Ministry of Health
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POST EXPOSURE PROPHYLAXIS For Occupational and Non-Occupational Exposure To HIV

National HIV/AIDS Programme
Belize

Notes

PROLOGUE

The use of ARVs for post exposure prophylaxis following occupational exposure to HIV has raised different areas of uncertainty for policy makers and healthcare workers. The Ministry of Health recognizes the need to develop guidelines that address the needs of healthcare workers, non-healthcare workers who experience blood or body fluid exposure in the course of their work, and sexual assault survivors. These guidelines are not static but evolve as the nature of the epidemic evolves, along with the character of our national response. As part of the Ministry's ongoing process of revision and implementation of protocols I am pleased to present this latest edition of Belize's Post Exposure Prophylaxis Manual.

For the first time, this edition includes a section for victims of sexual assault. This indicates our intent to offer ever more comprehensive services to anyone who may have been exposed to HIV and other sexually transmitted infections.

It is anticipated that the new manual, along with the increased availability of ARVs at all our health centres, will form a vital part of our efforts at minimizing the risk of sero-conversion in affected individuals.

Notwithstanding the above I must take the opportunity to remind all of us involved in the struggle against HIV that the best way to avoid infection is through the use of Universal Precautions – prevention is always the best way.

Hon. Pablo Marin

Minister of Health

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The health care worker should be able to resume duties and during the follow up period the HCW can continue performing their normal duties even if this implies performing exposure prone procedures since the risk of seroconversion is fairly low and the further risk of secondary onward transmission is even more remote.

Children and Adolescents – Non Occupational exposure through sexual assault/abuse

In children what is recommended is the pediatric formulation of *zidovudine and lamivudine* which are both available in pediatric suspension. The same criteria that is utilized in adults for initiating PEP prophylaxis applies to the pediatric population.

For HBV:

If the exposed person hasn't been vaccinated then an accelerated schedule of hepatitis B vaccine must be given regardless of the source's status. If the source person is determined to be a confirmed hepatitis B carrier or is considered to be a high risk person, then hepatitis B immune globulins can also be given. The ideal time for the administration of immune globulins is within 24 hrs post exposure but not later than a week.

For HCV:

There is no current PEP recommended for exposure to hepatitis C. Post exposure testing to determine sero conversion however is highly recommended. There is some published evidence that the treatment of acute hepatitis C with pegylated interferon +/- ribavarin could prevent the development of chronic hepatitis C infection.

Management of the Source Person:

Source persons of any exposure should receive adequate counseling and medical evaluation with adequate explanation as to why it is that an HIV test is being sought from them. It should be noted that a new diagnosis of HIV infection is a possibility and should this happen, the source person must be given all the assistance required with this new diagnosis and adequate provisions must be made for eventual medical and psychological follow up of this patient.

INTRODUCTION

Health Care Workers (HCWs) are at continuous risk for occupational exposure to bloodborne pathogens, in particular hepatitis B virus (HBV), hepatitis C virus (HCV) and the human immunodeficiency virus (HIV). Exposures occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth (mucosal surfaces) or skin with a patient's blood. Important factors that determine the overall risk of occupational transmission of a bloodborne pathogen include the number of infected individuals in a given population, factors inherent to the host individual and the type and number of exposures. Percutaneous injuries, usually inflicted by hollow-bore needles are the most common mechanism of occupational HIV transmission.

Most exposures do not result in infection; however, in the particular case of HIV transmission, medical evidence suggests that the risk increases whenever there is:

(A) Exposure to a large quantity of blood from the source person as indicated by:

1. A device visibly contaminated with blood
2. A procedure that involves a needle placed directly in a blood vessel
3. Deep, penetrative injuries

(B) Exposure to blood from source persons with terminal illness (AIDS)

(C) Deep injury and those caused by hollow bore needles, where more potential transference of blood is involved.

Many needlestick injuries and other cuts can be prevented by using safer techniques (e.g., not recapping needles by hand), disposing of used needles in appropriate sharps disposal containers,

and using medical devices with safety features designed to prevent injuries. Many exposures to the eyes, nose, mouth or skin can be prevented by using appropriate barriers (e.g., gloves, eye and face protection, gowns) when contact with blood is expected. **It is therefore imperative to stress that the exercise of universal precautions at all times greatly reduces the risk for occupational exposure to bloodborne pathogens and universal precautions are the best prevention strategy in any successful programme in order to reduce infection.**

Recognizing the value and the paramount importance of health care providers in Belize, the National TB, HIVAIDS and other STIs Programme of the Ministry of Health has embarked on the implementation of this protocol to address post exposure prophylaxis for occupational exposure (health care workers) and non-occupational exposures (survivors of sexual assaults) to reduce the risk of acquiring HIV through these types of exposure. The inclusion of strategies to address non-occupational exposure is as a result of the large number of sexual assaults reported lately and the implicit risk of HIV to others outside of the health sector. This protocol details the algorithm to be followed and includes the provision of antiretroviral (ARV) medications, the medical evaluation to assess the risk of infection, the monitoring of side effects of treatment, the counseling component and the eventual follow up to determine whether sero-conversion occurs.

What is Post Exposure Prophylaxis and who should receive it?

Post exposure prophylaxis (PEP) refers to any treatment given after exposure to a harmful substance which attempts to minimize or reduce the risk of injury or infection. PEP has now become a part of routine medical care offered to all workers involved in the health sector given the potential risk to many biological hazards that health care workers are exposed to. Prior to the prescription to PEP as it pertains to HIV some

The recommended prophylactic regimens are highlighted below:

Recommended regimens to be used as PEP:
Lamivudine 150 mgs + zidovudine 300 mgs – twice daily (available as a combination)
OR Tenofovir 300 mgs + emtricitabine 200 mgs – once daily (available as Truvada)
Expanded regimens would include either of the above PLUS:
Lopinavir/ritonovir 400/100 mgs – twice daily
OR Indinavir 400 mgs tabs three times a day + ritonovir 100 mgs twice daily

Laboratory monitoring should be done on all patients and must include a complete blood count along with renal and hepatic function tests at baseline and at two weeks; further tests may be required depending on the medical condition of the patient.

HIV testing must be conducted at baseline, at 6 weeks, 12 weeks and at 6 months. If there is no sero-conversion during this time period the probability of sero-conversion with this exposure is practically non-existent. Any sudden or severe flu like illness that includes fever, rash, myalgias, general malaise or swollen lymph glands must be reported immediately to the treating clinician.

Side effects such as nausea and diarrhea are fairly common and most of the times require symptomatic treatment only. If they are not managed properly and the patients are not made aware of the side affects, adherence may be compromised. Very rarely will the side effects be of relative importance to merit discontinuation of PEP and most of the side effects are reversible upon suspension of the anti retroviral drugs. The use of the non nucleoside transcriptase inhibitor (NNRTI) nevirapine is NOT recommended for use in PEP as there are reported cases of patients developing fulminant acute liver failure. There are other NNRTIs that are also not recommended in PEP such as abacavir due to documented hypersensitivity reactions.

Psychological support and counseling during the follow up period are essential components of PEP so that proper adherence is observed and because of the potential psychological impact of the exposure. Proper advice must also be given regarding safe sex during the follow up period and personnel exposed should refrain from donating blood during this time period.

In human studies, the use of AZT for PEP has been associated with a reduction in the risk of infection with HIV in approximately 80%-89%.

Post exposure treatment is not recommended for all occupational exposures to HIV because most exposures do not lead to HIV infection and because the drugs used to prevent infection may have serious side effects. Taking these drugs for exposures that pose a lower risk for infection may not be worth the risk of the side effects.

What should be prescribed as prophylactic treatment?

For HIV:

There is no large prospective randomized controlled trial that has been conducted to determine the real efficacy of PEP and conducting any such study is not feasible because of ethical concerns. Most of the current data on PEP for HCWs arises out of a single retrospective case-control study by CDC published in 1997 where an 81% reduction in the risk of HIV was documented in a relative small number of patients. The documented cases of reduction of mother to child transmission when anti-retrovirals are used also supports the notion of prescribing PEP in a timely fashion.

More recently, two studies highlight the use of PEP in non-occupational exposure in those who have been sexually exposed but this may not be applicable to the occupational exposure for HCWs but does highlight the efficacy of PEP.

A prescription of PEP should be considered an emergency.

It is recommended that PEP be started within the hour after exposure but no later than 72 hrs after exposure; there is no documented benefit of providing PEP drugs beyond the 72 hrs of initial exposure. PEP should be prescribed for 28 continuous days after initial dosage and the importance of adherence to the treatment should be emphasized at all times. Two or more anti retrovirals are usually used for prophylaxis and the use of triple therapy increases the probability of adverse events and less potential for full adherence. The PEP regimens described here are applicable to both occupational exposure in the HCWs and the non-occupation exposure that victims of sexual assault may be exposed to.

basic laboratory tests (i.e. CBC, FBS, lipid profile, urinalysis, liver and kidney function exams) and counseling should be initiated within 2-4 hours after the initial exposure. While PEP was originally designed for medical workers who were accidentally exposed to HIV through needle stick injuries, it is also used in other situations involving possible exposure to HIV, such as sexual assault.

PEP should be given as soon as possible, ideally within the first two hours after exposure but should not be given beyond the 72 hours after exposure to HIV, and must continue for approximately four weeks. After this period, the benefits are probably minimal (or non-existent) and the risk of intolerance and side-effects associated with anti-retrovirals (ARVs) will outweigh any potential preventive benefit. PEP provides potential benefit in administering early treatment in minimizing the risk although no large, prospective randomized controlled trial has been done to determine the real efficacy of occupation PEP. However this is the only time that starting ARV therapy should be considered to be an emergency.

The purpose of this protocol is to provide information to health workers on steps to be taken if they or a victim of sexual abuse has been exposed to HIV. This protocol also has a small section that looks at the risk for hepatitis B and C. Also embedded in this protocol are the guidelines for attending physicians and the required consent forms.

Who should be given PEP?

Any health care worker and/or victim who has been exposed to HIV through:

- Occupational exposure through blood or blood products
- Sexual assault

PEP should be given to an individual only if:

- Exposure occurred within the previous 72 hours;
- The exposed individual is not known to be diagnosed with HIV;
- There was a significant exposure of mucus membranes or non-intact skin to potentially infectious fluids;

- The source of exposure is known and the HIV status of the source is positive, or if the source is unknown

NOTE: <u>PEP is not for individuals who were exposed to HIV through unprotected sex.</u>

Pregnant health care providers should be encouraged to take PEP as this can reduce the risk of the HIV infection being passed onto the unborn child.

Who should not receive PEP?

PEP should not be given to an individual if:

- The exposed person is known to be HIV positive;
- The exposure does not pose a risk of transmission, that is after:

  -Exposure of intact skin to potentially infectious body fluids
  -Any exposure to non-infectious body fluids (such as faeces, saliva, urine and sweat)
  -Exposure to bodily fluids from a person known to be HIV-negative, unless this person is suspected of being in the 'window period'
- If exposure occurred more than 72 hours.

PROCEDURES FOR THE MANAGEMENT OF OCCUPATIONAL EXPOSURE

The following outlines steps to be followed as a result of occupational exposure however; it must be stressed that appropriate post-exposure management should be individualized.

If a person is exposed to a needle stick injury:

A. **Treat exposure site.**
   - Clean exposure site with soap and water.
   - Flush exposed mucous membranes with water only. Do NOT apply or inject caustic agents, antiseptics or disinfectants into the wound.

reasonable chance of exposure to blood or body fluids should receive hepatitis B vaccine. Vaccination should ideally occur during the health-care worker's training period. Workers should be tested 1-2 months after the vaccine series has been completed to ensure that vaccination has provided immunity to HBV infection. For those workers who have not developed immunity after the complete scheme has been given, the options of re-vaccination should be analyzed with their treating clinician.
For those who didn't develop immunity and require prophylaxis, the Hepatitis B immune globulin (HBIG) is effective in preventing HBV infection after an exposure. The decision to begin treatment is based on several factors, such as:

- Whether the source individual is positive for hepatitis B surface antigen.
- Whether you have been vaccinated.
- Whether the vaccine provided you with immunity or not.

The Hepatitis B vaccine is available from your Public Health Unit for free to all those health care workers.

Viral Hepatitis C (HCV)

There is currently no vaccine against hepatitis C and there is no PEP treatment after an exposure that will prevent infection. Immune globulin is not recommended but there is evidence that treating acute hepatitis C with pegylated interferon +/- ribavirin may prevent the development of chronic infection.

Human Immunodeficiency Virus (HIV)

There is no vaccine against HIV. Systemic infection does not occur immediately after exposure. This will provide a brief window of opportunity during which the use of antiretroviral intervention might change or prevent viral replication. Theoretically, beginning Post Exposure Prophylaxis (PEP) immediately after exposure might prevent or inhibit systemic infection by neutralizing the viral multiplication in the initial target cells.

72 hours. In addition, women who are pregnant at the time of exposure can still be offered PEP for HIV. (see algorithm in annex)

The recommended dosage for emergency contraception is:

- **Levonorgestrel 0.75 mgs orally initial dose and 0.75 mgs orally 12 hrs later (total is two doses)**

G. Survivors of sexual assault should also get prophylactic treatment for the most common sexually transmitted infections. The treatment includes:

Medication	Dose	Route
Metronidazole	2 grs – stat dose	Oral
Azithromycin	1 gr – stat dose	Oral
Ceftriaxone	125 mgs – stat dose	Intramuscular

• **Educate and evaluate patient on the need to immediately report** symptoms (lymphadenopathy, rash, sore throat, flu-like symptoms) as this is suggestive of acute HIV sero-conversion.

Sexual Exposure in Children and Adolescents:

This pediatric population is also to be considered in the realm of sexual abuse and medical literature has confirmed cases of sero conversion after an event of sexual assault. Victims of sexual abuse are more likely to sero convert, particularly females since the vaginal epithelium is thinner in young girls, because of cervical ectopy and because the victims may be continuously exposed since abuse may be over an extended period by the same person.

Is a vaccine or treatment available to prevent infections with blood borne pathogens?

Viral Hepatitis B (HBV)

Hepatitis B vaccine has been available since 1982 to prevent HBV infection. All Health Care Workers who have a

- Irrigate eyes with clean, saline solution continuously.

There is no scientific evidence that shows that using antiseptics, topical antibiotics or squeezing the wound will reduce the risk of transmission of a blood borne pathogen. Using a caustic agent such as bleach has also not proven to be of any further benefit and is thus not recommended.

Body fluids and the risk of HIV transmission in a significant exposure

HIGH RISK	LOW RISK (if not contaminated with blood)
Blood	Urine
Amniotic fluid	Vomit
Cerebro spinal fluid	Saliva
Breast milk	Faeces
Pericardial, peritoneal, synovial and pleural fluids	Sweat
Unfixed human tissues or organs	Tears
Exudative fluids from burns or skin lesions	Nasal secretions
Vaginal secretions	Sputum
Semen	
Saliva associated with dental procedures	

B. **Conduct risk assessment.** Evaluate the exposure for potential transmission of HIV, HBV and HCV, based on the route, severity of exposure, and the type of body fluids involved.

C. **Assess eligibility of individual to receive PEP according to the following eligibility criteria:**

• Less than 72 hours has elapsed since exposure, and
• Exposed individual is not known to be HIV infected, and
• Source person is HIV infected or the HIV status of the source person or the source person is unknown, and
• Exposure was to blood, body tissues, visibly bloodied stained fluids (cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid) or amniotic fluid; and
• Exposure penetrated the skin with spontaneous bleeding or deep puncture or splash of significant amount of fluid to mucous membrane, or prolonged contact of an at- risk substance with non-intact skin; and
• If the skin was penetrated, exposure was from a recently used hollow bore needle or other sharp object visibly contaminated with blood.

D. Evaluate exposure source

If source person is known:

• Seek voluntary HIV testing of source as soon as possible after exposure.
• Evaluate for evidence of other blood borne disease (HBV, HCV).

If source person is unknown:

• Provide treatment based on assessment of blood borne disease, risk and type of exposure, but consider the source person as potentially infectious.

If source person is negative:

- **No PEP is warranted.**

E. Provide individual with HIV-PEP information:

- The risk of HIV transmission with and without PEP.
- The benefits and risks of taking PEP.

C. Evaluate exposure source

If source person is known:

• Seek voluntary HIV testing of source as soon as possible after exposure.
• Evaluate for evidence of other bloodborne disease (HBV, HCV)

If source person is unknown:

• Base treatment on assessment of type of exposure, but consider the source person as potentially infectious.

If source person is negative:

- **No PEP is warranted.**

D. Provide individual with HIV – PEP information, and before administration of PEP:

NOTE: Refer to providing individual with PEP information as in previous segment.

E. Follow Up

• **Arrange follow-up consultations** at 3 and 6 months post-exposure to repeat HIV testing, to evaluate any side effects, the adherence to the PEP regimen, symptoms of HIV sero-conversion, psychosocial/emotional needs and referral needs.

• **Screen and treat for other sexually transmitted diseases:** there is potentially a higher risk of transmission of other STIs than HIV.

F. Pregnancy testing and emergency contraception for survivors of sexual assault. All female rape survivors of child bearing age should be offered a pregnancy test and if negative, should be offered emergency contraception. Emergency contraceptives can be given up to five days after the sexual assault, but should ideally be given within the first

PROCEDURE FOR THE MANAGEMENT OF NON-OCCUPATIONAL EXPOSURE – VICTIMS OF SEXUAL ASSAULTS

The following are important steps to be taken by the health care worker:

A. Initial post-assault visit.

Provide initial crisis intervention (e.g. emotional support) and first aid. Where possible, PEP should be offered as part of an integrated package of post-rape or HIV prevention services. Explain to the survivor that you will be conducting a general medical examination and forensic examination, with the potential need to take samples for investigation. Provide routine clinical management and/or collection of forensic evidence as soon as possible. Before collection of forensic evidence, it should first be confirmed whether oral sex was performed, and if so, an oral swab should be obtained prior to taking any medication.

B. Conduct risk assessment and assess the eligibility of the individual according to the following eligibility criteria:

- Less than 72 hours has elapsed since exposure, AND
- Exposed individual is not known to be HIV infected, AND
- Source person is HIV infected or of unknown HIV status, AND
- A defined risk of exposure such as:

a. receptive vaginal or anal intercourse without a condom or with a condom that broke or slipped; OR
b. contact of perpetrator's blood or ejaculate with mucous membrane or non-intact skin during the assault; OR
c. receptive oral sex with ejaculation; OR
d. the survivor was drugged or otherwise unconscious at the time of the alleged assault and is uncertain about the nature of the potential exposure;
e. the survivor was gang raped.

- A thorough medical history (including medications) of the HCW must be documented
- The importance of PEP during pregnancy.
- The importance of adhering to prescribed medications continuously for 4 weeks.
- That PEP is not fully guaranteed to prevent HIV transmission.
- The possible side effects of the PEP medications (mainly nausea and fatigue) and how they can be reduced by taking medication with food and with anti-emetics.
- The benefits of HIV testing (baseline, and again at 3 and 6 months).
- Other recommended blood tests.
- The usual course of PEP is 4 weeks: If there is a clinical justification, the treating clinician can stop the prophylaxis but this will reduce/cancel the effectiveness of PEP.
- The importance of taking precautions to prevent HIV transmission (e.g. avoiding sex or using condoms during sex, not sharing needles and not breastfeeding, if acceptable, feasible, affordable and safe) for the next 6 months or until testing excludes HIV infection.
- Not to donate blood, semen or body tissues for the next 6 months.
- The *HCW may decline PEP* and this must be respected and *properly documented*.

F. Report occupational exposure

Report all occupational exposure to the Chief of Staff or Administrator or to the Infection Control Unit/Nurse or whoever is the person responsible for occupational exposure within the unit, using the incident report form. Details such as the date and time of exposure, details of incident and procedure leading to exposure, type, severity and amount of fluid to which individual was exposed; exposure source details (i.e. any blood borne diseases, history of ARV therapy or resistance); post exposure management, including health care worker's PEP treatment decision, should be documented in the form. This report needs to be done immediately after the incident as proper documentation must be made at all times.

Arrange follow up consultations during the treatment in order to:

- Evaluate side effects, adherence to PEP regimen, psychosocial/emotional needs and referral needs, and at 3 and 6 months post exposure to evaluate symptoms of HIV sero conversion and to repeat HIV testing.

- Prevent other blood borne diseases as there is potentially a higher risk of transmission of Hepatitis B than HIV. In the absence of proven previous immunization against Hepatitis B (by vaccination or acquired) and no possibility of immediate testing, an accelerated vaccination scheme against Hepatitis B is recommended.

- Evaluate for individual symptoms (lymphadenopathy, rash, sore throat, flu-like symptoms) which may be suggestive of acute HIV sero-conversion.

- **Adequate counseling as the psychological impact may be the greatest factor to deal with.**

What is the risk of infection after an occupational exposure?

Viral Hepatitis B (HBV)

- Health Care Workers who have received the hepatitis B vaccine and have developed immunity to the virus are at virtually no risk for infection.
- For an unvaccinated person, the risk from a single needlestick or a cut exposure to HBV-infected blood ranges from 6-30% and depends on the hepatitis B e antigen (HbeAg) status of the source individual.
- Individuals who are both hepatitis B surface antigen (HbsAG) positive and HbeAg) positive have more virus in their blood and are thus more likely to transmit HBV.

Viral Hepatitis C (HCV)

- Based on limited studies, the risk for infection after a needlestick or cut exposure to HCV-infected blood is approximately 1.8%.

- The risk following a blood splash is unknown, but is believed to be very small; however, HCV infection from such an exposure has been reported.

Human Immunodeficiency Virus (HIV)

- The average risk of HIV infection after a needlestick or cut exposure to HIV-infected blood is 0.3% and this is from pooled data from several prospective studies of health care personnel. Initial studies indicated that if zidovudine is administered promptly after such an exposure, the likelihood of HIV transmission may be reduced by 80-89%.
- The risk after exposure of the eye, nose, or mouth to HIV-infected blood (mucous membrane exposure) is estimated to be, on average around 0.1%.
- The average risk associated with exposure to non-intact skin and exposure to HIV infected fluids and tissues other than blood or other bloody fluids is too low to be estimated in prospective studies. A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin. The risk may be higher if the skin is damaged or broken or if the exposure involves a large surface area of skin or is a prolonged exposure.

Risk factors for HIV seroconversion following a needlestick injury from a HIV positive patient
Deep injuries
Device is visibly contaminated with the source patient's blood
Larger diameter needles
Needle has been placed directly in vein or artery
Terminal disease in the source patient
High viral load in the source patient

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