

GUIDELINES FOR MANAGEMENT OF OCCUPATIONAL AND NON-OCCUPATIONAL EXPOSURES TO BLOOD AND BODY FLUIDS

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1. Background

These guidelines replace the following Queensland Health documents:

Guidelines for Management of Needlestick Injury and Blood and Body Fluid Exposure 1997
Guidelines for the Management of Non-Occupational Exposure to HIV and HBV June 2000
Guideline for Hepatitis B Immunisation (health care workers) 2001 (Appendix P2)

These guidelines have been developed to outline the minimum recommended procedures for the immediate assessment, management and follow-up of exposure to blood borne viruses (BBV), human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV), and the recommendations for initiation of post exposure prophylaxis (PEP) for HIV and HBV.

This document highlights the management of both occupational and non-occupational exposures to blood or body fluid and includes guidelines for:

- Immediate management of the exposed person
- Risk assessment for transmission of BBV through exposure - considering the nature of the exposure, the disease status of the source and the disease/immune status of the exposed person
- Recommendations for HIV PEP
- Recommendations for HBV PEP
- Recommendations for follow-up testing of the exposed person

Each Health Service District (HSD) and facility should develop processes to address their specific needs whilst still achieving consistency with the principles outlined in this document and by referring to the other policies/guidelines named herein.

These guidelines highlight the:

- Immediate management of the exposed person
- Risk assessment - considering the nature of the exposure, the status of the source, the status of the exposed person and the evidence for offering PEP
- Recommendations for HIV PEP
- Recommendations for HBV PEP
- Recommendations for follow-up testing of the exposed person

In addition there are a number of points which underpin this document:

1. The most effective means of preventing HIV, HBV and HCV infection continue to be those methods that protect against exposure.

OCCUPATIONAL:

Adherence to infection control practices including standard precautions remains the first line of protection for health care workers against occupational exposure to blood borne viruses.

NON-OCCUPATIONAL:

Preventative behaviours such as sexual abstinence or adherence to safe sex practices (including consistent and correct condom use), and abstinence from injecting drug use or adherence to safe injecting practices (including consistent use of sterile injecting equipment and safe disposal).

2. With the implementation of the Queensland Health Infection Control Guidelines and relevant policies contained therein, health care facilities and in particular public hospitals should have in place an emergency system for the management of occupational and non-occupational exposures to blood borne pathogens. The system should identify a local contact and a specialist in infectious diseases as a resource person for that institution (Attachment 1 includes contact details for the Expert Information Network). This system and contact numbers should be prominently displayed.
3. The District Manager or the relevant head of an institution or practice, must appoint a designated officer/medical officer as point of contact to be responsible for sharps injury/exposure to blood and body fluids at each health care facility.

4. The immediate management including risk assessment and consideration of PEP should be regarded as a medical emergency in terms of timeliness and resource allocation. PEP is most effective if administered preferably within 1-2 hours and certainly within 72 hours of exposureⁱⁱⁱ.
5. Knowledge regarding HIV and HBV PEP is well established. Therefore, in addition to the guidelines included in this document, the advice of an appropriate medical specialist must be sought prior to commencement of treatment. (Attachment 1 includes contact details for the Expert Information Network).
6. Health care facilities must have in place procedures for ongoing monitoring of, and strategies which aim to reduce needlestick, other sharps injuries and exposures among health care workers.
7. These guidelines should be read in conjunction with:
 - *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers*
 - *Queensland Health Policy for Immunisation of Health Care Workers*
 - *Queensland Health Policy for Hepatitis B Immunisation*
 - *Queensland Health Infection Control Guidelines*
 - *Queensland Hospitals Non-Inpatient Dispensed Drug Price Catalogue*
 - *Response to Sexual Assault. Interagency guidelines for responding to adult victims of sexual assault 2001*, Strategic Policy Branch, Queensland Health.

2. Responsibilities

HSDs and clinics must ensure the following:

- Ensure that health care facilities in the district have in place an emergency system for the management of occupational and non-occupational exposures to blood borne pathogens.
- The District Manager or the relevant head of an institution or practice must appoint a designated officer as point of contact to be responsible for sharps injury/exposure to blood and body fluids at each health care facility.
- The system should identify a specialist in infectious diseases as a resource person for that institution. (Attachment 1 includes contact details for the Expert Information Network).
- Ensure that advice is available 24 hours a day from HSDs and processes are in place to facilitate ready access to appropriate treatment.
- In relation to HIV PEP, it is recommended that Starter Packs containing the designated antiretroviral drugs as outlined in Section 5.3.1 be available at all emergency departments and also with authorised prescribers – see Attachment 6. Prescribers will need to organise packs by contacting the relevant pharmacy.
- Confidentiality is maintained, not only of the source individual (if known), but also regarding the current exposure or injury, in accordance with Section 62 *Health Services Act 1991*.
- On orientation, healthcare workers and contractors in healthcare facilities should be provided with information detailing emergency contact numbers in case of an occupational/exposure/injury. This information should be of the type that is easily accessible by healthcare workers at all time, replaced and updated as necessary.

Responsibility of the employer to all employees and members of the public is to:

- ensure the workplace is safe;
- provide adequate facilities and safe systems of work with strategies implemented to decrease the risk of exposure to blood or body fluid in the workplace;
- provide personal protective equipment when control of hazards is not practicable by other means;
- provide information, instruction, training and supervision so work can be performed safely;
- provide a system to ensure an incident is recorded confidentially; and
- ensure data from blood and body fluid exposures are monitored and information used as the basis of change of practice where problems are identified.

Responsibility of the employee is to

- follow the safe systems of work;
- follow advice as given by the employer;
- use protective equipment supplied; and
- report all injuries, exposures/dangerous incidents

3. Immediate Care of the Exposed Person

After exposure to blood or other body fluids the person should as soon as possible do the following:

OCCUPATIONAL AND NON-OCCUPATIONAL

- Gently encourage bleeding if the exposure involves a cut or puncture, then wash the area with soap and water.
- Wash with soap and water where the exposure does not involve a cut or puncture
- If eyes are contaminated then rinse open eyes while they are open, gently but thoroughly (for at least 30 seconds) with water or normal saline.
- If blood or other body fluids get in the mouth, spit fluid out and then rinse the mouth with water several times.
- If clothing is contaminated, remove clothing and shower if necessary.
- Inform an appropriate person to ensure that necessary further action is undertaken.

Where water is not available, use of a non-water cleanser or antiseptic should replace the use of soap and water for washing cuts or punctures of the skin or intact skin. The application of caustic agents (e.g. bleach) to wounds or skin sites is not recommended.

If an individual has sustained wounds or abrasions, their tetanus vaccination status should be assessedⁱ.

For human bites, clinical evaluation must include the possibility that both the person bitten and the person who inflicted the bite were exposed to blood borne pathogens. Transmission of HIV infection by this route has been reported rarely, but not after an occupational exposureⁱⁱⁱ.

Reporting

Inform an appropriate person soon after the exposure so assessment and follow-up can be undertaken in a timely manner.

NON-OCCUPATIONAL

- Vaginal or rectal douching should be discouraged following unprotected anal or vaginal intercourse, including condom breakage.
- For sexual assault refer to Section 4 within the Interagency Guidelines for Responding to Adult Victims of Sexual Assault (<http://www.health.qld.gov.au/violence/sexual/16005.pdf>)^{ix}

4. Risk Assessment

This includes assessment of the significance of the exposure, the status of the source individual and the status of the exposed person with respect to blood borne pathogens, as well as sexually transmissible pathogens, where relevant. **All this information must be documented appropriately.**

The risk of transmission following exposure to a HIV infected person is detailed in Table 2. It is important to note that studies of the risk of transmission have employed different methodologies and are difficult to compare, but all include estimates of risk which are of the same order of magnitude.

OCCUPATIONAL

Risk assessment in an occupational setting is conducted on the basis of the type of exposure and the amount of infectious material involved. The following information is intended to be a guide for follow-up requirements based on risk:

Risk stratification of the occupational exposure

Massive	<ul style="list-style-type: none">• transfusion of blood• infection of blood/body fluid more than 1ml• parenteral exposure to laboratory specimens containing high titre of virus
Definite	<ul style="list-style-type: none">• intramuscular penetrating injury with <i>contaminated</i> needle• injection of blood/body fluid less than 1ml (<i>contaminated - infected with blood/body fluids</i>)• discharging laceration/wound produced by a <i>contaminated</i> instrument
Possible	<ul style="list-style-type: none">• superficial subcutaneous injury with <i>contaminated</i> needle• non-discharging laceration/wound produced by a <i>contaminated</i> instrument• prior wound or skin abrasion contact with blood• mucous membrane surface contact with blood
Doubtful	<ul style="list-style-type: none">• intradermal injury with non-<i>contaminated</i> needle• prior wound or skin abrasion contact with body fluid other than blood• mucous membrane surface contact with body fluid other than blood
No exposure	<ul style="list-style-type: none">• when recipients have not had bodily contact with blood either by way of a previous or penetrating sharps injury eg blood or body fluid contact with intact skin

Recommended follow-up of exposures:

Massive/definite/possible:

- As a minimum, conduct baseline screening, and follow-up at 6 weeks, 12 weeks, 6 months
- Seek advice from Expert Information Network.

Doubtful:

- Conduct baseline screening; follow-up at 3 months is standard practice.
- *Clean needlestick injuries (i.e. those not contaminated with blood/body fluid) are to be documented only. The purpose is to allow facilities to identify all causes of needlestick injury in order to facilitate appropriate risk management.*

No exposure:

- No follow up although documentation by way of incident reporting may still be required.

See Attachment 3 for additional information regarding occupational exposure management.

NON-OCCUPATIONAL

Other factors such as intercurrent genital infections and ulceration in either the source person or the exposed individual influence the risk of transmission. Heterosexual transmission studies are generally based on long term relationships and repeated exposure to the same infected individual rather than a one-off exposure. The epidemiological data do not support transmission of HIV via oral sexual activity. However, there have been case reports which suggest HIV infection following oral-genital sex^x. This is something that must be assessed on a case by case basis.

The risk of acquiring HIV as a result of an accidental needlestick injury from unsafely discarded injecting equipment in the community environment is low^{xi}. Therefore, management of the case will depend on the particular circumstances and should include reference to epidemiological data regarding blood borne viruses in the community.

4.1 The Exposure

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- the nature and extent of the injury, where an injury is involved
- the nature of the item that caused the injury, where an injury is involved eg. gauge of the needle
- the nature of the body fluid involved
- the volume of blood and body fluids to which the person was exposed (Table 1).

NON-OCCUPATIONAL

- the type of sexual activity which was involved
- the type of sharing of injecting equipment which was involved

In the case of percutaneous, other significant percutaneous, significant or other mucous membrane, or significant skin exposures, the exposed person should be assessed further as outlined in Section 5.

In the case of other exposures, no further testing or examination is required apart from the possibility of further counselling. This should be determined according to individual circumstances.

Table 1 Classification of exposures^{i ii}

<p>Percutaneous exposures to blood</p>	<p>HIGH RISK - BOTH exposure to a large volume of blood (eg. deep injury with a large diameter hollow needle previously in the source patient's vein or artery and especially involving injection; sharing needles or drug paraphernalia) AND exposure to blood containing high titre of HIV or HBV (eg. in the case of HIV, blood from a source with acute seroconversion illness or who is terminally ill with AIDS). NOT HIGH RISK - NEITHER exposure to a large volume of blood NOR exposure to blood with a high titre of HIV or HBV.</p>
<p>Other significant percutaneous exposures</p>	<p>Percutaneous exposures involving fluids containing visible blood, or other potentially infectious fluids (includes semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids) or tissue.</p>
<p>Significant mucous membrane exposure</p>	<p>Exposures to vaginal or anal mucosa involving blood, fluid containing visible blood, semen, vaginal secretions or other potentially infectious body fluids. Highest risk situations include unprotected receptive anal and vaginal intercourse, although unprotected insertive anal and vaginal intercourse also carries risk.</p>
<p>Other mucous membrane exposures</p>	<p>Exposures to eyes or mouth, involving blood, fluid containing visible blood or other potentially infectious body fluids. This could include unprotected receptive fellatio with ejaculation in some situations of non-occupational exposure.</p>
<p>Significant skin exposures</p>	<p>Exposures of non-intact skin involving blood, blood-stained fluid or other potentially infectious body fluids.</p>
<p>Other exposures</p>	<p>Percutaneous, mucous membrane or cutaneous exposure to (non-blood stained) urine or saliva; needle stick injuries from discarded injecting equipment in parks and on beaches.</p>

Table 2. Risk of transmission following exposure to HIV infected person

Type of Exposure	Estimated Risk of HIV Transmission (per episode)
Needle stick injury of HCW	0.4%-0.8%
Receptive anal intercourse	0.1%-3%
Use of contaminated injecting equipment	0.67%
Receptive vaginal intercourse	0.1%-0.2%
Insertive vaginal intercourse ⁱⁱⁱ	0.03%-0.09%
Insertive anal intercourse	No published per-contact estimates of risk, but estimated to be at least as high as for insertive vaginal intercourse ^{iv}

4.2 The Source

OCCUPATIONAL AND NON-OCCUPATIONAL

To adequately assess risk it is important to try to ascertain the HIV, HBV and HCV status of the source, particularly in the case of *percutaneous exposures to blood, other significant percutaneous, significant or other mucous membrane or significant skin exposures* – see Table 1.

If the status of the source individual is unknown at the time of the exposure, then baseline testing should be undertaken to determine the source's infectious status for HIV, HBV and HCV, by testing for HIV antibody, HBsAg and HCV antibody.

Testing of the source individual must follow accepted guidelines. HIV test discussion and post-test counselling must be given and informed consent obtained before testing can proceed. Refer to guidelines for counselling (Attachment 4) adapted from the Australian National Council on AIDS & Related Diseases (ANCARD) and Intergovernmental Committee on AIDS & Related Diseases (IGCARD) *HIV Testing Policy, September 1998*^{xii, xiii}.

Confidentiality is maintained, not only of the source individual, but also regarding the current exposure or injury, in accordance with Section 62 *Health Services Act 1991*.

If the source is infected with HIV, HBV or HCV and is not already in the care of an appropriate medical specialist, they should be referred to such a specialist.

NON-OCCUPATIONAL

Determining the status of the source should be undertaken in accordance with contact tracing principles for sexually transmissible infections as set out in the Australian Society for HIV Medicine *Australasian Contact Tracing Manual, November (Revised) 2002*^{xiv}.

In a person alleged to have committed an assault or rape, as of 1 July 2000, under the Police Powers and Responsibilities and Other Amendments Act 1999 (PPRA), a police officer may apply to a magistrate for a "disease test order" (DTO) seeking the collection of a blood and/or urine sample. Any Queensland Health facility may be asked to perform this task and must refer to the *Queensland Health Guidelines for Blood and Urine Testing on the Alleged Perpetrator of an Assault 2001*^{xv}.

The ANCAHRD *Guidelines for the Management and Post Exposure Prophylaxis of Individuals who Sustain Nonoccupational Exposure to HIV 2001* outline the following cofactors which may increase the likelihood of HIV transmission and should be taken into consideration when assessing risk¹:

- A high plasma viral load. (Note: a very low, or undetectable plasma HIV viral load is likely to decrease the risk of transmission but does not exclude the possibility that transmission may occur).
- The presence of a sexually transmitted disease including gonorrhoea, syphilis, chlamydial infections and ulcerative genital disease in either the exposed individual or the source individual.
- The presence of mucosal disease of the mouth, mouth ulcers or gum disease in the exposed individual who has had unprotected, receptive oral sex with ejaculation. Similarly, the recipient may be at increased risk of HIV transmission if the source individual has these mouth diseases and performs oral sex on the recipient.
- A deep percutaneous injury with a hollow bore needle, or direct injection into the vein, or artery with a needle/syringe containing HIV positive blood.

4.3 The Exposed Person

In the case of *percutaneous exposures to blood, other significant percutaneous, significant or other mucous membrane, or significant skin* exposures the exposed person should have baseline testing for HIV, HBV and HCV.

Testing of the exposed person must follow accepted guidelines. HIV test discussion and post-test counselling must be given and informed consent obtained before testing can proceed. Refer to guidelines for counselling (Attachment 4) adapted from the ANCARD and IGCARD *HIV Testing Policy*, September 1998^{xii, xiii}.

Confidentiality is to be maintained not only of the exposed person but also regarding the current exposure or injury in accordance with Section 62 *Health Services Act 1991*.

If the exposed person, on baseline testing, is found to be infected with HIV, HBV or HCV and is not already in the care of an appropriate medical specialist, they should be referred to such a specialist.

OCCUPATIONAL

Health care workers performing exposure prone procedures who are found to be infected with HIV, HBV or HCV should be managed in accordance with the *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers*.

NON-OCCUPATIONAL

The opportunity should also be taken to follow up other sexual health requirements such as vaccination status and sexual health screening.

5. Treatment of the Exposed Person

5.1 Source negative for HIV, HBV and HCV

Apart from counselling and collecting baseline blood from the exposed person, further action is generally not required in relation to HIV, HBV or HCV. However, follow-up testing at 12 weeks for HCV and HIV could be considered based on the situational risk of transmission (e.g. geographic area), type of exposure, and the likelihood the source may be in the window period. If the exposed person is immune (anti-HBs ≥ 10 IU/L) at the time of the injury, follow-up for hepatitis B is not indicated (also refer Attachment 3).

5.2 Source unknown HIV status, unable or refuses to be tested

Assessment of risk should be conducted as outlined in Section 4.2. The relative risk of the source being positive (for example, local prevalence and risk behaviours) for HIV must be considered when giving recommendations concerning prophylactic measures. If the source refuses to be tested or there are factors which indicate a high risk of the source being infected with HIV, then the relative risk of the source being infected must be assessed and the exposed person managed as appropriate to the level of risk as outlined in Sections 5.3, 5.4, and 5.5.

5.3 Source known, or likely to be, HIV positive

OCCUPATIONAL EXPOSURE

Where the source is known to be HIV antibody positive, baseline HIV, HBsAb, and HCV antibody testing of the exposed person should be undertaken with appropriate HIV test discussion and post-test counselling and consent. Serum will be stored for at least 12 months to enable parallel testing if necessary.

NON-OCCUPATIONAL EXPOSURE

Where the source is known to be HIV antibody positive, baseline HIV, HBsAb, syphilis serology and HCV antibody testing of the exposed person should be undertaken with appropriate HIV test discussion and post-test counselling and consent. Serum will be stored for at least 12 months to enable parallel testing if necessary.

GENERAL

The exposed person should be informed (both on presentation and within a few days at follow-up) of the potential risk of HIV transmission to others, especially during the first 6 to 12 weeks following a significant exposure. During this period the exposed person should be advised:

- not to donate plasma, blood, body tissue, breast milk or sperm
- to protect sexual partners through abstaining from sexual activity or by adopting safe sexual practices (use of condoms etc)
- to seek expert medical advice regarding pregnancy and/or breastfeeding
- not to share any injecting equipment, if involved in injecting drug use
- to seek medical attention for any acute illness that occurs during the follow-up period.
- For health care workers performing exposure prone procedures, refer to the following policy for additional measures to be under taken after a significant blood/body fluid exposure - *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers.*

5.3.1 Recommendations for HIV Post Exposure Prophylaxis (PEP)

Initiation of HIV PEP depends on the type of exposure, the source's stage of HIV infection, the source's HIV viral load and the source's history of HIV antiretroviral therapy. Therefore, a thorough assessment of risk as outlined in Section 4.2 should be undertaken before initiation of HIV PEP. See Table 3 for guideline recommendations for HIV PEP based on risk assessment.

Prophylaxis should be commenced as soon as possible following exposure, preferably within 1-2 hours and is most effective if administered within 24 - 72 hours of exposure. Beyond this time, it is unlikely to be of benefit, but may be offered to an individual presenting after 72 hours in particular high-risk exposures to HIV. The person should be advised that PEP may offer some benefit but less benefit than if they had received PEP within 72 hours^{IV,V}.

Knowledge regarding HIV PEP is evolving rapidly. Therefore, in addition to following the guidelines included in this document, the advice of an appropriate medical specialist must be sought prior to commencement of antiretroviral therapy. Attachment 1 includes contact details for the Expert Information Network, clinicians experienced in the administration of drugs for the treatment of HIV.

After initial consultation with an appropriate medical specialist, the exposed person may be commenced on a "Starter Pack" of zidovudine 300mg/lamivudine 150 mg bd + / - Lopinavir 200mg with ritonavir 50mg x 2 tablets bd. The exposed person should be fully assessed regarding risk and the need for ongoing therapy within 24 hours. If the exposure is assessed as high risk, therapy will be continued for four weeks.

Composition of HIV PEP Starter Packs

Starter Packs are to consist of the following supply of medication:

6 x COMBIVIR zidovudine 300mg / lamivudine 150mg

12 x KALETRA lopinavir 200mg with ritonavir 50 mg

This is a three day supply.

Significant exposures from a source taking antiretroviral therapy may be treated with a different combination at the physician's discretion. Therefore, it is paramount that expert advice be sought prior to the commencement of treatment. It is probable that an antiretroviral regimen of 2 nucleosides + Protease Inhibitor or non-nucleoside consistent with the contents of the Starter Pack will be initiated, however the treatment history and the current viral load of an HIV positive source should be considered when selecting a treatment regimen for the exposed.

See Attachment 5 for an information sheet on the medications contained in the Starter Pack. See Attachment 6 for HIV PEP Starter Pack distribution lists.

Seek advice from the Expert Information Network (Attachment 1) when considering prescribing a 2 drug combination in accordance with the recommendations found at the end of this section for either occupational or non-occupational exposures.

Counselling of the person who is considering prophylaxis should include information on:

- appropriate referral for support;
- the risk of HIV infection following the exposure;
- the reports of seroconversion following HIV prophylaxis;
- the side effects and adverse reactions associated with HIV prophylaxis (Attachment 5);
- the use in pregnancy / breastfeeding of HIV prophylaxis (if appropriate);
- the current status of knowledge regarding the efficacy of chemoprophylaxis following exposure to HIV; and
- the risk of infecting others.

The decision to accept or decline treatment is that of the exposed person, **and should be documented.**

The exposed person should be retested at 6 weeks, 12 weeks and 6 months for HIV antibodies. It should be noted that antiviral therapy may delay seroconversion to HIV.

Extended HIV follow-up (e.g. for 12 months) is recommended for persons who become infected with HCV following exposure to a source co-infected with HIV and HCV. Whether extended follow-up is indicated in other circumstances (e.g. exposure to a source co-infected with HIV and HCV in the absence of HCV seroconversion or for exposed persons with a medical history suggesting an impaired ability to develop an antibody response to acute infection) is unclearⁱⁱⁱ.

For health care workers performing exposure prone procedures, refer to the *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers* for additional measures to be under taken following a significant blood/body fluid exposure.

Recommendations for 2 vs. 3 drug combination for HIV PEP - ANCAHRD Bulletin No. 28, July 2001 Guidelines for the Management and Post-exposure Prophylaxis of Individuals who Sustain Nonoccupational Exposure to HIVⁱ

If it is unknown whether the source is HIV positive:

If the clinician and individual decide that PEP should be prescribed it is recommended, unless specified below, that the patient should be prescribed only two HIV antiretroviral drugs in combination for HIV postexposure prophylaxis. This usually comprises two nucleoside reverse transcriptase inhibitors (NRTI's). It should be noted that the risk of side-effects is considerable with antiretroviral drugs. Consultation with a HIV specialist is strongly recommended.

If the source is known to be HIV positive

If the clinician and individual decide that PEP should be prescribed it is recommended, unless specified below, that the patient be prescribed only two HIV antiretroviral drugs in combination for HIV PEP. However, in this setting, the choice of dual therapy should be based upon the available current drug treatment, the drug history of the source and drug resistance test results. It is recommended that the clinician consult with a HIV specialist in all circumstances.

When to use three drugs for HIV postexposure prophylaxis

Three drugs should only be used in PEP regimens when it is known or there is a high suspicion that the source is HIV positive. If it is unknown whether the source is HIV positive, it is not recommended to add a third drug to the PEP regimen.

If the source is known to be HIV positive, the addition of a third drug is warranted in the following situations:

If a higher risk exposure has occurred e.g. unprotected receptive anal/vaginal intercourse, unprotected insertive anal/vaginal intercourse, sharing injecting drug equipment, or mucous membrane, or non-intact skin exposure

AND

1. If all that is known about the source individual is that s/he has advanced HIV disease

OR

2. If the source individual is known to have recently had an HIV plasma viral load greater than >20,000 copies/ml RT-PCR (10,000 copies/ml bDNA)

OR

3. If it is known, as a result of HIV antiretroviral drug resistance testing, that the source individual has evidence of drug resistance involving primary mutations to drugs from at least 2 drug classes

It should be noted that cases of severe, life threatening side effects have been reported with the use of 4 weeks of the NNRTI nevirapine in the HIV post exposure setting. Nevirapine is not recommended as part of an HIV PEP regimenⁱ.

Table 3. Recommendations for initiation of HIV PEP based on exposure and source material

Type of exposure [#]	Source material	Antiretroviral Prophylaxis [^]
Percutaneous	Blood - High risk [#]	Recommend
	- Not high risk [#]	Consider
Other significant percutaneous	Fluids containing visible blood or other potentially infectious fluid or tissue	Consider
Significant mucous membrane	Unprotected receptive or insertive anal or vaginal intercourse (includes condom breakage)	Recommend
	Blood	Consider
	Fluid containing visible blood, other potentially infectious fluid ^{^^} , including semen onto oral or other mucosa, or tissue	Consider
Other mucous membrane	Unprotected receptive fellatio with ejaculation ^{##}	Consider
Significant skin exposures	Blood	Consider
	Fluid containing visible blood, other potentially infectious fluid ^{^^} , or tissue	Consider
Other exposures	Any exposure to non-blood-stained urine and saliva	Not offer
	Blood/semen/vaginal secretions, other body fluids onto intact skin	Not offer
	NSI from discarded injecting equipment	Not recommended *

[#] See Table 1 for classification of exposures

[^] **Recommend** - PEP should be recommended to the exposed person with counselling.

Consider- PEP is not routinely recommended, but may be considered after risk assessment.

Not offer - PEP should not be offered as there are no documented HIV infections following this type of exposure

^{^^} Includes semen; vaginal secretions; cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids.

^{##} There are no epidemiological data which suggest that HIV is orally transmitted, however there are some case reports. PEP may be considered if risk is considered sufficiently high eg known HIV positive source and non-intact oral mucosa in receptive partner.

^{*} As transmission has never been recorded in this type of scenario, management should focus on education and counselling. However, there may be circumstances that support provision of PEP.

5.4 Source known, or likely to be, positive for HBsAg

In a source known to be HBsAg positive, testing of the exposed person for HIV, HBV and HCV antibodies should be undertaken with appropriate test discussion, post test counselling and consent. Serum will be stored for at least 12 months to enable parallel testing if necessary.

If non-immune (i.e. anti-HBs <10 IU/L), the exposed person should be informed (both on presentation and within a few days at follow-up) that the risk of transmission following exposure to the blood of an infected person ranges from 1%-6% for hepatitis B surface antigen positive but 'e' antigen negative blood to 22%-40% for hepatitis B 'e' antigen positive blood and/or HBV DNA positivity, especially during the first 6 months following the incidentⁱⁱ. During this period the exposed person should be advised:

- not to donate plasma, blood, body tissue, breast milk or sperm
- to protect sexual partners by abstaining from sexual activity or by adopting safe sexual practices (use of condoms etc)
- to seek expert medical advice regarding pregnancy and/or breastfeeding
- not to share any injecting equipment, if involved in injecting drug use
- to seek medical attention for any acute illness that occurs during the follow-up period
- For health care workers performing exposure prone procedures, refer to the following policy for additional measures to be under taken following a significant blood/body fluid exposure - *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers.*

If there is evidence of acute hepatitis, then the exposed person should be referred to a specialist experienced in the management of HBV.

5.4.1 Recommendations for HBV Post Exposure Prophylaxis

Initiation of HBV PEP is dependent on the type of exposure, the source's HBsAg status and the exposed persons HBV immunisation history. Immunisation against Hepatitis B is a condition of employment for Queensland Health care workers who are involved in direct patient contact or who may be exposed to blood or body fluids in the course of their work – refer to the *Queensland Health Policy for Immunisation of Health Care Workers*.

For detailed information regarding HBV PEP refer to Table 4 and the current edition of the Australian Immunisation Handbook (<http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook-home>).

Counselling of the exposed person should include information on:

- appropriate referral for support
- the risk of HBV infection following exposure
- the side effects and adverse reactions associated with HBV vaccination and HBIG
- the use in pregnancy/breastfeeding of HBV vaccination and HBIG
- the risk of infecting others.

The decision to accept or decline treatment is that of the exposed person, **and should be documented.**

The exposed person should have baseline testing for HBsAb, a Liver Function Test (LFT) at 6 weeks and 12 weeks, and HBsAg at 12 weeks and 6 months; and be offered testing for other blood borne viruses (also refer Attachment 3). HBsAg may give a false positive if tested within 2 weeks of hepatitis B vaccination.

Table 4: Recommendations for HBV PEP

HCW status	Source Status and Corresponding Recommendations for Treatment of HCW	
	HBsAg+ve* OR Source not tested/unknown*	HBsAg-ve
Unvaccinated:		
	HBIG x1 and initiate 3 dose HB vaccination course	Initiate 3 dose HB vaccination course
Previously vaccinated:		
A. Documented vaccine responder with current anti-HBs ≥ 10 IU/L	No treatment	No treatment
Documented vaccine responder with current anti-HBs < 10 IU/L	No treatment	No treatment
B. Non-responder*	HBIG x 1; or consider HBIG x 2 single doses 1 month apart depending on circumstances and supply	No treatment
C. Documented history of primary course of hepatitis B vaccine but in whom seroconversion status is not known	Check anti-HBs <ul style="list-style-type: none"> If ≥ 10 IU/L, no treatment If < 10 IU/L, HBIG x 1, booster dose x 1, and check anti-HBs after 1 month 	Check anti-HBs for reference but no treatment required
D. Vaccination incomplete	HBIG x 1 Administer remaining 'missed' doses. Check anti-HBs after 1 month	Administer remaining 'missed' doses. Check anti-HBs after 1 month
Past history, resolved infection		
	No treatment	No treatment
Current infection		
	Refer to Queensland Health Policy <i>Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus, and Hepatitis C Virus Infected Health Care Workers</i> available at http://www.health.qld.gov.au/chrisp/ic_guidelines/appendix_P4.pdf	

* Management of health care workers following a body fluid exposure where the source is unknown or is HBV positive should always be done in consultation with an Infectious Diseases Physician.

* An alternate method for non-responders to hepatitis B vaccination in high risk health care workers includes the use of intradermal injection. For further information refer to the current edition of the Australian Immunisation Handbook available at <http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook-home>

5.5 Source positive or likely to be positive for HCV Ab

In a source known to be HCV Ab positive, testing of the exposed person for HIV, HBV and HCV antibodies should be undertaken with appropriate HCV test discussion, post test counselling and consent. Serum will be stored for at least 12 months to enable parallel testing if necessary.

The exposed person should be informed (both on presentation and within a few days at follow-up) that the risk of transmission following exposure to the blood of an infected person ranges from 0.5 – 2%^{ii,iii}. During the 6 month period following the blood or body fluid exposure, the exposed person should be advised:

- not to donate plasma, blood, body tissue, breast milk or sperm
- to protect sexual partners by abstaining from sexual activity or by adopting safe sexual practices (use of condoms etc)
- to seek expert medical advice regarding pregnancy and/or breastfeeding
- not to share any injecting equipment, if involved in injecting drug use
- to seek medical attention for any acute illness that occurs during the follow-up period.
- For health care workers performing exposure prone procedures, refer to the following policy for additional measures to be under taken following a significant blood/body fluid exposure - *Queensland Health Policy for the Management of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infected Health Care Workers.*

If there is evidence of acute hepatitis, then the exposed person should be referred to a specialist experienced in the management of HCV.

5.5.1 Recommendations for HCV Post-exposure Management

At this time, there is no prophylaxis proven to be effective. The aim of follow up is to detect acute hepatitis C as soon as possible so that appropriate management can be instituted.

Counselling of the exposed person should include information on:

- appropriate referral for support
- the risk of HCV infection following exposure
- issues associated with pregnancy/breastfeeding
- the risk of infecting others.

The decision to accept or decline follow-up is that of the exposed person, **and should be documented.**

The exposed person should be tested for HCV Ab and HCV RNA PCR at 6 weeks, and HCV Ab at 12 weeks and 6 months, and be offered testing for other blood borne viruses (also refer Attachment 3). Refer to Expert Information Network (Appendix 1) for further information/advice.

5.6 Documentation and additional procedures for occupational exposure

In addition to the procedures outlined in Section 5 “Treatment of the exposed person”, the following procedures should be implemented in health care facilities

Supervisor

- complete incident report
- reassure health care worker
- refer to medical officer

Medical Officer

- Refer to your workplace occupational exposure protocol
- Follow flow chart (Appendix 3)
- Follow-up to be determined related to risk stratification of exposure (Section 4, Table 1, Table 3 and Attachment 3)
- Document and record advice obtained
- Document tests undertaken, counselling advice and prescribed treatment

Data Collection

- Incidence of body fluid exposures should be documented confidentially and monitored. This information should then be used as the basis for change management where problems are identified.

Expert Information Network

Advice will be provided **24 hours a day**, seven days a week by the Infectious Diseases physician on call. They can be contacted through the switchboard in the following facilities:

Brisbane	Princess Alexandra Hospital	(07) 3240 2111
	Mater Health Services	(07) 3840 8111
	Royal Brisbane & Women's Hospital	(07) 3636 8111
	The Prince Charles Hospital	(07) 3139 4000
Gold Coast	Gold Coast Hospital	(07) 5571 8211
Nambour	Nambour General Hospital	(07) 5470 6600
Townsville	The Townsville Hospital	(07) 4796 1111
Cairns	Cairns Base Hospital	(07) 4050 6333

Drug Replacement for HIV PEP Non-occupational

Patient initials: — —

NB: FOR NON-OCCUPATIONAL EXPOSURES ONLY

I confirm that a patient has had an exposure to HIV for which PEP is to be offered or is recommended.

N.B. Please do not place starter pack information in this table (see lower section)

Date	Drug Prescribed	Dose	Duration

Prescribers signature:.....

Prescriber's full name:

Date:.....

Name of pharmacy to which full course of replacement drugs should be dispatched:
.....

Contact Person at Pharmacy

Additional information to be provided by authorised prescribers outside designated HIV units only:

Provider number:

Practice Address:

Telephone:

STARTER PACKS

Is a replacement Starter Pack also required?

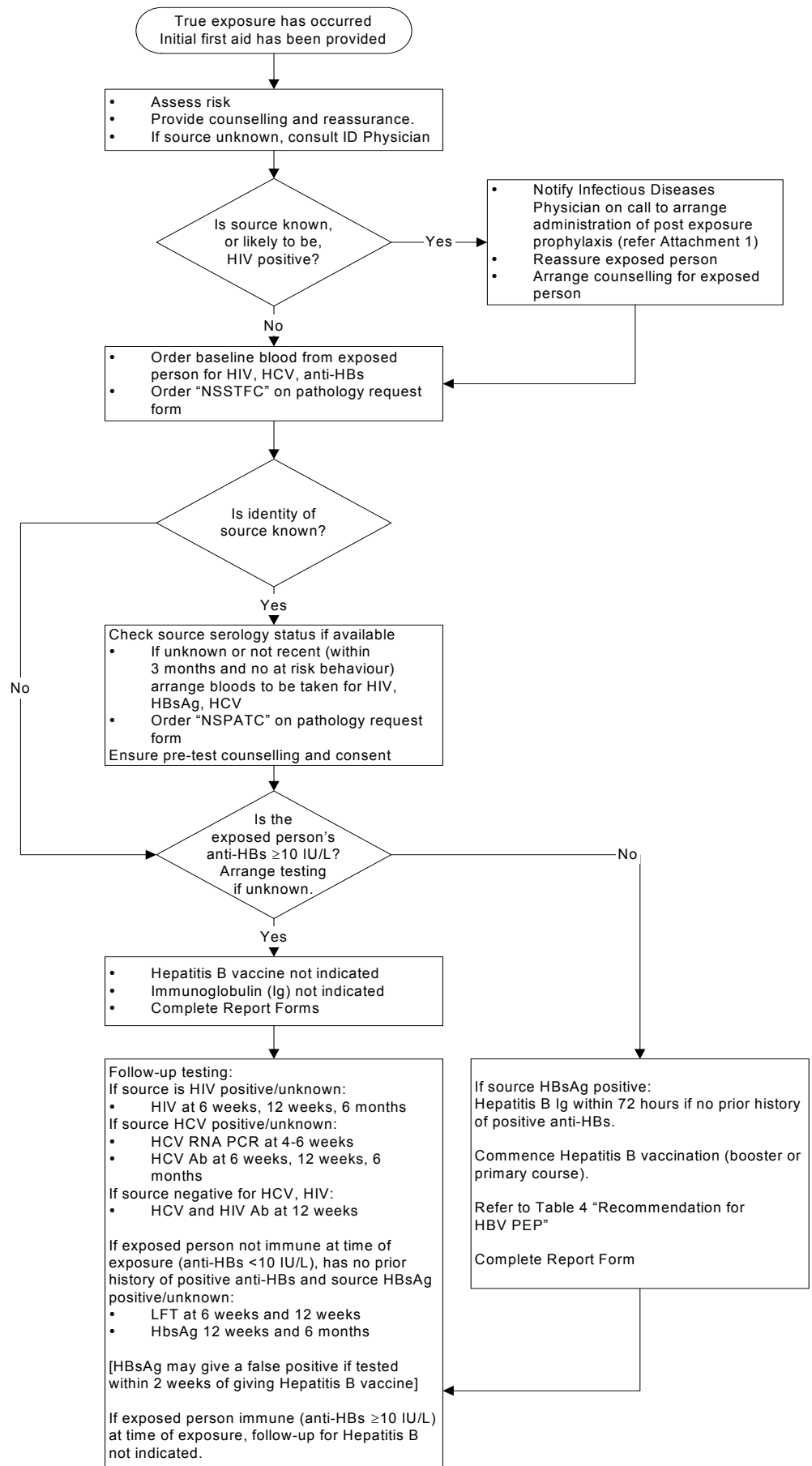
If YES, please circle the preferred delivery site for **starter packs**:

(Prescriber's) Clinic Pharmacy

Form to be faxed to 3328 9782 for the attention of: The Manager, HIV/AIDS Hepatitis C and Sexual Health, Communicable Diseases Branch.

Medical Management of Blood and Body Fluid Exposures

If any tests for HIV, HCV or HBV are positive on the source or the exposed person - contact the appropriate ID Physician (refer Attachment 1, Expert Information Network)



Guidelines for HIV Test Discussion & Post HIV Test Counselling

Members of the Expert Information Network will provide initial counselling and information regarding ongoing support for the affected health care worker if required.

The goal of the fifth National HIV/AIDS Strategy (2005 – 2008) is to reduce HIV transmission and to minimise the personal and social impacts of HIV/AIDS. The following information is adapted from the ANCARD/IGCAHRD HIV Testing Policy 1998.

Recommended test discussion

Informed discussion should occur between practitioner and client/patient before testing. After assessment, this should include giving appropriate information about risk and related matters, referral if necessary, assurances about confidentiality and privacy, and assessment of the client's preparedness to be tested. Specifically, the HIV test discussion should provide accurate information about safe practices that is appropriate to the person's gender, culture, behaviour and language and include:

- risk assessment and reason for testing;
- information regarding confidentiality and privacy;
- information about the testing process including how results are to be provided, the window period, and the difference between HIV and AIDS;
- information about what happens to test results;
- explanation of informed consent;
- assessment of the person's preparedness to be tested;
- information about what a negative or positive result means; and
- assessment of support mechanisms while waiting for the test result and/or if the result is positive.

Post-test counselling

This should include:

- giving the test result in person and in a manner that is sensitive and appropriate to gender, culture, behaviour and language;
- reassessing support mechanisms and requirements of client;
- if the result is negative, reinforcing positive education and messages about safe behaviours, and examining any difficulties or issues that the client may have in practicing safe behaviours;
- if result is positive, at an appropriate time, issues such as:
 - immediate needs and support;
 - safe behaviours – education, information and support
 - who to tell and how
 - managing or understanding strong emotions, feelings, reactions and changes;
 - options in drug treatment and medical management;
 - ongoing counselling or therapy if required;
 - complementary/alternative management options;
 - ways to deal with loss and grief, depression, anger and anxiety;
 - strategies for managing HIV which are flexible and appropriate to the person's needs;
 - legislative requirements (notifications, contact tracing, storage and coding).

Post-exposure Prophylaxis (PEP) Information Sheet

Therapy is only to be initiated after consultation with a Queensland Health Infectious Diseases physician (or an approved prescriber in the context of non-occupational exposure).
The kit includes 6 x zidovudine 300mg / lamivudine 150mg (Combivir) and 12 x lopinavir with ritonavir 200/50mg (Kaletra tablets)

Introduction

To reduce the risks of transmission of HIV after exposure, international authorities recommend immediate treatment with a combination of drugs, all of which are known to block reproduction of HIV. To be most effective, these medications must be commenced as soon as possible after exposure and taken exactly as instructed.

How do these drugs work?

A number of stages are involved in the process of HIV multiplying within cells. One of the initial stages involves the virus changing its genetic material so it can re-program the nucleus of the infected cell. The enzyme that enables HIV to do this is called reverse transcriptase. Drugs that combat HIV at this stage are called reverse transcriptase inhibitors.

At a later stage of HIV production, before the virus leaves the cell, the components of the virus must be split into useable components so it can infect other cells. An enzyme called protease performs this function. Protease inhibitors are drugs that combat HIV at this stage of the production of the virus. Drugs that target the virus at different steps in its development can be used in combination for the most potent antiviral effect, protecting the immune system.

What medication will you be given?

You will be prescribed a combination of medications from the two groups mentioned above. These drugs work together to prevent the virus spreading. There are a number of similar drugs currently available from each group and you will be prescribed the following:

Type	Generic Drug Names	Trade Names
1. Protease Inhibitor	Lopinavir with ritonavir	Kaletra
2. Reverse Transcriptase Inhibitors	Zidovudine / lamivudine (combination)	Combivir

Important Points:

- Take this medicine exactly as directed by your Doctor. Do not take it more often.
- Do not stop taking this medicine without checking with your doctor first. This starter pack contains three days supply. However, you need to continue the medication for a total of 4 weeks and thus you will need an appointment in the next few days to get further supplies.
- Space doses evenly throughout the day and night - complete the full course as prescribed.
- Avoid missing doses as these medications are most effective when there is a constant amount in the blood.
- These medications may interact with other medications you are taking. It is important that your Doctor is aware of all the medications you currently take. Some common interactions are described overleaf.
- These medications are not usually available from your local community pharmacy and you will need to have your ongoing supply of medication dispensed from a public hospital or clinic. Your doctor will advise your nearest contact pharmacy.

	Side Effects	Other Medical Conditions	Drug Interactions
<p>Lopinavir 200mg with ritonavir 50mg</p> <p>Dosage TWO (2) tablets taken twice daily (morning and night) with or without food.</p> <p>Trade Name Kaletra - combination</p>	<p>Check with your doctor if you are concerned about any of the following side effects:</p> <p><i>More common:</i> abnormal stools (bowel movements), mild to moderate diarrhoea, feeling weak and tired, headache, and nausea</p> <p><i>Less common</i> – worsening of liver disease, pancreatitis, increases in triglycerides and cholesterol, diabetes and high blood sugar, increased bleeding if you have a clotting disorder</p>	<p>Inform your doctor if you have: Liver disease or liver problems or are infected with Hepatitis B or Hepatitis C; lopinavir with ritonavir may cause worsening of the liver disease. If you have diabetes; some people develop new or more severe diabetes or high blood sugar If you have haemophilia: people taking lopinavir with ritonavir may have increased bleeding</p>	<p>Drug and herbal preparations which interact with lopinavir with ritonavir include: anticoagulants, corticosteroids, St John's Wort, antifungals, rifamycins, antiarrhythmics (digoxin, amiodarone, systemic lignocaine and quinidine), disulfiram, metronidazole, warfarin, methadone, and oral and patch contraceptives.</p>
<p>Zidovudine 300 mg / lamivudine 150 mg</p> <p>Dosage ONE (1) tablet taken twice daily (morning and night) with food.</p> <p>Trade Name Combivir –combination</p>	<p>Check with your doctor as soon as possible if any of the following side effects occur:</p> <p><i>More common</i> - Fever, chills, or sore throat; pale skin; unusual tiredness or weakness, tingling/numbness in hands, arms, feet or legs.</p> <p><i>Rare</i> –Abdominal discomfort; confusion; convulsions (seizures); fast, shallow breathing; general feeling of discomfort; loss of appetite; mood or mental changes; muscle pain, tenderness, weakness, or cramping; nausea; shortness of breath; sleepiness</p> <p>Bothersome – check with doctor if persists:</p> <p><i>More common</i> - Headache (severe); nausea; trouble in sleeping; dizziness, vomiting, diarrhoea</p> <p><i>Less common</i>- Bluish-brown coloured bands on nails; changes in skin colour; hair loss</p>	<p>Inform your doctor if you have Anaemia or other blood problems—Zidovudine may make these conditions worse Liver disease—Patients with liver disease may have an increase in side effects from zidovudine Low amounts of folic acid or vitamin B₁₂ in the blood— zidovudine may worsen anaemia caused by a decrease of folic acid or vitamin B₁₂ Kidney disease – Patients with kidney disease may have an increase in side effects from lamivudine</p>	<p>Drugs which increase zidovudine's activity: Atovaquone, pyrimethamine, sulphadiazine, probenecid NSAIDs eg Indocid, Feldene, Brufen, Voltaren</p> <p>Drugs which decrease zidovudine's activity: Ribavirin, clarithromycin, ritonavir, stavudine</p> <p>Drugs which should be avoided: Amphotericin, flucytosine, ganciclovir, trimethoprim/sulphamethoxazole</p> <p>Drugs whose activity is decreased: Pyrimethamine</p> <p>Other drugs which may interact: Quinidine, amiodarone (caution)</p>

References: Product information for Combivir and Kaletra, AUS-DI profiles for lamivudine, zidovudine, lopinavir and ritonavir

Distribution of HIV Starter Packs

A. Queensland Health hospital facilities

Public Hospitals with pharmaceutical staff

Atherton Hospital	Maryborough Base Hospital
Baillie Henderson Hospital	Mater Public Hospitals
Basil Stafford Centre	Mt Isa Base Hospital
Biloela Hospital	Nambour Hospital
Bowen Hospital	Oakey Hospital
Bundaberg Base Hospital	Princess Alexandra Hospital
Caboolture Hospital	The Prince Charles Hospital
Cairns Base Hospital	Queen Elizabeth II Hospital
Caloundra Hospital	Royal Brisbane & Women's Hospital
Charleville Hospital	Redcliffe Hospital
Emerald Hospital	Redland Hospital
Gladstone Hospital	Rockhampton Base Hospital
Gold Coast Hospital	Roma Hospital
Gympie Hospital	Royal Children's Hospital
Ipswich Hospital	The Townsville Hospital
Kingaroy Hospital	Thursday Island Hospital
Logan Hospital	Toowoomba Base Hospital
Longreach Hospital	Warwick Hospital
Mackay Base Hospital	Wolston Park Hospital
Mareeba Hospital	

Public hospitals without pharmaceutical staff

Goondiwindi

Clinical Forensic Medicine Unit (formerly Government Medical Office) – Brisbane

51 Herschel Street
Brisbane

B. Queensland Health sexual health clinics for management of non-occupational exposure

Sexual Health Clinic	Telephone
Bamaga	(07) 4090 4235
Brisbane	(07) 3227 8666
Princess Alexandra Sexual Health	(07) 3240 5881
Cairns	(07) 4050 6205
Gold Coast	(07) 5576 9033
Ipswich	(07) 3817 2428
Logan	(07) 3240 5881
Mackay	(07) 4968 3919
Mt Isa	(07) 4744 4805
Palm Island	(07) 4752 5100
Redcliffe/Caboolture	(07) 3883 7300
Rockhampton	(07) 4920 6262
Sunshine Coast	(07) 5476 2489
Thursday Island	(07) 4069 0413
Toowoomba	(07) 4616 6446
Townsville	(07) 4778 9600
Wide Bay	(07) 4150 2754

Other sites for information/treatment:

AIDS Medical Unit (07) 3837 5622 – Clinical Nurse Consultant

NOTE: Some HIV prescriber physicians will also hold Starter Packs

Glossary

ANCAHRD	Australian National Council on AIDS, Hepatitis C and Related Diseases
anti-HBs	antibody to hepatitis B surface antigen
CDC	Centers for Disease Control and Prevention
exposure prone procedures	a subset of invasive procedures which are characterised by the potential for direct contact between the skin (usually finger or thumb) of the health care worker and sharp surgical instruments, needles, or sharp tissues (spicules of bone or teeth) in body cavities or in poorly visualised or confined body sites (including the mouth)
HBIG	hepatitis B immunoglobulin
HBeAg	hepatitis B e antigen
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
HBV DNA	hepatitis B virus genetic material - marker of high level of infectiousness
HCV	hepatitis C virus
HCV RNA	hepatitis C virus ribonucleic acid
HIV	human immunodeficiency virus
HSD	Health Service District
IDU	injecting drug user
NSFC	AUSLAB request panel code for follow-up testing of the exposed person after a blood or body fluid exposure. Includes requests for HIV and HCV antibody only
NCHECR	National Centre in HIV Epidemiology and Clinical Research
NCHSR	National Centre in HIV Social Research
Non-occupational exposure	blood/body fluid exposure that is not work related e.g. sharing injecting equipment, unprotected sexual activity
Non-responder	a person with inadequate response to vaccination i.e. serum anti-HBs <10 IU/L
NSI	needle stick injury
NSPATC	AUSLAB request panel code for follow-up testing for the source of a blood or body fluid exposure. Includes requests for HIV, HBsAg and HCV antibody only
NSSTFC	AUSLAB request panel code for baseline testing of the exposed person after a blood or body fluid exposure. Includes requests for HIV, HBsAb and HCV antibody only
Occupational exposure	blood/body fluid exposures that occur as a consequence of work related activity e.g. needlestick injury sustained by a surgeon whilst performing an operative procedure
PCR	polymerase chain reaction
PEP	post exposure prophylaxis

Responder	a person with adequate levels of serum antibody to HBsAg i.e. anti-HBs \geq 10 IU/L
STI	sexually transmitted infection
source	person from whom blood or body fluids originated
window period	the time from exposure to seroconversion when the source may be asymptomatic or experiencing seroconversion illness

- i. Australian National Council on AIDS, Hepatitis C and Related Diseases (ANCHARD). The ANCAHRD Bulletin No. 28 July 2001 Guidelines For The Management And Post Exposure Prophylaxis Of Individuals Who Sustain Nonoccupational Exposure to HIV (<http://www.ancahrd.org>).
 - ii. Australian National Council on AIDS, Hepatitis C and Related Diseases (ANCHARD). The ANCAHRD Bulletin No. 29 September 2002 Management of Exposure To Blood/Body Fluids In A Health Care Setting (<http://www.ancahrd.org>).
 - iii. Centers for Disease Control and Prevention. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. MMWR 2001; 50 (No. RR-11): 1-43 (<http://www.cdc.gov/mmwr/>).
 - iv. Centers for Disease Control and Prevention. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis. MMWR 2005; 54 (No. RR-9): 1-17 (<http://www.cdc.gov/mmwr/>).
 - v. Centers for Disease Control and Prevention. 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 2005; 54 (No. RR-2): 1-16 (<http://www.cdc.gov/mmwr/>).
 - vi. NSW Health. The NSW Health Policy Directive PD2006_005: Human Immunodeficiency Virus (HIV) – Management of non-occupational exposure (http://www.health.nsw.gov.au/policies/PD/2005/PD2005_247.html).
 - vii. Queensland Health, Infection Control Guidelines. June 1999 (revised November 2001) (<http://www.health.qld.gov.au/infectioncontrol/>).
 - viii. National Centre in HIV Epidemiology and Clinical Research (editors). HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2005 (<http://web.med.unsw.edu.au/nchechr/>).
 - ix. Queensland Health, Queensland Police & Office of the Director of Public Prosecutions. Response to Sexual Health. Interagency Guidelines for Responding to Adult Victims of Sexual Assault, November 2001 (<http://www.health.qld.gov.au/violence/sexual/16005.pdf>).
 - x. Katz, M.H., & Gerberding, J.L. Post-exposure treatment of people exposed to the human immunodeficiency virus through sexual contact or injection drug use. New England Journal of Medicine 1997; 336: 1097-1100.
 - xi. Makwana N & Riordan FAI. Prospective study of community needlestick injuries. Arch. Dis. Child 2005; 90: 523-524.
 - xii. Australian National Council on AIDS & Related Diseases (ANCARD) and Intergovernmental Committee on AIDS & Related Diseases (IGCARD). HIV Testing Policy, September 1998 (<http://www.ancahrd.org>).
 - xiii. Australian National Council on AIDS, Hepatitis C and Related Diseases (ANCHARD). National Hepatitis C Testing Policy, August 2003 (<http://www.ancahrd.org>).
 - xiv. Australian Society for HIV Medicine (ASHM). Australasian Contact Tracing Manual, November (Revised) 2002 (<http://www.ashm.org.au>).
 - xv. Queensland Health. Guidelines for Blood and Urine Testing on the Alleged Perpetrator of an Assault 2001 (<http://qheps.health.qld.gov.au/PHS/Documents/cdu/11305.pdf>)
 - xvi. National Health and Medical Research Council. The Australian Immunisation Handbook, 8th edition, September 2003 (<http://www.immunise.gov.au>)
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