

# HIV IN PRISONS

## A READER WITH PARTICULAR RELEVANCE TO THE NEWLY INDEPENDENT STATES

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## ABSTRACT

"Prisoners are sent to prison AS punishment, and not FOR punishment." Exposing prisoners to often fatal diseases is not part of their sentences and is unacceptable. HIV/AIDS are a more concentrated and aggressive threat in prisons than outside, and prisons are serving as foci for the development of high levels of drug-resistant communicable diseases. This book has been written with the purpose of preventing unnecessary death and misery among prisoners and their families and everyone going into prisons, and helping to avoid the spread of disease from prisons. It is designed in the first place for prison medical staff, particularly in the newly independent states, and aims to pass on the most up-to-date knowledge and ethical standards in responding to HIV/AIDS in prison settings.

## Keywords

HIV INFECTIONS – prevention and control –  
transmission  
ACQUIRED IMMUNODEFICIENCY SYNDROME –  
prevention and control  
PRISONS  
EPIDEMIOLOGY  
TUBERCULOSIS – prevention and control  
SEXUALLY TRANSMITTED DISEASES –  
prevention and control  
COMMUNICABLE DISEASE CONTROL  
HUMAN RIGHTS  
WOMEN'S HEALTH  
EUROPE

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## **Acknowledgements**

Permission to use the diagnostic algorithms in Chapter 6 was kindly granted by the College of Family Physicians of Canada. The authors cannot be held responsible for the accuracy of the translation into Russian.

We would like to acknowledge the support of Tomris Atabay and Katya Smirnova, who provided skilled administrative assistance throughout the project.

Natalya V. Bolsunovskaya, Andrei V. Chernyshev, Alexander K. Churin, Viktor A. Diskant, Ingrid Lycke Ellingsen, Vladimir I. Fomenko, Lizz Frost, Cees Goos, Malgosia Grzemska, Sylvia Beatriz May, Jan-Olof Morfeldt, Vivien Stern, Paul Turnbull and Alexander N. Zotov offered useful comments on an earlier version of the book.

The translation into and editing of this text in the Russian language is kindly being provided by the International Committee of the Red Cross (ICRC), which recognizes the great need for this book in eastern Europe and central Asia. For further information on ICRC activities in these regions, please check the ICRC website: [www.icrc.org](http://www.icrc.org) (the Russian version of this website is being set up).

<p>This book is recommended for distribution in the penal system of the Russian Federation by the prison administration (GUIN) of the Ministry of Justice. It has been finalized in consultation with the Ministry of Health of the Russian Federation.</p>
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# Foreword

Prisons are among the most unhealthy places in our societies. In them, people are not only deprived of their freedom but they are also exposed to threats such as violence, addiction and infectious diseases, while at the same time their own capacity to manage these risks is severely constrained.

Prisoners are often exposed to hygienic conditions of the most basic kind and suffer from inadequate fresh air, space and opportunities for exercise. Many of the people who are incarcerated in prisons are already in poor health, and most will come into contact with other unhealthy prisoners in overcrowded conditions. As a result, prisoners are constantly at risk of stress to their mental health and to their physical wellbeing.

Incarcerating people in prisons and denying them their freedom is supposed to be their punishment: exposing them to diseases which are often fatal is not part of their sentence and is unacceptable. In addition, often large numbers of people circulate through holding cells and prisons and back into society. Prisons are serving as foci for the development of high levels of drug-resistant communicable diseases. The rapid development of a serious tuberculosis epidemic and the HIV epidemics in prisons in the newly independent states represents a major threat to prison populations and to society in general. It is imperative that these new threats be managed effectively.

Prisons do not have to be unhealthy *per se*, and some are not. Many heads of prison systems realize that there has to be good access to health care and health promotion and links between their institutions and the community. Prison doctors and other health and welfare personnel are frequently very dedicated to their patients, and the wider public health community is beginning to understand the relevance of prison health. There is a growing awareness that prisons, because of

their very nature, require extra efforts in the areas of health protection and health promotion.

The HIV epidemic is new and complex to address, involving technical challenges and substantial barriers of ignorance and stigmatization. As with many other health problems in society generally, HIV/AIDS is present in prisons in a more concentrated and aggressive way and requires an intensive response. If we act today, many people working or incarcerated in prisons, their families and their social contacts can be spared much suffering and humiliation.

There is as yet little experience with addressing the HIV epidemic in prison environments in the newly independent states. This book does not pretend to be a final authoritative solution, advocating simple rules and procedures that can be implemented by rote. Rather, it is a first attempt to empower prison health staff to recognize the issues they face and to move towards designing coherent and ethical services. It seeks to allow these dedicated staff to act: they will develop real expertise as they confront the problems.

This book was written in the first place for medical and semi-medical staff in penal institutions in the newly independent states. Close cooperation was, therefore, sought with the prison administration in the Russian Federation (the GUIN) from the outset and a Russian version will be published almost simultaneously with the English version.

This book has been made possible thanks to a grant from the Open Society Institute, the involvement of our organizations and many people who have in some way or other contributed. But more importantly it is here today because of the expertise, experience and insight into prison health, and above all the compassion, of the individual authors.

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# Chapter 1

## Epidemiology of HIV/AIDS in prisons

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### Introduction

Societal and environmental determinants of health are increasingly recognized as major factors in keeping people healthy. A healthy environment would seem incongruous with the loss of liberties and the strict regulation of all aspects of daily life to which prisoners are by definition submitted. Prisons<sup>2</sup> generally accumulate a number of unsuitable living conditions within their walls, among which are inadequate hygiene and ventilation, overcrowding and promiscuity. Overcrowding in prisons, particularly in pre-trial detention centres, is

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<sup>1</sup> The authors would like to acknowledge the contribution of Hernán Reyes to the introduction to this chapter.

<sup>2</sup> The generic term “prison” or “penal institution” will be used in this text for all places where people are held in custody for a certain length of time, following a judgment by a relevant body, or awaiting such a decision, corresponding to “colony”, “closed prisons” and “SIZO” in the newly independent states (NIS). The term “pre-trial detention centre” will refer to places of custody for persons awaiting trial (“SIZO” in the NIS). Transitory holding places, such as police stations (in the NIS: “TVS”), should normally not be considered as prisons (although they often present similar risks for the spread of HIV), because people arrested should only be held there when they are in transit and for very short periods of time.

a common phenomenon, and conditions have been reported of detainees having less than one square meter per person of floor space. There are often no budgets for maintenance and repairs. Tensions resulting from overcrowding and having to live together in unfavourable conditions also breed violence between prisoners.

Into this unhealthy environment are introduced the most underprivileged members of society. Prisoners most often come from disadvantaged and marginalized social groups, such as the urban poor, ethnic minorities, recent immigrants and injecting drug users. Malnutrition, unhealthy living conditions and lack of access to basic medical care are common to these groups. The prevalence of mental and physical disorders is therefore higher among prisoners than in the general population. In addition, prisoners may not have access to satisfactory medical care in prison, for a number of factors including inadequately trained staff, inadequate facilities, conflict between the control and caring roles, moral and value judgments about what prisoners should be entitled to, and of course inadequate funding of health services. The ever-present elements of coercion and security inherent to prisons complete the detrimental environment. Thus prisons can become breeding grounds for various sorts of infection. These may be airborne, such as tuberculosis, or transmissible due to conditions of promiscuity or unhealthy lifestyles, such as sexually transmitted infections or diseases due to intravenous drug use within the prison.

The AIDS epidemic has recently drawn attention to the alarming health situation in many prison systems. This book will concentrate on the prevention and management of HIV infection, but it will also address other diseases that are related to it, in the general framework of prisoners' right to health and health care.

## **Epidemiology of HIV in prisons**

HIV infection is a reality in many prisons in western and eastern European countries. Data on the prevalence of HIV-positive prisoners vary among countries, both because homogeneous surveillance data are not available, and because different factors were at work in different societies. The exact number of HIV-positive prisoners is difficult to estimate, due to the fact that testing procedures vary from

place to place (e.g. voluntary testing, screening of all new arrivals, screening on occasion of outbursts of infectious diseases). Two main conditions probably influence the prevalence of HIV among prisoners in western countries (although we lack reliable data to describe this association): (i) the prevalence of HIV infection among injection drug users (IDUs) in the community, and (ii) the criminal sentencing policy for drug-related crimes. Countries such as Ireland, Italy, Switzerland and the United States have high number of IDUs imprisoned for drug offences. Other countries, such as Hungary, have an extremely low rate of HIV-positive prisoners due to the availability of alternative sentencing policies for drug-related crimes, and possibly to a low rate of infection among IDUs. Table 1 reports the prevalence of HIV infection in prisons in selected western countries. However, aggregate data may give an incomplete picture of the burden of HIV infection in prisons, because it may be concentrated in selected regions such as New York in the United States or Moscow and Krasnodar in the Russian Federation.

Table 1. Prevalence of HIV infection in prisons in selected western countries

Author	Year of survey	Type of data	Country	Percentage of HIV-positive prisoners
DAP, 1997	1996	Voluntary testing	Italy	Approximately 7
Nelles et al., 1997	1996	Voluntary testing in selected prisons	Switzerland	4–12
Allwright et al., 2000	1998	Cross-sectional survey of a representative sample	Ireland	2
Direction Générale de la Santé <sup>a</sup>	1996	HIV-positive prisoners known to staff on a given day	France	1.9
Maruschak, 1999	1997	Yearly reports from correctional authorities	USA <sup>b</sup>	2

<sup>a</sup>Data presented at the Joint WHO/UNAIDS Seminar on HIV/AIDS, STDs and Tuberculosis in prisons. Warsaw, 14–16 December 1997.

<sup>b</sup>State and federal prisons.

The prevalence of HIV infection is certainly lower in eastern than in western Europe, but it is quickly catching up. Eastern European countries are now facing the first wave of HIV infection in prisons, due to a delayed onset of intravenous drug use and HIV infection in their societies as compared to western Europe. A rapid spread of the infection among IDUs due to low risk perception and lack of harm reduction strategies, and more severe sentencing policies have led to a rapid increase of HIV-positive prisoners. For instance, in the Russian Federation the number of newly admitted prisoners testing positive to HIV screening rose from 7 in 1993 to 2311 in 1998. In Moscow, out of 20 250 admissions to the SIZOs in the year 2000, 802 persons were found to be HIV-positive. In St Petersburg and the Leningrad region, 430 people out of 34 899 admitted were found to be HIV-positive. In August 2000, there were more than 7500 HIV-positive prisoners in the prison system (Ministry of Justice, personal communication). Such a rapid increase has posed formidable problems, especially in the light of decreasing resources being allocated to prisons combined with important health crises such as the tuberculosis epidemic. Data on HIV prevalence in prisons in selected eastern European countries are reported in Table 2.

Table 2. Prevalence of HIV infection in prisons of selected eastern European countries

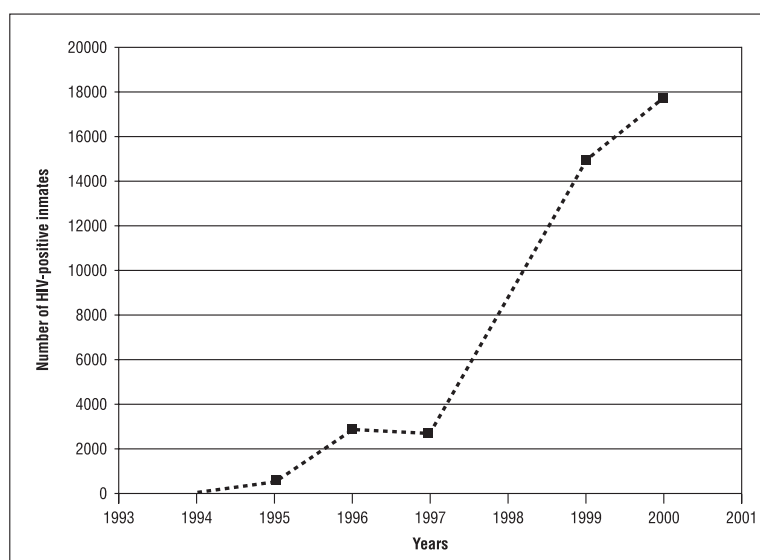
Author	Year of survey	Type of data	Country	Percentage of HIV-positive prisoners
Bollini et al., 2001	1998	Based on testing of all new admissions	Hungary	0.03
Bollini and Renaud-Théry <sup>a</sup>	1998	Based on testing of all new admissions	Belarus	1
MAP, 1998	1997	Based on testing of all new admissions	Russian Federation	0.1
Gunchenko, 2000	1999	Anonymous unlinked survey	Ukraine	Approximately 6

<sup>a</sup>Data provided by the Belarus prison authorities during a UNAIDS assessment mission to Belarus, 1998.



The case of Ukraine deserves a special mention. Ukraine is the worst affected country in the Region. In 1996 a sharp rise in HIV infection was registered in the country, mainly due to injection drug use (Fig. 1). Many infections were found in young people in the cities of Odessa and Mykolayev, where injecting drug use is concentrating, but cases are now reported in every part of the country and the proportion of women infected is increasing. The increase in the community was quickly reflected in the prison system. Only 11 HIV-infected prisoners were diagnosed between 1987 and 1994 on admission to SIZOs, but the number rose to 451 in 1996, and 2939 in 1997. At that time, the prison administration introduced a new policy based on intensive training of prisoners and staff, provision of condoms and disinfectants, stopping segregation of HIV-positive prisoners, and introducing voluntary HIV testing with strict confidentiality.

Fig. 1. Prevalence of HIV infection in Ukrainian prisons



Anonymous unlinked surveys were conducted in 1999 and 2000 to monitor HIV infection in prisons. The new prevention strategy was recently evaluated, and it was found that it had helped to reduce tension within prisons, and significantly raised the level of knowledge about HIV/AIDS of prisoners and staff.

## The WHO guidelines

The World Health Organization (WHO) has issued technical recommendations for the management and prevention of HIV infection in prisons in two separate occasions, 1987 and 1993. The 1993 WHO Guidelines emphasize voluntary testing, confidentiality, non-discrimination of HIV-positive inmates, availability of the means of prevention, and access to treatment equivalent to that in the community. The full text of the Guidelines is in Annex 1. The Guidelines have been used by prison administrations, health services and nongovernmental organizations to support changes and promote debate.

In Europe, repeated surveys of the implementation of the 1993 WHO Guidelines have shown many unsolved issues, but also a certain improvement over time (see Chapter 5). Overall, better knowledge of HIV transmission and of effective ways to manage the infection within prisons has led to less restrictive policies, although the debate on screening, prevention and segregation is continuing in both Europe and the United States.

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# Chapter 2

## Health and human rights in prisons

Hernán Reyes, International Committee of the Red Cross

### Introduction

“Prisoners are sent to prison *AS* punishment, and not *FOR* punishment”. This often repeated statement by Alexander Paterson, British Prison Commissioner in the 1930s, implied that the loss of an individual’s right to liberty is enforced by containment in a closed environment. Keeping the individual in the custody of the State, should not, however, have deleterious effects on his or her health. This is unfortunately precisely the case – to some degree or another – in many of the world’s prisons. Is it possible then to define a “healthy environment” in a prison, let alone talk about prisoners’ rights regarding any health services to be provided for them by the detaining authorities? The answer to this question is that prisoners have inalienable rights conferred upon them by international treaties and covenants, they have a right to health care, and they most certainly have a right *not* to contract disease in prison. How these rights apply to the often harmful prison environment and to HIV infection is the subject of this chapter.

## **Prisons can be bad for public health**

Public health policies are meant to ensure the best possible conditions for all members of society, so that everyone can be healthy. Prisoners are often forgotten in this equation. Prisoners enter and leave prisons. They are released if found innocent. They come and go from prison during the investigation and for trial. Furthermore they are often transferred, for a variety of reasons, from one prison to another. Prisoners are in contact with many different people who go in and out of the prison every day. Prison guards, prison staff, medical personnel, delivery and repair persons, not to mention family visitors and lawyers, come and go every day. Prisoners are eventually released from prison when they have served their time, or occasionally when there is an amnesty. This turnover and constant movement in and out of prison makes it all the more important to control any contagious disease within the prison so that it does not spread into the outside community.

Prisoner turnover is variable from country to country. Often the annual turnover of the prisoner population is four to six times the actual number of inmates being held at any given time. For a country like the Russian Federation, with a prisoner population numbering just under one million at the present time, the turnover is closer to some 300 000 per year<sup>3</sup> as many prisoners tend to “overstay”, particularly in pre-trial prisons. For all these reasons, it is not possible to tackle public health issues, such as tuberculosis or HIV, effectively if the prison populations are not taken into account.

## **Violence: an everyday reality in many prisons**

In many countries, violence and coercion between prisoners can lead to serious health risks, either directly or indirectly. Physical assaults – even murder – can occur in remand prisons and sometimes even in colonies. Assaults occur between prisoners and prison guards, and even more so between prisoners themselves. Violence between prisoners – and particularly sexual assault – is vastly underreported, as an internal kind of “omertà” is common in the prison milieu.

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<sup>3</sup>A. Goldfarb, Public Health Research Institute, New York, personal communication.

Violence in prison settings has many causes. Clashes may have ethnic causes, or rivalries between clans or gangs. The closed, often vastly overcrowded living conditions also lead to hostilities between inmates. The tedious prison environment with its lack of occupation for mind or body, and just plain boredom, lead to accumulated frustrations and tensions. This environment leads the way to high-risk activities, such as use of drugs, sexual activities between men, tattooing and other “blood brotherhood”-style activities (see Chapter 3). Some indulge in these activities to combat boredom. Others, however, are forced to engage in them, in a coercive play for power or monetary gain. Risky lifestyles can lead to the transmission of diseases from prisoner to prisoner and pose a serious public health risk if unchecked.

Violence in prisons makes possible unprotected contact with human blood. Fortunately, contamination with HIV through exposure to open wounds has been reported to be extremely low. Unprotected sexual acts with exchanges of potentially contaminated human secretions pose a real risk. Coercive penetrative sex between inmates is not always necessarily forcible rape – on the contrary, the violent prison setting may lead many inmates, particularly “underdogs” or “low-caste” prisoners to have to accept sexual acts they would otherwise avoid altogether. Intravenous drug use with sharing of needles and syringes obviously poses a specific problem. Coercion can be a relevant factor if some prisoners force others to use injectable drugs and contaminated shared instruments. Both medical and custodial staff have to be informed of the risks of such contacts and the means to avoid contamination. Education on these issues is essential if HIV is to be controlled.

Prisoners have a right to be protected from these dangerous settings in prison and to expect the authorities to protect them from physical and sexual violence. This right goes beyond the right to request incarceration in protected isolation. Prison authorities should be in a position to ensure a safe environment for the general prison population without having to resort to such extreme measures, by having trained staff in sufficient numbers. The problem of violence in the prisons in the newly independent states (NIS) is a reality. The internal prisoner hierarchy, which has been compared to a caste system, has been condoned, encouraged, ignored or even denied by prison authorities. Such a system severely penalizes low-caste prisoners, in extreme cases reducing some of them to becoming sexual objects and victims

of abuse. The caste system today is evolving and becoming more complex with the advent of drug gangs and their leaders, who contest the recognized hierarchy. In western Europe as well, the emergence of drug gangs both inside and outside prisons has considerably complicated the situation.

Contracting any disease in prison is not part of a prisoner's sentence. This fact becomes even more significant when the disease is potentially fatal, as is the case with HIV/AIDS. This leads us to consider the basic rights of the prisoner.

## **Human rights and prisoners**

### **Instruments and mechanisms**

All human beings, and this obviously includes prisoners, have certain inalienable rights which are acknowledged by internationally recognized instruments. Since the Second World War, human rights have been quantified and set down in treaties and conventions. In 1948, the United Nations General Assembly adopted the Universal Declaration of Human Rights. Later, two covenants were adopted, the International Covenant on Civil and Political Rights (ICCPR), and the International Covenant on Economic, Social and Cultural Rights (ICESCR). These state that prisoners have rights, even when they are deprived of liberty in custody. The ICCPR specifically provides that "all persons deprived of their liberty should be treated with humanity and with respect for the inherent dignity of the human person".

In 1955, the United Nations, in its Standard Minimum Rules for the Protection of Prisoners (SMR), established standards that included principles for providing health care in custody. The 94 rules in the SMR setting down the minimum requirements for prisoners were approved by the United Nations Economic and Social Council, which in 1977 extended their applicability to persons detained without charge, i.e. in places other than prisons. These standard minimum rules for the protection of people in custody have been supplemented over the years by additional instruments. In 1984, the United Nations adopted the Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment. In 1985, the United Nations Standard Minimum Rules for the Administration of Juvenile Justice,



called the “Beijing Rules”, were adopted for the protection of young offenders. In 1988 and 1990, respectively, the United Nations adopted the Body of Principles for the Protection of All Persons under any form of Detention or Imprisonment and the Basic Principles for the Treatment of Prisoners. At a regional level, the Council of Europe developed its European Prison Rules in 1987. Human rights treaties make states accountable for the way they act, or fail to act. United Nations bodies and regional, national and nongovernmental agencies are in charge of monitoring human rights. Prisoners of war are protected by international humanitarian law as set down in the Third Geneva Conventions of 1949.

Respect for even basic human rights has traditionally been a problem in prisons. In Europe particularly, there have been major attempts to protect prisoners from violations of their basic rights, as evidenced for example by the European Convention against Torture. The Council of Europe has created a specific body, the Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment, known as the CPT, to monitor ill treatment and the conditions of prisoners, including health issues. Many other nongovernmental organizations also monitor prisoners’ conditions, in particular all aspects of health within prisons.

### **The right to health care and a healthy environment in prison**

With specific reference to health, the right to conditions “adequate for the health and well-being” of all was recognized in the Universal Declaration of Human Rights. The ICESCR furthermore states that prisoners have a “right to the highest attainable standard of physical and mental health”. The standard minimum rules for prisoners regulate the provision of health care for them. These rules, as well as other instruments regulating the rights and regulations for the treatment of prisoners, have been extensively reviewed and commented on in a comprehensive text by Penal Reform International. The CPT issued standards for health services in prisons (published in their annual report for 1992). Most recently, in 1998, the Committee of Ministers of the Council of Europe promulgated new recommendations on health care in prisons.

Apart from civil and political rights, the so-called “second generation” economic and social human rights, as set down in the ICESCR, also apply to prisoners. The right to the highest attainable standard of

health should also apply to prison health conditions and health care. This right to health care and a healthy environment is clearly linked, particularly in the case of HIV, to other “first generation” rights, such as non-discrimination, privacy and confidentiality.

### **Health care in prison: equivalence versus equity**

Prisoners cannot fend for themselves in their situation of detention, and it is the responsibility of the State to provide for health services and a healthy environment.

Human rights instruments call for prisoners to receive health care at least equivalent to that available for the outside population. On the one hand, “equivalence” rather than “equity” has been called for because a prison is a closed institution with a custodial role that does not always allow for the same provision of care as is available outside. On the other hand, because prisoners are more likely to be in a bad state of health when they enter prison, and the unfavourable conditions therein make their health situation even worse, the need for health care and treatment will often be greater in a prison than in an outside community. However, providing even basic health care to prisoners has proved extremely difficult in countries where the overall health systems have collapsed or are chronically insufficient.

As regards the specific issue of HIV, there are various areas concerned by this provision. The authorities have a duty both to preserve the health of individual prisoners and to promote the public health of the prison – and outside – population.

The above-mentioned treaties and conventions state that prison authorities have a duty to provide:

- safe and healthy living quarters for all prisoners;
- protection of individuals from violence and coercion;
- provision of adequate health care services and medicines, as far as possible free of charge;
- information and education about preventive health measures and healthy lifestyles;
- implementation of elementary preventive health measures;
- means for detecting sexually transmitted infections and for treating them, so as to reduce risk of HIV transmission;

- continuation of medical treatments begun outside (including those for drug users) or the possibility of commencing them inside;
- provision of specific protection for vulnerable prisoners, such as those who are HIV-positive, from violence from other prisoners, or from those with infectious diseases which could be extremely dangerous for them, such as tuberculosis;
- where voluntary testing for HIV is available, it should always be provided together with adequate counselling before and after testing.

## Public health and human rights

### Protecting public health while respecting individual rights

The protection of public health in the prison context is concerned with promoting and protecting health, and with reducing morbidity and mortality of prisoners and of the whole community. This includes all prison staff (see Chapter 10), family members of prisoners and staff and visitors, as well as the outside community into which prisoners are eventually released.

As for any infectious disease, ensuring public health may involve collecting information and personal data on the HIV-infected population. It will be necessary to determine risk factors and risky forms of behaviour, so as to know how the infection disseminates. This information is crucial to develop prevention programmes (see Chapter 4). This is done routinely for other diseases, for example tuberculosis and syphilis. In the past, coercive measures such as segregation and quarantine were routinely adopted to control epidemics and public health menaces. Certain measures may indeed constrain individual behaviour for the public good.

In the recent years of the HIV pandemic, such coercive measures were questioned, mainly as a result of civil liberties groups coming forward to protect the rights of individuals. It was claimed that the protection of the public health had to go hand in hand with the respect of human rights. The late Dr Jonathan Mann convincingly demonstrated that respect for the rights of people infected with HIV was essential if the disease were to be dealt with efficiently. If people with HIV were discriminated against or if their right to medical confidentiality was

not respected, they would not volunteer to be tested and would be less likely to seek counselling on methods for prevention.

At the beginning of the HIV epidemic, anonymous testing was essentially invoked to avoid the stigma of being identified as HIV-positive. In prisons there is often a very real stigma attached to being HIV-positive, even more than outside due to the lack of education on the transmission of HIV infection. Prisoners and prison staff are still very often afraid of anyone identified as HIV-positive out of fear of contagion, out of prejudice against drug addicts or homosexuals, or a combination of these (see also Chapter 10). Prisoners are not generally aware that infection can only occur through high-risk behaviour (in prisons this means essentially penetrative sex or intravenous injections with contaminated equipment, and also possibly through other practices such as tattooing). The risk of exclusion and even physical harm for such prisoners is clearly a reality in the prison environment.

Despite guidelines issued by WHO stating unequivocally that testing should not be done as a mandatory routine (Annex 1), in the NIS testing has been regularly performed, when it can be afforded, often with little opposition from those concerned. The rationale for thus systematically testing inmates has been at best equivocal. In the prison environment, negative tests may provide a false sense of security for the authorities and subjects alike because of a window period of between three weeks to three months (see Chapter 6). Because of risky behaviour and/or violence inside prisons, there is no guarantee that HIV-negative prisoners will remain negative. Furthermore, single tests can be unreliable, thereby further limiting their usefulness, and repeat testing (even if offered on a voluntary basis) is an expensive option. In some particularly violent prisons, breaches of confidentiality regarding HIV status can be life-threatening.

This leads directly to the question of medical confidentiality. In any doctor–patient relationship, the concept of confidentiality is the keystone of medical care. Doctors working with prisoners have a special duty to ensure that the doctor–patient relationship is preserved and that doctors are not seen as merely part of the prison administration. Doctors are responsible for ensuring the confidentiality of prisoners' medical files, which may contain sensitive information. In systems where prison doctors are not realistically in a position to ensure such privacy, they should take care

not to write down anything that might compromise their patients with the prison administration.

This question is crucial where HIV is concerned. If a prisoner is not convinced that personal information as sensitive as his HIV status will be protected within the secrecy of the medical file, there will be no trust in the doctor–patient relationship. If there is no trust, doctors will lose any influence they might have to protect prisoners who seek their help. Prisons are unfortunately notorious for not respecting medical confidentiality. Untoward disclosure of HIV status may drive inmates away from the medical services altogether, and make prevention and education even more difficult. Information on a prisoner's HIV status should be divulged by doctors to non-medical authorities only on a limited, accountable and strictly need-to-know basis. A prisoner's right to medical confidentiality should be respected, and not violated – as is most often the case – in the name of control and security.

By putting the accent on education and peer training, it is possible to gain the trust of the general population and obtain cooperation in managing the HIV epidemic. In prisons, there is still an enormous amount of work to be done in the field of health education about HIV and AIDS. There is a great need to educate and convince medical staff, as well as their direct superiors in the prison administration and the prisoners themselves. In many of the NIS even prison medical authorities are still not quite certain about how safe it may be to keep HIV-positive and HIV-negative prisoners together. In the management of HIV it is necessary to convey that any limitations on individual human rights should only be used as a last resort, with a clear purpose and goal in mind. Furthermore, the basic human rights should never be restricted, and restrictions should not include a majority of prisoners not relevant to the action taken. Any action restricting human rights should be subjected to outside scrutiny and periodically reviewed to assess whether it is effective and still necessary. However, in some cases protective custody (a pragmatic form of segregation) may be justified for the HIV prisoners' own protection, as HIV-positive inmates could be assaulted by the others once their HIV status is known. Segregation has been the rule rather than the exception, but this situation might change soon, at least in the Russian Federation.

## Public health and human rights must work together

The emphasis of any management programme for HIV infection in prisons should be on education. Prisoners have a right to know about HIV and how to prevent its transmission (education and prevention activities are discussed in Chapter 5). There emerges the apparent contradiction of it being necessary to inform inmates and staff alike about the danger of risky behaviour, and even make available preventive measures to avoid contagion, while not appearing to condone such behaviour.

- The shared goal of public health policies and human rights is to prevent transmission of HIV and thereby improve health for all in general, while at the same time ensuring the respect of human rights and dignity of those already infected and needing treatment.
- Prison doctors should be able to work independently, and not as instruments of coercion within the prison system.
- Consent and confidentiality must be respected so as to ensure that all prisoners will readily seek medical counselling on HIV/AIDS.
- Adequate counselling before performing any voluntary testing for HIV will ensure trust within the doctor–patient relationship. Counselling should also be available for prisoners **after the result of the testing is known**.
- HIV test results should be kept confidential or forwarded on a very strict need-to-know basis to any non-medical personnel, as far as possible with the knowledge and consent of the patients concerned.

In prisons, the human environment is often one of violence and high-risk lifestyles, either engaged in voluntarily by those prisoners with positions of power, or forced upon the weaker prisoners. Prisoners have a right to live in conditions where their individual safety is guaranteed. It is paramount for the prison administration to have a thorough knowledge of how HIV is likely to be transmitted in a given prison. If sexual coercion and/or violence are the main issue, better surveillance and active interventions to protect targeted prisoners must be enforced. If drug injection and sharing of injection equipment is the main problem, active education may not be sufficient. It may be necessary to take measures to stop coercion by drug ringleaders, who may seek to force other prisoners to buy and inject drugs, and make available drug treatment programmes and harm reduction measures

for drug-addicted prisoners. HIV-positive inmates should not be denied access to recreation, education or normal access to the outside. From a strictly medical point of view, there is no justification for segregation as long as the prisoner is healthy. Solitary confinement of HIV-positive inmates should be forbidden. Any restrictions should be exceptional, such as mandatory testing for particularly risky situations, such as prisoners working as medical orderlies in hospitals or dental clinics. Prisoners working in other places less obviously posing a risk, such as laundries, kitchens or as cleaners, may also be exposed to injuries and therefore HIV infection (see Chapter 10). The protection of HIV-positive prisoners from other prisoners with contagious diseases such as tuberculosis is discussed in Chapter 7. There may also be considerations of personal security where, for example, prisoners known to be HIV-positive request to be kept in a secure unit as they fear for their own safety.

Both prison reform and penal reform are crucial elements if the many problems affecting the prisons of eastern Europe and the countries of the former Soviet Union are to be resolved. Diminishing the overall prison population will allow improvements in the physical and working conditions in prisons, and help to ensure the security of all individuals in custody. Obviously, financial resources will have to be allotted to the prison systems as well. One effective way to curb the rise in prison populations would be to offer alternatives to imprisonment for non-violent offenders.

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# Chapter 3

## High-risk behaviour in penal institutions

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### Introduction

Behaviour that puts prisoners at risk of contracting HIV (and other diseases) is common in penal institutions around the world. This chapter presents some of the evidence of the prevalence of high-risk behaviour in such institutions, in particular injecting drug use and sexual activity.

### Drug use

Despite the sustained efforts of prison authorities to prevent drug use by prisoners, by attempting to prevent the entry of drugs into penal institutions, the reality is that drugs can and do enter prisons. Drugs are commonplace in many penal institutions.

Many prisoners come to penal institutions with their drug habits already established. In fact, many prisoners are in a penal institution in the first place because of offences related to drugs. Many prison

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<sup>4</sup> The authors would like to acknowledge the contribution of Len Curran to the section on sexual activity.

systems have seen large increases in their populations (and consequent overcrowding) in large part due to a policy of actively pursuing and imprisoning those dealing in and consuming illegal substances. People who used drugs outside often find a way to continue to use them on the inside. Other prisoners start using drugs in the penal institution as a means to release tensions and to cope with being in an overcrowded and often violent environment. In some instances, drugs gangs within penal institutions force prisoners to take drugs.

Not many prison authorities have carried out studies on exactly how many prisoners use drugs while they are in penal institutions, and many authorities remain reluctant to admit the extent to which drugs are being used in the institutions. However, most studies that have been carried out show that rates of drug use are high. For example, an inmate survey carried out in 1995 by the Correctional Service of Canada (which administers all federal penal institutions in Canada) showed that 40% of the 4285 participating prisoners reported that they had used drugs since arriving in their current institution. Many staff working in penal institutions also acknowledge that drugs are part of prison culture and reality and that there does not seem to be a way to ensure that there will be no use of drugs in penal institutions.

### **Injection drug use**

Injection drug use is also prevalent and is of particular concern with regard to transmission of HIV and diseases such as hepatitis B and C. This is because those who inject drugs in penal institutions almost always share needles and syringes, which is a very efficient way of transmitting HIV – much more so than sexual contact. Because it is more difficult to smuggle needles and syringes into penal institutions than it is to smuggle drugs into them, needles and syringes are very scarce. Most often, only a handful of needles will circulate among a large population of prisoners who inject drugs. As a result, needle-sharing is frequent: often 15 to 20 people will inject using the same equipment. Sometimes, the equipment is even home-made, and needle substitutes are fashioned out of hardened plastic and ball-point pens, often causing damage to veins, scarring and severe infections.

Studies undertaken in penal institutions have therefore concluded that imprisonment increases the risk of contracting HIV infection. For example, a European Union study showed that injecting is highly prevalent in penal institutions in the seven European countries that

participated in the study, and that an important proportion of imprisoned injection drug users first injected in a penal institution (Table 3). In the study, the proportion of active injection drug users (defined as users who had injected within 12 month prior to imprisonment) among prisoners in 21 penal institutions ranged from 9% in France to 59% in Sweden. Some 25–79% of users injected in the penal institution, and 5–15% of IDUs began injecting in the institution.

Table 3. HIV, hepatitis C and injecting risk behaviour among intravenous drug users in prison (%)

Location of prison (number of institutions in brackets)	IDUs infected with HIV	IDUs infected with HCV	IDUs who shared materials during last injection outside prison	IDUs who injected in prison	IDUs who began injecting in prison
Belgium (1)	0	38.5	47	35 (10 <sup>a</sup> )	15
Germany (1)	1.4	14.4	n.a.	36 (18 <sup>a</sup> )	9
Spain (1)	23.4	n.a.	32	79	10
Italy (3)	13.3	53.2	34	37 (29 <sup>a</sup> )	7
France (3)	16.1	64.2	32	25	6
Portugal (3)	28.1	61.9	49	57	5
Sweden (9)	2.6	57.6	30	64	5

n.a.= not available

<sup>a</sup> Figures in brackets refer to the percentage of the total who had injected in the previous four weeks.

IDUs: injection drug users; HCV: hepatitis C virus.

Source: European Network on HIV/AIDS and Hepatitis Prevention. *Annual report to the European Commission*, May 1998.

In Canada, 11% of 4285 federal prisoners participating in a survey of prisoners reported having injected since arriving in their current penal institution. In some regions, up to 23% of prisoners reported injection drug use.

In Australia, a survey of HIV risk-taking behaviour by male drug injectors while in prison showed 75% of respondents reporting having injected drugs at least once while in prison.

In Thailand, the first wave of HIV infections occurred in 1988 among drug injectors. From a negligible percentage at the beginning of the year, the prevalence rate among injectors rose to over 40% by September, fuelled in part by transmission of the virus as injectors moved in and out of penal institutions.

The preliminary report on a study among 1087 prisoners in the Russian Federation showed that 42% had injected a drug at some point in their lives, and that 20% had injected in the penal institution, of whom 64% used injection equipment that had already been used by somebody else.

### **Risk of HIV transmission**

The high rates of injection drug use, coupled with the lack of access to sterile injection equipment which leads to increased levels of sharing of equipment among prisoners, can result in the frighteningly quick spread of HIV in penal institutions. This has been demonstrated by a number of studies in different countries.

Most notably, a study undertaken in Glenochil prison for adult male prisoners in Scotland provided definitive evidence that outbreaks of HIV infection can occur in penal institutions. The study investigated an outbreak of HIV in Glenochil in 1993. Before the investigation began, 263 of the prisoners who had been at Glenochil at the time of the outbreak had either been released or transferred to another penal institution. Of the remaining 378 prisoners, 227 were recruited into the study. Of those, 76 reported a history of injection and 33 reported injecting in Glenochil. Twenty-nine of the latter were tested for HIV, with 14 testing positive. Thirteen had a common strain of HIV, proving that they became infected in the penal institution. All prisoners infected in the penal institution reported extensive periods of syringe-sharing.

Another documented outbreak of HIV infection occurred in a penal institution in Australia. Epidemiological and genetic evidence was used to establish that HIV infection had indeed occurred in the penal institution. Attempts to trace 31 IDUs resulted in 25 being located. Of these, 2 were HIV-negative, 7 had died, 2 declined to participate, and 14 enrolled in the study. It could be proved that 8 of the 14 were infected with HIV while in the penal institution. Chapter 5 will discuss what can be done in penal institutions to prevent such outbreaks.

In the Russian Federation it is too early to make generalizations about drug use and syringe-sharing inside the prison system, as reliable data are as yet sorely lacking. In Nizhni-Novgorod *oblast*, with a prisoner population of 28 000, the authorities found that all of the 220 inmates who tested positive on admission to SIZO had contracted HIV through intravenous drug use. At the time of going to press, mandatory testing for HIV and segregation into separate units of all HIV-positive inmates are still the reality in Russian penal institutions.

## Sexual activity

In penal institutions, sexual activity is generally considered to be a less significant risk factor for HIV transmission than sharing injection equipment. Nevertheless, it does occur and puts prisoners at risk of contracting HIV infection.

Some prison systems allow conjugal visits during which prisoners may engage in sexual activity with their partners. Heterosexual activity may also occur between a prisoner and a member of the prison staff. However, there is very little information about how frequent such behaviour is. Most sexual activity that takes place in penal institutions involves sex between men (for sexual activities between women, see Chapter 9). Some such activity occurs as a consequence of sexual orientation. However, most men who have sex in penal institutions do not identify themselves as homosexuals. Many also do not think of their behaviour as homosexual if they are the penetrating partner, or are reluctant to acknowledge any such practice. In studies, this often results in underreporting of sexual activity in penal institutions. Generally speaking, prison authorities have great difficulties facing the reality of men having sex with men: such activities are officially prohibited, usually the object of sanctions and their existence most often denied.

Sexual activity between prisoners varies in frequency and kind within and across penal institutions and prison systems. It includes consensual sex and various kinds of non-consensual sexual activity, including so-called quasi-consensual sexual activity (for example, submission based on intimidation, or submission in return for protection or other favours). For a discussion of violence in penal institutions, see Chapter 2.

In all the NIS, inmates of the colonies are submitted to a strict internal hierarchy which is tolerated and reluctantly acknowledged by the authorities. This hierarchy, a veritable caste-like system, is horizontal and has four main groups of prisoners: the “bosses” (blatnye); the “men” (muzhiki), comprising the majority of inmates; the “goats” (kozly), or inmates who work for, or collaborate with, the prison system; and the “untouchables” or “underdogs” (petukhi). The latter are outcasts in the true sense of the word “untouchable” and live apart from the others. They can be, however, and are, used as sexual objects by the dominating caste. In these situations of what amounts to accepted yet coercive sex, condoms are never used.

Obviously any such sexual activity is prohibited and strictly taboo. Studies have shown the frequency and type of sexual activity by prisoners to vary greatly. In the Russian Federation, a survey was conducted among 1100 male prisoners aged between 18 and 80 who had been in prison for 1.5 to 10 years. Only 10–15% of the prisoners reported having no sexual contacts while serving their term. A group of inmates (8–10%), so-called “underdogs” (petukhi), had regular sexual activity with other men as passive partners. Fifty percent of the prisoners in this group were under 20 years old and another 30% were under 30 years old. Thirty-three percent of all the “untouchables” had been convicted for rape. Many had oral and anal sex with 30 to 50 partners. Some only “served” a “small group” (10–15) of inmates. Condoms were generally not available.

In western countries, many other factors affect the prevalence and type of sexual activity in penal institutions. These may include:

- the prevailing culture (the attitude of the community – accepting or rejecting same-sex behaviour – has an impact on the frequency of sexual activity);
- the size of the institution and system (sexual activities tend to be more frequent in large systems that provide anonymity than in those where prisoners know each others’ neighbourhoods and families);
- whether accommodation is single-cell or dormitory;
- the design of the institution (older radial design institutions place staff and prisoners within sight of other staff; more recent designs, emphasizing privacy, create spaces that staff are reluctant to patrol and that can become areas of crime, including rape);

- predictability of staff routines (for example, where warders' rounds take place at the same time every day, opportunities are created for prisoners to work around these and to engage in sexual activity once the staff have finished their rounds);
- the security classification (sexual activity tends to be less prevalent in high-surveillance institutions);
- the extent to which conjugal visits are allowed; and
- the duration of the sentence (those who have a long time to serve may be more likely to have sex than short sentence and remand inmates).

A 1993 survey in Rio de Janeiro, Brazil, suggested that 73% of male prisoners had had sex with other men in penal institutions. Other surveys in other countries have come up with lower figures. For example, a study conducted among 373 male prisoners in all of South Australia's penal institutions concluded that 12% had engaged in anal intercourse at least once. Another study in South Australia reported that prison officers and prisoners estimated that between 14% and 34% of prisoners engaged in "occasional anal intercourse." Research conducted in New South Wales on a random sample of 158 prisoners showed that 7% of the men reported having had voluntary sexual activities with other men in the institution. In Canada, 6% of prisoners in federal penal institutions reported that they had had sex with another inmate. Chapter 5 will discuss what can be done in penal institutions to reduce the prevalence of non-consensual activity, and to reduce the risk of transmission from consensual sexual activity.

## Tattooing

Tattooing is common in penal institutions but often regarded as illegal. Therefore, it is almost certainly conducted with non-sterile equipment. Needles or tattoo guns are frequently shared, creating a risk of transmission of HIV and hepatitis C. In contrast to the risk of hepatitis C transmission, the risk of HIV transmission is low, but some cases of HIV infection have been reported in ex-prisoners in the United States who had been tattooed in a penal institution with non-sterile needles that had been used to tattoo other inmates. Chapter 5 will discuss what can be done in penal institutions to reduce the risk of HIV and hepatitis C transmission through tattooing.

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# Chapter 4

## Monitoring HIV infection in prisons

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### Why monitor HIV among prisoners?

There are both public health and ethical reasons for monitoring the occurrence of HIV in prisons and detention centres. Incarceration creates an ethical obligation: inmates must be kept safe. To do this, officials need to understand the coming and going of HIV infection in institutions, and evaluate the adequacy of programmes to prevent infection. They should also monitor HIV, because the information yielded will offer a foundation for achieving specific public health goals, including disease control, reduction of disability and improving the economic status of the poor. Since HIV monitoring carries risks, however, it must be done carefully and without illusions as to its benefits and dangers. Confidentiality and sound ethical principles are the bases for evaluating HIV infection in prison, as recommended by the 1993 WHO Guidelines (Annex 1).

The second reason for monitoring HIV in prisons is less obvious: penal institutions are ideal sites for providing public health and social-welfare programmes. In most countries, it is the poor who are most likely to serve time in these institutions. Inmates are drawn from the

most marginalized in each population. Therefore, many will have untreated illnesses, undiagnosed mental health problems, and unmet social needs. Detention allows for the direct delivery of medical and social interventions to those who need them most. These interventions should include treatment for acute and chronic health conditions, screening for treatable diseases and health education. Ideally, prisons should connect inmates with community services after release, to meet health, mental health and welfare needs.

Awareness of the incidence and prevalence of HIV allows prison health-care providers to plan for prophylaxis against opportunistic infections for those infected with HIV and administer antiretroviral medications and AIDS patient care. It also forms the basis for determining the volume of equipment needed for adequate minimization of HIV-related harms.

The third reason why HIV should be monitored in prisons is to increase public awareness of the AIDS threat. Awareness can help make available funds that can be applied to other, underfinanced public health goals. In this case, tracking HIV allows the monitoring of hepatitis B and C virus (HBV and HCV) – infections that are typically more common and potentially more threatening than HIV – as well as other sexually transmissible infections.

The first section of this chapter deals with serological testing for HIV infection. We present the elements of an effective monitoring programme and discuss how to institute and maintain them. We also take up controversies in the application of serological HIV testing. The second section presents methods for monitoring HIV prevention and management programmes in prisons. The third section expands on the concept of epidemiological linkages between HIV, HBV and HCV, and how disease-prevention goals can be realized more efficiently by approaching all three viruses together. Finally, the last section discusses the ethical framework that frames prisoners' participation in clinical trials.

## **What to monitor**

By measuring two quantities, the occurrence of HIV in a chosen population can be characterized succinctly. The first, *incidence rate*,

gives the population's average propensity for contracting new infections. The other, *prevalence*, measures the burden of current infection. Both are important, because they allow not only monitoring of the public health situation inside penal facilities but for assessments of the course of the epidemic in the outside community as well.

*Incidence* requires the specification of a time period, e.g. one month, one year or five years. It is the ratio of new HIV infections occurring in that period to the total number of people in the population concerned (in this case, inmates) who are susceptible to new infection during that period:

$$\frac{\text{number of new infections}}{\text{number of individuals susceptible to becoming infected.}}$$

People who are already infected with HIV are excluded from this calculation. There is good reason for this: if we are interested in measuring the risk of incurring new HIV infections in a population, we must examine what happens to susceptible people. Obviously, if everyone were already infected (or rendered immune by a vaccine), there would be no susceptible people and therefore no incidence of HIV: the denominator (those susceptible) would equal zero and the numerator (new infections) would equal zero.

A simple arithmetical operation with the incidence ratio gives us a way to compare one population with another or examine one population over time in terms of the probability of new HIV infection. Since we have to choose a time period within which to calculate incidence, we can take the measured incidence ratio and divide by the length of time over which it was measured – one month, one year, etc. We then have an *incidence rate*:

$$\frac{\text{number of new infections}}{\text{number of individuals susceptible of infection per year.}}$$

This is the average probability of new infections in the population per year. If the incidence in one prison this year is much less than the incidence last year, we can conclude that the risk of HIV infection – the average probability of infection – must be going down in this institution.

To calculate the incidence of HIV infection in a prison setting, inmates would be tested for HIV antibodies at intake and again sometime later. This later testing could take place at the time of release, or by periodic sampling of the current inmate population. Each individual who is initially “seronegative” (i.e. lacking HIV antibodies) and later “seropositive” counts as one seroconversion. The number of seroconversions as a proportion of the number who are initially negative gives an estimate of the incidence of new HIV infections. Obviously, in order to calculate incidence, it is necessary to keep track of the test results of each individual. This means that test results must be linked to individual identifiers – names or identification numbers. If this linkage is made, there is an obligation to maintain the confidentiality of test results (see later).

*Prevalence* is not aimed at monitoring risk. It is a way of characterizing the burden of infection the population currently experiences, and is calculated as the ratio of the number of HIV infections in the population to total population size. Prevalence can be determined through a single so-called cross-section, i.e. through a one-time screening of the inmate population for the presence of HIV antibodies:

$$\frac{\text{number of individuals with HIV}}{\text{population size.}}$$

Unlike incidence, prevalence does not restrict attention to new infections in individuals who have not previously been infected. Prevalence goes up if more people in the population have become infected. So, a high incidence can produce higher prevalence. Prevalence is also susceptible to two other forces: mortality and emigration. If HIV-infected individuals die at the same rate as new HIV infections occur, the prevalence will stay the same because the overall weight of infection in the population is constant. The same would be true if HIV-infected people are moved out of the prison. For this reason, prevalence cannot be used to indicate the probability of new infection, and thus will not represent the risk of HIV infection. But it is useful to gauge how much infection is present, which is important information for the planning of services. In particular, comparison of HIV prevalences across institutions can yield information about the need for HIV-related services.

*Sampling* can allow for the estimation of incidence or prevalence without HIV testing of the entire population of interest. A sample is a subset of the population, here the prison population. If the sample is drawn correctly, the incidence or prevalence of HIV infection in the sample gives a good estimate of the incidence or prevalence of HIV infection in the prison population.

One way to draw a good sample is to choose people at random. This can be done by assigning a number to each inmate sequentially (1001, 1002, 1003, etc.), then choosing a subset of numbers at random. Random sampling can be done using a random-numbers generator, available in computerized statistical software, or with a table of random numbers.

An approximately random sample can be drawn by using inmates' identification numbers. Choose all inmates for whom the last two digits (or the first two, or the second and third) of the identification number are the same as the day of the month on which the investigator was born.

The size of the sample is important. Although small samples will produce equally good estimates of incidence or prevalence, they are less reliable. Therefore, choose the largest sample possible, given time and cost.

The incidence and prevalence of HIV infection are averages: incidence does not describe any one person's true risk of *acquiring* HIV, and prevalence tells us only how common HIV infection is in the population overall. Other measurable quantities are needed in order to complete the picture of HIV-related changes in a prison population. These include the *mortality rate* among HIV-infected inmates, and immigration and emigration of HIV-infected prisoners.

Furthermore, incidence and prevalence are useful averages when we look at how HIV behaves over time, but they do not reveal much about space. To understand the movement of HIV, spatial tracking methods are needed. These are harder to capture in simple equations, and their application in forecasting and public health service provision is less straightforward. Although spatial tracking will not be covered in this chapter, its potential utility for characterizing the movement of HIV should be borne in mind.

## **Monitoring programme objectives**

Sound monitoring programmes should be directed towards several ends. We put these aims in order here according to their value in prevention and planning for AIDS care, in order to provide maximal value for limited funds.

### **Epidemiological indicators**

To describe the spread of HIV infection in the community, make predictions about the future, and compare the situation for incarcerated individuals with that in the community outside the prison, the following indicators should be monitored (in order of importance):

- incidence;
- prevalence;
- mortality;
- spatial advance: in what proportion of areas (or prisons) where HIV was not present in the previous year has HIV appeared in the past year;
- rates of admission and release of HIV-infected inmates.

### **Prevention service indicators**

To determine the needs for specific preventive services for inmates, the following quantities should be measured:

- the number of programmes available ;
- the number of service opportunities (e.g. counselling sessions, hospital beds) available in each programme;
- the number of identifiable needs served;
- the proportion of inmates acknowledging that their needs have been met.

These quantities should not be assessed in isolation: the best way to monitor programmes is to undertake comprehensive needs assessments and compare outcomes of programme attendance with the observed needs to determine whether programmes are meeting inmates' needs adequately.



## Knowledge indicators

The amount of knowledge about how HIV is transmitted and how to protect oneself against acquiring infection should be measured.

## Surrogate indicators

Where for political, economic or logistical reasons it is not possible to measure HIV incidence or prevalence directly, we suggest that “surrogate” measurements can be useful.

*Serological tests* for hepatitis B and/or C viruses can provide circumstantial evidence about HIV infection. High prevalences of HBV and HCV antibodies in a prison population are markers of high incidence rates that occurred in the past (historic incidence rates). Since the three viruses share transmission routes, that *could* mean that HIV transmission was common, or is common, in the same population. However, this association is not certain. High antibody prevalence does not mean that HBV or HCV transmission has been occurring recently. Since both viruses are common among drug injectors (HCV in particular is commonly acquired within a few months of onset of injection), high prevalences can be found among former injectors and current injectors who no longer share injection equipment – groups among whom the risk of HIV would be low. In addition, HBV is transmitted sexually with greater facility than is HIV. In populations with high rates of sex-partner change but low prevalences of drug injection, HBV seroprevalence can exceed HIV seroprevalence.

The incidence of HBV or HCV is more readily linked with the incidence of HIV. Therefore, a high incidence of infection with either virus in a prison population suggests that active sharing of drugs and/or injection equipment is going on. This in turn indicates a high risk of HIV.

An additional reason for concern about HCV infection is that recent evidence suggests that the course of HCV disease is worse in people already infected with HIV. There is some evidence to suggest that HCV infection might also exacerbate the pre-existing HIV infection.

*Risk factor surveys* are sometimes employed as a way of assessing the risk of HIV and therefore estimating its incidence. If well carried out,

risk-factor surveys can allow the sexual and drug-using behaviour of a population to be described, but these surveys do not reveal how much HIV transmission is occurring, nor how much is likely to occur. In general, risk-factor survey results correlate poorly with actual HIV incidence. **We strongly discourage risk factor surveys as indicators of the spread of HIV.** Instead, information from such surveys can help in the assessment of the need for prevention programmes, thereby providing quantitative support for appeals for funding. We recommend that risk-factor surveys be used to emphasize the potential for HIV spread, but not as a surrogate for actual measurement of infection.

## How to monitor: elements of a sound HIV monitoring programme

### Serological testing

Serological testing for HIV should consist of two tests linked in series: a screening test with high sensitivity but limited specificity, followed by a diagnostic test with extremely high sensitivity and high specificity. Only specimens reactive on the screening test undergo the second, diagnostic test.<sup>5</sup> The first test can be done on serum (from a blood sample) or saliva. The test is usually an enzyme immunoassay (EIA). The screening test should have a sensitivity of over 99%; specificity is much less important, serving primarily to increase the efficiency of the second, diagnostic test.

Whichever screening test is used, reactive specimens represent a potential HIV infection that should be confirmed. They are therefore subjected to a second test. This test is conventionally a Western blot (WB) assay or an immunofluorescence assay (IFA), with specificity of 99.95% or more. Interpretation of test results can be made straightforward through a multistep algorithm. The following meanings are assigned to test results:

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<sup>5</sup> Here, sensitivity means the probability that the test will be reactive if HIV infection is present. Specificity means the probability that the test will be negative if HIV infection is not present. High sensitivity gives the test the capacity to detect all or almost all HIV infections; high specificity gives the test the capacity to avoid false positives, i.e. to rule out HIV infection if it is absent.

EIA non-reactive	no infection
reactive EIA, unreactive WB	about to convert, or uninfected (false-positive EIA, possibly due to cross-reactivity)
reactive EIA, reactive WB	infected or (rarely) false positive: MUST BE REPEATED.

*False negatives.* The one proviso that must be observed with serological testing arises from the usually brief (2–3 weeks) period required for the body to manufacture antibodies following exposure to the virus. Negative test results will occur even though infection has taken place if the test is done during this “window” period. Except in the instance of a rapidly escalating infection rate, as is found in explosive outbreaks, the window period proviso to interpreting test results produces only a small underestimation of actual incidence and has little impact on prevalence estimates. It is highly possible that there will be a rapidly increasing incidence rate in areas where AIDS has newly arrived; this proviso should therefore be observed in regions that do not have a historically high AIDS incidence.

It is often easier to accomplish two or more cross-sectional serosurveys within a penal institution than to perform two or more HIV tests on each inmate. This offers the opportunity to determine incidence from serial seroprevalence estimates. Mathematical models have been proposed for estimating incidence from serial seroprevalence data, but the details are beyond the scope of this book.

The worst potential error in testing is the *false positive*. Individuals who believe themselves to be infected with HIV can experience a range of problems, including depression, loss of social support, exacerbation of existing disabilities, or even suicide. In the prison setting, the threat of violence towards HIV-infected inmates adds to the necessity to minimize false-positive test results. It is for this reason that reactive EIAs must be repeated, and repeatedly reactive EIAs confirmed by Western blot or IFA. Individuals should not be informed that they are HIV-positive unless the confirmatory test is unquestionably positive. It is a good idea even then to repeat the entire testing sequence (EIA, EIA, WB/IFA) on a newly drawn blood sample, in order to verify the finding of HIV positivity before informing the individual inmate.

Future test kits might replace serological testing with tests for the presence of virus itself (such as polymerase chain reaction, PCR, tests). Such tests will probably continue to rely on EIA as the screening test, but use the virological test for diagnosis. They will not be subject to the window period limitation, and will therefore be marginally more valid. As these tests are at present too expensive and too hard to standardize, serological tests remain the practical choice.

### *Hardware*

Serological testing depends on the correct use of standardized, valid equipment (test kits and reagents) by trained, supervised staff. Standardization of test kits is of the utmost importance. Comparing results across time or between different populations requires that test results be completely repeatable. Test kit manufacturers should guarantee standardization. However, this should never be taken for granted by the user. At least one test from each batch or order should be reserved for standardization checking.

Check standardization whenever a new batch (or shipment) of test kits is going to be started, or when a new manufacturer's kits are going to be used, or when multiple suppliers' kits are in use. Standardization involves using at least one representative kit from each batch on a set of serum specimens and comparing results. This standardization set should include one or more negative (HIV-free) serum specimens, one or more positives, and one or more drawn from individuals just prior to seroconversion (i.e. during the window period). Failure to obtain identical results from all kits warrants communication with the manufacturer, and possible discarding of a faulty batch of test kits.

### *Staff*

Staff who carry out HIV testing must be trained and supervised. Training must involve two areas: the techniques needed for testing (including phlebotomy, specimen processing, communication with the laboratory, etc.), and communicating the meaning of test results (see Chapter 5 for a detailed discussion of pre- and post-test counselling). Training should be repeated every six months, or even more often. Refresher courses provide an opportunity to disseminate recently acquired information by integrating it into the training session. Procedures must be in place for training all newly hired staff.

## **Confidentiality**

The need to preserve medical confidentiality concerning HIV infection in penal institutions is discussed in Chapter 2. The best way to ensure confidentiality is by maintaining anonymity. For most pure monitoring purposes, including estimation of HIV incidence and prevalence as well as evaluation of programmes and services, HIV results can be determined entirely anonymously. Linkages between test results and information that identifies individuals (e.g. name, prison number, home address) is only needed if clinical services are to be provided as a result of the test result. For instance, if combination therapy is to be offered to HIV-infected individuals, it is obviously necessary to know which individuals are HIV-infected. In other applications, we recommend anonymous testing. Other data used for monitoring should be protected as well. This includes information about perceived risks and behaviour considered to confer a risk of HIV infection, and all forms of sexual behaviour. Such information is potentially damaging whether collected incidentally to HIV prevention work or as part of a concerted research plan.

To preserve anonymity, records should be doubly masked, i.e. names (or other identifiers) should be replaced by a first code. The key linking names to first codes can be destroyed. For information that is to be handled as anonymous now but for which identifiers might turn out to be useful in the future (e.g. if it is anticipated that HIV therapies will become available at some future date), mask the linkages connecting personal identifiers to code numbers. For instance, link names to code numbers with one key and store it safely. Then substitute a second code number for the first code number for each individual. Store the key linking second code numbers to first code numbers in a separate location from the first key. Make sure that no single individual has access to both of the keys.

## **Controversies**

### **Compulsory and voluntary testing**

Voluntary HIV testing is recommended by the World Health Organization (see Annex 1) and it is implemented in many prison systems throughout the world. The controversy opposing it to

compulsory testing hinges on the conflict between individual and societal rights, which is beyond the scope of this chapter. From the point of view of quantifying HIV prevalence and incidence, voluntary testing may give a partial view of the target population and therefore generates estimates which are subject to bias. This reduces the possibility to make direct comparison of estimates gathered across time or between institutions. This concern is generally overridden by the advantage of avoiding the coercion and potential alienation of compulsory testing. For further discussion on voluntary testing, see Chapter 2.

HIV testing may be part of routine testing, that is the testing of every incoming inmate at prison admission when screening for other conditions (e.g. syphilis) is conducted as well. The existence of repeated (or continual) routine testing must be well publicized, so that it is not construed as evidence of some extraordinary risk. By contrast, testing should be carried out with strict confidentiality (if HIV-specific medical care is to be provided) or absolute anonymity (if not). Finally, inmates should have the possibility to refuse to be tested if they wish.

### **Anonymous vs. linked serosurveys**

Another controversy involves anonymous and linked serosurveys. In the latter, information on HIV infection status is linked to personal identifiers. Linked serosurveys allow the characteristics of inmates to be correlated with higher HIV prevalence. There are three areas in which this controversy should be examined: research, public health and criminal justice policy, and needs assessment for HIV prevention.

From a research standpoint, the attempt to define HIV risk factors by linking cross-sectional serological testing for HIV antibody with individual information or behavioural data is misguided and potentially dangerous. The fallacy behind determination of risk through serosurveys is that such programmes can only determine correlates of HIV prevalence, while only incidence can indicate the risk of a group of individuals. Therefore, serosurveys provide at best an incomplete and possibly erroneous idea of the correlates of HIV infection.

For public health and policy planning purposes, information on inmate characteristics or behaviour can be useful – for instance, in

determining whether the primary route of HIV infection in the population is likely to be via drug use or by sex. However, individual data are only interpretable in the context of information about social structure and conditions that affect HIV transmission, which is very difficult to get in penal institutions. The limited potential benefit of linked serostatus data is usually outweighed by the possibility that the information on HIV status of each inmate might spark coercion, discrimination or violence.

Information on inmates' behaviour linked to HIV seropositivity may be useful for needs assessment, in order to develop prison-based interventions. The purpose of this linkage is to avoid erroneous conclusions. For instance, a large proportion of inmates might report having frequent unprotected sex and a very small proportion the use of drugs by injection, but HIV infection might be present only among drug injectors. The behavioural information alone would be misleading and lead to inefficient intervention. However, the potential for grave harms to inmates based on disclosure of HIV infection information must always be borne in mind.

### **Individual vs. pooled testing**

Pooled HIV testing offers ways to avoid linking HIV test results to individuals yet retain the capacity to identify infected persons. This approach is recommended for very low prevalence situations as a cost-saving measure, even if it is desirable to identify infected individuals in order to treat them. In very low prevalence settings, pooling will reduce the number of screening tests that have to be done. In this approach, serum from a large number of individuals (at least 10) is pooled, and each pool is tested for HIV using the screening test. Only in those pools for which the test is reactive are the individual specimens contributing to that pool subjected to screening. Those specimens that are reactive on screening are subjected to diagnostic testing, as usual.

Pools can be constructed at random, simply to reduce work and cost. Or they can be formed according to some characteristic of the inmates (e.g. age, length of time incarcerated). This allows for more efficient determination of HIV seroprevalence by levels of the pooling characteristic.

## Testing for other bloodborne pathogens

Since HIV and the hepatitis viruses are transmitted identically, and all are common among drug injectors, testing for one of the hepatitis viruses can provide an economical approach to monitoring and control where finances are inadequate for a full HIV plus HBV plus HCV monitoring programme. Since HCV has the highest parenteral transmission efficiency of the three pathogens, and HBV is the most readily transmitted sexually, while HIV is transmitted less well by inoculation than is HCV, and less well sexually than is HBV, HIV incidence can be assumed to be less than that measured by HBV or HCV monitoring (although the same is not true for prevalence). Where resources permit the tracking of all three viruses, programmes for prevention should be linked as well. This means that evaluation of programmes should include not only the ability to prevent the spread of HIV, but also interruption of HBV/HCV transmission.

## Monitoring HIV prevention programmes

Tracking the spread of HIV in prisons should be conducted in parallel with continuing assessment of the adequacy of programmes to interrupt HIV transmission. Many approaches exist for the evaluation of HIV prevention (and HBV or HCV prevention) programmes. In this section we will only review the most important ones.

Three types of programme evaluation are possible.

- Reduction in actual risk – i.e. measured decline in seropositivity or reduction in incidence rate. This is discussed above, but often will not be feasible.
- Behaviour change – this is difficult to interpret because of unknown validity of responses and changed responses, lack of calibration of stated changes to real change, and lack of information about the intensity of change needed to reduce actual risk. Some programmes measure intention to change; the validity of such measurements is poor, and the empirical value of “intention” has not been demonstrated. We do not recommend measuring intention.
- Number and types of need met, relative to needs identified.



Provided the incidence of HIV is high enough to begin with, a decline in incidence among inmates completing the programme can be observed. If that decline can be shown to be greater than any change in HIV incidence for inmates in general or for those inmates not completing the programme specifically, a programme can be shown to be effective in reducing or preventing HIV transmission (i.e. reducing risk). In most circumstances, however, HIV incidence will not be high enough for a drop in incidence to be discerned over time, or testing will not be carried out in a way that distinguishes inmates completing the programme from those who did not have any prevention programme. In that case it is difficult to assess whether programmes whose primary aim is to promote harm-minimizing behaviour are effective. The questionability of self-reported information is especially high in the prison context, where the value of information can reside more in its ability to elicit preferential treatment or avoidance of violence than in its truthfulness. Inmates might claim to engage in no transmission-favouring activities, but that will not be verifiable. Where no direct estimate of changes in HIV incidence is available, it is preferable to restrict programme monitoring to process evaluation. Monitors should ask of each programme: which activities were carried out? Were inmates satisfied with them? What perceived needs were not addressed? The principle to be followed in process evaluation is to ask inmates' opinions and solicit their needs. For instance, it is preferable to ask "Do you need condoms?" rather than "Do you have sex with other men?" Process evaluations can involve structured or unstructured interviews with individual inmates and/or programme staff, as well as collection and analysis of data regarding operation of the programme.

We do not recommend testing for drug use.

## **Ethics of inmate inclusion in clinical trials**

This section is included because it is important that inmates participate in clinical trials only after giving their free and fully informed consent. A revolution in health research ethics emerged in response to revelations about Nazi "medical" experiments during the Second World War. One outcome of the new ethics was a specific prohibition against prison inmates' participation in medical research. The rationale for the prohibition was that the environment of incarceration

is inherently coercive, as a result of which inmates cannot give their consent of their own free will. Only with the informed consent of the participants, it was held, can research be conducted on humans.

This prohibition was called into question in the late 1980s, when effective medications for people with AIDS appeared as unlicensed drugs under investigation. Enrolment in a clinical trial of one of the new therapies became a route to receiving good HIV therapy. Under these special circumstances, the prohibition against prisoners participating in medical research went against the ethical obligation to offer inmates quality health care. If prisoners could not enter clinical trials, they were being denied access to potentially life-prolonging (albeit still unlicensed) chemotherapy. The ethical problem was to balance the right of inmates to receive the best possible care with the responsibility of researchers not to coerce the participation of prisoners without their consent. Where the most effective HIV medications are not routinely available except through participation in clinical trials, ethical resolution is difficult. We hold that inmates must have access to participation in trials, if trials afford the best or only path to receiving effective HIV therapy in the local context. However, the participation of inmates in trials requires that special procedures be observed.

We strongly recommend that prison authorities establish ethics boards, comprising civilian health personnel, public health professionals and prisoners as well as prison staff, which are empowered to make decisions about the enrolment of inmates in clinical trials, oversee the conduct of trials involving prisoners, and hear complaints from inmates relating to participation in clinical trials. We also recommend ethics review by an external agency, such as an academic or nonprofit institution. We also recommend that the results of all studies in which inmates participate be provided to those inmates as soon as the findings are available.

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# Chapter 5

## HIV prevention in penal institutions

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### Introduction

The prison systems in western countries have been confronted with different sets of problems according to the phases of the HIV/AIDS epidemic. At first, the most common reaction was fear among both staff and inmates about the risk of contracting AIDS. Educating prisoners and staff about HIV/AIDS was the main response of the prison authorities, leading to decreasing fear of contagion and to the normalization of the situation in most circumstances. As the epidemic reached a mature stage, treatment and management problems became the main concern of prison authorities. For instance, AIDS-related deaths represented one third of all deaths in state prisons in the United States in 1995 (100 per 100 000 inmates). In Ukraine, which has experienced a devastating HIV epidemic a few years earlier than other eastern European countries, there is an increasing demand for hospital beds for AIDS patients, which is posing a heavy burden on the prison health system.

The prison system in the Russian Federation is experiencing an important increase in HIV infection at a time of severely reduced resources, massive overcrowding and competing health needs. The response of the administration has been to test all new admissions, and

to isolate HIV-positive prisoners, with two main objectives: to protect their safety, and to prevent the further spread of infection in prison. Both arguments are very serious, and raise dilemmas difficult to resolve in the present situation. However, pilot projects started in penal institutions in Nizhnii Novgorod, Krasnodar, Penza, Omsk and Moscow, which are centred on educating prisoners and staff and on providing some elements of harm reduction, have shown that changes are feasible. In Ukraine, a new policy based on extensive education, the introduction of voluntary testing and counselling, desegregation of HIV-positive prisoners, and confidentiality of information on HIV status has so far proved very successful.

This chapter provides examples of approaches adopted in western countries to prevent HIV in prison. These examples may be helpful in constructing a strategy appropriate to the specific nature of the prison system in the Russian Federation and the NIS.

## Education

Education is the cornerstone of HIV prevention in prison. In its *Guidelines on prevention and management of HIV infection and AIDS in prisons* (see Annex 1), the World Health Organization recommends that prisoners and prison staff be informed about HIV/AIDS and about ways to prevent HIV transmission, with special reference to the likely risks of transmission within the prison environment and to the needs of prisoners after release. Written materials distributed to prisoners should be appropriate for the educational level of the prison population, and information should be made available in a language and form that prisoners can understand and presented in an attractive and clear format. Inmates and staff should participate in developing educational materials. All prisoners should have an opportunity to discuss the related information with qualified people. Face-to-face communication, both in groups and on an individual basis, is an important element in education and information.

In view of the importance of peer education, both prison staff and prisoners themselves should be involved in disseminating information. Experience from many countries shows that it is important that education activities are not simply passive, but also include more active and participatory forms of education. There are many reasons

why passive education is often ineffective: information may not engage prisoners, in particular when prisoners have no part in its authorship and content, it may not meet the literacy requirements of prisoners, and there may be no input from external groups or peer reinforcement of educational efforts.

Every prisoner should be given basic informational materials on HIV/AIDS which should realistically address the risks from sexual activity, injection drug use and tattooing in penal institutions. However, making written information available is not enough, because some prisoners may not read pamphlets or brochures. Also, live education is often more effective in transmitting knowledge than purely passive forms of education. Therefore, all prisoners should participate in educational sessions about HIV/AIDS when they enter a penal institution. Thereafter, educational sessions about HIV/AIDS should be available to prisoners on a regular basis. These sessions should encourage the participation of the individual prisoner and include role-play and other interactive forms of communication. Whenever possible, these sessions should be delivered or supplemented by external, community-based organizations, which should be funded to develop and carry out such programmes, or by peers who have developed expertise in doing so. It is important to stress that educational sessions may also address the prevention of other infectious diseases or the adoption of healthy lifestyles (see below).

Prisoners should have the opportunity and be encouraged to participate in ongoing groups that provide themselves with information and support about risk reduction. A single intervention, even if repeated on a regular basis, is unlikely to lead to significant changes in risk behaviour. Prisoners need an opportunity to learn preventive skills, explore feelings and raise questions. Such programmes would best be developed by their peers.

The need for and effectiveness of peer-led educational efforts has been widely recognized. In some penal institutions peer education is already a major component of efforts to prevent the spread of HIV infection, including in pilot institutions in the Russian Federation. Peer educators can play a vital role in educating other prisoners. There are several reasons why peer education can be particularly effective:

- because HIV transmission in penal institutions often involves illegal practices, peers may be the only persons able to speak candidly to other prisoners about HIV transmission;
- peer educators' input is not viewed with the same suspicion as the "propaganda" from the hierarchy of the penal institution;
- peer educators are more likely to be able realistically to discuss the alternatives to risk behaviour that are available to prisoners;
- they are more likely to be able to respond to issues as they arise and in an ongoing way;
- they are able to judge which educational strategies would work within their penal institution and link HIV/AIDS prevention to the existing culture and informal power structure.

Peer education in penal institutions has also been found to contribute significantly to reducing prejudices that inmates may have towards HIV and people affected by it. For example, a study of a peer education programme in Australia concluded that a large majority of prisoners (71%) felt that HIV-positive prisoners should not be segregated from the general population. Prisoners had a high level of understanding of how HIV is or is not transmitted, with over 98% of them knowing that they could not get HIV from activities involving daily contact. Furthermore, over 99% understood that HIV can be transmitted through sharing needles and unprotected sexual intercourse.

Generally, peer education and educational sessions delivered by external organizations may be better received than education by staff of the penal institution. Involving independent health services, regional AIDS centres or specialized nongovernmental organizations is important because:

- it protects confidentiality and thus encourages prisoners to be open about their risk behaviour; and
- it allows for the creation of links with organizations outside the penal institution, which in turn may make prisoners more likely to develop trust and seek follow-up support after release.



Education and information about HIV/AIDS alone is not enough. In fact, information is not of much use to prisoners if they do not have the means to act on it. Prisoners should get both information about how to protect themselves and the means to do so.

## HIV counselling and testing

Making voluntary HIV testing and counselling available to prisoners in penal institutions is another prevention measure.

The WHO *Guidelines on HIV prevention and management in prisons* state:

Voluntary testing for HIV infection should be available in prisons when available in the community, together with adequate pre- and post-test counselling. Voluntary testing should only be carried out with the informed consent of the prisoner. Support should be available when prisoners are notified of test results and in the period following. (*paragraph 11*)

The primary public health purposes of counselling and testing are to help non-infected individuals initiate and sustain changes in their behaviour that will reduce their risk of becoming infected, and to assist infected individuals not to infect others. Counselling and testing are an important part of comprehensive HIV prevention programmes. To have a chance of preventing HIV transmission and ensuring that necessary services and care are provided to infected individuals, the focus of HIV testing must be on counselling. Voluntary, rather than mandatory, HIV testing is recommended because it fosters the development of trust between patients and health care providers. A trusting atmosphere facilitates better understanding of what the test means for patients, their partners and their families.

Counselling is essential before and after HIV antibody testing. The prisoner must understand what the test involves and the implications of testing and give his or her explicit informed consent. Components of pre-test counselling include:

- assessing the prisoner's risk of HIV infection;
- assessing the window period;

- providing information regarding HIV infection, risk activities, and ways to avoid or reduce risk;
- discussing the advantages and disadvantages of testing so the prisoner has an opportunity to weigh these in the context of his or her particular circumstances; and
- should the prisoner choose to proceed with the HIV test, determining the timing of testing and the post-test visit.

Components of post-test counselling include:

- communicating the test result;
- assessing the prisoner's understanding of the result;
- assessing the need for follow-up and care; and
- discussing the importance of risk-reducing behaviour regardless of the test result.

Compulsory testing of prisoners was conducted in many penal systems at the beginning of the HIV epidemic. Those who advocated the introduction of compulsory testing usually argued that the results of the test should be communicated to some or all of the staff of the institution so that they had a better chance of protecting themselves, and – if they had been exposed to the blood or bodily fluids of an inmate known to be HIV-positive – taking appropriate measures. Sometimes they argued that the results should also be communicated to fellow inmates, or at least to cellmates, so that they could protect themselves better and take appropriate measures if they had been exposed to the blood or bodily fluids of an inmate known to be HIV-positive. Finally, they sometimes said that, in order to reduce the risk of HIV transmission in penal institutions, all prisoners testing HIV-positive should be segregated from the general prison population.

Experience from several countries has shown that once measures have been taken to inform prisoners and staff properly and to make available means of prevention, measures such as compulsory testing, the communication of test results to staff and prisoners and/or the segregation of HIV-positive prisoners are not justified. The issue of whether positive HIV test results should be communicated to staff and fellow prisoners has been analysed in great detail. It has been concluded that in penal institutions the disclosure of personal medical information, including HIV status, without the consent of the prisoner

is seldom justifiable. In most situations, such disclosure cannot be considered to be necessary and its efficacy is questionable. Often disclosure would appear to be counterproductive or harmful, in excess of any benefits or potential benefits that might result from it. Measures that can be undertaken to prevent exposure to and infection with HIV have to be undertaken regardless of whether a prisoner or staff member is or is not known, to staff, wardens or prisoners, to be infected with HIV. To educate staff and prisoners about precautions that can prevent HIV transmission, and to make available to them the means necessary to prevent it, is essential if the transmission of HIV infection is to be prevented in penal institutions. Only in exceptional cases will disclosure be justified, when an individual assessment shows that disclosure is necessary to prevent harm that cannot otherwise be prevented. In all other situations in which claims for disclosure may arise, other means are often already available and would be less harmful than disclosure.

If funds are allocated to mass testing and segregation, which require considerable resources, other prevention activities will inevitably be curtailed. In addition, segregating all prisoners who test HIV-positive in order to reduce the risk of HIV transmission in penal institutions would create a false sense of security – in any testing programme some people would test negative even though they carried HIV and were infectious. Finally, segregation is not necessary because the vast majority of prisoners living with HIV do not pose any danger to staff or to fellow prisoners. Segregation of certain individuals might be warranted because of behaviour that could expose others to HIV, but segregation because of a prisoner's HIV infection alone is not warranted.

## **Preventing transmission through sexual activity**

### **Consensual sexual activity**

Recognizing the fact that sexual activity does occur and cannot be stopped in penal institutions, and given the high risk of disease transmission that it carries, many prison authorities in western Europe made condoms, together with lubricant, readily available to prisoners. In a number of surveys undertaken in Europe, the proportion of prison systems that reported that they had made condoms available rose from

53% in 1989 to 75% in 1992 and 81% in 1997. The most recent survey showed that condoms were available in all but four penal systems. Significantly, no system where a policy of making condoms available in penal institutions has been adopted has reversed the policy, and the number of systems where condoms are being made available has continued to grow every year. For example: in Australia, the New South Wales government has decided to make condoms available, and they have also been made available in other Australian systems. In most of Canada's penal institutions condoms have been available since 1992. After some initial opposition, the decision to make them available has been well accepted and has not created any problems. In most prisons, condoms, dental dams and water-based lubricant are easily and discreetly available at various places in the institution, and without inmates having to ask for them.

Studies have shown that if prisoners have to ask the health care services for condoms, few will do so because they do not want to disclose that they engage in same-sex sexual activity. Making condoms available is therefore not enough; they need to be easily and discreetly accessible.

The Joint United Nations Programme on HIV/AIDS (UNAIDS) also "believes it vital that condoms, together with lubricant, should be readily available to prisoners." UNAIDS concludes:

Unfortunately, there still exists a strong current of denial in many places about male-to-male sex (especially in prison) and a corresponding refusal to do anything which might be seen as condoning it. These attitudes will have to change if societies want to see the rate of HIV infection – inside prison and outside of it – decrease.<sup>6</sup>

### **Non-consensual sexual activity**

Violence, including sexual abuse, is common in many prison systems throughout the world (see Chapters 2 and 3). It is important to prevent violent attacks on prisoners, including rape – condoms are not going to be of use in situations of non-consensual sexual activity. It is the responsibility of prison authorities to provide a safe environment, including combating aggressive sexual behaviour such as rape,

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<sup>6</sup> *Prisons and AIDS*. Geneva, UNAIDS, 1997 (*Points of view*) pp. 6–7.

exploitation of vulnerable prisoners (e.g. transsexual or homosexual prisoners, or mentally disabled prisoners) and all forms of victimization of prisoners. Adequate staffing, effective surveillance, disciplinary sanctions, and education, work and leisure programmes are necessary components to reach this goal. Of course these measures should concern all prisoners, regardless of their HIV status.

Stopping violence in penal institutions is certainly a difficult task. The Canadian Expert Committee on AIDS in Prisons recommended a variety of measures to make the environment in penal institutions safer:

- careful classification of inmates so that more vulnerable prisoners are kept together and not mixed with more aggressive individuals;
- effective prosecution of sexual predators, and their removal or segregation from the general prison population;
- close supervision and protection, including single-cell accommodation where feasible, for prisoners who may be vulnerable to sexual abuse;
- education of prisoners, preferably by prisoners, about sexual abuse and the fact that non-consensual sexual activity will not be tolerated in penal institutions; and
- basic structural changes such as improvements in lighting and restricted access to certain areas in the institution.

As with the provision of condoms and lubricant, the prevention of rape and other forms of non-consensual sexual activity through which HIV infection may be transmitted must be appraised in each institution (see Annex 3). Ensuring the safety of all prisoners represents a critical element of the AIDS prevention policy of a penal institution.

## **Preventing transmission through injection drug use**

As Chapter 3 has shown, drugs, needles, and syringes will find their way through the thickest and most secure walls of penal institutions. While continuing and often stepping up drug interdiction efforts,

prison authorities around the world have taken steps to reduce the risk of the spread of HIV and other diseases through injection drug use. These usually come under the heading of “harm reduction” or “risk reduction.” As UNAIDS has pointed out, they are not necessarily easy options to embark upon, and they have ethical as well as practical problems attached to them. They have usually been undertaken as a pilot project in the first place. Success with them to date has led to their being continued, and indeed extended into other penal institutions and other countries. These measures include providing bleach to sterilize needles and syringes, making sterile needles available, and providing methadone maintenance treatment.

### **Bleach**

One strategy to reduce the risk of HIV transmission through the sharing of injection equipment is to provide liquid bleach, together with instructions on its correct use to sterilize needles and syringes. Making bleach available to prisoners has often been opposed on the grounds that it may be perceived as condoning an illegal act that has contributed to many prisoners being incarcerated in the first place. It has also been argued that making bleach and information on how to clean injection equipment available may encourage non-users to experiment with injection drug use, and that bleach could be used as a weapon against staff. However, experience in those prison systems where bleach has been made available to prisoners has shown that its distribution has not compromised security within penal institutions.

According to a study undertaken by Harding and Schaller (1992) for the WHO Global Programme on AIDS, in 1991 bleach was being made available to prisoners in 16 out of 55 prison systems surveyed in Europe. Significantly, in no system where a policy of making bleach available in penal institutions has been adopted has the policy ever been reversed, and the number of systems where bleach is being made available has continued to grow every year. For example, in a number of surveys undertaken in Europe, the proportion of prison systems reporting that they had made bleach available rose from 28% in 1992 to 50% in 1997.

In Canada, the Expert Committee on AIDS and Prisons recommended in 1994 that bleach be made available to prisoners. The Committee stressed that this in no way condoned drug use, but rather showed that in penal institutions as elsewhere, the overriding concern in any effort

to deal with drug use needed to be the health of the persons involved and of the community as a whole. After a pilot test was successfully conducted in one institution, in 1995 the implementation of bleach distribution was initiated in all institutions.

### **Needle exchange or distribution**

Bleach (sodium hypochlorite – NaOCl) diluted to a concentration of 1% (= 10 000 parts per million) is sufficient to kill HIV, HBV and HCV exposed to this solution for 30 minutes. For this reason, it is important to make bleach available in prisons. However, making bleach available is not enough since most prisoners do not have enough time to clean their syringes properly.

In many western countries, outside penal institutions, needle exchange or distribution programmes have become an integral part of a pragmatic public health response to the risk of HIV transmission among IDUs and, ultimately, to the general public. Extensive studies of the effectiveness of these programmes have been carried out. There is now scientifically sound evidence showing that they are an appropriate and important preventive health measure. For example, a worldwide survey found that in cities with needle exchange or distribution programmes HIV seroprevalence decreased by 5.8% per year; in cities without such programmes, it increased by 5.9% per year. In the Russian Federation and in some of the newly independent states, pilot needle distribution programmes have recently been implemented.

In countries where syringe and needle exchanges programmes are available in the community, providing sterile needles to prisoners has been recommended on the ground that access to sterile drug-injection equipment would ensure that prisoners would not have to share their equipment. A few penal institutions have established and evaluated needle and syringe exchange or distribution programmes. In Switzerland, sterile injection equipment has been distributed in some penal institutions since the early 1990s. Sterile injection equipment first became available to inmates in 1992, at Oberschöngrün, a penal institution for men. Dr Probst, a part-time medical officer working at Oberschöngrün, was faced with the ethical dilemma of as many as 15 of 70 prisoners regularly injecting drugs, with no adequate preventive measures. Probst began distributing sterile injection material without informing the warden. When the warden discovered this, instead of

firing Probst, he listened to his arguments and sought approval to sanction the distribution of needles and syringes. Eight years later, distribution is continuing, has never resulted in any negative consequences, and is supported by prisoners, staff and the administration of the institution.

Initial scepticism by staff has been replaced by their full support. Staff have realized that the distribution of sterile injection equipment is in their own interest. They feel safer now than before it started: formerly they were always afraid of sticking themselves with a hidden needle during cell searches. Now, prisoners are allowed to keep needles, but only in a glass in their medical cabinet over their sink. No member of staff has suffered a needle-stick injury since 1993.

In June 1994 another Swiss penal institution – Hindelbank Institution for Women – started a one-year pilot AIDS prevention programme, including needle distribution. Hindelbank's programme was evaluated by external experts, with very positive results: the health status of prisoners had improved; no new cases of infection with HIV or hepatitis had occurred; a significant decrease in needle sharing was observed; there had been no increase in drug consumption; needles were not being used as weapons; and only about 20% of the staff disagreed with the installation of the needle-distribution machines. Following the first evaluation, a decision was taken to continue the programme.

Needle distribution has also been introduced in various penal institutions in Germany and Spain. In Austria it will be piloted in at least one institution. In Canada, no prison authorities have yet started pilot needle-distribution projects, but a few are studying the issue.

The experience of penal institutions in which needles have been made available shows that this can be done in a manner that is non-threatening to staff and indeed appears to increase their safety. There are several ways in which sterile injection equipment can be distributed. So far, every institution has chosen its own model. What can be done in a particular institution depends on many factors, including (but not limited to) the size of the institution, the extent of injection drug use, the security level, whether it is an institution for men or for women, the commitment of health care staff, and the stability of the relations between staff and prisoners. A good way for a penal institution to start a needle-distribution programme (as any other harm reduction



programme) and to overcome objections is to treat it first as an experiment and to evaluate it after the first year of operation.

### **Methadone maintenance treatment**

Outside penal institutions, methadone maintenance treatment programmes have rapidly expanded in western countries in recent years. There are ample data supporting their effectiveness in reducing high-risk injecting behaviour and in reducing the risk of contracting HIV. There is also evidence that methadone maintenance treatment is the most effective treatment available for heroin-dependent injection drug users in terms of reducing mortality, heroin consumption and criminality. Further, methadone maintenance treatment attracts and retains more heroin injectors than any other form of treatment. Finally, there is evidence that people who are on methadone maintenance treatment and who are forced to withdraw because they are incarcerated often return to narcotic use, often within the penal institutions and often via injection. It has therefore been widely recommended that prisoners who were on methadone maintenance treatment outside the penal institution be allowed to continue it in the institution.

The introduction or expansion of methadone maintenance treatment in penal institutions is another AIDS-prevention strategy that provides people dependent on drugs with an additional option for getting away from needle use and sharing. *The main aim of methadone maintenance treatment (MMT) is to help people get off injecting, not off drugs.* Methadone dose reduction – with the ultimate goal of helping the client to get off drugs – is a longer-term objective.

With the advent of HIV/AIDS, the arguments for offering methadone maintenance treatment to those who were not following such a treatment outside were compelling. As in the community, methadone maintenance treatment, if made available to prisoners, has the potential to reduce injecting and syringe sharing in penal institutions. The WHO Guidelines on HIV/AIDS in Prisons therefore recommend that:

Prisoners on methadone maintenance prior to imprisonment should be able to continue this treatment while in prison. In countries where methadone maintenance is available to opiate-dependent individuals in the community, this treatment should also be available in prisons. (*paragraph 23*)

Worldwide, an increasing number of correctional authorities are offering methadone maintenance treatment to inmates. However, some critics consider methadone as just another mood-altering drug, the provision of which delays the necessary personal growth required to move beyond a drug-centred existence. Some also object to methadone maintenance treatment on moral grounds, arguing that it merely replaces one drug of dependence with another. If there were reliably effective alternative methods of achieving enduring abstinence, this would be a meagre achievement. However, as Dolan & Wodak (1996) have explained:

The majority of heroin-dependent patients relapse to heroin use after detoxification; and few are attracted into, and retained in drug-free treatment long enough to achieve abstinence. Any treatment [such as methadone maintenance treatment] which retains half of those who enrol in treatment, substantially reduces their illicit opioid use and involvement in criminal activity, and improves their health and wellbeing, is accomplishing more than “merely” substituting one drug of dependence for another.

### **Other treatment options and education about drugs**

Offering other treatment options in penal institutions, in addition to methadone maintenance treatment, to help break dependence on drugs is of paramount importance. There is a considerable and increasing range of interventions focusing on drug users in penal institutions, and most institutions provide one or several forms of drug treatment and education or even so-called drug-free wings. Forms of treatment and education include:

- provision of drug information to prisoners
- detoxification
- drug counselling
- abstinence-based programmes
- self-help groups
- peer education
- relapse prevention
- methadone maintenance
- other substitution prescription.

Drug information sessions should be addressed to all prisoners and are better if conveyed through peer-led educational efforts, with the aim

of preventing prisoners starting a drug habit while in prison (see Chapter 3).

## Preventing transmission through tattooing

A variety of options exist for dealing with the risk of spread of disease through the sharing of non-sterile tattooing equipment:

- increased surveillance and confiscation of equipment; this would probably, however, have little impact, given current experience with syringes, and may in fact increase the risk that non-sterile equipment is used;
- providing bleach to sterilize tattooing needles and guns, accompanied by education about the risks associated with tattooing and the need for sterilized equipment;
- allowing prisoners to engage professional tattooists.

## Conclusions

Chapter 2 showed that penal authorities have a moral and legal responsibility to do everything possible to prevent the spread of infectious diseases among prisoners. Annex 3 lists specific steps that are helpful for developing a model for HIV prevention and management in penal institutions, and some key points for effective implementation of HIV prevention programmes.

It may be difficult to bring ourselves to accept certain forms of behaviour (whether in a penal institution or outside), including sexual behaviour and drug injecting. But instead of pretending that the behaviour (and the resulting spread of HIV) does not exist, it is better to acknowledge that the behaviour exists and to allow an adequate and effective response.

The introduction of preventive measures in penal institutions appropriate to the local context is in the interest of all concerned. Any measure undertaken to prevent the spread of HIV and other infections will:

- protect the health of prisoners, who should not, by reason of their imprisonment, be exposed to the risk of a deadly condition;

- protect staff: lowering the prevalence of infections in penal institutions means that the risk of exposure to these infections will also be lowered; and
- protect the public: most prisoners are in penal institutions only for short periods of time and are then released into their communities; in order to protect the general public, education and prevention measures need to be available in penal institutions, as they are outside.

Prevention and education, however, are not enough. Many penal institutions are hugely overcrowded, violent places. The role that overcrowding and violence play in poor hygienic conditions, transmission of disease and an increase of tensions, including sexual tensions, must also be recognized and addressed.

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# Chapter 6

## Treatment of HIV/AIDS

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### Part A

#### General Principles

#### Introduction

The treatment of HIV/AIDS is subject to the general principle that the level of health care in prison, including the availability of essential medications, should be at least equivalent to that in the outside community (see Chapter 2). The prison environment itself may pose particular health risks, and prisoners are deprived of their liberties and thus fully dependent on the state authority, which has an obligation to provide the necessary health care.

Diagnosis and treatment in the context of HIV/AIDS are often complex. For this reason, health care should be sought from physicians specialized in HIV/AIDS, and arrangements with the regional AIDS centre should be made to facilitate optimal health care of prisoners with HIV/AIDS.

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<sup>7</sup> The author would like to acknowledge the support given in the writing of this chapter by Dr Peter Phillips at the British Columbia Centre for Excellence in HIV/AIDS, St Paul's Hospital, Vancouver, BC, Canada.

This chapter is divided into two parts: Part A outlines the general principles of care for HIV/AIDS, while Part B goes into the details of prophylaxis and treatment of HIV-specific diseases. As noted in other chapters of this book, voluntary counselling and testing for HIV is the only manner in which HIV testing is recommended. For the HIV-infected person, the prescription of certain prophylactic medications and the diagnosis of certain opportunistic illnesses necessitate the ascertainment of the patient's HIV status and of his/her immune status as reflected by CD4+ (or absolute lymphocyte) counts. Insofar as the health services available to prisoners may offer prophylaxis or treatment for HIV-related illnesses, patients should be encouraged to volunteer for HIV testing in order to ensure that they receive the optimal prevention and treatment of HIV-related diseases.

### **The pathogenesis and natural history of HIV infection**

HIV is a lentivirus, so called because of its unusual ability to cause persistent infection and slowly progressive disease. There are two different types of HIV, type 1 and type 2, and several different subtypes or clades of both HIV-1 and HIV-2. There are clear differences between the two types, with HIV-1 being more easily transmitted and HIV-2 being less virulent. There have been no important biological differences noted between the subtypes. Virus replication in humans is active throughout the course of infection, including the period of clinical latency. HIV infection has been directly linked to the progressive destruction of the population of CD4+ T cells that serve essential roles in the generation and maintenance of host immune responses. Ongoing HIV replication in the face of an active but incompletely effective host antiviral immune response is probably responsible for the secondary manifestations of HIV disease, including wasting and dementia.

The target cell preference for HIV infection and depletion is determined by the identity of the cell surface molecule, CD4, that is recognized by the HIV envelope glycoprotein as the virus binds to and enters host cells to initiate the virus replication cycle. Additional cell surface molecules that normally function as receptors for chemokines act as essential co-receptors required for the process of HIV entry into cells. Macrophages and their counterparts within the central nervous



system, the microglial cells, also express cell surface CD4 and provide targets for HIV infection. As macrophages are more resistant to the cytopathic consequences of HIV infection than are CD4<sup>+</sup> T cells and are widely distributed throughout the body, they may play critical roles in the persistence of HIV infection by providing reservoirs of chronically infected cells.

During primary infection in adults, concentrations of HIV ribonucleic acid (RNA) in plasma can exceed  $10^7$  copies/mL. HIV disseminates widely throughout the body during this period, and many newly infected persons display symptoms of an acute viral illness, including fever, fatigue, pharyngitis, rash, myalgias and headache. At any given CD4<sup>+</sup> T-cell count, plasma HIV RNA concentrations show wide variations between individuals. HIV replication depends on a virally encoded enzyme, reverse transcriptase (RT) (and RNA-dependent DNA polymerase) that copies the single-stranded viral RNA genome into a double-stranded DNA in an essential step in the virus life cycle. RT lacks a “proofreading” function and is therefore an “error-prone” enzyme, making frequent errors in the process of transcription of RNA into DNA and giving rise to numerous mutations in the progeny virus genomes produced from infected cells. Additional variation is introduced by genetic recombination: during reverse transcription there may be template-switching between the two HIV RNA molecules that are included in each virus particle. The survival of different genetic variants depends on their replicative fitness and on selective pressures acting upon them, including host anti-HIV immune responses, and antiretroviral drug treatments.

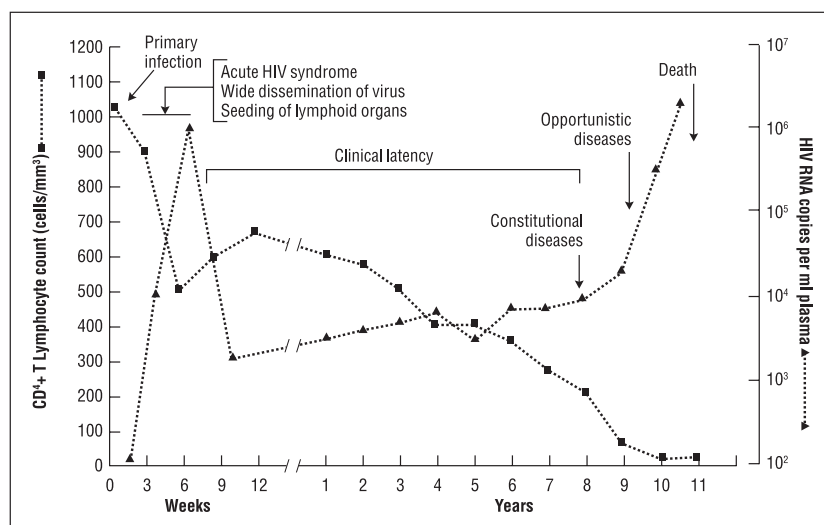
A mutation is probably introduced into every position of the HIV genome many times each day within an infected person. The resulting variants may accumulate with successive cycles of replication and viruses harbouring mutations conferring resistance to a given antiretroviral drug (perhaps multiple antiretroviral drugs) are likely to be present even before initiation of antiretroviral therapy. After initiation of antiretroviral therapy the pre-existing population of drug-resistant viruses can rapidly predominate. For example, the antiretroviral activity of non-nucleoside reverse transcriptase inhibitors (NNRTIs) such as nevirapine, when used alone, is largely reversed within four weeks of initiation of therapy. HIV variants resistant to nevirapine have been shown to persist more than a year after withdrawal of nevirapine. Zidovudine-resistant HIV variants, and

variants resistant to both nevirapine and zidovudine have been shown to persist in infected persons and to replicate well enough to be transmitted from one person to another.

Although depletion of CD4+ T cells after HIV infection is most readily revealed by sampling peripheral blood lymphocytes, these cells represent only approximately 2% of the total lymphocyte population of the body. Damage to the immune system takes place in lymphoid organs throughout the body that contain the majority (the remaining 98%) of CD4+ T cells. The thymus is also an early target of HIV infection and damage. In both adults and children, HIV infection compromises both of the potential sources of T-cell production, so the rate of T-cell replenishment cannot continue indefinitely to match cell loss. After initial infection, the pace at which immunodeficiency develops and the attendant susceptibility to opportunistic infections that arise are associated with the rate of decline of CD4+ T cell counts. This rate of decline differs considerably from person to person and is not constant throughout all stages of the infection. Acceleration in the decline of CD4+ T cells heralds the progression of disease. Host compensatory responses that preserve the homeostasis of total T-cell levels (CD4+ plus CD8+ T cells) appear to break down in HIV-infected persons approximately 1–2 years before the development of AIDS, resulting in the net loss of total T cells in the peripheral blood and signalling immune system collapse. A sequential loss of specific types of immune responses occurs. Memory CD4+ T cells are known to be preferential targets for HIV infection, and early loss of CD4+ memory T-cell responses is observed even before substantial decreases in total CD4+ T-cell numbers. Over time, gradual attrition of antigen-specific CD4+ T-cell-dependent immune recognition may limit the repertoire of immune responses that can be mounted effectively and so predispose the host to infection with opportunistic pathogens.

The chronic, clinically asymptomatic or minimally symptomatic state typically lasts for 7–11 years before the development of overt immunodeficiency (Fig. 2). A minority of persons may, however, demonstrate an accelerated disease course resulting in full-blown AIDS within 1–2 years. Higher plasma viral loads are associated with more rapid disease progression.

Fig. 2. Natural history of HIV infection



## General health management of the HIV-positive patient

### Clinical evaluation

Persons who are known to be HIV-positive or those who present with signs and symptoms suggestive of HIV infection should be systematically evaluated and offered advice and treatment consistent with the stage of their disease. The stages referred to below are the WHO clinical stages for HIV infection (for a complete description of these stages see Table 4 in Part B). Specific information on the prophylaxis of opportunistic infections, the diagnosis and treatment of HIV-related diseases and antiretroviral therapy is also provided in Part B.

#### On the initial visit:

- take a complete history of the patient's past illnesses, make a functional enquiry (including medication allergies) and review symptoms;

- make a complete physical examination of all systems;
- get confirmation of HIV seropositivity, if this is in doubt;
- make a baseline complete blood count (CBC) and differential, CD4+ count and percent (if available; if not, absolute lymphopenia may indicate advanced immunosuppression), nontreponemal antibody test for syphilis (CSF analysis may be indicated to exclude neurosyphilis), serology for HBV (HBsAg, anti-HBsAg), HCV, toxoplasmosis, chest X-ray (if indicated), Papanicolaou smear for cervical cytology for women, other tests if clinically indicated.

Review the results within one week and advise on prophylaxis (see sections below on environmental health risks and on prophylaxis of opportunistic infections).

**At clinical stage 1:**

- most patients are asymptomatic;
- depression may be present;
- a complete physical examination should be repeated every 6 months;
- CBC and differential (plus a CD4+ count if available) should be repeated every 6 months;
- the patient should be given advice regarding prevention of co-infections or the spread of HIV or hepatitis.

**At clinical stage 2:**

- patients may suffer from minor weight loss, skin complaints or upper respiratory tract infections;
- a complete physical examination concentrating on the mucocutaneous system should be made;
- CBC and differential (plus CD4+ count if available) should be taken;
- the patient should be re-evaluated every 3–6 months.

**At clinical stage 3:**

- patients may be bedridden at time, experience weight loss, fever, candidiasis, diarrhoea, fever, pneumonia or tuberculosis;
- a complete physical examination should be made;
- CBC and differential (plus CD4+ count if available) should be taken;
- multivitamins should be prescribed if nutrition compromised;
- PCP prophylaxis should be recommended (with cotrimoxazole or an alternate medication; see section on prophylaxis of opportunistic infections);
- the patient should be re-evaluated every three months or sooner if symptomatic.

**At clinical stage 4:**

- patients are frequently bedridden and are at risk for severe opportunistic infections;
- a physical examination, which will depend on signs and symptoms, and an ophthalmological examination to screen for CMV retinitis if CD4+  $\leq 50$ , should be made;
- CBC and differential should be taken (do not repeat CD4+ count more often than once every 3 months or if already  $< 50$ , since no valuable information will be gained);
- multivitamins should be recommended;
- PCP prophylaxis should be undertaken; other prophylaxis may be indicated depending on CD4+ count (see section on prophylaxis of opportunistic infections);
- the patient should be re-evaluated monthly or as symptoms dictate.

**Diet, exercise and complementary therapies**

Daily multivitamin and mineral supplements may be beneficial in terms of slowing progression to AIDS, while megadosing of vitamins, minerals and Chinese herbs should be cautioned against. Appetite stimulants such as megestrol acetate and dronabinol may be useful in AIDS patients with weight loss. Dietary intake of protein has an

impact on the degree of wasting: AIDS wasting syndrome is more severe in individuals who are consuming an inadequate amount of protein. Moderate physical activity may slow the progression of HIV disease. Studies of alternative treatments to cure HIV infections or causally affect the disease show few positive outcomes. Studies of alternative therapies for patient care are more encouraging: for instance, some programmes may be effective to reduce stress and anxiety and increase quality of life.

### **Physical environment: preventive measures**

The risk of exposure to tuberculosis should be minimized by separating patients with active tuberculosis, screening frequently for the disease, and masking tuberculosis patients when they are in contact with others.

Parents of children (particularly those attending day care centres) are at increased risk of acquiring cytomegalovirus (CMV) infection, cryptosporidiosis, and other infections (hepatitis A, giardiasis) from children. The risk can be diminished by good hygienic practices, such as washing the hands after contact with faeces (e.g. changing nappies), urine or saliva. Washing the hands after gardening or other contact with soil might reduce the risk of cryptosporidiosis and toxoplasmosis.

### **Food-related risks: preventive measures**

Raw or undercooked eggs, raw or undercooked poultry, meat, seafood and unpasteurized dairy products could contain enteric pathogens. Poultry and meat should be cooked until no longer pink in the middle. Fruits, vegetables and legumes should be washed thoroughly before being eaten. Cross-contamination of foods should be avoided, for example, uncooked meats should not be allowed to come into contact with other foods. Patients should not drink water directly from lakes or rivers because of the risk of cryptosporidiosis and giardiasis. During outbreaks, boiling water for 1 minute will eliminate the risk for cryptosporidiosis. Ice made from contaminated tap water may also be a source of cryptosporidiosis infection. Only juices labelled as pasteurized should be considered free from cryptosporidium.

### **Pet-related risks: preventive measures**

HIV-infected persons should avoid contact with animals that have diarrhoea. They should avoid contact with animals aged <6 months (<1 year for cats). Washing the hands after handling pets (especially before eating) is recommended. HIV-infected persons who keep cats have an increased risk of toxoplasmosis (and Bartonella infection). Litter boxes should be cleaned by HIV-negative persons, but if this is not possible, cleaning should be followed by washing the hands thoroughly to reduce the risk of toxoplasmosis. HIV-infected persons should avoid activities that might result in cat scratches or bites to reduce the risk of Bartonella infection, and they should not allow cats to lick open cuts or wounds. Control of fleas will also reduce the risk of Bartonella infection.

### **Antiretroviral therapy**

As active HIV replication is directly linked to the progressive depletion of CD4+ T-cell populations, reduction in the levels of virus replication by antiretroviral drug therapy will correlate with the clinical benefits observed in treated patients. Greater clinical benefit is obtained from more profound suppression of HIV replication. In a recent analysis of highly active antiretroviral therapy (using three drugs), by 6 months patients had a median increase in CD4+ levels of 86 cells/mm<sup>3</sup>, and by 12 months they had a median increase of 125 cells/mm<sup>3</sup> over baseline values. Responses to highly active antiretroviral therapy (HAART) varied. Patients who showed both virological and immunological responses showed the lowest rates of clinical progression (4.8% at 24 months); those with immunological but not virological responses had higher rates of clinical progression (7.2% at 24 months); those with virological but not immunological responses had still higher rates (9.5% at 24 months); those with neither virological or immunological responses had the highest rates (15.9% at 24 months).

These data illustrate that the provision of highly active antiretroviral therapy can be expected dramatically to reduce the incidence of opportunistic and other HIV-related diseases typically seen with progressive immune compromise. HAART can avert morbidity and mortality related to HIV, and the resources HAART requires will reduce the expenditure of human and financial resources that would be needed for the treatment of AIDS-related conditions.

Antiretroviral therapy should include at least three drugs. Regimens containing only two drugs will at most give only a temporary response, since dual therapy is typically associated with only a partial suppression of viral replication. The exposure of replicating virus to antiretroviral agents promotes the development of resistance to those agents (or in some cases to the entire class of agents). The response to monotherapy is even more short-lived, due to the rapid development of drug resistance.

### **Conditions for antiretroviral (ARV) agents**

The conditions necessary to introduce antiretroviral (ARV) agents are:

- access to functioning and affordable health services and support networks into which ARV treatments can be integrated so that they are provided effectively;
- information and training on the safe and effective use of ARVs for health professionals in a position to prescribe them;
- a capacity to diagnose HIV infection and to diagnose and treat concomitant illnesses;
- assurance of an adequate supply of drugs of acceptable quality;
- identification of enough resources to pay for treatment on a long-term basis; patients must be aware that treatment is “for life”, and released prisoners will need to be connected to HIV-related health services to ensure continuity of care;
- functioning laboratory services for monitoring, including routine haematological and biochemical tests to detect toxicities;
- assured access to voluntary HIV counselling and testing (VCT) and follow-up counselling services, including counselling on the necessity of adherence to treatment.

### **Palliative care for HIV/AIDS patients**

In AIDS there may be no clear transition between active treatment and palliative care. If the time between diagnosis and death is considered as a continuum, in general the initial period of care will concentrate on disease-specific treatment whereas the final period of care will concentrate on comfort and supportive treatment. Palliative care is



holistic, aiming to meet the physical, psychological, social and spiritual expectations and needs of the person and his/her family. People living with HIV/AIDS generally value autonomy and self-determination, asserting their right to be involved in decision-making.

### **Compassionate release of terminally ill prisoners**

Many governments have introduced compassionate release programmes to allow terminally ill inmates to be released early. AIDS is a terminal illness in the sense that death may be averted or delayed only with triple drug antiretroviral regimens. In the absence of such treatments, or in the absence of optimal treatments for the opportunistic illnesses associated with AIDS, patients will have a drastically reduced life expectancy. Such patients should be considered terminally ill and be considered for compassionate early release from prison. Compassionate release of terminally ill prisoners is recommended by the WHO 1993 Guidelines (see Annex 1).

Some prisons have developed hospices for dying inmates. These employ a nurse as well as volunteer services from prison inmates to provide palliative care to the dying. Visitation rules are relaxed so that other prisoners or outside family members can spend time with their dying friends. The provision of palliative care by other prisoners has been highly rewarding for those providing the care.

### **Care for caregivers**

HIV/AIDS can be stressful for caregivers because of the youth of those dying, their complex care needs, dementia, and tension between active treatment and comfort care. The work environment may have scarce resources (and there may be disagreement over their allocation), and there may be communication problems among the team providing care.

Manifestations of stress include avoidance of patients/families, grief overload, anxiety and fear, job/home interaction, punitive behaviour, feelings of hopelessness or impotence, feelings of guilt associated with iatrogenic illness, staff conflict, and health problems. If a

caregiver is allowed to progress to burn out, emotional exhaustion, depersonalization and reduced personal accomplishment can be seen.

Coping with stress for the caregivers has implications at organizational and individual levels. The organization should allow caregivers to assume roles across a continuum of care, avoid work overload, provide some time away from direct caregiving, hold regular discussion groups to deal with staff stress issues, and involve team members in decisions about changes to the work environment. On the individual level, caregivers should avoid excessive involvement since it may preclude objective counselling, advice and medical care. They should recognize that anger directed at them should not be taken personally, be aware of the risks of emotional exhaustion from immersion in caregiving, and avoid allowing AIDS to dominate their lives.

## Part B

### Management of specific clinical conditions

### Staging and monitoring of HIV/AIDS

The clinical staging of HIV infection proposed by WHO is summarized in Table 4. Combining the WHO clinical stage and either the CD4+ lymphocyte count or the total lymphocyte count yields a composite stage which can help in making a more accurate prognosis than using the clinical stage or CD4+/lymphocyte count alone. Composite stages I to IV are indicated with different shadows at the bottom of Table 4, and their prognosis is in Table 5. (HIV-related conditions fall into the *International statistical classification of diseases and related health problems*, 10th revision (ICD-10) codes B20 to B24 inclusive, but this classification is not intended for clinical staging of HIV disease and is therefore less useful to the clinician than the WHO clinical staging.)

Table 4. WHO clinical stages, plus composite stages with CD4+ and total lymphocyte counts

Stage 1	Stage 2	Stage 3	Stage 4
1. Asymptomatic HIV infection 2. Persistent generalized lymphadenopathy (PGL) with nodes in $\geq 2$ extranodal sites, at least 1 cm in diameter for $\geq 3$ months 3. Acute (primary) HIV illness	4. Unintentional weight loss, $<10\%$ body weight 5. Minor mucocutaneous manifestations (e.g. seborrheic dermatitis, fungal nail infections, oropharyngeal ulcerations, angular cheilitis, prurigo) 6. Herpes zoster, within the previous 5 years	8. Unintentional weight loss $>10\%$ of body weight 9. Chronic diarrhoea $>1$ month 10. Prolonged fever ( $38.5^{\circ}$ ; intermittent or constant) $>1$ month 11. Candidiasis, oropharyngeal 12. Oral hairy leukoplakia 13. Pulmonary tuberculosis (typical or atypical) within the previous year	16. Wasting syndrome due to HIV 17. Pneumocystis carinii pneumonia 18. Toxoplasmosis, cerebral 19. Cryptosporidiosis, chronic intestinal ( $>1$ month) 20. Isosporiasis, chronic, $>1$ month 21. Cryptococcosis, extrapulmonary 22. CMV retinitis, or CMV in other than liver, spleen, nodes 23. Herpes simplex with mucocutaneous ulcer $>1$ month or visceral (any duration)

Stage 1	Stage 2	Stage 3	Stage 4
	7. Recurrent upper respiratory infections (e.g. bacterial sinusitis)	14. Severe bacterial infections (e.g. pneumonia, pyomyositis) 15. Candidiasis, vulvovaginal; persistent >1 month, or poorly responsive  The above must be attributed to HIV infection or have a clinical course complicated by HIV	24. Progressive multifocal leukoencephalopathy 25. Coccidioidomycosis, extrapulmonary, histoplasmosis: disseminated, extrapulmonary; any other disseminated endemic mycosis 26. Candidiasis: trachea, bronchi, lungs, oesophagus 27. Atypical mycobacteriosis (e.g. <i>M. avium</i> or <i>M. Kansasi</i> ), disseminated 28. Non-typhoid salmonella septicaemia 29. Tuberculosis, extrapulmonary 30. Lymphoma 31. Kaposi's sarcoma 32. HIV encephalopathy
Performance scale I: asymptomatic, normal activity	Performance scale II: symptoms, but nearly fully ambulatory	Performance scale III: in bed <50% of normal day-time, but >normal in previous month	Performance scale IV: in bed >50% of normal daytime during previous month
CD4+ >500 LC >2000	CD4+ >500 LC >2000	CD4+ >500 LC >2000	CD4+ >500 LC >2000
CD4+ 200–500 LC 1000–2000	CD4+ 200–500 LC 1000–2000	CD4+ 200–500 LC 1000–2000	CD4+ 200–500 LC 1000–2000
CD4+ <200 LC <1000	CD4+ <200 LC <1000	CD4+ <200 LC <1000	CD4+ <200 LC <1000

The rates of progression to composite stage IV and survival rates may vary from one setting to another. The example reported in Table 5 shows how the WHO clinical stage and CD4+/lymphocyte count predicted disease progression and survival in Vancouver, Canada, before the widespread use of antiretroviral drugs.

Table 5. Composite stage, progression to composite stage IV and overall survival

Composite stages	Progression and survival
Composite stage I	55.8% progress at 6.7 yrs 74.2% survive at 7.6 yrs
Composite stage II	59.4% progress at 5.9 yrs 72.4% survive at 6.7 yrs
Composite stage III	66.2% progress at 5.8 yrs 51.5% survive at 6.6 yrs
Composite stage IV	37.8% survive at 3.5 yrs

Important notes about CD4+ counts and lymphocyte counts.

- There is a diurnal variation in CD4+ (= helper T cell) counts, averaging 60/mm<sup>3</sup> higher in the afternoon in HIV-positive individuals. Blood for sequential CD4+ counts or lymphocyte counts should be drawn at about the same time of day each time.
- The equivalence between CD4+ counts and CD4+ % of total lymphocytes circulating in peripheral blood is CD4+ ≥500 = ≥29%, CD4+ 200–499 = 14–28%, CD4+ <200 = <14%.
- Approximately 80% of the physiological variation in CD4+ counts is due to variations in the total (or absolute) lymphocyte count. This means that after one CD4+ count (and CD4+ %) the disease can be monitored with reasonable accuracy by repeating the total lymphocyte count.

### Prophylaxis of opportunistic diseases

Opportunistic diseases exact a great toll in terms of morbidity and mortality among severely immunocompromised patients. Although their incidence is lower when antiretroviral therapy is widely available, the prevention of these illnesses remains a priority for HIV-infected patients, both for improvement in quality of life and longer survival. The current consensus on the prophylaxis of opportunistic diseases is summarized in Table 6 (for the first episode) and Table 7 (for recurrent episodes). The tables include the alternative regimens which may be used if the treatment of choice is unavailable.

Table 6. Prophylaxis of opportunistic diseases in adults and adolescents infected with HIV (first episode)<sup>a</sup>

Pathogen	Preventive regimens		
	Indication	First choice	Alternatives
<b><i>I. Strongly recommended as standard of care</i></b>			
<i>Pneumocystis carinii</i>	CD4++ count <200/mL or oropharyngeal candidiasis <sup>b</sup>	Trimethoprim-sulfamethoxazole (TMP-SMZ) 1 single strength (SS) PO QD (SS = Trimethoprim 80 mg and sulfamethoxazole 400mg)	Dapsone 50 mg PO BID or 100 mg PO QD; dapsone 50 mg PO QD plus pyrimethamine 50 mg PO QW plus leucovorin, 25 mg PO QW; dapsone 200 mg PO plus pyrimethamine 75 mg PO plus leucovorin 25 mg PO QW; aerosolized pentamidine 300 mg QM via Respigard II nebulizer; atovaquone, 1500 mg PO QD; TMP-SMZ, 1 DS PO TIW
<i>Mycobacterium tuberculosis</i> <sup>c</sup>	TST reaction 5mm or prior positive TST result without treatment or contact with case of active tuberculosis	Isoniazid 300 mg PO plus pyridoxine 50 mg PO QD x 9 mo, or isoniazid 900 mg PO plus pyridoxine, 100 mg PO BIW x 9 mo; rifampin 600 mg PO plus pyrazinamide 20 mg/kg PO QD x 2 mo	Rifabutin 300 mg PO QD plus pyrazinamide 20 mg/kg PO QD x 2 mo, or rifampin 600 mg PO QD x 4 mo
Isoniazid-sensitive	Same; high probability of exposure to isoniazid-resistant tuberculosis	Rifampin 600 mg plus pyrazinamide 20 mg/kg PO QD x 2 mo	Rifabutin 300 mg PO plus pyrazinamide 20 mg/kg PO QD x 2 mo, or rifampin 600 mg PO QD x 4 mo or rifabutin 300 mg PO QD x 4 mo
Isoniazid-resistant	Same; high probability of exposure to multidrug-resistant tuberculosis	Choice of drugs requires consultation with public health authorities	None
Multidrug-(isoniazid and rifampin) resistant			

Pathogen	Preventive regimens		
	Indication	First choice	Alternatives
<i>Toxoplasma gondii</i>	IgG antibody to <i>Toxoplasma</i> and CD4+ count <100/mL	TMP-SMZ 1 double strength (DS) PO QD (DS = trimethoprim 160 mg and sulfamethoxazole 800 mg)	TMP-SMZ, 1 SS PO QD dapsone 50 mg PO QD plus pyrimethamine 50 mg PO QW plus leukovorin 25 mg PO QW; atovaquone, 1500 mg PO QD with or without pyrimethamine 25 mg PO QD plus leukovorin 10 mg PO QD
<i>Mycobacterium avium</i> complex	CD4+ count <50/mL	Azithromycin 1200 mg PO QW, or clarithromycin 500 mg PO BID	Rifabutin 300 mg PO QD; azithromycin 1200 mg PO QW plus rifabutin 300 mg PO QD
Varicella zoster virus (VZV)	Significant exposure to chickenpox or shingles for patients who have no history of either condition or, if available, negative antibody to VZV	Varicella zoster immune globulin (VZIG), 5 vials (1.25 mL each) IM, administered 96 h after exposure, ideally within 48 h	
<b>II. Generally recommended</b>			
<i>Streptococcus pneumoniae</i>	All patients	Pneumococcal vaccine 0.5 mL IM (CD4+ 200/mL; CD4+ <200/mL) might reimmunize if initial immunization was given when CD4+ <200/mL and if CD4+ increases to >200/mL on HAART	None
Hepatitis B virus	All susceptible (anti-HBvc-negative) patients	Hepatitis B vaccine: 3 doses	None

Pathogen	Preventive regimens		
	Indication	First choice	Alternatives
Influenza virus	All patients (annually, before influenza season)	Whole or split virus 0.5 mL im/yr	Rimantadine 100 mg PO BID, <i>or</i> amantadine 100 mg PO BID
Hepatitis A virus	All susceptible (anti-HAV-negative) patients with chronic hepatitis C	Hepatitis A vaccine: two doses	None

<sup>a</sup> The information given in Table 6 reflects current international standards. The intention is to offer a full range of possible preventive regimens from which medical doctors may choose, depending on their particular situation and the resources available.

<sup>b</sup> Prophylaxis should also be considered for persons with a CD4+ percentage of <14%, for persons with a history of an AIDS-defining illness, and possibly for those with CD4+ counts >200 but <250 cells/mm<sup>3</sup>. TMP-SMZ also reduces the frequency of toxoplasmosis and some bacterial infections. Patients receiving dapson should be tested for glucose-6 phosphate dehydrogenase deficiency. A dosage of 50 mg QD is probably less effective than one of 100 mg QD. The efficacy of parenteral pentamidine (e.g. 4 mg/kg/month) is uncertain. Fansidar (sulfadoxine-pyrimethamine) is rarely used because of severe hypersensitivity reactions. Patients who are being administered therapy for toxoplasmosis with sulfadiazine-pyrimethamine are protected against *Pneumocystis carinii* pneumonia and do not need additional prophylaxis against PCP.

<sup>c</sup> These are current approaches to the treatment of latent tuberculosis infection in order to prevent the development of the active disease, although the feasibility of such treatments in the Russian penal system has not been determined. See Chapter 7 for a discussion of the treatment of latent tuberculosis.



Table 7. Prophylaxis of opportunistic diseases (after chemotherapy for acute disease) in adults and adolescents infected with HIV (recurrent episodes)

Pathogen	Preventive regimens		
	Indication	First choice	Alternatives
<b>I. Recommended for life as standard of care</b>			
<i>Pneumocystis carinii</i>	Prior <i>P. carinii</i> pneumonia <sup>a</sup>	Trimethoprim-sulfamethoxazole (TMP-SMZ), 1 DS PO QD	Dapsone 50 mg PO BID or 100 mg PO QD; dapsone 50 mg PO QD plus pyrimethamine 50 mg PO QW plus leucovorin 25 mg PO QW; dapsone, 200 mg PO plus pyrimethamine 75 mg PO plus leucovorin 25 mg PO QW; aerosolized pentamidine 300 mg QM via Respigard IIO nebulizer; atovaquone 1500 mg PO QD; TMP-SMZ 1 DS PO TIW
<i>Toxoplasma gondii</i>	Prior toxoplasmic encephalitis	TMP-SMZ 1 SS PO QD, Sulfadiazine 500–1000 mg PO QID plus pyrimethamine 25–75 mg PO QD plus leucovorin 10–25 mg PO QD	Clindamycin 300–450 mg PO Q6–8 h plus pyrimethamine 25–75 mg PO QD plus leucovorin 10–25 mg PO QD; atovaquone 750 mg PO Q6–12 h with or without pyrimethamine 25 mg PO QD plus leucovorin 10 mg PO QD
<i>Mycobacterium avium complex</i>	Documented disseminated disease	Clarithromycin 500 mg PO BID plus ethambutol 15 mg/kg PO QD; with or without rifabutin 300 mg PO QD	Azithromycin 500 mg PO QD plus ethambutol 15 mg/kg PO QD; with or without rifabutin 300 mg PO QD
<i>Cytomegalovirus</i>	Prior end-organ disease	Ganciclovir 5–6 mg/kg IV 5–7 days/wk or 1000 mg PO TID; or foscarnet 90–120 mg/kg IV QD; or (for retinitis) ganciclovir sustained-release implant Q6–9 mo plus ganciclovir 1.0–1.5 g PO TID	Cidofovir 5 mg/kg IV QOW with probenecid 2 g PO 3 h before the dose followed by 1 g PO given 2 h after the dose, and 1 g PO 8 h after the dose (total of 4 g). Fomivirsen 1 vial (330 mg) injected into the vitreous, then repeated every 2–4 wks

Pathogen	Preventive regimens		
	Indication	First choice	Alternatives
<i>Cryptococcus neoformans</i>	Documented disease	Fluconazole 200 mg PO QD	Amphotericin B, 0.6–1.0 mg/kg IV QW-TIW; itraconazole 200 mg PO QD
<i>Histoplasma capsulatum</i>	Documented disease	Itraconazole capsule 200 mg PO BID	Amphotericin B 1.0 mg/kg IV QW
<i>Coccidioides immitis</i>	Documented disease	Fluconazole 400 mg PO QD	Amphotericin B 1.0 mg/kg IV QW; itraconazole 200 mg PO BID
<i>Salmonella</i> species, (non-typhi)	Bacteremia	Ciprofloxacin 500 mg PO BID for several months	Antibiotic chemoprophylaxis with another active agent
<b>II. Recommended only if subsequent episodes are frequent or severe</b>			
Herpes simplex virus	Frequent/severe recurrences	Acyclovir 200 mg PO TID or 400 mg PO BID	Valacyclovir 500 mg PO BID
		Famciclovir 500 mg PO BID	
<i>Candida</i> (oropharyngeal or vaginal)	Frequent/severe recurrences	Fluconazole 100–200 mg PO QD	Itraconazole solution 200 mg PO QD; ketoconazole 200 mg PO QD
<i>Candida</i> (oesophageal)	Frequent/severe recurrences	Fluconazole 100–200 mg PO QD	Itraconazole solution 200 mg PO QD; ketoconazole 200 mg PO QD

<sup>a</sup> See note <sup>b</sup> under Table 6.

## Diagnosis and treatment of HIV-related diseases

Fig 3–6 show four diagnostic algorithms for immunocompromised HIV-infected patients presenting with:

- fever or night sweats
- cough or dyspnoea
- new onset headaches or CNS dysfunction
- diarrhoea.

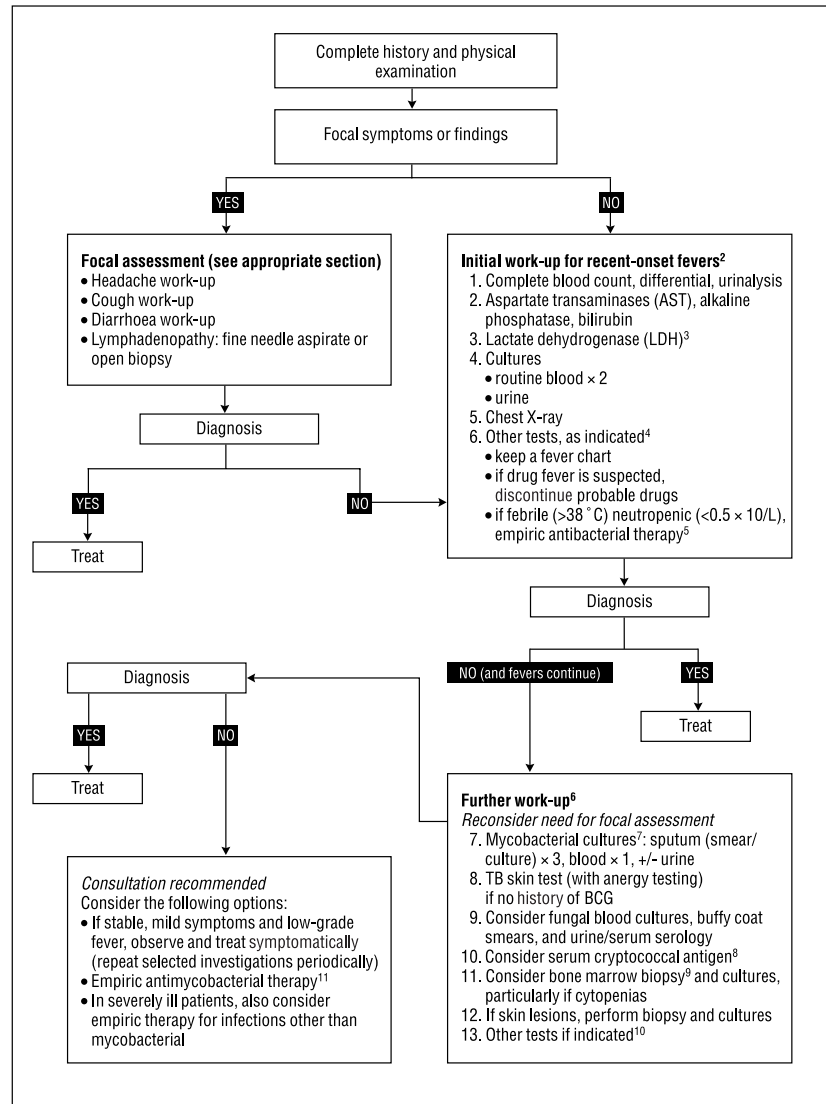
HIV-infected patients who are not immunocompromised are likely to present with the same spectrum of disease seen in the non-HIV-infected population. Many diseases seen in immunocompetent persons are not mentioned specifically in these algorithms.

Following the diagnostic algorithms are guidelines for the treatment of HIV/AIDS-related illnesses, including

- pulmonary diseases
- gastrointestinal diseases
- diseases of the mouth
- diseases of the oesophagus
- diseases of the bowel
- diseases of the liver
- neuropsychiatric diseases
- neurological diseases
- diseases of the eye
- dermatological diseases.

The differential diagnosis of HIV-related disease depends on the degree of immunosuppression as indicated by the CD4+ count. This is illustrated below for pulmonary diseases occurring in HIV-infected persons (Table 8), and for neurological diseases occurring in HIV-infected persons (Table 9).

Fig. 3. Presenting symptoms: fever and/or night sweats in immunocompromised HIV-infected patients<sup>1</sup>



## Notes:

1. If the patient is acutely ill or life-threatening infection is suspected, he/she should be hospitalized, investigated and empiric treatment considered. Unexplained fevers should not be attributed to HIV itself, because in most cases (82%) a cause (usually infection) can be identified.
2. Recent onset fevers (e.g. <1 week) may not require anymore than the "Initial Work-up". In the case of patients with more prolonged fevers and no obvious cause, investigations Nos. 1–13 should be proceeded with from the outset.
3. Elevation of serum lactate dehydrogenase (LDH) is non-specific but should prompt consideration of PCP, lymphoma, liver or muscle disease, toxoplasmosis, hemolytic anaemia, etc.
4. Other investigations may be appropriate in some patients, e.g. if there has been significant exposure to animals or birds (serology for Q-fever, psittacosis, brucellosis), a travel history (malaria smears), or suspicion of endocarditis (echocardiogram, endocarditis-protocol blood cultures).
5. Broad-spectrum antibacterial therapy, e.g. imipenem, or ceftazidime or combination therapy (antipseudomonal beta-lactam + aminoglycoside). Among HIV patients who develop febrile neutropenia, bacteremia is documented in approximately 12–16% and is usually caused by gram-negative rods (45%) or *Staphylococcus aureus* (22%).
6. The time between "initial" (1–6) and "further" (7–13) work-up depends upon the severity of illness. In a moderate to severely ill hospitalized patient, "initial" and "further" work-up should be carried out simultaneously in consultation with a qualified specialist (e.g. in AIDS or infectious diseases).
7. Mycobacterial blood cultures are mainly indicated for patients with CD4+ <50/mm<sup>3</sup> who also have one or more of the following: (i) a history of prolonged fevers (>30 days during the previous 3 months), (ii) hematocrit <30%, or (iii) serum albumin <30 g/L. One blood culture may be inadequate. Positive results may require up to 4–6 weeks incubation, although median time to positivity is ~10 days. Repeat mycobacterial blood cultures may be needed periodically (e.g. after a few weeks) if unexplained fevers continue. Radiographically clear lung fields do not exclude pulmonary tuberculosis in HIV-infected patients. If a respiratory tract specimen or lymph node is smear-positive for acid-fast bacilli (AFB), the patient should be treated for *M. tuberculosis* pending culture results.
8. Cryptococcosis is less likely if the patient has been receiving long-term daily systemic azole (ketoconazole, itraconazole or fluconazole) for e.g. mucosal candidiasis. Serum cryptococcal antigen is quite sensitive for extrapulmonary cryptococcosis; sensitivity >95% for cryptococcal meningitis.
9. A bone marrow (BM) biopsy may detect mycobacterial infection, cryptococcosis (easier by serum antigen test), toxoplasmosis or lymphoma. For HIV-positive patients, a diagnosis of opportunistic infection has been made on BM biopsy in 25% of cases when the indications for biopsy were fever of unknown origin or cytopenias (neutropenia or anaemia).

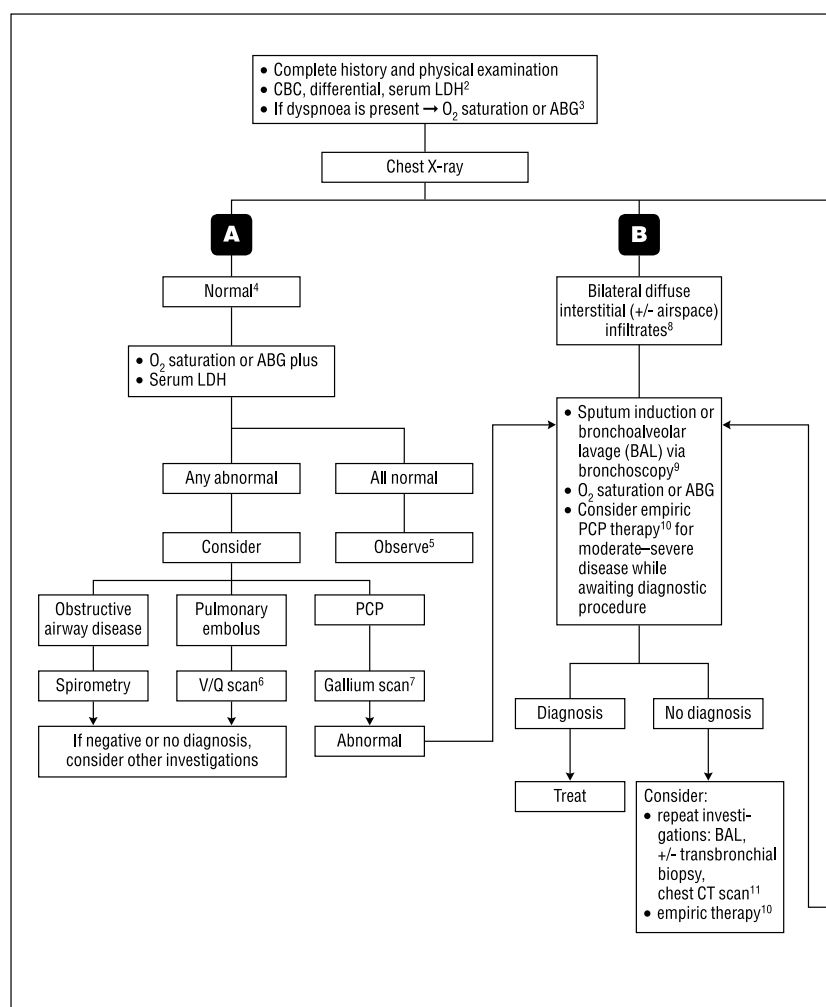
10. Other tests which may be appropriate include:

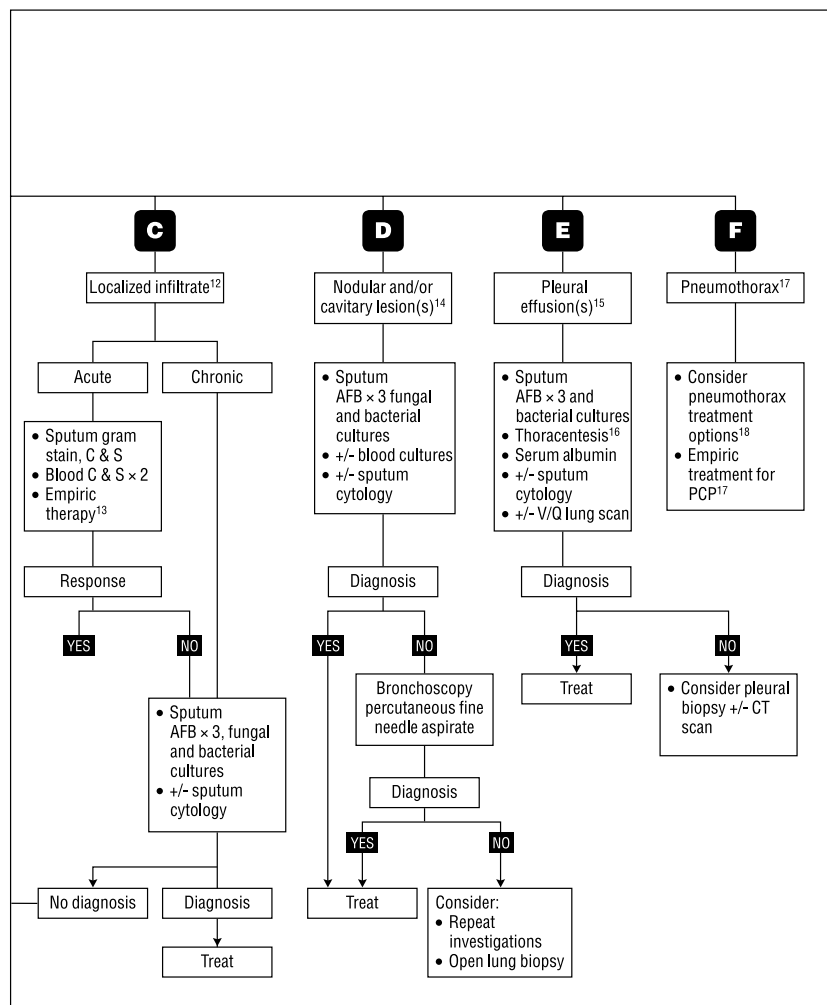
- gallium scan, technecium bone scan, indium scan;
- abdominal ultrasound or CT scan, serum amylase;
- gastroenterology evaluation with upper gastrointestinal (GI) endoscopy, sigmoidoscopy and biopsies;
- needle or open biopsy for histology and cultures of any lesions identified by imaging;
- lysis-centrifugation blood culture for fastidious organisms;
- positive toxoplasmosis serology (IgG) – this identifies a patient at risk for reactivation disease; occasionally toxoplasmosis presents as disseminated infection with a sepsis-like syndrome;
- ANA, rheumatoid factor, creatine kinase (CK) (+/- rheumatology consultation).

Liver biopsy may be helpful in HIV patients with unexplained fever and elevated liver enzymes.

11. Empiric therapy for tuberculosis as for HIV-negative patients should be considered (e.g. febrile illness plus unexplained granulomas on bone marrow biopsy). Some clinicians offer empiric therapy for MAC to patients with advanced HIV disease ( $CD4^+ < 50 \text{ cells/mm}^3$ ) and prolonged unexplained fever. However, no studies have evaluated the usefulness of this approach. Ethambutol and rifampin are considered first line drugs against both *M. tuberculosis* and *M. avium*, but INH and pyrazinamide are not active against *M. avium*.

Fig. 4. Cough and/or dyspnoea in immunocompromised HIV-infected patients<sup>1</sup>







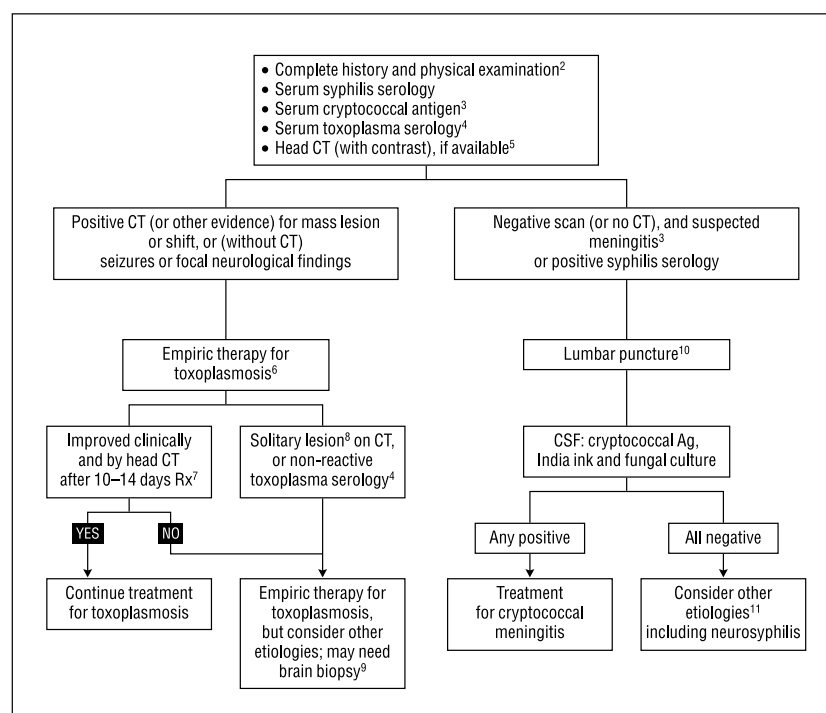
## Notes:

1. A recent (within 3–6 months) absolute CD4+ lymphocyte count is needed to determine the degree of immunodeficiency in patients without prior AIDS-defining diseases. Most episodes of PCP occur in patients with absolute CD4+ counts of  $<200/\text{mm}^3$  ( $0.2 \times 10^9/\text{L}$ ), and rarely if the CD4+ count is  $>300/\text{mm}^3$ .
2. Serum lactate dehydrogenase (LDH) supports the diagnosis of PCP and is elevated in 95% of patients. However, this is non-specific as it may also be associated with other conditions, including pulmonary embolism, hemolysis, lymphoma, AZT therapy, cardiac or hepatic injury, or disseminated toxoplasmosis.
3. Oxygen saturation or arterial blood gases (ABG) should be done in dyspnoeic patients. ABGs may demonstrate hypoxemia, increased A-aO<sub>2</sub> gradient or acid-base disturbance. O<sub>2</sub> saturation on room air is considered abnormal if  $<97\%$ , or if the O<sub>2</sub> desaturation with exercise is  $>5\%$ . Single breath diffusing capacity for carbon monoxide (DLco) is another measure of pulmonary function that is usually abnormal ( $<80\%$  of predicted) in PCP, but often not readily available.
4. Differential diagnosis includes PCP, pulmonary embolus, obstructive airway disease, bronchitis, bronchiectasis, metabolic acidosis and respiratory alkalosis.
5. If O<sub>2</sub> saturation and serum LDH are normal, ABGs should also be done to exclude acid-base disturbance if the patient is dyspnoeic. In severely immunosuppressed patients, atypical presentation of tuberculosis should be considered.
6. A ventilation-perfusion (V/Q) lung scan should be made to investigate pulmonary embolic disease, which is more common in HIV-infected patients.
7. A gallium scan characteristically shows increased bilateral diffuse uptake in PCP. However, this is non-specific. Isolated perihilar or mediastinal uptake suggests other diagnoses (e.g. mycobacterial disease or lymphoma). Pulmonary Kaposi's sarcoma (KS) may sometimes mimic PCP, although KS lesions do not show increased uptake of gallium.
8. Differential diagnosis includes PCP, viral pneumonia (e.g. influenza, occasionally CMV), *Mycoplasma* (and other agents of atypical pneumonitis), lymphoid interstitial pneumonia, non-specific interstitial pneumonitis, pulmonary oedema, adult respiratory distress syndrome, and occasionally bacterial pneumonia, tuberculosis, cryptococcosis, histoplasmosis or toxoplasmosis.
9. Sputum induction is specific but less sensitive than BAL for diagnosis of PCP. Specimens should be examined for bacteria (gram stain), PCP (toluidine blue, or methenamine silver, etc.), AFB (Ziehl-Neelsen stain, or auramine-rhodamine) and fungi (lactophenol cotton blue) and cytology. Bacterial, mycobacterial, and possibly viral and fungal cultures are indicated. Diagnosis of PCP is more difficult in patients receiving aerosol pentamidine because of more frequent atypical radiological and gallium scan findings.
10. Empiric therapy in patients with bilateral diffuse interstitial (+/- airspace) infiltrates should be directed against PCP (if the CD4+ count is  $<300$  cells/ $\text{mm}^3$ ) and/or other agents of atypical pneumonitis (*Mycoplasma*, etc.). One such regimen may be trimethoprim-sulfamethoxazole with or without erythromycin.

11. A chest CT scan may be of some help in differentiating HIV-related pulmonary disorders, but requires an experienced observer.
12. Differential diagnosis includes bacterial, mycobacterial or fungal pneumonia, PCP, pulmonary infarction and malignancy (Kaposi's sarcoma, lymphoma). In 10% of HIV+ patients with bacterial pneumonia there is concomitant PCP.
13. Culture and sensitivities of sputum and blood should be obtained if the presentation is compatible with acute bacterial pneumonia, then empiric therapy directed against predominant organism (if seen) on sputum gram stain. If sputum gram stain is unhelpful/unavailable, empiric treatment should be given vs community-acquired pathogens (e.g. pneumococcus, *Hemophilus influenza*, *Moraxella catarrhalis*, *Staphylococcus aureus* and agents of atypical pneumonitis such as *Mycoplasma* or *Legionella*) with cefuroxime or trimethoprim-sulfamethoxazole (TMP-SMX) (+/- erythromycin). TMP-SMX is an ideal choice when PCP remains a consideration (N.B. high dose TMP-SMX is required for PCP). If hospital-acquired pneumonia is present, empiric treatment should be given vs nosocomial pathogens (e.g. Enterobacteriaceae, *Pseudomonas*, *S. aureus*) with imipenem, or piperacillin, or 3rd generation cephalosporin or ticarcillin clavulanate, in combination with an antipseudomonal aminoglycoside.
14. Differential diagnosis includes mycobacterial disease, fungal infections (e.g. aspergillosis, cryptococcosis, occasionally endemic mycoses), nocardiosis, necrotizing bacterial pneumonia, right-sided endocarditis, nocardiosis and malignancy. PCP may be associated with cystic lesions, pneumatoceles and thin-walled cavities (rarely thick-walled).
15. Differential diagnosis includes parapneumonic effusion or empyema, mycobacterial or fungal infection (e.g. cryptococcosis, aspergillosis), hypoalbuminemia, congestive heart failure, malignancy (e.g. Kaposi's sarcoma) and occasionally pulmonary embolism.
16. Thoracentesis specimens should be sent for: cell count and differential (in anticoagulated tube), pH; glucose; LDH, protein, gram stain, cultures (aerobic/anaerobic, mycobacterial, fungal, +/- viral) and cytology. Serum LDH, total protein and glucose should also be obtained.
17. Pneumothorax develops in approximately 2% of AIDS patients, more frequently among those with a history of PCP and particularly in patients receiving aerosol pentamidine prophylaxis at a time when PCP develops. Patients receiving aerosol pentamidine who develop pneumothorax should receive empiric treatment for PCP.
18. Treatment options for pneumothorax include:
  - observation;
  - chest tube;
  - pleurodesis, e.g. pleural space instillation of tetracycline, bleomycin or talc (this is often unsuccessful).

If a bronchopleural fistula develops with persistent pneumothorax, the following should be considered: bronchoscopy-directed plugging of the involved bronchus; pleuroscopic repair; thoracotomy with resection of involved lung, or pleural stripping. If thoracotomy is considered, a CT scan of the chest is needed beforehand to screen for the presence of bilateral disease (e.g. subpleural blebs) which may indicate the need for bilateral pleural stripping.

Fig. 5. Presenting symptoms: new or worsening headaches or CNS dysfunction in immunocompromised HIV-infected patients<sup>1</sup>

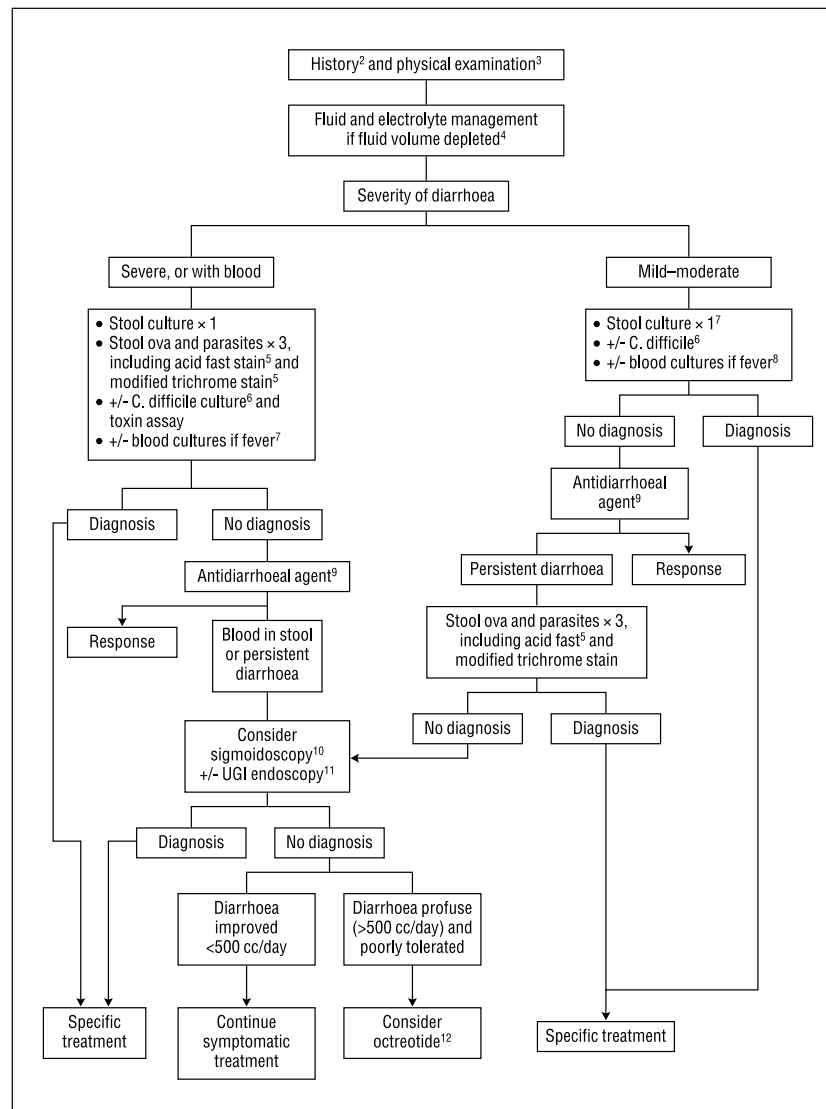


Notes:

- Opportunistic infections (e.g. cryptococcosis, toxoplasmosis) or neoplasms (primary lymphoma) involving the central nervous system usually only occur in advanced HIV disease associated with severe CD4<sup>+</sup> lymphopenia (i.e. <200/mm<sup>3</sup>).
  - Differential diagnosis of CNS focal or mass lesions includes toxoplasmosis, lymphoma, progressive multifocal leukoencephalopathy (PML), and occasionally vascular disorders, syphilis, aspergillosis, cryptococcoma, tuberculoma or viral encephalitis (CMV, HSV, VZV).
  - Differential diagnosis of diffuse brain disease (without meningitis) is dependent upon whether alertness is preserved (e.g. AIDS dementia complex) or depressed (e.g. metabolic/toxic encephalopathies, encephalitic toxoplasmosis, and CMV or Herpes encephalitis).
- Neuropsychological evaluation may also be indicated regarding AIDS dementia complex.
- Serum cryptococcal antigen assay (CRAG) is a rapid, accurate and non-invasive method for identifying cases of cryptococcal meningitis among HIV-infected patients presenting with headache or other neurological symptoms and signs.

- N.B. Most patients with cryptococcal meningitis do not have meningismus.
  - The results of serum CRAG may be available well before CT and lumbar puncture. Moderate to severely ill patients with a positive serum cryptococcal antigen may be started on empiric systemic antifungal therapy if significant delays are anticipated in completing other investigations, since CSF cultures and antigen titers remain positive at least during the first few days or weeks of treatment.
4. Toxoplasma serology. AIDS-related *Toxoplasma* encephalitis (TE) is usually a reactivation disease, and serum serology for toxoplasmosis (IgG) is useful for identifying those with previous infection and therefore at risk for reactivation. TE develops in 38% of AIDS patients who are seropositive for *Toxoplasma* antibodies (IgG). In acute AIDS-related TE a 4-fold rise in IgG or positive IgM titer are usually absent. However, the IgG titer is positive in approximately 84–97% of cases, and in association with typical neuroradiographic findings may have a predictive value for the diagnosis of acute TE as high as 80%. Seronegative patients with solitary lesions on a head scan should be considered for early brain biopsy but treated empirically for toxoplasmosis while waiting for a definitive diagnosis.
  5. Computerized tomography (with contrast):
    - Should be done urgently, particularly in patients with obtundation, focal neurological findings, papilledema or seizures.
    - Other patients presenting with an acute onset of fever and headache associated with neck stiffness (compatible with acute bacterial meningitis) should have a lumbar puncture performed as the initial investigation, provided there are no contraindications (e.g. papilledema, focal neurological deficit or coagulopathy). In such patients, delays involved in obtaining a CT scan before lumbar puncture and delay in the initiation of empiric antimicrobial therapy may adversely affect outcome.
    - Patients presenting with headache alone or in association with lethargy and confusion should have CT as the initial investigation. However, if unacceptable delays (as judged by the urgency of the clinical situation) are involved in obtaining the CT scan, lumbar puncture should be considered, provided there are no contraindications.
    - Sinusitis is common in HIV-infected individuals and may be asymptomatic. Radiological findings of sinusitis may be incidental in the HIV-infected patient with headache, and co-existent, unrelated intracranial pathology may still need to be excluded.
  6. Empiric therapy should be started if clinical presentation and enhanced CT are compatible with a diagnosis of CNS toxoplasmosis. Steroids should be reserved for patients with life-threatening cerebral oedema related to mass lesions. Steroid treatment may be associated with improvement in primary CNS lymphoma and therefore confuse the results of empiric therapy for toxoplasmosis.
  7. A stereotactic brain biopsy sooner should be considered (for diagnoses other than toxoplasmosis) if further clinical deterioration is noted by day 7 or there is no response after day 10 of empiric therapy.

8. Multiple lesions demonstrated by CT most likely indicate toxoplasmosis (63%) rather than lymphoma (23%) or PML (14%). Solitary lesion on CT usually indicates lymphoma (40%), toxoplasmosis (36%) or PML (24%).
9. A stereotactic brain biopsy is usually not appropriate for patients whose general medical condition and short-term prognosis are poor. Brain biopsy specimens should be examined for cultures and histology. If routine histology is negative, immunoperoxidase or electron microscopy may demonstrate *Toxoplasma* antigens or organisms, respectively. Diagnosis of lymphoma should be confirmed by tissue biopsy. Radiation therapy of primary CNS lymphoma is associated with improvement or stabilization of disease in 85% of patients, but cannot be recommended empirically in patients not responding to empiric therapy for toxoplasmosis.
10. Lumbar puncture should include opening pressure measurement, cell counts, glucose, protein, gram stain, India ink smear, AFB stain, VDRL, cryptococcal antigen titre, cultures (bacterial, fungal, mycobacterial, +/- viral) and cytology. Simultaneous blood glucose should be obtained.
11. Differential diagnosis includes tuberculous meningitis, bacterial meningitis (including *Listeria monocytogenes*), aseptic meningitis (HIV), neurosyphilis, HIV dementia, *Herpes simplex* or CMV encephalitis, bacillary angiomatosis, metabolic encephalopathy, Wernicke's encephalopathy, and thrombotic thrombocytopenic purpura.

Fig. 6. Diarrhoea in immunocompromised HIV-infected patients<sup>1</sup>

## Notes:

1. Opportunistic infections involving the gastrointestinal tract such as *Mycobacterium avium*, cytomegalovirus or symptomatic microsporidiosis usually occur in patients with absolute CD4+ counts <100 cells/mm<sup>3</sup>. Cryptosporidiosis is infrequently self-limited if the CD4+ count is <200 cells/mm<sup>3</sup>.
2. The patient should be asked about his/her:
  - use of diarrhoea-inducing drugs and caffeinated beverages;
  - recent antibiotic use (*C. difficile*);
  - sexual orientation (homosexual men are at risk for proctitis due to *Herpes simplex*, gonococcus, *Chlamydia* and syphilis);
  - ingestion of inadequately cooked seafood (e.g. *Vibrio*, Norwalk-like viruses);
  - travel to tropical areas (e.g. enterotoxigenic *E. coli*, *Giardia*, *E. histolytica*, *Strongyloides*, Norwalk-like viruses or rotavirus, and invasive bacterial infections);
  - bloody diarrhoea (e.g. *E. coli* 0157, amebiasis, *Campylobacter*, CMV, *Shigella*).
3. Physical examination should include assessment of intravascular volume, including supine/standing blood pressure and pulse and jugular venous pressure.
4. Initial management for fluid volume-depleted patients should be oral or intravenous fluids and electrolytes. A simple oral rehydration solution consists of: 1 level teaspoon of table salt, plus 4 heaped teaspoons of sugar added to 1 litre of water. A volume equivalent to 5–7% of body weight should be given for mild to moderate dehydration.
5. Stool acid fast staining is needed for identification of *Cryptosporidium*, *Isospora belli* and *Cyclospora*. Immunofluorescent methods (or ELISA) are more sensitive for cryptosporidiosis but are more expensive and may be associated with false positive results. Stool smear for acid fast bacilli is not routinely recommended because of variable results of sensitivity and specificity for true mycobacterial infection vs colonization. Positive stool smear may be more likely than mycobacterial stool culture to reflect invasive infection rather than colonization.  
  
Modified trichrome stain (mainly indicated if the CD4+ count is <100 cells/mm<sup>3</sup>) is the optimal method for light microscopy identification of microsporidia in stool and duodenal aspirate samples.  
  
*Entamoeba histolytica* is a nonpathogenic commensal in most infected homosexual men, and rarely causes invasive colitis in AIDS patients.
6. If there has been recent antibiotic use, a *C. difficile* culture and toxin assay should also be included.
7. A cost analysis study suggested that the initial investigation of mild to moderate AIDS-related diarrhoea should be limited to a stool culture and that other investigations (possibly expensive and associated with patient

discomfort) could be reserved for those with a negative stool culture and persistent diarrhoea despite symptomatic antidiarrhoeal treatment. Initial evaluation should include of stools for ova and parasites (see note 5) three times a day if the presentation is chronic diarrhoea or suggests small bowel-type diarrhoea (large volume, significant weight loss, etc.).

8. Routine blood cultures should be obtained in patients with fever and diarrhoea to exclude bacteremia due to *Salmonella*, *Shigella* and *Campylobacter*. Salmonellosis is 20 times more common in AIDS patients and 5 times more likely to be associated with bacteremia than in the general population. Mycobacterial blood cultures are indicated if persistent or recurrent fever develops in association with CD4+ lymphopenia (i.e. <50–100 cells/mm<sup>3</sup>).
9. The antidiarrhoeal agent of choice is loperamide (imodium), which is not associated with narcotic dependency, although this may occur with diphenoxylate. Diarrhoea and abdominal cramps respond earlier with loperamide than bismuth subsalicylate. Antimotility agents should usually be avoided in patients with fever or bloody stools, because they may worsen dysentery due to *Shigella* or *C. difficile*. Loperamide dosing: 4 mg initially, then 2 mg after each unformed stool (maximum 16 mg/day). When the daily dose is established, it may be given as 1–4 divided doses/day. Other symptomatic approaches include tincture of opium and attapulgite.
10. Mainly indicated for patients with large bowel-type of diarrhoea (i.e. frequent, small volume, +/- blood or mucous). Sigmoidoscopy specimens should include wet mount (*Entameba histolytica*). Biopsies are obtained for pathology, viral (CMV, adenovirus, *Herpes simplex*) and mycobacterial culture. Barium enema and colonoscopy are seldom useful for the investigation of chronic diarrhoea in HIV-infected people. Colonoscopy and biopsy may be helpful in patients with persistent undiagnosed large bowel-type of diarrhoea.
11. Upper gastrointestinal endoscopy is mainly indicated for patients with symptoms suggestive of small bowel-type of diarrhoea (i.e. large volume, watery) or malabsorption. Duodenal fluid specimens should be sent promptly for parasitology (wet mount, acid fast and modified trichrome stains), and biopsies for H & E, acid fast, +/- Giemsa stains looking primarily for protozoa (microsporidia, *Isospora*, *Giardia*), mycobacteria and CMV.
12. Octreotide is a synthetic analogue of somatostatin, and in dosages of 50–500 µg subcutaneously three times daily may provide benefit in severe refractory AIDS-associated watery diarrhoea, particularly when no pathogens have been identified.



Table 8. Course of pulmonary diseases and HIV infection in adults

Any CD4+ (0–1000)	CD4+ <200	CD4+ <100	CD4+ <50
Community-acquired pneumonia; tuberculosis; coincidental non-HIV-1 associated causes	←Any of these plus: Pneumocystis carinii pneumonia; Kaposi's sarcoma; Nocardiosis	←Any of these plus: Cryptococcosis; Coccidioidomycosis; Histoplasmosis	←Any of these plus: Aspergillosis M. avium

Table 9. Course of neurological disease and HIV infection in adults

Any CD4+ (0–1000)	CD4+ <500	CD4+ <200	CD4+ <100	CD4+ <50
HIV aseptic meningitis; (S. pneumoniae, H. influenzae, N. meningitidis); TB meningitis CNS syphilis; Nucleoside toxicity (ddl, ddC, d4T, 3TC); Acute retroviral syndrome may include neuro-pathic manifestations (headache, retroorbital pain, pain on EOM, photophobia (30%), meningo-encephalitis, peripheral neuropathy)	←Any of these plus: Herpes zoster; Mononeuritis multiplex	←Any of these plus: AIDS dementia complex; Coccidioides or Histoplasma meningitis	←Any of these plus: Cryptococcosis; Toxoplasmosis	←Any of these plus: Progressive multifocal leukoencephalopathy (PML); Primary CNS lymphoma; CMV mononeuritis multiplex; encephalitis

## Management of HIV-associated diseases

### Respiratory diseases

#### *Sinusitis*

Chronic or recurring sinusitis is a common problem in HIV-infected patients and is often difficult to eradicate. Close follow-up is essential.

- Ampicillin or trimethoprim-sulfamethoxazole are good first-line choices. Gram-negative organisms, such as *Pseudomonas aeruginosa* and *E. coli*, are isolated more frequently as immunodeficiency worsens.
- Symptomatic treatment may include topical decongestants (applied with the head well back), steam, saline irrigation or (occasionally) surgical drainage.
- Sinus X-rays or CT scan may be indicated, particularly if the patient is not responsive to therapy.

Bronchitis usually responds to conservative treatment with broad-spectrum antibiotics, such as ampicillin or tetracycline. *Haemophilus influenzae* is a common pathogen. Non-response to conservative treatment should prompt a more aggressive work-up, which may include a specialist consultation. Wheezing, alone or associated with bronchitis, is common; an asthma-like syndrome has been noted to occur with increased frequency as HIV infection progresses. This should be treated symptomatically.

#### *Pneumonia*

Managing opportunistic pulmonary infections usually involves consulting a pulmonologist or infectious diseases specialist who is experienced with these diseases.

#### *Pneumocystis carinii* pneumonia (PCP)

Suspected PCP should be aggressively investigated and treated.

PCP classically presents with cough, dyspnoea and fever, but the presentation may be very subtle. Anorexia or fatigue may be the only symptom. There may also be chest pain, and a productive or non-productive cough. It typically presents in an individual with a CD4+

count below 200 cells/mm<sup>3</sup>, but can occasionally occur even with the CD4+ count over 500 cells/mm<sup>3</sup> or during the seroconversion illness.

The classic chest X-ray abnormality is a bilateral diffuse interstitial pattern. However, a normal chest X-ray does not exclude PCP and further evidence must be sought; an abnormal oxygen saturation (particularly during exercise), gallium scan, or diffusing capacity should increase the index of suspicion. An elevated serum lactate dehydrogenase (LDH) is characteristic of PCP and the degree of elevation generally correlates with the severity of the disease and therapeutic response. It should be noted that dapsone may increase LDH levels through hemolysis.

Specific diagnosis of PCP relies on identification of the organism in a stain of induced sputum or bronchial washings and is particularly important in an initial, severe recurrent, or a presumed episode of PCP that fails to respond to therapy.

Therapy may be started before diagnostic confirmation, as this is not dependent on the culture of live organisms. *Pneumocystis carinii* will remain detectable by stain for several days after the initiation of therapy although the sensitivity of this diagnostic procedure may be reduced.

Diagnosis and treatment of PCP should be carried out under the guidance of an experienced physician. Induced sputum and bronchoscopy with bronchoalveolar lavage are most commonly used to confirm a diagnosis of PCP. A typical presentation in the appropriate setting with a documented recent and isolated elevation in serum LDH may warrant empiric therapy under some circumstances. In such a case, resolution of the symptoms, signs, and laboratory abnormalities with specific therapy will provide confirmation of the diagnosis. Treatment depends on the severity of illness, as well as whether the patient is able to comply.

#### Severe PCP

Indications of severe PCP include dyspnoea at rest, pO<sub>2</sub> <70 mm Hg, oxygen saturation <90%.

Treatment should be given in hospital with oxygen, intravenous antimicrobials, adjunctive corticosteroids, and access to intensive care.

- Inpatient therapy consists of:
  - intravenous trimethoprim 20 mg/kg/day  
PLUS sulfamethoxazole 75–100 mg/kg/day in 4 divided doses
  - OR
  - intravenous pentamidine 4 mg/kg/day over 1–3 hours for the first 5 days and 3 mg/kg/day for the remaining course
  - OR
  - intravenous clindamycin 600 mg every 8 hours  
PLUS primaquine 15 mg orally daily.
- When the patient is no longer oxygen-dependent and can tolerate oral therapy, he/she should be switched to a form of outpatient therapy. The total duration of treatment is 14–21 days.
- High dose corticosteroids accelerate defervescence and decrease mortality in this setting.

Prednisone 50 mg/day in two divided doses for 5–7 days, half the initial dose for the next 5–7 days, and a quarter of the initial dose for a final 5–7 days. Prednisone therapy should be continued until antimicrobial therapy is discontinued. Early discontinuation of prednisone therapy has been associated with a rebound of signs and symptoms. Adjunctive corticosteroids may also be of benefit among patients with milder PCP.

- Patients who develop respiratory failure may benefit from a short period of intubation and ventilation.

#### Mild to moderate PCP

Inpatient therapy consists of antibiotic therapy as above, if intravenous therapy is required.

Outpatient treatment can be offered to the compliant patient if there are no other complicating problems.

- First line oral treatment consists of:
    - dapsone 100 mg once daily  
PLUS trimethoprim 200 mg 4 times daily for 14–21 days.
- Dapsone often produces a rash on day 8 or 9, which does not necessarily indicate allergy and can usually be treated

symptomatically. Dapsone may be associated with a haemolytic anaemia secondary to methemoglobinemia.

OR

- Trimethoprim-sulfamethoxazole 2 double strength tablets orally 4 times daily for 14–21 days.

Trimethoprim-sulfamethoxazole may cause significant gastrointestinal and bone marrow side effects, and causes allergic reactions in 25–50% of HIV-infected patients.

- Second line oral treatment consists of:
    - atovaquone 750 mg orally three times daily for 21 days for patients unable to tolerate trimethoprim-sulfamethoxazole.
- Atovaquone should be taken with meals to maximize its bioavailability. This agent is NOT recommended if there is concomitant diarrhoea or malabsorption.

OR

- clindamycin 450 mg orally 4 times daily PLUS primaquine 15 mg orally daily for 14–21 days.

All patients who have been treated for acute PCP must continue on secondary prophylaxis.

### Other pneumonias

The most common organisms giving rise to acute bacterial pneumonia are *S. pneumoniae*, *H. influenzae* and *S. aureus*. Investigations should include sputum for gram, acid fast, and PCP stains as well as for culture of bacteria, fungi, and mycobacteria (typical and atypical). Failure to isolate an organism in the patient who is not responding to empiric treatment should lead to early referral for bronchoscopy. Cefuroxime is a reasonable choice for empiric therapy.

Other opportunistic pulmonary infections may include Cytomegalovirus (CMV), *Mycobacterium avium* complex (MAC), *Toxoplasma gondii*, *Cryptococcus neoformans*, *Nocardia* species, *Rhodococcus* and *Aspergillus*.

The presence of CMV in bronchial washings cannot be taken to infer anything more than infection, but does not necessarily indicate the presence of disease. Diagnosis of CMV pneumonitis depends on

finding the organism in lung tissue on biopsy. Demonstration of CMV disease elsewhere may confirm the need for treatment without lung biopsy.

For *Mycobacterium tuberculosis* see Chapter 7. MAC seldom has a pulmonary presentation in HIV disease.

## **Gastrointestinal diseases**

### *Malnutrition*

A decreased calorie intake is common in HIV disease and can be due to a variety of factors including anorexia, oral disease, dysphagia and odynophagia. Patients often stop eating to avoid diarrhoea and abdominal pain. Gastroparesis and malabsorption due to bowel infections and/or HIV enteropathy may also contribute to the frequently observed malnutrition in advanced disease. Deficiencies of vitamin B6, vitamin B12, zinc and selenium are common.

As malnutrition progresses, it can further aggravate immune deficiency. Good nutritional support is, therefore, important in the management of patients with HIV disease.

Symptomatic patients should be referred early for nutrition counselling. Regular monitoring of the patient's weight is a sensitive indicator of nutritional status. Anorexia may require intermittent treatment with an appetite stimulant, such as megestrol acetate at a dose of 160 mg orally twice daily. Some patients may require parenteral or enteral supplementary nutrition.

## **Mouth**

HIV disease affects the mouth throughout the entire course of illness. Some oral conditions indicate declining immune function and increasing risk of progression to AIDS.

### *Candidiasis*

Candidiasis is the most common oral infection in HIV-infected patients and indicates declining immune function. Presentation of oral candidiasis (thrush) in an adult who is not otherwise immunocompromised should raise the suspicion of HIV infection. Persons with recurrent oral candidiasis are candidates for antiretroviral

therapy and PCP prophylaxis, regardless of their CD4+ count. Symptoms of oral candidiasis can vary. Soreness and burning of the mouth are common, often with an associated sore throat. Physical findings can range from reddened, denuded mucosa in a patchy distribution, through confluent areas of erythema, to white plaques that are adherent but can be wiped from the surface. The diagnosis can be missed, especially in those patients with erythematous or atrophic candidiasis. Hyperplastic candidiasis resulting in keratotic white plaques and invasive candidiasis resulting in ulceration are less common. Diagnosis is confirmed by observation of budding yeast and hyphae or pseudohyphae on KOH prep or gram stain. Oral candidiasis can progress to oesophageal involvement and may be complicated by herpes.

### Treatment

While topical agents generally are not as well tolerated and may be less effective than systemic therapy, they are usually less expensive and free of potential drug interactions. The normal duration of treatment is 7–14 days.

- Topical
  - clotrimazole vaginal tablets (100 mg) or troches (10 mg), dissolved in the mouth and swallowed three to five times daily
  - OR
  - nystatin vaginal tablets (100 000 units) dissolved in the mouth and swallowed or suspension (0.5–1.0 million units) swished and swallowed three to five times daily
  - OR
  - amphotericin B lozenges (10 mg) three to five times daily may be used when other alternatives fail.

Due to its high sugar content, which may actually encourage fungal growth as well as contributing to dental caries, nystatin suspension is not highly recommended.
- Systemic
  - ketoconazole 200 mg orally daily
  - OR
  - fluconazole 50–100 mg orally daily

OR

- itraconazole 100–200 mg orally daily (oral solution or capsules).

For suppressive therapy, titrate the antifungal agent to the minimum effective dosage.

- Topical

- clotrimazole (troches or vaginal tablets dissolved completely in the mouth)

OR

- nystatin (vaginal tablets 100 000 units once or twice weekly dissolved in the mouth, or suspension swished and swallowed)

OR

- chlorhexidine 0.2% mouthwash as needed.

- Systemic

- ketoconazole 200 mg orally 3 times a week
- more expensive options include fluconazole 100–150 mg once or twice weekly or itraconazole 100–200 mg 2–3 times weekly.

*Notes:*

1. Ketoconazole and itraconazole require gastric acidity for optimal absorption. There may be inadequate absorption in patients who have achlorhydria, or who are being treated with inhibitors of gastric acid secretion or antacid-containing drugs (e.g. ddI). If ketoconazole or itraconazole are to be used during ddI treatment, administration of the two drugs should be separated by a few hours. Absorption of both of these azoles is improved by co-administration of a cola soft drink if there is gastric achlorhydria.
2. Metabolism of itraconazole and ketoconazole is enhanced by certain drugs (e.g. rifampin, carbamazepine, phenytoin). Concomitant use of such drugs often results in failed therapy with either of these two azoles.
3. Resistant strains of *Candida* may occur in severely immunosuppressed patients who have received prolonged azole therapy. After smear (gram stain or potassium hydroxide (KOH))



confirmation of thrush, azole-refractory cases should have a throat culture collected.

4. Drug interactions and impaired absorption appear to be an uncommon cause of failed therapy with fluconazole. If a drug interaction exists, consider eliminating the offending drug or increasing the azole dose.
5. Topical antifungals include nystatin suspension or tablets, clotrimazole lozenges and amphotericin B lozenges.
6. Itraconazole oral solution is currently an investigational formulation.
7. Intravenous amphotericin B can be continued daily (5–7 days per week) until there is a clinical response, then reduced to 2–3 times weekly for suppressive therapy.

### *Herpes simplex*

Herpes simplex infections of the mouth can be severe and recurrent. They tend to occur on the hard palate, gingiva and tongue. Multiple lesions often take a long time to resolve. Confirmation of diagnosis is by culture and only rarely is biopsy required. Treatment is with oral acyclovir 200–400 mg 5 times daily. Therapy may be required for an extended period and prophylaxis should be offered if recurrences are frequent and bothersome. Remember the possibility of acyclovir-resistant herpes.

### *Cytomegalovirus*

Oral ulceration due to cytomegalovirus has been identified in a small number of patients with HIV disease. Diagnosis requires tissue biopsy.

### *Hairy leukoplakia*

Hairy leukoplakia appears on the lateral border of the tongue as a slightly raised, corrugated white folded lesion with a “hairy” surface texture. The lesions do not rub off and are not associated with inflammation unless secondary candidiasis is present. Diagnosis is made by clinical examination but biopsy and in-situ hybridization can be used for confirmation. The lesions are usually asymptomatic, but are associated with a declining CD4+ lymphocyte count. Etiology may involve the Epstein-Barr and/or papilloma viruses. Treatment is usually unnecessary. Topical treatment with vitamin A or podophyllin

and systemic treatment with high dose acyclovir have been used with limited success.

### *Periodontal disease*

Periodontal disease is common in HIV-infected individuals. Significant pain, bleeding and loss of periodontal bone can occur. HIV gingivitis presents as an intensely red, linear band at the gingival margin. Periodontitis causes spontaneous bleeding and may progress rapidly. Severe periodontal disease should be referred to an oral specialist for treatment. Oral metronidazole can be helpful, in addition to local measures including oral hygiene, dental cleaning and irrigation with chlorhexidine.

### *Aphthous-like ulcers*

Aphthous-like ulcers are common and tend to occur on the lips, buccal mucosa, soft palate and peritonsillar areas, and can be persistent and extremely painful. They may be confused with herpes infections, but are usually deeper and often more solitary. Diagnosis is usually made on clinical grounds. Treatment is aimed at maintaining nutrition and decreasing pain. Thalidomide has been shown to be effective. Topical anaesthetics may be helpful and topical steroids (such as triamcinolone in orobase) can also be tried. Intra-lesional steroids and systemic steroids have been used in severe cases.

### *Dry mouth*

Dry mouth is a common symptom that may be a side effect of medications or a complication of HIV disease. It makes chewing and swallowing very difficult for patients, increases the frequency and progression of dental cavities, and increases the risk of oropharyngeal candidiasis. It often results in a loss of taste sensation. Management includes high fluid intake, salivary stimulation with sugar-free chewing gum and candies, and dietary modification to a low sucrose intake. Available salivary stimulants include anetholtrithione and pilocarpine. Bethanechol (Urecholine) may increase salivation and is currently being studied for this purpose.

### *Kaposi's sarcoma*

Oral Kaposi's sarcoma is the most frequent oral neoplasm and is seen most commonly on the hard palate and the gingiva. It appears as blue-purple and flat or slightly raised mucosal lesions. It can be solitary or

multiple and may be isolated or part of systemic disease. Kaposi's sarcoma may form a mass in the oral cavity that can bleed, interfere with chewing, swallowing and speech, and lead to considerable discomfort. However, it is usually asymptomatic and a careful oral examination and biopsy of any suspicious oral lesions are important for diagnosis. Once Kaposi's sarcoma is confirmed, it should be treated by a specialist.

#### *Other oral malignancies*

Other oral malignancies include lymphoma, which can present as a soft tissue mass at the gum margins. Involvement of the lymph nodes of the neck may occur. Suspicious, atypical nodules require biopsy if this diagnosis is to be made. Oral squamous cell carcinoma may also occur.

### **Oesophagus**

Oesophagitis is common in patients with HIV disease. Dysphagia combined with nausea, particularly in the presence of oral candida, suggests oesophageal candidiasis, and a trial of therapy with fluconazole (100–200 mg daily), ketoconazole (200–400 mg daily) or itraconazole (100–200 mg twice daily) is reasonable. Therapy should continue for two to three weeks. Persistent symptoms, such as odynophagia or retrosternal pain, after a trial of therapy should be investigated via endoscopy with brushings or biopsy to rule out cytomegalovirus or Herpes simplex.

Oesophageal ulcers occur in the early stages of disease and are often associated with seroconversion. Occasionally, these early ulcers are caused by HIV itself. They usually resolve spontaneously. In later HIV disease there may be persistent atypical ulcerations, for which prednisone may be helpful. Topical lidocaine may offer symptomatic relief.

In more advanced disease, oesophageal ulcers may be due to cytomegalovirus, *Herpes simplex* or perhaps HIV itself. Treatment with IV ganciclovir, oral or IV acyclovir and high dose oral steroids are the treatments, respectively, for these conditions. Maintenance therapy with oral acyclovir is often necessary in *Herpes simplex* disease.

### **Bowel/diarrhoeal disease**

The gastrointestinal tract is one of the target organs for HIV. Most patients have diarrhoea at some point during the disease and some develop malabsorption and wasting syndrome. Patients have difficulty maintaining their weight and are frequently anorexic. There are a number of principles to keep in mind when investigating symptoms of the gastrointestinal tract:

- do not rely on signs and symptoms to make a diagnosis;
- investigations must be targeted at finding those conditions that are treatable;
- as discomfort is associated with certain procedures, for example gastroscopy and colonoscopy, it is preferable to get a diagnosis by non-invasive measures (e.g. stool samples);
- problems can be caused by opportunistic or non-opportunistic infection, by HIV itself or by malignancy;
- if no cause is found, treatment must be symptomatic.

Functional gastroparesis and hypochlorhydria may occur. Nausea and vomiting occasionally occur and may represent opportunistic infection, particularly oesophageal candidiasis.

#### *Diarrhoea*

The signs and symptoms of diarrhoea are not very specific but there may be clues in the history. Ask about travel, prolonged use of antibiotics and multiple sexual contacts. Basic investigations should include:

- stool specimens for ova and parasites (preferably three separate samples); if *Cryptosporidia* is suspected a specific stain should be requested;
- stool specimen for culture (one sample is sufficient);
- *Clostridium difficile* toxin assay.

If the initial work-up is negative, patients with mild to moderate symptoms can be offered ant motility drugs, such as loperamide 4–6 mg orally twice daily. If this fails or symptoms are severe, refer the patient to a gastroenterologist for an endoscopy, if necessary. During

endoscopy, biopsies can be taken for histology and culture. X-rays of the bowel are seldom helpful but ultrasound examinations may be useful if masses are suspected.

Some common organisms that cause diarrhoea include campylobacter, *Salmonella*, *Shigella*, *Clostridium difficile*, *Giardia* and *E. Histolytica*, as well as a number of enteric viruses. Most of the common bowel infections that occur can be treated with standard therapy, but be aware that HIV-infected patients with salmonella infection have an increased risk of bacteremia. In some cases the patient can go on to have fever, severe diarrhoea and systemic collapse and will require fluid replacement and antibiotic treatment.

Opportunistic infections are common in the lower gastrointestinal tract and frequently cause diarrhoea, often necessitating prolonged treatment. The most important opportunistic infections to recognize include *Mycobacterium avium* complex (MAC), cytomegalovirus (CMV) and *Cryptosporidium*.

#### *Mycobacterium avium* complex

MAC is a common cause of diarrhoea in advanced HIV disease but is not limited to the gastrointestinal tract in its pathology. This organism frequently causes fever of unknown origin and contributes to progressive wasting. Culture of MAC in stool may represent colonization only, but it tends to be a disseminated infection and is often found on blood culture in addition to bowel biopsy specimens. When the bowel is involved, the small intestine is the most frequent site. Most patients experience at least a partial response to treatment. MAC disease should be managed by a qualified specialist.

- The regimen of choice for treatment of MAC is:
  - clarithromycin 500mg twice daily
  - PLUS
  - ethambutol 15 mg/kg daily
  - PLUS/MINUS
  - rifabutin 300 mg daily
- Alternatives to rifabutin include:
  - ciprofloxacin 750 mg orally twice daily

OR

- rifampin 600 mg orally daily

OR

- amikacin 10 mg/kg/day IV.

*Notes:*

1. Recently, the combination of clarithromycin, ethambutol and rifabutin was shown to be associated with improved survival and clearance of blood cultures in comparison with ciprofloxacin, ethambutol, rifampin and clofazimine.
2. Patients intolerant of, or not responding to, the standard treatment after a four-week trial should have a repeat MAC blood culture and be offered the addition or substitution of another drug not included in the initial regimen. Patients should be encouraged to continue clarithromycin and ethambutol, which are usually well tolerated and have greater activity than other first-line drugs.
3. Rifabutin has been associated with uveitis, particularly when used in treatment regimens which include clarithromycin. Patients with ocular symptoms should be evaluated promptly by an ophthalmologist. If uveitis is suspected, rifabutin should be stopped immediately.
4. Other second-line oral antimycobacterial drugs, such as ethionamide or cycloserine, may be associated with significant adverse effects, have uncertain efficacy, and are usually not recommended.
5. Monotherapy with any of these drugs is strongly discouraged because of the possible development of drug resistance.
6. Because of its potential toxicity, the need for vascular access, monitoring costs and uncertain efficacy, amikacin 10 mg/kg daily is reserved for those not responding to the orally available medications outlined above.

*Cytomegalovirus*

CMV can involve any part of the gastrointestinal tract but is particularly problematic in the colon, where it can cause colitis. The colitis can be severe enough to cause infarction or perforation, although these are rare. Diagnosis is made on biopsy via flexible

sigmoidoscopy. Occasionally, colonoscopy is necessary. Treatment is with intravenous ganciclovir or foscarnet as outlined for CMV retinitis, although the need for long-term maintenance therapy in this situation is unclear. Maintenance therapy should be offered to patients who have frequent recurrences that appear to respond to treatment. Treatment results are variable and may need to be prolonged.

### *Cryptosporidium*

*Cryptosporidium* is a parasite that can cause chronic, persistent, often profound diarrhoea. The diarrhoea can result in severe fluid loss and electrolyte imbalance, resembling cholera. It can contribute to weight loss and malnutrition and often results in hospitalization. *Cryptosporidium* may also affect the biliary tree. Diagnosis is made by finding characteristic cysts in the stool by direct modified acid fast stain, which should be specifically requested on ova and parasite examination. Multiple specimens may be necessary. Management is geared toward symptomatic relief with antidiarrhoeal agents. There is no proven effective therapy, although some patients appear to benefit from paromomycin (see below) or azithromycin. Despite that, a recent controlled trial did not indicate benefit with paromomycin.

### *HIV enteropathy*

HIV enteropathy is another condition which causes diarrhoea and wasting. At present, HIV enteropathy is a diagnosis of exclusion. It may be a direct effect of HIV or the result of an as yet undetected organism. Treatment is directed towards relieving the diarrhoea with antidiarrhoeal agents.

## **Liver**

Hepatomegaly and/or abnormal liver enzyme tests are common in patients with HIV. MAC is the most frequent opportunistic infection affecting the liver, followed by CMV and cryptococcal infections. Infection of the liver is usually associated with infection elsewhere. Malignancies such as lymphoma or Kaposi's sarcoma can occur in the liver. Drug hepatotoxicity is a common problem.

Sub-acute to chronic cholangitis occurs occasionally and may be associated with biliary tract CMV disease, cryptosporidiosis, microsporidiosis and possibly MAC.

## **Co-infections with HIV and hepatitis A, B, C, D, E or G**

### *Hepatitis A virus*

Acute HAV outbreaks have been reported among injecting drug users. Hepatitis A is often severe in patients with concomitant chronic hepatitis C. Treatment of hepatitis due to HAV is supportive. An effective vaccine is available which is less immunogenic but safe in HIV-positive persons.

### *Hepatitis B virus*

HIV and HBV share common transmission routes. In HIV-HBV co-infection there is an increase in persistence of HBV and an increase in the incidence of HBV reactivation and reinfection, and there is a reduced response to HBV vaccination. Hepatic necrosis is less because this is mediated by cytotoxic T-lymphocytes, which are reduced in the presence of HIV. Co-existent hepatitis B or C can be unusually severe with cirrhosis, ascites and liver failure.

The antiretroviral agent lamivudine suppresses HBV DNA synthesis, often inducing HBe seroconversion. This drug should be used as part of a triple drug regimen against HIV. Emergence of the YMDD variant of HBV has been observed in 25% of patients after 1 year of lamivudine therapy, but this variant is not as replication-competent as wild strain HBV and it causes less severe disease. When interferon-alpha is used in patients with HBe antigenemia, the response for those who are HIV-positive is only 20% of the response for those who are HIV-negative.

The response to HBV vaccination is suboptimal in immunosuppressed patients.

### *Hepatitis C virus*

HCV is commonly found in injecting drug users. Sexual transmission is thought to occur when sexual activities cause bleeding or disruption of mucosal surfaces, such as might occur during forced sex. Vertical transmission does occur. HCV is directly cytopathic (unlike HBV) and increased severity of disease has been reported in people who are immunosuppressed. Those co-infected with HIV have accelerated progression of HCV-related liver disease, and there appears to be increased risk for acceleration of HIV disease among co-infected



persons. Excessive alcohol consumption is independently associated with the presence of cirrhosis in co-infected persons.

Treatment for HCV is with interferon-alpha alone or in combination with ribavirin. The efficacy of interferon monotherapy has been best evaluated. Clinical trials of combination therapy are under way.

### *Hepatitis D*

Co-infection is usually seen among injecting drug users. HDV requires HBV surface antigen and may be acquired at the time of acute HBV infection or during chronic HBV infection. The risk of chronic carriage and disease progression is greater in HDV super-infected persons. HDV has a direct cytopathic effect on hepatocytes, such that more rapidly progressive liver disease is seen in people who are immunocompromised. In co-infection with HIV, both HBV and HDV show higher rates of replication. HDV appears to suppress HCV replication in HIV-infected haemophiliacs.

Data are scarce but lamivudine is thought to be worthwhile for HDV infection (as part of a triple antiretroviral regimen against HIV).

### *Hepatitis E*

HEV causes a self-limiting enterally transmitted hepatitis. Little is known of HIV-HEV co-infection. Treatment of HEV infection is supportive.

### *Hepatitis G*

This is an RNA flavivirus like HCV which is transmitted parenterally and so detected more frequently in injecting drug users. Little is known of HIV-HGV interactions.

HGV is sensitive to interferon therapy but reduced RNA levels are not sustained after discontinuation of therapy.

## **Neuropsychiatric disorders**

Pathology of both the central and the peripheral nervous systems is seen in patients with HIV disease. This can be due to direct infection of the brain and spinal cord with HIV or to opportunistic infections or malignancies. Altered metabolism associated with a wide variety of

conditions can cause CNS symptoms. Many patients will develop peripheral neuropathy from HIV itself or from related medications. Viral involvement of the central nervous system occurs early in HIV disease, but patients tend to remain free of symptoms until late in the disease process. When signs and symptoms occur, it is important to distinguish between true neurological conditions and the other emotional and psychological problems that complicate this illness.

Psychiatric conditions may also occur. Careful assessment of the clinical features can help differentiate among the various conditions. In particular:

- the rapidity of onset should be discerned: toxoplasmosis and cryptococcal infections tend to occur over days to weeks, while AIDS dementia complex develops over months;
- lateralizing signs should be looked for: space-occupying lesions, such as toxoplasmosis and lymphoma, can present in this manner;
- it should be considered whether more than one level of the central nervous system function is involved (hemiparesis indicates cerebral problems, ataxia indicates a cerebellar problem, cranial nerve involvement indicates brain stem involvement), and higher cortical function assessed.

The investigation and management of central nervous system conditions associated with HIV requires good neurological, neuroradiological and neurosurgical backup.

- A CT scan with contrast can quickly determine if a space-occupying lesion is present.
- With a normal CT scan, a lumbar puncture and CSF examination are often warranted to look for cryptococcal, syphilitic or mycobacterial infection.
- It may be necessary to obtain a tissue biopsy to distinguish between toxoplasmosis and primary CNS lymphoma if there has been no response to toxoplasmosis therapy.

Generally, neurological complications occur later in HIV disease, but they may be seen throughout the course of illness. Central nervous system (CNS) manifestations will interfere with the patient's ability to discuss many important issues such as death and dying, disposition of wills and funeral arrangements. The end stage of HIV disease can be a

physical, emotional and financial disaster, and the social, moral and ethical issues seem to be much more profound than for any other terminal illness. It is important to encourage patients to address these issues before significant neurological deterioration occurs. Some reassurance is possible, as the dementia may not necessarily be severe and the course is often fluctuating. It is important to plan for the later stages of this disease by mobilizing community services and involving family members to get appropriate support workers, community health workers and palliative care volunteers in place before deterioration occurs.

### *Psychiatric disorders*

#### **Adjustment disorder**

Depression, anxiety and fear are common at different times during the course of illness. There are a number of situations which may precipitate a psychological reaction and clinicians should be watchful. At the initial diagnosis of HIV infection, there can be a very severe psychological reaction. Another stressful time occurs when CD4<sup>+</sup> counts fall below 500 cells/mm<sup>3</sup> and antiretroviral treatment begins. This often presents as denial with resistance to antiretroviral treatment. Patients are forced to face the reality of disease progression. Finally, when AIDS is diagnosed, some patients may become depressed again.

Other stressful situations involve the response from family, friends, and co-workers. Some patients find it difficult to talk about death and dying or to make appropriate plans. Isolation, guilt and anger are frequent reactions. Counselling is necessary, and may come from a variety of sources. Sometimes anxiolytic medication can help. Patients should be encouraged to interact with the different support groups available.

#### **Depression**

While adjustment disorder causes much depression, true clinical depression can also occur and should be treated with antidepressant medication. Sometimes it is difficult to differentiate between depression and dementia, which may co-exist. When in doubt, a clinical trial of antidepressants should be instituted. If severe insomnia is a feature, antidepressants with sedative effects can be used at bedtime. Trazodone is useful because it has sedative effects and low anticholinergic side effects. The dosage required in advanced disease

may be less than that used in a healthier patient, but the full adult dose is recommended during the asymptomatic stages of HIV disease.

### Psychoses

Psychotic symptoms can occur in HIV-infected patients and can include hallucinations, delusions and agitated behaviour. Delirium, characterized by fluctuating clouded consciousness and disorientation, can also occur. It is important to search for underlying treatable causes, such as drug toxicity.

Acute manic psychosis may also occur in HIV disease. Low-dose, high-potency neuroleptic drugs, such as haloperidol, should be avoided because of increased sensitivity to side effects, including neuroleptic malignant syndrome. High-dose, low-potency drugs such as chlorpromazine are preferred. Emergency psychiatric admission may be required if the patient is out of control.

### *Neurological disorders*

#### HIV encephalopathy/AIDS dementia complex

Primary HIV encephalopathy is due to replication of the virus in the brain. This develops over many months, causing gradual deterioration in intellectual function. AIDS dementia complex is the end stage of HIV encephalopathy. The diagnosis of AIDS dementia complex is generally one of exclusion. Symptoms include memory loss, poor concentration, social withdrawal, lethargy, sleep disturbance, impaired judgment and increased sensitivity to alcohol and medications. These symptoms are not specific and can be found in other conditions. Patients with HIV encephalopathy do not tend to lose their vocabulary but do lose the ability to perform abstract associations. Subtle cognitive and behavioural dysfunction can progress to severe dementia, motor disturbances, ataxia, tremors, spasticity and paralysis. AIDS dementia complex can occur in the absence of any other sign or symptom of AIDS. The most useful clinical assessment is to do a mental status examination routinely in order to detect early changes in cognitive function.

A CT scan may reveal cerebral atrophy and large ventricles. Space-occupying lesions must be ruled out, with examination of the cerebrospinal fluid for cell count, cryptococcal antigen, bacterial and fungal culture, and protein and glucose, all of which should be normal. The two most common conditions to exclude before considering a

diagnosis of AIDS dementia complex are cerebral toxoplasmosis and CNS lymphoma. Both of these conditions generally present as space-occupying lesions and may cause a reduced level of consciousness which is not a feature of AIDS dementia. Although relatively rare, neurosyphilis should be considered.

Treatment is with high dose zidovudine 1200 mg/day, but this is less than satisfactory. There is some evidence that the increased use of antiretrovirals has greatly diminished the incidence of AIDS dementia complex.

#### Peripheral neuropathy

Painful sensory neuropathies are associated with HIV infection in up to 50% of AIDS patients. The neuropathy is characterized by numbness, weakness, painful dysesthesia, and abnormal nerve conduction in the extremities, particularly the legs, and is usually bilateral and symmetrical. The diagnosis is made clinically. Efforts should be made on physical examination to distinguish between peripheral nerve lesions and spinal cord lesions. Electromyography and nerve conduction studies can support the diagnosis but are generally unnecessary. Work-up should include vitamin B12 level and rapid plasma reagin (RPR) or other non-treponemal antibody test for syphilis.

Some neuropathies improve with time. Often, neuropathy from antiretroviral therapy (particularly as a side effect of ddC and ddI) must be distinguished from HIV itself. Treatment may involve adjusting the doses of associated medications. Therapy includes tricyclic antidepressants, such as amitriptyline, and occasionally anticonvulsants such as carbamazepine. Non-steroidal anti-inflammatory drugs (NSAIDs) are not helpful. Capsaicin ointment has been very effective in reducing pain in some patients.

#### Neurological infections

##### *Cryptococcus neoformans*

*Cryptococcus neoformans* is the most common cause of meningitis among HIV-infected patients. There may be a variety of confusing symptoms and the diagnosis can be difficult. It tends to present with mild to severe headache and fever, which may be low-grade at times. Photophobia is not usually present. There may also be seizures and/or neck rigidity. Frequently there is disseminated disease involving the

skin, urinary tract, lungs and other organs. Often days or weeks go by before the condition is detected.

Almost all AIDS patients with cryptococcal meningitis have a positive serum cryptococcal antigen titre. This, therefore, is a very useful screening test. Cerebrospinal fluid (CSF) India ink smear is positive in approximately 75% of cases. Diagnosis is confirmed by positive CSF latex agglutination (for cryptococcal antigen detection), or culture. Treatment of cryptococcal meningitis is hospital-based with:

- **Step 1**  
Intravenous amphotericin B 0.7 (0.6–1.0) mg/kg/day. 5-flucytosine 100mg/kg/day orally in 4 divided doses may be used in combination with amphotericin B. Duration of treatment is usually 2–3 weeks, depending upon clinical response.
- **Step 2**  
Intravenous or oral fluconazole 400 mg/day for 8 weeks. Itraconazole 200 mg twice daily may be an alternative, provided there are no concomitant rifampin, rifabutin, anti-seizure medications or other drug interactions.
- **Step 3**  
After initial treatment, the dose of fluconazole should be lowered to 200 mg/day and maintained for life to prevent relapse. Alternative maintenance therapies (itraconazole, amphotericin B) are generally discouraged because of reduced efficacy and/or tolerance.

*Notes:*

1. 5-Flucytosine in combination with amphotericin B may be associated with a modest improvement in outcome in HIV patients. There may also be a reduced relapse rate with initial combination therapy compared to using amphotericin alone.
2. Amphotericin B is superior to fluconazole as initial therapy. This regimen is associated with a more rapid sterilization of the CSF than fluconazole alone, although adverse effects are more frequent.
3. There is approximately a 50% relapse rate for HIV-related cryptococcal meningitis without secondary prophylaxis (maintenance therapy). Fluconazole is more effective and better tolerated than intravenous amphotericin B 1 mg/kg weekly.

Suppressive therapy fails more often with itraconazole 200 mg once daily (24%) than with fluconazole 200 mg daily (4%). Drug interactions which may result in failed itraconazole therapy relate to reduced absorption or enhanced metabolism of itraconazole.

### Cryptococcosis

The recommended treatment for cryptococcosis without meningitis (pulmonary or disseminated) is the same as that for meningitis. There are no comparative trials to clarify the role of azoles relative to amphotericin. Unless contraindicated, all patients with cryptococcosis should have a spinal fluid examination to exclude asymptomatic meningitis. The need for maintenance therapy for non-meningeal cryptococcosis has not been determined but is recommended.

### *Toxoplasma gondii*

*Toxoplasma gondii* infection is the most common opportunistic infection affecting the parenchyma of the brain. Positive serology at baseline work-up of the HIV-infected patient identifies those at greater risk of developing CNS toxoplasmosis, although up to 15% of those who present with this condition will have had negative serum serology. The lifetime risk of clinical toxoplasmosis in HIV-positive/toxoplasma-positive adults is approximately 38%.

### CNS toxoplasmosis

*CNS toxoplasmosis* generally presents with seizures, motor disturbances or altered mental status. Signs and symptoms are often those of a space-occupying lesion. Brain abscess is the usual presentation but diffuse encephalitis can occur. Characteristic ring-enhancing lesions appear on a CT scan but definitive diagnosis is possible through brain biopsy (stereotactic or open). This invasive procedure is indicated only when appropriate treatment for toxoplasmosis of 1–2 weeks' duration has not resulted in clinical or radiological improvement, at which time it would be important to rule out lymphoma. The rule of thumb is that empiric treatment should commence if:

- the CT or MRI scan is compatible with toxoplasmosis;
- the clinical presentation is compatible with toxoplasmosis (usually at least one of headaches, fever, seizures, focal neurological deficit or cognitive impairment).

Brain biopsy confirmation of the diagnosis should only be considered for patients worsening by day 7 of empiric treatment or who are not responding clinically by day 10, and then only if their general medical condition is reasonably good.

Recommended treatment consists of 4–6 weeks of induction therapy, followed by life-long maintenance therapy.

- Induction therapy:
  - sulfadiazine 1–2 gm orally 4 times daily (100 mg/kg/day)  
PLUS
  - pyrimethamine 200 mg loading dose then 50–75 mg orally daily  
PLUS
  - folinic acid 10 mg daily, with the dose adjusted according to the WBC and platelet count.
- Maintenance therapy:
  - pyrimethamine 25–50 mg orally daily  
PLUS
  - sulfadiazine 500 mg 4 times orally daily  
PLUS
  - folinic acid 10 mg orally daily or as required.

Patients unable to tolerate sulfadiazine should receive:

- Induction therapy:
  - clindamycin 600–1200 mg intravenously every 6 hours for the first 3 weeks and then 300 mg orally 4 times daily (or 450 mg every 8 hours) for the remaining 6 weeks of therapy  
PLUS
  - pyrimethamine and folinic acid as above.
- Maintenance therapy:
  - pyrimethamine 25–50 mg/day  
PLUS



- clindamycin 300 mg every 6 hours or 450 mg every 8 hours  
PLUS
- folinic acid 10 mg/day or as required.

*Notes:*

1. Folinic acid is expensive and may not be necessary for all patients. Dose adjustment should be made as haematology indicates.
2. Toxicity (e.g. rash, cytopenia) occurs in up to 80% of patients.
3. Zidovudine therapy should be discontinued during induction treatment if cytopenias are present and restarted when counts allow and pyrimethamine dose is reduced.
4. Induction therapy should last 4–6 weeks depending on response. A CT or MRI scan should be repeated at 2–3 weeks. A clinical and radiological response confirms the diagnosis and warrants life-long maintenance therapy. The absence of a response warrants additional investigation.
5. Monitoring should include: BUN and creatinine twice weekly during induction with sulfadiazine; CBC 2–3 times weekly during induction, then weekly during maintenance if counts are stable.
6. Atovoquone or a new macrolide (e.g. azithromycin or clarithromycin) plus pyrimethamine are options for those unable to tolerate other therapy. However, expert advice should be sought before contemplating treatment or prophylaxis with these agents.

**Aseptic meningitis**

Aseptic meningitis in HIV-infected patients may be due to direct infection of the CNS by HIV. In most cases, this illness is self-limited.

**Neurosyphilis**

Syphilis can occur in HIV-infected persons with the same range of clinical presentations as in HIV-negative persons. Neurosyphilis may occur at any stage of syphilis (primary, secondary or tertiary) and HIV-positive persons are more likely to develop symptomatic neurosyphilis than HIV-negative persons.

Patients who have late latent syphilis (i.e. asymptomatic but infected more than 1 year before), or syphilis of unknown duration, or those

presenting with secondary syphilis all deserve to have CSF examination to rule out neurosyphilis.

Neurosyphilis is diagnosed definitively by the presence of a reactive CSF nontreponemal antibody test, CSF pleocytosis and elevated CSF protein levels. Some patients with neurosyphilis may have nonreactive CSF nontreponemal antibody tests. Ocular manifestations of syphilis should be treated as neurosyphilis.

The treatment of syphilis is the same for HIV-positive and HIV-negative patients. Penicillin regimens are strongly recommended since alternate drug regimens are less efficacious.

The treatment for primary syphilis is described in Chapter 8. Treatment of secondary syphilis or early latent syphilis is the same as for primary syphilis.

- Late latent syphilis (or unknown duration) with normal CSF is treated with:
  - benzathine penicillin G, 7.2 million units IM (administered as 3 doses of 2.4 m units IM weekly for 3 successive weeks)
  - alternate regimens: doxycycline 100 mg PO BID for 28 days, or tetracycline 500 mg PO QID for 28 days.
- Neurosyphilis is treated with:
  - aqueous crystalline penicillin G, 18–24 m units IV per day for 14 days (administered as 3–4 m units every 4 hours each day)
  - alternate regimens: ampicillin 4 g IV every 6 hours each day for 14 days, or procaine penicillin G 2.4 million units IM daily plus probenecid 500 mg PO QID for 14 days if good compliance is assured, or ceftriaxone 2 g IV once daily for 10 days (ceftriaxone IM is NOT recommended due to high failure rates).

Follow-up: nontreponemal antibody titres on serum are recommended at 1–2 weeks and 1, 2, 3, 6, 9 and 12 months after treatment. Note that the typical response of a 4-fold decrease in titre by 6 months post treatment may not be seen in all HIV-infected patients.

Relapses are more common after treatment for neurosyphilis. If neurosyphilis was diagnosed in the absence of a reactive CSF

nontreponemal antibody test, CSF response to therapy (fall in CSF cell count and protein) should be followed by re-examination of CSF at 3, 6 and 12 months after treatment.

### CNS lymphoma

Primary CNS lymphoma is not rare in HIV disease and may be confused with toxoplasmosis. Definitive diagnosis can only be made by a brain biopsy. The prognosis is poor. Patients who are otherwise free of opportunistic infections and who still have some functional capacity may benefit from radiation and possibly chemotherapy. In most cases, however, palliative treatment is the only option.

## Diseases of the eye

### *CMV retinitis*

Patients with HIV infection and low CD4+ lymphocyte count ( $<100$  cells/mm<sup>3</sup>) are at risk of the development of CMV retinitis, which is the most common ophthalmic infection in AIDS patients, occurring in approximately 28% of people with AIDS. If possible, people with AIDS should have regular ophthalmological assessment every six months, with urgent referral to an ophthalmologist experienced in HIV-related eye disease should visual symptoms arise. These could include an increase in floaters, flashes of light or blind patches in the vision. If left untreated, CMV retinitis produces gradual visual loss with progression to blindness. Visual loss tends to be slowly progressive over a period of months in the majority of patients, but can be more rapid in some, depending on the location of the original site of infection within the eye. Early detection and treatment can slow the progression of CMV retinitis substantially.

Active CMV retinitis causes full thickness retinal necrosis. It is often first seen in the peripheral retina, causing visual field defects. It can occasionally begin in the posterior pole around the optic nerve head or in the macular region: these patients present with acute visual loss. If peripheral retinitis is causing a significant vitreous inflammatory reaction, the only symptom may be floaters. Rhegmatogenous retinal detachment, caused by holes in previously infected retina, can present with flashes of light or acute onset of floaters, or may be asymptomatic.

Ophthalmological evaluation should include vision testing, visual field testing by confrontation methods on each eye separately, and careful ophthalmoscopic examination of the optic nerve head, macula and posterior pole. Typically, CMV retinitis appears as whitish exudates associated with retinal haemorrhages.

Treatment of CMV retinitis is with intravenous ganciclovir or intravenous foscarnet and should be managed by a qualified specialist in conjunction with an experienced ophthalmologist. There is a time lag between starting therapy and stabilization of the retina, usually about two weeks. Lifelong maintenance therapy is required. An oral formulation of ganciclovir has become available as an option for maintenance therapy in limited circumstances.

- Induction therapy:
  - ganciclovir 5 mg/kg IV every 12 hours for 14–21 days
  - OR
  - valganciclovir 900 mg PO twice daily for 21 days
  - OR
  - foscarnet 90 mg/kg IV every 12 hours for 14–21 days.

*Notes:*

1. Patients with renal impairment should receive ganciclovir or valganciclovir rather than foscarnet.
2. Patients with neutropenia (ANC <0.5 G/L) should not receive ganciclovir or valganciclovir.
3. Zidovudine should be discontinued during ganciclovir or valganciclovir induction treatment to avoid additive bone marrow toxicity.
4. Ganciclovir, valganciclovir and foscarnet are equally effective for CMV retinitis treatment. Adverse drug effects for foscarnet (e.g. renal impairment, electrolyte abnormalities, anaemia) are more often dose-limiting than for ganciclovir or valganciclovir (neutropenia). Ganciclovir is generally considered to be the drug of choice, despite the fact that there is some evidence for a survival benefit with foscarnet maintenance therapy.

- Maintenance therapy:
    - ganciclovir 5 mg/kg intravenously daily or 6 mg/kg 5 days per week
- OR
- foscarnet 90–120 mg/kg intravenously daily (preferred dose is 120 mg/kg/day)
  - oral valganciclovir 900 mg PO once daily (first choice for PO maintenance therapy)
  - oral ganciclovir 1 g 3 times daily may be appropriate for patients who do not have moderate to severe diarrhoea, extraocular CMV disease, zone I retinitis, or poor compliance.

*Note:* Patients not willing to do daily maintenance therapy may be offered ganciclovir 6 mg/kg intravenously 5 days/week OR foscarnet 90–120 mg/kg intravenously 5 days/week.

### *Other ocular conditions*

#### Microvascular

HIV retinopathy consists of small cotton wool spots with or without haemorrhages. This is not threatening to vision as a general rule and tends to resolve over 1–2 months. HIV retinopathy may wax and wane and is more common in the later stages of HIV disease progression.

#### Neoplastic

Kaposi's sarcoma affecting the conjunctiva is seen and the lesions appear deep red and somewhat nodular, often with adjacent sub-conjunctival haemorrhage. There is usually associated lid oedema. High-grade lymphomas of the orbit and Kaposi's sarcoma of the orbit have also been described, but are rare.

#### Other opportunistic infections

The Herpes simplex virus (HSV) can cause corneal infection and iritis. Varicella zoster virus (VZV) can present as Varicella zoster ophthalmicus and may be the first indication that a person is infected with HIV. Both HSV and VZV are implicated in the development of progressive outer retinal necrosis, a visually devastating condition which has a high rate of blindness within days to weeks and is associated with retinal detachment. This tends to begin in the

peripheral retina and progresses rapidly toward the posterior pole due to increased intracranial pressure.

Cryptococcal infection of the meninges can cause papilledema, or direct infiltration of the optic nerves.

Syphilis can be associated with vision-threatening, but treatable, uveitis or chorioretinitis. Toxoplasma chorioretinitis, both primary and secondary, can occur. Uveitis has been reported in association with rifabutin therapy.

Molluscum contagiosum can affect the eyelids, conjunctiva and possibly the cornea. It can cause an indirect toxic conjunctivitis which will resolve if the molluscum is treated.

### Neuro-ophthalmic manifestations

These generally occur secondary to space-occupying CNS diseases such as CNS lymphoma or toxoplasmosis, and include visual field defects, brain-stem syndromes or cranial neuropathies. Other optic nerve abnormalities may be related to toxic neuropathy, due to medications such as ethambutol or poor nutrition with heavy smoking and/or alcohol use.

Blindness, or the threat of blindness, is reported to be a significant factor contributing to suicide in people with AIDS. As the overall survival of patients with HIV disease improves, there are likely to be more AIDS patients facing the possibility of blindness. Patients with deteriorating vision should have appropriate counselling as well as instruction in the use of low-vision aids, especially those aids used for mobility training.

### Dermatological disease

#### *Common skin conditions*

The earliest skin condition that may occur is an acute macular exanthem of seroconversion. It may look like pityriasis but is of very short duration (3–4 days).

Warts are common and can be difficult to eradicate. Genital warts can be treated with podophyllin, liquid nitrogen or 5-fluorouracil cream.

Facial warts are treated with cryotherapy, electrocautery or 5-fluorouracil cream.

Seborrhoeic dermatitis commonly occurs on the face and responds to 1% hydrocortisone cream. It often occurs early in HIV disease, may be confused with psoriasis and will recur over the course of the illness. Psoriasis gets worse with HIV infection. Treatment for both these conditions is with the usual topical steroids, tars and ultraviolet light. Severe attacks of psoriasis can be treated with retinoids.

Folliculitis is common and presents as dry, itchy skin with small pustules. It can be non-infectious or may result from *Staphylococcus aureus* infection, which responds to cloxacillin or erythromycin. Empiric treatment may be sufficient or the pustules may be cultured. If the cultures are negative, ultraviolet light may be helpful.

Fungal infections such as tinea pedis or tinea corporis are treated with topical antifungals. Onychomycosis also occurs and can be resistant to therapy. If the patient wants the onychomycosis treated, the options include terbinafine, itraconazole and griseofulvin. Resistant cutaneous fungal infections usually respond to oral azole antifungals such as ketoconazole or fluconazole, but the use of these agents needs to be balanced against their cost and the clinical severity of the problem.

Molluscum contagiosum typically occurs in the genital area or on the face. It may occur at any stage of infection but facial lesions tend to present later in the disease. Treatment is often not very successful but liquid nitrogen and in some cases curettage may be attempted.

Pruritus may result from a variety of underlying conditions including scabies and HIV dermatitis. Treatment should primarily address the underlying process, but symptomatic relief with antihistamines may be required. Dryness and itchiness may respond to topical lubricants and topical corticosteroids.

### *Herpes simplex virus (HSV)*

HSV can occur early or late in HIV infection. Once a patient has had an attack of herpes, it will recur more often as HIV disease progresses. Lesions in early disease are typical erosions and easily identified. Later in HIV disease, lesions can be quite keratotic and crusted and may not look like typical herpetic lesions. Diagnosis should be

confirmed by culture of scrapings from the lesions. Biopsy may be necessary if the lesion is quite atypical or if it is resistant to treatment.

### Treatment

- The usual treatment of the acute outbreak is acyclovir:
  - mild to moderate cases: 200 mg orally five times daily (up to 400–800 mg three to five times daily);
  - severe cutaneous disease: 5 mg/kg IV every 8 hours (the dose will need to be adjusted if there is renal impairment);
  - visceral or disseminated infections: 10 mg/kg IV every 8 hours.
- Relapses may be prevented with acyclovir 200–400 mg twice daily (or valacyclovir 500 mg once daily). An outbreak that occurs while on prophylaxis for herpes should prompt investigation regarding acyclovir-resistant HSV.
- Acyclovir-resistant HSV infections should be treated with foscarnet 40–60 mg/kg every 8 hours or 60–90 mg/kg IV every 12 hours, under a specialist's supervision. Foscarnet is contraindicated for patients with moderate to severe renal dysfunction or those taking nephrotoxic agents or intravenous pentamidine.

### *Varicella zoster virus (Herpes Zoster, VZV)*

VZV may occur early in HIV disease and is indicative of disease progression. The later in HIV disease zoster occurs, the more aggressive it is. It may be systemically or cutaneously disseminated and severe chronic keratotic lesions may be present on the skin.

Symptoms may begin with burning, pain or paraesthesia without any immediate rash. If zoster occurs about the eye there can be severe corneal damage and referral to an ophthalmologist is necessary.

### Treatment

- Herpes zoster which is not severe should be treated within 3 days of onset with acyclovir 800 mg PO 5 times a day or famciclovir 500 mg PO 3 times a day or valacyclovir 1 g PO 3 times a day.



- Herpes zoster which is severe and involves >1 dermatome or the trigeminal nerve should be considered for acyclovir 10–12 mg/kg IV every 8 hours. These patients should be referred to a qualified specialist. If infection is persistent, long-term high-dose treatment may be necessary.
- Patients with persistent hyperkeratotic lesions following zoster frequently have acyclovir-resistant strains of VZV and should be referred to a qualified specialist. A trial with acyclovir is worthwhile, but be prepared to switch to foscarnet 40 mg/kg every 8 hours or 60–90 mg IV every 12 hours for at least 10 days if the trial fails.
- Post-herpetic neuralgia may require treatment with tricyclic antidepressants, carbamazepine or capsaicin cream.

### *Kaposi's sarcoma*

Homosexual men have had a disproportionately greater incidence of Kaposi's sarcoma than other HIV-infected populations, which has prompted speculation about a possible sexually transmitted infectious etiology. A human herpes virus (HHV8) has been proposed as the etiological agent for this condition. The cell of origin is thought to be vascular endothelium. The lesion begins as one or more macules, papules or nodules, generally on the skin or mouth. The colour of the lesions can be pink, red or violet and they may be mistaken for bruises. As the lesions enlarge, they become darker and may coalesce to form raised plaques or tumours. They can grow in number and are often accompanied by oedema. Organ involvement is not uncommon, affecting the lungs, gastrointestinal tract and lymphatic system.

Kaposi's sarcoma may progress slowly or may be rapid and fulminant, occasionally causing death. Biopsy of lesions is essential to confirm a diagnosis, which can be done in the office with a 4 mm punch under local anaesthetic. Skin lesions which are associated with much oedema or many ulcerations can cause significant morbidity.

### *Other skin conditions*

Doctors should be alert to the skin manifestations of secondary syphilis. Growing or unexplained lesions should prompt consideration of biopsy or specialist referral.

## Antiretroviral treatment regimens

Antiretroviral therapy should include at least three drugs. Regimens containing only two drugs will at most give only a temporary response since dual therapy is typically associated with only a partial suppression of viral replication. The exposure of replicating virus to antiretroviral agents promotes the development of resistance to those agents (or in some cases to the entire class of agents). The response to monotherapy is even more short-lived, due to the rapid development of drug resistance. Table 10 gives the suggested priorities to be accorded to antiretroviral treatment according to the stage of the disease and available laboratory facilities.

Table 10. Suggested priority to be accorded to antiretroviral treatment according to stage of the disease and available laboratory facilities

Disease stage (WHO stage 1–4) <sup>a</sup>	Tests available		
	No CD4 counts No viral loads	Only CD4 counts	CD4 counts Viral loads
1. Acute HIV illness	Controversial	Controversial	Controversial
Asymptomatic phase	Fourth priority	Third priority	Third priority
2. Early symptomatic phase	Second priority	Second priority	Second priority
3. Symptomatic phase, non-AIDS	First priority	First priority	First priority
4. AIDS	First priority	First priority	First priority
5. Terminal AIDS	No antiretrovirals	No antiretrovirals	No antiretrovirals

<sup>a</sup> See Table 4 for details of clinical stages.

## Initiating antiretroviral therapy

Antiretroviral therapy should be offered to HIV-infected persons with symptoms related to HIV infection. It is generally advised for HIV-infected persons whose CD4<sup>+</sup> counts are <350 cells/mm<sup>3</sup> or whose plasma HIV RNA levels exceed 30 000 copies/ml, although the initiation of therapy in asymptomatic persons requires the potential risks (of disease progression and of adverse effects) to be weighed against the benefits. There is evidence that initiation of antiretroviral

therapy at a CD4+ count  $>200$  cells/mm<sup>3</sup> is associated with lower risk of death or disease progression than if therapy is initiated at CD4+ count  $<200$  cells/mm<sup>3</sup>. Risk of death was also found to be higher when therapy was initiated at a total lymphocyte count (TLC) of  $<1500$  cells/mm<sup>3</sup>, but the threshold TLC may vary between different populations.

The recommended regimens are two nucleoside reverse transcriptase inhibitors (NRTIs) plus a protease inhibitor (PI) or two NRTIs plus a non-nucleoside reverse transcriptase inhibitor (NNRTI).

NRTI pairs: d4T/ddI, AZT/3TC, d4T/3TC, or AZT/ddI  
(alternatives: ddI/3TC, AZT/ddC)

PIs: IDV, NFV, RTV/SQV, or RTV/LPV  
(alternatives: ABC, APV, RTV, SQV-sgc)  
(Although ABC is technically an NRTI it may be used with two other NRTIs without a PI or an NNRTI)

NNRTIs: EFV  
(alternatives: DLV, NVP).

Certain NRTI pairs *should not be used*: d4T/AZT, ddC/3TC, ddC/d4T, ddC/ddI.

*Abbreviations:*

3TC=lamivudine, ABC=abacavir, APV=amprenavir, AZT=zidovudine, d4T=stavudine, ddC=zalcitabine, ddI=didanosine, DLV=delavirdine, EFV=efavirenz, IDV=indinavir, NFV=nelfinavir, LPV=lopinavir, NVP=nevirapine, RTV=ritonavir, SQV=saquinavir (sgc = soft gel capsules).

### **Antiretroviral drugs: dosage and major adverse effects**

An exhaustive description of all adverse effects is beyond the scope of this book. Table 11 provides a list of some of the most important adverse effects associated with certain antiretroviral agents, but it does not list all adverse effects or drug interactions. The laboratory monitoring recommended during antiretroviral treatment is summarized in Table 12.

Table 11. Dosage and major adverse effects of antiretroviral agents

	Drug	Dosage	Most important adverse effects
NRTI	Abacavir (ABC)	300 mg BID <sup>a</sup> no food or water restrictions	Hypersensitivity reaction 3–5%: malaise, fever, gastrointestinal upset, rash; resolves in 2 days; do not rechallenge – may be life-threatening. Gastrointestinal upset and malaise are also common side effects without hypersensitivity reaction.
	Didanosine (ddl)	≥60 kg body wt 200 mg Q12 h or 400 mg QD <60 kg body wt 125 mg Q12 h or 250 mg QD empty stomach	Pancreatitis 6%, no intervention unless symptomatic, avoid in alcoholics; peripheral neuropathy 20% (dose reduction necessary in 12%); diarrhoea 28%. Buffers gastric acid so medications requiring gastric acidity for absorption must be taken 2 hours apart from ddl.
	Lamivudine (3TC)	150 mg BID	Well tolerated; fatigue and headache 35%, malaise 27%.
	Stavudine (D4T)	≥60 kg body wt 40 mg BID <60 kg body wt 30 mg BID	Peripheral neuropathy 15–20%.
	Zalcitabine (ddC)	0.75 mg Q8 h	Peripheral neuropathy 22–35%; oral ulcers 13%; rash 8%. Fertile women must use effective contraception while on ddC.
	Zidovudine (ZDV AZT)	300 mg BID 200 mg TID	Anaemia, granulocytopenia; (macrocytosis expected); nausea 50%; headache 62%; malaise 53%; asthenia and insomnia are common complaints.
NNRTI	Delavirdine (DLV)	400 mg TID	Skin rash 18%; cross resistance develops to strains resistant to NVP
	Efavirenz (EFV)	600 mg QHS with or without food	CNS side effects (dizziness, insomnia, somnolence, impaired concentration; abnormal dreaming) 52%; lowers Indinavir levels (IDV dose must be increased to 1000 mg Q8 h). Fertile women must use effective contraception while on EFV.

	Drug	Dosage	Most important adverse effects
	Nevirapine (NVP)	200 mg OD × 2 wks, then 200 mg BID	Skin rash 37% (Nevirapine stopped due to rash in only 6.7%; if rash is severe and accompanied by constitutional symptoms patients should NOT be re-challenged).
PI	Amprenavir (APV)	1200 mg BID with or without food but high fat meals should be avoided	Skin rash 28%; nausea, vomiting and diarrhoea; paraesthesias 30%; all PIs may cause 'buffalo hump' lipodystrophy, hyperglycemia or hyperlipidemias.
	Indinavir (IDV)	800 mg TID without food	Kidney stones 2–3% but much higher in hot climates; prevent with good hydration (1.5 litres extra water per day); increase indirect bilirubin 10–15% due to drug-induced Gilbert's Syndrome (not clinically important).
	Nelfinavir (NFV)	750 mg TID or 1250 BID with food	Mild to moderate diarrhoea 14–52%.
	Ritonavir (RTV)	600 mg BID with food (now more commonly given as 400 mg BID in combination with SQV 400 mg BID)	More drug interactions than any other anti-HIV drug – seek detailed information if using this drug; must separate ddl dose by 2 hours.
	Saquinavir (SQV)	1200 mg soft gel capsules TID or 600 mg hard gel capsules TID with food – high fat (may be given as 400 mg BID in combination with RTV)	Overall 37% have some side effects, mostly mild; <5% gastrointestinal side effects; initiate at 300 mg BID and increase by 100 mg increments if tolerated to reach full dose.
	Lopinavir (LPV)/ Ritonavir	400/100 mg fixed dose combination BID with food	Pancreatitis; gastrointestinal upset.

<sup>a</sup> See list of abbreviations at end of chapter for explanation of abbreviations.

## Drug interactions

Drug interactions occur between antiretroviral agents and various drugs of several classes, including antibiotics, antifungals, antimycobacterials, benzodiazepines, anticonvulsants, cardiac drugs, ergot alkaloids, gastrointestinal drugs and others.

Table 12. Laboratory monitoring during antiretroviral treatment

Laboratory parameter	Frequency	2 NRTIs + NNRTI	2 NRTIs + PI
Haematocrit/haemoglobin	Baseline, 1 m then Q3 m	XXX	XXX
White blood cell count + differential (includes absolute lymphocyte count)	Same	XXX	XXX
Platelets	Same	XXX	XXX
Bilirubin	Same	XXX	XXX
Transaminases	Same	XXX	XXX
Amylase	Q1–2 m (ddl, ddC, d4T, 3TC)	XXX	XXX
Creatinine/urea/urine protein	Baseline, 1 m then Q3 m	X	XX
Creatine phosphokinase	Same	X	XX
Glucose/glucose urinalysis	Initial + PRN		XX
Triglycerides	Baseline, Q3–4 m		XX
CD4 lymphocyte count/percent	Baseline, then Q3–4 m	XX	XX
Plasma viral load	Baseline and 1–2 m, then Q3–4 m	X	X

XXX=essential

XX=highly recommended, not essential

X=advisable, not essential.

There are particularly important interactions between the rifamycins and the PIs and the NNRTIs. In general the rifamycins substantially decrease levels of agent from both classes of drug. All PIs and DLV (an NNRTI) increase rifabutin levels between 173 and 342%. Only certain PIs and NNRTIs can be used in combination with rifabutin (none of these agents can be used with rifampin).

Rifabutin dosage adjustments with selected antiretrovirals:

<i>Drug</i>	<i>Usual dose</i>	<i>If co-administered</i>
Rifabutin	300 mg/day	With PIs: 150 mg/day With NFV: 450 mg/day

Dosage adjustments of selected antiretrovirals when rifabutin is co-administered:

<i>Drug</i>	<i>Usual dose</i>	<i>If co-administered</i>
Indinavir	800 mg/day	1000 mg Q8h
Nelfinavir	1250 mg/day	1000 mg Q8h
Nevirapine	200 mg BID	200 mg BID
Efavirenz	600 mg OD	600 mg OD

Options for tuberculosis treatment with highly active antiretroviral therapy (HAART):

<i>Drug</i>	<i>Usual dose</i>	<i>HAART regimen</i>
Rifampin	(standard regimen)	3-NRTI (ABC + 2 other) or postpone HAART
Rifabutin	150 mg/day	2-NRTI plus PI (IDV or NFV)
	300 mg/day	2-NRTI plus NVP
	450 mg/day	2-NRTI plus EFV
No rifamycin		Any HAART

### Monitoring antiretroviral therapy

Response to antiretroviral therapy is reflected in decreased plasma HIV RNA levels and increased CD4+ lymphocyte counts. Virological response is usually evident prior to CD4+ count change. Failure of an antiretroviral regimen is generally considered as: (i) a failure to achieve an undetectable viral load or at least a drop of >1 log decline in viral load by four weeks of therapy, or (ii) a return to detectable levels of viral RNA while on treatment, or (iii) a persistent significant decline in CD4+ count with or without clinical progression, or (iv) intolerance or toxicity of therapy resulting in inconsistent dosing or intolerable side effects.

If failure is a result of drug toxicity without evidence of virological failure, the offending agent alone may be changed. When there is clinical or virological failure, all drugs in the regimen should be changed. If the regimen contained an NNRTI, the new regimen should not contain an NNRTI since resistance to one agent in this class of drug confers a high level of resistance to other agent in this class. There may also be cross-resistance between PIs and, in particular, IDV and RTV should not be exchanged for one another. A detailed discussion of salvage antiretroviral therapies is beyond the scope of this book.

## Immune reconstitution syndrome

A minority of patients who initiate highly active antiretroviral therapy will experience an immune reconstitution syndrome (IRS) weeks to months after commencing therapy. This is typically associated with decreased plasma viral load and increased CD4+ count compared to pre-treatment baseline values. Presentations include certain opportunistic infections or malignancies that appear to be unmasked, or alternately as paradoxical reactions to the agents of opportunistic infections. When they occur these phenomena most often involve *M. avium* complex (usually an unmasking), *M. tuberculosis* (always a paradoxical reaction), cytomegalovirus (may be either), hepatitis B and C viruses, and Herpes zoster virus, but fungal agents (e.g. cryptococcus) may also be involved. Autoimmune disorders (Graves disease, systemic lupus erythematosus) and malignancies (lymphoma, Kaposi's sarcoma) have also been described in immune reconstitution syndromes.

The immune reconstitution syndrome is typically self-limited if highly active antiretroviral therapy continues, but if symptoms are severe the therapy may need to be temporarily interrupted while the opportunistic infection is treated.

## Palliative care in HIV/AIDS

### Caring for HIV-positive substance users

Caregivers need to:

- make a full assessment of chemical dependency issues;
- recognize that the reasons for drug use may include fear, coping with serious illness, anger, pain, low self-esteem, or may co-exist with a psychiatric diagnosis;
- understand that a substance may elicit different responses from each individual.

Substance users may:

- present with anxiety, insecurity and emotional instability;
- show forms of behaviour such as manipulation, seduction and an unwillingness to tolerate frustration;



- be tempted to self-medicate to suppress feelings associated with HIV/AIDS.

Assessment should include:

- the history of substance use (drugs and alcohol: date of last use, amount used, method of use, frequency of use, cigarette smoking, history of drug and alcohol treatment and outcomes, reasons for using drugs and alcohol);
- psychiatric history: confirmation of diagnosis; treatments, medications, periods in hospital; current situation;
- the person's needs/perceptions regarding pain management: pain relief needs/perceptions, knowledge of analgesic medications for pain management.

### **Last hours of living**

All persons involved (caregivers, family members, friends) should be clear among themselves what is happening and what can be expected. Caregivers should encourage a shift from “hope for life, hope to get better” to “hope for some time together, hope for a peaceful death”.

Medical management seeks to:

- minimize pain
- reduce shortness of breath
- control terminal delirium
- control and/or reduce the risk of seizures
- minimize the risk of aspiration
- keep mucous membranes moist
- minimize the risk of skin breakdown.

In communicating with the dying person, family and caregivers should:

- discuss good news at the bedside, including the person in any conversations;
- discuss bad or potentially distressing news as far away as possible from the bedside;
- say what they feel they need to say;
- include family, children and pets;
- touch, hold, lie beside the person;

- reassure the person that he/she is safe and not alone, right up until death;
- above all – listen.

## **Pain**

Individuals living with HIV/AIDS often suffer from pain related to the variable nature of HIV/AIDS, concurrent opportunistic infections, major psychosocial stressors and multiple medications, with drug interactions and side effects.

The assessment of pain should include inquiry about site, radiation of pain, timing, quality, severity, aggravating factors, relieving factors, impact on activities of daily living and previous therapy (and any adverse effects).

The type of pain should be established: nociceptive, visceral, neuropathic or mixed, rest or movement pain.

Multiple approaches may be required depending on the cause(s) of the pain.

- modify the disease: antivirals, antibiotics, chemotherapy, radiation therapy, surgery;
- modify the perception of the pain: medications, education, massage therapy, psychological support, relaxation therapy, therapeutic touch;
- modify or interrupt pain transmission pathways: transcutaneous electrical nerve stimulation, acupuncture, chiropractic, nerve blocks, neurosurgery;
- modify lifestyle: occupational therapy, physiotherapy, homemaking assistance.

Prescribe analgesics in a stepwise fashion:

- mild pain: non-opioids (ASA, acetaminophen, NSAIDs);
- moderate pain: add a weak opioid (codeine);
- severe pain: replace the weak opioid with a strong opioid (morphine, hydromorphone, oxycodone, fentanyl, methadone).

For constant pain at rest always provide round-the-clock analgesia, never PRN dosing.

For intermittent pain (such as movement pain, extra pain) provide PRN dosing.

Anticipate the potential side effects (constipation, nausea, dry mouth, drowsiness/sedation, confusion/delirium, urinary retention, twitches/jerks/myoclonus, respiratory depression) and educate the patient about them. Bulk-forming agents or hyperosmotic agents (such as psyllium hydrophilic mucilloid 4.5–20 g/day or lactulose 10–40 g/day) should be added to opioid treatment to avoid severe constipation.

Be prepared to lower the opioid dose significantly if delirium presents along with fever/sepsis. Know how to handle opioid overdose (encourage fluids PO; if the breathing rate is too low, administer naloxone).

#### *Additional considerations for HIV-positive substance users*

In the case of opioid users, bear in mind:

- higher tolerance to morphine derivatives (increase dose, shorten interval);
- withdrawal from opioids (treat with clonidine, benzodiazepines, anti-spasmodics, anti-inflammatories);
- drug interactions (phenytoin, rifampin increase elimination of methadone; use of agonist/antagonist drugs such as pentazocine can rapidly provoke withdrawal);
- hepatic failure (monitor dosages to prevent overdosing).

In the case of benzodiazepine users, bear in mind:

- higher tolerance to benzodiazepines (increase dose, shorten interval).

In the case of alcohol users, bear in mind:

- cross tolerance to benzodiazepines (increase dose, shorten interval);
- hepatic failure can alter pharmacokinetics (adjust dose, interval accordingly).

In the case of cocaine users, bear in mind:

- withdrawal (use longer-acting benzodiazepines);
- hepatic failure (as above).

### *Neuropathic pain*

If pain is due to nerve damage or infiltration:

- tricyclic antidepressants (amitriptyline, desipramine, imipramine) may be effective and may enhance effect of opioids: 10–25 mg at bedtime (HS) for 3–5 days and, if no adverse effects, increase in 10–25 mg increments every 3–5 days to a maximum of 150 mg/24 hours; maximal response may take 2–4 weeks;
- local anaesthetics, membrane stabilizing antiarrhythmics (do **not** combine with TCAs): mexiletine 100 mg every 8 hours, increase 100 mg every 8 hours every 3 or more days as needed; flecainide 50 mg every 12 hours, increase 50 mg every 12 hours every 4 or more days as needed; capsaicin 0.025–0.075% cream, apply to affected areas TID/QID.

If pain is due to nerve compression or irritation:

- carbamazepine 100–200 mg every 12 hours, increase to 100–400 mg TID/QID, monitor therapeutic plasma levels;
- valproic acid 125 mg every 8 hours, increase to 250–1000 mg every 8 hours as needed;
- phenytoin 100 mg every 8 hours, modify therapeutic plasma levels to modify dose as needed;
- clonazepam 0.5 mg every 12 hours, increase to 0.5–3.0 mg every 8 hours as needed.

### *Odynophagia (pain on swallowing)*

The causes of odynophagia may be infectious (candida, sometimes without oral infection, CMV, HSV, VZV), malignancy (Kaposi's sarcoma, lymphoma) or other (idiopathic oesophageal ulcers, excess alcohol, hiatus hernia, hyperacidity/reflux, radiation therapy, spicy food, stress).

Pain can be managed with stepwise analgesia; NSAIDs may be particularly helpful. Local anaesthetic effects can be obtained from

oxethazaine, aluminium and magnesium hydroxide mouthwash 15–30 ml TID/QID, rinse mouth, gargle, then swallow.

Excess acid can be neutralized with Al or Mg antacids 15–30 ml every 2 hours PRN, or alginic acid 10–20 ml or 2–4 tabs PO QID PC + HS.

Acid production can be reduced with ranitidine 150 mg PO every 12 hours, famotidine 20–40 mg PO OD (or IV every 12 hours), or omeprazole 20–40 mg PO OD.

Open gastric/oesophageal ulcers can be covered with sucralfate 1 gm PO QID AC + HS.

## Dementia

The main presentations of dementia are shown in Table 13.

Table 13. Main presentations of dementia

Early dementia	Late dementia	Very late dementia
Blunted affect Decreased concentration Forgetfulness Mental slowing Short term memory loss	Apathy Disorientation Fatigue Generalized weakness Hypomania Loss of balance Night time delusions Psychomotor retardation Sundown syndrome Tremors Vacant stare Wandering Withdrawal	Confusion Dysarthria Incontinence Mutism Seizures

The causes may include HIV itself, opportunistic infections, progressive multifocal leukoencephalopathy, delirium or depression.

The general approach in giving care is to:

- continue only essential medications (methylphenidate 5–20 mg each morning has helped mild dementia)

- provide a protective, safe, structured environment
- keep familiar objects in close proximity
- establish regular daily routines (regular activity and sleep times)
- reduce external stimuli
- provide as much control as possible
- make instructions clear and simple
- minimize the number of caregivers.

Antiretrovirals (AZT, ddI, ddC) may protect against or reverse HIV-related dementia.

### **Delirium**

Presentation may include:

- agitation
- nightmares
- decreased level of consciousness, somnolence (often fluctuating)
- disorientation
- hallucinations or other perceptual disturbances
- hypervigilance
- moaning, groaning
- reduced concentration
- restlessness
- short-term memory difficulties
- sleep/wake cycle reversal.

The causes include:

- depression, pre-existing bipolar disorder, brief reactive psychosis or schizophrenia
- HIV encephalopathy
- opportunistic infections, sepsis
- increased intracranial pressure
- side effects or withdrawal of medications (benzodiazepines, opioids, anti-cholinergics)
- metabolic abnormalities (may include renal or hepatic failure)

- hypoxia
- fecal impaction
- urinary retention

The following is the general approach in giving care.

- Discontinue any medications that could be responsible.
- Provide a familiar environment and orient the patient frequently.
- Neuroleptics may be helpful for agitation, restlessness or psychosis. Start with the smallest possible dose (Haloperidol 0.5 mg PO, IM, SC; thioridazine 10 mg PO; loxapine 2.5 mg PO, IM; chlorpromazine 10 mg PO, PR, IM). Adjust upward as necessary; frequent dosing may be required to achieve control. Once the delirium is controlled, reduce the total daily dose by 25–33% and divide the daily maintenance dose into 2–3 doses/ 24 hours.

*Note:*

There are potential side effects. Higher potency drugs (haloperidol) are associated with extra-pyramidal side effects; lower potency drugs (chlorpromazine, thioridazine) are associated with sedation and anti-cholinergic side effects; mid potency drugs (loxapine, trifluoperazine) are less likely to cause either type of side effect.

*Terminal delirium*

The aim is to settle the person since the underlying causes are untreatable.

The goals are to bring about muscle relaxation, a reduction in anxiety and seizures, and inhibition of the perception of the last hours of living.

Benzodiazepines may settle terminal delirium and /or induce sedation: lorazepam 1–4 mg against buccal mucosa Q1H PRN (pre-dissolved in 0.5–1.0 ml water). Up to 50 mg per 24 hours may be required in very restless individuals; midazolam 1–5 mg SC, IM, IV Q3H PRN or by continuous infusion.

Haloperidol and methotrimeprazine may also be useful (administer subcutaneously; avoid IM injections in cachectic persons).

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## List of abbreviations

ABG	Arterial blood gases
AC	Before meals
AFB	Acid fast bacilli
ANA	Anti-nuclear antigen
ARV	Antiretroviral
ASA	Acetylsalicylic acid
BAL	Broncho-alveolar lavage
BID	Twice daily
BUN	Blood urea nitrogen
CBC	Complete blood count
CK	Creatine kinase
CNS	Central nervous system
CMV	Cytomegalovirus
C/S	Culture and sensitivity testing
CSF	cerebrospinal fluid
CT	Computerized tomography
DS	Double strength
ELISA	Enzyme-linked immunosorbent assay
EMG	Electromyography
EOM	Extra-ocular muscle
OD	Once daily
HAART	Highly active antiretroviral therapy
HS	At bedtime
HSV	Herpes simplex virus
KOH	Potassium hydroxide
KS	Kaposi's sarcoma
LC	Lymphocytes
LDH	Lactate dehydrogenase
Log	Logarithm
NSAIDS	Non-steroidal anti-inflammatory drugs
Pap test	Papanicolaou smear for cervical cytology
PC	After meals
PCP	Pneumocystis carinii pneumonia
PML	Progressive multifocal leukoencephalopathy
PO	By mouth
pO <sub>2</sub>	Partial pressure of oxygen
PRN	As needed
PR	Per rectum
QHS	Daily at bedtime

QID	Four times daily
QD	Once daily
QW	Once weekly
RNA	Ribonucleic acid
RPR	Rapid plasma reagin
SC	Subcutaneously
SE	Side effect
SIADH	Syndrome of inappropriate anti-diuretic hormone release
SL	Sub-lingual
SS	Single strength
TE	Toxoplasmic encephalitis
TID	Three times daily
TIW	Three times weekly
TMP-SMZ	Trimethoprim sulfamethoxazole
TST	Tuberculin skin test
VCT	Voluntary HIV counselling and testing
VDRL	Venereal Disease Research Laboratory
V/Q	Ventilation perfusion
VZV	Varicella zoster virus

#### Antiretrovirals

ABC	abacavir
APV	amprenavir
AZT or ZDV	zidovudine
ddc	zalcitabine
ddI	didanosine
DLV	delavirdine
d4T	stavudine
EFV	efavirenz
IDV	indinavir
LPV	lopinavir
NFV	nelfinavir
NRTI	nucleoside RTI
NNRTI	non-nucleoside RTI
NVP	nevirapine
PI	protease inhibitor
RTI	reverse transcriptase inhibitor
RTV	ritonavir
3TC	lamivudine
SQV	saquinavir

# Chapter 7

## Tuberculosis and HIV/AIDS

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### Introduction

The current global tuberculosis (TB) epidemic is responsible for approximately 8 million new TB cases and 2 million deaths each year. Although adequate treatment exists, encompassed in the WHO-recommended basic TB control package (directly observed treatment, short course – DOTS), it was estimated that in 1999, only 2% of the world's infectious TB cases had access to such treatment. Inadequate treatment for TB not only results in sickness and death but also in the continued transmission of infection and the creation of drug-resistant TB.

The emergence of the HIV pandemic has seriously threatened TB control efforts globally. HIV dramatically increases the risk of developing active TB disease. In some countries, the number of TB cases has quadrupled over the last decade as a result of HIV. TB is the single biggest killer of people infected with HIV. Where the twin epidemics of HIV and TB collide, an explosion in the number of TB cases is witnessed. As prison life carries an increased risk of both TB and HIV, the setting is ripe for such a catastrophe. Neither epidemic will stay within the prison walls.

## Pathogenesis and risk factors for dual infection

TB is caused by the bacterial species *Mycobacterium tuberculosis*. It can affect any organ but most commonly attacks the lungs (pulmonary TB). It is spread through the air in infectious droplets produced when a patient with pulmonary TB coughs, sneezes, talks, etc. These infectious droplets persist in the air for longer periods in dark, poorly ventilated areas.

The most infectious TB cases are those people who produce sputum in which the TB bacteria are so numerous that they are readily visible, after appropriate staining, under a light microscope. These are termed “smear-positive” pulmonary TB cases. “Smear-negative” pulmonary TB cases are estimated to be 10 times less infectious than those that are smear-positive. Patients with TB of other organs (extrapulmonary cases) are not infectious. The risk of infection depends on the length and intensity of exposure and the individual’s immune response. In the vast majority of healthy individuals, the immune system controls the primary infection and active TB disease does not develop. Instead, the TB bacteria remain dormant inside the body. This is termed “latent TB infection” with the only evidence of infection being a positive tuberculin skin test (see below, Prevention of HIV-related TB disease). However, in approximately 10% of healthy individuals, infection either develops into disease within weeks or reactivates after months or years of latency. Although previous infection is thought to provide some protection from subsequent infection, re-infection is known to occur.

By weakening the immune response, HIV is the most powerful known factor governing the progression from TB infection to disease. Where TB and HIV co-exist, the risk of developing active TB disease is estimated to be 5–15% *per year*, as opposed to a 10% *lifetime* risk in the non-HIV-infected. The risk appears to be greatest for those with pre-existing HIV infection who are subsequently infected with TB. There is also evidence to suggest that TB may increase the speed of replication of HIV, thus making the progression to AIDS more rapid. HIV infection alone is not a risk factor for drug-resistant TB.

Prison presents a number of risk factors for dual TB-HIV infection:

- a disproportionate number of prisoners already come from populations with a higher risk of both HIV and TB e.g. the homeless, substance abusers, mentally ill;
- prisons promote the transmission of epidemic disease through the conditions (overcrowding, poor nutrition, lack of fresh air and sunlight), barriers to accessing and continuing medical care, high turnover of population (increasing contacts and difficulties tracing patients), weak health education and promotion, unhealthy behaviour, official denial, fear and stigma.

Active TB disease, with or without HIV disease, may appear in many clinical forms and mimic a number of other diseases. Pulmonary disease is most common, causing lung destruction with cavities, upper lobe infiltrates, fibrosis and pneumonia. Extrapulmonary disease can affect any organ but is most often associated with the pleura, lymph nodes, central nervous system, pericardium, gastrointestinal system and the spine, bone and joints. In HIV-infected patients, TB is commonly one of the first opportunistic infections to appear, but it can occur at any point in the progression of HIV disease. The manifestation of TB disease depends on the degree of immuno-suppression – at relatively high CD4+ counts pulmonary TB is common (see Chapter 6). As HIV disease progresses, lymphatic and serous forms, meningitis and disseminated TB become more frequent.

## **Epidemiology of TB/HIV in prisons**

Reliable data on the levels of TB and HIV in prisons are often difficult to obtain. However, reports suggest that the prevalence of both infections is very much higher inside prison than in civilian society. For example a TB prevalence survey of the Georgian prison system in 1998–1999 found that 5995 per 100 000 prisoners had smear- or culture-positive pulmonary TB compared with 155 per 100 000 (all forms of TB) in the civilian population of 1997.

The impact of HIV on the TB epidemic varies in different settings. As the reactivation of latent TB infection is most important epidemiologically, HIV is unlikely to cause significant changes in TB incidence in populations with low levels of TB infection. This is unless TB is introduced, where rapid progression to active disease and explosive

outbreaks of TB have been documented. Conversely, where pre-existing levels of TB infection are significant, the introduction of HIV will have a dramatic effect. The associated general increase in TB transmission will pose a risk for both those who are and those who are not infected with HIV. The full impact on the TB epidemic may not be seen immediately because the incidence of TB increases with HIV disease progression and because of the potential latent period before reactivation of TB infection.

This second scenario of high levels of pre-existing TB infection with the introduction of HIV in a population is precisely the situation in many European prisons. Without efforts to bring both HIV and TB transmission swiftly under control, the TB epidemic in prisons can be expected to worsen significantly in the coming decade.

## Principles of TB control

The basic principles of TB control remain the same with or without the presence of HIV. The threat posed by HIV just means efforts must be intensified urgently in the control of both infections. The fundamental principles of TB control in prison include:

- early case detection and prompt initiation of correct treatment to reduce morbidity and mortality and the transmission of infection and avoid development of drug-resistant TB;
- accessibility of services for all TB cases, but giving those with infectious (smear-positive) TB priority in diagnosis and treatment, especially where resources are limited;
- continuity and equivalence of care through integration of prison and civilian TB services, including procedures to ensure correct medical follow-up when individuals with TB are arrested or released from prison;
- improvement of structural and administrative factors that promote transmission of TB and have a negative impact on TB control.

The World Health Assembly has defined global targets for TB control, namely:

- to cure 85% of sputum smear-positive cases detected
- to detect 70% of estimated new sputum smear-positive cases.



The basic TB control package (DOTS) therefore needs to include:

- government commitment to ensuring sustained, comprehensive TB control activities;
- case detection by sputum smear microscopy among symptomatic patients self-reporting to health services;
- standardized short-course chemotherapy, using regimens of 6–8 months for at least all confirmed smear-positive cases, and direct observation of treatment (DOT);
- a regular and non-interrupted supply of all essential anti-TB drugs;
- a standardized recording and reporting system that allows assessment of treatment results for each patient and of the TB control programme performance overall.

The technical aspects of basic TB control are not difficult. Programmes usually fail because of a lack of strong policy and management supported by an adequate infrastructure. Unfortunately, when basic programmes fail they will later require more complicated and expensive technical support, which will again fail if fundamental management requirements are not met. Good management and supervision of TB programmes is therefore essential. For more details on establishing and managing TB control programmes in prison, as well as technical issues, the reader is referred to *TB control in prisons – a manual for programme managers* (see Bibliography).

## Diagnosis of HIV-related TB disease

Although extrapulmonary forms of TB occur more frequently in those co-infected with HIV, pulmonary TB remains the most common manifestation of TB. As the early detection and prompt treatment of infectious TB cases is the highest priority, **all patients suspected of any form of tuberculosis must submit sputum specimens for smear microscopy** at least. Because of the close link between TB and HIV, any patient diagnosed with TB should be offered confidential counselling and a voluntary HIV test, and any patient diagnosed with HIV should be screened for TB.

## Pulmonary TB

Patients may be suspected of TB by having symptoms suggestive of TB and/or by chest X-ray changes. Table 14 compares both methods and indicates possible changes in the manifestations of pulmonary TB disease expected with co-existent HIV infection. The tuberculin skin test is of little value in detecting active TB disease (see below, Prevention of HIV-related TB disease).

Table 14. Methods of identifying tuberculosis suspects

	Symptoms	Radiography
In TB unrelated to HIV:	Cough >3 weeks, sputum production (+/-blood), weight loss, chest pain, breathlessness, fever/night sweats	"Classical" pattern: upper lobe infiltrates/cavitation/fibrosis [NB: No pattern of X-ray changes is absolutely typical of pulmonary TB.]
Possible adaptations with co-existent HIV:	Weight loss and fever more common, cough and blood-stained sputum less common.	Depends on degree of immuno-compromise; at mild levels, "classical" pattern above seen. With more severe immunocompromise: "atypical" pattern: interstitial infiltrates (especially lower zones)/no cavitation/no abnormalities
Advantages for identifying TB suspects:	More than 90% of infectious TB cases have symptoms. Cheap and simple to perform.	Sensitivity and specificity for identifying TB cases reported to be >90% in some contexts, but may be less sensitive and specific where HIV infection is common
Disadvantages for identifying TB suspects:	Symptoms not specific to TB and may indicate other respiratory disease (HIV-related or not). Prisoners quickly learn which symptoms suggest TB, leading to possible corruption of procedures (denying or falsely claiming symptoms).	Radiographic changes not specific to TB and may indicate other respiratory disease (HIV-related or not). More objective method of detecting suspects. Sensitivity and specificity depend on quality of films and observer. Requires sophisticated equipment and training with high capital and running costs

Ideally, both methods should be used, although where resources are limited, symptom screening followed by sputum examination is adequate.

Patients suspected of TB should provide three sputum samples on consecutive days. Three samples are taken to increase the chance of finding TB bacteria in the prisoner's sputum. Sputum should be collected in the early morning in a well ventilated area. Sputum collection should be directly observed to limit the potential for prisoners to provide false specimens. Samples should then be sent to the laboratory for smear examination (and culture, species identification and drug susceptibility testing, if resources allow).

Smear-positive pulmonary TB cases are defined as follows:

- TB in a patient with at least two initial sputum smear examinations positive for TB bacilli by direct microscopy, **or**
- TB in a patient with one sputum specimen positive for TB bacilli and radiographic abnormalities consistent with active pulmonary TB as determined by a clinician, **or**
- TB in a patient with one sputum specimen positive for acid fast bacilli (AFB) and sputum culture positive for tubercle bacilli.

Prisoners with respiratory symptoms but who provide three negative sputum samples may have smear-negative pulmonary TB. In keeping with good clinical and public health practices, criteria for diagnosing smear-negative TB should include:

- at least three sputum specimens negative for TB bacilli, **and**
- radiographic abnormalities consistent with active pulmonary TB, **and**
- no response to a course of broad-spectrum antibiotics, **and**
- a decision by a clinician to treat with a full course of anti-TB chemotherapy.

However, other pathologies (HIV-related or not) should also be considered, including:

- other infections, e.g. bacterial pneumonia, lung abscess, *Pneumocystis carinii* pneumonia (PCP), aspergillosis, cryptococcosis, nocardiosis;

- non-infectious diseases, e.g. congestive cardiac failure/left ventricular failure, asthma, chronic obstructive airways disease, bronchiectasis, bronchial carcinoma, Kaposi's sarcoma.

Remember that two pathologies may co-exist.

### Extrapulmonary disease

Extrapulmonary TB is defined as TB of organs other than the lungs (e.g. pleura, lymph nodes, bones and joints, genitourinary tract, intestines, pericardium, meninges). Diagnosis should be based on one culture-positive specimen or histological or strong clinical evidence consistent with active extrapulmonary TB, followed by a decision by a clinician to treat with a full course of anti-TB chemotherapy. Extrapulmonary TB in the presence of HIV most commonly manifests as lymphadenopathy, serous effusions (pleura, peritoneum, pericardium) and disseminated or miliary TB.

If TB is suspected, diagnosis should be confirmed by biopsy or aspirate followed by smear/culture and histological examination, as appropriate and feasible. The diagnosis may be presumptive if other conditions can be ruled out. Remember also that pulmonary and extrapulmonary TB or two different pathologies may co-exist.

### Treatment of HIV-related TB disease

TB responds as well to treatment in patients with HIV infection as in those without, although there is often a higher case fatality among HIV-positive patients (approximately 20%), partly due to TB itself and partly to other HIV-related pathologies. After successful treatment, the rates of recurrence of TB disease are similar for HIV-positive and HIV-negative patients.

TB treatment in those co-infected with HIV increases the quality and length of life of affected individuals and also reduces TB transmission by reducing the number of infectious sources. **HIV infection is never a valid reason for withholding TB treatment.**

HIV-positive TB patients may receive the same treatment regimens as those who are HIV-negative, with a few cautions, as below. Prison

programmes should use the same regimens as those recommended nationally. Regimens should contain at least three active anti-TB drugs and be prescribed in the correct doses and for the correct duration. The drugs used must be of good quality and health workers must be sure that patients have swallowed their tablets. Inadequate treatment does not cure patients, leads to persistent transmission of infection, and creates drug-resistant TB.

Tables 15 and 16 demonstrate the WHO recommended regimens in the basic TB control package. They are designed to prioritize treatment to the seriously ill and those most likely to be transmitting TB infection. A strengthened treatment regimen is allocated to those previously treated who are more likely to be suffering from resistant forms of TB. Where resources permit and drug-resistant tuberculosis is likely, treatment regimens can be adapted, depending on drug susceptibility testing, either on an individual basis or according to the prevailing drug susceptibility pattern in each context. However, treatment for drug-resistant TB is complex, difficult and prolonged, and if badly managed will result in further resistance to so-called second-line drugs. It should, therefore, only be carried out in specialized centres that are closely supervised and adequately resourced.

In prison there may be a number of pressures on patients to default from TB treatment, either openly or in a concealed way. For example, medicines may be used as currency or patients may be coerced into giving up their treatment. Patients may feel that a diagnosis of TB gives them better privileges (e.g. living conditions), leading them to avoid being cured. Health workers must therefore make every effort to ensure that patients take the medicines prescribed for them by counselling and supporting them. Every dose should be directly observed (i.e. the health worker should watch the patient as he or she swallows the tablets). Other incentives or enablers can be considered, although care should be taken to ensure that incentives do not encourage patients to try to be treated for TB falsely or to default from treatment to maintain the incentive.

Table 15. Standardized basic tuberculosis treatment regimens

Treatment category	Type of tuberculosis patient	Recommended alternative tuberculosis treatment regimens <sup>a</sup>	
		Initial phase (daily or 3 times per week)	Continuation phase
I	New smear-positive cases or severely ill new smear-negative or extrapulmonary cases <sup>b</sup>	2 EHRZ (SHRZ) <sup>c</sup>	6 HE or 4HR or 4H <sub>3</sub> R <sub>3</sub>
II	Previously treated smear-positive cases or severely ill, previously treated smear-negative and extrapulmonary cases	2 SHRZE/1 HRZE	5 H <sub>3</sub> R <sub>3</sub> E <sub>3</sub> or 5 HRE
III	Smear-negative pulmonary or extrapulmonary TB	2 HRZ	6HE or 4 HR or 4H <sub>3</sub> R <sub>3</sub>
IV	Chronic cases	Refer to specialist treatment centre if available. If not, provide counselling and palliative treatment and place in respiratory isolation <sup>d</sup>	

<sup>a</sup> Each drug is coded by a letter (see Table 16 for drug names). The number of months of a protocol is shown by the number directly before the letter indicating the drug to be taken. The number of times in a week that the drug is taken is indicated by a number as a subscript after the letter; the absence of such a number indicates that daily therapy is given. For example, 4H<sub>3</sub>R<sub>3</sub> means that isoniazid and rifampicin are given for 4 months, 3 times a week.

<sup>b</sup> Includes TB meningitis, miliary (disseminated) TB, Pott's disease (spinal TB), pericardial TB.

<sup>c</sup> Ethambutol should be used instead of streptomycin, as injectable drugs should be avoided if possible because of the risks of HIV transmission if equipment is not fully sterilized. Ethambutol is also less costly than streptomycin.

<sup>d</sup> Must not be synonymous with punishment.

Table 16. Recommended doses and contraindications of basic tuberculosis drugs

Drug (abbreviation)	Recommended dose (mg/kg) for adults and children		Contraindications
	Daily	3 doses/ week	
Isoniazid (H)	5 (4–6)	10 (8–12)	Known hypersensitivity Active liver disease (acute/severe hepatitis, hepatic insufficiency, portal hypertension, cirrhosis)
Rifampicin (R )	10 (8–12)	10 (8–12)	
Pyrazinamide (Z)	25 (20–30)	35 (30–40)	
Streptomycin (S)	15 (12–18)	15 (12–18)	Known hypersensitivity Auditory nerve impairment Myasthenia gravis Pregnancy
Ethambutol (E) Children maximum dose 15mg/kg/d	15 (15–20)	30 (25–35)	Known hypersensitivity Optic neuritis Creatinine clearance <50ml/min Children <6 years

## Side-effects and drug interactions

Side effects of varying severity may occur with any anti-TB drug. However, side effects are more common in those infected with HIV, the risk increasing with the degree of immunocompromise. For example, the peripheral neuropathy often associated with isoniazid is more common but can be prevented by administering 10 mg of pyridoxine with each isoniazid dose. Thioacetazone, an anti-TB drug now rarely used in Europe, should be avoided for patients known or suspected to have co-existent HIV infection because of potentially fatal skin reactions, including Steven-Johnson's syndrome.

Itching while on TB treatment may indicate allergy to one or more anti-TB drugs, although other causes of itching such as scabies should first be excluded. Itching can be treated with anti-histamines while the anti-TB drugs are continued. If a rash develops, anti-TB drugs should be stopped. If a serious reaction occurs (hypotension, exfoliative

dermatitis or toxic epidermal necrolysis, mucous membrane involvement), supportive treatment may be required with intravenous fluids and corticosteroids.

When the reaction has resolved, challenge doses of anti-TB drugs as in Table 17 should be given to identify the drug responsible. Start with the drug least likely to cause a reaction first (isoniazid), giving increasing doses over three days. The procedure should be repeated, adding drugs until the drug responsible is identified. If possible, patients should be treated with two anti-TB drugs not previously received while undergoing the drug challenge. When the drug causing the reaction has been identified it should be replaced with another if possible, particularly if it has been a serious reaction. The resumption of full TB treatment should be considered the start of a new treatment course. Desensitization to drugs should never be attempted in HIV-positive patients.

Table 17. Reintroduction of anti-tuberculosis drugs after a cutaneous hypersensitivity reaction

Drugs (in sequence)	Likelihood of causing a reaction	Day 1	Day 2	Day 3
Isoniazid	Least likely	50–100 mg	300 mg	300 mg
Rifampicin	↓	75 mg	300 mg	Full dose
Pyrazinamide		250 mg	1 g	Full dose
Ethambutol		100 mg	500 mg	Full dose
Streptomycin		125 mg	500 mg	Full dose
	Most likely			

Gastrointestinal intolerance is more common in HIV-positive patients. After excluding other causes of abdominal pain and/or vomiting such as hepatitis (see also Chapter 6), symptoms may be alleviated by the use of anti-emetics or by giving drugs before sleep. Antacids may reduce the absorption of rifampicin and isoniazid. Where possible, rifampicin should be taken on an empty stomach.

HIV-positive patients also have a greater risk of hepatotoxicity to anti-TB drugs, particularly isoniazid, rifampicin and pyrazinamide. If patients develop hepatitis (significantly abnormal liver function tests, jaundice) while on treatment, other causes of hepatitis should be



excluded and anti-TB drugs should be stopped. If the patient is severely ill with TB, streptomycin and ethambutol may be continued. After the hepatitis has resolved it may be possible to re-introduce the same regimen with close monitoring as the hepatitis may not recur. Alternatively 2SHE/10HE may be used, or where streptomycin or isoniazid resistance is known, 9RE.

Further information regarding the management of minor and major side effects with TB treatment can be found in the texts mentioned in the Bibliography at the end of this chapter. Interactions may also be noted with anti-fungal agents, such as ketoconazole and fluconazole. Guidance should always be sought when combining anti-TB drugs with drugs for the treatment of HIV or associated conditions (see Chapter 6).

Although there is some debate over the role of particular nutritional factors in susceptibility to TB and response to treatment, common sense would suggest that increasing energy and protein intake as well as essential nutrients is likely to play a positive role in influencing response to treatment. If possible, nutritional supplementation should be provided in the form of high-energy milk, high-energy biscuits or supplementing the prison diet with locally available high-protein foodstuffs, fruit and vegetables wherever possible.

## **Patient monitoring and treatment outcomes**

Patients should be monitored at regular intervals clinically and through smear microscopy/culture during and at the end of treatment. Recording and analysing the results of treatment, particularly of sputum smear-positive cases, is vital to assess the effectiveness of the programme. At the end of treatment patients should be categorized as follows.

- cure: a patient who was smear-positive at the start of treatment and is smear-negative in the last month of complete treatment and on at least one previous occasion;
- treatment completed: a patient who has completed treatment but who does not meet the criteria to be classified as cured or failed;
- failure: a patient who is smear-positive at five months or later, during treatment;

- died: a patient who dies for any reason during the course of treatment;
- defaulter: a patient whose treatment was interrupted for two consecutive months or more;
- transfer out: a patient who is transferred to another reporting unit and for whom the treatment outcome is not known.

*Note:* in countries where culture is current practice, patients can be classified as cure or failure on the basis of culture results.

The treatment outcomes of each group or cohort of patients commencing treatment in a fixed period of time (e.g. three months) is collected and analysed. In this way the proportion of patients that are successfully treated (cure plus treatment completion) can be determined and the effectiveness of the programme determined. The target in HIV-negative TB patients is 85%. In HIV-positive patients, the proportion successfully treated will be depressed because of the higher than normal expected death rate. However, the combined failure, transfer out and defaulter target should be less than 15%. Again more details are available in the texts in the Bibliography.

## **Prevention of HIV-related TB disease**

HIV-related TB can be prevented by avoiding exposure to TB infection or by preventing infection progressing to active TB disease.

### **Avoiding exposure to TB infection**

The best way to reduce exposure to TB infection is the early detection and treatment of infectious TB cases, thus interrupting the chain of transmission of infection. This is the priority intervention for the prevention of TB. Early case detection and the prompt initiation of treatment can be enhanced by raising awareness of TB – its transmission, symptoms and treatment as well as means of reducing risks of infection and accessing TB services. All prisoners, staff and policy-makers should be aware of the importance of detecting and treating TB cases.

Once effective treatment is initiated, smear-positive cases become smear-negative in a matter of weeks (although this may take longer in

those treated for highly drug-resistant forms of the disease). However, some exposure remains inevitable. It is standard hospital practice, therefore, to place patients with infectious TB in respiratory isolation until they are no longer an infectious risk to others. This should also be applied in prisons. However, such isolation must not be in any way construed as punishment or discrimination in its design or implementation and should only be used for as long as is absolutely necessary.<sup>8</sup>

Additional environmental measures may be used to reduce the concentration of infectious TB droplets in the air, where resources allow. These include ventilation systems and ultraviolet germicidal irradiation. These should be given priority in the highest risk areas. However, if such measures are not properly installed and maintained they can do more harm than good. Personal respiratory protection with appropriate masks may be considered in high-risk areas but should be considered as a complement to the measures described above. Again, unless the masks are supplied and used appropriately, they may be of no use.

HIV-positive staff or inmates should not come into contact with confirmed or potential TB cases if at all possible, as TB infection may be devastating for a patient with pre-existing HIV infection. However, it is doubtful whether separating HIV-positive inmates for their own safety offers any protection in contexts where many inmates have pre-existing TB infection and living conditions are poor. Outbreaks of TB have been reported in HIV segregation wings because active TB disease that develops from reactivation of latent TB in one inmate then spreads rapidly in such a highly vulnerable population. Instead, prevention of exposure to TB infection must focus on the early and effective treatment of all infectious TB cases.

### **Preventing TB infection progressing to TB disease**

Treatment of latent TB infection (otherwise known as preventive therapy) has been demonstrated to reduce the risk of active TB disease developing. Treatment of latent infection may be of particular benefit to those co-infected with HIV, at least in the short to medium term. However, this treatment is inadequate for active disease, which must

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<sup>8</sup> In accordance with Article 4 of the International Covenant on Economic, Social and Cultural Rights. See also Chapter 2.

therefore be excluded by radiographic (X-ray) as well as symptom screening.

Latent TB infection is demonstrated using the tuberculin skin test (TST). However, other mycobacteria or previous vaccination with Bacille Calmette-Guérin vaccine (BCG) may produce a false positive reaction. Conversely, serious disease (e.g. HIV, active TB, malnutrition, cancer) or immunosuppressive therapy may produce a false negative reaction, which is why TST is not reliable for detecting active TB disease. TST results must therefore be interpreted with great care. For details of technique and interpretation see *Clinical tuberculosis*.

Treatment of latent TB infection is recommended for TST-positive, HIV-positive individuals who do not have active TB disease. Its efficacy in TST-negative, HIV-positive individuals remains unproved. However, WHO recommends that HIV-positive contacts of definite infectious TB cases receive preventive therapy regardless of TST results. Where TST testing is not feasible, some groups of HIV-infected individuals (including prisoners) should be considered for treatment of latent TB infection.

Several regimens have been tested and shown to be effective (see Chapter 6). Isoniazid 5 mg/kg (max 300 mg) daily for 6–12 months is the most often used. Preventive therapy should be provided under direct observation as above. Contraindications to isoniazid treatment include active hepatitis, end-stage liver disease and daily alcohol intake. Pyridoxine 10 mg should be provided with each isoniazid dose to prevent peripheral neuropathy.

The duration of protection provided with these regimens is unknown. If recurrence is commonly due to re-infection, there is possibly no protection once treatment is completed. The risks and benefits of longer or repeated courses are not yet established.

Although treatment of latent TB infection brings some advantages, it is of lower priority than the detection and treatment of infectious TB cases. **Resources should not be diverted to the treatment of latent infection at the expense of detecting and treating active TB cases.**

Treatment for latent TB infection should not be established unless:

- a functional and fully accessible TB programme is in place for detecting and correctly treating active TB cases;
- active TB can reliably be excluded from each patient considered for preventive therapy;
- resources are available for supply, delivery and monitoring of preventive therapy additional to those used for an active TB detection and treatment programme;
- there are sufficient numbers of appropriately trained staff to implement the programme;
- counselling and voluntary HIV tests and TB counselling are established and integrated;
- the outcomes of preventive therapy will be evaluated.

Finally, immunization with BCG has only been consistently demonstrated to prevent dissemination of TB infection in children. Its use has been proposed in contexts of highly resistant TB, because the efficacy of preventive therapy regimens in these settings remains unestablished. However, BCG should not be given to an individual known or suspected of HIV infection because of the risks of disseminated BCG disease.

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### Abbreviations

BCG	Bacille Calmette-Guérin
DOTS	directly observed treatment, short course (WHO-recommended basic TB control package)
TST	Tuberculin skin test

### Glossary

*Active TB*: TB infection that has progressed to disease and causes illness, associated with symptoms and/or physical findings.

*Directly observed treatment (DOT)*: a trained and supervised person observes the patient swallowing the tablets.

*Drug-resistant TB*: TB that is resistant to one or more anti-TB drugs.

*Latent infection*: infection with TB that is currently dormant but may be reactivated. Individuals with latent TB have no symptoms and are well.

*Multidrug-resistant TB*: TB that is resistant to at least rifampicin and isoniazid, the most important anti-TB drugs.

*New TB case*: a patient with TB who has either never received, or received less than one month of, anti-TB treatment.

*Previously treated TB case*: patient with TB who has previously received at least one month or more of anti-TB treatment.

*Tuberculin skin test (TST)*: skin test to detect latent TB infection, normally using a purified protein derivative (PPD).





## Chapter 8

# Prevention and care of sexually transmitted infections in prisons

Alexander Gromyko, WHO Regional Office for Europe, Copenhagen

### Introduction

Sexually transmitted infections (STIs) are infections caused by bacterial, mycological and protozoa agents that are transmitted through sexual contacts. STIs are not only a cause of acute morbidity in adults but may result in complications with sequelae such as infertility in both men and women, ectopic pregnancy, cervical cancer, premature mortality, congenital syphilis and fetal wastage, low birth weight, preterm births and ophthalmia neonatorum.

There is a close relationship between AIDS and STIs, which could be summarized in the following points.

- The predominant mode of transmission of HIV and other STIs is sexual. Other routes of transmission for both include blood, blood products, donated organs or tissue and vertical transmission from an infected mother to her fetus or newborn infant.
- Many of the measures for preventing sexual transmission of HIV and STIs are the same, as are the target populations for these interventions.

- Clinical services for STIs are important points of contact with individuals at high risk of both AIDS and STIs for diagnosis, treatment and education.
- STIs damage the epithelium of the genitalia and thus facilitate the penetration of HIV virus into the epithelial cells. Early diagnosis and effective treatment of STIs are therefore an important strategy for the prevention of HIV transmission.
- Trends in the incidence and prevalence of STIs can be useful early indicators of changes in sexual behaviour and are easier to monitor than trends in HIV seroprevalence or incidence.

## **STIs in the Russian Federation and NIS**

Since the beginning of the 1990s, and especially following the changes in the countries of the former USSR towards market economies, there has been a dramatic increase in the incidence of certain infectious diseases in most of the NIS. As well as the explosion in HIV (see Chapter 1), an important rise in other STIs has been observed in these countries. The incidence rate of syphilis in countries of eastern Europe and central Asia is more than 100 times higher than in countries of western Europe (187.3 per 100 000 population as against 1.5). As reporting of syphilis cases is compulsory, the disease is regarded as a marker of the trends in STI cases as a whole. In many of the NIS the incidence of syphilis has increased 15–60-fold over the past 5–6 years, reaching epidemic levels of 200–300 cases per 100 000 population and even higher levels (up to 1500 per 100 000 population) in some areas. In the Russian Federation alone, over the past three years more than one million sexually active people contracted syphilis, mainly young people and adolescents.

An estimated 30% of the infected people remain outside any registered health care services or simply do not consider the symptoms and signs as a manifestation of an STI. The prison system is also highly affected by the ongoing epidemic of syphilis and other STIs.

## STI control in prisons

Measures to diminish the spread of STIs are based on the following basic principles, both in the general population and in prison:

1. primary prevention and raising awareness of the need to seek medical care as early as possible after the first clinical manifestations;
2. provision of accessible, acceptable and effective care, including:
  - correct diagnosis
  - effective treatment
  - education and counselling on risk reduction
  - advice on complying with treatment
  - promotion of condoms and their availability in daily life
  - encouragement to notify sexual partners
  - clinical follow-up and serological confirmation of cure;
3. screening for latent infection.

It is important to note that in HIV-infected individuals the clinical course of STIs may be more severe, infectiveness prolonged and increased, and the response to conventional treatment regimens reduced. Each country should have a national programme on STI prevention and care, as well as national guidelines on STI case management. The practice in prisons should conform to the national programme and guidelines.

### Primary prevention and raising awareness of STIs

Most of the prevention messages will apply to both HIV and conventional STIs but the educational messages that specifically relate to STIs should include:

- information that many STIs can be treated and cured;
- information that early treatment is necessary to avoid complications and permanent sequelae;
- information that symptoms and signs may not be noticed, particularly in women, until complications appear;
- description of recognizable signs and symptoms;

- assurance that when services are obtained, confidentiality and respect are guaranteed.

## Diagnosis

The ideal would be etiological diagnosis identifying the causative infectious agent of the disease. However, in most prisons laboratory facilities are practically absent, and test results are not usually available at the patient's initial visit. An effective alternative is to use flowcharts based on a syndromic approach. Syndromic case management identifies and treats consistent groups of symptoms, and it is completed by appropriate health education. Syndromic case management is better than the clinical or laboratory-based approach in that patients receive immediate treatment, thus interrupting the chain of infection at an early stage and without high laboratory costs.

## Treatment

The availability of effective drugs is an essential requirement for effective STI care. Measures should be taken to ensure that the recommended STI drugs are widely available in prison settings, and antimicrobial resistance should be regularly monitored. Ideally, STI treatment should offer a cure rate of at least 95%. Treatment regimens should use currently effective (and sometimes expensive) drugs in a rational manner, so as to minimize the emergence of organism resistance. While the cost of newer drugs is considerable, it must be weighed against the costs of inadequate treatment, which include complications, relapse, further transmission, development of antimicrobial resistance and, very importantly, increased transmission of HIV.

Ciprofloxacin and other quinolones are highly effective drugs for treatment of a number of sexually transmitted infections but they are also in the list of the second-line anti-TB drugs, which are used to treat multidrug-resistant tuberculosis. In prisons, where co-infection with STIs and TB is common, an inappropriate use of these drugs may induce resistance. It is therefore very important to use ciprofloxacin, ofloxacin and kanamycin for treatment of STIs at the dose and for the length of time indicated in the remaining sections of this chapter.

## **Partner notification**

Partner notification is the notification of the sexual partners of an individual with an STI, informing them of the exposure and offering them services. The patient should personally inform partner(s) of the risk of infection and, with the agreement of the health care provider, ask the partner to seek medical care. Partner notification is crucial to identify asymptomatic persons, particularly women, at an early stage and before the development of complications. Partner notification may be very difficult or even impossible in prison settings. Prison health care staff should make sure that partner notification is done in a voluntary and non-coercive way, preserving confidentiality and trust, and respecting the dignity and human rights of the individual.

It is unethical to defer treatment of patients with STIs until a sexual partner is also brought in for treatment. It is similarly unethical to treat patients only if they guarantee that a sexual partner also be treated.

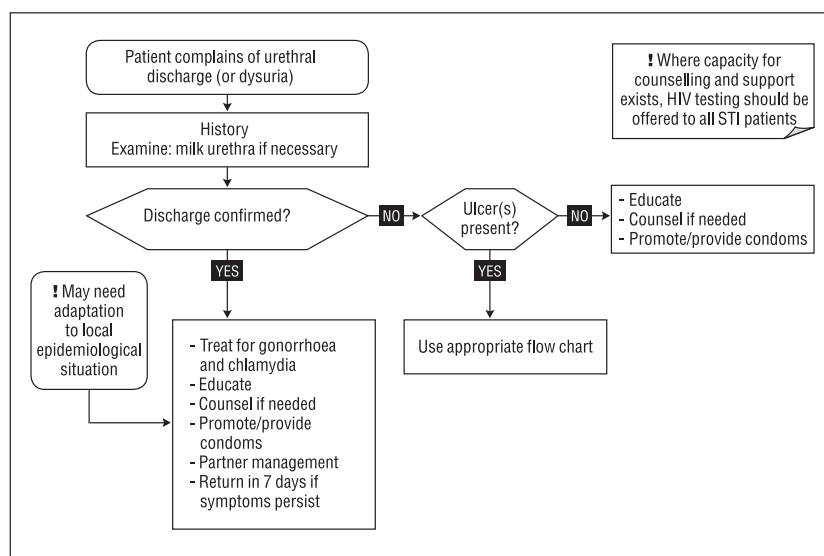
## **Treatment of STI-associated syndromes**

This section describes the management of the most common clinical syndromes caused by sexually transmitted agents. Flowcharts (algorithms) for the management of each syndrome are provided. When several syndromes are present, it is necessary to use several flowcharts. For all these conditions (except vaginitis) the sexual partner(s) of patients should also be examined for STIs and promptly treated for the same condition(s) as the index case. Candidiasis and bacterial vaginosis are causes of endogenous infections. These are not sexually transmitted and therefore treatment of partners for these conditions is not recommended.

### **Urethral discharge**

Male patients complaining of urethral discharge and/or dysuria should be examined for evidence of discharge. If none is seen, the urethra should be gently massaged from the ventral part of the penis towards the meatus (Fig. 7).

Fig. 7. Flowchart for urethral discharge



The major pathogens causing urethral discharge are *N. gonorrhoeae* and *C. trachomatis*. Unless a diagnosis of gonorrhoea can be definitely excluded by laboratory tests, treatment of patients with urethral discharge should provide adequate coverage of these two organisms. If microscopy is available, a urethral specimen should be collected; a gram-stained urethral smear showing more than 5 polymorphonuclear leukocytes per field ( $\times 1000$  magnification) in areas of maximal cellular concentration is indicative of urethritis. To diagnose gonorrhoea, gram stain or methylene blue and/or culture can be used. If gonococci (gram-negative intracellular diplococci) are seen on gram stain, patients should be treated for both gonorrhoeae and non-gonococcal urethritis (mainly caused by *Chlamydia*). When the gram stain is negative, treatment can be limited to treatment of non-gonococcal urethritis.

### Drug treatment

The following drugs should be administered as shown.

- When gonorrhoea is diagnosed or cannot be excluded:
  - ciprofloxacin 500 mg, **or** ofloxacin 400 mg, as a single oral dose **or** ceftriaxone 250 mg IM as a single dose **or** cefixime

400 mg, as a single oral dose **or** spectinomycin 2g IM as a single dose **plus** doxycycline 100 mg orally, twice daily for 7 days

OR

- azithromycin 1 g orally, as a single dose.

*Note:* ciprofloxacin is contraindicated in pregnancy.

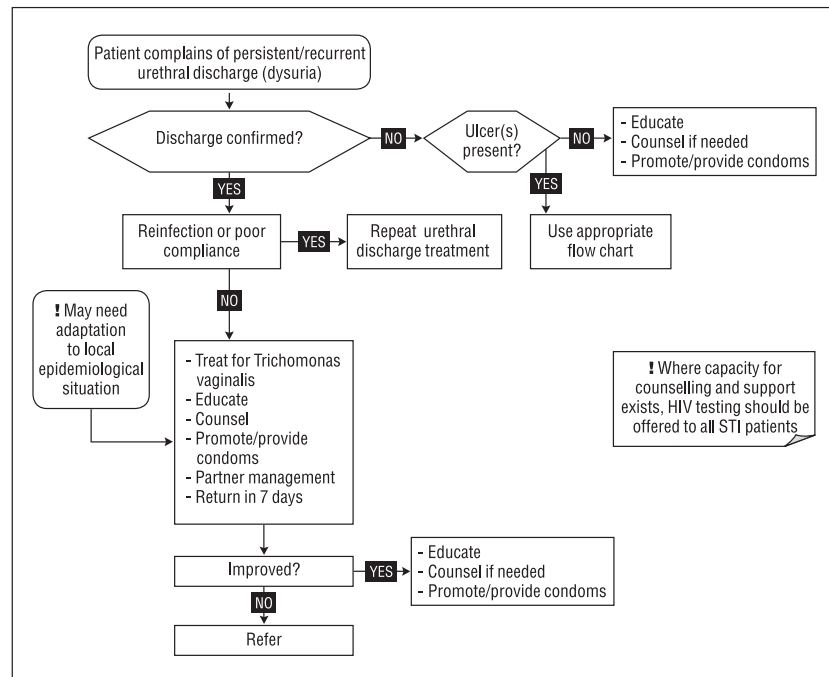
- Alternative regimen where a single-dose therapy for gonorrhoea is not available:
  - trimethoprim 80 mg/sulfamethoxazole 400 mg 8 tablets, or trimethoprim 160 mg/sulfamethoxazole 800 mg 4 tablets, orally, once daily for 3 days plus doxycycline 100 mg orally, twice daily for 7 days.
- If gonorrhoea can be excluded:
  - doxycycline 100 mg orally, twice daily for 7 days.

### *Follow-up*

Patients should be advised to return if symptoms persist seven days after the start of therapy.

Persistent or recurrent symptoms may be due to poor compliance, reinfection, and infection with a resistant strain of *N. gonorrhoeae* or with *T. vaginalis*. Where symptoms persist or recur after adequate treatment of the index patient and partner(s), both (or all) should be referred for laboratory investigation. The investigation should include a gram stain and/or a culture to confirm the presence of urethritis and to look for *N. gonorrhoeae*. *T. vaginalis* may be identified by microscopic examination of a first-voided urine sample or a wet mount, although this test has a fairly low sensitivity as compared to culture. If the presence of *T. vaginalis* is confirmed, metronidazole 2 g should be given as a single dose. (Fig. 8.)

*Note:* Patients taking metronidazole should be cautioned to avoid alcohol.

Fig. 8. Flowchart for persistent/recurrent urethral discharge in men<sup>a</sup>

<sup>a</sup> This flowchart assumes that effective therapy for gonorrhoea and Chlamydia have been received and taken by the patient prior to this consultation.

## Genital ulcer disease

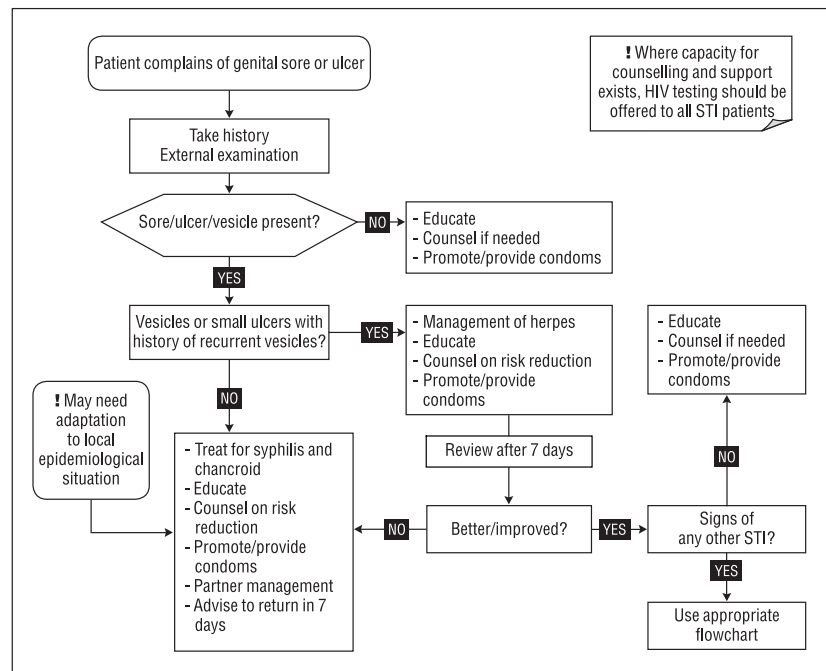
Genital ulcers are mainly caused by syphilis and *Herpes genitalis*. Chancroid has not been reported in the countries of eastern Europe and central Asia.

### First episode

When a patient complains of genital ulceration, the presence of the ulcers should be confirmed by a physical examination. In cases of early syphilis the serological tests may still be negative. Therefore, **all patients presenting with a first episode of genital ulcer disease should be treated for syphilis, independent of the laboratory results.** (Fig. 9.)



Fig. 9. Flowchart for genital ulcer disease



Syphilis and herpes are the only diseases causing genital ulcer in the region. Serological tests for syphilis are, however, useful to confirm the diagnosis and for the follow-up. Non-treponemal tests are used for the diagnosis of active syphilis. Rapid plasma reagin tests (RPR card tests) can be done at any level of the health care system. The advantage is that the reaction can be seen without the aid of a microscope. The tests are reported as either reactive or non-reactive. If titration can be done, titers equal to or higher than 1 : 8 should be considered as positive. Lower titers can indicate a false positive result but are also seen in latent and late syphilis. Reactive tests can be confirmed by a treponemal test. The treponema pallidum hemagglutination assay (TPHA) can be used for that purpose. A TPHA test alone cannot be used for the diagnosis of active syphilis, as it remains positive for life even if the patient is cured from the disease. Furthermore, treponemal test antibody titers correlate poorly with disease activity and should not be used to assess treatment response.

### Drug treatment

When genital ulcer typical of syphilis is present the patient should start treatment as for early syphilis (i.e. primary, secondary or latent syphilis of not more than two years' duration). The recommended regimen is: Benzathine penicillin G, 2.4 million IU, by IM, at a single session (because of the volume involved this dose is usually given as two injections at separate sites). Late latent and late benign syphilis, cardiovascular syphilis, neurosyphilis and syphilis in pregnancy should be treated in referral settings with adequate laboratory support.

In the presence of multiple vesicular lesions characteristic of herpes infection, acyclovir 200 mg orally, 5 times daily for 7 days should be given. Treatment can be expected to reduce the formation of new lesions, the duration of pain and the time required for healing. However, it does not appear to influence the natural history of recurrent disease.

### Follow-up

Patients with genital ulcers should be followed up weekly until the ulceration shows signs of healing.

### Recurrent episodes

Recurrent episodes of genital lesions are mainly caused by *Herpes genitalis*. Even if herpes is suspected, new syphilis infections should be excluded. The RPR test can be used for that purpose. If the initial test is non-reactive, the patient should have a repeat reagin test at 1 week, 1 month and 3 months. Sequential serological tests should be performed using the same testing method (e.g. VDRL<sup>9</sup> or RPR), preferably by the same laboratory. If the RPR test remains negative during these 3 months, the diagnosis of syphilis as the cause of the lesion can be excluded.

### Scrotal swelling

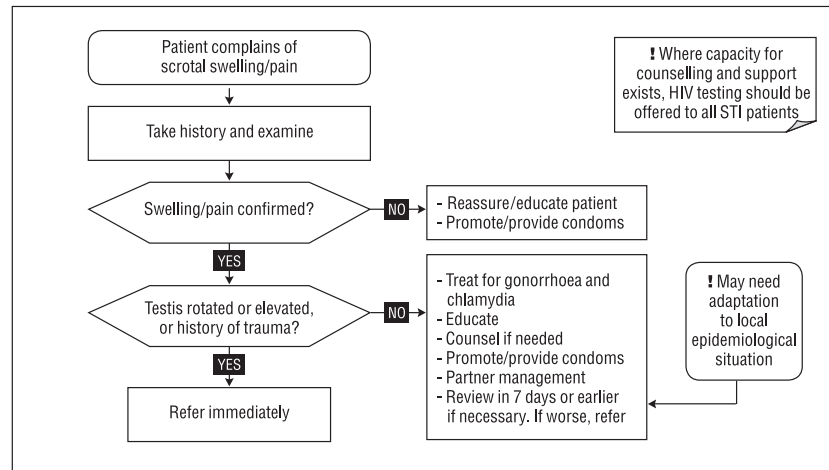
Scrotal swelling can be caused by trauma, a tumour, a varicocoele, torsion of the testis or epididymitis. Inflammation of the epididymus is usually accompanied by pain, oedema and erythema and sometimes by urethral discharge, dysuria and/or pollakiuria. The adjacent testis is often also inflamed (orchitis), producing epididymo-orchitis. Sudden onset of unilateral swollen scrotum may

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<sup>9</sup> A test developed by the Venereal Disease Research Laboratory.

be due to trauma or testicular torsion and requires immediate referral. When not effectively treated, STI-related epididymitis may lead to infertility. The most important causative organisms are *N. gonorrhoeae* and *C. trachomatis*. (Fig. 10.)

Fig. 10. Flowchart for scrotal swelling



### Drug treatment

The recommended regimen is:

- ciprofloxacin 500 mg or ofloxacin 400 mg as a single oral dose, or ceftriaxone 250 mg by IM as a single dose, or cefixime 400 mg orally as a single dose, or spectinomycin 2 g by IM as a single dose plus doxycycline 100 mg orally, twice daily for 7 days

OR

- azithromycin 1 g orally, as a single dose.

Adjuncts to therapy are bed rest and scrotal elevation until local inflammation and fever subside.

## Vaginal discharge

Vaginal discharge is most commonly caused by vaginitis but may also be the result of cervicitis. *N. gonorrhoeae* and *C. trachomatis* infection cause cervicitis, and *T. vaginalis*, *C. albicans* and a synergistic combination of *Gardnerella sp.* and anaerobic bacterial infection (bacterial vaginosis) cause vaginitis. Effective management of cervicitis is more important from a public health point of view, as cervicitis may have serious sequelae. However, clinical differentiation between the two conditions is difficult. Women attending for vaginal discharge should be asked if the partner has symptoms. They should automatically be treated for cervicitis if the partner complains of discharge. All women having complaints of discharge should be examined with a speculum. Other gynaecological pathology should be excluded by speculum and bimanual examination (Fig. 11,12).

Fig. 11. Flowchart for vaginal discharge

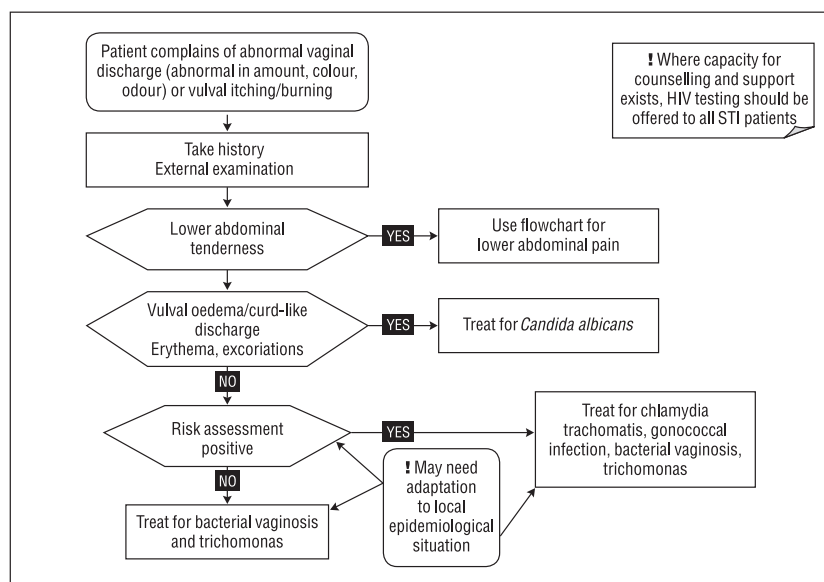
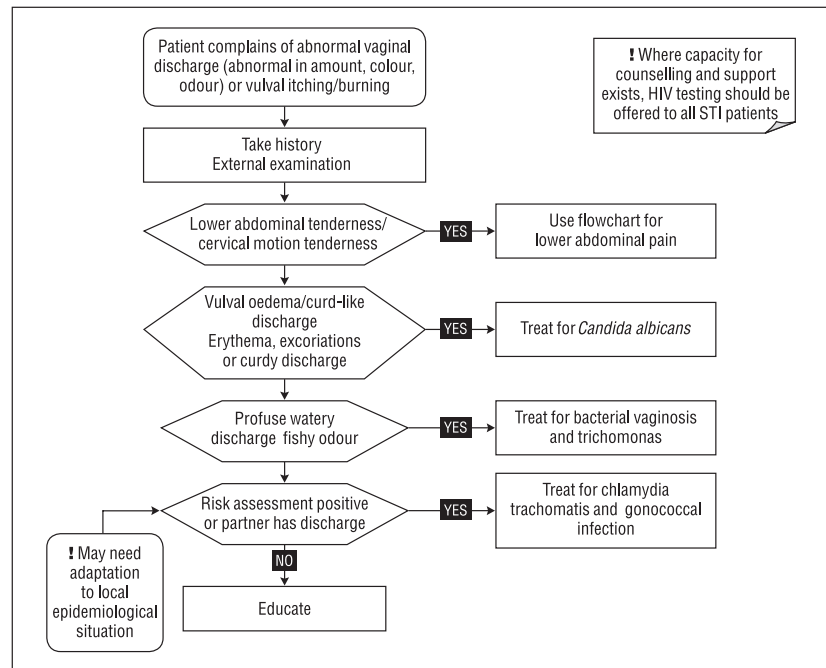
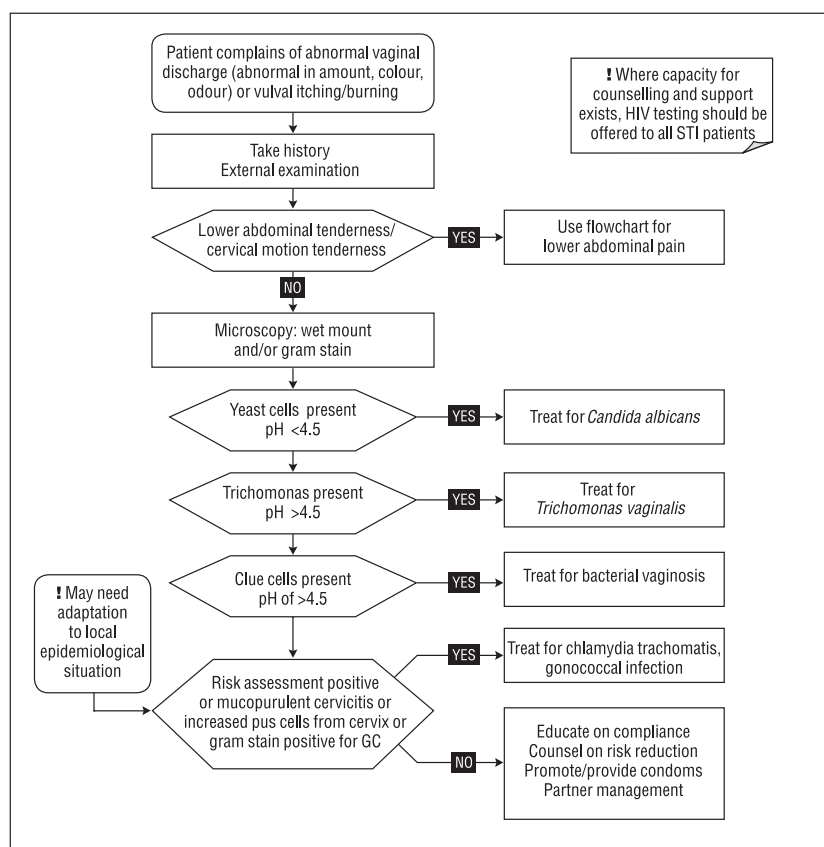


Fig. 12. Flowchart for vaginal discharge (speculum and bimanual examination)



When a clinical diagnosis of cervicitis is made (mucopurulent discharge or bloody discharge from cervix), the patient should be treated for cervicitis. If a microscope is available, the presence of at least 30 leucocytes/field on a cervical gram stain is indicative of cervicitis. The gram stain is of poor value for the specific diagnosis of gonorrhoea because this test has low sensitivity in women. A wet mount and a vaginal gram stain can be done to diagnose the different causes of vaginitis, i.e. bacterial vaginosis, trichomoniasis and candidiasis. If no microscope is available, treatment of vaginitis can be done on the basis of the vaginal examination with speculum (Fig. 13).

Fig. 13. Flowchart for vaginal discharge (with speculum and microscope)



### Cervicitis

#### Drug treatment

The recommended treatment for cervicitis is:

- ciprofloxacin 500 mg or ofloxacin 400 mg as a single oral dose, **or** ceftriaxone 250 mg IM as a single dose, **or** cefixime 400 mg orally as a single dose, **or** spectinomycin 2 g IM as a single dose plus doxycycline 100 mg orally twice daily for 7 days

OR

- azithromycin 1 g orally, as a single dose.

*Note:* Tetracyclines are contraindicated in pregnancy. To treat cervicitis in pregnancy, give erythromycin 500 mg orally 4 times daily for 7 days.

### *Vaginitis*

#### Drug treatment

The recommended regimen for *Trichomonas* and bacterial vaginosis is:

- metronidazole 2 g orally as a single dose, **or** metronidazole 400–500 mg orally twice daily for 7 days.

The recommended regimen for *Candida* infections is:

- miconazole or clotrimazole 200 mg intravaginally once daily for 3 days, **or** clotrimazole 500 mg intravaginally as a single dose.

*Note:* Patients taking metronidazole should be cautioned to avoid alcohol.

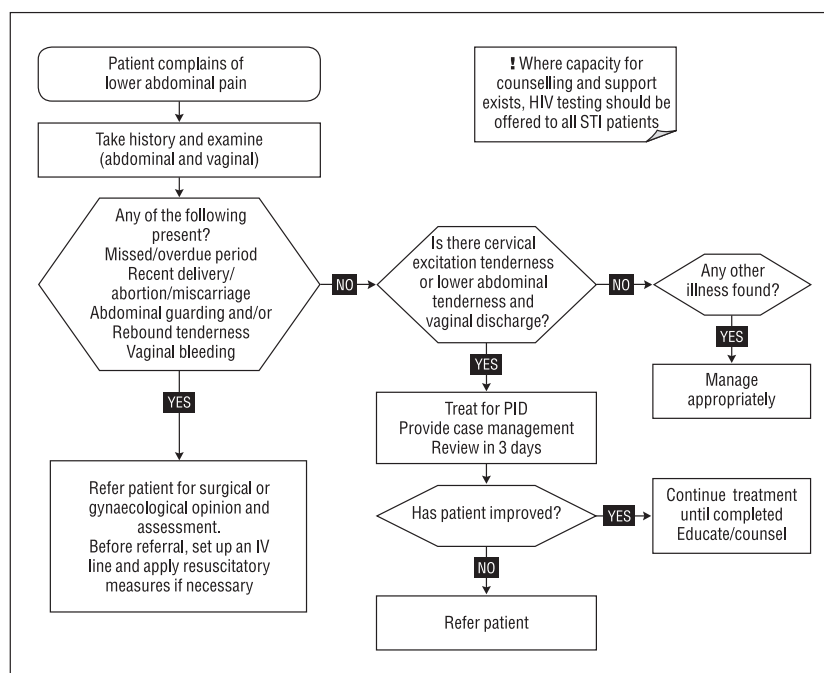
### **Lower abdominal pain and pelvic inflammatory disease (PID)**

All sexually active women presenting with lower abdominal pain should be carefully evaluated for the presence of salpingitis and/or endometritis-pelvic inflammatory disease (PID). In addition, routine bimanual and abdominal examinations should be carried out on all women with a presumptive STI since some women with PID or endometritis will not complain of lower abdominal pain. Women with endometritis may present with complaints of vaginal discharge and/or bleeding and/or uterine tenderness on pelvic examination. Symptoms suggestive of PID include abdominal pain, dyspareunia, vaginal discharge, menometrorrhagia, dysuria, pain associated with menses, fever, and sometimes nausea and vomiting. (Fig. 14.)

*Note:* PID is rare in pregnant women and is, therefore, an unlikely cause of lower abdominal pain in them.

PID is difficult to diagnose because clinical manifestations are varied. PID becomes highly probable when one or more of the above symptoms are seen in a woman with adnexal tenderness, evidence of lower genital tract infection and cervical motion tenderness. Enlargement or induration of one or both fallopian tubes, tender pelvic mass, and direct or rebound tenderness may also be present. The patient's temperature may be elevated but is normal in many cases.

Fig. 14. Flowchart for pelvic inflammatory disease



Hospitalization of patients with PID should be seriously considered when: (i) the diagnosis is uncertain; (ii) surgical emergencies such as appendicitis and ectopic pregnancy need to be excluded; (iii) a pelvic mass is suspected; (iv) severe illness precludes management on an outpatient basis; (v) the patient is pregnant; (vi) the patient is unable to follow or tolerate an outpatient regimen; (vii) the patient has failed to respond to outpatient therapy; or (viii) clinical follow-up 72 hours after the start of antibiotic treatment cannot be guaranteed.

Etiological agents of PID include *N. gonorrhoeae*, *C. trachomatis*, anaerobic bacteria (*Bacteroides* spp. and gram-positive cocci). Facultative gram-negative rods and *Mycoplasma hominis* have also been implicated. As it is impossible to differentiate between these clinically, and a precise microbiological diagnosis is difficult, the treatment regimens must be effective against this broad range of pathogens. The regimens recommended below are based on this principle. When a woman presents with a PID, the partner should always be treated for gonorrhoea and *Chlamydia trachomatis*.



*Inpatient therapy for PID*

## Drug treatment

- ceftriaxone 500 mg IM once daily **plus** doxycycline 100 mg orally or IV twice daily **plus** metronidazole 400–500 mg orally or IV twice daily, **or** chloramphenicol 500 mg orally or IV 4 times daily
- OR
- clindamycin 900 mg IV every 8 hours **plus** gentamicin 1.5 mg/kg IV every 8 hours
- OR
- ciprofloxacin 500 mg or ofloxacin 400 mg twice daily or spectinomycin 1 g IM 4 times daily **plus** doxycycline, 100 mg orally or IV twice daily **plus** metronidazole 400–500 mg orally or IV twice daily, **or** chloramphenicol 500 mg orally or IV 4 times daily

*Notes:*

1. For all three regimens, therapy should be continued until at least two days after the patient has improved and should then be followed by:
  - doxycycline 100 mg orally twice daily for 14 days
  - OR
  - tetracycline 500 mg 4 times daily, for 14 days.
2. Patients taking metronidazole should be cautioned to avoid alcohol.
3. Tetracyclines are contraindicated during pregnancy. They can be replaced by erythromycin or amoxicillin.

*Outpatient therapy for PID*

## Drug treatment

- The recommended regimen is:
  - ciprofloxacin 500 mg or ofloxacin 400 mg as a single oral dose, **or** ceftriaxone 250 mg IM as a single dose, **or** cefixime 400 mg orally as a single dose, **or** spectinomycin 2 g IM as a

single dose **plus** doxycycline 100 mg orally twice daily for 14 days **plus** metronidazole 400–500 mg orally twice daily for 14 days

OR

- azithromycin 1 g orally as a single dose **plus** metronidazole 400–500 mg orally twice daily for 14 days.

*Notes:*

1. Patients taking metronidazole should be cautioned to avoid alcohol.
  2. Tetracyclines are contraindicated during pregnancy. They can be replaced by erythromycin or amoxicillin.
- Alternative regimen where single-dose therapy for gonorrhoea is not available: trimethoprim (80 mg)/sulfamethoxazole (400 mg) 10 tablets orally once daily for 3 days, and then 2 tablets orally twice daily for 10 days **plus** doxycycline 100 mg orally twice daily for 14 days **plus** metronidazole 400–500 mg orally twice daily for 14 days.

*Notes:*

1. Tetracyclines are contraindicated in pregnancy.
2. Patients taking metronidazole should be cautioned to avoid alcohol.

*Adjuncts to therapy:* removal of an intrauterine device (IUD), if present. Although the exact effect of removing an IUD on the response of acute salpingitis to antimicrobial therapy and on the risk of recurrent salpingitis is unknown, removal of the IUD is recommended soon after antimicrobial therapy has been initiated. When an IUD is removed, contraceptive counselling is necessary.

#### Follow-up

Outpatients with PID should be followed up at 72 hours and admitted if their condition has not improved.

#### Scabies

Even though scabies is often sexually transmitted in adults, there are clearly situations in which it is also transmitted through close body

contact not related to sexual activities. If it is suspected that the patient acquired the infection through sexual contact, management should include the treatment of all sexual partners.

The recommended treatment regimen is:

- Lindane 1% lotion or cream applied thinly to all areas of the body from the neck down and washed off thoroughly after 8 hours (not to be used on pregnant or lactating women or on children aged under 10 years)

OR

- Benzyl Benzoate 25% applied for 3 nights.

### *Special considerations*

Pruritus may persist for several weeks after adequate therapy. In the absence of clinical improvement, a single treatment after 1 week may be appropriate. Clothing or bed linen that may have been contaminated by the patients in the 2 days prior to the start of the treatment should be washed and well dried.

### **Pediculosis pubis**

The recommended treatment regimens for pediculosis pubis are:

- Lindane 1% lotion or cream, applied to the infested area and washed off after 8 hours

OR

- Lindane 1% shampoo applied for 4 minutes and then thoroughly washed off.

### *Notes:*

1. Sexual partners should always be treated.
2. Lindane is not recommended for pregnant or lactating women.

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# Chapter 9

## Women in prison and HIV

Hernán Reyes, International Committee of the Red Cross

### Women's health issues and the prison environment

Women have always made up a very small proportion of the overall prisoner population worldwide. In its *Global report on prisons* published in 1993, Human Rights Watch estimated the proportion to be within 3–7% of the male population. There are no reliable current global figures at the time of this writing, but the women prisoner population would seem to be increasing, at least in those countries where substance abuse is a major issue.

Most prison systems are designed with male inmates in mind, which explains why living conditions for women prisoners are often not tailored to their specific needs. The United Nations Standard Minimum Rules acknowledge that separate provision of facilities for women can be “disproportionately costly”. Whatever the arrangement found for separation of the sexes, the fundamental issue of catering to women's specific needs is often neglected. Basic requirements such as greater access to showers when women prisoners have their monthly periods, or making sanitary napkins available, are often simply not provided for. Not all women's prisons cater for prisoners who are pregnant although some of them do provide for mothers with newborn babies or infants.

As women prisoners are fewer than males, the health services provided for women are sometimes minimal or second-rate and referral to outside facilities is also often more difficult than for male

prisoners. Security rules during outside transfers are applied without gender consideration, and in recent years outrageous situations have been revealed in some western countries, women prisoners being handcuffed to their beds while in labour.

With the advent of HIV infection and AIDS, a new problem has arisen for women prisoners. HIV and AIDS have specific manifestations in women, and the prison environment may considerably complicate proper administration of medical care and follow-up for women with HIV. Women are considerably more at risk for contracting HIV from sexual activity than men. Documented studies in the USA have shown that heterosexual contact is becoming the leading risk exposure for American women of all age groups, even more so than injection for drug use. Women are the fastest growing populations being infected with HIV – and young adolescent women are those most at risk through heterosexual contacts. Infection through the sharing of needles and syringes when injecting drugs is obviously a high-risk activity for both sexes, and women engaging in sex with drug users are at further risk from sexual transmission if they do not protect themselves. Women arrested for drug-related offences or for prostitution are therefore at high risk for already being infected with HIV when they enter the prison system. In many countries, many or most will not know their HIV status, and experience has shown that prisoners' knowledge about HIV is scanty, unreliable and often based on street rumours rather than facts.

Women going through the prison system – whether they have HIV or not – have a unique opportunity to receive education on HIV. Education for women prisoners on HIV should be tailored to the needs of the different age groups and professions, specifically including and catering for women who engage in commercial sex. Cultural sensitivities should be respected, but trained staff should not shy away from frank and open discussions on sexuality, condoms, safer forms of sex and other issues that women may never again have an opportunity to learn about. Counselling on testing should be given, and testing for HIV offered to those in high risk groups on a voluntary basis.

Such treatment as is available for the outside community should be made available for women prisoners. Particular care should be given to concurrent diseases, such as sexually transmitted infections, and accompanying diseases such as tuberculosis. As for men prisoners, condoms should be made available for women who have family visits.

Women may enter prison pregnant or become so during family visits. Prison medical services should cater to the specific needs of pregnant women, and again offer counselling on HIV testing and different alternatives available during surveillance of pregnancy, delivery and postpartum care including breastfeeding.

### **Women are more at risk than men**

HIV is found in the semen of infected men, both in the seminal fluid and in mononuclear cells. In infected women, HIV is found in cervicovaginal secretions. Heterosexual transmission of HIV is more likely from men to women than from women to men. Several studies have shown that HIV transmission is about eight times more likely from men to women than vice versa. This is taking vaginal heterosexual contacts into account – anal sex enhances the risk of transmission for both men and women.

The fact that there are presently many more men infected with HIV than women of course increases the chances of women becoming infected by their partners rather than the other way around. Moreover, there is unquestionably a greater likelihood of women becoming infected through heterosexual intercourse, for several reasons. The volume of semen is greater than the volume of cervicovaginal secretions. HIV is found in greater concentrations in semen than in vaginal fluids. The surface area of the female genital tract exposed to contact is greater than that in the male, and finally the Langerhans cells of the cervix may provide a portal of entry for HIV.

### **Influence of sexually transmitted infections other than HIV**

Vulval and vaginal inflammations increase the likelihood of acquiring HIV infection. Sexually transmitted infections (STIs) apart from HIV increase the chances of HIV infection during sexual intercourse. The figures vary, but the increased risk of acquiring or transmitting HIV from sexual intercourse is 2 to 5 times higher if the woman has such an infection. This is due to the fact that any genital ulceration or other disruptions of the normal mucosal defence mechanisms make it easier for HIV to enter the bloodstream.

Any genital ulceration or ulcer disease such as genital herpes, chancroid or syphilis (primary chancre stage) will increase the risk for HIV infection. In women, these infections often go undetected for long periods of time, either because they are asymptomatic or because the lesions caused are not visible, being inside the female genital tract. Other STIs that are not ulcerative, such as chlamydia, trichomoniasis and gonorrhoea, also increase the risk of HIV transmission. Women with STIs also have an associated diminished immune response, which again makes infection with HIV more likely.

Inversely, genital ulcers or other genital tract infections in the HIV-infected male will also increase the likelihood of HIV transmission to healthy women, as these infections are accompanied by leukocytosis, which increases the HIV viral load in the semen coming into contact with the woman's genital tract. High viral load in the male partner may also be found in those persons with recently acquired (acute) HIV infections or in those with advanced stages of HIV infection. In both cases, the risk of acquiring HIV for a female sexual partner will be increased.

Studies have shown that effective treatment of sexually transmitted infections can, in situations where the epidemic is not yet full-blown, decrease HIV transmission by up to 40%. Furthermore, as the predominant mode of transmission of both STIs and HIV is sexual, STI monitoring may offer a useful indicator of change in sexual behaviour (see Chapter 8).

### **Other risk factors in transmission of HIV to women**

Any other factor that causes ulcerative lesions on the female genital tract will also increase the likelihood of HIV infection. Cervical ectopia, whereby the normal squamous epithelium of the cervix is replaced by a single-layered columnar epithelium normally found within the cervical canal, will make the cervix more friable and thus more vulnerable to HIV infection. The same is true with an ectropion of the cervix, with prolapsus of the columnar epithelium of the cervical canal outside the cervical os.

Tearing and bleeding during sexual intercourse may come about during rough sex, particularly with younger women, through dry sex



(i.e. without lubrication) or of course violent rape. Such lesions increase the risk of the woman acquiring HIV. Anal intercourse without lubrication (and condom protection) is particularly dangerous, as the anal mucosa is fragile and can easily tear and bleed. Intercourse with HIV-positive men during menstruation or during bleeding from other causes will increase the risk of HIV infection in women. It is not yet certain whether hormonal contraception, with its modifications of the vaginal epithelium during the different phases of the artificial cycle, is a factor in increasing HIV transmission. Progesterone causes thinning of the vaginal epithelium, which may increase vulnerability to HIV. Further well controlled research is necessary before recommendations can be made.

Finally, certain subtypes of HIV would seem to be transmitted more efficiently by heterosexual intercourse than others. This could explain the initial differences in the epidemiology of the disease between the United States and western Europe on the one hand and sub-Saharan Africa and south-east Asia on the other. More research is also under way in this area.

### **Sociocultural and gender factors influencing HIV transmission to women**

Women are at greater risk of acquiring HIV than men because cultural and societal conditions are such that women are often not in a position to control their own bodies. Gender inequalities, a lack of education and employment, and poverty force many women into commercial sex work in order to feed their families or just to survive. These women are particularly at risk of HIV infection, as their clients, sometimes with offers of extra payment, often require unprotected sex.

In the same light, even though women may be monogamous, many are at high risk of HIV because their partners have sexual intercourse with others without protection. Women in many cultures cannot even suggest the use of condoms to their partners, as this is taken as an accusation (often deserved!) of infidelity. Often women are simply expected to defer to men's sexual needs and are not in a position to have any control over when, and under what circumstances, sexual intercourse takes place. They are thus severely constrained in their ability to protect themselves, even if they have the knowledge and the

means to do so. Also, women who seek information on sexuality and HIV prevention are at risk of being considered promiscuous and loose. In the same light, the stigma of being known to be HIV-positive can be much more burdensome and damning for women than men in many cultures.

## **HIV prevention for women**

The use of condoms as protection against HIV infection has been shown to be effective. Unfortunately, women in general, and particularly in high-risk environments such as intravenous drug users, are often not in a position to make their sexual partners use latex protection. The bottom line is that it is ultimately not the woman who wears the condom. This is even truer in situations of coercion, as often exist in such communities, and between prostitutes and pimps.

It must be said that while not all prostitution is forced, most women who sell their bodies do so out of dire necessity. Women whose lives have been disrupted by war, who are in vulnerable refugee situations or catastrophes, or who have suffered disrupted lives and divorce sometimes have to resort to commercial sex work. Prostitutes risk violence at the hands of their clients or loss of income if they insist on the use of condoms. Increasingly, however, prostitutes are coming together, or working in brothels and demanding that their clients use condoms. Female condoms, first marketed in 1993, have also been promoted and distributed, so that women have a greater say in the use of barrier protection against HIV infection. These are polyurethane vaginal sheaths that cover the female external genitalia, and may offer barrier protection against other STIs as well as HIV. These condoms do not as yet have wide acceptance, either by women or men, although some studies look promising. Their cost is however, frequently prohibitive. Again, women are very often not in a position to convince their male partners to use any barrier method, for cultural, religious or societal reasons.

Women in most countries identify fear of coercive sex, of violence (mainly domestic) and of economic abandonment as the main reasons why they cannot insist that their partners use condoms. Vaginal microbicides or viricides that would prevent the transmission of STIs (including HIV) have been proposed and are currently under study.

Nonoxynol-9, a potent viricide *in vitro* has been tested in Nairobi, but the results are not yet conclusive as it produces vaginal irritation and vulvitis. Such agents might be better than nothing in contexts where condoms are not acceptable and pregnancy is either desired or not an obstacle. Further studies are needed, but these products would have the advantage of being truly female-controlled, technically easy to use and relatively inexpensive.

In prisons, condoms should be made available for family visits, ideally without a complicated or demeaning procedure to obtain them, such as having to request them from staff. Condoms could be made available in the visiting room for all users, whether or not they are requested. Counselling about condoms should be available as well, as many women will not necessarily understand why they should use condoms with their partners. Realistically, many fewer women than men prisoners actually have “intimate” visits with spouses. Whether or not those who do are in a position to insist on condom use is not known.

## HIV in young women

Young adolescent women are increasingly at risk for HIV. Twenty-five per cent of sexually active adolescents, male and female, contract an STI each year. The rate of HIV infection is growing faster among adolescent women than in any other group, and in young people more than in any other group heterosexual transmission is the overwhelming cause of HIV infection. Most young women and adolescent girls who contract HIV apparently do not use drugs. They very often have sexual partners who are older than they are, and therefore often have trouble negotiating with them to use condoms.

The not fully formed genital tract (particularly the immature cervical epithelium) and the scant vaginal secretions of young adolescent women put them at greater risk of contracting HIV than mature women because they provide less of a barrier to the virus. Increased heterosexual transmission may also be at least partially due to the natural occurrence of cervical ectopy and ectropion. In poverty-stricken countries, young women are often under pressure to engage in commercial or transactional sex (occasionally exchanging sex for material goods or favours). Some resort to prostitution to support their families or to pay for their schooling. In some countries, where

virginity is required at marriage, young women resort to unsafe alternative sexual practices, such as unprotected anal sex, putting themselves more than ever at risk of acquiring HIV.

In young people, and particularly young adolescent women, merely educating them by simplistic counselling on abstinence or rational sexual behaviour, with the accent on using condoms, may not be enough. Sexuality is still a taboo subject in many countries, particularly where young women are concerned. In any educational programmes on HIV/AIDS outside, but even more inside prisons, information should be given by trained physicians and psychologists and include not only biological and epidemiological information, but also culturally appropriate but frank and open discussions about sexuality and self-respect. Women should not merely be told that condoms should be used. There should be open discussions about the very real difficulties in getting some men to use them, and counselling offered by experienced educational staff on how best to convince male partners to use them. This type of education is essential for prostitutes, and prison could be an ideal forum to provide both knowledge and practical advice for when they return to the outside world. Information and counselling on appropriate contraception should be provided, particularly to young adolescent women and any women of childbearing age.

Finally, and particularly with young adolescent women, there need to be more candid discussions on sexuality, contraception and the prevention of HIV. Adolescents rightly ask why condoms, that used to be considered one of the most unreliable forms of contraception, are now trumpeted as infallible for HIV prevention. Young women try sex with and without condoms and understandably feel that there is a difference. These issues need to be frankly addressed, otherwise the message will be counterproductive and therefore ignored. Prisons could provide a forum for a last chance of reaching marginalized and often confused women who, upon their release, will be most at risk of contracting HIV.

### **Woman having sex with other women (WSW)**

There would seem to be a small, but as yet undocumented, risk of HIV transmission associated with sexual contacts between women. HIV

infection will of course depend on what exactly these practices involve. Oral sex between women would seem to pose a relatively low risk of transmission, but no real data are available at the present time. Any practices involving shared sex toys or dildos, which can be contaminated by vaginal secretions and also cause trauma to the genital tract, may be riskier. Any such instruments should be thoroughly cleaned and disinfected with bleach after use, and preferably not shared.

Latex barriers (dental dams or newer user-specific similar items) have been encouraged for WSW during cunnilingus. The acceptability of such barrier protection methods is not known in different countries and cultures.

What makes the risk of HIV transmission difficult to assess is that WSW often inject drugs, engage in commercial sex, and often have sex with bisexual or heterosexual men as well. WSW can be strictly lesbian or bisexual. Studies have not been possible because of the very low number of WSW without any other risk factors, particularly who do not use drugs. HIV is certainly present in the cervical and vaginal secretions of HIV-infected women, but the risk of transmission needs further study.

### **Clinical manifestations of HIV disease in women**

The only major difference in the specific AIDS-defining diseases between men and women is the significant discrepancy in the rate of Kaposi's sarcoma (KS). KS is most common among homosexual or bisexual men, less common in heterosexual men and rare (reportedly less than 2%) in women. This may be due to an associated human herpes virus, but further studies are needed to clarify the issue. Invasive cervical cancer, obviously only in women, is the other pathology that is linked to HIV/AIDS (see below). A few cases of aggressive breast cancer in women with HIV have been reported. Other AIDS-defining diseases are essentially the same in both sexes. Symptoms and signs of HIV in the initial stages of infection are not different from those observed in men. HIV-infected women may suffer from fever, muscular and joint pains, diarrhoea and vomiting and from swollen lymph glands. This latter sign, when found

elsewhere than in the inguinal region, is the only physical finding that may be more common in women with HIV than in men.

Vaginal infections by *Candida albicans* is the most frequent cause for women with HIV initially to seek medical attention, occurring in more than a third of cases. Studies have shown that 40% of HIV-infected women have no symptoms during the first years following infection. Other initial manifestations in women with HIV, in order of frequency, are: swollen lymph nodes, bacterial pneumonia, acute retroviral syndrome and oral thrush (oropharyngeal candidiasis). It should be remembered in the prison context that bacterial infections, particularly respiratory ones with *Streptococcus pneumoniae* and *Haemophilus influenzae*, occur more frequently in IV drug users with HIV in **both** women and men. Table 18 summarizes clinical conditions which give high suspicion of HIV infection and warrant counselling and testing.

Table 18. Clinical conditions warranting specific HIV counselling and testing

•	Recurrent episodes of genital <i>Herpes Simplex</i> (more than two episodes within 6 months, or the frequency doubling within a year)
•	Severe or combining lesions of genital <i>Herpes Simplex</i> or candidiasis
•	Other genital ulcerating diseases (chancroid, syphilis, apthous genital ulcers, lymphogranuloma venereum)
•	Condyloma acuminata recalcitrant to conventional therapy or in multifoci
•	An abnormal Pap smear
•	Pelvic inflammatory disease (PID) or persisting STI

## HIV and specific gynaecological manifestations

The four most common gynaecological manifestations of HIV in women are vaginitis with *Candida Albicans*, human papilloma virus (HPV), cervical disorders associated with HPV and pelvic inflammatory disease (PID).

### **Vaginal candidiasis**

This yeast infection is quite common, particularly among women taking oral contraceptives or broad-spectrum antibiotics. For this reason, it is often not recognized as a potential warning sign for HIV, even among women potentially at high risk for HIV such as prostitutes or intravenous drug users. This oversight could lead to delays in treatment and therefore be detrimental to the overall prognosis. Untreated yeast infection also enhances the risk of HIV transmission to sexual partners. Symptoms and clinical signs typical of vaginal candidiasis are secretion of a thick white (“cheesy”) vaginal discharge, severe itching, pain when urinating and pain during sexual intercourse (dyspareunia). The gynaecological examination shows swelling and erythema of the labia minora, and the direct wet-mount exam under the microscope detects characteristic filaments.

Local therapy usually consists of miconazole nitrate cream or clotrimazole vaginal tablets (ovules). Systemic therapy with oral ketoconazole, fluconazole, itraconazole or amphotericin B may be necessary in some cases (see Chapter 8).

### **Other gynaecological infections and pelvic inflammatory disease**

Other gynaecological infections are extremely common among women infected with HIV. Pelvic inflammatory disease (PID) tends to be more severe and more prolonged in HIV-positive than in HIV-negative women. This may require changes in antibiotic therapy, but initial standard therapy is the same for women with PID, with or without HIV. Studies have shown a twofold increase in the formation of tubo-ovarian abscesses, hence the greater need for surgical management in women with HIV and PID. The main agents for PID are *Neisseria Gonorrhoeae* and *Chlamydia Trachomatis*, i.e. the same for women with or without HIV.

### ***Herpes simplex* genital infection**

Genital infections by herpes simplex virus type 2 frequently occur in women with HIV. The disease may last longer than in HIV-negative women, be more severe and reoccur more frequently. Ulcerative manifestations of the disease can be particularly severe, and most often correlate with the severity of the immune deficiency of the

patient. The most common manifestations of recurrent herpes infection occur on the labia majora and minora and the buttocks.

As is the case with men, chronic perianal herpes infection is an AIDS-defining condition, although it occurs much less frequently in women than in homosexual men.

### **Trichomoniasis**

Trichomoniasis is almost twice as common in women with HIV as in women without HIV (28% versus 16% in one study). Treatment and diagnosis are the same as in usual gynaecological practice (see Chapter 8).

### **Syphilis**

Reports vary from country to country but syphilis has been reported to be increasing in the general population in many areas. Testing for syphilis is obligatory in many countries, and reporting all confirmed cases to a central medical authority is required as well. In the NIS, testing of prisoners is frequently done systematically for both syphilis and HIV despite WHO guidelines for HIV testing of prisoners. However, syphilis infection can increase the risk of contracting HIV, and as HIV accelerates the progression of syphilis into neurosyphilis, it is justified to counsel women at risk to test for both diseases, as they are transmitted in the same way.

Primary syphilis is more difficult to detect in women than in men, as the chancre is most often hidden from view inside the female genital tract and is asymptomatic.

### ***Chlamydia trachomatis* and *Neisseria Gonorrhoeae***

Inflammation of the cervix (cervicitis) due to either infection may enhance transmission of HIV from an infected partner. The diagnosis should be made as soon as possible to avoid the risk of contracting HIV. Treatment and management of both infections are the same as for women who are HIV-negative (see Chapter 8).



Women at risk of venereal diseases, even if asymptomatic, should be medically counselled and offered a thorough pelvic examination and any bacteriological tests deemed necessary, as all sexually transmitted infections enhance vulnerability to HIV infection through sexual intercourse.

### **Irregularities of the menstrual cycle**

Women in custody are submitted to the constant stress of prison life, and amenorrhea and irregularities of the menstrual cycle are common among prisoners. Relatively little is known about specificities of menstrual variations in relation to HIV. Several studies have been carried out comparing menstruation between women with and without HIV. No differences have been found relating to amenorrhea, spotting, irregular cycles or breakthrough bleeding in the two groups compared.

A recent study of the viral content of cervicovaginal fluids during the different phases of the menstrual cycle showed preliminary evidence that viral content was highest both during the menstrual flow and during the luteal phase (generally two weeks after menstruation, in a normal four-week cycle). More research needs to be done on possible variations in viral content of secretions according to the hormonal cycle.

Menstrual irregularities may increase the risk of the partner's exposure to HIV. An irregular cycle also makes it more difficult to predict the fertility period, complicating calculations for either conception or avoidance of pregnancy.

### **HIV, human papilloma virus, dysplastic lesions of the cervix and cervical cancer**

Dysplastic lesions of the cervix are linked to infection by the human papilloma virus (HPV), which is believed to be an etiological factor in cervical cancer. Evidence to date shows that there is an increase in the occurrence and aggressiveness of cervical cancer in women with HIV. Cervical cancer is classified as an AIDS-defining diagnosis.

Screening for cervical dysplastic lesions so as to detect any precursor lesions for cervical cancer should be part of all gynaecological examinations. Such screening should be part of medical care provided for women prisoners, and the risks of cervical dysplastic lesions and their management duly explained to prisoners at risk for such lesions by trained medical staff.

#### *Screening for precursor lesions and HPV*

About 95% of cervical condyloma, all grades of dysplasia and invasive cervical cancer have been shown to contain DNA from HPV. Detection of cervical cancer is performed routinely in western countries by regular Papanicolaou (Pap) smears and regular clinical controls with colposcopy. Pap-smear screening detects early signs of precursor lesions in the transition zone between the squamous epithelium on the cervix and the columnar single-cell layered epithelium of the cervical canal, the zone where dysplasia occurs. The initial dysplasia is known as cervical intra-epithelial neoplasia, or CIN. This dysplasia can precede invasive carcinoma of the cervix by several years. CIN staging varies from I to III according to specificities of the dysplasia.

The epithelium in the transition zone is the place where infection by human papilloma virus is known to concentrate. HPV infection is very common, affecting up to one third of all young adult women and a significant proportion of men (around 8% in one study). There are several types of HPV, some associated with condyloma (genital warts), some associated with mild dysplastic changes in the cervical epithelium. Genital warts in women with HIV may be larger, multifocal and more likely to reappear than in women who are HIV-negative. Other types of HPV, however, are associated with more severe CIN lesions (stages CIN II and III) and can lead to invasive carcinoma of the cervix.

Immunosuppression (as seen in patients undergoing organ transplantations) enhances the risk of cervical dysplastic lesions. HIV and HPV are transmitted in the same way, and HPV may actually enhance HIV transmission from an infected male partner.

In women with HPV infection, contracting HIV may reactivate a dormant infection or prolong a persistent infection with HPV, owing to the decline in immune response due to HIV. The connection

between HPV and precursor lesions of cervical cancer, and the fact that HPV and HIV enhance each other, logically lead to the fact that cervical dysplasias are more than twice as common in women with HIV than in HIV-negative women.

Pap-smear testing is not infallible, as dysplasias of the transition zone tested may not be accessible to the sampling. Local inflammatory reactions, as may be the case in HPV infections, may make the Pap diagnosis difficult. Because of the association between HPV and HIV, some researchers have recommended routine colposcopy in women with HIV, so as to determine a baseline, to be followed up either by Pap smears or colposcopy according to findings. However, colposcopy is more costly and time-consuming and requires specially trained personnel for correct interpretation.

Regular Pap smears every six months have been recommended for women with HIV, particularly those with advanced immunodeficiency. It must be noted that 15% of the dysplasia in women with HIV was limited to vulvar, vaginal or perianal lesions not detected of course by a Pap smear. Careful inspection of the whole internal and external pudendal area should accompany all screening by Pap smears. Any persistent genital inflammation that is unresolved after treatment for *Neisseria Gonorrhoeae*, *Trichomonas Vaginalis* or *Chlamidia Trachomatis* should be referred for colposcopy.

#### *Treatment of CIN lesions*

Treatment of CIN lesions is basically the same for women either with or without HIV. CIN I lesions are not treated, as they do not lead to carcinoma, while CIN II and CIN III lesions must be treated to avoid development of full-blown cervical cancer. The treatment is the same, and the treatments available are several and include cryotherapy, laser vaporisation and electrical surgical excision for the minor, entirely visible lesions, and cervical conisation for all other more serious cases.

Studies have shown that the prognosis for recurrence of CIN *after* treatment is four to five times higher in women with HIV within a year of initial treatment. Research on how to prevent this enhancement due to HIV status is ongoing, some treatment regimens calling for regular, local application of 5-fluorouracil cream.

*Invasive cervical carcinoma*

Invasive cervical carcinoma (ICC) is an AIDS-defining disease. However, although the incidence of ICC is much higher in countries with limited resources and little or no screening, for reasons that are not clear ICC is not a leading cause of death in women with HIV. It is possible that in regions such as sub-Saharan Africa, where high numbers of women are infected with HIV, they do not live long enough to develop ICC.

When ICC is discovered in women with HIV, however, the carcinoma is usually of advanced stage, significantly more so than in similar women without HIV. Metastasis to lymph nodes is found twice as frequently as in HIV-negative women, and there is almost a uniform relapse (100%) of women with ICC and HIV after treatment in just a few months time. Women with HIV thus have a particularly poor prognosis when they are diagnosed with ICC.

*Other areas affected by HPV*

HPV may affect areas other than the cervix, particularly in patients with HIV. Genital warts can be treated with habitual therapies such as trichloroacetic acid, cryotherapy with liquid nitrogen, or by surgery or laser for extensive cases.

Anal cancer may be associated with HPV, as well as malignancies of the vulva and the vagina. Anuscopy should be recommended in women with both HIV and HPV infections, and careful evaluation done on the entire pudendal area during gynaecological examinations. Anal squamous intraepithelial lesions are more prevalent in women with than without HIV. Receptive anal intercourse undoubtedly plays a role in HPV transmission. It is not known whether fingers or sex toys can lead to contamination by HPV in women or men.

**Efficacy and toxicity of antiretroviral drugs in women**

Women were not included in initial drug trials with antiretroviral agents so little is known about gender-specific differences between the sexes in this area. Treatment schemes are evolving and as yet are essentially the same for men and women. Some recent studies which

have sought to obtain data for women would seem to indicate that reverse transcriptase inhibitors and protease inhibitors have the same efficacy in both men and women (see Chapter 6). Toxicities may, however, be different, as women have lower mean body weight and lower mean haemoglobin levels than men. A study of the toxicity of ritonavir combined with reverse transcriptase inhibitors reported more nausea, vomiting, physical malaise and fatigue in women than men. Diarrhoea was more common in men than in women. Other differences in toxicity were reported concerning protease inhibitor nelfinavir. At similar levels of efficacy, women experienced more abdominal pain, itching and skin rashes than men did. Again, diarrhoea appeared more frequently in male patients.

Abnormal accumulations of body fat, a condition known as lipodystrophy syndrome and well documented in men, appears to be a complication of treatment with antiretroviral therapy in women as well. A recent study with indinavir reported such changes in 18% of women, causing increased abdominal girth, increased breast size, wasting in limbs and facial fat and development of the characteristic “buffalo hump” (posterior high cervical fat pad), although this manifestation is more common in men than in women. Another study with two or more antiretroviral drugs reported abnormal fat distribution in 10% of the women.

Several antiretroviral drugs react with oral contraceptives. Reverse transcriptase nevirapine specifically metabolizes ethinyl estradiol, leading to a clinically relevant decrease in the levels of this hormone. Protease inhibitors such as ritonavir and nelfinavir have also been shown to decrease levels of ethinyl oestradiol. The main point is to underline that several antiretroviral agents interfere with the metabolism of oral contraceptives.

## **Viral load and prognosis in women**

The levels of viral load in plasma in men versus women have been studied extensively but have given conflicting results. Progression of HIV to AIDS associated to viral load, in similar comparisons, has also given controversial results. The differences may be due to discrepancies in methodology or in different CD4+ cell counts (see Chapter 6 for the relationship between CD4+, LC and clinical

prognosis). Further study is needed to find out whether the level of viral load is really different in women patients, because guidelines for treatment up to now have been based on data coming from male patients. For the moment, there is not sufficient reason to modify current treatment guidelines for women.

Early studies indicated that the prognosis of women with AIDS was significantly worse than that for men. More recent work shows that these differences were due above all to the fact that women had poorer access to diagnostic facilities and to proper medical care.

There would seem to be no difference regarding the survival of women versus men with AIDS, if they receive an equivalent level of medical care and treatment. Progression in the disease also seems to be the same in both genders. The studies published, however, were conducted in countries where treatment was available and provided efficiently to all patients.

### **HIV and pregnancy: general considerations**

In prison it is not uncommon for a woman to discover she is pregnant at the same time she discovers she has HIV infection. The psychological burden of being in prison, leaving behind her family, a new pregnancy and discovering her HIV status can be devastating for women who are often fragile and vulnerable. They may also have apprehensions about their pregnancy, about infecting their baby, and about losing custody of the newborn. Ethical dilemmas can arise if the woman refuses to disclose her diagnosis of HIV to the baby's father. In all cases, much empathy and patient counselling are paramount to ensure the best conditions possible for mother and baby in what is always a complicated situation. The patient's confidentiality should not be waived under the pretext that she is a prisoner, but some informed disclosure may be necessary to those who need to know, so as to obtain the best possible medical care (for example, in planning a caesarean section).

Immune function is suppressed as a normal effect of pregnancy in both HIV-positive and -negative women. In early pregnancy, levels of both immunoglobulin and complement are reduced, and there is a significant decrease in cell-mediated immunity during pregnancy. Research has shown, however, that these normal changes do not

accelerate the progression from HIV to AIDS in women with asymptomatic HIV who are pregnant. There may be some such effect in women in advanced stages of HIV disease, but more research is necessary to confirm this.

HIV seems to have little effect on the development, outcome and complications of pregnancy. Nutritional counselling should be given and adequate modifications made to the woman's food regime when necessary, as both pregnancy and HIV disease place additional nutritional burdens on women who are often already malnourished when entering prison. Providing vitamin A supplements to HIV-infected pregnant women may be useful, as vitamin A deficiency has been associated with greater transmission of HIV to the newborn. Initial assessment of women prisoners for groups at risk of HIV who are pregnant should include a detailed history of STIs and a thorough and professional physical examination with particular attention to detecting any manifestations of HIV. A Pap smear and any necessary cultures should be performed.

Reported higher rates of ectopic pregnancy in women with HIV may in fact be due to the effects of other concurrent STIs. High rates of syphilis, bacterial pneumonia, urinary tract infections and other infections are all more common during pregnancy in women with HIV. *Herpes zoster* is common in young women with HIV, and uncommon in the same age group without HIV. Detection of shingles in a young pregnant woman may be an early sign of HIV infection.

Invasive diagnostic procedures such as amniocentesis carry a theoretical risk, for the pregnant woman with HIV, of inoculation of the foetal compartment by the needle that passes through the maternal tissues. If there is a clear indication and desire for amniocentesis, it should be made available with open and understandable counselling.

Premature labour may be more common in pregnant women with HIV, some studies showing rates up to twice those in HIV-negative women. Other studies have suggested that premature rupture of the membranes and abruptio placentae are also more frequently found in women with HIV. Again, the influence of concurrent or antecedent STIs has to be taken into account in such evaluations. Preterm delivery is particularly worrying because, for reasons as yet unclear, preterm infants are at greatest risk of becoming infected with HIV

from the mother. Finally, differences in the birth weight of babies born to women with HIV are not significant from those born to women who are HIV-negative.

### **Pregnancy, opportunistic infections and antiretroviral treatment**

Generally speaking, pregnancy is not a contraindication for the most appropriate antiretroviral therapy or for most management of HIV-related conditions. In developed countries, vertical transmission has been found to range between 16% and 24% without any antiretroviral therapy, and to be around 8% with AZT monotherapy. The risk to the foetus should, however, always be considered and treatment modified if necessary. If there is no immediately urgent indication for antiretroviral therapy in a woman with HIV who has not as yet received it, it may be most reasonable to withhold such treatment until after 12–14 weeks of gestation. Nausea and vomiting are most common during the first trimester and could make antiretroviral therapy difficult to tolerate. Also, and to most mothers, most important, the effect of the drugs used on the developing foetus is not known. It is therefore perhaps better to commence therapy once the organogenesis period is past, i.e. in the second trimester. This of course implies that there be adequate determination of gestational age, if necessary with sonographic confirmation.

Prophylaxis for opportunistic infections should be given in pregnancy, as indicated by the clinical stage of HIV infection. Prophylaxis with isoniazid and treatment for tuberculosis should be given when indicated, but streptomycin is contraindicated during pregnancy. There is no reliable information on whether Pyrazinamide can be used safely during pregnancy and breastfeeding (it does pass into milk). This drug should only be considered for use during pregnancy if a drug-resistant form of tuberculosis warrants it.

Prophylaxis for *Pneumocystis carinii* pneumonia, if indicated, can continue throughout pregnancy with sulfamethoxazole/trimethoprim or pentamidine. The risk to the foetus of giving sulphonamide in the third trimester may be outweighed by the risk to maternal health. Kernicterus has not been reported where the drug was given for the



maternal indication, and obviously discontinued for the newborn immediately after birth.

Dermatological conditions are common in women with HIV and treatment may be required. Acyclovir can be used safely, if required, after the first trimester, as can oral fluconazole. Topical imidazole antifungal agents or topical gentian violet can be used throughout pregnancy.

## **Mother-to-child transmission of HIV**

Transmission of HIV from a pregnant mother to her unborn child is the most common source of HIV infection in young children. The most effective interventions to reduce this transmission depend upon a pregnant woman knowing her HIV status. Information, counselling during pregnancy as well as around and after delivery, and voluntary testing services should be available to women prisoners. Access to counselling on termination of pregnancy and adequate services for safe abortions – where they are legal – should also be available but should be viewed as an option for the individual woman, and not as a public health intervention for the prevention of HIV transmission. Pretest counselling should be provided by trained medical staff, such as midwives trained in HIV education.

HIV can be transmitted to the foetus during pregnancy, mainly during the third trimester, or to the baby during labour and childbirth and during breastfeeding, as HIV is found in maternal milk. The exact mechanism of transmission by breast-milk is not yet fully understood. The respective roles of cell-free and cell-associated virus (HIV-1) are not known. Both have been detected in colostrum and mature breast-milk. According to UNAIDS, breastfeeding may account for more than one third of all cases of transmission of HIV from mother to child.

The exact relative contribution of each of these events is difficult to ascertain, but most transmission occurs just before or during labour or delivery. Suggested mechanisms for intrapartum transmission of HIV to the baby include direct skin and mucous membrane contact with cervicovaginal secretions, ingestion of HIV from these secretions, and ascending infection to the amniotic fluid. The risk of transmission of

HIV from mother to child is increased if the woman is in an advanced stage of the disease (AIDS) or if she has a high viral load or a low CD4+ cell count.

Research has shown that the risk of transmission is significantly higher if the mother contracts HIV during pregnancy or while breastfeeding. It is not clear, however, whether viral loads in blood and breast-milk are correlated. All preventive measures for HIV should therefore be available for pregnant women in prison who have family visits, and proper counselling provided about HIV infection. Whenever relevant, the use of condoms during pregnancy specifically to avoid possible HIV infection should be explained and encouraged.

The chances of transmitting HIV to the baby during childbirth, in the absence of preventive intervention, are about 15–25% in developed countries. Treatment with a short regimen of zidovudine (short-course AZT) during the last weeks of pregnancy has been shown to reduce the risk by approximately two thirds. The suggested regimen is:

- for the mother: 100 mg orally five times daily, to be started a few weeks before delivery, followed by intrapartum AZT, 2 mg per kg of body weight IV over one hour period, then 1 mg per kg per hour until delivery;
- for the newborn: 2 mg per kg every six hours for six weeks.

In prisons, treatment may not be available and diagnostic procedures may be limited. Women prisoners with HIV who are pregnant should, however, receive adequate prenatal counselling and care. Once again, prison should provide a unique forum to deliver information to women who may not have access to it once they leave prison.

The use of Nevirapine could be an appropriate alternative for AZT. Several clinical trials are under way and preliminary results have been very promising, perhaps even more so than with Zidovudine. The advantage of Nevirapine is that its administration involves giving only two doses: one 200 mg oral dose at the onset of labour, and for the infant a single 2 mg/kg oral dose at age 48–72 hours. (If the mother receives Nevirapine less than one hour prior to actual birth, the infant should be given an identical initial dose, as soon as possible after birth, as well as the normal one at 48–72 hours.) Because pregnant women in prison situations may in many cases have a low compliance

rate for prenatal care and follow-up, such a treatment scheme, involving only two administered doses, would be more realistic for such patients. Unfortunately, this medication is as yet unavailable in the NIS.

If a mother who has just given birth is known to be infected with HIV, it is preferable to avoid breastfeeding the baby and supply replacement feeding, so as to reduce the risk of HIV transmission through the milk. This should only be done if the potential risk of HIV transmission is higher than the risk of the baby dying from malnourishment or from infections that could be avoided by the maternal antibodies contained in maternal milk. By associating the AZT regimen to replacement feeding, HIV transmission can be lowered to under 10%.

If preventive health, economic or social reasons make breastfeeding imperative despite the mother's HIV positive status, special care should be taken to avoid fissured nipples, mastitis and breast abscesses. Breastfeeding should be suspended immediately in such cases. Proper counselling by experienced midwives or nurses can prevent poor breastfeeding techniques. Modified cow's milk can be given to infants so as to avoid breastfeeding when the mother is known to have HIV. An infant needs 150 ml of milk per kg of body weight per day. To make the formula, add 100 ml of cow milk to 50 ml of boiled water and add 10 g of sugar. A vitamin and mineral supplement containing vitamins A and C and folic acid as well as iron and zinc should also be added. Formula should be prepared with special attention to hygiene and quality of water.

### **Obstetrical and postpartum measures to avoid HIV transmission from mother to child**

Transmission occurs mainly by contamination of the child during passage through the birth canal. The virus is found in the blood and mucus in the canal, which should be cleansed by vaginal lavage before and during delivery. Aqueous chlorhexidine 0.25% solution has been suggested for this, with benzalkonium chloride as an alternative. Lavage may be of paramount importance in cases where the membranes have been ruptured for more than four hours.

Delivery by caesarean section (C-section) reduces the child's exposure to contaminated fluids in the birth canal and to the inevitable blood associated with delivery. In western countries, the C-section is now

recommended for **all** deliveries of HIV-positive women. This procedure is recommended even if the membranes have been ruptured for several hours or more, although opinions still diverge as to the real utility of C-section indication in women with rupture of the membranes of four hours or more who are already in labour. In developed countries an infusion with AZT (see above) is administered four hours before elective C-section and continued until the umbilical cord is clamped. In many countries, however, C-sections in prisons may be impossible to programme ahead of time and the hazards of postoperative care should be carefully weighed in taking a decision. There is a risk of delivering an iatrogenically premature baby if there is no precise dating of the pregnancy and an elective C-section is performed. The decision on C-section delivery should be made on an individual basis. The risks associated with sepsis following C-section in less than ideal conditions are greater in HIV-positive than in HIV-negative women. Prophylactic antibiotics should be given for both elective and emergency C-sections. Finally, the increased risk of placenta previa, placenta accreta and uterine rupture for future pregnancies should not be neglected.

The duration of labour does not seem to be as important a factor as the duration of rupture of the membranes. Prolonged rupture (more than four hours) is known to increase considerably the risk of transmission of HIV to the foetus (doubling it according to one study), regardless of the mode of delivery. During labour, unnecessarily rupturing the membranes should be avoided. Any invasive procedure that may put maternal and foetal blood in contact, e.g. scalp electrodes or sampling for foetal pH values, should be avoided as far as possible. If a scalp electrode is imperative, however, to determine foetal wellbeing, it should not be excluded.

Women with HIV who present with ruptured membranes at or near term should receive induction with an oxytocin perfusion, taking all obstetrical factors into account. If AZT can be administered, it should be given on a separate IV line as it cannot be administered together with oxytocin.

Episiotomies should be performed only if there is an obstetrical or serious maternal indication. If an assisted delivery is required, forceps delivery may be preferable to vacuum extraction, because of the risk of micro-lacerations to the baby's scalp from the vacuum cap.

Postpartum care should be similar for women with and without HIV. Women with HIV are more likely to develop postpartum infectious complications, including pulmonary and urinary tract infections and wound infections (C-section, episiotomy). Mothers should be given instructions on the safe handling of lochia and bloodstained sanitary pads and other material.

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# Chapter 10

## Protecting prison staff

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### Introduction

Prisons are built and designed to hold those who are sentenced by the courts. This fact creates a natural antagonism between prisoners and staff. Prisoners are young, sexually active people. Some, convicted of violence, continue to behave violently; others used drugs outside and continue to use them inside. Many are rule-breakers and may find the rules of safer sex and safer drugs use difficult to observe and keep. Finally, self-injuries are common, and this often involves blood spillage.

In many (particularly older) prisons, much depends on the daily routines which involve staff and prisoners in frequent interactions. The physical layout of some institutions generates areas which the staff are reluctant to enter alone. Assaults on staff resulting in injury are relatively common.

For all of these reasons, prisons can be threatening places, and while the probability of an infection occurring is small the consequences can be so serious that this causes great anxiety. The staff know that the prisons must keep working and often feel that they are given only the information necessary to ensure the functioning of prisons and not all the information they need to protect themselves and their families. Despite being in a hierarchical organization and subject to prison

discipline they retain their human rights. The prison service is responsible under international law for their health and safety. Protection of staff from infectious diseases is a duty and makes good management sense. A system which is phobic about AIDS will not function adequately.

## **HIV and other bloodborne viruses in prison**

The spread of these viruses is a matter of concern for the whole community, but the ease with which they are transmitted by needle-sharing, and in the case of HIV and hepatitis B by unprotected sex, underlines their importance in the prison environment.

The staff need to maintain a sense of perspective on the risks they run at work. The chances of infection are extremely small and adherence to recommended procedures will make them even smaller. Everything possible should be done to prevent the spread of HIV, pulmonary tuberculosis and bloodborne hepatitis in prisons.

## **Retention and recruitment of staff**

Since the general kinds of contact between staff and prisoners are unlikely to transmit infection there is no medical justification for testing on recruitment. Such testing on recruitment is still applied in some countries, but it is unnecessary and may be an infringement of some of the international agreements on human rights. Such testing is as ineffective as the compulsory testing of prisoners, confers no benefit and infringes the human rights of candidates. Similarly, members infected in their private lives, provided that they are not engaged in illegal activity, should not be discriminated against. This would be an infringement of their human and employment rights and would confer no benefit. They should continue to work normally while they are able to do so and receive a medical pension on retirement, as would any member of staff who became ill during his or her career.

HIV-positive health care workers engaged in invasive procedures will need to inform the medical director in strict medical confidence about their status. The medical director will make the necessary decisions regarding their working practice and will keep these under review.



This will remain privileged and confidential information. Detailed guidelines have been drawn up by a number of countries. Reference is provided in the bibliography at the end of this chapter and further detailed information is available from UNAIDS and WHO.

## **The risk of spread of HIV within a prison**

HIV infection occurs when blood, semen or vaginal fluids containing the virus get into the body of another person. There are only three known routes of infection: blood, sexual intercourse and mother-to-baby (see Chapter 6).

HIV cannot be spread by casual contact, shaking hands, sharing accommodation, sharing toilet facilities, sharing cups and plates or using someone else's knife and fork, even if these have not been washed. It is recommended not to share razors or toothbrushes in view of the tiny risk that they will be contaminated with blood.

HIV spread may occur from inmate to inmate through unprotected sexual intercourse, or as a result of sharing injecting equipment (see Chapter 3). The risk of a member of staff catching HIV from an inmate is very small. The only realistic hazard is from being stuck, accidentally or intentionally, by an infected needle. There has been one documented case in Australia of a prison officer being infected in this way. Even after a needle-stick the risk of transmission is quite low: in studies of incidents involving health workers only 0.2% (2 in 1000) contracted the virus and infection was almost always associated with more serious injuries. If, however, blood containing HIV were actually injected in the course of an assault, the risk of infection would be high. Blood spills as a result of fights and accidents carry hardly any risk of transmission of HIV.

There is no risk from blood falling on the intact skin (although it is wise to wash it off promptly and thoroughly). A few cases have been reported in health care workers in which infection occurred as a result of blood getting into an open wound or an eye; infection is not known to have occurred in this way in any prison staff. Contamination by urine or saliva carries no risk of transmission of HIV.

Members of staff who may have acquired the virus in the course of their private lives pose no threat at all either to colleagues or inmates as they carry out their duties.

### **Action to minimize the risk of HIV transmission within prisons**

There is no vaccine that can be used to immunize people against HIV. Even if a safe and effective vaccine is eventually produced, it will be many years before it has gone through the necessary tests and can be made generally available. For the foreseeable future, the prevention of HIV infection must depend entirely on the avoidance of those activities that are known to spread the virus.

In some systems (e.g. Australia, Canada, Switzerland, Ukraine and United Kingdom), an extensive educational programme has been carried out to ensure that staff and inmates are as informed as possible about HIV and AIDS and are aware of the dangers of unprotected sex and unclean works (injecting equipment – needles, spoons and syringes used by injecting drug users). This enables the development of rational policy on HIV and other communicable diseases in prisons. Multidisciplinary teams in prisons will consider incidents occurring in the prison involving an assault, blood spillage, exchange of blood or other risk situation to determine what led up to the incident and how it could have been handled differently, and to incorporate such learning into staff training on the management and control of risky situations (see Annex 3). The World Health Organization Regional Office for Europe has set up a European network of prisons to encourage work on HIV. This network includes countries from both the east and west of Europe, and work is currently ongoing in a number of countries albeit on a smaller scale (the Czech Republic, Poland and in some prisons in the Russian Federation).

### **Tuberculosis**

Tuberculosis (TB) is caused through infection by a bacterium. People with HIV are susceptible to TB infection and if they do develop the disease it is likely to progress rapidly (see Chapter 7). In the close and confined spaces of a prison TB has the potential of spreading rapidly

among inmates and staff. It has significant implications for staff and prisoners, and anyone with responsibilities in relation to HIV needs to be well informed about tuberculosis. For a complete discussion of how to prevent and treat tuberculosis, see Chapter 7.

## Hepatitis

There have been outbreaks of hepatitis A in some prisons. Hepatitis A is an infection which causes inflammation of the liver, and while the person can be quite severely ill this is normally a self-limiting illness which causes no lasting harm. The normal route of transmission is generally faecal–oral, but outbreaks have also occurred among drug users who share injecting equipment. Once an outbreak occurs it can be easily spread within the close confines of a prison and rigorous public health measures need to be taken. Public health action varies from country to country, but in general the public health consultant will need to be consulted at the earliest opportunity in order to minimize the spread. A vaccine exists and all staff members should be vaccinated.

Hepatitis B and C are strains of the virus that cause acute hepatitis (inflammation of the liver) but can also cause serious liver disease such as cirrhosis many years after infection. Diagnosis of hepatitis B infection is done by detecting elements of the virus in the blood. The diagnosis of hepatitis C depends on detection of antibodies, which can take a year or more to be produced.

- **Transmission** occurs by blood spread for both viruses and there is a high risk when drug injectors share unclean needles and works. Hepatitis B is also spread by sexual contact, but hepatitis C is less easily transmitted by this route. There is some risk from both viruses if saliva or blood comes into contact with an open wound. Hepatitis B can be transmitted by contamination with urine, but it is not known if this is possible for hepatitis C. Transmission from mother to baby occurs with hepatitis B and C.
- **Spread among inmates.** There is a high risk of spread for both viruses when drug injectors share unclean works. Hepatitis B can be spread by unprotected sex or the exchange of saliva, but the risk of transmission of hepatitis C by these routes is thought to be much lower.

- **Spread from inmates to staff** should not occur in ordinary circumstances. Needle-sticks carry a significant risk if there is contamination with hepatitis B; the level of risk of hepatitis C is not yet clearly defined. Both viruses can be transmitted by bites, and there is a risk of infection if blood or saliva comes into contact with an open wound or gets into the eye. With routine precautions, however, the risk is very low. From 1979 to 1989, less than one case a year of bloodborne hepatitis was reported among prison staff in the United Kingdom.
- **Vaccination** is available for hepatitis B but not, as yet, for hepatitis C. Giving specific immunoglobulin can provide short-term protection against hepatitis B. All staff in regular contact with inmates should be eligible for vaccination. All staff should be made aware of the steps to be taken after accidental exposure (they should perhaps be provided with a staff action card).

### Universal precautions appropriate in prisons

The set of procedures known as universal precautions has been developed and adapted in many countries to minimize the risk of HIV infection in hospitals and other health care settings. Few expert advisory groups have considered prisons. The principle underlying universal precautions is that since medical history and examination (including testing all prisoners on entry) cannot reliably identify all patients infected with HIV or other bloodborne pathogens, blood and body-fluid precautions should be consistently used for ALL patients or prisoners.

Since the lifestyles of many prisoners leaves them at greater risk of HIV and other infections, all prison staff should routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids of any prisoner or patient is anticipated. Rubber gloves should be worn for touching blood and body fluids, mucous membranes or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose

and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

Prisoners who work in the prison laundry or as cleaners should also be provided with rubber gloves and taught how and why to use them. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

All prison staff should take precautions to prevent injuries caused by needles, scalpels and other sharp instruments or devices during medical or search procedures, and when disposing of used needles. Health care staff need to take particular care when cleaning surgical equipment and when handling sharp instruments after medical procedures. Needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades and other contaminated sharp items should be placed in puncture-resistant containers for disposal. The puncture-resistant containers should be located as close as practicable to the area in which they are used.

In some prison systems disposable needles are not available in prison health care centres and glass syringes are used. Great care must be taken to ensure that re-usable needles are properly cleaned and disinfected with chlorine. Bleach (sodium hypochlorite; NaOCl) diluted to a concentration of 1% (= 10 000 parts per million) is sufficient to kill HIV, HBV and HCV exposed to this solution for 30 minutes, so long as all debris is removed with washing and/or scrubbing first. Steam sterilization is irrelevant if chlorine is used in this way. Of course, during the washing, scrubbing and dismantling process the staff are in danger of needle-stick before the syringe is disinfected. They need to be trained in a simple but effective way to reduce the risk to themselves when carrying out such procedures. A proper protocol for doing this cleansing should be drawn up and published as a poster wherever this is carried out.

Although saliva has not been implicated in HIV transmission, to minimize the need for emergency direct mouth-to-mouth resuscitation, mouth-pieces, resuscitation bags or other ventilation devices should be

available for all members of staff who may need to assist a prisoner or other member of staff.

## How can staff protect themselves?

Since HIV, hepatitis B and hepatitis C can be transmitted sexually, prison staff should be aware of safer sex procedures and like anyone else take the appropriate precautions in their private lives. These involve always using a condom unless it is certain that the sexual partner is not infected, or avoiding penetrative sexual intercourse.

The most likely ways that prison staff can become infected with HIV and hepatitis B or C are by needle-stick injuries involving contaminated blood during the following procedures.

- **Searching cells.** Experience has shown that prison staff are most likely to receive a needle-stick when searching under furniture or in cavities where a prisoner may have concealed a used needle. Frequently prison staff will run their hands along the underside of tables, chairs or ledges to seek illicit material. Wherever possible, visual inspection should be made first and then searching by feel or touch should only be undertaken wearing thick leather gloves to minimize risk of a needle-stick.
- **Body searching.** Prisoners sometimes secrete needles in their clothing to transport them from one part of the prison to another. Prison staff will carry out body searches to ensure, for example, that no concealed weapons are being moved about the prison. Commonly prison staff will run their hands down lapels, under shirt collars and around waistbands. A needle secreted there can cause a needle-stick injury. The same practice should be adopted as recommended above, visual inspection first by asking the inmate to turn out the lapels and the collar and to empty and then turn out pockets, etc. Following that, manual searching should be carried out using leather gloves and patting the clothing rather than rubbing it down to reduce risk of injury.
- **Assaults using a needle as a weapon.** There is nothing that can be done to prevent a deranged prisoner suddenly and without warning attacking a staff member in the same way that nothing can be done to prevent such an inmate attacking with a weapon. However, there is generally a build-up of tension before the

weapon or needle is drawn or threatened. Prison staff have established ways of dealing with such incidents, involving calling assistance, isolating the attacker and negotiating the surrender of the needle. There is only one documented case of an inmate infecting a prison officer and that was in Australia. In other systems, members of the staff have received similar threats but happily these have not resulted in infection.

- **Major blood spillage or exchange of blood.** Blood spillages in prison are the result of self-injury incidents, such as when a prisoner cuts his wrist or in fights or in assaults. While there is no documented case of a prison officer being infected during such a spillage, there have been a small number of cases involving health care workers. Blood falling on intact skin is unlikely to be risky, but officers with eczema or other lesions on the skin will be at higher risk. Such areas of skin should always be covered at work, using thin rubber gloves or a waterproof bandage. Blood must always be treated with caution and spillages on the floor or other surfaces should be cleaned up using dilute bleach (1 : 10 solution) and wearing rubber gloves. Prisoners who work as cleaners should also be issued with rubber gloves.
- **Disposal of needles found in search operations.** A needle or syringe found in a search operation is likely to be contaminated. So many variables are involved (quantity of blood, ambient temperature, drying state, etc.) that it is not easy to say for how long the blood inside a syringe remains infective. The safest practice is to treat all used needles as contaminated and infective. Great care must be taken in their disposal and transportation. Search officers should wear thick leather gloves, should not hand the needle to anyone, should not try to bend or destroy it but should place it carefully in a puncture-proof box or container. If it is not possible to transport standard medical surgical and needle disposal boxes, a container such as a glass jam jar which can be capped or a soft drinks can could be used. The needles should not be removed from the jar or can but both should be dropped in the disposal box for incineration.

## **Procedures following a high-risk incident**

Following a needle-stick incident, the wound should be squeezed to express blood and then immediately thoroughly washed with soap and plenty of cold water. The staff member should be referred directly to the prison doctor. Prophylactic treatment with AZT or combined drug therapy should be begun as quickly as possible. The staff member will require counselling to assist him or her to come to terms with what has happened, to inform the wife, husband or partner and to understand the need for safer sex until it is clear that infection has not taken place.

## **Ensuring health and safety**

Since every prison is different in whether or not a medical doctor will be on duty, its distance from an HIV specialist centre and the availability of AZT, each prison will need to develop its own policy based on the following:

- enabling staff to understand their true level of risk (low);
- minimizing the risk by safer working practices;
- developing an appropriate procedure to follow after a risk incident;
- providing appropriate prophylaxis;
- providing counselling and support to an officer and his/her partner after an incident

The prison service itself will wish to develop a national policy to assist and compensate prison staff infected during the course of their work. This will be based on existing policy for staff disabled during an accident at work, but should include the principles that:

- staff infected at work should be enabled to continue working as long as they are well and want to work;
- staff infected at work should receive maximum retirement benefits when they are no longer able to work;
- adequate compensation should be paid to staff as with any accident at work.



In many countries, at the beginning of the HIV epidemic a variety of occupational groups (hospital staff, ambulance personnel, police, firemen and prison staff) demanded special payments for working with individuals who were potentially infected with HIV. However, it was quickly realized that in most circumstances people with HIV present virtually no risk and that applying simple precautions would reduce any such risk to a minimum. Therefore, special payments are not generally made in countries with experience of HIV, but good training and staff preparation are provided. Similarly, special equipment for prison staff is often demanded. Once again, commonsense needs to prevail. Demands for special shields, visors or helmets are generally an indication of staff fears of HIV, which should be addressed in training.

## Management of outbreaks

An outbreak of an infectious disease can be considered to have occurred if more than one inmate or member of staff has acquired the infection and there is evidence that transmission took place within the establishment. The responsibility for advising on the medical aspects of an outbreak of HIV, hepatitis B or C and pulmonary tuberculosis will lie with the senior prison doctor. In the case of the bloodborne viruses, he will need to liaise with the multidisciplinary AIDS management team (see Annex 3) in the prison and the regional infectious diseases doctors. Considerations will include the following.

- **How did the infection get in to the prison:** a new admission, a member of staff, a visitor?
- **How is the infection being spread?** With HIV and the bloodborne hepatitis viruses, the most likely cause is needle-sharing by drug users, but for HIV and hepatitis B sexual transmission must also be considered.
- **How many people are affected?** Screening with informed consent will be needed to detect people who are not ill but are carrying the infection. This will entail an urgent educational programme to explain the situation to inmates and the provision of counselling facilities. Cooperation between inmates and staff would be called for in the event of an outbreak of pulmonary tuberculosis.

- **How can further spread can be prevented?** Reinforce the education inmates should have already received concerning the risks of sharing needles. Consideration needs to be given to the provision of bleach/sterilizing tablets and/or needle exchange to enable prisoners who continue to share to prevent the spread of further infection. If sexual transmission has been occurring, the risks of unsafe sex would need to be emphasized. Further, the prison administration needs to make sure that inmates are protected from assaults.

## Prophylaxis

Prophylactic treatment refers to immunization or other treatment given to healthy people to prevent them falling ill with some specific disease in the future. Prophylaxis is available for hepatitis B and also for pulmonary tuberculosis. No vaccines exist for HIV or hepatitis C. However,

- hepatitis B vaccination should be offered to all operational prison staff;
- immunoglobulin for hepatitis B should be offered to staff within 48 hours of exposure to a risk of hepatitis B;
- serious consideration should be given to offering these to inmates as well.

## Staff training

Once appropriate policies have been devised on prophylaxis, procedures to be followed after a risk incident, management of risk situations, employment protection and compensation for staff infected during the course of their work, a major training programme will need to be mounted to ensure that all staff who come into contact with inmates:

- understand their true (low) level of risk;
- what constitutes an actual risk incident;
- how to avoid or minimize risk;
- how to manage behaviour involving a threat of infection;
- what to do following a risk incident;

- what procedures will be followed (counselling, prophylaxis, blood testing);
- consent – a staff member's right to refuse testing;
- what the blood test results mean;
- what prophylaxis entails;
- who needs to be informed following an incident (partner, family member);
- where ongoing support can be obtained;
- what compensation procedures (and retirement packages) are available.

Such training should be carried out routinely and updated as lessons regarding risk incidents are learned. Staff need to be aware of these elements before they are involved in an incident because following an injury the anxiety generated will make it more difficult to get the information across. The results of such training should be monitored. While much of this training must necessarily be information-based, it is important that experiential learning is also provided. The staff need to understand that prisoners with HIV are facing a difficult and uncertain future, that they are human and are subject to the same feelings of fear and loneliness that would afflict anyone else in those circumstances. This will enable staff to perceive prisoners as not merely threats but as fellow human beings. It will also help them to come to terms with their fears of infection and will assist in the development of rational policy in the penal environment.

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## **Annex 1**

# **WHO guidelines on HIV infection and AIDS in prisons**

These guidelines were prepared on the basis of technical advice provided to WHO prior to and during a consultation of experts convened in Geneva in September 1992. The consultation included representatives of international and nongovernmental organizations and government departments with a wide range of experience and background in the health, management and human rights aspects of HIV/AIDS in prisons.

The guidelines provide standards from a public health perspective which prison authorities should strive to achieve in their efforts to prevent HIV transmission in prisons and to provide care to those affected by HIV/AIDS. It is expected that the guidelines will be adapted by prison authorities to meet their local needs.

### **A. General principles**

1. All prisoners have the right to receive health care, including preventive measures, equivalent to that available in the community without discrimination, in particular with respect to their legal status or nationality.
2. The general principles adopted by national AIDS programmes should apply equally to prisoners and to the community.

3. In each country, specific policies for the prevention of HIV/AIDS in prisons and for the care of HIV-infected prisoners should be defined. These policies and the strategies applied in prisons should be developed through close collaboration among national health authorities, prison administrations and relevant community representatives, including nongovernmental organizations. These strategies should be incorporated into a wider programme of promoting health among prisoners.
4. Preventive measures for HIV/AIDS in prison should be complementary to and compatible with those in the community. Preventive measures should also be based on risk behaviours actually occurring in prisons, notably needle-sharing among injecting drug users and unprotected sexual intercourse. Information and education provided to prisoners should aim to promote realistically achievable changes in attitudes and risk behaviour, both while in prison and after release.
5. The needs of prisoners and others in the prison environment should be taken into account in the planning of national AIDS programmes and community health and primary health care services, and in the distribution of resources, especially in developing countries.
6. The active involvement of nongovernmental organizations, the involvement of prisoners, and the non-discriminatory and humane care of HIV-infected prisoners and of prisoners with AIDS are prerequisites for achieving a credible strategy for preventing HIV transmission.
7. It is important to recognize that any prison environment is greatly influenced by both prison staff and prisoners. Both groups should, therefore participate actively in developing and applying effective preventive measures, in disseminating relevant information, and in avoiding discrimination.
8. Prison administrations have a responsibility to define and put in place policies and practices that will create a safer environment and diminish the risk of transmission of HIV to prisoners and staff alike.
9. Independent research in the field of HIV/AIDS among prison populations should be encouraged to shed light on, among other things, successful interventions in prisons. Independent examination by an ethical review committee should be carried out

for all research procedures in prisons, and ethical principles must be strictly observed. The results of such studies should be used to benefit prisoners, for example by improving treatment regimens or HIV/AIDS policies in prisons. Prison administrations should not seek to influence the scientific aspects of such research procedures, their interpretation or their publication.

#### B. HIV testing in prisons

10. Compulsory testing of prisoners for HIV is unethical and ineffective, and should be prohibited.
11. Voluntary testing for HIV infection should be available in prisons when available in the community, together with adequate pre- and post-test counselling. Voluntary testing should only be carried out with the informed consent of the prisoner. Support should be available when prisoners are notified of test results and in the period following.
12. Test results should be communicated to prisoners by health personnel, who should ensure medical confidentiality.
13. Unlinked anonymous testing for epidemiological surveillance should only be considered if such a method is used in the general population of the country concerned. Prisoners should be informed about the existence of any epidemiological surveillance carried out in the prison where they are, and the findings of such surveillance should be made available to the prisoners.

#### C. Preventive measures

##### *(i) Education and information*

14. Prisoners and prison staff should be informed about HIV/AIDS and about ways to prevent HIV transmission, with special reference to the likely risks of transmission within prison environments and to the needs of prisoners after release. The information should be coordinated and consistent with that disseminated in the general community. Information intended for the general public (through posters, leaflets and the mass media) should also be available to prisoners. All written materials distributed to prisoners should be appropriate for the educational level in the prison population; information should be made available in a language and form that prisoners can understand, and presented in an attractive and clear format.

15. Prison staff should receive HIV/AIDS prevention information during their initial training and thereafter on a regular basis.
16. Prisoners should receive HIV/AIDS education on entry, during their prison term, and in pre-release programmes. All prisoners should have an opportunity to discuss the related information with qualified people. Face-to-face communication, both in groups and on an individual basis, is an important element in education and information.
17. Consultation with, and participation of, inmates and staff in the development of educational materials should be encouraged.
18. In view of the importance of peer education, both prison staff and prisoners themselves should be involved in disseminating information.
19. Education on infection control should emphasize the principles of universal precautions and hygiene. The lack of any risk of HIV transmission as a result of normal everyday contact should be emphasized. Excessive and unnecessary precautions while handling HIV-infected prisoners should be avoided.

*(ii) Sexual transmission*

20. Clear information should be available to prisoners on the types of sexual behaviour that can lead to HIV transmission. The role of condoms in preventing HIV transmission should also be explained. Since penetrative sexual intercourse occurs in prison, even when prohibited, condoms should be made available to prisoners throughout their period of detention. They should also be made available prior to any form of leave or release.
21. Prison authorities are responsible for combating aggressive sexual behaviour such as rape, exploitation of vulnerable prisoners (e.g. transsexual or homosexual prisoners or mentally disabled prisoners) and all forms of prisoner victimization by providing adequate staffing, effective surveillance, disciplinary sanctions, and education, work and leisure programmes. These measures should be applied regardless of the HIV status of the individuals concerned.



*(iii) Transmission by injection*

22. As part of overall general HIV education programmes, prisoners should be informed of the dangers of drug use. The risks of sharing injecting equipment, compared with less dangerous methods of drug-taking, should be emphasized and explained. Drug-dependent prisoners should be encouraged to enrol in drug treatment programmes while in prison, with adequate protection of their confidentiality. Such programmes should include information on the treatment of drug dependency, and on the risks associated with different methods of drug use.
23. Prisoners on methadone maintenance prior to imprisonment should be able to continue this treatment while in prison. In countries in which methadone maintenance is available to opiate-dependent individuals in the community, this treatment should also be available in prisons.
24. In countries where bleach is available to injecting drug users in the community, diluted bleach (e.g. sodium hypochlorite solution) or another effective viricidal agent, together with specific detailed instructions on cleaning injecting equipment, should be made available in prisons housing injecting drug users or where tattooing or skin piercing occurs. In countries where clean syringes and needles are made available to injecting drug users in the community, consideration should be given to providing clean injecting equipment during detention and on release to prisoners who request this.
25. Prison health services must have adequate material and resources available to ensure that HIV transmission through the use of non-sterile equipment during medical procedures does not occur.

*(iv) Use of other substances that may increase the likelihood of HIV transmission*

26. Orally ingested or inhaled psychoactive substances, such as cocaine, solvents and alcohol, some of which are used to a considerable extent in different prison settings worldwide, may increase the likelihood of HIV transmission by impairing judgement and hindering the adoption of preventive measures by prisoners in circumstances where these measures would be required. Therefore, actual and potential users of psychoactive drugs should be made aware of this, as well as of other possible

harmful effects and consequences of these substances in the broader context of health education.

#### D. Management of HIV-infected prisoners

27. Since segregation, isolation and restrictions on occupational activities, sports and recreation are not considered useful or relevant in the case of HIV-infected people in the community, the same attitude should be adopted towards HIV-infected prisoners. Decisions on isolation for health conditions should be taken by medical staff only, and on the same grounds as for the general public, in accordance with public health standards and regulations. Prisoners' rights should not be restricted further than is absolutely necessary on medical grounds, and as provided for by public health standards and regulations. HIV-infected prisoners should have equal access to workshops and to work in kitchens, farms and other work areas, and to all programmes available to the general prison population.
28. Isolation for limited periods may be required on medical grounds for HIV-infected prisoners suffering from pulmonary tuberculosis in an infectious stage. Protective isolation may also be required for prisoners with immunodepression related to AIDS, but should be carried out only with a prisoner's informed consent. Decisions on the need to isolate or segregate prisoners (including those infected with HIV) should only be taken on medical grounds and only by health personnel, and should not be influenced by the prison administration.
29. Disciplinary measures, such as solitary confinement for prisoners, including perpetrators of aggressive, or predatory sexual, acts or those who threaten such acts, should be decided upon without reference to HIV status.
30. Efforts should be made to encourage among prisoners supportive attitudes towards, for example, those affected by HIV/AIDS in order to prevent discrimination and to combat fear and prejudice about HIV-infected people.

#### E. Confidentiality in relation to HIV/AIDS

31. Information on the health status and medical treatment of prisoners is confidential and should be recorded in files available only to health personnel. Health personnel may provide prison managers

or judicial authorities with information that will assist in the treatment and care of the patient, if the prisoner consents.

32. Information regarding HIV status may only be disclosed to prison managers if the health personnel consider, with due regard to medical ethics, that this is warranted to ensure the safety and wellbeing of prisoners and staff, applying to disclosure the same principles as those generally applied in the community. Principles and procedures relating to voluntary partner notification in the community should be followed for prisoners.
33. Routine communication of the HIV status of prisoners to the prison administration should never take place. No mark, label, stamp or other visible sign should be placed on prisoners' files, cells or papers to indicate their HIV status.

#### F. Care and support of HIV-infected prisoners

34. At each stage of HIV-related illness, prisoners should receive appropriate medical and psychosocial treatment equivalent to that given to other members of the community. Involvement of all prisoners in peer support programmes should be encouraged. Collaboration with health care providers in the community should be promoted to facilitate the provision of medical care.
35. Medical follow-up and counselling for asymptomatic HIV-infected prisoners should be available and accessible during detention.
36. Prisoners should have access to information on treatment options and the same right to refuse treatment as exists in the community.
37. Treatment for HIV infection, and the prophylaxis and treatment of related illnesses, should be provided by prison medical services, applying the same clinical and accessibility criteria as in the community.
38. Prisoners should have the same access as people living in the community to clinical trials of treatments for all HIV/AIDS-related diseases. Prisoners should not be placed under pressure to participate in clinical trials, taking into account the principle that individuals deprived of their liberty may not be the subjects of medical research unless they freely consent to it and it is expected to produce a direct and significant benefit to their health.

39. The decision to hospitalize a prisoner with AIDS or other HIV-related diseases must be made on medical grounds by health personnel. Access to adequately equipped specialist services, on the same level available to the community, must be assured.
40. Prison medical services should collaborate with community health services to ensure medical and psychological follow-up of HIV-infected prisoners after their release if they so consent. Prisoners should be encouraged to use these services.

#### G. Tuberculosis in relation to HIV infection

41. The prison environment is often conducive to tuberculosis transmission and rates may be higher than in the general population. Furthermore, tuberculosis is increasingly associated with HIV/AIDS, so that the presence of HIV-infected prisoners may increase the risk of tuberculosis transmission. Vigorous efforts are therefore needed to reduce the risks related to the environment (e.g. by improving ventilation, reducing overcrowding, and providing adequate nutrition); to detect cases of tuberculosis as early as possible through screening for tuberculosis on entry and at regular intervals during imprisonment, and through contact-tracing; and to provide effective treatment.
42. Diagnostic screening for tuberculosis in prison staff should also be available. Treatment programmes for prisoners with tuberculosis should be available in prisons, and adequate follow-up should be ensured when treated prisoners are transferred or released.
43. Epidemiological surveillance of tuberculosis among prison inmates and prison personnel is needed. Special attention should be paid to the early detection of outbreaks of drug-resistant tuberculosis and their control by public health measures. In particular, strategies should be implemented to ensure that prisoners complete tuberculosis treatment regimens.

#### H. Women prisoners

44. Special attention should be given to the needs of women prisoners. Staff dealing with detained women should be trained to deal with the psychosocial and medical problems associated with HIV infection in women.

45. Women prisoners, including those who are HIV-infected, should receive information and services specifically designed for their needs, including information on the likelihood of HIV transmission, in particular from mother to infant, or through sexual intercourse. Since women prisoners may engage in sexual intercourse during detention or release on parole, they should be enabled to protect themselves from HIV infection, e.g. through the provision of condoms and skills in negotiating safer sex. Counselling on family planning should also be available, if national legislation so provides. However, no pressure should be placed on women prisoners to terminate their pregnancies. Women should be able to care for their young children while in detention regardless of their HIV status.
46. The following should be available in all prisons holding women:
  - gynaecological consultations at regular intervals, with particular attention paid to the diagnosis and treatment of STDs;
  - family planning counselling services oriented to women's needs;
  - care during pregnancy in appropriate accommodation;
  - care for children, including those born to HIV-infected mothers;
  - condoms and other contraceptives during detention and prior to parole periods or release.

I. Prisoners in juvenile detention centres

47. Health education programmes adapted to the needs of young prisoners should be organized to foster attitudes and behaviour conducive to the avoidance of transmissible diseases including HIV/AIDS. Decisions concerning children and adolescents, such as notifying parents of their children's HIV status, or obtaining consent to treatment should be taken on the same grounds as in the community, with due regard for the principle that the best interests of the child are paramount.

J. Foreign prisoners

48. The needs of foreign prisoners should be respected without discrimination. Prison authorities should be trained to respond to requirements such as assistance with languages, oral contact with

families and counselling services. Adequate measures should be adopted to provide for the protection of HIV-infected foreign prisoners in the case of prisoner transfer/exchange programmes between different countries, extradition proceedings and other interchanges.

**K. Semi-liberty and release**

49. Prisoners should not be excluded from measures such as placements in semi-liberty hostels or centres, or any other type of open or low-security prison, on the grounds of their HIV status, nor should such placement be contingent upon disclosure of HIV status.
50. Community-based medical care, psychological support and social services should be organized for HIV-infected prisoners to facilitate their integration into the community after release.

**L. Early release**

51. If compatible with considerations of security and judicial procedures, prisoners with advanced AIDS should be granted compassionate early release, as far as possible, in order to facilitate contact with their families and friends and to allow them to face death with dignity and in freedom.
52. Prison medical services should provide full information on such prisoners' health status, treatment needs and prognosis, if requested by the prisoner, to the authorities competent to decide upon early release. The needs of those prisoners without resources in the community should be taken into account in any early release decision.

**M. Contacts with the community and monitoring**

53. Cooperation with relevant nongovernmental and private organizations, such as those with expertise in AIDS prevention, counselling and social support, should be encouraged. HIV-infected prisoners should have access to voluntary agencies and other sources of advice and help.
54. Independent organizations concerned with prisoners' interests should have access to HIV-infected prisoners, if the prisoners so wish, and should draw attention to any instances of substandard care, discrimination, non-respect of ethical principles or deviation

from established prison policies and procedures to ensure the humane treatment of prisoners.

55. Regular visits to, and supervision of, all prison establishments should be carried out by public health authorities independent of prison administrations.
56. Prisoners should be able to complain to an independent competent body about substandard treatment, discrimination or non-respect of basic ethical principles in relation to HIV/AIDS, and effective redress should be available.

#### N. Resources

57. Adequate resources for prison health care, for related staffing and for specific HIV/AIDS-related activities should be ensured by authorities. The resources made available should be used for preventive measures, counselling, outpatient consultation, medication, and hospitalization.

#### O. Evaluation and research

58. Studies concerning HIV/AIDS in prison populations are recommended in order to establish an adequate information base for planning policies and interventions in this field. Such studies could investigate, for example, the prevalence of HIV infection or the frequency of risk behaviours for HIV transmission.
59. The implementation of interventions by prison authorities to prevent the transmission of HIV and to provide care to those affected by HIV/AIDS should be evaluated. Such evaluations should be used by prison administrations to improve the design and implementation of interventions.





## Annex 2

# The main aspects of current HIV-related prison legislation in the Russian Federation

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The main legislative acts related to the care and prevention of HIV in prisons are summarized below:

- Federal Law of 30 March 1995 No. 38-FL “On preventing the spread of HIV infection in the Russian Federation”;
- Russian Federation Government Resolution No. 877 of 4 September 1995;
- “Regulations for conducting HIV test on prisoners”, ratified by Russian Federation Government Resolution of 28 February 1996, No. 221;
- Ministry of Interior Order of 5 May 1996, No. 237;
- Criminal Code, Article 122 (in effect since January 1997);
- Ministry of Justice, Central Prison Administration (GUIN) Order of 11 June 1999, No. 18/39-620 stipulating the introduction of pre- and post-test counselling with respect to HIV test;
- Russian Federation Criminal Executive Code, Article 101, Part 2;

- Ministry of Justice, GUIN Order of 30 June 2000 “On measures to improve the prevention and treatment of HIV infection in the penal institutions of the Russian Ministry of Justice”.

On 30 March 1995 the State Duma adopted Federal Law No. 38-FL due, among others, to “the need to protect the rights and legal interests of the population”. Article 3 of this law stipulates: “If international agreements undersigned by the Russian Federation provide for other regulations than those set forth by this Federal Law, the regulations set forth by such international agreements shall apply”.

The law guarantees:

“The provision of all kinds of qualified and specialized medical assistance to HIV-positive citizens of the Russian Federation free of charge and their right to receive medication and treatment in outpatient clinics or hospitals free of charge, as well as full observance of the rights and freedoms of HIV-positive citizens.”

All subsequent laws, government resolutions and ministerial and departmental orders and instructions were adopted in execution of the above-mentioned law. Among these, the “Regulations for conducting HIV tests on prisoners”, ratified by Russian Federation Government Resolution of 28 February 1996, No. 221, set forth the categories of prisoners subject to mandatory HIV tests, as follows:

- those wishing to donate blood, blood plasma, sperm or other biological fluids, tissues or organs, each time donor material is taken;
- those employed in certain positions in the medical institutions of the Russian Federation Ministry of Interior prison system, as set forth in the “List of employees of certain professions, industries, enterprises, institutions and organizations”, who are subject to mandatory HIV testing during preliminary and periodical medical check-ups required by the job, as approved by the Russian Federation Government; periodical medical check-ups shall be conducted no less than once a year;
- in accordance with the clinical symptoms set forth by the Ministry of Health and the Russian Federation medical industry.

The efforts of the government and relevant departments to prevent the spread of HIV infection can be seen in various documents adopted at different times since that date:

- Ministry of the Interior Order of 5 May 1996, No. 237 stipulated the creation of special branches for providing medical assistance to prisoners living with HIV/AIDS in the medical institutions of the prison system;
- Russian Ministry of Justice, GUIN Order of 11 June 1999, No. 18/39-620 stipulated introducing pre- and post-test counselling with respect to HIV tests into the practical work of medical employees of penal institutions and pre-trial detention centers (SIZOs), appointing employees responsible for conducting informational and educational work on the prevention of HIV infection, and making available the appropriate documentation.

At the time of writing, the Federation Council has submitted a draft law to the State Duma of the Russian Federal Assembly aimed at excluding norms from Part 2 of Article 101 of the Russian Federation Criminal Executive Code, which envisages establishing special medical penal institutions for the housing and outpatient treatment of convicted prisoners living with HIV/AIDS, on the grounds that this is ineffective and contrary to accepted international standards and regulations.

Recognizing the prevention and control of HIV infection as one of the priority tasks in the prison system, the Russian Ministry of Justice (GUIN) issued an Order on 30 June 2000 which is based on all the experience accumulated by the Russian prison system during recent years and takes into account international standards and practice. This order is aimed at executing the Federal Law of 30 March 1995, No. 38-FL “On preventing the spread of HIV infection in the Russian Federation”. The nine documents appended to the order set forth in detail methods of preventing HIV infection in prisons, organizing counselling for HIV positive prisoners, and ensuring confidentiality of information. Presenting the full text of the order along with the appendices is beyond the scope of this book, and all those whom it concerns most immediately in the Russian Federation are already acquainted with this document. However, some of the main provisions of the order are outlined below.

- Drawing up a draft normative legal act regarding the benefits envisaged by legislation for prison employees engaged in the diagnosis and treatment of HIV-positive prisoners, as well as for those whose work involves handling HIV-infected substances.
- Governors of territorial penal institutions shall be responsible for:
  - drawing up and approving a plan of action for reducing the risk of becoming infected with HIV/AIDS in institutions under the jurisdiction of the prison system;
  - organizing mandatory HIV testing for certain categories of pre-trial prisoners and convicted prisoners, as approved by Russian Federation Government Resolution of 28 February 1996, No. 221, as well as those expressing the desire to undergo such testing voluntarily, respecting the confidentiality of results;
  - organizing mandatory HIV testing for employees in those professions, industries, enterprises, institutions and organizations put forward in the list approved by Russian Federation Government Resolution of 4 September 1995, No. 877;
  - appointing medical employees in every penal institution and SIZO to be responsible for conducting informational and educational work on the prevention of HIV infection, organizing record-keeping of HIV-positive prisoners and conducting pre- and post-test counselling; providing such medical employees with separate facilities and the necessary equipment;
  - raising the salary of prison staff who perform their official duties in direct contact with HIV-positive prisoners, in order to compensate for the difficulty, stress and special demands involved in such work;
  - making it possible for prisoners to purchase and use condoms during long-term visits; providing enough bleach in penal institutions and SIZOs for disinfecting shaving accessories;
  - being guided by the demands of the normative documents of the Russian Ministry of Health when providing in-hospital, consultative and outpatient preventive care to HIV-positive prisoners.

According to the instructions, prison governors are responsible for ensuring confidentiality, and they must prevent any person or employee from gaining access to confidential medical information, with the exception of a medical employee appointed by prison order, as well as official court representatives, investigation agencies and prosecutor's offices as stipulated by law. The appointed medical staff member is responsible for preventing the spread of HIV/AIDS in prison, organizing HIV testing and conducting pre- and post-test counselling. He/she has personal responsibility for keeping information on HIV-positive prisoners confidential.

An HIV-positive prisoner shall also be informed of and must sign a "Warning of criminal liability for intentionally infecting another person or placing another person in danger of becoming infected". Such deeds fall under Article 122 of the Russian Federation Criminal Code and are punishable by a maximum prison term of up to five years (for intentionally infecting one person) or up to eight years (for intentionally infecting two or more persons or a juvenile).

The order offers territorial prison administrations a sample programme for reducing the spread of HIV/AIDS, which includes a detailed list of measures aimed at creating a legal, educational-methodological and material-technical basis to conduct the programme, and provides recommendations for resolving organizational and operative problems and conducting informational and educational work. This programme is based on the interaction of prison administrations with district AIDS prevention and management centres.

To summarize, the provisions of HIV-related legislative and normative acts in Russian prisons envisage, *inter alia*, the following:

- mandatory medical examination of specific categories of prisoners and staff;
- pre- and post-test counselling of prisoners who are to undergo HIV testing;
- confidentiality of information relating to HIV-positive prisoners;
- provision of all types of qualified and specialized medical assistance to HIV-positive prisoners free of charge, and availability of condoms and bleach;

- training and education for prisoners and staff on prevention of HIV infection.

Despite the significantly progressive character of the new order, there are a couple of points that should be noted. There is an obvious contradiction between the order that stipulates confidentiality of information concerning test results and the current practice of segregating HIV-positive prisoners – a practice which has not been discontinued. The order does not refer to segregation at all, although clearly as long as segregation continues to be practised there can be no possibility of confidentiality. Although, by law, mandatory testing has only applied to certain categories of prisoners since 1996, testing of all prisoners, without exception, continues to be the normal practice in the Russian Federation. The order does not provide any safeguards against overall mandatory testing, although in general it is critical of this measure as a practice that contradicts Russian legislation and human rights standards. These two concerns, at least, necessitate that further steps should be taken in legislation and practice to enable the order to be implemented in full.

## **Annex 3**

# **A model for the prevention and control of HIV and other communicable diseases in prisons in the Russian Federation and in eastern Europe**

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### **Introduction**

The newly independent states in Europe are experiencing a period of rapid change characterized by, among other things, high crime rates, increased prison populations, and fewer health, social and prison resources leading to a lack of supplies of medicinal drugs and other health materials. The increases in injecting drug use and epidemics of HIV, sexually transmitted infections (STIs), hepatitis, tuberculosis (TB) and diphtheria have been reverberating within prisons. Regimes in this part of the world as elsewhere are often characterized by discrimination and needless isolation of prisoners with infection. Such measures (an exception being in the case of active TB) are generally unnecessary and expensive, and contribute to staff and prisoners' anxieties.

To combat HIV and other communicable diseases in prisons requires concerted action on the part of management, the staff responsible for health care, discipline, psychological care and education, and social workers. The model described below is based on multidisciplinary team working and is adaptable to different countries and to the individual nature, geography and regimes of different establishments and prison systems. It empowers staff at local level to tackle the many challenges presented by communicable diseases in prisons. Such a model could be applied in the Russian Federation within the legislative framework set by the Russian Ministry of Justice, GUIN Order of 30 June 2000 (see Annex 2).

#### Model for the prevention and control of HIV and other communicable diseases in prisons in the Russian Federation and in eastern Europe

*What does the model do?*

It brings together:

- central management;
- regional and local management;
- specialist workers in prisons (doctors, health care staff, psychologists and social workers); and
- staff responsible for discipline (officers working in various parts of prisons and security staff);

to enable them to:

- understand the implications of HIV and other communicable diseases in prisons;
- generate priorities for action based on consensus;
- plan and carry out these actions; and
- set targets which can be monitored.

*What is needed to create such a model?*

In order to obtain the commitment of central government, high-level officials in the responsible ministry (the Ministry of Justice in the Russian Federation) need to be appraised of the:

- nature of the epidemic;
- ability of HIV to spread within the prison population;



- effect of the spread of HIV in prisons on the outside community;
- likely impact of HIV and other diseases on the proper management of prisons;
- power of HIV to generate fear of AIDS in staff and prisoners;
- disruption such fears can generate inside prisons;
- necessity of developing a coherent strategy on HIV; and
- how such a strategy could be implemented.

In order to develop rational local policies prison systems need:

- a set of national guidelines, informed by staff in prisons and drawn up by the Ministry of Justice in conjunction with epidemiologists, public health officials, AIDS and drug control agencies;
- aims, objectives, targets and principles to be adopted in relation to communicable diseases;
- protocols for the management and treatment of each of the communicable diseases incorporating: infection control; health and safety; ethical principles for testing, treatment and care of infected prisoners; and occupational health, including job protection of staff who are infected;
- resources allocated from the various national budgets (AIDS, TB, prisons) on the basis of public health priorities;
- the principles of consent and medical confidentiality clearly stated and adhered to;
- prevalence information gathered by surveys based on ethical principles.

*How does the model work?*

It consists of setting up in each prison a small multidisciplinary team, headed by a governor grade staff member, with a doctor, health care worker, psychologist, social worker, discipline officer and security officer, who are brought together for training and planning. The aim is to form groups of experienced people who understand their own prison and have varying professional perspectives on prisoners in order that they may pool their ideas and approaches. The institution plans they develop will follow the national guidelines, but are adapted

and implemented at local level. Since not all prisons are the same, the committee in each prison will:

- review the epidemiological situation in their prison;
- consider occupational health concerns of staff;
- review risk behaviour in the prison;
- examine the central prison service policy on HIV and other diseases;
- assess the education needs of staff and prisoners;
- plan a strategy to tackle the challenges identified for their own prison within the national objectives set by the central team; and
- contribute to the formulation of a coherent national strategy.

In this way, staff at all levels of the organization will contribute to the plan, which will benefit from their combined experience. In addition, staff will feel a sense of ownership towards the strategy. They will prove good ambassadors to other staff in their home institutions when the plan is to be implemented.

*Has such a model been tested in prisons?*

Versions of the model have been tested in two prison systems: England & Wales and Ukraine. In England & Wales, over 100 of the 130-odd prisons in the system sent teams for centrally funded and organized training on HIV and its management in prisons. A UNAIDS-funded programme developed the national strategy for Ukraine by bringing together multidisciplinary teams from prisons across the country. After learning about HIV and its implications for prisons, the various occupational groups invited (governors, doctors, social workers, etc.) considered what their specialty could contribute to the development of the strategy. Later, each prison team presented suggestions for the national strategy and developed a plan to suit the particular circumstances of its own prison. A similar model was developed in Australia with the addition of including a peer education programme. When teams were established in prisons in England & Wales it was found that the fear of HIV abated, accurate knowledge of HIV increased, staff felt that they were being given clear information on

HIV, and empathy towards people with HIV improved.<sup>10</sup> In Ukraine, the responses from staff and prisoners were compared and similar improvements were noted in prisoners as were noted with staff.<sup>11</sup>

### Implementing the multidisciplinary team approach

Preventing and controlling communicable diseases in prisons requires the coordinated skills of prison management, medical, health care, psychological and social approaches as well as discipline, information, education and counselling skills:

- since systems and individual prisons vary greatly (population mix, resources, regimes and disease prevalence), the detailed management of cases, outbreaks, prevention control and health promotion initiatives should be delegated to teams at the local level who cooperate with regional health services;
- team meetings take place regularly within establishments to develop the strategy for the prevention and management of AIDS and contingency plans to meet with emergencies;
- a governor grade staff member chairs these meetings to ensure priority;
- these teams require training appropriate to each speciality on each of the communicable diseases, to enable participants to understand the implications these disease have within prisons;
- as part of this training, teams produce for their establishment a plan which takes into account the national policy for prevention, management and control of communicable diseases;
- liaisons are formed with the local AIDS centre and communicable diseases specialist;
- multidisciplinary teams in prisons coordinate, manage and develop initiatives on education, information and counselling and the provision of optimum care to infected individuals;
- they will give consideration to the most appropriate ways to provide information to prisoners and staff, including the development of peer education programmes for both;

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<sup>10</sup> AIDS Advisory Committee report to International Conference on AIDS in Stockholm.

<sup>11</sup> UNAIDS. *Best practice report* (in print).

- the effectiveness of the groups should be monitored closely by named and accountable officials at regional level and they should report regularly to the head of the prison service and to an expert body such as the national AIDS committee.

### Mass immunization and screening programmes

The central policy-making division will wish to consider the mass immunization of staff and prisoners. Immunization is available for hepatitis A and B and for diphtheria. These vaccines are well tolerated and considered safe for use. Vaccination against these diseases could be offered to prisoners in order to provide “herd immunity” and to reduce the overall incidence and the likelihood of outbreaks within the prison population. Staff immunization is considered in Chapter 10. The role for the multidisciplinary team would be to organize the prison aspects of such an immunization programme and to liaise closely with and assist the regional infection control teams who would carry out the programme.

### *HIV*

Prisoners with HIV should not suffer discrimination in terms of testing, location and treatment and should be treated in the same way as anyone in the community. Mass education programmes will alert the prison population to the risks of HIV and other communicable diseases and, together with the provision of prophylactics and bleach for cleaning injecting equipment and/or needle exchanges, will help reduce the spread of HIV within the prison system and to the community. This education, which should be directed to staff and prisoners, should aim to develop empathy towards people with HIV and an understanding that their individual human rights should be protected.

The role for the multidisciplinary team is to ensure that staff and prisoner education takes place and is effective, and that a policy of prophylaxis, if accepted centrally, is implemented in a way that ensures maximum uptake by prisoners and staff. The team will conduct health and safety education or ensure that it takes place and that occupational health regulations are known and implemented.

### *Syndromic management for STIs*

Untreated STIs have been implicated in the rapid spread of HIV. A programme to prevent the spread of these infections in prisons should involve the rapid and effective treatment of STIs. The syndromic

management of STIs has been attempted in areas where resources are stretched and where laboratory diagnosis is not possible (see Chapter 8). A large and complex prison system such as that in the Russian Federation could usefully apply this system on an experimental basis.

### **Conclusion**

The prevention and control of HIV and other communicable diseases in prisons is a priority for the prison service in each country. These diseases can disrupt not only prison regimes but also the normal movement of prisoners throughout the system.

Staff and prisoners will be enabled to come to terms with their fears of AIDS and behave rationally, and most importantly healthier environments for both prisoners and staff will be generated.



## Annex 4

### List of useful Web sites

1. <http://www.hiv-aids.ru>

Created and sustained by AIDS Infoshare. Available statistics on HIV infection in the Russian Federation. Description of AIDS Infoshare projects, as well as other organizations from AIDS INFO NET (around ten organizations in the Russian Federation and Ukraine). Announcements of issues of the *Round table* magazine for AIDS service organizations, as well as subscription.

2. <http://www.medlux.ru>

Created and sustained by the corporation Medicine for You. One of the largest internet general medical Web sites in Russian.

3. <http://www.rusmedserv.com/aids/weandyou/Regions/5.htm>

Created and sustained by the organization We and You. Contents include:

- on AIDS in the regions
- announcement board for HIV+
- chat HIV+
- conference
- banners and links (several hundred links for Russian and English sites on HIV and related subjects).

4. <http://harm.reduction.org.ua/>

Huge resource in Russian and Ukrainian on harm reduction related to non-medical drug use.

5. <http://www.osi.ru/web/homepage.nsf>

Open Society Institute. Information on HIV prevention programmes, hepatitis, STIs, harm reduction related to non-medical drug use funded by OSI (Soros Foundation).

6. <http://www.depart.drugreg.ru/>

Official site of the Department of Sanitary Surveillance, Ministry of Health, Russian Federation.

7. <http://www.unaids.org/whatsnew/newadds/index.html>

Site [www.unaids.org](http://www.unaids.org) created and sustained by UNAIDS. Available: news and documents of UNAIDS. The majority of documents are in English. Some parts are translated into Russian.

8. <http://www.family-planning.ru/>

Site of the Russian Association of Family Planning. Huge Russian resource on methods of family planning, STIs and methods of prevention.

9. <http://www.hepatit.ru/>

Site of the Association of Centres for Liver Diseases. Available: information on hepatitis viruses, ways of prevention and treatment. Publications: *Viral hepatitis* journal and *The world of viral hepatitis* newsletter.

10. <http://www.narcom.ru/>

Russian public server against drugs. Suggested idea – ban on drugs and total drug refusal. Available: information on harmful consequences of drug use.



11. <http://www.lycaeum.org/live/>

Available: information on various drugs, their effects and chemical structure, history of discovery and use. Discussions on legalizing different drug substances (in English).

12. <http://www.drugscope.org.uk/>

Site created by the Institute for the Study of Drug Dependence (ISDD) and the Standing Conference on Drug Abuse (SCODA), organizations in the United Kingdom which have been studying chemical dependence for around 60 years. Information on European drug policy and control of the drug mafia, brief announcements of studies being conducted in the field of chemical dependencies, information on drugs (in English).

13. <http://www.hivatis.org/>

The HIV/AIDS Treatment Information Service (ATIS) project – huge resource on HIV therapy, based on CDC library and other federal medical centres in the USA. Available: information on various substances used for AIDS and HIV treatment (in English).

14. <http://www.tuberculosis.ru/>

Created by the New York Public Health Institute (program in the Russian Federation). Available: information on TB and its spread in the Russian Federation (particularly in the penal system), on treatment methods for multidrug-resistant TB, discussions on preventive and therapeutic programmes in the Russian Federation.

15. <http://tvoidoktor.boom.ru/slovari.html>

Various medical dictionaries.

16. <http://www.ecoline.ru/funds/>

Site of the Ecoline project. Available: information on grant programmes on health promotion in the Russian Federation.

17. <http://www.hrw.org/russian/>

Site of the organization Human Rights Watch. Available: information on the main human rights, on their violation in different spheres of life and on ways of human rights protection.

18. <http://www.asi.org.ru/asinfo/asinfo>

Site of the Agency of Social Information. The largest Russian resource in the world on socially relevant problems and programmes. Regularly updated news on social and preventive projects in the Russian Federation.

19. <http://www.translate.ru/>

Automatic English-Russian and Russian-English translator.

20. <http://www.hipp-europe.org/>

The web-site of the WHO Health in Prisons Project containing information on the project as such, the Member States and partner organizations participating in the project, meeting reports, consensus statements on various prison health issues issued by the project, and links to other relevant institutions.