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The Quality of Support in European HIV/AIDS Treatment Centres

"Eurosupport"

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REPORT ON THE EUROSUPPORT PROJECT IN BELGIUM

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1. HIV/AIDS care/support in Belgium

Introduction

Belgium has a population of 10 million inhabitants, including 11.370 persons with HIV infection and 2.413 AIDS patients, reported in December 1997 (1). These are profiled as follows :

- 34.1 % non-residents
- 55 % Belgian nationals
- 44 % heterosexuals
- 41.7 % homo- or bisexual men
- 6.7 % IV drug users
- 0.8 % homo- or bisexual male IV drug users
- 5 % haemophiliacs
- 1.9 % unknown mode of transmission

An average of 71 new diagnoses of HIV infection were reported every month between 1987 and 1993 ; a slight decrease in the number of new HIV diagnoses per month was noted since 1994.

The following information is based on data obtained from the Centre Review Questionnaires (CRQ) completed by nine major HIV/AIDS treatment centres in Belgium and from relevant information found in local and national sources and publications.

HIV testing

Since 1985, eight AIDS Reference Laboratories have been established in Belgium (one in each of the six Belgian universities with a medical faculty, one in the Louis Pasteur Institute (Brussels), and one in the Institute of Tropical Medicine (Antwerp, WHO co-operating centre). The task of these reference laboratories is to carry out confirmatory HIV testing and to report HIV and AIDS cases to the Louis Pasteur Scientific Institute for Public Health, which is responsible for data validation and for reporting on Belgian HIV and AIDS cases nationally and internationally. The AIDS Reference Laboratories jointly received an annual fixed budget of 3.75 million ECU (during the period 1991-1993) (2).

Guidelines for HIV testing were proposed in 1993 by a scientific steering committee on AIDS appointed by the Flemish Ministry of Social Affairs and Employment (3). These guidelines conform to international guidelines on HIV testing and allow for HIV testing only after informed consent and pre-test counselling. However, state of the art pre-test counselling is not provided in 50% to 90% of the HIV tests performed outside the clinical AIDS reference centres (CRQ), because some physicians are not convinced of its necessity and also due to time constraints.

To our knowledge there has never been a legal action in Belgium against a physician who carried out an HIV test without the patient's consent.
In 1995, 585.831 HIV tests were performed for diagnostic purposes and 147.085 (25.1 %) of these tests were performed on hospitalised patients (4). It is estimated that between 10 % - 90 % of patients undergoing surgery are tested for HIV with large discrepancies in testing observed between hospitals (CRQ). In 1989, 91% of Belgian gynaecologists offered HIV testing for pregnant women : 49% systematically to all pregnant women, 42% to those with an at-risk profile (5). In 1997, it was estimated that HIV testing is offered nation wide to most pregnant women (CRQ).
In a questionnaire survey performed in 1993-95 among 316 HIV infected persons in Belgium, 17 % of the participants stated to have been tested without consent (7).

All foreign students who come to Belgium with a study grant of the Belgian Administration for Development Co-operation have to undergo an HIV test in their country of origin (7). In theory, if they are found to be HIV seropositive they are not eligible to receive the study grant. At arrival in Belgium they are tested again. To date all HIV seropositive students arriving in Belgium have been accepted to continue their studies, and care has been organised during their residence in Belgium. HIV testing is also systematically performed among candidate refugees who reside in the Red Cross shelters of the French Community.

There is very little anonymous HIV testing in Belgium. The 7 AIDS Clinical Reference Centres offer anonymous testing but individuals have to pay for the test (except at St. Luc University Hospital). Only one centre, the ELISA centre in Brussels, is specialised in anonymous HIV testing. In 1995, 2.997 persons visited the ELISA centre, 51 (1.6%) of which were found to be HIV seropositive (8).

Several studies have been performed on the use of HIV testing by general practitioners (9 - 11). A survey of general practitioners, conducted in 1991 reported that 48.5% of HIV testing was initiated by the physician and 51.5% by the patient. In 1995, 70% of the tests were initiated by the patient. From 1992 to 1995, a drastic decrease was observed in the percentage of patients tested by general practitioners without consent, from 40% to 9%. Among 10.671 HIV tests ordered by general practitioners between 1989 and 1995, 19 new cases of HIV infection were diagnosed or 1.78 HIV positive cases per 1000 tests (5). A telephone interview of a representative sample of Flemish general practitioners, gynaecologists, rheumatologists and urologists, conducted in 1995, found that 90% of HIV testing was done by general practitioners (10). Only 0.6% of the general practitioners mentioned that they did not perform any pre-test counselling compared with 20% of the gynaecologists, 21% of the urologists and 13% of the dermatologists (10). Anxiety was the primary motivation for patients to request an HIV test. About 25% of the general practitioners in this sample had encountered a person with HIV infection in their practice; 51% of the general practitioners mentioned they communicated the HIV test result to their patients by telephone.

Contact tracing

There is no official position on contact tracing in Belgium. Very little contact tracing is done in Flanders. Contact tracing is conducted at the St.-Pierre hospital of Brussels, the largest HIV/AIDS treatment centre in Belgium. Between April 1995 and June 1996, 225 new persons with HIV infection were seen at the St.-Pierre AIDS Reference Centre of which 48 % notified to have one sexual partner (11-12). The percentage of new HIV seropositives among the notified persons was 14%. Ninety eight percent of the patients preferred to contact the partners themselves. Only 3 persons preferred that partners were contacted by the team at the Reference Centre. At the Antwerp Institute of Tropical Medicine, the largest HIV/AIDS Treatment Centre in Flanders, contact tracing of Belgian heterosexuals has occasionally been done, always with the agreement of the index case. Contact tracing of homosexuals has never been conducted at this HIV Treatment Centre, because the homosexual community in Flanders estimated that this would be counter productive to HIV prevention.

Access to treatment

A consensus meeting about the use of antivirals was organised in Belgium with the participation of the major HIV Treatment Centres in December 1996. Since April 1st, 1997, the following antivirals have been commercially available in Belgium: zidovudine, didanosine, zalcitabine, stavudine, lamivudine, saquinavir, indinavir and ritonavir. For patients with CD4 lymphocytes < 500 or a viral load > 30.000 copies/ml plasma, or for symptomatic patients, combination therapy is possible including the combination ritonavir-saquinavir. In order to start a combination antiviral treatment, permission should be obtained from the consulting physician of the patient' s health insurance. This permission is given on the basis of a simple medical report written by a specialist in internal medicine or paediatrics. Antiretroviral drugs can be obtained nation wide at all pharmacies. Currently there are obstacles in providing antivirals for illegal immigrants.

Primary prophylaxis is given for the prophylaxis of *pneumocystis carinii* pneumonia, toxoplasmosis and tuberculosis according to international guidelines, while *Mycobacterium Avium* Complex prophylaxis is only given occasionally.

Most of the clinical trials are multicenter international trials that have been initiated by pharmaceutical companies. Two trials have been initiated by Belgian HIV/AIDS treatment centres. The Picasso Study was organised by the Belgian clinical AIDS reference centres in July 1996 to compare a combination antiviral treatment including indinavir with a combination antiviral treatment including ritonavir (13). More than 400 patients participated in this trial which was co-ordinated by the St.-Pierre Hospital of Brussels. Antivirals were paid for by social security services. Funding to organise the trial was provided by industry. A second trial, the Iris Study, was initiated by the Institute of Tropical Medicine in May 1997, in order to compare the combination antiviral treatment including ritonavir-saquinavir with the combination antiviral treatment including indinavir. General practitioners are only exceptionally included as co-investigators in clinical trials.

Treatment monitoring

During the consensus meeting of clinicians of the largest HIV/AIDS treatment Centres in Belgium (December 1996) guidelines for the laboratory monitoring of HIV infected patients were proposed: social security pays for the CD4 lymphocyte counts and viral load measurements are free of charge. The viral load measurements are only performed by the AIDS Laboratory Reference Centres. All major HIV/AIDS treatment centres perform at least one viral load test before starting antiviral treatment (CRQ). Genotypic resistance and phenotypic resistance are only measured for research purposes.

Computerised medical records

There is no uniform system of computerised data collection in Belgium. In most centres only laboratory data are available on computer. Only one centre that completed the Centre Review Questionnaire stated that they enter all clinical and laboratory data on a computer (CRQ).

HIV/AIDS training

Most medical faculties allocate about 2-4 hours of theoretical training to HIV/AIDS in their core curriculum for medical doctors. Postgraduate training on HIV/AIDS is not obligatory and is organised from time to time by AIDS Reference Centres (theoretical courses for physicians and/or nurses). Very little or no in service training is offered. There has not been any evaluation of the HIV/AIDS training, but a few KAP studies were carried out among physicians (14).

Psychosocial support

The French Community provided a budget of 926.000 ECU during 1991-1993, to the three clinical AIDS reference centres of the French Community for psychosocial support services for persons with HIV/AIDS or groups at risk for HIV infection (2). In the Flemish clinical reference centres similar care services were available without additional funding from the Flemish Community. Only in two of the four Flemish reference centres, money allocated to the budget of the AIDS Reference Laboratories was used to support HIV care and psychosocial support services. Since June 1996, seven clinical AIDS reference centres have received funding for paramedical and support services from the Belgian national government: about 500 ECU per year for each HIV-infected person requiring psychosocial support and followed in the centre. Nurses, doctors, psychologists and dieticians are also paid from this budget. Psychosocial support services are also offered at NGO's such as the "HIV vereniging Vlaanderen", the Foundation, Poenki, AIDE info SIDA, Service Enfant Gravement Malades, and others.

Outpatient care

Outpatient care for persons with HIV infection is organised by the clinical AIDS reference centres, by general hospitals and general practitioners.

Certain persons with HIV infection prefer to be seen by a general practitioner because it is less stigmatising. In general there is a good co-operation between general practitioners and the clinical AIDS reference centres. A small number of general practitioners have a particular motivation/experience in following persons with HIV infection. A study carried out in 1993-95 showed that asymptomatic HIV infected persons visit a general practitioner an average of three times per year and a physician in a clinical AIDS reference centre an average of four times per year (15). In the clinical AIDS reference centres there is a multidisciplinary team including physicians, nurses, psychologists and dieticians. Most general practitioners in Belgium are willing to care for persons with HIV infection. Some however, are reluctant to provide care for drug users (14).

Hospital care

Infectious diseases is not a recognised medical speciality in Belgium. Therefore there are few infectious disease wards in the country. The main infectious disease ward is situated in St.-Pierre Hospital in Brussels and mainly houses AIDS patients. In other hospitals, patients are hospitalised in the internal medicine wards. In Flanders, the largest number of AIDS patients are hospitalised at the hospitalisation unit of the Institute of Tropical Medicine namely at the Antwerp University Hospital. Here AIDS patients are hospitalised together with patients with pulmonary or tropical diseases. Patients are only hospitalised in separate rooms if they have complications that are contagious, such as tuberculosis. The mean duration for hospitalisation is 14 days. Patients are hospitalised at one-day clinics for certain procedures such as a blood transfusion, pentamidine inhalations, chemotherapy for Kaposi's sarcoma. The number of hospitalised patients has decreased by 50% since the use of the protease inhibitors. The number of nurses allocated to the AIDS Unit of the University Hospital Antwerp is comparable to most other hospital wards. Most general hospitals accept patients with HIV infection.

Sometimes there are problems with providing adequate care for persons with HIV infection who have serious psychiatric disturbances. Psychiatric departments are not accustomed to treating HIV complications. On the other hand, AIDS units do not have sufficient staff to deal with patients who may present a danger to health care workers or to other patients because of aggressive behaviour.
There is no extra governmental funding for AIDS units but in certain units volunteers are assisting nurses. The percentage of hospitalised HIV infected persons treated in single rooms varies between 10 - 100% while less than 2-10% of the AIDS patients have ever been hospitalised at an intensive care unit (CRQ). Multidisciplinary meetings among staff members are organised weekly in the clinical AIDS reference centres (CRQ).

Hospital AIDS care services have been evaluated at the Antwerp University Hospital (16). Patient satisfaction with medical and nursing care was very high. The workload of nurses and physicians involved in the care for persons with HIV infection has been measured through an observational study. Between 30 and 40 % of the nurses time was spent on direct patient care (16). A questionnaire survey among persons with HIV infection in 1993-94 showed a higher satisfaction score for hospitals of clinical AIDS reference centres than for hospitals with less HIV/AIDS experience (17).

Home care

Aremis is an NGO was set up in Brussels to provide care for people with HIV infection or cancer. Home care in Antwerp is organised in co-operation with existing health care professional services: general practitioners, nursing organisations, and palliative care services. Intra-venous treatment of CMV infection can be performed at home but chemotherapy for Kaposi's sarcoma, blood transfusions, and pentamidine inhalations are given only in hospitals. Only a minority of persons with HIV infection in Belgium are homeless. A few housing programmes for persons with HIV infection have been initiated: in Leuven ("Integratiehuis"), Ghent ("Espero") and Brussels ("Espace"). All housing programs experience difficulties due to insufficient funding. Recently some of the housing programs have ceased to operate (e.g. Integratiehuis and Espero). Housing problems are more frequently reported by patients in Brussels. There was a housing problem in 11% of the patients seen by the nurses of St.-Pierre Hospital (18).

Palliative care

Palliative care units began just 2 years ago and there are no specialised services for palliative care for AIDS patients. Terminally ill AIDS patients are either treated in hospitals or at their homes by general practitioners. Most AIDS patients (> 80%) die in a hospital (CRQ). Most of the patients in Antwerp who prefer to die at home are assisted by a palliative home care service. This organisation has trained volunteers to care for and to support persons with AIDS. Palliative home care in Brussels is offered among others, by the organisations Aremis and Omega. The need for palliative care has decreased since the introduction of protease inhibitors.

Euthanasia

Like elsewhere in Europe, euthanasia is illegal in Belgium, but during the last 10 years no legal action has been undertaken against it. On a minority of the AIDS patients euthanasia has been performed in different Belgian hospitals, at the explicit demand of the patient (CRQ). It was also always decided upon jointly by the patient and several health care workers. The percentage of terminally ill patients, receiving drugs which decrease suffering but which are also able to terminate life earlier (e.g. morphine), was estimated - by doctors working at the clinical AIDS reference centres - to range from 10 - 80% (CRQ). In a questionnaire survey conducted in 1993-94 among patients with HIV infection, 87% estimated that a physician should be able to perform euthanasia if a patient with severe physical suffering requested this (19). Requests for euthanasia have decreased since the availability of protease inhibitors. Before the introduction of protease inhibitors, an estimated 5 - 20% of the terminally ill AIDS patients asked for euthanasia (CRQ).

Support organisations

At the clinical AIDS reference centres, 30 - 100% percent of the patients is informed about the existence of self-help groups (CRQ). Between 10 - 25% of them is referred to a self-help group (CRQ).

◊ ***HIV-Vereniging Vlaanderen*** (self-help group of persons living with HIV/AIDS)

This organisation provides support for HIV infected people and defends their interests. Most of the people working for this organisation are infected with HIV. It was estimated in 1996 that 498 people with HIV infection had contacted the organisation. They organise information sessions, train volunteers, organise weekends for people with HIV infection and offer psychosocial support. There has been little participation from persons belonging to ethnic minorities in such activities. The taboo about HIV infection among some ethnic minorities is still very strong, therefore people are often afraid to disclose their seropositivity. The organisation also runs a telephone help line for people affected by HIV infection in Flanders. Calls are being answered by people with HIV/AIDS. In 1996 they received more than 5.600 telephone calls and 14% of these calls were made by persons with HIV infection (20).
The HIV-Vereniging Vlaanderen has also been very active in defending patients' rights, namely in influencing the Belgian government to reimburse combination antiviral treatment (realised in early 1997).

◊ ***Act Up*** (self-help group of persons living with HIV/AIDS, French speaking)

This organisation defends the interests of persons with HIV infection in Brussels. Together with the HIV-Vereniging Vlaanderen, IPAC and The Foundation they played an important role in influencing the Belgian government to reimburse combination antiviral treatment in early 1997.

◊ ***Act Together*** (self-help group)

Support organisation for English speaking population in Belgium with HIV infection.

◊ ***Poenki***

NGO to support families with an HIV seropositive child in Flanders.

◊ ***Service enfant gravement malade***

Provides assistance and support for seropositive children and their families in Brussels.

◊ ***IPAC***

This is the co-ordinating centre for HIV prevention and care initiatives in Flanders. The organisation is funded on the basis of governmental project funds (21). In co-operation with all other organisations involved in HIV prevention/care, they propose an action plan for HIV control in Flanders. They organise regular meetings with nurses and social workers active in the major HIV/AIDS treatment centres and NGO's. They also run a clearing house for information on HIV/AIDS aimed at the general public and intermediaries, and plan and execute major STD/HIV prevention campaigns in Flanders.

◊ ***The Foundation***

This is a buddy organisation active in Flanders and Brussels. The organisation trains volunteers to assist people with HIV infection with psychosocial, emotional or clinical care needs. Buddy support was provided for 65 clients during 1996, 21 (32%) of them died that same year (22). During 1996, a total of 96 buddies were available with 75 (80%) of them being active in assisting clients.

◊ ***Infor SIDA - Agence de Prévention SIDA (APS)***

A clearing house for information on HIV/AIDS. It offers psychosocial support, buddy services (about 150 volunteers), and a telephone help line funded by the French Community.

◊ ***AIDS Telephone/Stichting AIDS Gezondheidszorg***

Free telephone line for information and counselling about HIV funded by the Flemish Community. The AIDS telephone had 65 volunteers for answering telephone calls during 1996. A total of 22.724 telephone calls were received during 1996 : 11.718 of these were conversations with individuals comprising 1.652 (14.1%) persons who were waiting for an HIV test result and 99 (0.9%) who mentioned they were HIV seropositive.

All these support organisations mainly receive funding from the government, but they also receive donations of private organisations and from fund raising activities.

Drug users

In 1994, 1 - 6 % of the intravenous (IV) drug users in Belgium were HIV infected (24). Most of the HIV infected drug users are living in Brussels and the French speaking, southern part of the country. Most of them are young. Among the 15 - 25 years of age IV drug users, 18% were HIV seropositive. Syringes can only officially be obtained in pharmacies. A pilot project for needle exchange has been carried out in Antwerp. The return rate of distributed syringes was 98.5%, but the program was discontinued. A similar program still exists in Brussels. Less than 5% of the IV drug users is treated with methadone (24). In Flanders methadone is mainly provided by organisations involved in the care for IV drug users, such as the Free Clinic and De Sleutel. In Brussels and the French speaking part of the country methadone is mostly provided by general practitioners. The methadone distribution has never been evaluated. Between 10 and 90 % of HIV infected drug users were estimated to use methadone according to doctors working in clinical AIDS reference centres which completed the questionnaire (CRQ). A small pilot project has started in 1997 in Liege where heroine is provided legally to drug users for whom there is no other way to control their drug use.

HIV/AIDS care/support in prisons

HIV prevalence in Belgian prisons was 1.2% in 1994 (25). About 50% of Belgian prisoners are drug users (30% of them are IV drug users). It was estimated in 1997 that there were about 150 persons with HIV infection in Belgian prisons. Persons with HIV infection are incarcerated in separate cells and treated by the physician affiliated with the prison (but a second opinion from a physician from outside the prison is possible). Neither drugs nor syringes are allowed in prisons. Most prisons do not have a methadone program. The physician affiliated with the prison decides whether an imprisoned HIV infected person on methadone can continue taking methadone. Condoms are available in most prisons but are infrequently used. Care for HIV infected persons in prisons has never been evaluated. Theoretically the same medical care as provided to non-prisoners, including antiviral treatment, has to be provided to prisoners. In theory, HIV test results should remain confidential in prisons but leaks in confidentiality have been reported. There is no hepatitis B vaccination program in prisons and persons with chronic liver disease caused by hepatitis C infection remain untreated. There is very little psychosocial support for HIV infected prisoners, and prison staff lack adequate training on HIV issues. There is little support and no organised referral system for drug users or persons with HIV infection after they have been discharged from prison.

Cost of medical care

Persons with HIV infection do not receive any special financial support. Social security reimburses their medical care to the same extent as for patients with other diseases. Antiviral drugs are fully reimbursed. The cost for a person with AIDS has been estimated in different studies by different methodologies (26-30). In 1993 - 1995, it was found that the non-reimbursed HIV related costs for an asymptomatic person with HIV infection amounts up to 104 ECU on average per year, the symptomatic non-AIDS patients paid a mean of 213 ECU per year, and the AIDS patient spent an average of 241 ECU per year. A study conducted just before the introduction of the protease inhibitors, estimated that the non-reimbursed HIV related direct and indirect costs for persons with AIDS were on average 33474 ECU per year including hospitalisation costs of 10.380 ECU (30).

Prevention of HIV transmission to health care workers

The frequency of needle stick injuries among health care workers working with HIV infected material/patients is not known. It is unclear whether there are health care workers who acquired a nosocomial HIV infection in Belgium. A questionnaire survey conducted in 1991 among 98 physicians and 337 nurses at the University Hospital of Antwerp - which included all departments - revealed that 76% used to recap needles. During an observational study at the ward where persons with HIV infection are hospitalised, in the University Hospital Antwerp, it was observed that universal precautions were often not followed even by specially trained personnel (15). Only 61 % of the nurses used gloves in order to obtain a blood sample. Blood was visually present on the hands in 4.5 % of the nurses after they had drawn blood (16). Needles were only put in a container in 76% of the cases. In 13 % of the cases, the sharp container was filled up to more than ¾ of its capacity. Recapping with two hands was never observed.

Gloves were used 1.75 times more by taking blood from persons with HIV infection, compared with persons from which the HIV status is unknown.
In case of a serious needle stick injury with a contaminated needle, triple therapy including zidovudine + lamivudine + indinavir is proposed in all AIDS reference centres. It is unknown to which extent these drugs are available for immediate use in other hospitals. Only a few small knowledge, attitude and practice (KAP) studies among health care workers concerning the transmission of blood borne infections have been circulated (16, 31, 32).

Funds for care/support

Since 1995 there is a small budget of 95.514 ECU (from private donations) that offers financial support to persons with HIV infection in Flanders who have with financial problems. Per person an average of only 495 ECU is given per year (21).

Evaluation of care/support

A questionnaire survey was organised in 1993-1995 among 316 persons with HIV infection in Belgium in order to measure their satisfaction with care/support organisations (Circa 93-95; 33-41). Eurosupport centre review questionnaires (CRQ) were sent in 1997 to doctors working at the eight clinical AIDS reference centres in Belgium and to a few major hospitals involved with health care for persons with HIV/AIDS. A total of nine questionnaires were completed. All four of the clinical AIDS reference centres in Flanders participated.

2. Problem areas of HIV/AIDS care/support in Belgium

1. Insufficient pre- and post-test counselling. Informed consent is often not obtained.
2. Systematic HIV testing of foreign students receiving grants from the Belgian Administration for Development and Co-operation.
3. Insufficient support for ethnic minorities with HIV infection.
4. Insufficient access to treatment for certain groups (such as those not covered by social security, illegal immigrants) and very slow administrative procedures for the reimbursement of new treatments.
5. High medical costs for HIV/AIDS patients.
6. Lack of facilities able to care for AIDS patients with psychiatric problems. Little experience, especially in Flanders, in the field of care/support for drug users with HIV infection.
7. General practitioners, nurses and NGO's are insufficiently informed about new developments in HIV treatment. Collaboration between general practitioners and HIV/AIDS centres could be improved.
8. Compliance with antiviral drugs should be improved.
9. Insecurity of NGO's involved in the care/support for HIV infected persons about long term funding.
10. Lack of a sufficient computerised data collection system.
11. No surveillance system for needle stick injuries and lack of an adequate program to reduce needle stick injuries and to implement universal precautions.

2. Suggestions to improve the care/support for persons with HIV/AIDS in Belgium

1. Continue training (including practical training) about pre- and post test counselling.
2. Adapt legislation to prohibit HIV testing among foreign students.
3. Study the needs of ethnic minorities with HIV infection in order to offer specialised services for psychosocial support.
4. Improve the access to treatment including combination antiviral treatment with protease inhibitors for all persons with HIV infection in Belgium. Accelerate the procedure for the reimbursement of new treatments.
5. Increase the possibilities for reimbursement for certain medical costs (e.g. certain drugs, nursing care, home care).
6. Strengthen existing facilities to care for HIV seropositive drug users and HIV infected persons with psychiatric disturbances.
7. Regular training of health care workers, volunteers of NGO's and patients on HIV/AIDS care/support issues should be organised including a network of general practitioners with specific expertise in the area of HIV/AIDS treatments, HIV/AIDS treatment centres and NGO's.
8. Special programs and research projects are needed to improve patient compliance with antiviral treatment.
9. Allocate more long term funds for NGO's involved in the support of persons with HIV infection.
10. Establish a uniform computerised system for clinical and laboratory data collection with protection of the confidentiality of the data.
11. Organise a surveillance system for needle stick injuries and training programs for health care workers to avoid such injuries.

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