Guidance Note on Health Care Worker Safety from HIV and other Blood Borne Infections

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Health, Nutrition and Population (HNP) Discussion Paper

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Guidance note on Health Care Worker Safety from HIV and other Blood Borne Infections

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For the East Asia and Pacific Healthcare Worker Safety Network

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Abstract: The safety of health care workers (HCWs) who take care of people with HIV/AIDS and other infectious diseases is of paramount importance. Occupational transmission of blood borne infections is not regarded as a common problem in developed country settings, but this is not the case in resource poor countries where the incidence and impact of such exposures is under-reported and is now becoming appreciated as an important risk factor for HCWs. It is generally assumed that protection from occupational exposures requires expensive equipment which is not reasonable for resource poor health care services. However, appropriately designed education and training, in combination with relatively low-cost technologies have the potential for both reducing injuries and increasing the confidence of Healthcare workers in providing essential care for their patients.

Keywords: Health Care Worker Safety; HIV/AIDS; Infection Control; Standard Precautions; Occupational Exposure to Blood Borne infections

Disclaimer: The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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# TABLE OF CONTENTS

Table of Contents v

Foreword viii

Acknowledgements x

Introduction 1

**Purpose of this Guidance Note** 1

**Abbreviations** 1

**Part I - SCOPE OF THE PROBLEM** 2

1.1 *The extent of blood-borne viruses (BBV)*
   - How widespread are blood-borne viruses? 2
   - Where can exposures occur? 2
   - How does transmission occur in the health care setting? 2
   - Who is at risk of infection? 3
   - Excessive use of injections 3

1.2 *The potential impact on HCW of caring for people with BBV*
   - Health care worker anxiety 4
   - A safe workplace 4

1.3 *Rationale for engaging in health care worker safety*
   - The value of health care workers 4
   - The role of health care workers 4
   - Impact of losing health care workers 5

1.4 *Strategies to engage HCW*
   - A holistic approach 5
   - Policy development and best practice 6
   - Health care worker safety capacity building 6

**Part II - DEVELOPING HCW SAFETY GUIDELINES** 7

*Summary of principles of HCW safety* 7

*Practices which are NOT recommended to prevent transmission* 7

A. *Reduce susceptibility to infection*
   i. Vaccination programs 8
   ii. Health education 8

B. *Prevent occupational exposures*
   i. Reduce potential for exposure 8
   ii. Engineering controls 9
   iii. Standard Precautions 11
   iv. Safe sharps handling 13
C. Manage occupational exposures

i. Encourage reporting

ii. Simple, accessible protocol

iii. First aid

iv. Risk assessment

v. Post exposure prophylaxis

vi. Testing

vii. Support

viii. Follow up

D. Maintain health of infected HCW

i. Protocols which support infected HCW

ii. Assurance of confidentiality

iii. Work practices

iv. Infection control standards

v. Compensation for occupationally acquired disease

Part III - STRATEGY FORMULATION

Rationale for formulating national policies and implementation strategies

Steps in the strategy design and policy development process

National sector assessment

Formulation of a National Strategy

Ensuring government commitment and support

Development of national guidelines

Capacity building and training

Resource provision

Networking with stakeholders

Development of outcome indicators

Development of local policies and protocols

Implementation of policies

BIBLIOGRAPHY

RESOURCES FOR HELP AND INFORMATION

Appendix 1: Prioritising measures to increase HCW safety by cost

Appendix 2 : Health Care Worker Safety Checklist
FOREWORD

Healthcare worker fear of contamination by HIV, hepatitis, or opportunistic infections such as tuberculosis has a direct (and potentially negative) impact on the provision of care and treatment to patients, their families and the community. This affects clinical, social and economic outcomes. Similarly, reducing or ameliorating this fear is an integral part of the global response to the HIV/AIDS epidemic and to the achievement of the Millennium Development Goals.

Improving healthcare worker safety will require concerted national efforts along with support from the international community. In addition, health centers and communities will need to be an integral part of the process. The private sector involved in delivering health care services will also play a role, as will non-governmental organizations that utilize healthcare workers.

Yet there is still a great need for information to support this process. This area would benefit by more publications and scientific studies that focus on occupational safety issues of health care workers who are faced with managing growing numbers of HIV/AIDS patients in developing countries.

It is our hope that this guidance note will begin to fill this gap. This note was designed to serve as a stepping-stone for informing further discussion and action. In this way, we hope to promote prevention through knowledge – and continue to improve health outcomes.

Debrework Zewdie

Director
Global HIV/AIDS Program of the World Bank
Human Development Network
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INTRODUCTION

Health care worker (HCW) safety is a significant issue for infectious disease management in the South East Asian Region, although relatively few cases of occupational transmission of blood borne viruses (BBV) have been recorded. The impact of occupational exposures is not known, due to limited availability of surveillance. Addressing safety issues will lead to improved standards of health care for staff and patients and increased retention of HCW.

PURPOSE OF THIS GUIDANCE NOTE

The purpose of this Guidance Note is to encourage policy makers to include HCW safety as a component in all health policies, protocols and guidelines. The Guidance Note provides some strategies as to how this may be achieved as well as guidelines for the content of policies. It uses straightforward language and includes practical guidelines so that clinical HCW can also use the document to make workplace practices safer and educate themselves and their colleagues. Many of the strategies outlined can be implemented at little or no cost.

The three sections of the Guidance Note address the rationale for the importance of health care worker safety, the practical steps needed to maintain a safe workplace and strategies to implement safe practices.

ABBREVIATIONS

AIDS – Acquired Immune Deficiency Syndrome
BBV – Blood-borne virus(es)
CDC – Centers for Disease Control
HBV – Hepatitis B virus
HBsAg – Hepatitis B virus surface antigen
HBeAg – Hepatitis B virus ‘e’ antigen
HCV – Hepatitis C virus
HIV – Human Immunodeficiency Virus
HCW – Health care worker(s)
NSI – Needlestick injury
PCR – Polymerase chain reaction
PEP – Post exposure prophylaxis
PLWHA – People living with HIV/AIDS
PPE – Personal protective equipment
PART I - SCOPE OF THE PROBLEM

1.1 THE EXTENT OF BLOOD-BORNE VIRUSES (BBV)

How widespread are blood-borne viruses?

This guidance note is particularly concerned with the prevention of transmission of the following BBV: hepatitis B (HBV), hepatitis C (HCV) and the human immunodeficiency virus (HIV).

Each year there are approximately 8 to 16 million new HBV infections, 2.3 million new HCV infections and 5 million new HIV infections world wide. It is estimated that currently 3% of the world's population, approximately 170 million people, are infected with HCV while more than 2 billion people have been infected with HBV. There are currently about 40 million children and adults living with HIV/AIDS. The majority of all these infections are in developing countries.

Where can exposures occur?

Exposures can occur anywhere health care is being administered. While most transmissions are likely to occur within a clinical setting, outreach activities such as community based immunisation programs and home care also pose a risk, especially if there are inappropriate equipment and waste disposal procedures, or if equipment is reused or not cleaned properly.

The administration of unnecessary injections, the reuse of non sterile needles and poor disposal mechanisms for contaminated equipment may all lead to an increased risk of infection. The use of unnecessarily hazardous diagnostic equipment such as non retracting finger stick lances and glass capillary tubes to test for common tropical diseases such as malaria and filariasis may also lead to exposure.

How does transmission occur in the health care setting?

Most blood-borne occupational infections occur through injuries from sharps contaminated with blood through accidents or unsafe practices.

The likelihood of infection occurring will depend on the nature of the exposure and the infectiousness of the BBV. Through one exposure a HCW may be at risk of contracting several different BBV.

Exposure to urine, faeces or aerosols poses little risk for HIV, HBV, or HCV transmission. Testing patients prior to admission to health care is not likely to be preventative as several studies have demonstrated that knowledge of patients’ status would not have reduced exposures to blood.

The questions to ask when assessing risk are covered in Section 2: Managing Occupational Exposures. The likelihood of transmission is related to several factors including the following: the infectivity of the source (if known) or prevalence of infection in the local population; the type of injury; the volume of blood or substance exposed to; the type and gauge of needle or device; the depth of penetration or the duration of contact; and whether gloves were used.

The risks for occupational HIV transmission in developed countries have been well quantified. The most risky procedures are those which involve a large hollow bore device which has been in a blood vessel, is visibly blood stained, or is contaminated with concentrated virus in the laboratory. However, a small proportion of recorded cases of transmission have been from a solid sharp or from mucocutaneous exposure.

HCV and HBV are more easily transmitted than HIV. When HCW have been infected with HCV at work it appears to be by similar devices and procedures as for HIV, although there has also been a
documented transmission from blood splash to the cornea. HBV appears to have also been transmitted by solid sharps – such as lancets used to obtain blood by finger pricks, and human bites. Before widespread vaccination for HBV in HCW in developed countries, the rate of HBV infection was greater in HCW than in blood donors. Since the availability of a vaccine, HBV transmission through occupational exposure has declined.

The following is the estimated risk per needlestick if the source is:

- HbeAg positive: 30 – 40%
- HCV PCR positive: 10%
- HBSAg positive: 2-6%
- HCV positive (PCR negative): 1%
- HIV positive: 0.3%

Certain devices are more likely to cause injury such as needles on flexible tubing (for example winged infusion needles), or devices which need to be manipulated or taken apart by hand. Certain practices are also more risky such as waste disposal or recapping needles after use. Before it was discouraged, recapping accounted for up to 30% of reported needlestick injuries.

These statistics come from Western countries with both comparatively low prevalence rates and well developed reporting and surveillance systems. These are also the countries which offer post exposure prophylaxis (PEP) to HCW, thus encouraging reporting of exposures. Higher prevalence rates in parts of Africa and Asia where there are also large numbers of health care patients with untreated advanced disease will mean a greater order of risk for exposed HCW.

**Who is at risk of infection?**

HCW most at risk of exposures are nurses, medical staff and phlebotomists (blood collectors). However, over 50% of cases of documented occupational transmission of HIV have been to nurses, followed by clinical laboratory staff (blood collectors). Physicians are at some risk, but surgical and dental staff, although at high risk of injury, have a lower risk of infection.

It must be remembered that all health care personnel (including cleaners, laundry staff and waste contractors) may be exposed to inappropriately discarded sharps and should be included in education programs on sharps safety. Some published studies suggest that student nurses and medical students are more likely to be exposed to BBV due to inexperience and should receive appropriate supervision until they achieve competence in using equipment.

There is often an assumption that emergency rooms and operating theatres are the environments which pose the highest risk for HCW. However, in many studies it has been found that a) the majority of exposures have occurred in general ward areas and b) a larger number of exposures which would be classified as high risk have occurred in medical wards.

**Excessive use of injections**

It is estimated that world wide, 12 billion injections are given annually.

In many countries it is believed that injections are more effective than other forms of treatment and this has resulted in the overuse of injections. It has been documented that there is a correlation between the frequency of injections and the prevalence of HBV, HCV and HIV. This suggests that the excessive use of injections can facilitate the spread of BBV.
1.2 THE POTENTIAL IMPACT ON HCW OF CARING FOR PEOPLE WITH BBV

Health care worker anxiety

It is understandable that HCW may be anxious about contracting a BBV through the course of their work. This concern may be justified if HCW do not have access to equipment and resources that are likely to minimise the risk of transmission. HCW may also have a limited knowledge of how BBV are transmitted and this can lead them to be fearful of conducting certain procedures or managing certain categories of patients.

HCW anxieties about contracting a BBV may mean that infected patients or those who may be considered at risk of having a BBV are not provided with optimal health care. There are many accounts of patients with a BBV, or those suspected of having a BBV, especially HIV, being discriminated against in clinical settings. This discrimination includes the quarantining of infected patients, denial of access to clinical procedures and breaches in confidentiality. Discrimination against people with HIV/AIDS appears to be based on a number of factors, including that HIV/AIDS is a life threatening disease and that people with HIV/AIDS are often considered to have acted immorally or irresponsibly.

When HCW themselves are infected with a BBV they are likely to be concerned about transmitting infection to their patients and family. However, because of a fear of reprisals, including possible loss of employment and discrimination, they may be unwilling to disclose their status. Anxiety may impact on the HCW’s ability to carry out their job effectively and therefore inadvertently increase the possibility of HCW to patient transmission. If Standard Precautions (formerly known as Universal Precautions, see section 2) are in place then the risk of HCW to patient transmission is minimised.

A safe workplace

Every effort should be made to ensure that all HCW operate in an environment that is as safe as possible for both them and their patients. Regardless of the incidence of BBV in the population, the implementation of Standard Precautions should, ideally, be practiced in all health care settings. The implementation of Standard Precautions has been shown to be the most effective way to dramatically reduce the incidence of occupational exposure.

1.3 RATIONALE FOR ENGAGING IN HEALTH CARE WORKER SAFETY

The value of health care workers

HCW are a valuable resource in any society and provide frontline care to the sick and injured. They are the human face of the health care system. Their skills and experience are beneficial not only to the institutions in which they work, but also to their communities, families and friends.

HCW have usually received several years of formal training, often subsidised or totally funded by the state. This training represents a significant investment of resources especially in resource poor countries where health and education budgets are likely to be small.

The role of health care workers

Most countries in the world have experienced, or are experiencing, an HIV epidemic. HIV has had the most impact in resource poor countries and the pressure it places on existing health infrastructures directly increases the workload of HCW.

HCW are crucial to the provision of effective care and treatment of HIV positive patients. They provide education for HIV positive people and their families in the prevention of HIV transmission and health maintenance and they train members of the community to deliver home based care.
The support that HCW provide to patients can be a critical factor in determining how patients react to illness and may encourage them in their health maintenance strategies. Similarly, HCW support to families of HIV positive patients can reduce discrimination and stigmatisation within families and local communities.

Current HIV management strategies, including pharmacological interventions, nutrition and counselling can be complex. Committed and well educated HCW are needed to ensure patients are appropriately cared for and that the disease burden is minimised.

Research has shown that the counselling provided by HCW prior to patients being tested for HIV and when the results of testing are delivered, significantly affects the way a patient responds to an HIV positive test result. Appropriate, informed and supportive counselling contributes to the patient’s ability to better respond to an HIV positive result. HCW can also utilise pre and post test counselling sessions to:

- Promote a better understanding of how HIV is transmitted.
- Encourage the uptake and maintenance of safe sex and safe injecting practices.
- Provide information on treatment and care options.

The HCW can be an important link between the HIV positive person and their partner and family, helping to minimise discrimination and increase family understanding of HIV transmission and HIV disease.

**Impact of losing health care workers**

The fear of occupational transmission of BBV may cause HCW to change occupations. The loss of a HCW has implications for the whole community. These include:

- If a wage-earning HCW has to leave work as a result of becoming ill this can impact directly on the financial security of the worker’s family and the social welfare burden of the country.
- HCW may choose to work in the private sector where there may be more resources to implement Standard Precautions thereby depleting the numbers of HCW available to work in the public sector.
- The loss of the HCW can have a disproportionate effect on the health care infrastructure of developing countries where trained health professionals are scarce in relation to the overall populations they serve. Any reduction in the number of HCW can put further strain on an already understaffed and over extended health care system.
- The cost of formal and workplace training of replacements for HCW who leave the workforce prematurely will have a detrimental impact on education and health budgets.

1.4 **Strategies to engage HCW**

**A holistic approach**

Any approach to reducing the transmission of BBV to, and by, HCW needs to be holistic and involve all stakeholders and partners. While HCW safety strategies and guidelines need to be developed, consideration also needs to be given as to how to effectively involve HCW in policy development and strategy formulation and how policies will be implemented, monitored and evaluated. Implementation is more effective if HCW feel they have some “ownership” of the policies (see Section 3).
Policy development and best practice

Achieving best practice in HCW safety requires commitment and participation at all levels within the health care institution as well as support from the health ministry. Comprehensive policies aimed at increasing HCW safety may already exist but if there is limited encouragement or incentive to implement these policies they may not be utilised. If the policies are not fully understood, difficult to follow, expensive to implement, or have been issued without consultation and staff training then they are unlikely to have an impact on actual practice.

To avoid policies becoming redundant, policy makers should consult widely and encourage HCW input into the development of HCW safety systems. HCW have first hand experience of the practices used in patient care and the use of equipment that may facilitate transmission of BBV. They will also be able to advise on whether proposed changes are practical and sustainable.

Health care worker safety capacity building

HCW and their employers need to have a comprehensive understanding of how BBV are transmitted and how occupational exposure and infection can be prevented. This will include use of Standard (Universal) Precautions within the clinical setting, the provision of training programs including formal and informal education and the development of a set of HCW safety competencies.

HIV is often the BBV of most concern to HCW and there is a need to address this concern in an appropriate way. HCW may benefit from a broad approach to HIV/AIDS education incorporating activities which address issues such as stigma and discrimination, personal and cultural values and human rights issues and obligations. This approach could include opportunities to meet with people living with HIV/AIDS (PLWHA). Face to face meetings or presentations by PLWHA are often an effective means of addressing HCW fears, increasing understanding and reducing levels of discrimination. In countries where there are only a few people, if any, who are openly HIV positive, it may be necessary to invite representatives from other countries to meet with HCW.

It can also be important for HCW to meet with people from communities that are sometimes considered at greater risk of contracting HIV including sex workers, injection drug users and men who have sex with men. Discrimination against these groups may be deeply ingrained within the society and strongly associated with the fear of HIV. As with PLWHA, face to face meetings and workshops can help to address issues which may affect the ability of HCW to work with patients from these groups. It may be useful for health care institutions to form ongoing partnerships with non government organisations representing PLWHA and other stigmatised groups. These groups are often highly skilled at advocacy and may have volunteers or staff with excellent training skills that can be utilised in HCW training.

Training programs need to be developed for HCWs which address their anxieties and support them to implement best practices in the prevention of BBV transmission. Training programs should reflect adult education principles and need to be interesting, accessible and authoritative. HCW at more junior levels or in isolated areas may especially lack access to both information and further education so it is important that HCW training is provided to staff at all levels and in all areas. Formal training programs can be supported by in-house committees (such as those devoted to infection control) and also working and support groups set up for staff to discuss issues and develop practical solutions.
PART II - DEVELOPING HCW SAFETY GUIDELINES

SUMMARY OF PRINCIPLES OF HCW SAFETY

A. Reduce susceptibility to infection
   i Vaccination programs
   ii Health education programs

B. Prevent occupational exposures
   i Reduce potential for exposure
   ii Engineering controls
   iii Standard precautions
   iv Safe sharps handling
   v Staff supervision
   vi Staff education
   vii Waste management and storage
   viii Occupational health and safety issues
   ix Data collection

C. Manage Occupational Exposures
   i Encourage reporting
   ii Simple, accessible protocols
   iii First aid
   iv Risk assessment
   v Post exposure prophylaxis
   vi Testing
   vii Support
   viii Follow up

D. Maintain health of infected HCW
   i Protocols which support infected HCW
   ii Assurance of confidentiality
   iii Work practices
   iv Infection control standards
   v Compensation for occupationally acquired disease

The principles and strategies outlined below represent the ideal standards which health care administrators and professionals would be expected to aspire to in well-resourced settings. Many can be achieved with little or no cost, but some take considerable resources (see Appendix 1). However, information is also given on what can be achieved with less than optimum resources.

PRACTICES WHICH ARE NOT RECOMMENDED TO PREVENT TRANSMISSION

- Testing of patients – this does not identify all people who may be infected with a BBV (they may be in the window period – the time during which infection may be undetectable) and may lead to a false sense of security among HCW. Testing for BBV should only be done where it is of demonstrated benefit to the patient, not as an infection control measure.
- Using different or special procedures for people with a diagnosed BBV.
- Discriminating against patients or staff with a diagnosed BBV.
A. REDUCE SUSCEPTIBILITY TO INFECTION

i. Vaccination programs

All employees at risk of exposure to BBV should be offered screening and vaccination for HBV and tetanus by their employers. Employees at risk of exposure are those whose work may bring them into contact with patients, blood or body fluids, or contaminated waste. Information about the value of HBV vaccination should be provided on employment or at orientation to a new position.

ii. Health education

The majority of health care workers infected with BBV became infected through lifestyle risk factors or because they live in an endemic region, rather than through occupational exposure. Conducting health education programs to address both occupational and lifestyle prevention of BBV for all levels of staff will help to maintain a healthy workforce. Such programs should aim to dispel myths about transmission of BBV in the community and teach protective behaviours including safe sex, safe needle use, injection safety, etc.

<table>
<thead>
<tr>
<th>TABLE 2.1 REDUCING SUSCEPTIBILITY TO INFECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNATIONAL BEST PRACTICE</td>
</tr>
<tr>
<td>Vaccination programs for HBV and tetanus</td>
</tr>
<tr>
<td>Health education programs in the workplace to address lifestyle and community transmission issues</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT CAN BE ACHIEVED WITH LIMITED RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health education programs in the workplace to address lifestyle and community transmission issues</td>
</tr>
</tbody>
</table>

B. PREVENT OCCUPATIONAL EXPOSURES

The cost of occupational exposures to the health care system (whether or not the exposure leads to infection) is high, comprising loss of work time, baseline and follow up serology testing, post exposure prophylaxis (PEP), loss of productivity from stress, possible resignation of skilled staff, disability payments, etc. Prevention is a far better and more cost effective option.

i. Reduce potential for exposure

There has been considerable work on the risks to the public from unsafe and unnecessary injections (see the publications from SIGN in the bibliography). Risks of needlestick injury (NSI) to HCW would also be lessened by reducing the numbers of injections administered. In many countries considerable public education is required to reduce demand for injections.

Each procedure in health care facilities should be examined and techniques modified where possible to reduce use or handling of sharps and potential for exposures to BBV.
ii. **Engineering controls**

There are many safety devices available which are designed to reduce potential for injury by sharps in health care.

Some examples are:

- Self-sheathing needles and cannulae which are designed so the needle is covered by an impenetrable sheath when removed from the patient and so unable to cause injury.
- Needle disposal units which burn needles from syringes after use.

In general, safer devices are more expensive than those previously used. Not all devices marketed as improving safety are actually of benefit, even if they are affordable. Before making a commitment to purchase, each device must be assessed on its merits by asking questions such as those in Table 2.2 below.

Manufacturers should be encouraged to supply disposable or safe equipment with diagnostic kits, immunisations, etc, which are administered by needles or other sharps.

When negotiating contracts with suppliers, ensure that HCW safety is one aspect of the evaluation process. Award contracts to manufacturers who consider safety issues.

<table>
<thead>
<tr>
<th>TABLE 2.2 ASSESSING SAFETY DEVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Questions</strong></td>
</tr>
<tr>
<td>------------------------------------</td>
</tr>
<tr>
<td>▪ Has there been published research on the device demonstrating effectiveness?</td>
</tr>
<tr>
<td>▪ How much more does it cost than the equipment currently used?</td>
</tr>
<tr>
<td>▪ Where is the device made? Is continued supply guaranteed?</td>
</tr>
<tr>
<td>▪ Can the device only be used safely or does it have to be manipulated?</td>
</tr>
<tr>
<td>▪ If a single use device, can it be modified for inappropriate re-use?</td>
</tr>
<tr>
<td>▪ If not single use, how is it cleaned?</td>
</tr>
<tr>
<td>▪ Is there a possibility of blood spillage or environmental contamination when using the device?</td>
</tr>
<tr>
<td>▪ Does using the device involve using a new technique?</td>
</tr>
<tr>
<td>▪ How will the device be disposed of?</td>
</tr>
<tr>
<td>▪ The device should be trialled by staff working in the clinical setting.</td>
</tr>
<tr>
<td>▪ For a needle disposal unit – can it cope with all types and sizes of needles?</td>
</tr>
</tbody>
</table>
Containers for the disposal of sharps are of particular concern in health facilities as most cases of occupational transmission of BBV involve inappropriate disposal of or an accident with a sharp. Sharps may include needles, infusion sets from intravenous fluids, introducers, surgical instruments and many other objects which are used in health facilities, as well as non-equipment such as teeth, or pieces of bone.

### TABLE 2.3 SHARPS CONTAINERS

<table>
<thead>
<tr>
<th>INTERNATIONAL BEST PRACTICE</th>
<th>WHAT CAN BE ACHIEVED WITH LIMITED RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharps containers must:</td>
<td>Containers that have been recycled from another use may be modified to meet as many of the criteria on the left as possible.</td>
</tr>
<tr>
<td>▪ Be specifically designed.</td>
<td>▪ The opening should be wide enough to allow the sharps to be dropped in without being disassembled.</td>
</tr>
<tr>
<td>▪ Have an opening that is wide enough to allow a needle and syringe to be dropped in whole.</td>
<td>▪ The opening of the container should be sealable to allow for safe transportation for disposal. This may be a screw top cap or a lid to a strong cardboard box which may be taped in place.</td>
</tr>
<tr>
<td>▪ Have a flange at the opening to prevent hands being placed inside.</td>
<td>▪ Containers should always be labelled as containing contaminated sharps, especially if various types of containers are used.</td>
</tr>
<tr>
<td>▪ Be able to be securely sealed with a lid before disposal.</td>
<td>▪ If needles are being separated from syringes for disposal, they should be removed with forceps, not by hand.</td>
</tr>
<tr>
<td>▪ Be puncture resistant.</td>
<td>▪ If needles are being recapped before disposal, this must be done as safely as possible, using a one-handed “scooping” technique or forceps.</td>
</tr>
<tr>
<td>▪ Be waterproof and leak proof.</td>
<td>▪ Sharps should not be disposed of in contaminated waste bags, unless they are first placed in a puncture resistant container.</td>
</tr>
<tr>
<td>▪ Be labelled as containing sharps.</td>
<td>▪ Soaking sharps before disposal does not reduce risks of infection and is an unnecessary expense and handling risk.</td>
</tr>
<tr>
<td>▪ Be colour coded.</td>
<td>▪ Cardboard containers should not be stored where they may become damp</td>
</tr>
<tr>
<td>▪ Be available in a variety of sizes.</td>
<td>▪ Thin cardboard containers are not puncture resistant, waterproof or leak-proof and should be avoided.</td>
</tr>
<tr>
<td>▪ Be able to be completely incinerated.</td>
<td>▪ Sharps should not be disposed of in contaminated waste bags, unless they are first placed in a puncture resistant container.</td>
</tr>
</tbody>
</table>

### POTENTIAL PROBLEMS

- Recycled empty intravenous fluid flasks or drinking water bottles are a poor option for sharps containers as the plastic is usually thin and can easily be penetrated by a needle.
- Metal sharps containers (such as recycled oil containers) are puncture resistant but cannot be incinerated. Their contents need to be emptied, which increases handling and thus the risk of needlestick injuries.
- Cardboard containers should not be stored where they may become damp
- Thin cardboard containers are not puncture resistant, waterproof or leak-proof and should be avoided.
- Sharps should not be disposed of in contaminated waste bags, unless they are first placed in a puncture resistant container.
- Soaking sharps before disposal does not reduce risks of infection and is an unnecessary expense and handling risk.
iii. **Standard Precautions**

Standard Precautions (formerly known as Universal Precautions) are designed to minimise exposures to BBV by developing safe practices which provide barriers to contact with body fluids. They include measures such as good hygiene practices, handwashing, use of personal protective equipment, waste management, appropriate use of cleaning agents and correct sterilisation, disinfection and cleaning.

Standard Precautions apply to all body substances (except sweat), mucous membranes and non-intact skin. Standard Precautions are applied equally in all settings to all people - patients, family members and HCW, regardless of what is known of their BBV status. Using Standard Precautions means that a consistent standard of infection control is applied. If Standard Precautions are not practised, HCW may not use appropriate standards of infection control for those people who have not been diagnosed with a BBV or who they do not perceive to be at risk. Because an undiagnosed person may actually be infected and infectious, this may put the HCW at risk.

<table>
<thead>
<tr>
<th>STANDARD PRECAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Standard Precautions means that all patients are treated as if they have a BBV. Any patients who have a diagnosed BBV, such as HBV or HIV – are treated <em>exactly</em> the same as all other patients. No extra precautions are needed. Extra infection control precautions are <em>only</em> used if someone is known or suspected to be infected with an infection which is spread by another route (for example, droplet, airborne, or contact transmission). Transmission Based Precautions (see below) are then used.</td>
</tr>
</tbody>
</table>

In most regions there will be a government or health department policy on Standard Precautions but in general a local policy, in line with the government policy and specific to the health care facility, is still necessary to explain how local resources and equipment are to be used.

Part of the local Infection Control Policy should include a blood and body fluid spill protocol, so that HCW know what equipment and cleaning agents are available and recommended to use for cleaning spills. Spills should be cleaned as for any other blood/body substance with personal protective equipment (PPE): cleaning up the visible matter with absorbent material, cleaning the residue or area with a neutral detergent and allowing to dry.

Handwashing has been shown to be the single most important technique in the prevention and minimisation of the spread of infection within the health care environment. Soap and water is all that is necessary for handwashing in most circumstances. Routine use of antiseptics to wash hands may lead to skin irritations and increased risk of infections in some staff. Alcohol hand rubs are of use if no running water is available (such as during a home visit or at the scene of an accident). Hands should be dried with disposable paper towels which are used once only, or cloth towels which are used for one handwash by one person before being laundered.

An important part of Standard Precautions is wearing appropriate personal protective equipment (PPE) but often too little or too much is worn. Table 2.4 outlines how to choose the appropriate level of PPE for the task.
### TABLE 2.4 CHOOSING PPE

<table>
<thead>
<tr>
<th>INTERNATIONAL BEST PRACTICE</th>
<th>WHAT CAN BE ACHIEVED WITH LIMITED RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gloves</strong></td>
<td><strong>Gloves</strong></td>
</tr>
<tr>
<td>- Gloves must be used in situations where the HCW is potentially exposed to blood and/or body substances from any person, in particular: - during any procedure where direct contact is anticipated with a patient’s blood, body substance, mucous membrane, or non-intact skin  - while suctioning a patient  - while handling items or substances that have come into contact with blood or body substances  - while performing an invasive procedure, venepuncture, or finger/heel stick  - while handling sharps and sharps containers.</td>
<td>- When supplies of gloves are limited, prioritise and use the gloves for the procedures which involve the greatest potential for exposure to BBV, regardless of what is known about the infectious status of the patient.  - Wound dressings can be performed using an aseptic no-touch technique without using gloves.  - Gloves are recommended when handling sharps or sharps containers as the risk of transmission of BBV is reduced if a sharp penetrates a gloved hand.  - Plastic bags may be used over the hands when soiling may be a hazard, for example when changing drainage bags.</td>
</tr>
<tr>
<td>- Re-usable household gloves can be worn for housekeeping and cleaning tasks, and by staff who handle waste and sharps containers. Household gloves should be washed regularly and be discarded when cracked, peeled, torn, or punctured.</td>
<td>- Re-usable household gloves can be worn for housekeeping and cleaning tasks, and by staff who handle waste and sharps containers. Household gloves should be washed regularly and be discarded when cracked, peeled, torn, or punctured.</td>
</tr>
<tr>
<td>- Single use, sterile gloves should always be used for aseptic procedures such as surgery where there is contact with tissue that would normally be sterile.</td>
<td>- Single use, sterile gloves should always be used for aseptic procedures such as surgery where there is contact with tissue that would normally be sterile.  - Sterile gloves may be washed, sterilised and reused for hygiene purposes only – not for invasive procedures.</td>
</tr>
<tr>
<td>- Using gloves does not change the need for handwashing.</td>
<td>- Only HCW with healthy intact skin can perform tasks without gloves where there is a potential for contact with blood or body fluids.  - All HCW should ensure the skin on their hands is intact by careful examination or the use of an alcohol hand rub at the start of their shift.  - Using gloves does not change the need for handwashing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aprons or gowns</th>
<th>Aprons or gowns</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Impermeable aprons or gowns should be worn when there is a risk of body fluids splashing onto clothing.</td>
<td>- If impermeable aprons or gowns are unavailable, a large plastic bag can be cut open and worn under a cotton apron or gown to protect clothing.</td>
</tr>
</tbody>
</table>
**Masks**
- Single use, fluid repellent masks should be worn when there is a likelihood of splattering or spraying of body fluids.
- Masks should be used for one procedure and one patient only before being changed.
- Masks with one way valves should be used for mouth to mouth resuscitation.

**Masks**
- Fluid repellent masks should be worn when there is a likelihood of splattering or spraying of body fluids.
- Masks should not be used for routine patient care and should be changed between procedures and patients.
- Direct mouth to mouth resuscitation without a barrier between the mouth of the health care worker and that of the patient to prevent contact with secretions is discouraged. There are various levels of protection available which can be used to provide a barrier.

**Protective eyewear**
- Protective eyewear (such as wrap around glasses, goggles, or visors) should be worn when there is a likelihood of splattering or spraying of body fluids.
  
  After use they should be discarded or cleaned appropriately.

**Protective eyewear**
- Eyeglasses provide some but not complete protection.

*Transmission Based Precautions* are designed for patients known or suspected to be infected with pathogens for which additional precautions are available and necessary to prevent transmission in health care settings. There are three types of precautions designed to prevent diseases spread by the airborne route, by droplet, or by contact. Transmission Based Precautions are used in addition to Standard Precautions.

**iv. Safe sharps handling**

When it is necessary to generate contaminated sharps in health care (when alternative techniques are not possible), it is essential to ensure protocols are in place to minimise risk of injury to HCW.

**TABLE 2.5 SAFE SHARPS HANDLING**

<table>
<thead>
<tr>
<th>INTERNATIONAL BEST PRACTICE</th>
<th>WHAT CAN BE ACHIEVED WITH LIMITED RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Re-evaluation of all procedures to ensure techniques are adopted which avoid use of sharps or minimise handling.</td>
<td>• Re-evaluation of all procedures to ensure techniques are adopted which minimise sharps handling as much as possible.</td>
</tr>
<tr>
<td>• The person who uses the sharp is responsible for its disposal.</td>
<td>• The person who uses the sharp is responsible for its disposal.</td>
</tr>
<tr>
<td>• Minimising distractions when handling sharps.</td>
<td>• Minimising distractions when handling sharps.</td>
</tr>
<tr>
<td>• Avoiding recapping of needles.</td>
<td>• Avoiding recapping where possible. If absolutely necessary a safe single-handed technique should be devised or forceps used so that the sheath is not held by hand.</td>
</tr>
<tr>
<td>• Avoiding hand manipulation of sharps.</td>
<td>• Avoiding hand manipulation of sharps (use forceps if necessary).</td>
</tr>
<tr>
<td>• Point of use disposal of sharps.</td>
<td>• Sharps containers to be sealed when</td>
</tr>
<tr>
<td>• Sharps containers to be sealed when</td>
<td></td>
</tr>
</tbody>
</table>

13
full, stored securely, not reopened, and incinerated.

- Patient compliance – addressing patient anxieties; anticipating sudden movements; delaying use of sharps or getting extra staff to help if patient agitated and/or confused.
- Wearing appropriate footwear.
- Health facilities should be responsible for the safe handling of sharps from the time they are used to the point of incineration. This includes responsibility for any contractors used in this process.

- Patient compliance – addressing patient anxieties; anticipating sudden movements; delaying use of sharps or getting extra staff to help if patient agitated and/or confused.
- Wearing appropriate closed in shoes (not shoes that are open at the toes or heels) in clinical areas to prevent injury to the feet.
- Education and supervision of contractors who dispose of sharps to prevent injuries and to prevent illegal recycling of contaminated sharps.
- Instruments which are being re-turned to a Central Sterilising area should be put into strong plastic sealable containers (such as a lunch box) for transportation. Soaking instruments in disinfectant first or during transport is unnecessary. It is preferable that instruments be cleaned by experienced staff in the Sterilising area. This saves duplication of tasks and costs of staff training.

v. **Staff supervision**

Unskilled staff who are unused to handling equipment and providing patient care are more likely to have accidents. All students and new staff should be supervised performing procedures until they have demonstrated competence and safe practice in the procedure.

vi. **Staff education**

All HCW and support staff in health care facilities should have access to ongoing inservice education on a range of topics relating to BBV.

Topics which should be regularly covered and updated include:

- BBV epidemiology, pathophysiology and modes of transmission.
- Standard Precautions.
- Selection of PPE.
- Safe sharps handling.
- Choosing and using sharps containers appropriately.
- Managing exposures – procedures and local protocols, first aid and risk assessment.

Staff to be involved:

- Clinical HCW.
- Cleaning/housekeeping staff.
- Any staff who handle waste or sharps.
- Partners and families of staff may benefit from simple education about transmission of BBV as they may be anxious about the HCW working with people with BBV.
vii. **Waste management and storage**

The subject of health care waste management has been addressed in an earlier World Bank Guidance Note. Addressing this issue is essential to ensure the health of the general community. To ensure HCW safety the main issues are appropriate point of use sorting of waste and on-site storage.

Attention should also be paid to getting the right balance between minimising amount of waste generated as opposed to minimising risks of infection by using disposable, single use items.

viii. **Occupational health and safety issues**

Addressing occupational health and safety issues such as adequate staffing levels, workplace stress and safe working conditions will result in safer work practices and reduce the potential for occupational exposures.

ix. **Data collection**

Occupational exposures and “near-misses” should be documented to enable ongoing evaluation of the safety of the workplace. The development of measurable outcome indicators for HCW safety programs and the dissemination of results will assist in the introduction and funding of successful and cost-effective programs.

Unless the lessons learned from the data can be implemented, data collection and analysis is not useful and can be an unnecessary waste of resources. There needs to be a mechanism to change practices based on new local and international research.

C. **MANAGE OCCUPATIONAL EXPOSURES**

i. **Encourage reporting**

Staff may be reluctant to report occupational exposures because they are afraid of being blamed for the action which caused the exposure or afraid their confidentiality will be breached. Sometimes the attitudes of others, such as work peers, discourage reporting, or the process is seen as being too long and complicated with too many forms to fill in.

Some measures by which managers may encourage staff to report exposures are:

- Have a simple and clear management plan.
- Relieve staff from duty to be assessed and followed up without question.
- Ensure staff are seen as soon as possible by the person doing the risk assessment.
- Have confidential reporting and documentation systems.
- Make the process supportive, not punitive.
- Give options for assessment and testing off site from the facility where they work to allow increased confidentiality.

A reporting mechanism needs to be developed which sets out the responsibilities of the individual, the manager, the institution and the appropriate government agencies.

ii. **Simple, accessible protocol**

Each health care facility needs a local protocol for managing exposures which is relevant to local resources and circumstances. All staff should know where the protocol is located, what first aid to implement after exposure and how to get an exposure assessed immediately after it occurs. The more simple and practical the protocol, the more likely it is that staff will report exposures and the less anxious they will feel should an exposure occur.
iii. First aid

The aim of first aid after exposure to body fluids is to decrease contact time with any BBV by washing away the fluid. Washing should not be with any strong solution which may lessen the skin integrity. The following is recommended after exposure to BBV:

- Skin – wash with soap and water.
- Broken skin – wash with soap and water, allow to bleed a little, first aid (eg suturing) if necessary.
- Eye – rinse thoroughly with water or saline solution. If wearing contact lenses remove after rinsing eye and clean as usual.
- Mouth – rinse with water and spit out several times.

All staff should be taught what to do as immediate first aid so they are prepared should an exposure occur.

iv. Risk assessment

Risk assessment is the most urgent step of the management process after first aid. It is urgent because once a risk assessment has been done, it can be determined whether PEP should be offered and whether the source of the exposure needs to be assessed.

Even if PEP is not available, it is still worthwhile to provide a timely risk assessment as it may be possible to allay the anxiety of the exposed person and provide support which may be crucial to maintaining their ability to function at work.

If the type of exposure is unlikely to transmit a BBV, then no further action is required except a review of work practices – to prevent further exposures - and baseline and follow up blood testing (if requested by the HCW). Risk assessment by a skilled person should be available 24 hours a day so that shift workers are not penalised by having to wait for a risk assessment which would delay their access to risk assessment and PEP. This may mean arrangements have to be made with another institution to provide risk assessment by telephone. Table 2.6 sets out questions which could be considered when doing a risk assessment.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Was first aid done immediately?</td>
<td>Immediate first aid reduces contact time.</td>
</tr>
<tr>
<td>How long ago was the exposure?</td>
<td>Within 72 hours means the exposed person may be eligible for prophylaxis.</td>
</tr>
<tr>
<td>Was it an exposure to sharps or a splash-type injury?</td>
<td>Solid sharps are less likely to transmit BBV.</td>
</tr>
<tr>
<td>If sharps injury:</td>
<td></td>
</tr>
<tr>
<td>What caused the injury – hollow bore needle or solid sharp object?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>What had the sharp been used for?</td>
<td>Lower risk of transmission.</td>
</tr>
<tr>
<td>Had the sharp been in a vein or an artery?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>Was the injury through gloves or clothing?</td>
<td>The US CDC defines potentially infectious fluids in the workplace</td>
</tr>
<tr>
<td>Was the sharp visibly blood stained?</td>
<td></td>
</tr>
<tr>
<td>What type of fluid was involved in the exposure?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>If a needle, what size was the bore?</td>
<td>to be blood, semen, vaginal secretions, and cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids. Larger bore needles (such as 19 or 20 gauge) pose greater risks.</td>
</tr>
<tr>
<td>If splash injury:</td>
<td>See above</td>
</tr>
<tr>
<td>What type of fluid was involved in the exposure?</td>
<td>Not considered an exposure if to intact skin.</td>
</tr>
<tr>
<td>Was the exposure to mucous membranes or non-intact skin?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>Was the fluid visibly blood stained?</td>
<td>Higher volumes of blood pose a higher risk of transmission.</td>
</tr>
<tr>
<td>How much blood or blood-stained fluid was the person exposed to?</td>
<td>Length of contact time is a factor in transmission.</td>
</tr>
<tr>
<td>How long was the exposure to blood or blood-stained fluid?</td>
<td></td>
</tr>
<tr>
<td><strong>Exposed person</strong></td>
<td></td>
</tr>
<tr>
<td>Are they vaccinated against HBV and tetanus?</td>
<td>If significant injury and not immune consider HBV and/or tetanus prophylaxis.</td>
</tr>
<tr>
<td><strong>Source (if significant exposure)</strong></td>
<td></td>
</tr>
<tr>
<td>If the source is known to have a BBV:</td>
<td>If the injury is not significant, source follow up is not essential.</td>
</tr>
<tr>
<td>HIV – do they have a positive antigen or high viral load?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>– are they on medications? Which?</td>
<td>May affect choice of PEP medications.</td>
</tr>
<tr>
<td>HBV – are they HBsAg or HbeAg positive?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>HCV – are they PCR positive?</td>
<td>Higher risk of transmission.</td>
</tr>
<tr>
<td>Source BBV status unknown or negative:</td>
<td>Assess if likely to be infected.</td>
</tr>
<tr>
<td>Do they have risk factors?</td>
<td></td>
</tr>
<tr>
<td>Could they be in the window period?</td>
<td></td>
</tr>
</tbody>
</table>

**v. Post exposure prophylaxis**

PEP is a medication or combination of medications which are given after a significant exposure to a blood borne virus to help to prevent the development of infection in the exposed person. For detailed PEP guidelines see regional protocols or Centers for Disease Control (CDC) guidelines listed in the bibliography.

*For HIV:* If PEP is available it should be offered as soon as possible after an exposure that is assessed to be significant – that is, able to transmit a BBV. It is not appropriate to wait for blood test results from the source of the exposure before offering PEP. PEP should be commenced and reassessed once the status of the source is known.

*For HBV:* If the exposed person is not immune to HBV, and the exposure is significant, hepatitis B immunoglobulin and commencement of vaccination can be offered within 72 hours of exposure. For all less significant exposures to a non-immune person, suggest commencement of course of vaccination.
vi. Testing

A baseline blood test for HIV, HBV and HCV should be done to establish the status of the exposed person at the time of the incident. This does not need to occur immediately if testing will delay risk assessment and commencing PEP, or if appropriate pre-test counselling is not available. The same pre-test counselling should be given to HCW as would be given to clients presenting for an HIV test, in keeping with regional guidelines and legal requirements. This counselling is necessary because the baseline test must consider lifestyle as well as occupational risks for HIV. For this reason, the exposed HCW may prefer to have this testing done at another site or by their local health care provider. Blood for testing can only be drawn after informed consent has been given for the procedure.

HCW who have sustained a significant exposure to a source who has or is likely to have a BBV, or who is unknown should be advised to prevent transmission of possible infection to others. This involves advice about safe sex practices, safe needle use, safe work practices, breastfeeding and alternatives and donating blood.

vii. Support

Reactions to occupational exposures do not equate to the level of risk involved. Some staff will be very anxious after an exposure that posed minimal risk. Counselling and support should be available to both the exposed person and those close to them – such as family members or partners, who may also be concerned about their own risks.

viii. Follow up

At the time of baseline blood testing, the exposed person needs to be informed as to where to receive their results in person, as well as when future blood tests need to be conducted. The timing of follow up testing required varies according to regional protocols. (In Australia, it is 3 months for HIV and 6 months for HBV and HCV).

There should also be an occupational health and safety review after each exposure to determine whether techniques or equipment need to be modified to prevent further exposures.

<table>
<thead>
<tr>
<th>TABLE 2.7 MANAGING OCCUPATIONAL EXPOSURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNATIONAL BEST PRACTICE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>▪ Encourage reporting of exposures.</td>
</tr>
<tr>
<td>▪ Have a simple accessible management</td>
</tr>
<tr>
<td>protocol for exposures.</td>
</tr>
<tr>
<td>▪ Have posters explaining first aid after</td>
</tr>
<tr>
<td>exposures.</td>
</tr>
<tr>
<td>▪ Provide immediate risk assessment.</td>
</tr>
<tr>
<td>▪ Provide PEP after significant exposure</td>
</tr>
<tr>
<td>to HIV and HBV.</td>
</tr>
<tr>
<td>▪ Provide baseline blood testing after pre-</td>
</tr>
<tr>
<td>test counselling.</td>
</tr>
<tr>
<td>▪ Provide support to exposed staff and</td>
</tr>
<tr>
<td>their family.</td>
</tr>
<tr>
<td>▪ Do follow up blood tests at 3 and 6</td>
</tr>
<tr>
<td>months.</td>
</tr>
<tr>
<td>▪ Provide compensation if occupational</td>
</tr>
<tr>
<td>transmission established.</td>
</tr>
</tbody>
</table>
D. Maintain health of infected HCW

i. Protocols which support infected HCW

In all countries with HIV infection there will also be a proportion of HCW who are infected. In some countries with a higher prevalence of infection this will amount to a considerable number. Having practical, non-discriminatory policies about infected HCW will encourage HCW to report their status to employers as well as retaining experienced HCW in the workforce. If the treatment of infected HCW is seen as fair and non-stigmatising, an example is set for the treatment of infected patients and also those exposed to BBV may be encouraged to report their injuries.

ii. Assurance of confidentiality

For HCW to report their BBV status, the protocol must include an assurance of confidentiality, with strict guidelines determining who will have access to the information. Usually only health professionals involved in treating the infected HCW would have access to this information. A manager of the HCW may also be informed (if the HCW agrees) as work practices may need to be changed, or time off work may be necessary.

iii. Work practices

Some regions put restrictions on the work which can be carried out by persons infected with BBV. The US CDC recommends that HCW who are infected with HIV or are HBeAg positive not perform a sub-set of procedures called “Exposure Prone Procedures”, where there may be potential in the case of accident for contact between blood from the HCW and a wound or mucous membrane of a patient. They further recommend that people who perform these procedures know their BBV status. However, such procedures are only a very small part of the practice of some surgeons, dentists and midwives. The majority of HCW can practise without restriction under these guidelines. Very few HCW would have to limit procedures undertaken or modify techniques.

iv. Infection control standards

Standard Precautions are designed to protect against patient to HCW, patient to patient and HCW to patient transmission of BBV in the workplace. If Standard Precautions are routinely practised by all HCW in the facility no additional special techniques are needed by HCW infected with a BBV. This means that infected HCW will not be identified because they use different practices, which could lead to breaches of confidentiality or discrimination.

v. Compensation for occupationally acquired disease

Ideally HCW who acquire a BBV in the course of their work should be compensated by their employer for loss of income resulting from inability to work due to the acquired infection. The availability of this compensation will depend on national laws relating to support for workers after accidents or for industrial diseases.

PART III - STRATEGY FORMULATION

Rationale for formulating national policies and implementation strategies

Comprehensive and clear policies are a pre-requisite for improving HCW safety. However, good policies need to be supported by practical strategies which facilitate their implementation. A good sounding policy may be a positive statement of intent on behalf of a government or ministry; for example “All HCW should be protected from infection in the workplace.” However, this kind of
policy statement will have little impact if there is no appropriate set of strategies which describe how it can be realistically achieved.

Experience in many countries indicates that the use of participatory processes (those which encourage and include input from stakeholders at all levels) will increase the likelihood of developing policies and strategies which are effective and sustainable. In particular there needs to be a thorough process of consultation with HCW to ensure that policies and strategies are suitable for implementation in existing health care facilities.

In many countries HCW are not consulted in the preparation of HCW safety policies and strategies. Instead, high level officials and politicians make decisions on behalf of HCW and, as a result, policy documents can quickly become redundant or simply ignored. If governments are serious about improving HCW safety, policies and implementation strategies need to be informed by the experiences of those actually providing health care in the community.

In order to engage the input and support of HCW in the policy development process there may need to be changes in how policies and strategies are developed. This might involve examining models that have been used successfully in other countries and incorporating lessons learned into local processes.

The suggestions for strategy development offered here represent what might be described as “best practice”. They represent a comprehensive and inclusive approach that values input at all levels while especially valuing the input of people who are most at risk of injury and infection. This section stresses consultation and developing mechanisms for implementation, monitoring and review.

### STEPS IN THE STRATEGY DESIGN AND POLICY DEVELOPMENT PROCESS

- National sector assessment.
- Formulation of a national strategy.
- Ensuring government commitment and support.
- Development of national guidelines.
- Capacity building and training.
- Resource provision and allocation.
- Networking with stakeholders.
- Development of outcome indicators.
- Development of local policies and protocols.
- Implementation of policies.

### NATIONAL SECTOR ASSESSMENT

Before formulating HCW safety policies and strategies it is necessary to have at least some baseline information on the current situation relating to HCW safety. This information can be representative rather than inclusive and should be able to be collected relatively quickly using limited personnel and resources. The assessment should include:

- An outline of current HCW safety guidelines and practices (current policies and guidelines should be checked against actual practice in both small and large health care facilities).
- A list of ministries and authorities involved or potentially involved in HCW safety.
- The distribution of responsibility between ministries and authorities.
- A review of relevant legislation relating to HCW safety.
- Information on international donors active in the area of HCW safety that can provide financial and technical support.
However, it is important not to allocate too many resources to this process. A national sector assessment should be a targeted exercise carried out within a finite period of time. Information should be collected with a very clear understanding of how it will be used in the formulation of the national strategy.

**Formulation of a National Strategy**

A coordinating committee will need to be established. This committee should be multisectoral and include representatives from relevant government ministries and authorities - including finance and education, and professional bodies representing HCW. It should oversee the formulation of the strategy, guidelines and action plans and may choose to establish working parties to carry out or oversee specific tasks relating to the formulation.

The coordinating committee will need to appoint or designate appropriate personnel or consultants to articulate the policies, write up the strategy, establish guidelines for the consultation process and develop a framework for how the strategy can be promoted.

A significant part of the design process will involve consultation with HCW themselves as well as health care managers and other stakeholders. The national coordinating committee needs to consider the best ways to collect information from HCW and others. Options can include small group meetings, larger workshops and seminars, and anonymous questionnaires. Information should be sought from HCW in a range of urban and rural settings including small and large, private and government, hospitals and clinics.

The co-ordinating committee and any delegated authorities need to be able to assure HCW that their input will be taken seriously and that their contributions will be treated confidentially. This is necessary to avoid any distrust, anxiety, or confusion on the part of HCW.

The process of policy and strategy formulation will require a commitment of human and financial resources since it will involve a series of activities rather than just a meeting of policy makers. However, the cost of this process needs to be considered against how much more effective the strategy will be if it has widespread support from HCW and results in practical improvements which can be readily implemented, preferably at low cost.

A national strategy for HCW Safety should:

- Articulate the policies which will inform the strategy.
- Delineate responsibility and accountability for each level of strategy implementation.
- Include a national policy framework outlining the direction and intent of the strategy.
- Make recommendations on HCW safety measures.
- Provide mechanisms for resourcing recommendations.
- Propose guidelines for HCW safety training programs at facility and municipal/regional level.
- Suggest a process for prioritising HCW safety initiatives within healthcare facilities.
- Set indicators for and means of implementing and monitoring standard precautions.
- Determine outcome indicators for strategy evaluation.
- Propose mechanisms for ongoing stakeholder consultation and strategy review.
- Outline an overall approach to evaluation of the strategy.
- Make recommendations for any necessary changes to legislation.

**Ensuring Government Commitment and Support**

Once the strategy has been completed, ongoing multisectoral support for its implementation is essential. The participating sectors should be able to demonstrate how they will support the strategy. This may include the allocation of specific financial resources, allocation of personnel to carry out particular tasks, dissemination of the strategy and/or advocacy on its behalf.
The inclusion of requirements for HCW safety within a national accreditation process has proved valuable in some countries in motivating health care institutions to adopt national guidelines and develop local policies and protocols.

**DEVELOPMENT OF NATIONAL GUIDELINES**

HCW safety strategies need to be translated into national guidelines which provide practical and technical advice to facilitate implementation of HCW safety initiatives. The guidelines should be accessible, widely distributed and should aim to accomplish the following:

- Give a rationale for the emphasis on HCW safety.
- Provide information on the legal framework for HCW safety.
- Compile and clarify or expand on definitions from legislation.
- Explain principles of HCW safety.
- Make practical recommendations on the implementation of HCW safety measures.
- Provide guidance on the management and monitoring of HCW safety measures.
- Provide a framework for evaluating and purchasing safe equipment.
- Place HCW safety issues within a general occupational health and safety framework.

**CAPACITY BUILDING AND TRAINING**

The process of change can be supported through capacity building and HCW training. The national strategy should make recommendations as to how best to increase staff skills at all levels within the health care system to ensure that they are fully aware of the rationale of the national strategy. Staff should receive appropriate training in how to implement the national guidelines. This training for HCW should reflect the practical nature of the strategy and guidelines and include a range of practical, skills based activities.

**RESOURCE PROVISION**

Some HCW safety initiatives require few resources (see Appendix 1) while others, such as the provision of PEP, are likely only to be achieved by countries with considerable economic resources. When considering resource allocation, the potential saving and benefits from the resource outlay should be considered. Sustainability of resources must also be considered.

**NETWORKING WITH STAKEHOLDERS**

The completion of the national strategy and guidelines should not be seen as the end of the process in promoting HCW safety. There will need to be ongoing consultation with the various stakeholders to monitor the implementation of the strategy and to evaluate its effectiveness. HCW and other stakeholders should receive regular feedback on the implementation of the strategy at a regional level and be informed of any resources available for them to better implement the strategy in health care facilities.

One way to facilitate further consultation and feedback is to promote the establishment of infection control committees within all health care settings and to liaise directly with those committees.

**DEVELOPMENT OF OUTCOME INDICATORS**

The success of the development and implementation of the national strategy and guidelines can only be evaluated if there are agreed outcome indicators. These are measurable factors which can demonstrate changes. Quantitative indicators could include number of health facilities developing local protocols, number of HCW attending training, evaluation of training, exposures reported, estimation of percentage of exposures reported (from anonymous surveys), prescription of PEP, or
surveys of HCW knowledge. Baseline indicators will need to be measured before strategies can be evaluated.

**DEVELOPMENT OF LOCAL POLICIES AND PROTOCOLS**

Every health care facility needs to use the national guidelines to develop local implementation protocols which take into account availability of skills and resources. Local protocols should address the principles of HCW safety but should consider what is achievable rather than what would be the ideal. For instance, if the policy states that gloves must be worn for all procedures but there are not enough gloves available, this may lead to disillusionment on the part of HCW that they are not able to comply and there may be non-adherence to all of the protocol. Instead, if resources are limited, the guidelines in the preceding chapter (Section 2) can be used to prioritise which are the most important and achievable measures to facilitate HCW safety.

Policies and protocols should be as simple as possible and consider “what really happens” in the practice of health care. Very complicated protocols are likely to mean HCW will not comply with them.

**IMPLEMENTATION OF POLICIES**

Once local policies and protocols have been developed, an implementation strategy is necessary to ensure they are to be put into practice. While policies will usually be developed by a multidisciplinary committee, the responsibility for implementation needs to be with an individual or a small team. Appropriate people to implement protocols would be Infection Control Officers, Occupational Health and Safety Officers, or senior nurses.

A local implementation strategy should include:

- Ensuring all department managers are aware of the policies.
- Education and training activities for staff.
- Ensuring availability of resources and skills necessary to implement the policies.
- Ensuring implementation of policies is consistent in all departments.
- Incorporating HCW into hospital accreditation programs or other quality assurance activities.
- Developing documentation and reporting mechanisms.
- Mechanisms for evaluating the impact of the strategy.
- Measuring compliance across a range of professions and roles.
- Determining and measuring outcome indicators.
- Review of policies (and revision if necessary) after a pre-determined time.

Local policies and implementation strategies should be compatible with the principles of national policies and strategies but reflect local conditions and resources. Where possible all policy documents should be simple and straightforward. They need to be easy to read and simple to follow.
BIBLIOGRAPHY


UNAIDS 2000 *HIV and AIDS-related stigmatization, discrimination and denial: forms, contexts and determinants - research studies from Uganda and India*
UNAIDS/00.16E


RESOURCES FOR HELP AND INFORMATION

Health care waste management at WHO
www.healthcarewaste.org
This site is primarily directed at health care waste management in developing countries. The objectives are to provide up-to-date information, references, country-specific or region-specific information and links.

INASP-Health Directory (International Network for the Availability of Scientific Publications)
http://www.inasp.org.uk/health/directory/index.html
This is a directory of international programs working to increase the availability of appropriate, reliable, low-cost information for health professionals in developing countries.

SIGN (Safe Injection Global Network)
www.injectionsafety.org

OSHA (Occupational Safety and Health Administration, US Department of Labor)
United States' website on blood borne pathogens and needlestick prevention, which includes news releases, fact sheets, legislation, related technical links, and more

CDC (Centers for Disease Control, United States)
Worker protection against blood borne pathogens. Factsheets, guidelines and publications.

International Health Care Worker Safety Center
http://www.med.virginia.edu/epinet

Healthcare Workers' Internet Resource Center
http://www.medadvocates.org/marg/hcw_irc/part1/intro.html

PATH
http://www.path.org/resources/safe-inj-pdf.htm
A training curriculum and manual for health care workers who provide injections
## APPENDIX 1: PRIORITISING MEASURES TO INCREASE HCW SAFETY BY COST

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>No or little cost</td>
<td>Develop local and regional policies for Standard Precautions.</td>
</tr>
<tr>
<td></td>
<td>Educate all levels of staff on principles and techniques of HCW safety.</td>
</tr>
<tr>
<td></td>
<td>Follow safe sharps handling principles.</td>
</tr>
<tr>
<td></td>
<td>Modify techniques to reduce sharps handling and potential for exposure.</td>
</tr>
<tr>
<td></td>
<td>Make the person who uses the sharp be responsible for its disposal.</td>
</tr>
<tr>
<td></td>
<td>Modify existing resources for safe sharps handling or PPE.</td>
</tr>
<tr>
<td></td>
<td>Address patient compliance issues.</td>
</tr>
<tr>
<td></td>
<td>Ensure staff in clinical areas wear appropriate footwear.</td>
</tr>
<tr>
<td></td>
<td>Supervise staff learning procedures.</td>
</tr>
<tr>
<td></td>
<td>Encourage reporting of occupational exposures.</td>
</tr>
<tr>
<td></td>
<td>Develop a simple, accessible protocol for managing occupational exposures.</td>
</tr>
<tr>
<td></td>
<td>Provide first aid and risk assessment after occupational exposures.</td>
</tr>
<tr>
<td></td>
<td>Develop protocols which support infected HCW.</td>
</tr>
<tr>
<td></td>
<td>Provide an assurance of confidentiality.</td>
</tr>
</tbody>
</table>

**Initial costs but will lead to decreased disease burden (Savings will eventually be greater than cost)**

- Provide vaccination programs for HBV.
- Provide health education programs for staff to address lifestyle risks of BBV.
- Provide public education to reduce demand for injections.
- Provide PPE for Standard and Transmission Based Precautions.
- Provide equipment for safe sharps handling.
- Manage and store waste appropriately.
- Provide support and follow up after occupational exposures.

**More expensive – recommended to implement but with less benefit evident per dollar spent than other measures**

- Provide baseline and follow up testing for HCW after occupational exposures.
- Provide PEP after significant occupational exposures.
- Introduce safety equipment such as needle-less systems for injections and intravenous infusions, or needle disposal systems.
- Provide financial compensation for occupationally acquired disease.

**Costs which may be borne by private sector**

- Engineering controls: design of equipment to improve HCW safety.
- Supply of safe equipment with diagnostic kits, immunisations, etc.
- Development of non-invasive forms of drug administration.
## APPENDIX 2 : HEALTH CARE WORKER SAFETY CHECKLIST

### SECTION 1

#### HAND WASHING

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. a</td>
<td>Is running water available for hand washing?</td>
<td></td>
<td></td>
<td>GO TO QUESTION 1.c</td>
</tr>
<tr>
<td>1. b</td>
<td>Are non-water hand cleansers available?</td>
<td></td>
<td></td>
<td>WATER OR NON-WATER HAND CLEANSERS SHOULD BE AVAILABLE</td>
</tr>
<tr>
<td>1. c</td>
<td>Is liquid soap available?</td>
<td></td>
<td></td>
<td>GO TO SECTION 2</td>
</tr>
<tr>
<td>1. d</td>
<td>Is bar soap available?</td>
<td></td>
<td></td>
<td>SOAP OR NON-WATER HAND CLEANSERS SHOULD BE AVAILABLE</td>
</tr>
</tbody>
</table>

### COMMENTS:
### SECTION 2

**STERILE GLOVES**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.a</td>
<td>Are sterile gloves available for sterile or surgical procedures?</td>
<td></td>
<td></td>
<td><strong>STERILE GLOVES SHOULD BE MADE AVAILABLE FOR STERILE OR SURGICAL PROCEDURES</strong></td>
</tr>
<tr>
<td>2.b</td>
<td>Are sterile gloves used once only then discarded as waste?</td>
<td></td>
<td></td>
<td><strong>GO TO SECTION 3</strong></td>
</tr>
<tr>
<td>2.c</td>
<td>Are sterile gloves reprocessed by an accredited company?</td>
<td></td>
<td></td>
<td><strong>GO TO SECTION 3</strong></td>
</tr>
<tr>
<td>2.d</td>
<td>Are sterile gloves reprocessed on site?</td>
<td></td>
<td></td>
<td><strong>GO TO SECTION 3</strong></td>
</tr>
<tr>
<td>2.e</td>
<td>Are gloves that are to be reprocessed machine washed?</td>
<td></td>
<td></td>
<td><strong>GLOVES THAT ARE TO BE REPROCESSED SHOULD BE MACHINE WASHED</strong></td>
</tr>
<tr>
<td>2.f</td>
<td>Are the gloves being reprocessed checked for holes and tears?</td>
<td></td>
<td></td>
<td><strong>GLOVES BEING REPROCESSED SHOULD BE CHECKED FOR HOLES AND TEARS</strong></td>
</tr>
<tr>
<td>2.g</td>
<td>Are reprocessed gloves to be used for sterile or surgical procedures?</td>
<td></td>
<td></td>
<td><strong>REPROCESSED GLOVES TO BE USED FOR STERILE OR SURGICAL PROCEDURES SHOULD BE RE-STERILISED</strong></td>
</tr>
<tr>
<td>2.h</td>
<td>Are reprocessed gloves to be used as examination gloves?</td>
<td></td>
<td></td>
<td><strong>REPROCESSED GLOVES TO BE USED AS MEDICAL EXAMINATION GLOVES SHOULD BE STERILISED BETWEEN USE BUT DO NOT NEED TO BE USED AS A STERILE ITEM</strong></td>
</tr>
</tbody>
</table>

**COMMENTS:**
### SECTION 3
#### EXMINATION GLOVES

<table>
<thead>
<tr>
<th></th>
<th>Are latex or vinyl medical examination gloves available?</th>
<th>YES</th>
<th>NO</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. a</td>
<td>Are latex or vinyl medical examination gloves available?</td>
<td>YES</td>
<td>NO</td>
<td>LATEX OR VINYL GLOVES SHOULD BE AVAILABLE</td>
</tr>
<tr>
<td>3. b</td>
<td>Are all sizes of gloves readily available in the clinical areas?</td>
<td>YES</td>
<td>NO</td>
<td>ALL SIZES OF GLOVES SHOULD BE READILY AVAILABLE IN THE CLINICAL AREAS</td>
</tr>
<tr>
<td>3. c</td>
<td>Are medical examination gloves used only once?</td>
<td>YES</td>
<td>NO</td>
<td>MEDICAL EXAMINATION GLOVES SHOULD ONLY BE USED ONCE BEFORE BEING DISCARDED OR REPROCESSED</td>
</tr>
<tr>
<td>3. d</td>
<td>If examination gloves are not available, are health care workers educated about hand hygiene, the importance of hand washing and intact skin?</td>
<td>YES</td>
<td>NO</td>
<td>IF EXAMINATION GLOVES ARE NOT AVAILABLE, HEALTH CARE WORKERS SHOULD BE EDUCATED ABOUT HAND HYGIENE, THE IMPORTANCE OF HAND WASHING AND INTACT SKIN</td>
</tr>
</tbody>
</table>

**COMMENTS:**
### SECTION 4

#### SAFE HANDLING AND DISPOSAL OF SHARPS

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.a</td>
<td>Are needles recapped during procedures or after use?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.b</td>
<td>Is a single-handed technique, forceps or a suitably designed device used for re-capping needles?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.c</td>
<td>Are needles used once and then discarded as waste?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.d</td>
<td>Are commercially designed sharps containers available for the disposal of sharps?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.e</td>
<td>If commercially designed sharps containers are not available, are designated containers of any kind used for the disposal of sharps?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.f</td>
<td>Is the designated sharps container waterproof?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.g</td>
<td>Is the designated sharps container leak-proof?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.h</td>
<td>Are sharps containers replaced when three-quarters full?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.i</td>
<td>Does the sharps container have an opening that is wide enough to allow sharps to be dropped into it by a single hand action?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Question</td>
<td>YES</td>
<td>NO</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td>Are sharps containers sealed with a lid before disposal?</td>
<td></td>
<td></td>
<td>Sharps containers should be sealed with a lid before disposal</td>
</tr>
<tr>
<td>Are sharps containers incinerated?</td>
<td></td>
<td></td>
<td>Sharps containers should be incinerated</td>
</tr>
<tr>
<td>Are sharps containers reused?</td>
<td></td>
<td></td>
<td>Go to section 5</td>
</tr>
<tr>
<td>Are reused sharps containers cleaned and disinfected before reuse?</td>
<td></td>
<td></td>
<td>Reused sharps containers should be cleaned and disinfected before use</td>
</tr>
<tr>
<td>Are defective reused sharps containers repaired or taken out of service?</td>
<td></td>
<td></td>
<td>Defective sharps containers should be repaired or taken out of service</td>
</tr>
</tbody>
</table>

Comments:
<p>| 5. a | Are health care workers educated about the transmission risks of blood-borne infections from occupational exposures? | YES | NO | HEALTH CARE WORKERS SHOULD BE EDUCATED ABOUT THE TRANSMISSION RISKS OF BBV FROM EXPOSURES |
| 5. b | Are health care workers offered the hepatitis B vaccine? | YES | NO | HEALTH CARE WORKERS SHOULD BE INFORMED ABOUT THE AVAILABILITY OF THE HEPATITIS B VACCINE |
| 5. c | Are health care workers aware of the first aid procedures to follow after sustaining an occupational exposure, such as a needlestick injury or a splash to the eye or mucous membranes? | YES | NO | HEALTH CARE WORKERS SHOULD BE EDUCATED ABOUT THE FIRST AID PROCEDURES AFTER AN OCCUPATIONAL EXPOSURE |
| 5. d | Is there a system in place for reporting and managing occupational exposures? | YES | NO | A LOCAL SYSTEM SHOULD BE ESTABLISHED FOR REPORTING AND MANAGING OCCUPATIONAL EXPOSURES |
| 5. e | Are health care workers aware who to contact after sustaining an occupational exposure? | YES | NO | HEALTH CARE WORKERS SHOULD BE AWARE OF WHO TO CONTACT AFTER SUSTAINING AN OCCUPATIONAL EXPOSURE |
| 5.f | Is expert advice available 24 hours a day for health care workers sustaining occupational exposures? | YES | NO | EXPERT ADVICE SHOULD BE AVAILABLE 24 HOURS A DAY FOR HEALTH CARE WORKERS SUSTAINING OCCUPATIONAL EXPOSURES |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. g</td>
<td>Are occupational exposures assessed, a risk assessment performed and medical management provided?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>5. h</td>
<td>Is confidentiality of health workers sustaining occupational exposure maintained?</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

COMMENTS:
Adolescent Health and Development (AHD)

A Resource Guide for World Bank Operations Staff and Government Counterparts

James E. Rosen

April 2004