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Enigma of HIV Control - Modelling a Global Surveillance Network for HIV Infection

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Abstract

It seems control of HIV infection spread is lag behind research for new treatments, especially in developing countries. Intravenous drug use is a major risk factor for HIV infection. Addiction control is a reasonable measure for HIV transmission prevention. Implementing treatments for opiate dependence such as: training drug dependence side effects in schools, omitting behavioral and environmental addiction predispositions, organizations to assist addicted, HIV-infected infected patients to change their lifestyles, and teaching prevention and health maintenance, promoting access to diagnosis and treatment, and to remain in treatment is necessary. More definite protocols for screening and surveillance of at-risk groups by implementing ethical and legal codes, and also better supervision on addiction and harm reduction policies may decrease number of new victims. Estimating addiction patterns and prevalence of HIV infection in different situations may help to model prevention protocols. Lack of routine testing of at-risk populations, data registry screening programs and intervention strategies had lead to confronting HIV- infected subjects lately when presenting with co-morbidities such as advanced liver failure, tuberculosis and opportunistic diseases. It seems in developing countries more policy guidelines for testing, counseling and treatment, and modeling HIV control according to at-risk population such as in the injecting drug users, male homosexual context is needed.

Regarding transmission of HIV infection from undiagnosed cases or by those neglecting treatment to community, it is necessary that prevention methods, receive of appropriate prophylaxis, practical use of recommendations, harm reduction policies, adverse drug side effects, treatment failure, and drug resistance followed and supervised regularly in each country.

Keywords: HIV infection; Global prevalence; Transmission; Intravenous drug use

Introduction

According to 2011 estimates from UNAIDS, WHO and UNICEF around 30.6 million adults and 3.4 million children were living with HIV at the end of 2010. During 2010, some 2.7 million people became infected with HIV, including an estimated 390,000 children. Most of these children are babies born to women with HIV, who acquire the virus during pregnancy, labour or delivery, or through breast milk. Drugs are available to minimize the dangers of mother-to-child HIV transmission, but these are still often not reaching the places where they are most needed. The year also saw 1.8 million deaths from AIDS-related causes. The number of deaths peaked around 2005, and due to the expansion of antiretroviral therapy, it is estimated that 2.5 million AIDS-related deaths have been prevented since 1995 in low- and middle-income countries. By the end of 2009, the epidemic had left behind 16.6 million AIDS orphans, defined as those aged under 18 who have lost one or both parents to AIDS. Around half of people who acquire HIV become infected before they turn 25, and AIDS is the second most common cause of death among 20-24 year olds. The overwhelming majority of people with HIV live in low- and middle-income countries. Sub-Saharan Africa accounts for two-thirds of all infected people. South and South-East Asia has the second highest number of people living with HIV [1-4]. Low- to middle-income countries bear the overwhelming burden of the human immunodeficiency virus type 1 (HIV-1) epidemic in terms of the numbers of their citizens living with HIV/AIDS (acquired immunodeficiency syndrome) [5]. Around 1.5 million people in Russia, Eastern Europe and Central Asia were living with HIV at the end of 2010, with the region having a prevalence of 0.9 percent [3]. Since 2001, HIV prevalence in Russia, Eastern Europe and Central Asia has increased by 250 percent, making the region home to the world's most rapidly expanding epidemic. In contrast, over the same period, prevalence in sub-Saharan Africa fell from 5.8 percent to 5 percent, and stabilised in South and Southeast Asia at 0.3 percent [3]. The rise of HIV in the region is closely linked with increasing rates of injecting drug use that developed in the mid-1990s during the socioeconomic crisis that followed the break-up of the Soviet Union. At this time, nearby Afghanistan became the world's largest producer of opium, from which heroin is derived, and drug trafficking increased throughout the region. Initial outbreaks were detected in Ukraine, Russia, Belarus and Moldova [6].The primary care visit provides an opportunity to screen patients for ongoing high-risk drug and sexual behaviors for transmitting HIV infection, routine screening and symptom-directed testing for and treatment of sexually transmitted diseases (STDs), as recommended by CDC [7].

Methods

A review of literature was performed in 2012 to summarize scientific

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reports on epidemiology and transmission of the HIV infection and its association with addiction. Search was performed on MEDLINE, EMBASE, PsycINFO databases, and other sources to identify published studies on social networks. Articles published during recent years (1989-2012) were searched by using the following key words: HIV infection, epidemiology, prevalence, transmission, hepatitis C, hepatitis B, addiction and vulnerability to addiction**,** injection drug users, and psychology. Exposure group specific information was searched by adding a risk factor name to the search.

Examples of HIV infection trends

Africa

In 2009, approximately 22.5 million Africans were living with HIV-1, with the worst affected region being southern Africa where about one-third of the world's HIV-infected people reside [4]. The epidemic in Africa is fueled by genetically diverse viral genotypes, which may differ in terms of pathogenicity and rates of transmission [8]. The social, economic, and political factors responsible for the widespread epidemic in southern Africa include poverty, poor social and health infrastructure, lack of education, political and social instability, the low status of women, and sexual violence, as well as lack of political commitment, slow control response, and ineffective preventive measures during critical periods of HIV epidemic in the region. There is no single factor that accounts for the high HIV prevalence observed in certain countries in Africa. Behavioral factors are likely to have contributed, including the number of casual sexual partners, condom usage, age of sexual debut, intergenerational sex, concurrency, and sexual networks [5,8,9-12].

Asia

In China, the proportion of MSM in the annual reported HIV cases increased from 12% in 2007 to 33% in 2009 [5,13]. Because of cultural and social pressures, many MSM in Asia are married or otherwise engaged with female partners so as to avoid social stigma and discrimination. For example, approximately one-quarter of the Chinese MSM are married [5,14], and ~30% of these individuals have sex with a steady female partner [5,15].

IDU is a major route of HIV-1 transmission in this region. Afghanistan and Myanmar are the world's largest opiate- and heroin-producing areas. Whereas one-third of the heroin produced in Afghanistan reaches Europe, one-quarter goes to Central Asia and the Russian Federation. The rest is trafficked to other South and Southeast Asia countries. Most of the heroin produced in Myanmar supplies the local and regional markets, including China, South and Southeast Asia, and Oceania [5].

Latin America and the Caribbean

The world's largest cocaine-producing area is located in the Andean region, covering Columbia, Peru, and Bolivia, and HIV transmission follows the drug-trafficking routes. High HIV prevalence were found in IDUs in Peru (9.8%-22.3%), Brazil (8%-65%), Argentina (14%-80%), and Uruguay (24%-76%) [5,16].

Europe

In a study of AIDS cases diagnosed by transmission group and geographical area, 2004-2010, heterosexual cases in West and then Men who have sex with men outnumber Injecting drug users, while in central Europe Men who have sex with men and then Heterosexual cases outnumber Injecting drug users, and in Eastern Europe Injecting drug users outnumber Heterosexual cases (Data not included from: West: Austria, Monaco, Sweden; East: Russia, Ukraine) [17].

Data collection of populations at risk

Voluntary blood donors, military solders, employment seekers, and periodic population-based sero-surveys may regard as representative of young population. Meanwhile the frequency of infection in this group likely is under-estimated.

Pregnant women were originally selected as a sentinel population for HIV surveillance as a way to monitor trends in a population group at low risk of infection. This population was selected because the coverage by prenatal clinics was high in most developing countries and because blood was already being drawn for other purposes [18-19].

Sentinel sites representing at high risk of HIV infection subjects are:

Injection drug users (IDUs), is probably the most universally marginalized of all HIV-related behaviors, and it is also almost universally illegal. Recent estimates of the number of injection drug users in Russia, for example, vary by a factor of 10 [20].

Other at-risk population are: Drug treatment centres, sexually transmitted infections (STIs) clinics, female sex workers prisoners, men who have sex with men (MSM), Tuberculosis (TB) clinics, Hospital wards, refugees, truck drivers, and in some society's barbers.

In this group their off-springs, spouses, and all intimate contact subjects, detention centres personnel, and the clinics they referred should be screened.

At-risk group for HIV infection and co-morbidities

A review selected of a total of 215 studies, included 43,170 patients, depicted the following prevalence of transmission of drug-resistant HIV in rank order: North America (12.9%), Europe (10.9%), Latin America (6.3%), Africa (4.7%), and Asia (4.2%). Nucleoside reverse transcriptase inhibitor resistance declined over time in North America ($p=0.03$), Europe ($p < 0.001$), and Latin America ($p < 0.001$). The decline in nucleoside reverse transcriptase inhibitor resistance reflects the improvement of treatment regimens in resource-rich settings. In contrast the resistance prevalence increased in Asia ($p=0.047$) and Africa ($p < 0.001$). This can be explained by the antiretrovirals becoming more available during recent years in these continents. Nonnucleoside reverse transcriptase inhibitor resistance rose over time in North America ($p < 0.001$), Europe ($p < 0.001$), Latin America ($p < 0.001$), and Asia ($p=0.01$). Changes include the more wide-spread use of antiretroviral drugs in developing countries and the development of therapies from low-active mono-therapies to highly active antiretroviral regimens in the industrialized countries [21].

HCV co-infection with HIV ranges from 5% to more than 30%, depending on the overall prevalence of HIV in the area [22]. A study conducted in KwaZulu-Natal Province in South Africa where HIV is predominantly a sexually transmitted infection and injection drug use is rare in this region. The prevalence of HCV was 6.4% and that of HIV, 40.2%. There was a significantly higher prevalence of HCV among HIV infected patients as compared to HIV negative patients (13.4% vs. 1.73% respectively, $P < 0.001$). This study has found that hepatitis C co-infection is more common in HIV positive individuals and is associated with an increased mortality and renal morbidity [23-24]. In a study of 250 injecting drug users (IDUs) from a de-addiction centre, one hundred and forty-nine (59.6%) IDUs were positive for HIV antibody, 226 (90.4%) were positive for anti HCV antibody and

27 (10.8%) were positive for HBsAg. Comprehensive public health interventions targeting this population and their sexual partners must be encouraged [24-25].

In a cross-sectional study of 973 inmates of eight Italian prisons, 30.4% were injection drug users (IDUs). A high seroprevalence rates were found (HIV: 7.5%; HCV: 38.0%; anti-HBc: 52.7%; HBsAg: 6.7%). HIV and HCV seropositivity were associated strongly with injection drug use (OR: 5.9 for HIV; 10.5 for HCV). Tattoos were associated with HCV positivity (OR: 2.9). The number of imprisonments was associated with HIV infection, whereas the duration of imprisonment was only associated with anti-HBc. The probability of being HIV-seropositive was higher for HCV-seropositive individuals, especially if IDUs [24,26]. In a study of 103 former heroin addicted adults on methadone maintenance therapy in the USA, most methadone-maintained subjects had at least one marker for viral hepatitis. A quarter of subjects had silent HBV infection, defined as the presence of HBV DNA in the absence of HBsAg. These subjects should be considered infectious and pose a public health risk [24,27].

In a study in Switzerland, 78.3% of the 1035 patients entering heroin-assisted treatment were HCV positive, 53.3% were HBV positive, 41.2% were HAV positive and 12.6% were HIV positive [24,28]. In a study of 433 subjects among a whole population of 900 inmates in the Prison of Bologna, Italia, 147 (33.9%) were injection drug users (IDU) and 286 were not addicts (66.1%). 12.5% of inmates were HIV positive, 8.1% HBV positive and 31.1% HCV positive. In the prison of Bologna drug addiction is prevalent in Italian seropositive persons and it is often associated with HIV and HCV positivity [24,29]. A study conducted on a sample of 210 women from the Montreal detention center, showed that addicted inmates present earlier onsets of both drug use and criminal behaviors compared to other female inmates [24,30].

Renal disease is a complication of heroin addiction. Of 19 patients with serological evidence of HCV infection, 68.4% were found to have membranoproliferative glomerulonephritis (MPGN) [31].

Improved detection of alcohol consumption in the context of HCV and opiate dependence would allow for earlier intervention in this population that is at particular risk of liver disease and fatal respiratory-depressed overdose [24,32].

Tuberculosis (TB) is the most frequent opportunistic infection in patients infected by the Human immunodeficiency virus (HIV). The mortality related to this co-infection can be reduced by the early introduction of an antiretroviral treatment. However, when treating subjects with TB and HIV, interactions between antiretroviral and tuberculostatic treatments can be problematic; also, these patients may develop, under treatment, an immune reconstitution inflammatory syndrome (IRIS). This review aims to summarize the necessary therapeutic adjustments which should be performed when treating patients co-infected with TB and HIV, the most important interactions between HIV and TB treatments, and the medical management of the IRIS [33].

Globally, tuberculosis (TB) and HIV interact in deadly synergy. The high burden of TB among HIV-infected individuals underlies the importance of TB diagnosis, treatment and prevention for clinicians involved in HIV care. Despite expanding access to antiretroviral therapy (ART) to treat HIV infection in resource-limited settings, many individuals in need of therapy initiate ART too late and have already developed clinically significant TB by the time they present for care. Many co-infected individuals are in need of concurrent ART and anti-TB therapy, which dramatically improves survival, but also raises several management challenges, including drug interactions, shared drug toxicities and TB immune reconstitution inflammatory syndrome (IRIS). Due to the survival benefits of promptly initiating ART among all HIV-infected individuals, including those with TB, it is recommended that co-infected individuals receive treatment for both diseases, regardless of CD4+ cell count. We review current screening and treatment strategies for TB and HIV co-infection. Recent findings and ongoing studies will assist clinicians in managing the prevention and treatment of TB and HIV co-infection, which remains a major global health challenge [34].

Human immunodeficiency virus (HIV) associated tuberculosis (TB) remains a major global public health challenge, with an estimated 1.4 million patients worldwide. Co-infection with HIV leads to challenges in both the diagnosis and treatment of tuberculosis. Further, there has been an increase in rates of drug resistant tuberculosis, including multi-drug (MDR-TB) and extensively drug resistant TB (XDRTB), which are difficult to treat and contribute to increased mortality. Because of the poor performance of sputum smear microscopy in HIV-infected patients, newer diagnostic tests are urgently required that are not only sensitive and specific but easy to use in remote and resource-constrained settings. The treatment of co-infected patients requires antituberculosis and antiretroviral drugs to be administered concomitantly; challenges include pill burden and patient compliance, drug interactions, overlapping toxic effects, and immune reconstitution inflammatory syndrome. Also important questions about the duration and schedule of anti-TB drug regimens and timing of antiretroviral therapy remain unanswered. From a programmatic point of view, screening of all HIV-infected persons for TB and vice-versa requires good co-ordination and communication between the TB and AIDS control programs. Linkage of co-infected patients to antiretroviral treatment centers is critical if early mortality is to be prevented. We present here an overview of existing diagnostic strategies, new tests in the pipeline and recommendations for treatment of patients with HIV-TB dual infection [35].

Detecting vulnerability to addiction

According to a study, high stress load in childhood and before puberty, but not in adulthood, was related to negative effect in all participants. In patients, high stress load was related to depressive and posttraumatic symptoms, severity of disorder, and the diagnoses of Major Depressive Disorder (MDD) and personality disorders (PD). Results support the hypothesis of stress-sensitive periods during development, which may interact with genetic and other vulnerability factors in their influence on the progress of psychiatric disorders [24,36]. Depression in older adults is a serious health problem with a poor prognosis [24,37].

Medications which bind to opioid receptors are increasingly being prescribed for the treatment of multiple and diverse chronic painful conditions. The psychological addiction that can occur with the use of these medications, abuse and diversion of these medications is a growing problem as the availability of these medications increases and this public health issue confounds their clinical utility [24,38]. Universal interventions have potential for public health impact by reducing some types of prescription drug misuse among adolescents and young adults [39]. Of 170 schools from seven countries (Austria, Belgium, Germany, Greece, Italy, Spain, Sweden) by European Drug Abuse Prevention trial (EU-Dap) study, 34.9% of students had smoked cigarettes, 24.7% had been drunk, and 8.9% had used cannabis at least once in life [24,40]. In the EU-Dap study of 7079 pupils 12-14 years

of age concluded school curricula based on a comprehensive social-influence model may delay progression to daily smoking and episodes of drunkenness [24,41]. Experimental trials of Project Towards No Drug Abuse (TND), a senior-high-school-based drug abuse prevention program is an effective drug and violence prevention program for older teens, at least for one-year follow-up [42].

In Germany each general practitioner who has completed an additional training in addiction medicine is allowed to prescribe substitution drugs to opioid dependent patients. Also, in the development of research on health care services, guidelines and the implementation of quality assurance measures, implementing substitution treatment with concomitant effects and treatment elements such as drug history-taking, dosage setting, co-use of other psychoactive substances (alcohol, benzodiazepines, cocaine), management of 'difficult patient populations', and integration into the social environment and psychosocial counseling programs adjuvant has been arranged successfully, there [24,43]. In a study of 26 former male inmates who had recently used drugs within correctional facilities in Vancouver, Canada showed the harms normally associated with drug addiction and injection drug use are exacerbated in prison. The scarcity of syringes has resulted in patterns of sharing amongst large numbers of persons. Continual reuse of scarce syringes poses serious health hazards and bleach distribution is an inadequate solution [24,46]. Harm reduction policies, such as needle exchange programs, injection centers, and substitution treatments, attempt to reduce the health and social damage associated with illegal drug use [24,47].

Harm reduction can be understood as "policies and programs which are designed to reduce the adverse consequences of mood altering substances without necessarily reducing their consumption"; it is consistent with the best traditions of both medicine and public health [24,48]. The success of harm reduction as a unifying concept will depend on its innovative application in both prohibitory and regulatory frameworks, and careful evaluation of its effectiveness in a variety of cultural contexts [47]. In the Western Pacific regions, Malaysia has the second highest HIV prevalence after Vietnam among adult populations (0.62%) and the highest proportion of HIV cases resulting from injection drug use (76.3%). Malaysia has lagged behind in the treatment of drug addiction and related disorders, despite experiencing severe drug problems [48]. Methadone pharmacotherapy has been the most widely used treatment for opioid addiction in injection drug users. Methadone has adverse drug-drug interactions with many antiretroviral therapeutic agents that can contribute to nonadherence and poor clinical outcomes in this high-risk population. Buprenorphine has a significant pharmacokinetic interaction with efavirenz but no pharmacodynamic interaction; therefore, simultaneous administration of these drugs is not associated with opioid withdrawal, as has been observed with methadone [24,49].

Secondary syringe exchange (SSE) refers to the exchange of sterile syringes between injection drug users (IDUs). SSE-based networks should be used to improve public health interventions, while minimizing the potential risks associated with the practice of secondary exchange [50]. Network correlates of drug equipment sharing are multi-factorial and include structural factors (network size, density, position, and turnover), compositional factors (network member characteristics, role and quality of relationships with members) and behavioural factors (injecting norms, patterns of drug use, severity of drug addiction) [51].

In a comparative study of a group of experimental and control subjects in Argentina, Brazil, Costa Rica, Japan, Jordan, Italy, Malaysia, Singapore and the United States of America (State of New York), and of the results of independent studies conducted in Sweden and the United Kingdom of Great Britain and Northern Ireland, a rather close association was found to exist between drug abuse, criminal behavior and social attitudes to such problems. The study encouraged the review, testing and implementation of alternative measures to penal sanctions, particularly with a view to creating a genuine therapeutic approach to correcting the deviant behavior of drug abusers [52]. According to a study, harm reduction programs (HRP) was associated with a lower incidence of HCV and HIV infection in ever-injecting drug users (DU), indicating that combined prevention measures, but not the use of needle exchange program (NEP) or methadone alone might contribute to the reduction of the spread of these infections [24,53].

In a study of assessing activity and coverage of needle and syringe programmes (NSP) in Central and Eastern Europe and Central Asia, results from 213 sites in 25 countries suggested that overall syringe coverage for the population in contact with NSP was 9.8%. Strategies to increase coverage that may go beyond NSP are urgently required [54,55].

Setting purposively selected opioid substitution treatment (OST) sites in Asia (China, Indonesia, Thailand), Eastern Europe (Lithuania, Poland, Ukraine), the Middle East (Iran) and Australia showed all countries demonstrated significant reductions in reported heroin and other illicit opioid use; HIV and other blood-borne virus exposure risk behaviors associated with injection drug users and criminal activity, and demonstrated substantial improvement in their physical and mental health and general wellbeing over the course of the study [56].

Implementing hospice behind bars has some unique challenges in addition to those inherent in hospice work. This series will provide an in-depth look at four hospice programs for inmates in the United States [42]. The synthetic opioids are not routinely assessed in many screening procedures. If a drug screen is positive, but the patient denies drug use, the laboratory should be asked to conduct a confirmatory test using gas chromatography/mass spectroscopy [24,57].

It has been estimated that the burden of illness associated with alcohol dependence is 5 times greater in wealthier countries, compared with less wealthy nations, and that in all cases this burden is significantly greater than the corresponding impact of all illicit drugs [58-59].

Conclusion

HIV surveillance is defined as a systematic data collection about occurrence, distribution, and trends in HIV infection and factors associated with its transmission.

Results of surveillance are used in practice to inform program decisions, judge the effectiveness of the national response, lobby for effective programs, and to provide accurate measures of trends and the absolute state of the epidemic [60].

In the early years of the epidemic, countries were encouraged to set up surveillance systems which had as a primary component AIDS case reporting systems, but also included HIV surveillance in some population groups [60-62].

Many of the developing countries developed and relied on sentinel systems to detect trends in HIV prevalence in groups with high-risk behavior as well as in the general population. This paper focuses on these sentinel surveillance systems. Second generation HIV surveillance aims to tailor surveillance systems to the needs of specific epidemic states [19,61,64]. Second generation systems use behavioral as well as biological data to increase the explanatory power of surveillance systems

Sheet number:		Date:		Name of Physician:			
Name and family name		Father name		Identification number			
Sex:	Male □ ; Female □	Age (Year)		Age at diagnosis of HIV (Year)			
Immigration status:	Native □; Immigrated □, if yes, name the original country						
Ethnicity:	□; □; □; □; □; □						
Country/City of living in recent 10 years	occupation	Marital status:	unmarried□ married□	Birth place city			
Education:	illiterate□ primary school□ secondary school□ university degree□						
Personal history of exposure to HIV							
Health care workers	Yes□ ; No□	History of use of shared shaving razors or admitted unsanitary barbers	Yes□ ; No□				
History of hospitalization	Yes□ ; No□	History of common syringe use	Yes□ ; No□				
History of surgery	Yes□ ; No□	History of receive medical procedures such as endoscopy or minor surgery/ extraction/ repair of tooth in an unsanitary clinic	Yes□ ; No□				
History of receiving blood transfusion. If yes, cause and the date:	Yes□ ; No□	History of addiction. If yes, route of use: orally, inhalation, IV	Yes□ ; No□				
History of suspected sexual activity, number of cases	Yes□ ; No□	History of being client of barbers with re-used instruments	Yes□ ; No□				
History of needle stick	Yes□ ; No□	History of acupuncture	Yes□ ; No□				
History of blood splashing	Yes□ ; No□	Being international traveler	Yes□ ; No□				
Truck driver	Yes□ ; No□	History of participation in war or injury during war, if yes type of injury	Yes□ ; No□				
History of tattoo	Yes□ ; No□	History of incarcerated in war, If yes, duration of incarceration	Yes□ ; No□				
History of imprisonment, inmates of correctional center	Yes□ ; No□	History of emergent blood transfusion during war or accident	Yes□ ; No□				
Personal history according to diagnosis of physician							
Personal history of hypertension or use of antihypertensive drugs Chronic HTN or rapid rise of BP due to drug abuse	Yes□ ; No□	History of occupational chemical contact	Yes□ ; No□				
Personal history of stroke or CVA	Yes□ ; No□	History of TPN	Yes□ ; No□				
Loss of more than 10 kg in recent 6 months	Yes□ ; No□	History of hospital admission for alcohol/drug-abuse withdrawal or over-use					
Family history according to diagnosis of physician							
Family history of hepatitis, hepatocellular carcinoma	Yes□ ; No□	Family history of addiction	Yes□ ; No□				
Habits							
history of alcohol consumption	Yes□ ; No□	Habit smoking, Number of cigarettes per day	Yes□ ; No□				
history of alcohol use in recent 6 months	Yes□ ; No□	Amount and duration of use					
Drug use							
Drugs used regularly is recent 6 months	Yes□ ; No□	Vaccinated for HBV and date of vaccination, Number of vaccination	Yes□ ; No□				
Physical exam, symptoms, signs							
Body weight(kg)		Height (cm)		Hepatotoxicity			
Lactic Acidosis		Osteonecrosis, Osteoporosis, Osteopenia		Skin Rash			
Lipodystrophy		Itching	Yes□ ; No□	Jaundice	Yes□ ; No□		
Fatigue	Yes□ ; No□	Spider Angioma	Yes□ ; No□	Pleural effusion	Yes□ ; No□		
Nausea	Yes□ ; No□	Hypertrophy of parotid gland	Yes□ ; No□	Hepatorenal syndrome	Yes□ ; No□		
Vomiting	Yes□ ; No□	Edema	Yes□ ; No□	Encephalopathy	Yes□ ; No□		
Poor appetite	Yes□ ; No□	Testicular atrophy	Yes□ ; No□	Splenomegaly	Yes□ ; No□		
Weight loss	Yes□ ; No□	Gynecomastia	Yes□ ; No□	Hormonal disorders (hypogonadism, hypothyroidism)	Yes□ ; No□		
RUQ pain, Abdominal tenderness	Yes□ ; No□	Caput medosa	Yes□ ; No□	Liver span in midclavicular line(cm)	Yes□ ; No□		
Ascites	Yes□ ; No□	Echymosis, Petechia, Purpura	Yes□; No□	Small liver	Yes□ ; No□		
Palmar erythema	Yes□ ; No□	Coagulopathy, thrombocytopenia,	Yes□ ; No□	Had the patient symptoms and signs of chronic hepatitis?	Yes□ ; No□		
Pulmonary involvement	Yes□ ; No□	Renal involvement	Yes□ ; No□	Cardiac involvement	Yes□ ; No□		
Other infections	Yes□ ; No□	Any cancer	Yes□ ; No□	others	Yes□ ; No□		
Biochemical, Serological Findings							
HIV.Ab		CD4 count		Triglyceride, Cholestrol, HDL, LDA			
ferritin	Pos□ ; Neg□	PPD test		CBC:			
HBs Ag:	Pos□ ; Neg□	GGT, AST,ALT		PT (s), INR			
HBs Ab:	Pos□ ; Neg□	VDRL		AFP:			
HBc Ab:	Pos□ ; Neg□	LDH:		FBS:			
HBe Ag:	Pos□ ; Neg□	T3, T4, TSH		Albumin			
HBe Ab:	Pos□ ; Neg□	Billirubin direct and total		Uric acid:			
Alk Phosphatase:		creatinin		BUN:			
Drug side effects, drug resistance							

Table 1: Our proposed HIV Surveillance Form.

in both predicting and tracking the course of the HIV epidemic in a given country. Within a larger monitoring and evaluation framework, however, data generated by regular surveillance systems can contribute to an understanding of the impact of the combined effect of the national response to HIV [60,63-66].

It is hoped that closer global cooperation from upstream basic research to downstream clinical trials will greatly speed better intervention and treatment strategies as well as the ultimate production of a successful AIDS vaccine [67-68].

In Table 1 our proposed surveillance form for recruitment and follow-up of HIV cases is depicted. In this table one may add other parameters of bbehavioural surveillance as about the sexual and drug-injecting behaviours, number of sexual partners, condom use, number of syringe use during one month. Also to assess other characteristics of infected subjects such as occupation and socio-economic state, other infections such as inactive hepatitis B carrier, viral hepatitis B, hepatitis C, anti-HDV, infections and cancers related to immune deficiency state, pregnancy, breast feeding, cirrhosis, hemodialysis, organ transplanted, coagulopathy and other hematologic disorders, recent surgical/medical procedure and seek the possible source of infection and possible transmission. However, we believe informed consent of tested person without their permission in high risk group may be obtained by local ethical/legal rules. Anyway, data of tests, results of biologic and behavioral surveillances, subjects who need to be screened, and feedback of drug abuse/ correction centers/treatment follow-up/ and other referral consult centers for high risk group should be keep secret and just only be accessible by other medical centers with certain precautions.

Lack of routine testing of at-risk populations, data registry screening programs and intervention strategies had lead to confronting HIV- infected subjects lately when presenting with co-morbidities such as advanced liver failure, tuberculosis and opportunistic diseases. It seems in developing countries more policy guidelines for testing, counseling and treatment, and modeling HIV control according to at-risk population such as in the injecting drug users, male homosexual context is needed.

Regarding transmission of HIV infection from undiagnosed cases or by those neglecting treatment, it is necessary that prevention methods, receive of appropriate prophylaxis, practical use of recommendations, harm reduction policies, adjust treatment to changes in more dangerous drug use patterns, adverse drug side effects, treatment failure, and drug resistance followed and supervised regularly in each country. Track HIV infection trends, its biologic and behavioral pattern, implementing strategies according to certain mode of spread of infection, analysis of networking data by supervised epidemiologists are all necessary tools to control the infection.

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References

1. Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, et al. (2009) Global patterns of mortality in young people: a systematic analysis of population health data. Lancet 374: 881-892.
2. WHO/UNAIDS/UNICEF (2011) Global HIV/AIDS Response: Epidemic update and health sector progress towards Universal Access 2011.
3. UNAIDS (2011) World AIDS Day Report 2011.
4. Global Report (2010) UNAIDS report on the global AIDS epidemic.
5. Shao Y, Williamson C (2012) The HIV-1 Epidemic: Low- to Middle-Income Countries. Cold Spring Harb Perspect Med 2: a007187.
6. Hamers FF, Downs AM (2003) HIV in central and eastern Europe. Lancet 361: 1035-1044.
7. Workowski KA, Berman S (2010) Sexually transmitted diseases treatment guidelines, 2010. MMWR Recomm Rep. 59: 1-110.
8. Kaleebu P, French N, Mahe C, Yirrell D, Watera C, et al. (2002) Effect of human immunodeficiency virus (HIV) type 1 envelope subtypes A and D on disease progression in a large cohort of HIV-1-positive persons in Uganda. J Infect Dis 185: 1244-1250.
9. Karim QA, Kharsany AB, Frohlich JA, Werner L, Mashego M, et al. (2011) Stabilizing HIV prevalence masks high HIV incidence rates amongst rural and urban women in KwaZulu-Natal, South Africa. Int J Epidemiol 40: 922-930.
10. Gregson S, Nyamukapa CA, Garnett GP, Mason PR, Zhuwau T, et al. (2002) Sexual mixing patterns and sex-differentials in teenage exposure to HIV infection in rural Zimbabwe. Lancet 359: 1896-1903.
11. Ott MQ, Bärnighausen T, Tanser F, Lurie MN, Newell ML (2011) Age-gaps in sexual partnerships: seeing beyond 'sugar daddies'. AIDS 25: 861-863.
12. Steffenson AE, Pettifor AE, Seage GR 3rd, Rees HV, Cleary PD (2011) Concurrent sexual partnerships and human immunodeficiency virus risk among South African youth. Sex Transm Dis 38: 459-466.
13. Mi G, Wu Z (2010) A review of studies on sero-sorting among HIV positive men who have sex with men. Chin J AIDS STD 16: 201-203.
14. Tang WM, Ding JP, Yan HJ, Xuan XP, Yang HT, et al. (2008) Sexual behaviors and HIV/syphilis infection among men who have sex with men: a meta analysis of data collected between 2001 and 2006 in the Chinese mainland. Chin J AIDS STD 14: 471-488.
15. Ruan Y, Li D, Li X, Qian HZ, Shi W, et al. (2007) Relationship between syphilis and HIV infections among men who have sex with men in Beijing, China. Sex Transm Dis 34: 592-597.
16. Hacker MA, Malta M, Enriquez M, Bastos FI (2005) Human immunodeficiency virus, AIDS, and drug consumption in South America and the Caribbean: Epidemiological evidence and initiatives to curb the epidemic. Rev Panam Salud Publica 18: 303-313.
17. European Centre for Disease Prevention and Control/WHO Regional Office for Europe (2011) HIV/AIDS surveillance in Europe 2010. Stockholm: European Centre for Disease Prevention and Control.
18. UNAIDS/WHO (2000) Second generation surveillance for HIV: the next decade. Geneva.
19. WHO (1989) Unlinked anonymous screening for the public health surveillance of HIV infections: proposed international guidelines. Geneva.
20. Dehne KL (1999) The HIV epidemic in Central and Eastern Europe: update. University ofHeidelberg, Germany.
21. Frentz D, Boucher CA, van de Vijver DA (2012) Temporal changes in the epidemiology of transmission of drug-resistant HIV-1 across the world. AIDS Rev 14: 17-27.
22. Maier I, Wu GY (2002) Hepatitis C and HIV co-infection: a review. World J Gastroenterol 8: 577-579.
23. Parboosing R, Paruk I, Lalloo UG (2008) Hepatitis C virus seropositivity in a South African Cohort of HIV co-infected, ARV naive patients is associated with renal insufficiency and increased mortality. J Med Virol 80: 1530-1536.
24. Fallahian F, Najafi A, Alavian SM (2010) Intravenous Drug Use: the Predominant Risk Factors for Hepatitis C Virus Infection. Shiraz E-Medical Journal (SEMJ) 11: 209-218.
25. Devi KhS, Brajachand N, Singh HL, Singh YM (2005) Co-infection by human immuno deficiency virus, hepatitis B and hepatitis C virus in injecting drug users. J Commun Dis 37: 73-77.
26. Babudieri S, Longo B, Sarmati L, Starnini G, Dori L, et al. (2005) Correlates of HIV, HBV, and HCV infections in a prison inmate population: results from a multicentre study in Italy. J Med Virol 76: 311-317.

27. Bart G, Piccolo P, Zhang L, Jacobson I, Schaefer RA, et al. (2008) Markers for hepatitis A, B and C in methadone maintained patients: an unexpectedly high co-infection with silent hepatitis B. Addiction 103: 681-686.

28. Gerlich M, Gschwend P, Uchtenhagen A, Kramer A, Rehm J (2006) Prevalence of hepatitis and HIV infections and vaccination rates in patients entering the heroin-assisted treatment in Switzerland between 1994 and 2002. Eur J Epidemiol 21: 545-549.

29. Sabbatani S, Giuliani R, Fulgaro C, Paolillo P, Baldi E, et al. (2004) [HIVAb, HCVAb and HBsAg seroprevalence among inmates of the prison of Bologna and the effect of counselling on the compliance of proposed tests]. Epidemiol Prev 28: 163-168.

30. Guyon L, Brochu S, Parent I, Desjardins L (1999) At-risk behaviors with regard to HIV and addiction among women in prison. Women Health 29: 49-66.

31. do Sameiro Faria M, Sampaio S, Faria V, Carvalho E (2003) Nephropathy associated with heroin abuse in Caucasian patients. Nephrol Dial Transplant 18: 2308-2313.

32. Wurst FM, Dursteler-MacFarland KM, Auwaerter V, Ergovic S, Thon N, et al. (2008) Assessment of alcohol use among methadone maintenance patients by direct ethanol metabolites and self-reports. Alcohol Clin Exp Res 32: 1552-1557.

33. Charbonnier F, Calmy A, Janssens JP (2011) Tuberculosis and HIV co-infection: a therapeutic challenge. Rev Med Suisse 7: 2295-2296, 2298-2300.

34. Venkatesh KK, Swaminathan S, Andrews JR, Mayer KH (2011) Tuberculosis and HIV co-infection: screening and treatment strategies. Drugs 71: 1133-1152.

35. Padmapriyadarsini C, Narendran G, Swaminathan S (2011) Diagnosis & treatment of tuberculosis in HIV co-infected patients. Indian J Med Res 134: 850-865.

36. Weber K, Rockstroh B, Borgelt J, Awiszus B, Popov T, et al. (2008) Stress load during childhood affects psychopathology in psychiatric patients. BMC Psychiatry 8: 63.

37. Pot AM, Melenhorst AS, Onrust S, Bohlmeijer ET (2008) (Cost) effectiveness of life review for older adults: design of a randomized controlled trial. BMC Public Health. 8: 211.

38. Benyamin R, Trescot AM, Datta S, Buenaventura R, Adlaka R, et al. (2008) Opioid complications and side effects. Pain Physician. 11: S105-S120.

39. Spoth R, Trudeau L, Shin C, Redmond C (2008) Long-term effects of universal preventive interventions on prescription drug misuse. Addiction. 103: 1160-1168.

40. Faggiano F, Vigna-Taglianti FD, Versino E, Zambon A, Borraccino A, et al. (2008) School-based prevention for illicit drugs use: a systematic review. Prev Med 46: 385-396.

41. Faggiano F, Galanti MR, Bohrn K, Burkhart G, Vigna-Taglianti F, et al. (2008) The effectiveness of a school-based substance abuse prevention program: EU-Dap cluster randomised controlled trial. Prev Med 47: 537-543.

42. Sussman S, Dent CW, Stacy AW (2002) Project towards no drug abuse: a review of the findings and future directions. Am J Health Behav 26: 354-365.

43. Michels II, Stover H, Gerlach R (2007) Substitution treatment for opioid addicts in Germany. Harm Reduct J 4: 5.

44. Small W, Kain S, Laliberte N, Schechter MT, O'Shaughnessy MV, et al. (2005) Incarceration, addiction and harm reduction: inmates experience injecting drugs in prison. Subst Use Misuse 40: 831-843.

45. Ramirez-Jonville A (2006) [Drug addiction: harm reduction policies in France and Spain]. Presse Med 35: 1151-1161.

46. Wodak A (1995) Harm reduction: Australia as a case study. Bull N Y Acad Med 72: 339-347.

47. Erickson PG (1999) Introduction: the three phases of harm reduction. An examination of emerging concepts, methodologies, and critiques. Subst Use Misuse 34: 1-7.

48. Mazlan M, Schottenfeld RS, Chawarski MC (2006) New challenges and opportunities in managing substance abuse in Malaysia. Drug Alcohol Rev 25: 473-478.

49. McCance-Katz EF (2005) Treatment of opioid dependence and coinfection with HIV and hepatitis C virus in opioid-dependent patients: the importance of drug interactions between opioids and antiretroviral agents. Clin Infect Dis 41: S89-S95.

50. De P, Cox J, Boivin JF, Platt RW, Jolly AM (2008) Social network-related risk factors for bloodborne virus infections among injection drug users receiving syringes through secondary exchange. J Urban Health 85: 77-89.

51. De P, Cox J, Boivin JF, Platt RW, Jolly AM (2007) The importance of social networks in their association to drug equipment sharing among injection drug users: a review. Addiction 102: 1730-1739.

52. Asuni T, Bruno F (1984) Summary of an eleven-country study of socio-legal measures to combat drug abuse and related crime. Bull Narc 36: 3-8.

53. Van Den Berg C, Smit C, Van Brussel G, Coutinho R, Prins M (2007) Full participation in harm reduction programmes is associated with decreased risk for human immunodeficiency virus and hepatitis C virus: evidence from the Amsterdam Cohort Studies among drug users. Addiction 102: 1454-1462.

54. Aceijas C, Rhodes T (2007) Global estimates of prevalence of HCV infection among injecting drug users. Int J Drug Policy 18: 352-358.

55. Lawrinson P, Ali R, Buavirat A, Chiamwongpaet S, Dvoryak S, et al. (2008) Key findings from the WHO collaborative study on substitution therapy for opioid dependence and HIV/AIDS. Addiction 103: 1484-1492.

56. Linder JF, Enders SR, Craig E, Richardson J, Meyers FJ (2002) Hospice care for the incarcerated in the United States: an introduction. J Palliat Med 5: 549-552.

57. Loftis JM, Matthews AM, Hauser P (2006) Psychiatric and substance use disorders in individuals with hepatitis C: epidemiology and management. Drugs 66: 155-174.

58. World Health Organization (1999) The World Health Report 1999: making a difference. Geneva.

59. Somers JM, Goldner EM, Waraich P, Hsu L (2004) Prevalence Studies of Substance-Related Disorders: A Systematic Review of the Literature. Can J Psychiatry 49: 373-384.

60. Pisani E, Lazzari S, Walker N, Schwartländer B (2003) HIV surveillance: a global perspective. J Acquir Immune Defic Syndr 32: S3-S11.

61. Chin J (1990) Public health surveillance of AIDS and HIV infections. Bull World Health Organ 68: 529-536.

62. WHO/GPA (1991) Report of a meeting on HIV sentinel surveillance. Dakar, Senegal. December 14-18.

63. Asiimwe-Okiror G, Oppio A, Musinguzi J, Madraa E, Tembo G, et al. (1997) Change in sexual behavior and decline in HIV infection among young pregnant women in urban Uganda. AIDS 14: 1757-1763.

64. Meda N, Ndoye I, M'Boup S, Wade A, Ndiaye S, et al. (1999) Low and stable HIV infection rates in Senegal: natural course of the epidemic or evidence for success of prevention? AIDS 13: 1397-1405.

65. UNAIDS (1998) Relationships of HIV and STD declines in Thailand to behavioral change. UNAIDS, Geneva.

66. UNAIDS (2000) National AIDS programmes: a guide to monitoring and evaluation. Geneva.

67. Kaleebu P, Abimiku A, El-Halabi S, Koulla-Shiro S, Mamotte N, et al. (2008) African AIDS vaccine programme for a coordinated and collaborative vaccine development effort on the continent. PLoS Med 5: e236.

68. Kent SJ, Cooper DA, Chhi Vun M, Shao Y, Zhang L, et al. (2010) AIDS vaccine for Asia network (AVAN): Expanding the regional role in developing HIV vaccines. PLoS Med 7: e1000331.