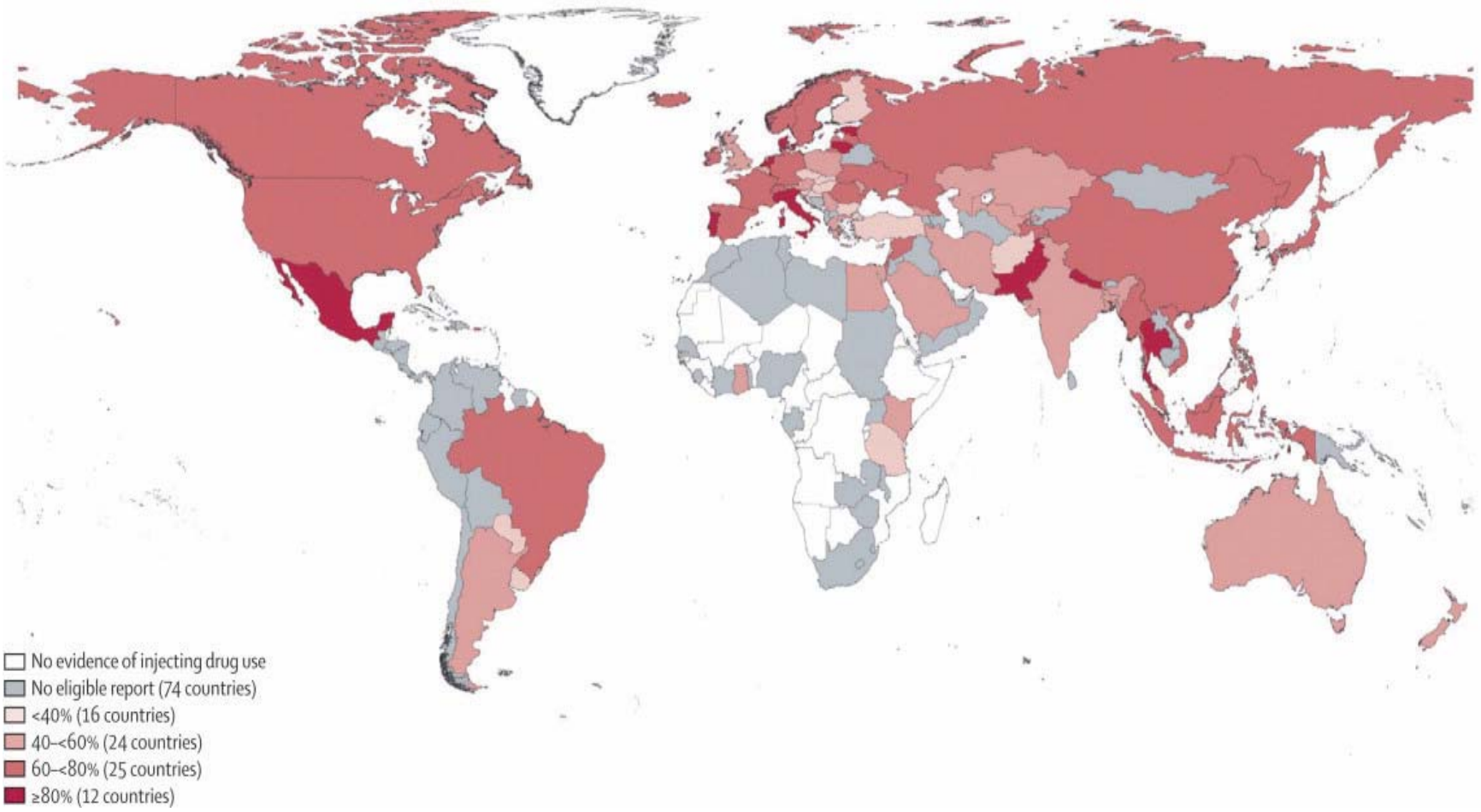
Remember
- There are only 5 reported cases of confirmed HIV transmission from a patient to a healthcare worker in the UK[161]
  - There have been no such transmissions reported since 1999, in the UK
  - Worldwide, there have been only 106 confirmed cases of HIV transmission from a patient to a healthcare worker
    - In 24 of these cases, HIV seroconversion occurred despite use of PEP. In 83% of these, PEP was commenced within 2 hours.

Risk assessment
- Type/ details of injury – as above
- Source status – increased risk with high viral load, recent seroconversion, immunocompromised
- Recipient status –increased risk if immunocompromised, genital tract trauma[140], menstruation[140],
- For unknown source, consider where injury occurred – community setting versus hospital setting
  - If in hospital – possible patients in area/ ward
  - If in community, consider prevalence of HIV and of IDU in local population

Prevalence of hepatitis B worldwide



Prevalence of anti-hepatitis C among injecting drug users worldwide



Hepatitis B post-exposure prophylaxis

- Hepatitis B vaccine is highly effective in preventing infection after exposure if given within 7 days and preferably within 48 hours
- Hepatitis B immunoglobulin (HBIG) is only indicated where the source is known HBsAg positive, or where the recipient is a known non-responder to HBV vaccine and the source is known to be high risk
- HBIG should ideally be given within 48 hours but not later than 7 days after exposure
- If recipient is a documented responder to vaccine (anti-HBs ≥10 mIU/ml) – no need for test or vaccine

Hepatitis C exposure

- No recommended post-exposure prophylaxis for HCV
- Treatment of early infection shown to be successful
- Monitor for evidence of HCV infection
  - Anti-HCV AND Ag or RNA
  - @ 6weeks and 3 months
- If Ag or RNA positive, immediate referral to specialist

HIV post-exposure prophylaxis

- Only if within 72 hours of significant exposure
- Only if known HIV positive or suspected high-risk source
- If source unknown
  - careful risk assessment
  - PEP unlikely to be justified in majority of these
- If PEP indicated, ideally should be started within 1 hour of exposure – 3-5 day starter pack
- Urgent referral to ID/HIV/Occ. Health Specialist
- Duration of PEP is 28 days
- Discontinue immediately if source tests negative

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