



International Labour Organization

World Health Organization



Joint ILO/WHO guidelines on health services and HIV/AIDS

Geneva, 2005

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services and HIV/AIDS**

**Tripartite Meeting of Experts to Develop Joint
ILO/WHO Guidelines on Health Services and
HIV/AIDS**

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Preface

These guidelines are the product of collaboration between the International Labour Organization and the World Health Organization. In view of their complementary mandates, their long-standing and close cooperation in the area of occupational health, and their more recent partnership as co-sponsors of UNAIDS, the ILO and the WHO decided to join forces in order to assist health services in building their capacities to provide their workers with a safe, healthy and decent working environment, as the most effective way both to reduce transmission of HIV and other blood-borne pathogens and to improve the delivery of care to patients. This is essential when health service workers have not only to deliver normal health-care services but also to provide HIV/AIDS services and manage the long-term administration and monitoring of anti-retroviral treatments (ART) at a time when, in many countries, they are themselves decimated by the epidemic.

The Governing Body of the ILO decided at its 290th Session in June 2004 that a meeting of experts should be held to develop joint ILO/WHO guidelines on health services and HIV/AIDS. At the 291st Session of the Governing Body in November 2004, it was agreed that the Meeting of Experts was to be held from 19 to 21 April 2005. The following composition had been proposed for the Meeting: five experts appointed after consultation with the governments of five countries selected by the WHO in agreement with the ILO; five experts appointed after consultation with the Employers' group of the ILO Governing Body; and five experts appointed after consultation with the Workers' group. Four experts from the selected governments participated, as did five Employer experts and five Worker experts. An independent chairperson, selected after consultation with the government of an additional country, was also appointed. In agreement with the WHO, it was further decided that the purpose of the Meeting was to discuss and adopt a set of ILO/WHO guidelines on health services and HIV/AIDS.

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Acronyms

AIDS	acquired immunodeficiency syndrome
ART	antiretroviral treatment
BBV	blood-borne virus
GHSS	Global Health Sector Strategy (WHO)
HBIG	hepatitis B immunoglobulin
HBV	hepatitis B virus
HCV	hepatitis C virus
HCWM	health-care waste management
HIV	human immunodeficiency virus
ILO	International Labour Organization
MDR TB	multidrug-resistant tuberculosis
NGO	non-governmental organization
OHS	occupational health services
OSH	occupational safety and health
OSHMS	occupational safety and health management systems
PEP	post-exposure prophylaxis
STI	sexually transmitted infections
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Glossary of terms

The definitions below have been taken from existing ILO and WHO guidelines and technical standards as well as the UNAIDS terminology database.

- **AIDS:** Acquired immunodeficiency syndrome. A cluster of medical conditions, often referred to as opportunistic infections and cancers and for which, to date, there is no cure.
- **Antiretroviral treatments:** The range of medications prescribed to minimize the effects of HIV infection by keeping the level of virus in the body at as low a level as possible.
- **Body fluids and tissues:** These may contain infectious pathogens and should be handled with the same precautions as blood. They include: cerebrospinal, peritoneal, pleural, pericardial, synovial and amniotic fluids; semen, vaginal secretions and breast milk; any other body fluid containing visible blood, including saliva in association with dentistry; and unfixed tissues and organs.
- **Discrimination:** In these guidelines, defined in accordance with the ILO Discrimination (Employment and Occupation) Convention, 1958 (No. 111), and includes HIV status. It also includes discrimination on the basis of a worker's perceived HIV status, including discrimination on the ground of sexual orientation.
- **Employer:** A person or organization employing workers under a written or verbal contract of employment which establishes the rights and duties of both parties, in accordance with national law and practice. Governments, public authorities, private enterprises and individuals may be employers.
- **Exposure:** An exposure that might place health-care personnel at risk of HBV, HCV, or HIV infection is defined as a percutaneous injury (e.g. a needle stick or cut with a sharp object) or the contact of mucous membrane or non-intact skin (e.g. exposed skin that is chapped, abraded or afflicted with dermatitis) with blood, tissue or other body fluids that are potentially infectious.
- **Hazard:** The inherent potential of a material or a situation to cause injury or to damage people's health, or to result in loss of property.
- **Health services:** All infrastructures and settings involved in the provision of general and specialized health care to patients or support services, such as public and private hospitals, nursing and personal care facilities, blood collection services, home health-care services, offices/surgeries/practices of physicians, osteopaths, dentists and other medical practitioners, medical and dental laboratories, clinics, occupational health services, community health-care services, dispensaries, funeral homes or maternity care services.
- **Health services waste:** Any discarded material from a setting offering health and medical services that may contain clinical waste. Clinical waste is taken to be waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice or from investigation, treatment, care, teaching or research, which by the nature of its toxic, infectious or dangerous content may prove a hazard or give offence unless previously rendered safe and inoffensive. Such waste includes human or animal tissue, drugs and medical products, swabs and dressings and instruments, or similar substances and materials.

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- **Health-care worker:** A person (e.g. nurse, physician, pharmacist, technician, mortician, dentist, student, contractor, attending clinician, public safety worker, emergency response personnel, health-care waste worker, first-aid provider or volunteer) whose activities involve contact with patients or with blood or other body fluids from patients.
 - **Hierarchy of controls:** A method of prioritizing strategies and measures to control occupational health hazards listed in order of effectiveness: elimination, substitution, engineering controls, administrative and work practice controls, personal protective equipment (PPE).
 - **HIV:** Human immunodeficiency virus. A virus that weakens the body's immune system, ultimately causing AIDS.
 - **Occupational health services (OHS):** In these guidelines, defined in accordance with the ILO Occupational Health Services Convention, 1985 (No. 161), and refers to health services at or for the workplace, which have an essentially preventive function. OHS are responsible for advising the employer, as well as workers and their representatives, on how to establish and maintain a safe and healthy working environment and work methods that facilitate optimal physical and mental health. OHS also provide advice on the adaptation of work to the capabilities of workers in the light of their physical and mental health.
 - **Personal protective equipment (PPE):** Equipment designed to protect workers from serious workplace injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Besides face shields, safety glasses, hard hats, and safety shoes, PPE includes a variety of devices and garments such as goggles, coveralls, gloves, vests, earplugs and respirators.
 - **Post-exposure prophylaxis:** The immediate provision of medication following an exposure to potentially infected blood or other body fluids in order to minimize the risk of acquiring infection. Preventive therapy or "primary prophylaxis" is given to at-risk individuals to prevent a first infection; "secondary prophylaxis" is given to prevent recurrent infections.
 - **Reasonable accommodation:** Any modification or adjustment to a job, working hours or the workplace, which is reasonably practicable and will enable a person living with HIV/AIDS (or some other chronic illness or disability) to have access to or participate or advance in employment.
 - **Risk:** A combination of the likelihood of an occurrence of a hazardous event and the severity of the injury or damage that the event causes to the health of people or to property.
 - **Screening:** Measures to assess the HIV status of individuals, whether direct (HIV testing) or indirect (such as assessment of risk-taking behaviour, asking questions about medication).
 - **Seroconversion:** The development of antibodies to a particular antigen. When people develop antibodies to HIV, the "seroconversion" goes from antibody-negative to antibody-positive. It may take from as little as one week to several months or more after infection with HIV for antibodies to the virus to develop. After antibodies to HIV appear in the blood, a person should test positive on antibody tests.

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- **Sex and gender:** There are both biological and social differences between men and women. The term “sex” refers to biologically determined differences, while the term “gender” refers to differences in social roles and relations between men and women. Gender roles are learned through socialization and vary widely within and between cultures. Gender roles are affected by age, class, race, ethnicity and religion, and by geographical, economic and political environment.
 - **Social dialogue:** This may be a tripartite process in which the government is an official party to the dialogue, or a bipartite process between employers and workers or their organizations, with or without indirect government involvement.
 - **Standard precautions:** Those measures taken to prevent transmission of infection in the provision of health-care services, including methods of handling waste products, as well as universal precautions to prevent exposure to blood or other body fluids, taken with all patients regardless of diagnosis.
 - **STI:** Sexually transmitted infection. Such infections include syphilis, chancroid, chlamydia and gonorrhoea. They are also commonly known as sexually transmitted diseases (STDs).
 - **Termination of employment:** In these guidelines, defined in accordance with the ILO Termination of Employment Convention, 1982 (No. 158), namely dismissal at the initiative of the employer.
 - **Workers’ representatives:** In these guidelines, defined in accordance with the ILO Workers’ Representatives Convention, 1971 (No. 135), as persons recognized as such by national law or practice whether they are: (a) trade union representatives, namely, representatives designated or elected by trade unions or by members of such unions; or (b) elected representatives, namely, representatives who are freely elected by the workers of the undertaking in accordance with provisions of national laws or regulations or of collective agreements and whose functions do not include activities which are recognized as the exclusive prerogative of trade unions in the country concerned.
 - **Wellness programmes:** In these guidelines, defined as the provision of comprehensive care to ensure an adequate level of functionality for the HIV-infected person.
 - **Workplace:** All places where workers need to be or to go by reason of their work and which are under the direct or indirect control of the employer.

Introduction

1. The HIV/AIDS epidemic is a global crisis and a formidable challenge to development and social progress. Many of the world's poorest countries are among those most affected in terms of numbers of infections and scale of the epidemic's impact. This undermines the capacity of the vast majority of persons living with HIV/AIDS in their working years, about half of whom are women, who are now becoming infected at a faster rate than men. The consequences are felt by enterprises and national economies as well as by workers and their families. In this context, governments have an obligation to implement the provisions of the 2001 United Nations Declaration of Commitment on HIV/AIDS,¹ which include a commitment to strengthen health-care systems and expand treatment, as well as to respond to HIV/AIDS in the world of work by increasing prevention and care programmes in public, private and informal workplaces.
2. To date, there is no vaccine to prevent HIV, and no cure. Prevention relies on public-awareness campaigns and individual behaviour change in a supportive environment, requiring time and patience. In terms of treatment, increasingly effective and affordable ART has helped to preserve the health of those who have access to the drugs, and to prolong their lives and maintain their livelihoods. Ongoing joint efforts and initiatives by States, employers and international organizations concentrate on accelerating access to ART in the most affected countries as well as strengthening prevention campaigns globally. However, treating large numbers of people requires functioning health-care systems that have the capacity to administer and monitor treatment while ensuring ongoing prevention and providing care and support on a long-term basis.
3. Being present in all sectors of economic activity and all areas of social life, the HIV/AIDS epidemic is a threat to long-term growth and development. Its social and economic impact is especially acute where the loss of human resources is concentrated among those with scarce skills and higher professional and managerial training. The consequences of this loss reach critical proportions when they affect essential services and structures that are at the forefront of the response, such as national health systems.
4. The pressures on health systems are enormous. Although health care is a basic human right,² and over 100 million health-care workers are delivering services worldwide,³ "health for all" is far from being achieved. Constraints have been identified at different levels and include structural adjustment policies that have reduced public spending and employment; weaknesses in health sector policy and strategic management; and shortages of infrastructure, equipment and human resources that have undermined health service delivery.⁴ Human resource problems identified by the WHO include quantity and quality of personnel, demoralization of health-care workers, and huge gaps in both initial and in-service training. The HIV/AIDS epidemic is a major additional factor that is overwhelming the health system in a number of countries. Over 50 per cent of hospital beds in the

¹ *Declaration of Commitment on HIV/AIDS*, United Nations General Assembly resolution A/RES/S-62/2, June 2001.

² "Right to health" is an abbreviated form of "the right to the enjoyment of the highest attainable standard of physical and mental health".

³ *Human resources for health: Overcoming the crisis*, Joint Learning Initiative (Harvard, 2004).

⁴ WHO: *Scaling up HIV/AIDS care: Service delivery and human resources perspectives* (Geneva, 2004), http://www.who.int/entity/hrh/documents/en/HRH_ART_paper.pdf.

countries of sub-Saharan Africa are occupied by people with HIV-related illness, although most of the latter are cared for at home. Their traditional domestic and nurturing roles mean that women and girls bear most of the burden of care. This not only adds to their workload but undermines the vital productive, reproductive and community roles they play. There is a need to provide education, training and support in order to effect this home-based care role.

5. The primary mode of acquiring HIV infection is associated with individual behaviours. In addition, the health workforce, in providing care to patients with HIV/AIDS, can also be at risk from transmission, especially where basic rules of occupational safety and health are not implemented. The greater workload resulting from the epidemic, the fear of infection, and the lack of adequate safety and health provisions or HIV/AIDS-specific training mean that health-care workers suffer enormous psychological and physical stress. This is often in addition to inadequate staffing levels, long hours and violence. Under these pressures many are forced to leave the health profession, leave the public sector, or migrate to work in other countries. Because of the fear of stigma attached to the health profession, lower intakes are being observed in developing countries, in particular among front-line workers such as nurses. This compounds the lack of capacity to address HIV/AIDS in the health system.
6. An expanded, well-trained, adequately resourced and secure health service workforce is essential to curbing the transmission of HIV and to the provision of care, treatment and support to those who need them. The multiplicity of issues involved requires coherent and integrated policies to build the necessary infrastructure and human and technical capacities.

Purpose

7. The purpose of these guidelines is to promote the sound management of HIV/AIDS in health services, including the prevention of occupational exposure. Furthermore, the purpose is to ensure that health-care workers have decent, safe and healthy working conditions, while ensuring effective care that respects the needs and rights of patients, especially those living with HIV/AIDS. These guidelines rest on the basic principle that the process of policy development and implementation should be the result of consultation and collaboration between all concerned parties, based on social dialogue and including, to the extent possible, persons and workers living with HIV/AIDS. They take a rights-based approach to HIV/AIDS, as promoted by the Declaration of Commitment and the international community at large, expanding on ILO and WHO HIV/AIDS and occupational safety and health instruments.

Scope and contents

8. These guidelines are intended for governments, public and private employers, workers and their representatives, professional associations, scientific and academic institutions, and all other groups and bodies with responsibilities and activities relevant to the delivery of health care. They are designed as a basis for practical policy and as a technical reference that can be used by – or adapted to the needs and capacities of – large, medium-sized or small health-service structures.
9. The guidelines cover legislation, policy development, labour relations, occupational safety and health, and other technical subjects. They discuss the basis for action, identify roles and responsibilities, set out the key policies and actions needed for sound management of HIV/AIDS in health services, and include core references in each section. In addition,

practical information on the most relevant technical aspects of occupational safety and health is provided in the form of concise fact sheets adapted from a range of reliable international and national sources.

Principles

- 10.** These guidelines reflect the ten key principles of the ILO code of practice on HIV/AIDS and the world of work which apply to all aspects of work and all workplaces, including the health sector.
- (a) **A workplace issue:** HIV/AIDS is a workplace issue because it affects the workforce, and because the workplace can play a vital role in limiting the transmission and effects of the epidemic.
 - (b) **Non-discrimination:** There should be no discrimination or stigma against workers on the basis of real or perceived HIV status.
 - (c) **Gender equality:** More equal gender relations and the empowerment of women are vital to preventing the transmission of HIV and helping people to manage its impact.
 - (d) **Healthy work environment:** The workplace should minimize occupational risk, and be adapted to the health and capabilities of workers.
 - (e) **Social dialogue:** A successful HIV/AIDS policy and programme needs cooperation and trust between employers, workers and governments.
 - (f) **No screening for purposes of employment:** Testing for HIV at the workplace should be carried out as specified in the code, should be voluntary and confidential, and should never be used to screen job applicants or workers.
 - (g) **Confidentiality:** Access to personal data, including a worker's HIV status, should be bound by the rules of confidentiality set out in existing ILO instruments.⁵
 - (h) **Continuing the employment relationship:** Workers with HIV-related illnesses should be able to work in appropriate conditions for as long as they are medically fit.
 - (i) **Prevention:** The social partners are in a unique position to promote prevention efforts through information, education and support for behaviour change.
 - (j) **Care and support:** Workers are entitled to affordable health services and to benefits from statutory and occupational schemes.
- 11.** In certain areas as reflected in this document, it has been necessary to further elaborate these principles to take cognizance of the specific challenges posed by HIV/AIDS in the health sector. As an example, it may be necessary to offer HIV testing of health-care workers before and during allocation to areas of high risk to themselves, such as multidrug-resistant tuberculosis (MDR TB) wards.

⁵ See Appendix 1.

Legal and policy framework

12. A range of national laws and policies provides the framework for action related to HIV/AIDS and health services. These include national health sector and AIDS policies, labour legislation, occupational safety and health standards and regulations, anti-discrimination legislation, and laws and regulations applying to the health sector.
13. The inclusion of people living with HIV/AIDS in the response to HIV/AIDS is important and they are the first to be affected by policies and laws. Health sector workers living with HIV/AIDS and their associations should therefore, and to the extent possible, play a central role in the development, implementation and evaluation of policies and programmes both at the national level and within the workplace.

Role of government

14. The responsibility of government is to ensure a coordinated approach across all sectors, to promote and support the highest possible standards in health services, especially in terms of working conditions and patient care, and to allocate adequate resources, including funding. The successful planning and implementation of national policies and legislation requires a process of extensive consultations with health service employers, workers and their representatives, professional associations, persons living with HIV/AIDS, and all other stakeholders, as well as effective enforcement systems.
15. In the particular context of the health sector, government is, therefore, at the same time, a regulator, an enforcer of regulations, and an employer. It should ensure that these functions are kept separate in order to minimize conflicts of interest and protect the rights of workers adequately, especially where workers' organizations are not recognized. Governments, in collaboration with employers, workers and their representatives, and others with responsibilities for health services, should provide the relevant regulatory framework and, where necessary, revise labour laws and other legislation to include provisions that:
 - (a) ensure that national HIV/AIDS action plans define and give high priority to the specific needs of health services and health-care workers;
 - (b) promote the implementation of a national system for occupational safety and health management in health services, including workplace regulations and guidelines aimed at achieving decent working conditions and a safe working environment that treats an HIV/AIDS occupational exposure incident in a manner consistent with other occupational injuries;
 - (c) protect the rights of all workers and patients, whether or not they are personally affected by HIV/AIDS, and provide for:
 - (i) a work and care environment free of stigma and discrimination based on real or perceived HIV status;

⁶ ILO: *HIV/AIDS and the world of work*, An ILO code of practice (Geneva, 2001), <http://www.ilo.org/public/english/protection/safework/cops/english/download/e000008.pdf> .

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- (ii) the prevention and containment of transmission risks;
 - (iii) post-exposure management systems, including a guarantee of confidentiality as set out in ILO instruments, counselling and prophylaxis, as appropriate;
 - (iv) the prohibition of mandatory HIV screening for the purpose of exclusion from employment or work processes. HIV testing may be offered to protect the health of health-care workers, for example, prior to and during allocation to MDR TB wards;
 - (v) reasonable accommodation, such as job reassignment, adaptation of workstations and working-time flexibility;
 - (vi) continued employment of workers living with HIV/AIDS while medically fit;
 - (vii) the protection of workers' HIV-related data;
 - (viii) access to benefits, including early retirement options, coverage of medical services and funeral costs;
 - (ix) the right to negotiate on benefit issues, taking into account national laws;
 - (x) grievance procedures that are gender sensitive and designed to be fully accessible to all staff;
 - (xi) appropriate disciplinary measures;
 - (xii) penalties for violations of regulatory requirements.

16. The competent authorities should supply technical information and advice to employers, whether public or private, and workers and their representatives, on the current ILO *Guidelines on occupational safety and health management systems: ILO-OSH 2001* as an effective way of complying with the legal and policy framework. They should strengthen enforcement systems for occupational safety and health, including monitoring and reporting mechanisms.

17. In their role of employer, governments should maintain an adequate level of consultation and collaboration with private organizations of employers and organizations of health sector workers.

18. In their roles of employer and policy-maker, governments should ensure that properly funded OSH inspectorates exist to advise on and enforce OSH legislation.

<p>Guidelines on addressing HIV/AIDS in the workplace through employment and labour law, ILO, 2004. ⁷</p>
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⁷ ILO: *Guidelines on addressing HIV/AIDS in the workplace through employment and labour law*, InFocus Programme on Social Dialogue, Labour Law and Labour Administration, Paper No. 3 (Geneva, 2004), <http://www.ilo.org/public/english/dialogue/ifpdial/publ/index.htm> .

Policy for the development and management of national health systems to respond to HIV/AIDS

19. Health policy needs to cover and promote collaboration among all relevant institutions including teaching, district and private hospitals and clinics, occupational health services, community health services, dispensaries and home-based care associations, and faith-based and other national and international NGOs. Governments should therefore:
- (a) build capacity in all components and at every level of national health systems;
 - (b) provide and maintain an effective continuum of care through the coordination of services and the sharing of resources, including information and training;
 - (c) improve institutional capacity for planning and management of health services;
 - (d) draft and reform legislation on the development of human resources for health services to cover planning, educating and training, and regulation of the qualifications and conditions of practice for health personnel, including certification and accreditation requirements;
 - (e) urgently develop and implement human resource plans and strategies that enable health systems to deliver services;
 - (f) prioritize, and make adequate budgetary provisions for, human resources, infrastructure, equipment and materials for effective service delivery to patients and protection of health-care workers.

Terms of employment and working conditions in health sector reforms, ILO, 1998. ⁸

Global Health Sector Strategy for HIV/AIDS 2003-2007, WHO. ⁹

Scaling up HIV/AIDS care: Service delivery and human resources perspectives, WHO, 2004. ¹⁰

Role of employers' and workers' organizations

20. Within the broad scope of care for the carers, employers' and workers' organizations should:
- (a) participate fully in the development and dissemination of standards, guidelines, policies and ethical frameworks that support HIV/AIDS programmes, including occupational safety and health standards;
 - (b) develop and implement an HIV/AIDS strategy for their own membership and a policy for their employees;

⁸ ILO: *Terms of employment and working conditions in health sector reforms*, Report for discussion at the Joint Meeting on Terms of Employment and Working Conditions in Health Sector Reforms, Geneva, 21-25 September 1998, <http://www.ilo.org/public/english/dialogue/sector/publ/reports.htm> .

⁹ WHO: *Global Health Sector Strategy for HIV/AIDS 2003-2007: Providing a framework for partnership and action*, <http://www.who.int/hiv/pub/advocacy/ghss/en/> .

¹⁰ *Scaling up HIV/AIDS care*, op. cit.

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- (c) raise awareness and build capacity amongst health-care workers to mitigate the impact of HIV/AIDS in the workplace;
 - (d) inform and train health-care workers about the ILO fundamental principles and rights at work;
 - (e) ensure that health-care workers who are infected or affected are protected against stigma and all forms of discrimination;
 - (f) work together with health-care workers to monitor compliance with all labour and OSH legislation and regulations;
 - (g) strengthen the access of health-care workers to voluntary counselling and testing, treatment and wellness programmes in the workplace;
 - (h) cooperate with each other and other relevant stakeholders to design strategies to fight against HIV/AIDS in health services.

IOE/ICFTU joint statement: Fighting HIV/AIDS together, 2003. ¹¹

The health sector as a workplace

21. Prevention and control of occupational risks related to infectious diseases – including HIV/AIDS, hepatitis and tuberculosis – are more likely to be achieved if considered together with other workplace hazards and risks in health services. The scale of occupational risk in the health sector is unclear, in part because of the stigma and blame attached to the reporting of sharps injuries and the lack of available post-exposure prophylaxis.
22. Workplace policies and programmes should ensure protection against stigma and discrimination, assure provision of treatment, care and support, and enable access to statutory benefits, regardless of how HIV was contracted.
23. The main elements of workplace policies and programmes are identified and described below with an emphasis on the specific requirements of health services. References to key legal, policy and technical instruments are highlighted to assist users in accessing additional information that is considered both by the ILO and by the WHO as valid and relevant.

Recognition of HIV/AIDS as a workplace issue

24. HIV/AIDS is a workplace issue that should be treated like any other serious occupational hazard or disease. Employers should ensure that health-care workers and managers at all levels are sensitized to workplace issues related to HIV/AIDS, including those relevant to the rights and needs of patients, and that they are given appropriate training and are supported by management.

¹¹ *Fighting HIV/AIDS together – A programme for future engagement*, IOE/ICFTU joint statement, ILO, Geneva, May 2003, http://www.ioe-emp.org/ioe_emp/pdf/ICFTU-IOE_HIV_AIDS.pdf.

Stigma and discrimination in the health sector ¹²

25. Stigma and discrimination – by health-care workers towards other health-care workers, towards patients, or by employers towards health-care workers – are a serious issue in many health-care settings, undermining the provision of care as well as programmes for prevention. They take a variety of forms and can result in treatment being delayed, inappropriate or withheld, and in breaches of confidentiality, inappropriate and unethical behaviour and the use of excessive precautions.
26. Interventions in the health services are more successful when they are part of a broader campaign to reduce stigma and discrimination. Within health services, stigma and discrimination can be significantly reduced by combining complementary interventions such as:
- (a) the implementation of workplace policies which expressly prohibit discrimination in employment and in the exercise of professional responsibilities;
 - (b) the provision of comprehensive care, including wellness programmes and provision of ART to improve the quality of life;
 - (c) appropriate training of personnel at all levels of responsibility in order to increase understanding of HIV/AIDS and to help reduce negative and discriminatory attitudes towards colleagues and patients living with the disease. This training should provide health-care workers with:
 - (i) **information** on the modes of transmission of HIV/AIDS and other infectious diseases, the level of occupational risk, to address the fear of physical contact with patients and provide a platform for continuous learning;
 - (ii) **inter-personal skills** to help health-care workers understand the impact of HIV/AIDS and the burden of stigma, and provide them with the tools to communicate with patients, colleagues and others in a respectful and non-discriminatory manner;
 - (iii) **techniques to manage stress and avoid burnout**, such as through the provision of appropriate staffing levels; more opportunities for autonomous work and increased involvement in the way it is carried out; determining shift patterns; work rotation; promotion and personal development; early recognition of stress; development of communication skills for supervision; staff support groups; and time away from the workplace;
 - (iv) **awareness of existing legislation and regulations** that protect the rights of health-care workers and patients regardless of their HIV status.

¹² *Understanding and responding to HIV/AIDS-related stigma and discrimination in the health sector*, Pan American Health Organization, 2003, <http://www.paho.org/english/ad/fch/ai/stigma.htm>.

Gender: Issues for women and men^{6, 13}

27. Women are more likely to become HIV-positive and are more adversely affected by the consequences of the epidemic than men for a range of biological, socio-cultural and economic reasons. The health sector is a major employer of women, who in some cases make up 80 per cent of the workforce. In such a context, it is essential that the gender dimensions of occupational safety and health and of HIV/AIDS are fully recognized, and that men and women health-care workers are sensitized through information, education and training.
28. Employers should ensure that the following measures are considered and accommodated in the design and implementation of workplace policies and programmes:
- (a) All health sector programmes should be gender sensitive, as well as sensitive to ethnicity, age, disability, religion, socio-economic status, culture and sexual orientation. This includes targeting both women and men explicitly and dealing with them in programmes which recognize the different types and degrees of risk for men and women.
 - (b) Information for women, especially young women, needs to alert them to and explain their higher risk of HIV transmission. Education should help both women and men to understand and act upon unequal power relations between them in employment and personal situations; harassment and violence should be addressed specifically, not only in the workplace, but also in domestic situations.
 - (c) Programmes should help women to understand their rights, both within the workplace and outside it, and empower them to protect themselves.¹⁴
 - (d) Education for men should include awareness raising, risk assessment and strategies to promote men's responsibilities regarding HIV/AIDS prevention, and the contextual factors that can facilitate responsible prevention behaviours.
 - (e) HIV/AIDS training for health-care workers should ensure understanding of the particular physical and psychological needs of HIV-positive women, including the specific problems they face with respect to reproductive and child health. It should also address barriers to HIV status disclosure, such as fear of stigma, discrimination or violence.

¹³ ILO: *Implementing the ILO code of practice on HIV/AIDS and the world of work: An education and training manual* (Geneva, 2002), <http://www.ilo.org/public/english/protection/trav/aids/code/manualen/index.htm> .

¹⁴ Discrimination (Employment and Occupation) Convention (No. 111), and its accompanying Recommendation No. 111, 1958.

Women, HIV/AIDS and the world of work, ILO. ¹⁵

ILO action plan on gender equality and gender mainstreaming. ¹⁶

Mainstreaming a gender perspective into the health services, ICN. ¹⁷

Gender dimension of HIV status disclosure to sexual partners: Rates, barriers and outcomes, WHO. ¹⁸

Social dialogue

- 29.** Social dialogue includes all types of negotiation, consultation and information sharing among governments, employers, and workers and their representatives. It may be a tripartite process, with government as an official party to the dialogue or it may consist of bipartite relations between employers – whether public or private – and workers and their representatives. The main goal of social dialogue is to promote consensus building and cooperation between the government and social partners in the world of work in order to achieve objectives of common interest. In this case, social dialogue may also benefit from the consultation of health professional associations, as well as community associations, particularly those of people living with HIV/AIDS.
- 30.** Within the health sector, social dialogue is an important mechanism for the sound management of general labour relations and occupational safety and health, as well as for the introduction of HIV/AIDS policies and programmes. Employers should ensure that effective social dialogue processes are made an integral part of health service management structures. Social dialogue in the workplace should:
- (a) be based on negotiation, consultation and the sharing of information;
 - (b) follow a continuous process of planning, implementing, monitoring, evaluation and revision;
 - (c) be conceived to build a safer and healthier working environment;
 - (d) ensure full participation of workers and their representatives in all aspects of the process, and the proportionate representation of women, especially at higher levels;
 - (e) be supported by adequate resources in terms of budget, time, facilities and training.
- 31.** In order to create an enabling environment for social dialogue, fundamental principles and rights at work should be recognized. Workers and their representatives should be given the means and training to participate effectively in social dialogue, and thereby to contribute to

¹⁵ ILO: *Women, HIV/AIDS and the world of work* (brochure), <http://www.ilo.org/public/english/protection/trav/aids/facts/wd04en.pdf> .

¹⁶ ILO: *ILO action plan on gender equality and gender mainstreaming* (Geneva, 2001).

¹⁷ *Mainstreaming a gender perspective into the health services*, Fact sheet, International Council of Nurses (ICN), http://www.icn.ch/matters_gender.htm .

¹⁸ *Gender dimensions of HIV status disclosure to sexual partners: Rates, barriers and outcomes*, Review paper, WHO, 2004, <http://www.who.int/gender/documents/en/genderdimensions.pdf> .

the establishment of a safe and healthy working environment, to the introduction of HIV/AIDS programmes, and to general health sector reform, where relevant.

Social dialogue in the health services: A tool for practical guidance, ILO, 2004. ¹⁹

Occupational safety and health

32. An effective safety and health system requires joint commitment between the competent authority, employers, workers and their representatives. While the overall responsibility for providing a safe and healthy working environment rests with the employer, who should demonstrate commitment to OSH by putting in place a documented programme, available to workers and their representatives, that addresses the principles of prevention, hazard identification, risk assessment and control, information and training, workers have a duty to cooperate with the employer in implementing this OSH programme, and in respecting and applying procedures and other instructions designed to protect them and others present at the workplace from exposure to occupational hazards. Joint safety and health committees are a recognized mechanism through which such collaborative action can be achieved.

ILO Occupational Safety and Health Convention, 1981 (No. 155), and other relevant ILO instruments listed in Appendix 1.

OSH management systems

33. Employers should base their OSH programme on the ILO *Guidelines on occupational safety and health management systems* ²⁰ which includes the following steps:
- (a) **establishing a policy** that is based on the principles of OSH and worker participation and that defines the main elements of the programme;
 - (b) **organizing** a structure to apply the policy, including lines of responsibility and accountability, competence and training, incident recording and communication;
 - (c) **planning and implementation**, including objectives, initial review, system planning, development and implementation;
 - (d) **evaluating** performance monitoring and measurement, investigation of work-related injuries, ill-health, diseases and incidents, audit and management review;
 - (e) **action for improvement** through preventive and corrective measures, and the constant updating and revision of policies, systems and techniques to prevent and control work-related injuries, ill-health, diseases, and dangerous incidents.

¹⁹ ILO: *Social dialogue in the health services: A tool for practical guidance*, Sectoral Activities Programme (Geneva, 2004), http://www.ilo.org/public/english/dialogue/sector/papers/health/social_health.pdf.

²⁰ ILO: *Guidelines on occupational safety and health management systems: ILO-OSH 2001*, (Geneva, 2001), <http://www.ilo.org/public/english/protection/safework/cops/english/download/e000013.pdf>.

Guidelines on occupational safety and health management systems: ILO-OSH 2001, ILO ²⁰ and The occupational safety and health management cycle (Fact Sheet No. 2).

Occupational health and safety management framework model, Department of Human Services, State of Victoria, Australia, 2003, ²¹ and Model for a hospital OSH management systems structure (Fact Sheet No. 3).

Prevention and protection against infectious pathogens ^{22, 23}

34. Workers in health services, like workers elsewhere, may encounter chemical, physical, ergonomic, or psycho-social hazards (such as stress, burnout, harassment and violence). ²⁴ In health services, however, there are occupational hazards, particularly infectious pathogens, which require special preventive and protective measures.
35. The risks of exposure to pathogens such as HIV and hepatitis B and C should be addressed in a comprehensive way that ensures ongoing prevention and protection as well as immediate prophylactic response in the event of occupational exposure. Attention to blood-borne pathogens does not eliminate or reduce the need for considering risks from pathogens transmitted by respiratory, gastrointestinal or other contacts.
36. Many of the measures designed to prevent occupational exposure to HIV and other blood-borne pathogens are straightforward and should be part of the workplace occupational safety and health programme. The handling of HIV exposure incidents and post-exposure prophylaxis, however, requires both technical know-how and, in particular, a solid care and support framework to meet the needs of infected workers. Health-care workers who serve a patient community with a high prevalence of HIV/AIDS may also be at higher risk of exposure to tuberculosis. In such situations it is especially important that a comprehensive occupational tuberculosis exposure control plan be put in place to complement an HIV/AIDS exposure control plan. Prevention and protection issues related to tuberculosis are described in specific guidelines developed jointly by the ILO and the WHO. ²⁵ A number of fact sheets annexed to these guidelines provide additional technical information on safe work practices.

²¹ *Public Hospital Sector Occupational Health and Safety Management Framework Model*, Department of Human Services, Melbourne, State of Victoria, Australia, 2003. The document can be downloaded in full at <http://www.health.vic.gov.au/ohs> .

²² *Guidance for clinical health-care workers: Protection against infection with blood-borne viruses*, HSC 1998/063, United Kingdom Department of Health, <http://www.dh.gov.uk/assetRoot/04/01/44/74/04014474.pdf> .

²³ *National code of practice for the control of work-related exposure to hepatitis and HIV (blood-borne) viruses* [NOHSC:2010(2003)], 2nd edition, Dec. 2003, National Occupational Health and Safety Commission, Australia.

²⁴ WHO/ILO/ICN/PSI: *Framework guidelines for addressing workplace violence in the health sector*, ILO, Geneva, 2002.

²⁵ ILO/WHO/WEF: *Guidelines for workplace TB control activities: The contribution of workplace TB control activities to TB control in the community*, WHO, 2003.

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37. In accordance with relevant national regulations and immunization protocols, employers should make available a course of hepatitis B vaccinations to all health-care workers who may be exposed to blood or body fluids. Employers should keep themselves regularly informed of progress in the development and availability of new vaccines.²⁶

Risk management

38. The overall process of risk management includes the steps of hazard identification, risk assessment and risk control. Control measures should be undertaken in a hierarchical order based on their effectiveness in eliminating the risk, preventing exposure or preventing injury.²⁷ All aspects of risk management are more effective with active health-care worker involvement. This document is specific to management of risks associated with HIV/AIDS. A parallel risk management process should be undertaken for all risks to health-care workers, such as tuberculosis. Special attention should be paid to minimizing risk to HIV-positive health-care workers. Up-to-date rules, procedures and instructions designed to highlight relevant hazards and related safe practices and the importance of following precautionary routines and using all equipment correctly, should be available to health-care workers and be the object of appropriate periodic information and training sessions.

Hazard identification

39. Risk management starts with the identification of situations, activities and tasks in the workplace which may put health-care workers at risk of exposure to HIV and other blood-borne infections or associated opportunistic infections. Hazard identification should be carried out as follows:
- (a) *Ask health-care workers.* A procedure to ensure that health-care workers can report perceived hazards without sanction should be established and implemented. This requires an active programme to educate health-care workers about the importance of reporting and how and when to report.
 - (b) *Analyse reports of incidents of exposure to blood or body fluids.* Use these data to determine trends; identify high-risk activities and tasks; evaluate reporting and documentation procedures; and monitor the effectiveness of follow-up and corrective action taken.
 - (c) *Survey the workplace layout, work practices and other sources of worker exposure.* This should include all possible sources of exposure to blood or body fluids, including possible risk to those outside but connected to the workplace; this is especially important for the staff in charge of health-care waste treatment. The survey should identify all job classifications, knowledge, attitudes and work practices which are most likely to put health-care workers at risk. All activities where health-care workers may be exposed to blood or body fluids should be listed and matched to job classifications.

Hazard characterization: Hepatitis and HIV viruses (Fact Sheet No. 1).

²⁶ WHO: *Weekly epidemiological record*, 9 July 2004, 79th year. No. 28, 2004, 79-253-264, <http://www.who.int/wer>.

²⁷ Fact Sheet No. 4 – Hierarchy of controls applied to risk of blood-borne pathogen exposure.

Risk assessment

- 40.** Once a hazard is identified, risk assessment should be carried out to evaluate the level and nature of the risk to health-care workers of exposure to hazards such as blood or body fluids and to determine the measures needed to eliminate the hazard or minimize the risk factors. Risk assessment includes consideration of:
- (a) modes of transmission of HIV and other blood-borne pathogens in the workplace;
 - (b) type and frequency of exposure to blood or body fluids, the amount of blood or body fluid, all probable routes and the most probable route of transmission, the type of body fluid encountered, and analysis of multiple exposures;
 - (c) factors which contribute to exposure and its recurrence, including workplace layout, work and clean-up practices, and availability, adequacy and use of protective clothing and equipment;
 - (d) the knowledge and training of employers, supervisors and health-care workers regarding HIV and other blood-borne pathogens and safe work practices;
 - (e) whether or not any equipment used is likely to increase or reduce risk of exposure;
 - (f) existing risk control measures and the need for new measures.

Risk control²⁰

- 41.** The goal of risk control is to follow the hierarchy of controls, selecting the most effective control measures in order of priority for their effectiveness in minimizing health-care workers' exposure to blood or body fluids, or preventing injury or illness resulting from exposure.
- (a) **Elimination:** The most effective measure is the complete removal of a hazard from the work area. Elimination is the method preferred in controlling hazards and should be selected whenever possible. Examples include: removing sharps and needles and eliminating all unnecessary injections and replacing them with oral medication of similar efficacy. Jet injectors may eliminate some uses of syringes and needles. Other examples include the elimination of unnecessary sharps such as towel clips, and using needleless IV systems (non-needle connectors for supplemental or "piggyback" connection to intravenous lines).
 - (b) **Substitution:** Where elimination is not possible, the employer should replace the work practices with others that present a lesser risk. An example is substituting a less toxic chemical for a disinfectant, such as paracetic acid for glutaraldehyde.
 - (c) **Engineering controls:** These controls isolate or remove a hazard from a workplace. They may include the use of appropriate mechanisms, methods and equipment to prevent worker exposure. Measures developed to minimize exposure to blood or body fluids should take into account:
 - (i) sharps containers, also known as safety boxes;
 - (ii) newer device technology such as safer devices with engineered injury prevention features (see Fact Sheet No. 6);
 - (iii) ergonomic factors such as improved lighting, workplace maintenance and workstation layout;

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- (iv) regular checks of the instruments and equipment used in the workplace, such as autoclaves and other sterilization equipment and processes, with repair or replacement as appropriate.
- (d) **Administrative controls:** These are workplace policies aimed at limiting exposure to the hazard, such as scheduling changes, rotation, or access to risk areas. Standard precautions requiring health-care workers to treat the blood or body fluids of all persons as potential sources of infection, independent of diagnosis or perceived risk are an example of an administrative control. For standard precautions to work effectively the concept of independence from diagnosis must be widely understood as enabling workers to protect themselves and patients without opening the door to discrimination or the attachment of stigma.
- (e) **Work practice controls:** These controls reduce exposure to occupational hazards through the method by which the work is conducted, protecting the health and improving the confidence of health service workers and their patients. Examples include no needle recapping, placing sharps containers at eye-level and within arms reach, emptying sharps containers before they are full, and establishing the means for safe handling and disposing of sharps devices before beginning a procedure. Employers should make sure that safe work practices are in place, and that unsafe practices are modified after other risk control measures have been applied.
- (f) **Personal protective equipment (PPE):** The use of PPE is a control measure that places barriers and filters between the worker and the hazard.²⁰ Employers should make available equipment to protect workers from exposure to blood or body fluids. They should ensure that:
- (1) there are adequate supplies of items for personal protection;
 - (2) equipment is properly maintained;
 - (3) workers have access to these items free of charge;
 - (4) workers are trained adequately in their use, and know how to examine personal protective equipment for defects and the procedures for reporting and replacing these;
 - (5) there is a clear policy for their use and health-care workers are fully aware of it;
 - (6) the following items should be provided, as appropriate:
 - (i) a variety of non-porous waterproof dressings for health-care workers with abraded or broken skin;
 - (ii) a variety of gloves in a range of sizes, sterile and non-sterile, including heavy latex,²⁸ vinyl, waterproof leather and other puncture-resistant materials; they should be worn whenever health-care workers are likely to come into contact with blood or body fluids or handle anything contaminated with blood or body fluids;

²⁸ Allergy to natural rubber latex (NRL) has been documented in 8-12 per cent of workers regularly exposed to latex. Alternative synthetic materials, which include vinyl, neoprene, and nitrile, provide adequate barrier protection. Avoidance of any contact with NRL products is essential for latex-sensitive health-care workers and will prevent sensitization in non-allergic health-care workers.

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- (iii) appropriate respiratory protection, including masks for mouth-to-mask resuscitation when bagging systems are not available or are ineffective;
 - (iv) plastic aprons, waterproof gowns, eye protection, fluid-resistant masks, overalls and overboots for workers who may be splashed or sprayed by blood in their work.

Safe work practices ^{20, 21, 29}

42. The core safe work practices to minimize the risk of transmission of HIV and other blood-borne infections in the workplace are standard precautions, including personal hygiene, good hand-washing practices and an infection control programme. Employers should ensure that hand-washing facilities are provided at clearly identified sites in the workplace. Hand-washing facilities should be equipped with adequate supplies of running water, soap and single-use towels. Where it is not possible to use running water, alternative means of hand cleaning should be made available, such as a 70 per cent alcohol hand rub. Workers should wash their hands at the beginning and end of each shift, before and after taking care of a patient, before and after eating, drinking, smoking and going to the toilet, and before and after exiting their work area. Workers should wash and dry their hands after contact with blood or body fluids and immediately after removing gloves. They should also check for cuts or abrasions on exposed parts of the body, and use waterproof dressings to cover any found. Workers should be encouraged to report any reactions they may have to frequent hand washing and the substances used, for appropriate action by the employer.

Safe handling of disposable sharps and injection equipment

- 43.** Employers should develop procedures for the safe handling and disposal of sharps, including injection equipment, and ensure training, monitoring and evaluation. The procedures should cover:
- (a) placement of clearly marked puncture-resistant containers for the disposal of sharps as close as practicable to the areas where sharps are being used or are found;
 - (b) regular replacement of sharps containers before they reach the manufacturer's fill line or when they are half full; containers should be sealed before they are removed;
 - (c) the disposal of non-reusable sharps in safely positioned containers that comply with relevant national regulations and technical guidelines;
 - (d) avoiding recapping and other hand manipulations of needles, and, if recapping is necessary, using a single-handed scoop technique;
 - (e) responsibility for proper disposal by the person using the sharp;
 - (f) responsibility for the proper disposal and for reporting the incident by any person finding a sharp.

²⁹ WHO: *Guidelines on prevention and control of hospital associated infections*, Regional Office for South-East Asia (New Delhi, 2002), http://whqlibdoc.who.int/searo/2002/SEA_HLM_343.pdf.

Hierarchy of controls applied to risk of blood-borne pathogen exposure (Fact Sheet No. 4).

Preventing nosocomial HIV infection using standard precautions (Fact Sheet No. 5).

Injection safety (Fact Sheet No. 6).

Measures to reduce risks during surgical procedures (Fact Sheet No. 7).

Cleaning, disinfection and sterilization of equipment

44. Depending on use, there are three levels on which decisions will be made to clean, disinfect or sterilize equipment:
- (a) if the equipment is used solely for contact with intact skin, it requires cleaning only;
 - (b) if the equipment is to have contact with mucous membranes or is contaminated with blood, it requires cleaning and high-level disinfection;
 - (c) if the equipment is to have contact with normally non-infected human tissue, it requires cleaning and sterilization. Cleaning must always precede disinfection or sterilization. It should be done with appropriate detergent and water, and:
 - (i) gloves should be worn during cleaning;
 - (ii) items should be washed and scrubbed to remove all visible contamination, if possible by mechanical means such as a dishwasher; care should be taken during cleaning to avoid splashing;
 - (iii) eye protection should be worn if splashing is likely to occur.
45. Incorrect use of some disinfectants is potentially hazardous, and instructions on labels and in material safety data sheets should be followed. Sterilizing equipment should be used in accordance with instructions and after provision of appropriate training.

Sterilization and high-level disinfection methods (Fact Sheet No. 8).

Cleaning blood spills

46. Blood spills should be assessed and attended to immediately. When cleaning blood spills:
- (a) appropriate gloves should be worn;
 - (b) absorbent material, such as paper towels, cloth or sawdust, should be used to absorb the bulk of the blood or body fluids;
 - (c) all materials should be deposited in approved leak-proof waste bags after use;
 - (d) the area should then be cleaned and disinfected using appropriate disinfection agents (see Fact Sheet No. 8);
 - (e) large spills may be hosed down with water safely by workers wearing protective clothing;
 - (f) workers should be encouraged to report all incidents of exposure.

Body handling and disposal

47. When there is any risk of contact with blood and body fluids in handling bodies for any purpose, standard precautions should be used. Gloves should be worn together with other protective clothing as necessary. Drainage tube sites and open wounds should be covered by waterproof dressings. All bodies being dispatched for storage or post-mortem examination or to a mortuary should be examined to ensure there are no sharps remaining in them.

Laundry

48. A procedure should be put in place to cover the distribution of clean linen and the collection, handling, bagging, storage, transport and cleaning of used linen. All used linen should be treated as potentially infectious and placed in a standard bag for linen. If there is a risk of contamination due to seepage of body fluids, the bag for linen should be placed in a clear leak-proof plastic bag. Bags for linen should be only three-quarters filled and should be secured prior to transport. Leather or other puncture-resistant gloves should be worn because sharps may remain in the linen. Sharps containers should be made available for disposal of sharps found when sorting used linen. If sharps are found or exposure occurs, this should be reported and recorded.
49. All linen should be washed with detergent. Where there is no access to specialist services, contaminated clothing or linen should be washed with detergent using the hot wash cycle of a domestic washing machine, heating the water to a temperature of at least 80 °C, or dry cleaned followed by ironing with a hot iron. Overloading of washing machines should be avoided. If washing by hand is unavoidable, household rubber gloves should be worn.³⁰

Waste management

50. Health services waste has greater potential to cause infection and injury than most other types of waste. Poor handling of health-care waste may have serious consequences for public health and the environment. As regards the waste they produce, health-care employers therefore have a “duty of care” to the workers involved, to public health and to the environment.
51. The employer should establish a waste management procedure in conformity with national law and practice. Such a procedure should pay particular attention to infectious wastes and sharps and should cover:
- (a) the packaging and marking of waste per category;
 - (b) the preliminary disposal of waste in the area where it is generated;
 - (c) the collection and transport of waste away from the area where it is generated;
 - (d) the storage, treatment and final disposal of waste as required by the relevant regulations and technical guidelines.

³⁰ In health-care settings where the above technology is not available, the linen can be soaked in a bucket of water with sodium hypochlorite (1 in 10 parts) or bleach for a minimum of 30 minutes. It can then be washed with detergent.

Safe management of wastes from health-care activities, WHO, 1999, ³¹ Health-care waste management at a glance, WHO/World Bank, 2003, ³² and Safe management of wastes from health-care activities (Fact Sheet No. 9).

Monitoring and evaluation

52. Workers' health surveillance³³ is aimed at the protection of workers and the early detection and prompt treatment of occupational diseases. Whilst compensation should be expedited this may reflect a failure of the occupational health and safety system. Surveillance should take into account the nature of occupational risks in the workplace, the health requirements, the health status of the workforce, including HIV status, the resources available and workers' and employers' awareness of the functions and purposes of such surveillance, as well as the relevant laws and regulations. The collective results of surveillance should be available to workers and their representatives.
53. Employers should regularly monitor and evaluate work practices and ensure that action is taken to modify them when indicated. A person or a group of people should be identified in the workplace to carry out monitoring and evaluation. The person or group thus identified should be made known to all health-care workers and should represent all categories of staff, including those in charge of health-care waste. Elements that should be considered are:
- (a) the effectiveness of workplace policies and procedures;
 - (b) the effectiveness of information and training programmes;
 - (c) the level of compliance with standard precautions;
 - (d) the accurate recording and analysis of incidents;
 - (e) the causes of exposure to blood or body fluids;
 - (f) the evaluation of incident debriefing;
 - (g) the effectiveness of action taken and follow-up.

³¹ A. Prüss, E. Giroult and P. Rushbrook (eds.): *Safe management of wastes from health-care activities* (Geneva, WHO, 1999), http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en/.

³² WHO/World Bank: *Health-care waste management at a glance*, June 2003, <http://www.healthcarewaste.org/linked/onlinedocs/WW08383.pdf>.

³³ ILO: *Technical and ethical guidelines for workers' health surveillance* (Geneva, 1998), <http://www.ilo.org/public/english/protection/safework/cops/english/index.htm>.

Technical and ethical guidelines for workers' health surveillance, ILO, 1998. ³³

International code of ethics for occupational health professionals, 2002. ³⁴

ILO code of practice on the recording and notification of occupational accidents and diseases, 1996. ³⁵

Summary outline for the management of occupational exposure to blood-borne pathogens (Fact Sheet No. 10).

Updated US public health service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for post-exposure prophylaxis, 2001. ³⁶

Exposure incident management

54. Exposure prevention is the primary strategy for reducing occupationally acquired infections. However, there will always remain a risk of occupational exposure from blood-borne pathogens. Employers should therefore have in place a system for managing such occupational exposure. It should be consistent with procedures for other occupational injuries and include mechanisms for immediate care, counselling and treatment (if needed), reporting, investigation, compensation and long-term follow-up, and should be presented to workers as a part of job orientation.

Exposure response system

55. The employer should designate an appropriately trained person or persons to conduct initial assessment and counselling or refer exposed health-care workers for needed follow-up, and assure that this resource is available during all working hours. The designated individual is responsible for assuring that documentation of the event and follow-up are completed. Workers should be informed of the procedure and the mechanism for contacting the designated individual.
56. Medications for post-exposure prophylaxis, including antiretroviral drugs, hepatitis B vaccine and hepatitis B immunoglobulin (HBIG) should be available on site for timely administration. If the designated contact person is not a clinician, access to an appropriately trained clinician who can provide consultation should be available during all working hours.
57. Workers should report any incident of occupational exposure immediately, because of the need for immediate consideration of post-exposure prophylaxis. Workers at risk of

³⁴ International Commission on Occupational Health: *International code of ethics for occupational health professionals*, updated 2002, http://www.icoh.org.sg/core_docs/code_ethics_eng.pdf .

³⁵ ILO: *Recording and notification of occupational accidents and diseases*, An ILO code of practice (Geneva, 1996), <http://www.ilo.org/public/english/protection/safework/cops/english/download/e962083.pdf> .

³⁶ "Updated US public health service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for post-exposure prophylaxis", in *Morbidity and Mortality Weekly Report*, 29 June 2001, Vol. 50, No. RR-11; Epidemiology Program Office, Centers for Disease Control and Prevention, United States Department of Health and Human Services (Atlanta), <http://www.cdc.gov/mmwr/PDF/wk/mm5302.pdf> .

occupational exposure to blood-borne pathogens should be familiarized with the principles of post-exposure management and the specific procedures of the employer as part of job orientation and ongoing training.

Immediate actions

58. Incidents requiring first-aid treatment can occur in any workplace. Because the delivery of first aid may involve exposure to blood or body fluids visibly contaminated with blood, those who may be called upon to render first aid should be informed about the risks of exposure and trained in use of preventive measures and protective equipment using procedures based on standard precautions. Employers should comply with all relevant national regulations in providing first-aid services, including appropriate equipment and training.
59. Immediate care to the injured individual should be based on the most current WHO guidelines on post-exposure prophylaxis,³⁷ and include referral to the designated individual for assessment of risk of transmission and provision of post-exposure prophylaxis or other needed medical follow-up.

Follow-up actions

60. The designated individual should ensure that full reports on the injury and immediate treatment provided are completed in a timely manner. This includes referral of the exposed individual for counselling and testing and other follow-up as described further below. An investigation of the exposure incident, including identification of potential actions to prevent similar exposures in the future, should be completed in a timely manner.

Analysis and record keeping

61. A system for recording and analysing all occupational exposures should be developed and maintained at the place of work in consultation with workers and their representatives and consistent with national requirements regarding the recording and notification of occupational injuries and diseases. The system should allow access to accumulated information without individual identifiers by both employer and workers and their representatives for purposes of analysis and improvement of prevention measures.

Care, treatment and support^{6, 13}

62. The provision of care, treatment and support to health-care workers infected or affected by HIV/AIDS, reduces the loss of essential skills and experience and minimizes disruption to the provision of care. It also respects the rights of workers to remain in employment as long as they are fit to work, helps to maintain their income, and contributes to their general well-being. To the extent possible, employers should facilitate access to comprehensive care, treatment and support programmes that combine specific provisions, for workers who are ill or have an ill family member, with general provisions as part of a social protection package available to all workers. Key elements of such a programme are identified and described below.

³⁷ Fact Sheet No. 10 will be electronically updated subsequent to an upcoming joint ILO/WHO meeting of experts.

Voluntary counselling and testing^{6, 38}

63. Voluntary testing for health-care workers wishing to know their HIV status should be encouraged and made available. Where adequate medical services exist, voluntary testing may be undertaken at the request and, if necessary, with the written informed consent of the worker, and with advice from the workers' representative where sought.
64. The acceptance of HIV testing depends on improved protection from stigma and discrimination as well as assured access to integrated services for prevention, treatment and care. According to the key principles of HIV testing known as the "3 Cs", the test must be provided on the basis of informed consent and be accompanied by counselling, and confidentiality must be ensured. UNAIDS and WHO encourage the use of rapid tests so that results are provided quickly and can be followed up immediately with post-test counselling for both HIV-negative and HIV-positive persons, and with treatment if necessary. Counselling, including appropriate referral, and prevention messages should be an essential part of a care and support programme for workers with HIV/AIDS. Counselling to health-care workers may require additional information beyond that included in typical counselling.
65. Although testing for HIV usually should not be carried out at the workplace, health workplaces are particular settings in which management of risk may require testing (see paragraphs 11 (Principles) and 52 (Monitoring and evaluation) and the ILO code of practice on HIV/AIDS and the world of work). Both in and outside the workplace, testing for HIV should be the consequence of voluntary informed consent and performed by suitably qualified personnel, in conditions of the strictest confidentiality. HIV testing should not be required at the time of recruitment, as a condition of continued employment or for insurance purposes.³⁹
66. Unlinked surveillance or anonymous epidemiological testing, whether to assess HIV infection trends and impact in the health sector or in the country as a whole, may be undertaken provided it complies with the ethical principles of scientific research, professional ethics and the protection of individual rights and confidentiality, and safeguards anonymity.

Disclosure and confidentiality

67. Voluntary disclosure by an individual of his or her HIV status has many consequences and can be only a personal decision. Confidentiality at the workplace means that persons with HIV have full control over decisions about whether and how their colleagues are informed. Health-care workers should understand they have a right to confidentiality and have no obligation to respond if asked about their sero-status by patients or their families. Health-care workers may decide against disclosing their HIV status at work for fear of dismissal or stigmatisation by the employer or fellow workers. In a safe and decent workplace, where health-care workers are educated about HIV and where discrimination is prohibited and absent, people living with HIV are more likely to be open about their status, seek counselling and treatment, and attend prevention programmes. This in turn enhances the

³⁸ UNAIDS/WHO policy statement on HIV testing, June 2004, <http://www.who.int/hiv/pub/vct/statement/en/>.

³⁹ The issue of voluntary testing and disclosure is to be the subject of a joint WHO/ILO meeting of experts, the results of which will be available electronically as a fact sheet.

potential for the practice of preventive behaviours and appropriate placement (see paragraphs 11 (Principles) and 52 (Monitoring and evaluation)).

68. The confidentiality of all records of health-care workers who have been exposed to blood or body fluids should be maintained. Summary information regarding all incidents of exposure in a particular health-care institution may be made available to all workers and their representatives in a form that has been agreed through consultation between the employer and the workers' representatives. Procedures should be established to manage and minimize breaches of confidentiality in the workplace, in accordance with national laws and regulations.

Treatment

69. Wellness programmes and ART are an essential part of any strategy to keep HIV-positive health-care workers in employment and productive. They also help to reduce stigma and discrimination by demonstrating the benefits of appropriate treatment. Employers should, to the extent possible, ensure that wellness programmes, including ART when needed, are made available in a manner consistent with treatment for other medical conditions.⁴⁰

Job security and promotion

70. Health-care workers who become HIV-positive can remain active for many years. Those who are medically fit should not suffer discrimination in terms either of job security or of opportunities for training or promotion. Employers should be aware that appropriate management of HIV/AIDS, including the provision and dispensation of antiretroviral therapy, can dramatically improve general health, life expectancy and the quality of life.

Terms and conditions of work

71. In accordance with national law and practice, health-care workers employed by both the public and the private sectors should be covered by sick pay, an insurance, and social security and/or workers' compensation scheme providing coverage at least equivalent to that enjoyed by workers in other sectors. Health-care workers living with HIV/AIDS should not be discriminated against in terms of access to welfare and other statutory benefits. At the same time, adjustments may be needed to respond to the way the disease develops, for example by extending sick leave and, if necessary, coverage for other benefits. If existing provisions or schemes need adjustment to take into account the special requirements of HIV-related illness, this should be the subject of negotiation between management and the union or the workers' representatives.

⁴⁰ 9.3. Occupational and other health services

- (a) Some employers may be in a position to assist their workers with access to antiretroviral drugs. Where health services exist at the workplace these should offer, in cooperation with government and all other stakeholders, the broadest range of health services possible to prevent and manage HIV/AIDS and assist workers living with HIV/AIDS.
- (b) These services could include the provision of antiretroviral drugs, treatment for the relief of HIV-related symptoms, nutritional counselling and supplements, stress reduction and treatment for the more common opportunistic infections including STIs and tuberculosis.

ILO: *HIV/AIDS and the world of work*, An ILO code of practice, op. cit.

Reasonable accommodation

- 72.** Reasonable accommodation refers to administrative or practical adjustments that are made by the employer to help workers with an illness or disability to manage their work. Workers with AIDS-related illnesses seeking accommodation should be treated like workers with any other chronic illness, in accordance with national laws and regulations. Employers, in consultation with workers and their representatives, should take measures to reasonably accommodate on a case-by-case basis. These could include:
- (a) rearrangement of working hours;
 - (b) modified tasks and jobs, including modification in the case of HIV-positive workers who may be at risk (see paragraph 11) or pose a risk to patients by virtue of their performing invasive procedures (see paragraph 52);⁴¹
 - (c) adapted working equipment and environment;
 - (d) provision of rest periods and adequate refreshment facilities;
 - (e) granting time off for medical appointments;
 - (f) flexible sick leave;
 - (g) part-time work and flexible return-to-work arrangements.
- 73.** It is best if the general conditions for reasonable accommodation are defined collaboratively between employers and workers and their representatives. Awareness-raising campaigns should be developed to ensure that other workers see reasonable accommodation as providing necessary care, not favourable treatment.

Employee assistance programmes

- 74.** Employee assistance programmes provide information, advice and support for workers on a broad range of personal, health and legal issues. They can be an effective framework for workplace health promotion services. Support may be extended to the families of workers to include them in workplace programmes – for example, education for HIV/AIDS prevention – or to help them to cope with a worker's disease or dependency. Such programmes may need to be established or extended to include a fuller range of services. This should be done in consultation with workers and their representatives, and might also involve relevant government authorities and other stakeholders.
- 75.** Large public health facilities such as major hospitals should set up or strengthen comprehensive family assistance. If beyond the reach of small private or non-governmental employers, such assistance could be provided through collaboration between several parties, including local health authorities, community-based organizations and self-help groups. Employers and workers and their organizations should examine together how they could contribute to the support of the families of workers living with HIV/AIDS. The involvement in this process of women, caregivers and people living with HIV/AIDS should be encouraged.

⁴¹ The issue of voluntary testing and disclosure is to be the subject of a joint WHO/ILO meeting of experts, the results of which will be available electronically as a fact sheet.

Social protection

76. Social protection is an important component of care and support. It includes not only formal social security schemes, but also private or non-statutory schemes with similar objectives, such as mutual benefit societies or occupational pension schemes. These schemes may feature, for example, group solidarity, an employer subsidy, or perhaps a subsidy from the government. A number of international labour Conventions deal with aspects of social protection and social security (see Appendix 1).

Knowledge, education and training

77. The capacity to generate, process and disseminate knowledge is essential in developing effective OSH strategies and monitoring their benefits. Core components of the knowledge base must include international labour standards, national legislation, technical standards, statistics and risk-assessment data, good practices, and education and training tools. Employers should make sure that the appropriate tools to collect, analyse and organize the information needed to maintain a safe and healthy working environment are made available and used in the workplace. Workers and their representatives should be involved in this process so that the knowledge and expertise of workers can be considered.
78. Education and training should be designed to meet the needs and situations of the different groups being educated or trained. Employers should consult the relevant authorities for further information on training and collaborate with workers and their representatives, and professional associations, in the development of education programmes and training materials. To the extent possible, larger hospitals, particularly teaching hospitals, and other specialized health services should cooperate in developing knowledge-exchange mechanisms designed to provide education, training and information to smaller health services, including occupational health services, and to community services and home caregivers. Private hospitals and clinics should be encouraged to help to facilitate the effective flow of knowledge and skills in the national health-care system. They should seek up-to-date scientific knowledge from national, and international, academic and research institutions, including professional associations.
79. The employer should ensure that health-care workers at all levels are provided with the information and training they need to maintain, update and improve their skills and knowledge as required. Information and training programmes for health-care workers should enable them to:
- (a) increase awareness of the risks of exposure to blood-borne pathogens;
 - (b) understand the modes of transmission of blood-borne pathogens, with particular emphasis on HIV, hepatitis B and hepatitis C;
 - (c) identify and anticipate situations where they may be exposed to blood-borne pathogens;
 - (d) apply the hierarchy of controls to prevent exposure (see Fact Sheet No. 4);
 - (e) follow standard precautions and other workplace practices for safety and health;
 - (f) use and handle equipment and personal protective equipment and clothing;
 - (g) be aware of their legal obligations regarding OSH;

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- (h) report promptly and accurately to the designated person in the workplace any exposure to blood or body fluids;
 - (i) initiate post-exposure follow-up and prophylaxis as appropriate according to assessed transmission risk level;
 - (j) apply social dialogue processes to improve workplace practice;
 - (k) support or take part in an OSH committee.

80. In addition to the above, information and training programmes for managers and supervisors should enable them to:

- (a) ensure that health-care workers at risk are informed about the transmission of blood-borne pathogens such as HIV, hepatitis B and hepatitis C;
- (b) implement and manage the different elements of OSH, especially safe work practices and preventive and protective measures;
- (c) be aware of their legal obligations regarding OSH;
- (d) ensure that any occurrences of exposure to HIV and hepatitis B and C are reported, investigated and corrective action taken;
- (e) refer health-care workers for information, guidance and counselling if they have concerns about exposure in general or in the context of PEP.

81. Training materials should be based on validated information and methodologies that are accepted at the national level by regulators and specialists. Health-care workers with proven skills and experience are often the best trainers, and peer education is therefore recommended at all levels, together with a participatory methodology. A list of the key elements to be included in information, education and training programmes for health-care workers is provided in Fact Sheet No. 11. Other specific areas for training are also identified in paragraphs 20(d) (Role of employers' and workers' organizations), 24 (Recognition of HIV/AIDS as a workplace issue), 26(c) (Stigma and discrimination in the health sector), 28 (Gender: Issues for women and men), 31 (Social dialogue), 38 (Risk management), 39 (Hazard identification), 41(f) (Risk control), 57 (Exposure response system).

Research and development

82. It is in the interest of employers, workers and society as a whole to facilitate as far as possible research and development in the area of HIV/AIDS. This may include seroprevalence and incidence studies, vaccine and drugs development, research into behavioural change and other areas that will contribute to improved management of the HIV/AIDS pandemic.

Appendix 1

International basis for action

Relevant international programmes on HIV/AIDS

The present guidelines have been developed in the context of and as a contribution to current HIV/AIDS programmes implemented by the following.

Joint United Nations Programme on HIV/AIDS

UNAIDS is the main advocate for global action on the epidemic. It leads, strengthens and supports an expanded response aimed at preventing transmission of HIV, providing care and support, reducing the vulnerability of individuals and communities to HIV/AIDS, and alleviating the impact of the epidemic. The Programme is a joint venture that brings together the efforts and resources of ten organizations of the United Nations system to help the world to prevent new HIV infections, care for those already infected and mitigate the impact of the epidemic.

World Health Organization

As a co-sponsor of UNAIDS, the WHO leads the health sector response to the HIV/AIDS epidemic. Its action is guided by the Global Health Sector Strategy (GHSS) for HIV/AIDS 2003-07, endorsed by the World Health Assembly in May 2003. HIV/AIDS is an organization-wide priority for the WHO, whose core HIV/AIDS programme has close links with other, related programme areas including: occupational health; sexual and reproductive health; tuberculosis; blood safety; child and adolescent health; essential drugs and medicines policy; disease surveillance; mental health; vaccine and microbicide development; gender and women's health; health education; and substance dependence. The WHO is the lead agency for implementing the "3 by 5" initiative aimed at providing 3 million people living with AIDS in developing countries with anti-retroviral treatment by the end of 2005.

International Labour Organization

The ILO's response to HIV/AIDS was prompted by the threat the endemic poses to the health, rights, productivity and livelihoods of its constituents, and the obstacles it poses to the Organization's goal of reducing decent work deficits, particularly those related to employment and social protection. The principles of social justice and equality, the process of tripartism, and core labour standards underpin the rights based approach of the ILO's involvement in the global effort against HIV/AIDS. The mission of the ILO Programme on HIV/AIDS (ILO/AIDS) is to demonstrate that the workplace is a major area for effective action to reduce the spread and impact of the AIDS epidemic. All activities are therefore geared towards helping the ILO's tripartite constituents to contribute actively to national efforts by bringing the workplace perspective into national strategic plans, and developing AIDS policies and programmes for all workplaces based on the ILO's fundamental international standards and, more practically, on the ILO code of practice on HIV/AIDS and the world of work.

International standards and instruments relevant to HIV/AIDS

Currently, no specific international treaty or Convention exists which deals with HIV/AIDS. Some of the main legal instruments of relevance to HIV/AIDS have been developed by the ILO. Other international instruments such as declarations and technical guidelines have been developed by the United Nations programmes that focus on HIV/AIDS and by the WHO.

United Nations instruments

- United Nations General Assembly special session on AIDS (UNGASS): Declaration of Commitment on HIV/AIDS, 2001;
- UNAIDS and Office of the United Nations High Commissioner for Human Rights (OHCHR): International Guidelines on Human Rights and HIV/AIDS, 1998; and Revised Guideline 6: Access to prevention, treatment, care and support, 2002;
- United Nations Millennium Development Goals, 2000.

International labour instruments

Conventions and Recommendations

- Discrimination (Employment and Occupation) Convention (No. 111), and Recommendation (No. 111), 1958.
- Occupational Safety and Health Convention, 1981 (No. 155).
- Occupational Health Services Convention, 1985 (No. 161).
- Termination of Employment Convention, 1982 (No. 158).
- Vocational Rehabilitation and Employment (Disabled Persons) Convention, 1983 (No. 159).
- Social Security (Minimum Standards) Convention, 1952 (No. 102).
- Labour Inspection Convention, 1947 (No. 81).
- Labour Relations (Public Service) Convention, 1978 (No. 151).
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98).
- Collective Bargaining Convention, 1981 (No. 154).
- Part-Time Work Convention, 1994 (No. 175).
- Migration for Employment Convention (Revised), 1949 (No. 97).
- Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143).
- Reduction of Hours of Work Recommendation, 1962 (No. 116).
- Night Work Convention (No. 171) and Recommendation (No. 178), 1990.
- Protocol of 1990 to the Night Work (Women) Convention (Revised), 1948 (No. 89).
- Nursing Personnel Convention (No. 149) and Recommendation (No. 157), 1977.

Codes of practice and guidelines

- ILO code of practice on workplace violence in services sectors, 2004.
- ILO code of practice on HIV/AIDS and the world of work, 2001.
- Guidelines on occupational safety and health management systems, 2001.
- Technical and ethical guidelines for workers' health surveillance, 1997.
- ILO code of practice on the protection of workers' personal data, 1997.
- Recording and notification of occupational accidents and diseases, 1995.

WHO instruments and guidelines

Instruments and policy

- Global Health Sector Strategy for HIV/AIDS 2003-07: Providing a framework for partnership and action.

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- Resolution WHA57.14 on scaling up treatment and care within a coordinated and comprehensive response to HIV/AIDS, 2004.
 - Resolution on the contribution of the WHO to the follow-up of the United Nations General Assembly special session on HIV/AIDS, 2002.

Technical guidelines

- *Prevention of hospital-acquired infections: A practical guide*, 2nd edition (2002). WHO/CDS/CSR/EPH/2002/12. Download document: English – PDF 405 kb; Spanish – PDF 806 kb, http://www.who.int/csr/resources/publications/drugresist/WHO_CDS_CSR_EPH_2002_12/en/.
- Guidelines for the prevention of tuberculosis in health-care facilities in resource-limited settings, 1999.
- A guide to monitoring and evaluation for collaborative TB/HIV activities, 2004.
- Safe health-care waste management (policy paper), 2004.
- WHO/ILO/ICN/PSI Framework guidelines for addressing workplace violence in the health sector, 2002.
- Location production of injection devices with reuse prevention features including auto-disable syringes: terms of reference for assistance by the WHO in technology transfer activities, 2004.
- Aide-mémoire for infection prevention and control in a health-care facility, 2004.
- A reference outline for developing a national policy and plan of action for injection safety in national immunization programmes, 2003.
- Aide-mémoire for a strategy to protect health-care workers from infection with blood-borne viruses, 2003.
- Managing an injection safety policy, 2003.
- Aide-mémoire on blood safety for national blood programmes, 2002.
- HIV testing and counselling: The gateway to treatment, care and support, 2004.
- Integrated guidelines for ART in the context of primary health care, 2004.
- Scaling up HIV/AIDS care: Service delivery and human resources perspectives, 2004.
- Standards for quality HIV care: A tool for quality assessment, improvement, and accreditation, 2004.
- Guidance on ethics and equitable access to HIV treatment and care, WHO, 2004.

Fact sheets

Note: These fact sheets provide internationally recognized practical information – available at the time of publication of the guidelines – on hazards and on risk prevention and control measures designed to protect health workers from exposure to HIV and other infectious pathogens. However, in view of the fast pace of technical and scientific progress, they will be updated electronically on the WHO and ILO web sites. Users should periodically check these and other sources for new or updated information in the areas covered by the fact sheets.

Fact Sheet No. 1 – Hazard characterization: Hepatitis and HIV viruses

Hepatitis viruses

The common causes of viral hepatitis are hepatitis B virus (HBV) and hepatitis C. Symptoms of hepatitis may include abdominal discomfort, nausea, loss of appetite, tiredness, fever, jaundice and dark urine. Blood tests are used to determine the cause of the hepatitis and, if applicable, the type of virus causing infection.

Hepatitis B virus

HBV can be found in blood and body fluids/substances such as semen. It can be passed from one person to another by infected blood or body fluids/substances entering the body. This may occur:

- by injection or injury with contaminated injecting equipment (e.g. needle-stick injury or intravenous drug use) or other sharp objects;
- by sexual contact (mainly hepatitis B virus);
- by transfusion with infected blood or blood products or the transplantation of infected material;
- by indirect transfer of infected blood through shared razors, toothbrushes and other personal items;
- through mucosal contact (e.g. splashes of body substances to the mouth, nose, eyes or non-intact skin); or
- during pregnancy, childbirth and breastfeeding from mother to child.

HBV can survive in blood and body fluids/substances outside the body. HBV is not usually transmitted by casual contact between persons. People who use contaminated injecting drug equipment have a greatly increased risk of infection with HBV. Occupational infection occurs mainly from transmission via contaminated needles and other sharp objects in the workplace, or from mucosal contact (e.g. splashes of body substances to the mouth, nose, eyes or non-intact skin).

A vaccine is available to prevent HBV infection. The majority of adults who are infected with HBV do not suffer serious illness and may not develop jaundice. If an obvious illness does develop the severity can vary. Some of those who are infected with HBV never recover from the infection and become long-term carriers of the disease. Some carriers are capable of transmitting the disease to others, but infectiousness varies between people and for the same person at different times. The risk of becoming a carrier is highest in those who are infected at birth from their infected mother. Long-term carriers face a risk of liver cirrhosis and primary liver cancer.

Hepatitis C virus

HCV is transmitted via blood-to-blood contact, the highest risk being when equipment used to inject drugs is shared. Moderate to low risk modes of transmission include tattooing and body piercing with contaminated equipment, needle-stick injuries, blood product transfusions where strict process control is not in place, and transmission from mother to baby. Although HCV is not classified as a sexually transmitted infection, it is possible for transmission in the sexual context to occur if blood is shared, although this is thought to be rare. There is currently no vaccine available that protects against the acquisition of HCV. In the initial stages of infection there are often no signs or symptoms of disease. Around 75 per cent of persons with HCV infections will develop a chronic (long-term) hepatitis C infection. Most people with chronic hepatitis C will develop some symptoms, ranging from mild to severe, after approximately ten to 15 years. Symptoms most often present as fatigue, nausea, muscle aches and pains, abdominal pain and loss of appetite. Occupational infection of HCV may occur through injury from contaminated sharps or, more rarely, through mucosal (i.e. eyes, nose and mouth) contact with blood.

Other hepatitis viruses

These include hepatitis A (and the less common hepatitis E), and hepatitis D and G. HDV and HGV are less common than, but probably spread through similar means to, HBV and HCV, and are likely to be controlled by the measures suggested in this code for HBV and HCV.

Human immunodeficiency virus (HIV)

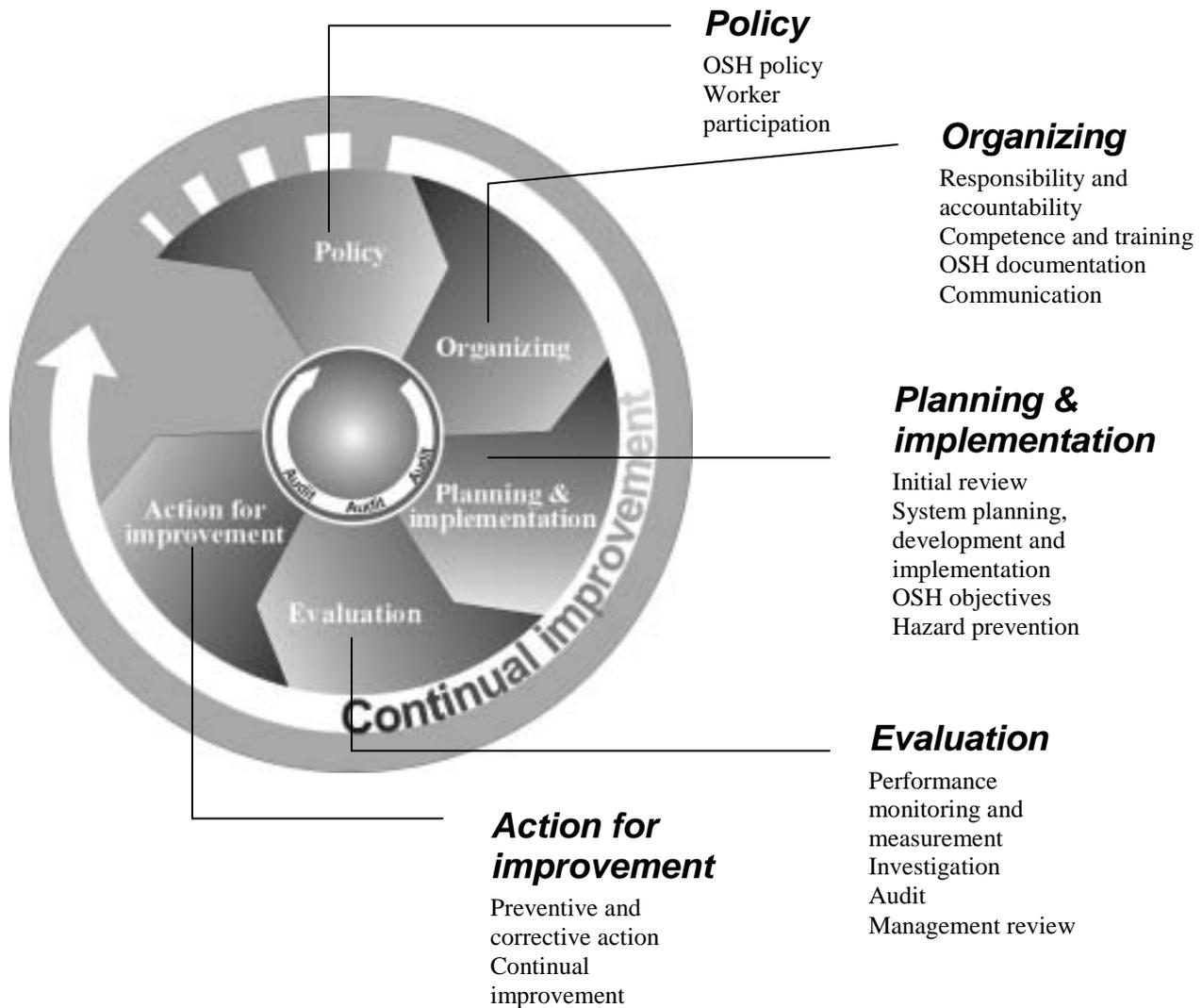
The human immunodeficiency virus (HIV) can damage the body's immune system so that it is unable to fight off infection. This is the cause of Acquired Immune Deficiency Syndrome (AIDS). An important feature of HIV infection is that there is usually a long period after initial infection during which the person has few or no symptoms of the disease. HIV usually progresses through several stages. In the initial weeks of infection, the person may experience symptoms similar to those of glandular fever. Antibodies to the virus are usually formed at this time (three to 12 weeks after infection occurs). Following the initial infection, there is a long period during which the person has few or no symptoms, but HIV is detectable through the presence of antibodies in the blood. This period usually lasts from three to eight years after the initial infection. As the virus begins to destroy the immune system, symptoms such as weight loss, fever, diarrhoea and lymph gland enlargement may commence. This usually progresses to the full AIDS, which develops when the immune system is severely damaged. The person may become terminally ill with infections, cancers or neurological disorders.

HIV is not as infectious as hepatitis B (HBV) or hepatitis C (HCV) but is spread by similar means to HBV. Infection with HIV can occur through the transfer of infected human blood or other body fluids/substances during anal or vaginal sexual intercourse, sharps injury (including needle sticks) and needle sharing related to drug use. It may also be transmitted from an infected mother to a baby during pregnancy, childbirth or breastfeeding.

HIV is usually not transmitted through non-sexual, person-to-person contact. However, the virus can be transferred where infected materials such as blood or other body fluids/substances come into direct contact with broken skin or the mucous membranes of the eyes, nose or mouth. Sharing toothbrushes and razors probably increases the risk of transmission. Occupational infection occurs mainly from transmission via contaminated needles and other sharp objects, or from mucosal contact (e.g. splashes of body substances to the mouth, nose, eyes or non-intact skin). Although HIV can survive in body fluids/substances outside the body, it is much more fragile than the hepatitis viruses and cannot survive for long outside the body. There is currently no vaccine available that protects against the acquisition of HIV. There is no evidence that HIV is transmitted by insects, food, and water or shared eating or drinking utensils; sneezing, coughing, sweat, tears, shared clothing or telephone hand sets; or toilets, urinals or swimming pools.

Fact Sheet No. 2 – The occupational safety and health management cycle

The main sections and their elements of the OSH management system for the workplace based on the ILO guidelines on OSH management systems, 2001, are shown in the figure below.



For further information on ILO-OSH 2001, please contact: SafeWork, ILO, 4, route des Morillons, CH-1211 Geneva 22, Switzerland. Tel: +41-22-799-6715. Fax: +41-22-799-6878. Email: safework@ilo.org, web site: <http://www.ilo.org/safework> .

Fact Sheet No. 3 – Model for a hospital OSH management systems structure²¹

This model, taken from guidelines developed by the Department of Human Services of the State of Victoria, Australia, presents in a summary outline format all the key elements needed by any hospital or health service to develop a comprehensive approach to managing its health and safety obligations, including legal obligations to provide a workplace free of risk, and to ensuring continuous improvement of health and safety performance and reduction of costs arising from workplace accidents, illness and workers' compensation premiums.

System structure

- 1. OSH policy and commitment:** A healthy and safe workplace needs everyone's involvement and commitment and involves an ongoing partnership between management, employees and their representatives. This should be expressed in a general policy which states the organization's commitment to health and safety and how this commitment will be achieved. The policy should also set an objective of a workplace free from injury and illness.
- 2. OHS responsibilities:** The health and safety system can only be managed effectively if detailed responsibilities are identified and assigned to those who have management and supervisory positions. The responsibilities assigned to each position must tally with the authority the position carries. Employees also have responsibility for maintaining a safe and healthy workplace. These should be established in job descriptions.
- 3. OHS consultation:** People will be more committed to the health and safety system if they are involved in its development and are consulted over aspects of the system which affect them. Consultation improves the operation of the system because it gives people information about health and safety activities and affords them a chance to contribute their thoughts and ideas on how health and safety can be managed in their workplace.
- 4. OHS training:** Everyone has to know how health and safety is managed in the workplace if they are to contribute to maintaining a high standard of health and safety. They also need to know how to do their job safely. OHS training is particularly important when people first come into the workplace. At that stage they are unfamiliar with the system and the hazards they might encounter.
- 5. OHS procedures:** Written procedures are required to ensure that people know how the safety system operates and that safety is incorporated into all standard work practices. These procedures must cover key activities under the system, such as risk management, purchasing, design, emergency response. These procedures form the basis of the organization's health and safety manual.
- 6. Contractor management:** Health facilities use contractors to provide a variety of medical and other services. Health and safety should be part of the contractor selection criteria so that only competent contractors are engaged. Contractors must be managed while in the workplace to ensure that they put neither themselves nor other people at risk.
- 7. OHS performance indicators and targets:** Targets need to be set for the health and safety system so that system activity is directed towards specified achievements, and performance in managing health and safety can be measured. Targets give the system its direction and provide a framework for ongoing system assessment. Performance indicators should be developed so that the performance of the system can be regularly reviewed and corrective action taken to make sure progress is being made towards the targets.

System activity

- 8. Risk management processes:** Hazards are present in all workplaces and could pose a threat to everyone's health and safety. Hazards include: manual handling, infection exposures, hazardous substances, violent behaviour, slips, trips and falls. There must be a continuous

process to identify hazards and put effective controls in place. Either the hazards should be eliminated altogether or the risk from hazards must be controlled so that people are kept safe.

9. **Inspection, testing and corrective action:** Regular and planned checks of the workplace are essential to make sure that risk controls are effective and that no new hazards have arisen. Checks include site inspections, maintenance of plant and equipment and tests of the work environment. Corrective actions should be identified, recorded and implemented to maintain a safe working environment.
10. **Incident reporting and emergency response:** While the health and safety system aims to prevent people from being injured or becoming ill at work, safety incidents may still happen. There must be a procedure available to report and investigate incidents and prevent them from recurring. Procedures are required in case of a major safety incident involving, for example, fire, a chemical spill or violent behaviour.
11. **Injury management and return to work:** People who become injured or ill at work should be supported to help them to get back to work as soon as possible. There may need to be a staged return to work which involves the person working limited hours or doing less demanding work until they can return to full duties.
12. **OHS document control:** An OHS system produces a number of important documents. These documents must be kept to serve as a basis on which to compare system performance and to provide evidence that system activities are being carried out as planned.

System review

13. **OHS performance review:** The performance of the health and safety system needs to be regularly reviewed to ensure that it is operating properly and that satisfactory standards of health and safety are being maintained. The system should be reviewed against the identified performance indicators.
14. **OHS auditing:** Audits of the health and safety system should be done periodically to test how well the system has been established and how well it is meeting operating standards. There can be both an internal and external audit programme. External audits can provide an independent check on system operations.
15. **OHS continuous improvement:** No system is perfect; there is always room for improvement. Efforts should be made to improve the health and safety system so that it is capable of delivering even higher standards of safety in the workplace.

Fact Sheet No. 4 – Hierarchy of controls applied to risk of blood-borne pathogen exposure

Methods to control occupational hazards have traditionally been discussed in terms of hierarchy and presented in order of priority for their effectiveness in preventing exposure to the hazard or preventing injury resulting from exposure to the hazard. The table below shows how to apply the hierarchy of controls framework to blood-borne pathogen hazards.

Method of control	Efficacy of control measure
<p>Elimination of hazard – complete removal of a hazard from the work area. Elimination is the method preferred in controlling hazards and should be selected whenever possible. Examples include: removing sharps and needles and eliminating all unnecessary injections. Jet injectors may substitute for syringes and needles. Other examples include the elimination of unnecessary sharps like towel clips, and using needleless IV systems.</p>	<p>IV needleless systems were shown to be 78.7 per cent effective in reducing IV-line-related needle-stick injuries over one year in a Canadian study.</p>
<p>Engineering controls – controls that isolate or remove a hazard from a workplace. Examples include sharps disposal containers (also known as safety boxes) and needles that retract, sheathe or blunt immediately after use (also known as safer needle devices or sharps with engineered injury-prevention features).</p>	<p>Sharps containers reduced injuries by two-thirds. A review of seven studies of safer needle devices demonstrated a reduction in injuries from 23-100 per cent with an average of 71 per cent.</p>
<p>Administrative controls – policies aimed to limit exposure to the hazard such as Universal Precautions. Examples include allocation of resources demonstrating a commitment to health-worker safety, a needle-stick injury prevention committee, an exposure control plan, removing all unsafe devices, and consistent training on the use of safe devices.</p>	<p>Poor safety climate and reduced staffing was associated with a 50 per cent increase in needle-stick injuries and near misses.</p>
<p>Work practice controls – reduce exposure to occupational hazards through the behaviour of workers. Examples include no needle recapping, placing sharps containers at eye level and at arms reach, emptying sharps containers before they are full, and establishing means for the safe handling and disposal of sharps devices before beginning a procedure.</p>	<p>Elimination of recapping resulted in a two-thirds reduction in needle-stick injuries</p>
<p>Personal protective equipment (PPE) – barriers and filters between the worker and the hazard. Examples include eye goggles, gloves, masks and gowns</p>	<p>PPE will prevent exposures to blood splashes but will not prevent needle-stick injuries. Double gloving in the surgical setting reduced puncture of the inner glove by 60-70 per cent.</p>

Fact Sheet No. 5 – Preventing nosocomial HIV infection using standard precautions

What are they?

Standard precautions combine the major features of **universal precautions** (designed to reduce the risk of transmission of blood-borne pathogens from blood and body fluids) and **body substance isolation** (designed to reduce the risk of transmission of pathogens from moist body substances). Standard precautions apply to: (1) blood; (2) all body fluids, secretions and excretions, *except sweat*, regardless of whether or not they contain visible blood; (3) non-intact skin; and (4) mucous membranes. Standard precautions are intended to reduce the risk of transmission of micro-organisms from both recognized and unrecognized sources of infection in hospitals. Under the standard precaution principle, all blood and body fluids should be considered as potentially infected with blood-borne pathogens including HIV and hepatitis B and C, regardless of the status or supposed risk factors of the person.

Standard precautions include the use of:

- hand washing;
- personal protective equipment (gloves, gowns, masks, whenever touching or exposure to patients' body fluids is anticipated);
- patient placement;
- environmental practices (waste disposal, housekeeping, soiled linen);
- handling and disposal of sharps;
- work practices;
- specimen handling and transport;
- care of equipment (cleaning, transporting and servicing).

Why are standard precautions important?

Exposure to blood or body fluids can transmit infections such as hepatitis B and C, bacteria, viruses and HIV. These exposures may be obvious (such as when a used syringe pierces the skin) or subtle (as when the blood or body fluid of an infected person comes into contact with micro-abrasions in the caregiver's skin). Infections may be transmitted from patient to patient, from patient to health worker or from health worker to patient (although this is rare).

Not adhering to standard precautions increases the occurrence of otherwise avoidable transmission of infection.

How are standard precautions ensured?

Before health workers can comply with procedures for standard precautions, national authorities and health-care institutions must ensure that appropriate policies and guidelines are in place and that equipment and supplies are available. To facilitate health worker adherence to infection control practices, national and institutional level policies and guidelines must:

- *Ensure that staff has been educated to treat all body substances as if infectious.* Health workers should be educated about occupational risks and should understand the need to use standard precautions with everyone, at all times, regardless of diagnosis. Regular in-service training should be provided for all medical and non-medical personnel in health-care settings. In addition, pre-service training for all health workers should address standard precautions.
- *Ensure that adequate staffing, supplies and facilities are available.* While education for health workers is essential it is not sufficient to ensure that standard precautions are observed. To prevent harm and infection to patients and staff, facilities should provide materials necessary

for clinical care. For example, adequate sterile and clean supplies should be available, even in resource-constrained settings. Single-use, disposable injection equipment should be available for each injectable medication in stock. Water, gloves, cleaning materials, means for disinfection and sterilization including a means to monitor and supervise reprocessing should be available. Adequate, easily available water is key to the prevention of health-care associated infections. (Although running water may not be universally available, access to sufficient water supplies should be ensured.) A means for safe disposal of medical and laboratory waste and faeces should be available.

- *Adopt locally appropriate standards that ensure patient and staff safety, are evidence based and are effective.* The proper use of supplies and staff education and supervision needs should be outlined clearly in institutional policies and guidelines. Further, policies and guidelines must be supported by available supplies and standards for monitoring and supervision specified. (Regular supervision in health-care settings can help to deter or reduce the risk of health-care associated harm in the workplace.) If injury or contamination results in exposure to HIV-infected material, post-exposure counselling, treatment, follow-up and care should be provided (necessitating the development of guidelines and policy in this area as well).
- *Seek to reduce unnecessary procedures.* Health facilities need to define when risky procedures are indicated, and health workers need to be trained to do procedures only when absolutely necessary. For example, workers should avoid blood transfusions when they are unnecessary and should substitute a safer procedure when possible (such as the use of volume-replacement solutions). Unnecessary injections should likewise be eliminated. Where pharmaceutical treatment is indicated, guidelines should recommend use of oral medication where appropriate. Adherence to these guidelines should be monitored.
- *Form a multidisciplinary group to assess and address the use of standard precautions.* A multidisciplinary group should be constituted to address the problem of prevention, assess current practices and resources for prevention, establish surveillance systems to detect patient and health-worker acquisition of infection, establish policies and procedures, educate personnel and monitor compliance.
- *Create consumer demand for safer health-care practices.* Demand for safe procedures – such as new, disposable, single-use injection equipment and oral medicines – can help to drive the institution of standard precautions.

Human resources, infrastructure and supplies needed

In addition to institutional guidelines for infection control, the supplies and facilities noted above must be made available: hand-washing stations, increased water supply, improved ventilation, sterilization facilities, cleaning supplies, oral medicines, sterile single-use needles and syringes, sharps containers, disinfectant, laboratory capacity, laboratory equipment and reagents, and anti-retroviral agents. Health-care waste management may require the construction of adapted waste-treatment options, such as incinerators and alternatives to incineration.

An infection control specialist or designation of an administrative staff member to reduce the number of health-care associated infections is beneficial. Infection-prevention measures should be a part of all health workers' training, which should be routinely supervised on the job. Specific institutional efforts should be made to monitor and reduce unnecessary invasive procedures. In addition, professional associations, including the national nursing association and the national medical association, should be engaged in protecting health workers and support the principle "first do no harm".

Cost information

The cost of the equipment needed to ensure standard precautions (gloves, soap, disinfectants, etc.) will certainly add to the operating expenses of health-care services and will vary according to the supplies and equipment that need to be added, the size of the institution and patient population served. The benefit to both staff and patients justifies this expenditure, however. Ensuring standard precautions should be seen as a non-negotiable responsibility of health-care institutions to both health-care staff and patients. Where the prevalence of HIV infection, hepatitis and other

transmittable infections is high, the cost-effectiveness of employing standard precautions will be greater.

Key references

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Fact Sheet No. 6 – Injection safety

What is it?

A safe injection is one that does not harm the recipient, does not expose the provider to any avoidable risks and does not result in waste that is dangerous for the community. Injection safety ensures that the conditions required to provide safe injections exist and that safe practices are adhered to.

Why is it important?

Many injections administered in the world are unsafe. Among unsafe practices, the reuse of syringes and/or needles without sterilization is of particular concern. The WHO estimates that each year, globally, unsafe injection practices cause an estimated 20 million infections with hepatitis B virus, 2 million infections with hepatitis C virus and 260,000 infections with HIV. Chronic infections acquired in 2000 because of unsafe injections will be responsible for an estimated 9 million years of life lost (adjusted for disability) between 2000 and 2030.

How is injection safety accomplished?

While it is the responsibility of national authorities to ensure that the conditions for injection safety exist, health-care institutions and health workers as well must be committed to ensure the safe and appropriate use of injections.

Activities required at the national level

The establishment of a national multidisciplinary coalition involving different departments of the Ministry of Health and other stakeholders is crucial to ensuring the development and implementation of national policy. Subsequent to establishing this policy, elements of a strategy for the safe and appropriate use of injections are:

- behaviour change among patients and health workers to decrease injection overuse and achieve injection safety;
- the availability of injection devices and safety boxes;
- the management of sharps waste.

Behaviour change. The foundation for the safe and appropriate use of injections is a behaviour-change strategy targeting consumers, as well as public, private and lay health workers. Key components to behaviour change include developing national behaviour-change strategy, incorporation of safe injection practices and minimum standards of care at the institutional level, promotion of safe technologies and promotion of rational use of injections (guidelines should recommend use of oral medication where appropriate).

Equipment and supplies. Eradication of the reuse of syringes and needles without sterilization requires the continuous, sufficient availability of injection devices and infection-control supplies – including safety boxes – in all health-care facilities. Needed are auto-disable syringes for immunization, single-use syringes and needles for curative care, norms and standards for equipment, central bulk procurement, central management of storage and a sufficient distribution system.

Sharps waste. The efficient, safe and environmentally friendly management of sharps waste is the only means of ensuring that single-use syringes and needles are not reused and do not lead to needle-stick injuries. Management of sharps waste includes the development of policy, assessment of waste-management systems, selection and implementation of appropriate waste-disposal systems, regulatory frameworks, training and supervision.

For all areas, adequate resources must be made available.

Activities required at the institutional level

Availability of appropriate injection equipment. Three different types of injection devices are now available for use in health-care facilities. Although reusable syringes and needles can be effectively sterilized with steam, evidence indicates that that result is difficult to ensure and that breakdown in such systems leads to lack of sterilization. Thus, their use must be discontinued. Use of single-use injection equipment may create a consumer demand for safety as patients can be encouraged to ask to witness the breaking of the sterility seal of new injection equipment. "Auto-disable syringes", which are inactivated automatically after one use, provide an additional opportunity to prevent dangerous reuse of injection equipment. Auto-disable syringes for immunization are now widely available on the market at a cost close to that of standard disposable syringes and larger size syringes with reuse prevention features designed for therapeutic injections are increasingly available.

Elimination of unnecessary injections. When pharmaceutical treatment is indicated, guidelines should recommend use of oral medication where appropriate.

Training of staff. Training of all physicians, nurses and other health workers providing injections must be provided and supervision in place.

Waste management. Waste management sites must be available and practices established by national policy adhered to. Sufficient sharps containers or other appropriate means of immediate disposal must be provided.

Activities required by health workers

Injection practices. Injections are only provided with single-use or adequately sterilized equipment. Unnecessary injections should be avoided, with oral substitutes used when appropriate.

Disposal of needles and syringes. Used needles and syringes should be discarded immediately, without recapping, in puncture-proof and liquid-proof containers that are closed, sealed and destroyed before completely full.

Human resources, infrastructure and supplies needed

A national coalition on safe and appropriate use of injections should be facilitated by a coordinator. National guidelines for safe injections should be in place in all health-care settings. Oral medicines, sterile single-use needles and syringes, and sharps containers must also be available. Options for safe disposal of injection equipment, such as incinerators and alternatives to incineration, are essential.

Safe injection techniques should be a part of all health workers' training, which should be routinely supervised on the job. Specific institutional efforts should be made to monitor and reduce unnecessary injections. In addition, professional associations, including the national nursing association and the national medical association, should be engaged in protecting health workers and support the principle "first do no harm".

Cost information

In 2002, the average international retail price for disposable syringes ranged from US\$0.04 (2 ml) to US\$0.08 (5 ml). A typical 5-litre safety box costs US\$1 and holds 100 syringes and needles. In practice, in the case of essential drugs, these costs should not lead to an increase in drug expenditure of more than 5 per cent.

In one modelling exercise by the WHO and the World Bank, it was concluded that each disability-adjusted life year (DALY) averted through policies for the safe and appropriate use of injections costs considerably less than one year of average per capita income – making such policies a sound investment for health care.

The cost in lives saved, illnesses avoided and direct medical costs makes injection safety a key intervention in the prevention of HIV/AIDS and other infections.

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Fact Sheet No. 7 – Measures to reduce risks during surgical procedures

1. These measures are applicable to surgery and all areas of medicine, midwifery and dentistry where surgical procedures are performed, including general practice. Risk-reduction strategies are of particular relevance to obstetrics, gynaecology and emergency care.
2. Most percutaneous injuries in the operating theatre or during obstetric/midwifery procedures are caused by sharp suture needles. The risk of percutaneous injury to the operator has been found to be associated with the type and duration of the procedure, and the use of fingers rather than instruments to hold tissue whilst suturing. Perforations of surgical gloves are common and often go unnoticed. Gloves can also become porous during prolonged procedures due to hydration of latex. Double gloving does not “prevent” sharps injury, but has been shown to effect up to a sixfold decrease in inner glove puncture and to reduce the volume of blood transmitted due to the enhanced wiping effect of two layers of glove.
3. The use of blunt-tipped needles can further reduce the incidence of glove puncture and of percutaneous injury. Although unsuitable for suturing skin and bowel, they can be used effectively for all other components of abdominal closure. For skin and bowel closure, stapling devices are a safer alternative to sharp suture needles.
4. Blood-skin contacts pose a risk of blood-borne virus transmission to the health worker if the skin surface is not intact. Non-intact skin on hands in surgical personnel may result from dermatitis due to frequent scrubbing, and from cuts and abrasions incurred during other activities.
5. In order to minimize the risk of injury, the tasks of each member of the surgical team should be outlined. Specific hazards and measures to reduce the risks of exposure should be identified for each team member and should be reviewed periodically.

Reducing the risk of percutaneous exposure: Methods, procedures and equipment

6. The following measures may reduce the risk of percutaneous exposure and should be considered where practicable:
 - (a) have no more than one person working in an open wound/body cavity at any time (unless essential to the safe and successful outcome of an operation);
 - (b) use a “hands-free” technique whereby the same sharp instrument is not touched by more than one person at the same time; avoid hand-to-hand passing of sharp instruments during an operation;
 - (c) assure safer passage of necessary sharp needles and instruments via a “neutral zone”; announce when a sharp instrument or needle is placed there. The “neutral zone” may be a tray, kidney basin or an identified area in the operative field;
 - (d) ensure that scalpels and sharp needles are not left exposed in the operative field, but always removed promptly by the scrub nurse having been deposited in the neutral zone by the operator or assistant;
 - (e) use instruments rather than fingers for retraction, and for holding tissues while suturing;
 - (f) use instruments to handle needles and to remove scalpel blades;
 - (g) direct sharp needles and instruments away from own non-dominant, or assistant’s hand;
 - (h) remove sharp suture needles before tying suture; tie suture with instruments rather than fingers.
7. Alternative equipment and procedures should be considered where practicable:
 - (a) eliminate any unnecessary use of sharp instruments and needles, e.g. by appropriate substitution of electrocautery, blunt-tipped needles and stapling devices;
 - (b) opt for alternative, less invasive surgical procedures where practicable and effective;

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- (c) avoid scalpel injuries associated with assembly/disassembly, by using scalpels which are either disposable, have retractable blades or which incorporate a blade release device;
 - (d) avoid the use of sharp clips for surgical drapes; blunt clips are available as are disposable drapes incorporating self-adhesive operating film;
 - (e) consider double gloving with a larger pair of gloves innermost for optimum comfort.

Reducing risk of blood-skin contact

- 8. The following measures may reduce the risk of blood-skin contact and should be considered:
 - (a) if a glove puncture is suspected or recognized, rescrub if possible and reglove as soon as safety permits;
 - (b) change gloves regularly if performing, or assisting with, a prolonged surgical procedure even if no glove puncture is suspected or recognized;
 - (c) the need for protection of body, eyes and face;
 - (d) choose waterproof gowns, or wear a surgical gown with waterproof cuffs and sleeves and a plastic apron underneath if blood contact and therefore “strikethrough” is considered a risk – such as procedures anticipated to involve high blood loss;
 - (e) if legs or feet may be contaminated, ensure that impermeable gown/apron covers legs and wear impermeable footwear. Overboots are preferable to shoes or clogs. Surgical drapes with “catch-basins” are available to reduce the risk of leg and foot contamination;
 - (f) wear protective headwear and surgical mask. Male health workers should consider wearing hoods rather than caps to protect freshly shaven cheeks and necks;
 - (g) ensure that all blood is cleansed from a patient’s skin at the end of an operation before patient leaves theatre;
 - (h) remove protective clothing including footwear on leaving the contaminated area. All contaminated reusable protective clothing, including footwear, should be subjected to cleaning and disinfection or sterilization, with appropriate precautions for those undertaking it. Footwear should be adequately decontaminated after use.

Measures to reduce eye and other facial exposure

- 9. Protect mucous membrane of eyes with protective eyewear. This should prevent splash injuries (including lateral splashes) without loss of visual acuity and without discomfort. Face shields may be considered appropriate for procedures which involve a risk of splatter of blood including aerosols or other potentially infectious material. Various forms of combined eye and face protection are available.
- 10. Eye-wash stations should be available in case of accidental exposure. Contact lenses should be removed prior to eye washing.

Fact Sheet No. 8 – Sterilization and high-level disinfection methods

General principles

In clinical practice, contaminated equipment, clothing etc., may harbour a wide range of micro-organisms of varying susceptibility to inactivation. Sterilization inactivates even resistant bacterial endospores. The disinfection methods recommended here may not inactivate resistant spores but should be adequate to inactivate the range of organisms likely to be encountered. Thus, although the following guidance deals specifically with HIV and HBV, it is emphasized that other pathogens may be present and sterilization by heat is the preferred method of decontamination. Instruments used to penetrate skin and enter normally sterile body areas must be sterile.

Manufacturers' instructions must be consulted on compatibility of materials with the method of sterilization or disinfection preferred. Equipment used for sterilization or disinfection must be commissioned on installation, regularly serviced and maintained and tested in accordance with the manufacturers' instructions and relevant national regulations or standards, or recognized international guidelines.

In **all** cases, thorough cleaning must precede sterilization or disinfection of instruments or equipment. Workers undertaking this should wear suitable protective clothing including household gloves. The human immunodeficiency virus (HIV) can be transmitted from one person to another through the use of non-sterile needles, syringes, and other skin-piercing and invasive instruments. Proper sterilization of all such instruments is therefore important to prevent its transmission. HIV is very sensitive to standard methods of sterilization and high-level disinfection, and methods designed to inactivate other viruses (e.g. hepatitis B virus) will also inactivate HIV.

Heat is the most effective method for inactivating HIV; methods for sterilization (1) and high-level disinfection (2) based on heat are therefore the methods of choice. High-level disinfection by boiling is feasible in most circumstances, as this requires only a source of heat, a container and water. In practical and field settings, high-level disinfection with chemicals is far less reliable.

It is imperative that all instruments be cleaned thoroughly before being sterilized or disinfected at high level by any method. It is suggested, particularly in health-care settings where the prevalence of HIV infection among patients is high, that medical instruments should be soaked for 30 minutes in a chemical disinfectant before cleaning. This will give further protection to the personnel from exposure to HIV during the process of cleaning.

Physical methods

Sterilization by steam (autoclaving) is the method of choice for reusable medical instruments including needles and syringes. An inexpensive type of autoclave is an appropriately modified pressure cooker (WHO/UNICEF type). (3) Autoclave and pressure cookers should be operated at 121°C (250°F) equivalent to a pressure of 1 atmosphere (101 kPa, 15 lb/in²) above atmospheric pressure, for a minimum of 20 minutes. The WHO and UNICEF have collaborated in developing a portable steam sterilizer containing an insert (rack), where needles, syringes and other instruments commonly used in health-care settings can be fitted.

Sterilization by dry heat in an electric oven is an appropriate method for instruments that can withstand a temperature of 170°C (340°F). This method is therefore not suitable for reusable plastic syringes. An ordinary electric household oven is satisfactory for dry-heat sterilization. The sterilization time is two hours at 170°C (340°F).

High-level disinfection by boiling is achieved when instruments, needles and syringes are boiled for 20 minutes. This is the simplest and most reliable method for inactivating most pathogenic microbes, including HIV when sterilization equipment is not available. Hepatitis B virus is inactivated after a few minutes of boiling and it is probable that HIV, which is very sensitive to heat, is also inactivated after several minutes of boiling. However, in order to be sure, boiling should be continued for 20 minutes.

Chemical methods

Many disinfectants recommended for use in health-care facilities have been found to inactivate HIV in laboratory testing. However, in practice, chemical disinfectants are not reliable, because they may be inactivated by blood or other organic matter present. For heat-labile articles and surfaces which cannot be sterilized or boiled it will be necessary to employ methods of chemical disinfection. The use of chemical agents is restricted by many factors, including their variable effects on different micro-organisms, incompatibility with various surfaces, reduced efficacy in the presence of organic matter, susceptibility to deterioration with storage and toxic potential. Chemical disinfection must only be undertaken in the absence of a satisfactory alternative. Recommendation of disinfectants for the purpose of inactivation of HIV and hepatitis viruses is restricted by lack of adequate data for many chemical agents. Although various publications have claimed efficacy against HIV for a wide range of disinfectants and detergents, the evidence for some claims is equivocal. Furthermore, in any clinical situation where it may be necessary to inactivate HIV it will also be necessary to inactivate HBV which is generally regarded as more resistant (4).

Chlorine-releasing compounds

- (a) **Sodium hypochlorite:** Sodium hypochlorite solutions (liquid bleach, eau de javel, etc.) are excellent disinfectants: they are bactericidal, virucidal, inexpensive and widely available. However, they have two important disadvantages.
- *They are corrosive.* They will corrode nickel and chromium steel, iron and other oxidizable metals. Solutions exceeding 0.1 per cent available chlorine should not be used repeatedly for the disinfection of good-quality stainless steel equipment. Contact should not exceed 30 minutes and should be followed by thorough rinsing and drying. Dilutions should not be prepared in metallic containers as they may corrode rapidly.
 - *They deteriorate.* Solutions should be recently manufactured and protected in storage from heat and light. Dilutions should be prepared just before use. Rapid decomposition may be a major problem in countries with a warm climate. Two other chlorine-releasing compounds (calcium hypochlorite, sodium dichloroisocyanurate) may be more suitable because they are more stable. In addition, they can be transported more easily and more cheaply. Their effectiveness, however, has not yet been evaluated.
- (b) **Calcium hypochlorite** (5) (powder, granules or tablets): This substance also decomposes gradually if not protected from heat and light but it decomposes more slowly than sodium hypochlorite solution. It is available in two forms: “high-tested” calcium hypochlorite and chlorinated lime or bleaching powder. A deposit in solutions is normal.
- (c) **Sodium dichloroisocyanurate** (6) (NaDCC): When dissolved in water, NaDCC forms hypochlorite (hypochlorous acid); it is much more stable than sodium hypochlorite solution or calcium hypochlorite, and is generally formulated as tablets.
- (d) **Chloramine** (tosylchloramide sodium; chloramine T): Chloramine is more stable than sodium hypochlorite and calcium hypochlorite. It should, however, be stored protected from humidity, light and excessive heat. It is available in powder or tablet form.

The disinfectant power of all chlorine-releasing compounds is expressed as “available chlorine” (percentage for solid compounds; percentage or parts per million (ppm) for solutions) according to the concentration level. Thus, 0.0001 per cent = 1 mg/litre = 1 ppm and 1 per cent = 10g/litre = 10,000 ppm.

Chlorine-releasing compounds: Recommended dilutions

	Clean condition (e.g. cleaned medical equipment)	Dirty condition (e.g. blood spills, soiled equipment)
Available chlorine required	0.1 per cent (1 g/litre, 1,000 ppm)	0.5 per cent (5 g/litre, 5,000 ppm)
Dilution		
Sodium hypochlorite solution (5 per cent available chlorine)	20 ml/litre	100 ml/litre
Calcium hypochlorite (70 per cent available chlorine)	1.4 g/litre	7 g/litre
NaDCC (60 per cent available chlorine)	1.7 g/litre	
NaDCC-based tablets (1.5 g of available chlorine per tablet)	1 tablet/litre	4 tablets/litre
Chloramine (25 per cent available chlorine)	20 g/litre*	20 g/litre

*Chloramine releases chlorine at a slower rate than does hypochlorite. Therefore, a higher available chlorine concentration is required in chloramine solutions for the same effectiveness. On the other hand, chloramine solutions are not inactivated by biological materials (e.g. protein and blood) to the same extent as hypochlorites. Therefore, a concentration of 20 g/litre (0.5 per cent available chlorine) is recommended for both clean and dirty conditions.

Ethanol and 2-propanol

Ethanol (ethyl alcohol) and 2-propanol (isopropyl alcohol) have similar disinfectant properties. They are germicidal for vegetative forms of bacteria, mycobacteria, fungi, and viruses after a few minutes of contact. They are not effective against bacterial spores. For highest effectiveness they should be used in a concentration of approximately 70 per cent (70 per cent alcohol, 30 per cent water); lower and higher concentrations are less effective. Ethanol can be used in its denatured forms, which may be less expensive. All alcohols are very expensive if they have to be imported, as they are subject to strict air-freight regulations requiring special heavy packaging. Importation of alcohol is forbidden in some Muslim countries.

Polyvidone iodine (PVI)

PVI is an iodophore (a compound that carries iodine) and can be used in aqueous solution as a potent disinfectant. Its disinfectant activity is very similar to that of hypochlorite solutions, but it is more stable and less corrosive to metals. It should not, however, be used on aluminium and copper. It is commonly formulated as a 10 per cent solution (1 per cent iodine). It can be used diluted to 2.5 per cent PVI (1 part 10 per cent solution to 3 parts boiled water). Immersion for 15 minutes in a 2.5 per cent solution provides high-level disinfection for clean equipment. Dilute solutions (2.5 per cent) for soaking instruments should be prepared fresh every day.

Glutaral (glutaraldehyde)

Glutaral is usually available as a 2 per cent aqueous solution which needs to be activated before use. Activation involves addition of a powder or a liquid supplied with the solution; this renders the solution alkaline. Immersion in the activated solution destroys vegetative bacteria, fungi and viruses in less than 30 minutes. Ten hours are required for the destruction of spores. After immersion, all equipment should be thoroughly rinsed to remove any toxic glutaral residue. Once activated, the solution should not be kept more than two weeks. It should be discarded if it becomes turbid. Stabilized glutaral solutions that do not require to be activated have been formulated recently. However, insufficient data exist for their use to be recommended. Glutaral solutions are expensive.

Hydrogen peroxide

It is a potent disinfectant whose activity is due to the release of oxygen. Immersion of clean equipment in a 6 per cent solution provides high-level disinfection in less than 30 minutes. The 6 per cent solution should be prepared immediately before use from the 30 per cent stabilized solution (1 part of stabilized 30 per cent solution added to 4 parts of boiled water). The concentrated stabilized 30 per cent solution should be handled and transported with care because it is corrosive. It should be stored in a cool place and protected from light. Hydrogen peroxide is not suitable for use in a hot environment. Because it is corrosive, hydrogen peroxide should not be used on copper, aluminium, zinc or brass.

Field guide to sterilization and high-level disinfection: techniques effective against HIV. After thorough cleaning, instruments should be sterilized by heat (steam or dry heat). If sterilization is not possible, high-level disinfection by boiling is acceptable. Chemical disinfection must not be used for needles and syringes. Chemical disinfection for other skin-cutting and invasive instruments should only be employed as the last resort, and only if the appropriate concentration and activity of the chemical can be ensured and if the instruments have been thoroughly cleaned prior to soaking in the chemical disinfectant.

Sterilization: inactivates (kills) all viruses, bacteria and spores	
Steam sterilization under pressure for at least 20 minutes: 1 atmosphere (101 kPa, 15lb/in ²) above atmospheric pressure, 121°C (250°F)	In autoclave or WHO/UNICEF-type steam sterilizer
Dry heat sterilization: two hours at 170°C (340°F)	In electric oven
High-level disinfection: inactivates (kills) all viruses and bacteria, but not spores	
Boiling for 20 minutes	In appropriate container
Immersion in high-level disinfectant for 30 minutes (<i>in practical and field settings, high-level disinfection with chemicals is far less reliable than boiling</i>)	e.g. sodium hypochlorite 0.5 per cent available chlorine chloramine 2 per cent ethanol 70 per cent 2-propanol 70 per cent polyvidone iodine 2.5 per cent formaldehyde 4 per cent glutaral {glutaraldehyde} 2 per cent hydrogen peroxide 6 per cent

Notes

- (1) Sterilization is defined as inactivation of all microbes, including spores.
- (2) High-level disinfection is defined as inactivation of all microbes except spores.
- (3) For more information, contact: Expanded Programme on Immunization, World Health Organization, or UNIPAC (UNICEF Procurement and Assembly Centre), Freeport, DK 2100, Copenhagen, Denmark.
- (4) Although formaldehyde has been listed as a chemical sterilization agent in previous versions of the WHO guidelines, it is not included in the present version because of its high irritating properties and the fact that it has been classified by the International Agency for Research on Cancer (IARC) and several countries as a human carcinogen.
- (5) Calcium hypochlorite and sodium dichloroisocyanurate (NaDCC) solutions can be expected to inactivate HIV because they both generate hypochlorous acid in solution and are therefore expected to act in a similar way to sodium hypochlorite.
- (6) See previous note.

Fact Sheet No. 9 – Safe management of wastes from health-care activities^{31, 32}

1. Health-care waste management (HCWM) is a process to help ensure proper hospital hygiene and safety of health workers and communities. It includes planning and procurement, construction, staff training and behaviour, proper use of tools, machines and pharmaceuticals, proper disposal methods inside and outside the hospital, and evaluation. Its many dimensions require a broader focus than the traditional health specialist or engineering point of view.

Advantages of good HCWM

2. The need for proper HCWM has been gaining recognition slowly. It can:
 - help control nosocomial diseases (hospital-acquired infections), complementing the protective effect of proper hand washing;
 - reduce community exposure to multi-drug-resistant bacteria;
 - dramatically reduce HIV/AIDS, sepsis, and hepatitis transmission from dirty needles and other improperly cleaned/disposed medical items;
 - control zoonoses (diseases passed to humans through insects, birds, rats and other animals);
 - cut cycles of infection;
 - easily and cost-effectively address health-worker safety issues, including reducing risk of needle sticks;
 - prevent illegal repackaging and resale of contaminated needles;
 - avoid negative long-term health effects; e.g. cancer, from the environmental release of toxic substances such as dioxin, mercury and others.
3. HCW can be subdivided into various categories (table 1). Segregation of different waste categories is critically important to proper disposal. Approximately 80 per cent of all HCW can be disposed of through regular municipal waste methods. The other 20 per cent can create serious health threats to health workers and communities if not disposed of properly. Disposal methods vary according to type of waste, local environment, available technology, costs and financing, and social acceptance (due to religion, customs, etc). Each facility or health authority must assess local conditions and decide on appropriate HCW solutions; there is no single best method or method mix. Table 2 summarizes currently available disposal methods and some of their advantages and disadvantages.

Table 1. WHO categories of health-care waste

Waste category	Description and examples
Infectious waste	Waste suspected to contain pathogens, e.g. laboratory cultures, waste from isolation wards, tissues (swabs), materials or equipment that have been in contact with infected patients, excreta.
Pathological waste	Human tissues or fluids, e.g. body parts, blood and other body fluids, fetuses.
Sharps	Sharps waste, e.g. needles, infusion sets, scalpels, knives, blades, broken glass.
Pharmaceutical waste	Waste containing pharmaceuticals, e.g. pharmaceuticals that are expired or no longer needed, items contaminated by or containing pharmaceuticals (bottles, boxes).
Genotoxic waste	Waste containing substances that are capable of causing damage to DNA, e.g. waste containing cytostatic drugs (often used in cancer therapy), genotoxic chemicals.
Chemical waste	Waste containing chemical substances, e.g. laboratory reagents, film developer, disinfectants that are expired or no longer needed, solvents.

Waste category	Description and examples
Wastes with high content of heavy metals	Batteries, broken thermometers, blood-pressure gauges, etc.
Pressurized containers	Gas cylinders, gas cartridges, aerosol cans.
Radioactive waste	Waste containing radioactive substances, e.g. unused liquids from radiotherapy or laboratory research, contaminated glassware, packages or absorbent paper, urine and excreta from patients treated or tested with unsealed radionuclides, sealed sources.

Table 2. Factors influencing the effectiveness of treatment technologies

Type of treatment and disposal method	Factors that influence effectiveness	Concerns
Burial, encapsulation (simple, inexpensive)	<ul style="list-style-type: none"> - depth of groundwater - depth, size of trench/pit - lining of burial pit (non-porous) - sealing method/material 	<ul style="list-style-type: none"> - no disinfection - can handle small volumes only - potential of being unburied (if pit is only soil covered, or waste not encapsulated) - presents a danger to community if not properly buried
Incineration (disinfects and greatly reduces volume, produces secondary waste streams)	<ul style="list-style-type: none"> - turbulence/mixing - waste moisture content - combustion chamber filling - temperature/residence time - maintenance/repair 	<ul style="list-style-type: none"> - may produce emissions and hazardous ash containing dioxins, metals and furans depending on the type of waste burned - may require pollution-control equipment to meet local environmental regulations - public acceptance of incineration tends to be low - expensive to build, operate and maintain
Steam autoclave (disinfects only, little reduction of volume unless used with shredder, produces secondary waste stream)	<ul style="list-style-type: none"> - temperature and pressure - steam penetration - waste load size - treatment cycle length - chamber air removal - model (many available) 	<ul style="list-style-type: none"> - mostly for reusable materials and instruments, and to sterilize disposable sharps before disposal - can only treat some types of HCW - some models cannot handle high volume - requires electricity and water - some models have high capital, maintenance and operation costs
Microwave (disinfects, some reduction of volume, produces secondary waste stream)	<ul style="list-style-type: none"> - waste characteristics - waste moisture content - microwave source strength - microwave exposure duration - waste mixture extent 	<ul style="list-style-type: none"> - expensive, needs good infrastructure - requires training and oversight for medium to high effectiveness - effectiveness very dependent on type of technology used
Chemical/mechanical treatment (disinfects, no volume reduction volume can increase, produces secondary waste streams)	<ul style="list-style-type: none"> - chemical concentration - temperature and pH levels - chemical contact time - waste/chemical mixing - recirculation or flow-through option 	<ul style="list-style-type: none"> - can increase the volume of waste - worker safety issues prominent - personnel intensive - may not adequately disinfect AD syringes - disinfection process needs to be verified

HCW handling and disposal

4. The stages in HCWM are:
 - production of waste within a hospital ward;
 - segregation of waste;
 - ward storage;
 - on-site transportation and treatment (if any);
 - on-site central storage;
 - off-site transportation;
 - treatment; and
 - final disposal.
5. Dealing with such a comprehensive subject, which impacts on the construction and functionality of health facilities, can be daunting. Several agencies (WHO, World Bank) and NGOs (Health Care Without Harm) have developed useful guidelines on the topic. HCWM is most effective when proper methods are employed at each step, from planning and procurement through disposal. The first step should be determining realistic options for HCWM given the budget, technology, and local community preferences. Different aspects of health-care waste must be considered when choosing the appropriate treatment technology (such as volume, temperature, whether the waste is liquid or solid, hazardous or infectious).
6. Once procurement is initiated, staff must be trained to work within a system of accountability, from correctly segregating waste and labelling every bag/container, to proper storage at each point of the cycle and safe transportation and disposal of HCW. Most importantly, management staff must be trained to monitor activities at each point in the cycle and maintain standards.

HCW worker safety and procurement issues

7. To ensure worker safety, it is normally necessary to procure plastic bags, trash bins, “sharps” containers, and sometimes even special trucks. It is sometimes advisable to ensure access to disposable gloves and other protective equipment for staff (e.g. boots, aprons and thick rubber gloves), needles and syringes, laboratory equipment, cleansing agents, and tubes/hoses/other items associated with diagnostic and intensive-care machines. Disposable items increase the amount of HCW each hospital or health-care facility produces, and have cost implications.
8. It is wise to ensure proper hygienic methods for cleaning reusable items within a health facility, such as linens, laundry, reusable tools (surgical, etc.) and foodstuffs. Availability and costs of associated utility systems such as sewerage, hot and/or cold water, electricity, sources of heating, etc., must be considered. Sometimes new equipment is procured without considering available utilities, recurrent costs and repairs, and then stands unused because it is not connected to the municipal system (e.g. sewerage) or because recurrent costs are too great.
9. Training all health workers in techniques associated with newly procured items and medical equipment is crucial to proper HCWM. All workers in the facility need some training on the importance of proper HCWM, and their roles and responsibilities. Information about cleaning techniques and protocols should be prominently displayed. Appropriate vaccinations and barrier mechanisms such as gloves and masks should be made available to all staff coming into contact with HCW, including cleaning staff and engineers.

Who is responsible for HCWM?

10. Normally nurses and cleaning staff, inspectors, engineers and drivers are responsible for day-to-day HCWM. Budgetary, procurement, regulatory and training aspects are overseen by facility management/administration. Hospitals could hold department heads responsible for proper management and disposal of waste generated in their departments. HCWM should have high priority, and involve the highest authorities at each facility. In general, rural and urban areas differ

greatly, even within regions or countries, so it is important to check the management aspects in both areas.

11. Proper HCWM extends beyond the hospital to the disposal site. Traditionally, there has been a disconnection of accountability between what occurs on the premises of a health-care facility and what occurs after HCW leaves the facility. More and more, this is no longer the case as NGOs and local communities have been very active in organizing against facilities that do not monitor the results of waste disposal off-site. Project managers are well advised to follow the route of HCW until its ultimate disposal and inquire after the secondary waste streams that might be created.

Do's and Don'ts

DO ensure that a good system is in place for segregating different types of waste and that each type is disposed of in an appropriate and safe way.

DO train all levels of health-care staff (administrators, doctors, nurses, cleaning staff, laboratory technicians and engineers) to help ensure that the materials and methods chosen are used correctly and consistently.

DO vaccinate all workers who come into contact with HCW against hepatitis B virus.

DO monitor costs throughout project implementation in order to determine whether projections are correct and to provide data for better future cost estimates.

DO make reasonable adjustments to the project when monitoring progress and costs.

DO be realistic. Many countries want the very best and latest technology but do not have the necessary resources for sustained use. Proper HCWM can be viewed as a step-wise process, with gains made every few years. The most important goal is to ensure the health and safety of health workers and the local community. The WHO is an excellent resource for the various options available (see key references).

DON'T forget to engage hospital staff in HCWM decisions. Normally, as a HCWM project progresses staff will begin offering serious and substantive advice and ideas for improvement within local constraints.

DON'T forget to consider and consult with the local community. Project acceptability within the local community is a key to success and project managers need to get early advice and understand socio-economic factors and local concerns. Communities can become surprisingly emotional about HCWM, especially if it touches on cultural biases regarding various types of waste. It is important to address these issues seriously and resolve any concerns quickly: a project that might be viewed as a success internally could be viewed negatively by the community.

Key references

World Health Organization, Health-care Waste Management Working Group.
<http://www.healthcarewaste.org> .

Health Care Without Harm. <http://www.noharm.org> .

Partnership for Quality Medical Donations. <http://pqmd.org> .

World Bank. Public health topics: <http://www.worldbank.org/phataglance> .

World Health Organization: <http://www.injectionsafety.org> .

Fact Sheet No. 10 – Summary outline for the management of occupational exposure to blood-borne pathogens

Provide immediate care to the exposure site:

- Wash wounds and skin with soap and water.
- Flush mucous membranes with water.

Determine risk associated with exposure by:

- Type of fluid (e.g. blood, visibly bloody fluid, other potentially infectious fluid or tissue and concentrated virus).
- Type of exposure (i.e. percutaneous injury, mucous membrane or non-intact skin exposure and bites resulting in blood exposure).

Evaluate exposure source:

- Assess the risk of infection using available information.
- Test known sources for HBsAg, anti-HCV and HIV antibody (consider using rapid testing).
- For unknown sources, assess risk of exposure to HBV, HCV or HIV infection.
- Do not test discarded needles or syringes for virus contamination.

Evaluate the exposed person:

- Assess immune status for HBV infection (i.e. by history of hepatitis B vaccination and vaccine response).

Give PEP for exposures posing risk of infection transmission:

- HBV: PEP dependant on vaccination status:
 - unvaccinated: HBIG + HB vaccination;
 - previously vaccinated, known responder: no treatment;
 - previously vaccinated, known non-responder: HBIG + HB vaccination;
 - antibody response unknown: test and administer HBIG + HB vaccination if results are inadequate.
- HCV: PEP not recommended.
- HIV: Initiate PEP as soon as possible, preferably within hours of exposure. Offer pregnancy testing to all women of childbearing age not known to be pregnant:
 - seek expert consultation if viral resistance is suspected;
 - administer PEP for four weeks if tolerated.

Perform follow-up testing and provide counselling:

- Advise exposed persons to seek medical evaluation for any acute illness occurring during follow-up.

HBV exposures:

- Perform follow-up anti-HBs testing in persons who receive hepatitis B vaccine:
 - test for anti-HBs one to two months after last dose of vaccine;
 - anti-HBs response to vaccine cannot be ascertained if HBIG was received in the previous three to four months.

HCV exposures:

- Perform baseline and follow-up testing for anti-HCV and alanine aminotransferase (ALT) four to six months after exposure.

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- Perform HCV RNA at four to six weeks if earlier diagnosis of HCV infection desired.
 - Confirm repeatedly reactive anti-HCV enzyme immunoassays (EIAs) with supplemental tests.

HIV exposures:

- Perform HIV-antibody testing for at least six months post-exposure (e.g. at baseline, six weeks, three months, and six months).
- Perform HIV antibody testing if illness compatible with an acute retroviral syndrome occurs.
- Advise exposed persons to use precautions to prevent secondary transmission during the follow-up period.
- Evaluate exposed persons taking PEP within 72 hours after exposure and monitor for drug toxicity for at least two weeks.

Fact Sheet No. 11 – Workplace education and training^{6, 13, 20}

Employers should ensure that health workers' information, education and training programmes on safety and health:

- assume that all health workers are at risk in being exposed to infectious pathogens and should therefore be educated and trained appropriately in taking appropriate preventive and protective measures;
- provide health workers with the tools and training necessary to manage technical and scientific knowledge, including data collection, analysis and retrieval;
- are part of the induction programme for new health workers, students, and volunteer workers;
- cover the general aspects of occupational safety and health, including prevention and protection measures as well as the principles of OSH management;
- ensure that workers are informed on general and specific hazards related to their tasks and to the particular risks of exposure related to HIV and other infectious pathogens;
- address the ethical, gender and social dimensions related to the management of HIV and other infectious pathogens as they relate to the safety and health of workers and the well-being and rights of patients;
- include periodic retraining to maintain and update knowledge, skills and, where required, professional certifications;
- relate to the scope of activities of the health service and are targeted to specific tasks;
- keep personnel up to date with regard to new information about infectious pathogens such as HIV, HBV, HCV and tuberculosis;
- provide updates when modifications to work procedures and practices are made and introduced;
- provide specific training in emergency and first-aid techniques and procedures, including those related to exposure to HIV and other infectious pathogens;
- provide the information and training required to use new equipment;
- inform workers of the post-exposure process of testing, counselling and follow-up;
- inform workers of vaccination programmes and encourage vaccination;
- train workers to implement adequate and correct exposure prevention and protection measures;
- use a variety of educational and training materials and techniques involving the active participation of workers;
- inform workers about their legal rights and obligations regarding occupational safety and health; and
- direct workers to other reliable sources of information.

Fact Sheet No. 12 – Selected international sources of HIV/AIDS-related policy, and regulatory and technical information available on the Internet

European Union Commission, Brussels: http://europa.eu.int/comm/health/ph_threats/com/aids/aids_en.htm

Family Health International, Research Triangle Park (NC, United States): <http://www.fhi.org>

Global Business Coalition on HIV/AIDS, New York: <http://www.businessfightsaids.org>

Global Health Initiative, World Economic Forum, Geneva: <http://www.weforum.org/globalhealth>

International Commission on Occupational Health, Rome: <http://www.icoh.org.sg>

International Confederation of Free Trade Unions: <http://www.icftu.org>

International Council of Nurses, Geneva: <http://www.icn.ch>

International Federation of Social Workers, Bern: <http://www.ifsw.org>

International Labour Office, Geneva: <http://www.ilo.org>

International Organisation of Employers, Geneva: <http://www.ioe-emp.org>

International Pharmaceutical Federation, The Hague: <http://www.fip.org>

Joint United Nations Programme on HIV/AIDS, Geneva: <http://www.unaids.org>

Pan American Health Organization, Washington: <http://www.paho.org>

Public Services International, Ferney-Voltaire: <http://www.world-psi.org>

United Nations Development Programme, New York: <http://www.undp.org/hiv>

World Bank, Washington: http://www1.worldbank.org/hiv_aids/

World Health Organization, Geneva: <http://www.who.int/hiv/>

World Medical Association (WMA), Ferney-Voltaire: <http://www.wma.net>