

**Occupational Post Exposure Prophylaxis
for HIV:
– A discussion paper**

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Introduction

Each day thousands of healthcare workers (HCWs), around the world, suffer accidental occupational exposures during the course of their role of caring for patients. These injuries can result in a variety of serious and distressing consequences ranging from extreme anxiety to chronic illness and premature death for the individual involved. The most important response to this risk is to prevent as many of these injuries as possible, by constantly educating HCWs on the best methods for preventing injuries, by improving the safety of equipment and by working towards the optimal occupational health and safety environment. There is a wide range of blood borne infections that a HCW can be exposed to in the course of their work, including Hepatitis B and C (HBV and HBC), Cytomegalovirus, Epstein - Barr virus, malaria, and Human Immunodeficiency Virus (HIV). This latter infection is probably the most serious and causes the highest level of anxiety amongst HCWs.

In many resource constrained settings, HCWs are managing an increasing number of HIV infected patients who come into the healthcare system for care and treatment. This discussion paper will examine the issues associated with occupational exposure to HIV only and not other blood borne infections. However in another forum it is important to consider options for occupational exposure to other blood borne infections.

As voluntary counselling and testing (VCT) and antiretroviral therapies (ART) for HIV disease are expanding in resource constrained settings, the number of people who require invasive procedures is increasing, thus raising the potential risk of injury to HCWs and transmission of HIV. In addition, as patients taking ART accrue the benefits of therapy and live longer, there will be an increasing patient load for HCWs, again increasing the potential for occupational exposure and transmission of HIV and other blood borne infections. The generally accepted risk for HIV infection, following a percutaneous exposure to HIV-infected blood, is approximately 0.3%.¹ However, the data that underpin this estimate were collected in the United States in settings where resources, training and equipment are close to optimal and therefore probably represent the minimal risk estimate. It is highly unlikely that a similar overall estimate of risk would exist for resource constrained settings where all aspects of care of patients place HCWs at increased risk of HIV transmission. A more realistic way to develop a risk estimate is one that depends on the type of injury incurred. The only available data on risk, according to type of occupational exposure, is again based on case-control data from the United States, France and the United Kingdom, where the risk substantially increases as the type of injury becomes more severe.²

The study (see table 1 below) describing this risk also presented data that indicated the use of zidovudine may reduce the risk of contracting HIV, following occupational exposure, by as much as 79%.² It was this 1995 study that encouraged governments, public health systems and occupational health and safety personnel to advocate the use of zidovudine in the health care setting.

Table 1: Risk Factors for contracting HIV in different exposure situations²

Risk Factor	Adjusted odds ratio*	(95% CI#)
Deep Injury	16.1	(6.1-44.6)
Visible blood on device	5.2	(1.8-17.7)
PROCEDURE INVOLVING NEEDLE PLACED DIRECTLY IN A VEIN OR ARTERY	5.1	(1.9-14.8)
Terminal illness in source patient	6.4	(2.2-18.9)
Post exposure use of zidovudine	0.2	(0.1-0.6)

* All were significant at p<0.01.

Confidence interval.

The number of HCWs occupationally exposed to HIV, and the number possibly infected, has been calculated by Elisabetta Rapiti and colleagues in their excellent work for WHO's Environmental Burden of Disease series.³ In their report the authors developed a mathematical model to calculate the incidence of HCV, HBV and HIV infections according to the probability of injury, the prevalence of disease in each of the 14 WHO - recognised geographical regions, the susceptibility of the worker and the potential of transmission from percutaneous exposures.³ Using data from a variety of published sources they estimated that, globally, there are 327,000 (range 61,000 to 1,300,000) sharps injuries to HCWs from HIV contaminated blood. The authors have then made an assumption that post exposure prophylaxis (PEP) would be offered in resource rich settings and that it would be effective in reducing the HIV infection rate in those regions by 81%. Even taking into account this highly effective role of PEP, the authors estimate that 1,000 HCWs are infected with HIV each year (range 200 – 5,000). Given the pivotal role of frontline HCWs in resource constrained countries in expanding ART, the potential loss of this number of workers each year is a serious problem that needs urgent attention.

Finally, the authors estimate that 4.4% (range 0.8% to 18.5%) of all HIV infections amongst HCWs are due to occupational injuries. It is further estimated that at least half of these cases occur in sub-Saharan Africa. As stated above, these estimates were calculated using the most conservative data available which was generally collected when there was minimal interaction between healthcare systems and patients with HIV/AIDS. This minimal interaction is often attributed to patients presenting to hospitals at the terminal stages of illness. With the increasing availability of ART, the number of people seeking VCT and treatment for HIV is expected to increase exponentially, and therefore the potential for occupational injuries will also increase. On the other hand, it may be argued that HCW safety will improve and so balance the increase in patient load. An example of the remaining risk, even in the face of the most optimal HCW safety equipment, training and procedures can be drawn from the United States where it is estimated that 384,325 injuries occur each year or 1,000 injuries each day.⁴

Table 2: Regions for burden of disease³

WHO sub-region	Mortality stratum	Countries
Afr	D	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Togo
Afr	E	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
Amr	A	Canada, Cuba, United States of America
Amr	B	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela
Amr	D	Bolivia, Ecuador, Guatemala, Haiti, Nicaragua, Peru
Emr	B	Bahrain, Cyprus, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates
Emr	D	Afghanistan, Djibouti, Egypt, Iraq, Morocco, Pakistan, Somalia, Sudan, Yemen
Eur	A	Andorra, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom
Eur	B	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Slovakia, Tajikistan, The Former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia
Eur	C	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine
Sear	B	Indonesia, Sri Lanka, Thailand
Sear	D	Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Maldives, Myanmar, Nepal
Wpr	A	Australia, Brunei Darussalam, Japan, New Zealand, Singapore
Wpr	B	Cambodia, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam

Table 3: Estimates of the number of HCWs at risk in the 14 WHO regions³

Region	Total population (x1000)	Number of health care workers	Proportion of health care workers in total population
Afr D	292,130	611,000	0.21%
Afr E	337,548	1,011,000	0.30%
Amr A	311,000	7,696,000	2.47%
Amr B	428,680	1,518,000	0.35%
Amr D	71,200	176,000	0.25%
Emr B	133,400	739,000	0.55%
Emr D	325,340	782,000	0.24%
Eur A	409,897	5,773,000	1.41%
Eur B	216,930	2,255,000	1.04%
Eur C	249,400	4,222,000	1.69%
Sear B	293,300	488,000	0.17%
Sear D	1,238,890	1,395,000	0.11%
Wpr A	152,000	2,351,000	1.55%
Wpr B	1,524,050	6,685,000	0.44%
Total	5,983,765	35,702,000	0.60%

Table 4: Number of HCWs exposed to at least one percutaneous injury with a sharp object contaminated with HCV, HBV and HIV³

Region	Estimated numbers of health-care workers exposed annually (Lower and upper estimates)		
	HCV	HBV	HIV
Afr D	33,000 (12,000-53,000)	131,000 (50,000-201,000)	33,000 (5,900-144,000)
Afr E	57,000 (20,000-92,000)	223,000 (84,000-340,000)	194,000 (37,000-652,000)
Amr A	22,000 (14,000-31,000)	7,100 (4,300-10,000)	8,000 (2,500-33,000)
Amr B	57,000 (20,000-93,000)	61,000 (22,000-99,000)	23,000 (4,100-109,000)
Amr D	10,000 (3,700-17,000)	8,700 (3,100-14,000)	4,500 (800-21,000)
Emr B	18,000 (6,300-29,000)	43,000 (15,000-70,000)	170 (30-840)
Emr D	178,000 (68,000-272,000)	143,000 (53,000-222,000)	2,200 (380-11,000)
Eur A	16,000 (5,700-27,000)	43,000 (15,000-71,000)	9,400 (1,700-46,000)
Eur B	39,000 (14,000-64,000)	113,000 (40,000-183,000)	420 (70-2,000)
Eur C	94,000 (33,000-156,000)	148,000 (52,000-241,000)	12,500 (2,000-61,000)
Sear B	28,000 (10,000-46,000)	83,000 (31,000-130,000)	5,600 (1,000-27,000)
Sear D	57,000 (20,000-93,000)	109,000 (39,000-75,000)	23,000 (4,000-107,000)
Wpr A	47,000 (17,000-77,000)	34,000 (12,000-56,000)	670 (120-3,000)
Wpr B	269,000 (96,000-439,000)	953,000 (350,000-1,498,000)	10,400 (1,800-51,000)
Total	926,000 340,000-1,490,000	2,100,000 770,000-3,300,000	327,000 61,000-1,300,000

Table 5: Number of infections attributable to sharps injuries among HCWs (average value for ages 20-65)³

Region	Number of infections attributable to sharps injuries among health-care workers* (Lower and upper estimates)		
	HCV [infections]	HBV [infections]	HIV [infections]
Afr D	580 (200-3,100)	3,600 (1,300-10,900)	100 (20-510)
Afr E	1,000 (350-5,400)	6,200 (2,200-18,800)	620 (110-3000)
Amr A	390 (240-1,800)	40 (20-120)	5 (1-20)
Amr B	1,000 (360-5,500)	6,000 (1,800-25,100)	70 (13-360)
Amr D	180 (60-980)	760 (230-3,200)	14 (3-70)
Emr B	310 (110-1,700)	2,300 (680-9,600)	1 (0-3)
Emr D	3,200 (1,200-14,900)	6,800 (2,200-25,000)	7 (1-30)
Eur A	290 (100-1,600)	210 (60-730)	6 (1-30)
Eur B	690 (240-3,800)	6,400 (2,100-23,000)	1 (0-7)
Eur C	1,700 (590-9,100)	8,200 (2,600-29,800)	40 (7-200)
Sear B	500 (180-2,700)	1,500 (480-6,100)	20 (3-90)
Sear D	1,000 (360-5,500)	7,300 (2,600-22,000)	70 (13-350)
Wpr A	830 (290-4,500)	110 (30-400)	0 (0-2)
Wpr B	4,700 (1,700-25,400)	16,000 (5,100-63,500)	30 (6-160)
Total (rounded)	16,400 (5,900-86,000)	65,600 (2,400-240,000)	1,000 (200-5,000)

*PEP applied to A-regions, HBV and HIV

Policy issues

1. *The use of HIV PEP after occupational exposure*

1.1 What should be classified as occupational exposure?

Definitions of occupational exposures usually contain the elements of a percutaneous, mucous membrane, or non-intact skin exposure to blood or body fluids of another person which occurs during the course of employment (some definitions also include exposure to intact skin; some specify the fluids which constitute an exposure.)^{5,6,7,8}

Occupational exposures in the health workplace tend to be splash exposures (low risk) or injury with a sharp object (potentially high risk depending on the sharp, the procedure and the background prevalence.) However, there are some non-health occupational exposures which may pose a similar risk – such as body piercers who work with very large hollow bore needles.

The majority of non-occupational exposures are from sexual exposure or exposure through needle sharing (potentially high risk for HIV transmission depending on context and local prevalence) or injury with a discarded needle (low risk.) However, some exposures which occur in the context of a non-health workplace may be classified as occupational exposures. For example, sex workers may be assaulted or experience condom breakages. Cleaners, municipal workers and many other workers may experience a needlestick injury from a discarded needle or a splash from blood or body fluids during the course of their work.

1.2 Risk assessment^{2,5,6,9,10}

All occupational exposures do not carry equal risk. Some are unquestionably high risk if the source is positive – such as a spontaneously bleeding injury caused by a large bore hollow needle immediately after it has been used to withdraw blood from a vein or an artery. Some exposures pose very little risk – such as exposure to body fluids other than blood, splash exposures to non-mucous membranes, or superficial injuries which do not cause bleeding. Some contacts with blood or body fluids are usually considered not to be exposures – such as when the contact is only to intact skin.

In between there is a 'grey' area of exposures which pose only a small risk epidemiologically. Despite this low level of risk, in many settings PEP is often available and prescribed after such exposures. It is likely that in many cases, even though seroconversion is thought to be extremely unlikely, PEP is prescribed because of fear of litigation if it were to happen. If national and regional guidelines recommend PEP for every instance where there is a theoretical risk for transmission, the cost per single case of infection prevented will increase significantly. It is difficult to develop a standard classification of probability of infection which could be applied in all settings to determine at

what level of risk PEP should be given. (See Addendum for sample risk assessment classification.)

1.3 Source assessment

Many protocols for management of occupational exposures call for evidence that the source is HIV positive or at high risk before PEP can be prescribed. The rationale for this policy is to reduce doses of PEP given unnecessarily when the source is negative. There are several issues which arise from policies for source assessment which are discussed below.

1.3.1 Low risk exposures

For exposures which pose no or little risk of HIV transmission it can be argued that testing the source in these circumstances is not necessary or cost effective because PEP would not be recommended after the exposure regardless of the status of the source. (It may be “available” depending on the view of availability based on risk assessment as discussed in 1.2.) If potential for transmission is the first assessment criterion, then less testing would need to be done – which would reduce the costs of management programs. To test the source after a low risk exposure would not change immediate management of the exposed person but would only serve the purposes of epidemiological data collection.

1.3.2 Time for results of source assessment

While the exact timeframe is unknown, it is generally agreed that PEP should be given as soon as possible after an exposure to maximise efficacy against viral replication. If the status of the source is unknown at the time of the exposure, waiting for the results of source testing will jeopardise the timeliness of commencing PEP. Therefore, PEP should be given after a significant exposure if there is any possibility that the source could be HIV positive. The availability and use of rapid testing to test the source may mean that less PEP needs to be given while waiting for results of source testing.^{11,12} One study found that the introduction of rapid testing reduced the number of source patients who remained untested and increased the number of exposures reported, in addition to being cost effective because of the decreased numbers of PEP regimens started.¹³

1.3.3 Possibility of source being in window period

If the source test results are negative, this does not necessarily mean that they are not infected with HIV. General recommendations are to question the source regarding possible risks within the window period. However, it is possible that the source may not know or wish to disclose past potential risks. For significant exposures, consideration should be given as to whether PEP should be available even if the source test results are negative or whether other tests should be done – such as for HIV antigen – which would show HIV infection sooner.

1.3.4 Source testing not possible

Source test results may not be able to be obtained for a number of reasons – such as if the source is unknown, if they are unable to be contacted, or if they do not give consent to be tested. In this case, it is generally accepted that PEP should be given for significant injuries. This presupposes a standard classification for exposures (as discussed in 1.2.)

1.4 Maximising efficacy

Studies of both single and combination drug regimens for PEP demonstrate that even in settings where PEP is available, some eligible HCWs elect not to take it and in many cases the full four week course is not completed.^{1,14-16}

The most common reasons for not taking the full course are either that the source test results are negative or because of side effects.^{1,14,16,17} Side effects can be expected to be less with combination PEP than with zidovudine monotherapy but they are still significant and may cause about one third of HCWs who commence PEP to discontinue before completing the prescribed course.^{14,16}

Expected side effects can be reduced by the prescription of medications to alleviate them; for example, the prescription of an antiemetic to prevent or relieve nausea. With some PEP medications, anti-diarrhoeal medication may also be prescribed. In addition, advice on adherence needs to be given to the person who has had an exposure – as for anyone being commenced on an antiretroviral regimen. Such measures are likely to increase adherence to the regimen and thus increase the cost effectiveness per infection prevented. However, they also add to the cost of post exposure management programs and may consequently reduce the overall amount of PEP which is available.

Many protocols allow for the provision of a three-day starter pack of medications as soon as possible following exposure and then require the exposed person to present to a specialist clinician or health facility for continuation of medication. The advantage of this approach is that if a HCW decides not to continue with the medication for whatever reason, there is less drug wastage. Also non-specialist facilities need only to stock small amounts of medication, so less stock is wasted if they are not used by the expiry date. Timely follow up for the provision of the medications allows an experienced clinician to address issues of adherence to maximise the likelihood of the course of medications being completed as prescribed. It also allows for re-evaluation of the decision to take PEP in light of results of source testing and risk assessment by an experienced clinician. Inexperienced or non-specialist physicians may be more likely to prescribe PEP inappropriately.^{18,19}

The disadvantage of this system is that it relies on the motivation of the exposed person to return to receive the remainder of their medication regimen. It also presupposes the availability of experienced clinicians who can provide follow up.

2. PEP in the context of exposure management

2.1 Exposure management protocols

In resource constrained settings, some argue that if PEP is not perceived to be available after exposures, workers do not understand the value of reporting exposures. Exposure management protocols may exist but may not be seen to be useful in the absence of PEP. Other factors in the workplace which discourage reporting of an occupational exposure include fear of reprimand, uncertainty regarding the confidentiality of the results, being unaware that a protocol exists for reporting and dealing with occupational exposure, and lack of support and encouragement to report.

Therefore, even in the absence of PEP, exposure management protocols are an essential strategy in any setting where an occupational exposure may occur. There are many procedures besides PEP which should be included in exposure management protocols. These not only help to prevent the transmission of HIV, but may also provide epidemiological data, identify unsafe practices, reduce anxiety, and/or increase staff retention and productivity.

For example, many exposures pose little or no risk of transmission of HIV infection. An appropriate risk assessment which can provide information about the low level of risk may serve to reduce anxiety and thus increase staff retention and productivity.

Exposure management protocols need to be developed and locally promoted to identify beneficial strategies in the absence of PEP or for those low risk exposures for which PEP is not recommended.

3. PEP accessibility - legal, ethical, and resource issues

3.1 Is use of PEP cost effective?

The cost of supplying medications is only a proportion of the actual cost of PEP programs.²⁰ Additional costs include staff education, support and follow up services, medications to prevent or relieve side effects and testing of the source and the exposed person.

Cost effectiveness should consider more than just HIV infections prevented in exposed persons. A good occupational exposure management program may also help keep HCWs in the workforce, decrease stigma and discrimination and increase HCW engagement in caring for people living with HIV/AIDS (PLWHA) (which in turn will increase the benefits from investment in ART because committed HCWs are necessary to administer ART and to maximise adherence.)²¹

The best management of occupational exposures is to prevent them from occurring. There needs to be consideration of how PEP programs fit into the mix of cost effective measures to protect HCWs. In resource constrained

settings, it must be ensured that resources used to offer PEP would not decrease availability of resources for reducing occupational exposures (such as education and personal protective equipment to implement Standard (Universal) Precautions, or safe waste disposal mechanisms).

3.2 Would use of PEP for health workers mean improved care?

It can be postulated that a lack of provision of PEP could lead to reluctance by HCWs to treat PLWHA. This would result in reduced healthcare outcomes and increased stigma and discrimination against patients. It is unknown whether attitudes to PLWHA are related in any way to the availability of PEP.

3.3 Allocation of limited resources

3.3.1 Financial resources

In resource constrained settings where there is a limited budget for ART, and not all eligible PLWHA are able to access treatment, provision of PEP will almost certainly mean diversion of ART which would have been used for treatment. This may lead to increased morbidity and mortality to prevent a relatively low risk event (i.e. transmission of HIV after an occupational exposure).

The use of ART for treatment (rather than for PEP) should mean a reduced risk for HCWs because there will be less patients in healthcare facilities who pose the greatest risk of HIV transmission to HCWs (i.e. those with a high viral load or end stage disease.)⁹ However, there may be an increased number of people living with HIV as ART reduces the mortality rate.⁹

Increased access to treatment and the availability of a wider range of ART may affect PEP guidelines and therefore costs. If the source has potentially resistant virus this will mean a more expensive regimen will be necessary – either using different drugs or three drugs instead of two.

If the ethical imperative is to save life and prevent the most morbidity possible, then PEP may not be the most appropriate use of scarce resources.

3.3.2 Human resources

The provision of PEP requires human resources as well as financial resources for the cost of the medications. Clinicians are required to provide the initial risk assessment, prescription and dispensing of the medications, counselling and support, testing of the source and the exposed person, support for adherence, monitoring of side effects and other follow up. In low prevalence settings there may not be sufficient experienced clinicians to provide this support. In high prevalence, resource constrained settings experienced clinicians may be too overburdened with caring for patients to perceive provision of this service to HCWs as a priority.

There may be more cost effective ways to provide some of these support services, for instance the use of a telephone service to provide 24-hour expert risk assessment over a wide area. An example of this is the Needlestick Injury Hotline (operating in Australia since 1995) or the National Clinicians' PEPLINE (operating in the United States since 1997.)

3.3.3 Determining availability of PEP

Currently different settings have different guidelines for the availability of PEP. It is inequitable that PEP is available for fewer types of exposures (only the most significant) in resource constrained settings. It could be argued that PEP is unjustifiably available for too many low risk exposures in countries with increased resources.

In determining policy, the relative risk of transmission in different settings – needlestick, needle sharing, sexual – needs to be considered. Should people exposed occupationally have preference for PEP over those exposed non-occupationally, or should availability be determined by level of risk? (Some non-occupational exposures pose greater risk than many occupational exposures.)

3.4 Monitoring and evaluation

It is impossible to monitor and evaluate or even accurately cost PEP programs, exposure management programs, or prevention strategies because there is little baseline data on the numbers of occupational exposures that occur.

Even when data is collected nationally, in many settings few exposures are reported. There have been many retrospective surveys of HCWs which show high rates of needlestick injuries but low rates of reporting,²²⁻²⁶ even in high HIV prevalence areas.²⁷⁻²⁹

Many unreported injuries may have been lower risk exposures. It is probable that HCWs do their own risk assessment and report only those injuries they consider to be higher risk. However individual risk assessments may be based on erroneous data such as assumptions made about the source instead of the potential risk of the injury.

Summary of Issues and Questions

This discussion paper has presented an overview of the issues for consideration about the availability and prescription of PEP in resource constrained settings. A summary of the key questions examined in the paper are:

1. Should PEP be available for HCWs?
2. How can PEP accessibility be made equitable in all settings?
3. Will the provision of HIV PEP for HCWs mean that less ART is available to reduce morbidity and mortality for people with HIV?

4. Should and how PEP be equitably distributed for occupational and non-occupational exposures?
5. Will the provision of HIV PEP for HCWs mean that less money is spent on prevention - such as personal protective equipment and education for Standard/Universal Precautions?
6. Are HCWs more likely to report their exposures if they know PEP is available?
7. What can be done to encourage and facilitate reporting of occupational exposures?
8. Are HCWs more willing to care for people with HIV or HBV if they know PEP is available?
9. Is there a good and simple risk assessment system that means HCWs are not given PEP for low risk exposures?
10. How can you give HCWs access to good risk assessment 24 hours a day?
11. What is the role of source assessment?
12. Should PEP only be given if the source is known to be HIV antibody or HBV antigen positive?
13. What else needs to be available to ensure HCWs who are prescribed PEP adhere to the full course?
14. What should the post-exposure management protocol be if PEP is not available?
15. How can post-exposure management and PEP programs be monitored and evaluated?

Some areas for further examination and action include:

16. More studies to provide more accurate information on the current issues in occupational exposures in resource constrained settings e.g. safe injection, blood safety, handling and disposal of sharps and other clinical waste.
17. Standardisation of risk algorithms and decision-making flow charts.
18. Measures to increase the availability of trained and experienced clinicians for risk assessment and the management of occupational exposures.

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Addendum: Sample risk assessment classification

After an exposure to blood or body fluids, PEP may be indicated if:

Exposure is to blood, visibly blood stained fluid, concentrated virus, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid or amniotic fluid,^a **and**

The exposure was from a hollow bore needle^b or other sharp visibly contaminated with blood, **and**

The exposure occurred less than 72 hours previously, **and**

The exposure was:

skin penetration with spontaneous bleeding or deep puncture, or splash of significant amount of at risk fluid to mucous membrane, or prolonged contact of at risk fluid with non-intact skin

NB – Source assessment

If source status is not immediately available (i.e. already known or available by rapid testing), the decision to commence PEP should be based on the above factors. If source can be tested, the test results should be included in the decision as to whether to continue PEP if it is commenced.^c

If the source is HIV antibody negative at the time of the incident assessment should be made as to whether they could possibly be in the window period before the health care worker makes a decision to stop taking PEP.

Notes

- a Other fluids are not considered a risk unless they are visibly blood stained.
- b hollow bore needles used for venepuncture or vascular access account for the majority of recorded cases of occupational transmission
- c while sources with a high viral load pose a greater risk of transmission, transmission has occurred from asymptomatic sources

Addendum References

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