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Trends of incidence and prevalence of HIV-1 in Guinea-Bissau, West Africa, and preliminary data on subtypes

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Background : Guinea-Bissau has the highest prevalence of HIV-2 in the world and has previously been an almost exclusively HIV-2 prevalent area. Recent findings indicate an increased spread of HIV-1 in various population groups.

Objectives :

- a) To study the HIV incidence in an occupational cohort ;
- b) To study the trend of the seroprevalence of HIV among pregnant women ;
- c) To subtype strains of HIV-1 in Guinea-Bissau.

Methods : Prospective study of a cohort of police officers in Guinea-Bissau. Annual screening of pregnant women at a maternity clinic in Bissau. HIV-testing with ELISA and Western blot. Direct DNA sequencing of the V3 domain of the HIV-1 envelope.

Results :

Prevalence	<i>Pregnant women in Bissau</i>					
	HIV-1		HIV-2		Double	
	%	No.	%	No.	%	No.
1987	0	(0/707)	8.3	(59/707)	0	0
1988	0.	(3/2 539)	6.0	(152/2 539)	0	0
1989-91	0.4	(6/1 514)	5.5	(84/1 514)	0	0
1992	0.8	(12/1 485)	6.0	(79/1 485)	0	0
1993	0.9	(10/1 078)	4.1	(44/1 078)	0.3	(3/1 078)
1994	1.4	(16/1 059)	6.7	(71/1 059)	0.3	(3/1 059)

P[HIV-1 1988-92] < 0.05

	<i>Police officers</i>					
	HIV-1		HIV-2		Double	
	P	I	P	I	P	I
1990-92	0.3	0.7	12.9	1.6	0.2	0
1990-92	0.3	0.9	10.9	1.0	0.2	0

P= prevalence I= incidence
Double= HIV-1/HIV-2 double reactive

Four strains of HIV-1 have been characterized by sequencing, all belong to subtype A.

Conclusions : HIV-1 is increasing rapidly in Guinea-Bissau. Although the prevalence of HIV-1 is still low, the incidences of HIV-1 and HIV-2 are almost equal. The four HIV-1 strains characterized so far, all belong to subtype A.

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Evidence of multiple SIV_{agm-sab} subtypes within African green monkeys of the same troop

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Rationale and Objective : Elevated seroprevalence rates have been reported in the four African green monkey (AGMs) subspecies and each subspecies is infected by SIV^{agm} strains exhibiting limited identity. Moreover genetic diversity within the viruses infecting each AGM subspecies is much more important than that observed for the other primate lentiviruses. The objective of this study is to determine genetic diversity of SIV^{agm-sab} from feral AGM of the *sabaeus* subspecies (*Cercopithecus aetiops sabaeus*).

Methods : AGMs were sampled from two troops living in non overlapping home ranges in the Fathala forest (Saloum Delta National Park Senegal). By a semi-nested PCR technique, two 450bp regions of the genome were amplified and sequenced, spanning the first *tat* coding exon and part of the TM glycoprotein. The *env* fragment allowed to assess the variability of 140 amino acid residues in the gp40, corresponding to the transmembrane domain and a part of the cytoplasmic region. Combination of *env* and *tat* regions allowed to deduce sequences for *Tat* and *Rev* regulatory proteins.

Results : Eleven new SIV^{agm-sab} from 2 troops were included in this study. Regulatory proteins *Tat* and *Rev* showed limited amino acid variability for domains known to be important for protein functions. However detailed analysis of these proteins indicate that N-terminus region for *Tat* and C-terminus region for *Rev* are highly variable ; biological relevance of this variability is not known, but has not yet been reported for regulatory proteins in lentivirus. Analysis of splicing events for *tat* also revealed important differences between the different SIV^{agm-sab} strains. Average homology score between the different viruses for gp40 amino acid sequences is comparable to homology between SIV^{agm-ver} strains. Unexpectedly SIV^{agm-sab} within AGMs from the same troop differ by as much as 30 % in the portion of the TM glycoprotein evaluated. Phylogenetic analysis of *env* and *tat* regions allowed identification of distinct virus lineages, equidistantly related referred as SIV^{agm-sab} subtypes. Identical clustering of these different viruses in both trees indicate that at least two distantly related subtypes are found in one AGM troop. Moreover these subtypes differ from one troop to another.

Conclusions : These results represent the most detailed phylogenetic analysis of SIV^{agm-sab} within feral animals that has been conducted to date indicating the presence of multiple subtypes within the same troop. These data strongly suggest ancient introduction of distinct SIV^{agm-sab} lineages designated here as SIV^{agm-sab} subtypes.

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Capacity development ; Strengthening national research capacity for policy/programme research on socio-economic aspects of HIV in Africa.

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Issue : How to strengthen national capacity to define, undertake and utilise research on the socio-economic causes and consequences of the HIV epidemic.

Project : UNDP has a project in 4 African countries [Senegal, Central African Republic, Kenya and Zambia] where innovative processes of technical assistance have been developed in support of national teams of researchers undertaking policy and programme relevant socio-economic research. At the core of the process have been new ways of providing technical assistance and working in partnership with NAPs, researched communities and other users of data.

Results : Research is underway in a number of project countries and important insights have been gained into how to establish and support through technical and other assistance national interdisciplinary research teams, and how best to ensure that research is timely and relevant to programme needs.

Lessons learned : New approaches to technical assistance have to be identified and utilised in the conditions of falling ODA and in the face of the HIV epidemic which requires new approaches. Such TA needs to be based on the principles of Process Consulting which establish new relationships and working methods between development partners. The research throws light on how best to strengthen national research capacity through technical consortia ; how to involve potential users of research throughout the research process from start to finish ; how best to strengthen research skills ; new forms of dissemination of research outputs and their utilisation in programme development. General insights into the issue of Capacity Development are derivable from the project of relevance to all forms of technical assistance to countries responding to the epidemic.

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Socio-economic factors of the HIV/AIDS epidemic in Senegal.

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Objective : 1) To identify the socio-economic factors which help to the spread of the HIV infection in Senegal. 2) To strengthen the preventive strategies against the HIV infection in Senegal.

Methods : 7 cities in Senegal were chosen for this study. The target population was the sexually active men and women aged more than 15 years. The study was based on focus group method. In each city 8 focus groups were done with 10 persons by groups.

Results : 560 persons were included in this study. The knowledge on HIV transmission was good. For some participants, the HIV came from north countries and many of them considered HIV infection as a divine malediction and as a punishment. Young adults know how to prevent against HIV but the problem remain the geographical accessibility for these condoms. The beginning of sexual intercourse is early for young boys. Multiple sexual partners is frequent and the practice of "Mbaxal" which means one girl with many boy friends is a reality. For young boys multiple sex partners is a situation which increases one's prestige. According to the focus group, adultery is a frequent practice in men and women. Many women use aphrodisiac products during their sexual intercourse.

Conclusion : This study emphasizes the importance of the socio-economic factors which help to spread the HIV infection in Senegal. The HIV prevention programs must emphasize these factors in order to decrease the epidemic.

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10-years incidence trends of HIV-1 and HIV-2 in Senegal

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Objectives : The measurement of HIV incidence is critical to our understanding the dynamics of both HIV-1 and HIV-2 spread in populations at-risk. These incidence estimates in high risk population cohorts will be necessary for future vaccine efficacy trials.

Methods : Since 1985, we have prospectively studied 1 790 registered female prostitutes in Dakar Senegal, with sequential evaluation of their antibody status to HIV-1 and HIV-2. Incidence rates of HIV seroconversion were calculated over the study period. Poisson regression models were used to

describe temporal changes in HIV incidence and demographic variables associated with seroconversion.

Results :

<i>Incidence</i>	<i>Calendar Year</i>									
<i>Per</i>										
100/pyo	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
HIV-1	0	0	0.71	0.63	0.67	1.12	2.64	2.49	1.26	2.07
HIV-2	1.06	1.09	1.24	0.63	1.08	1.37	0.79	0.41	0.32	0.94

Over the 10-year period, the annual incidence of HIV-2 remained stable, despite higher HIV-2 prevalence, while HIV-1 incidence has increased dramatically. Risk-factors for infection differed between HIV-1 and HIV-2.

Conclusions : In our study population, the heterosexual spread of HIV-2 is significantly slower than that of HIV-1, which strongly suggests differences in the infectivity potential of these two related immunodeficiency viruses. This cohort may be particularly useful for assessing cross-protection in future vaccine candidates.

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Adams Diédhiou Badiane ¹

Contribution to the fight against AIDS in the Senegalese regions of Dakar and Ziguinchor

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I. *HIV Situation in Senegal :* Seroprevalence in Senegal is approximately 1 % of the population. There are 1 800 AIDS cases registered with Senegalese hospitals and 56 000 people are currently HIV-positive. According to the National AIDS Committee, the number of cases could rise to 90 000 by 1998.

II. *Problem :* To date, efforts to fight AIDS have been the sole domain of the government or of NGOs that specialise in HIV-related activities. This restrictive and exclusive approach is one of the weak points of the anti-AIDS efforts in Senegal. To be more effective, anti-AIDS efforts must be wider and interest all sectors and key actors of the country.

The *Union Ekolong* organization of Diolas women includes 57 information/education and community groups specialising in development activities. With the financial support of the ANCS (national association against AIDS), the organization integrated a large component of AIDS actions into its traditional development activities : vegetable farming, small retail business, functional literacy, reproductive health. The objectives of the project are :

- Increase knowledge about AIDS
- Educate target populations using national languages
- Increase awareness using culturally adapted education materials
- Involve youth in awareness projects
- Promote condom use

III. *Result :* Awareness campaign for 2 200 members of the organization

- Training of 57 information/education leaders
- Establishment of monitoring committees in regional antenna groups
- Systematisation of literacy for all members
- Information/education activities

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HPV infection in seropositive women in Senegal

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Objective : To determine the prevalence of infection by HPV in seropositive women. To co-relate this infection with the presence of cytologic abnormalities in these women.

Methods : A case-control study was carried out in the Infectious Diseases Department of Fann Hospital. All women who were 15 years old and more were enrolled after their agreement. A standardized interview, a clinical exam, and a specially gynecologic exam were done. Blood samples were collected for the HIV test. Cervicovaginal specimens were obtained for microbiology and cytology ; those for HPV have been analysed by PCR in Seattle.

Results : 1 429 women were enrolled : 157 HIV+ (113 HIV-1 ; 29 HIV-2 ; 15 HIV-1+2), 127 seronegatives controls. The mean age of HIV positive women was as follows : 32 years for HIV-1 36 years for HIV-2 and 32 years for HIV-1+2. Cytologic abnormalities were found in 4.7 % of women, 1.5 % CIN I and 0.8% CIN II-III. The mean age of women with CIN II-III were 39 years old. HPV was found in 8 % of seropositive women ; this mean age was 31 years old. HIV positive women had 5 fold high risk to be HPV (+) by comparison with HIV negative women [OR : 5.09 ; IC 95 % ; 3.45-7.53]. There was an association between HPV infection and the presence of cytologic abnormalities ; [OR : 2.5 ; IC 95 % = 1.05-5.63].

Conclusion : HIV seropositive in Senegal have a high risk to be HPV positive. The results show also a correlation between HPV infection and cytologic abnormalities, according to the immunodepression state. These women's follow-up will clarify these relationships.

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Baba Goumbala ¹

Supporting CBOS to participate in Senegal's response to AIDS

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Issue : Small community groups, including groups of people with AIDS, have been insufficiently involved in both policy development and programme implementation in Senegal. In addition to resulting inadequate national strategies these CBOs have thus suffered from inadequate funding and technical support.

Project : Bring together leaders from both the CBO and NGO sectors to create a local intermediary mechanism to provide funds and technical support with services in local languages adapted to the needs of small groups. Alliance Nationale de lutte contre le Sida (ANCS) was created with the participation of 122 NGOs and CBOs, which elected a Board of Directors representing people with HIV/AIDS. NGOs working on AIDS, development NGOs, CBOs, women and youth groups. ANCS also created a separate project selection committee with the participation of local donors, the government, and NGOs/CBOs. The Board of Directors governs a secretariat that is responsible for mobilising CBOs to work on AIDS, administering grants to CBOs, and providing technical support and monitoring of projects.

Results : In its first year ANCS distributed grants of over 66 million F CFA to 93 CBOs and NGOs (over \$US 130,000). Technical support included two workshops on project design, planning management. monitoring and evaluation were organised for 60 of the beneficiary groups, four seminars

on IEC and prevention techniques were organised for a total of 90 of the beneficiaries, and one workshop was organised to train 15 trainers who will be responsible for further technical support.

Lessons Learned : Community responses to AIDS can be strengthened through the democratisation and localisation of resource allocation ; reinforcement of the management skills of CBOs ; establishment of a forum for NGOs and CBOs to exchange their views and experiences ; and building links between donors, NGOs, CBOs, and the government.

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Africa against AIDS : an illustrated catalogue of information and prevention resources

¹ CRIPS Ile-de-France, Paris

² AHRTAG, London

³ ENDA, Dakar NADIC, Kampala, CRIPS, Dakar

Objectives : to promote educational documents on AIDS made in Africa for Africans ;
— to demonstrate educational creativity and innovation in Africa ;
— to favour exchange between different countries and linguistic zones in Africa ;
— to develop documentation networks in Africa.

Method : Five African and European bodies collaborated to gather the main educational tools made in Africa. Numerous bodies and associations throughout Africa participated in the project by sending their documents. More than 250 were chosen among these, according to the following quality criteria : respect for human rights, effective design for the target group, community contribution. The documents were also intended to be representative of the countries and languages of the African continent as whole. The titles were translated into English, French and Portuguese, the documents were photographed in colour and classified according to their target audience. This catalogue benefited from aid from the French Ministry of Cooperation.

Results : This catalogue in English, French and Portuguese presents over 250 documents (posters, brochures, video tapes, T-shirts, etc.) from 40 African countries. The addresses and telephone numbers of the centres having produced these documents are given at the end of the publication. This document was widely distributed at the Kampala Conference on AIDS and STD in Uganda in December in 1995. This collaborative work was reinforced by a satellite meeting linking 15 African AIDS documentation centres to enable them to reinforce their networking capacities

Conclusion : This first edition has been received with interest and we invite production centres who create other tools to send them to us so that we can create another volume. The documentation centres who wish to participate in the African network are also invited to get in touch with us.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 2, p. 382, Th.C. 4828

Vincent Josse, Jean-Baptiste Coursaud

The ethical problems that therapeutic research arouses in Africa, particularly the trials promoted by the ANRS (French AIDS Research Agency.)

Issue/Problem : The trials promoted by the ANRS in Africa : ANRS 020 (treatment of cryptococcosis, Burundi), ANRS 049 (reduction of HIV-1 mother-to-child transmission in the Ivory Coast and Burkina-Faso), ANRS WO56 (prophylaxis of opportunist infections in the Ivory Coast), ANRS WO63 (treatment of neurosyphilis in Mozambique).

Evolution and permanence of the problems brought up by those trials (free and enlightened consent,

African Ethic Committees, involvement of infected people).

Non-ethical trials, promoted by private laboratories, are carried out in Africa. (for example : the trial by WN medical laboratory, in the Ivory Coast.) Those promoted by national and international agencies (ANRS, CDC, WHO) must be exemplary.

Aim : The respect of the people who lend themselves to medical research must be guaranteed in Africa as everywhere else. (Helsinki's convention, Dakar's declaration, French Hurriet law).

Method : The method which has been chosen by Act Up-Paris is activism (public questioning of officials, investigation work in Africa, lobbying.)

Results : The stopping of the WN trial, improvement of the ANRS trials, which remain still unsatisfactory, greater involvement of African people living with HIV/AIDS, promotion of the problem through the media.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 2, p. 398, Th.D. 4941.

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Change in knowledge and attitudes towards AIDS and in sexual behavior in a rural area of Senegal.

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Issues : Little is known about the evolution of sexual behavior, knowledge and attitudes towards AIDS in rural areas of Africa.

Project : The comparison of the data from two surveys carried out by the same research team in the same population of rural Senegal, 3 years apart (in 1991 and 1994). Random samples of 330 (in 1991) and 482 (in 1994) adults were interviewed. Interviews were completed by local staff using structured questionnaires on sexual behavior and knowledge and attitudes towards AIDS. For the analysis, individuals of each survey were matched a posteriori for age, sex, marital status and migratory status to ensure comparability. A total of 176 individuals from each survey were compared that way.

Results : The proportion of those who responded "I don't know" to questions concerning way of HIV transmission and perception of condom decreased by 14 % among men and by 47 % among women. Women experienced a larger increase of their AIDS-related knowledge score than men did. The average score grew from 0.7 to 2.6 for women and from 1.5 to 2.1 for men. However, the proportion of men declaring casual sex decreased from 39 % to 21 % while the same proportion remained stable for women (15 % and 18 % in the first and the second survey respectively).

Lessons Learned : Striking changes in knowledge and attitudes towards AIDS has occurred in a very short period of 3 years in this rural area. But while women did improve their knowledge of AIDS transmission routes and their practice of condom use, no change of sexual behavior was recorded.

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A behavioral intervention among male clients of female sex workers in Kaolack Senegal

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Issue : Few AIDS prevention interventions have targeted the male clients of female sex workers. Clients' knowledge of condoms and their attitudes about using them with their commercial and other sex partners are key determinants of the safety of these encounters. Few studies have demonstrated the

efficacy of behavioral intervention programs with changes in the incidence of HIV.

Project : In preparation for a behavioral change intervention among male clients of female sex workers, we assessed the sexual behavior as well as knowledge, beliefs, and attitudes about condom use and HIV and AIDS of men working in transportation parts and among members of the military in Kaolack Senegal. These two groups were identified as major client sources in research with a cohort of 100 registered, commercial sex workers. We used a stages of change mode to inform our interventions via an assessment of men's readiness to consistently use condoms with different types of sexual partners. The interventions will be evaluated using sex workers' reports of client behavior men's self-reports, and clinical measures of the incidence of sexually transmitted diseases, including HIV.

Results : We found important inter-group differences in sexual behavior knowledge of HIV and AIDS, experience with condom use, and readiness to adopt consistent condom use with sexual partners. We also documented significant differences in the use of condoms, and in intentions to use condoms, across partner types. Men were currently over 4 times more likely to use a condom with casual partners than with steady partners. However, approximately 50 % reported not using condoms the last time they had sex with a commercial sex worker

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The use of mass media for public education on AIDS through training of journalists as AIDS educators in Rwanda, Senegal and Zimbabwe

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² National AIDS Control Program, Kigali, Rwanda

³ AIDS-SCAP/FHI, Dakar ; Senegal

Issues : To enable journalists to combine information dissemination with role of educators on STD/HIV/AIDS through the mass media.

Project : While journalism training seminars on STD/AIDS in Africa aim to improve the skills and knowledge of the participants in information dissemination through the mass media, it is generally not expected that journalists should play the role of health educators. This is indeed contrary to reality, as the mass media do educate people. In Rwanda, Senegal and Zimbabwe, new and original curricula were used in journalism seminars with the aim of encouraging journalists to improve information dissemination and also see themselves as educators on STD/HIV/AIDS. Subsequently, the activities of the trainees were monitored to assess their perception as educators and how well they see themselves playing an educational role.

Results : Preliminary analysis of the data from Senegal showed that 60 % of the trained journalists see themselves as educators of the general public when they write on HIV/AIDS. The final results of the data from the 3 countries will be presented.

Lessons Learned : Through systematic application of specialized training programs, journalists can serve as educators on STD/HIV/AIDS. Therefore, in addition to raising awareness and providing general information, mass media can play a more significant role in HIV/AIDS interventions.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 1, p. 46. Mo.D. 251

Bunmi Makinwa ¹, R. Odindo ¹

Misinformation among AIDS educators : a survey of key persons in Rwanda, Senegal, South Africa and Tanzania

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Issues : Anecdotal evidence suggest that misinformation and misconceptions about HIV/AIDS exists even among key persons trained to educate others about HIV/AIDS prevention.

Project : To identify misinformation and misconceptions about HIV/AIDS among HIV/AIDS educators by administering an anonymous survey questionnaire to participants in HIV/AIDS materials development workshops in Rwanda, Senegal, South Africa and Tanzania. Most participants were paid staff of prevention programs and most had about 3 years' experience working in HIV/AIDS prevention. Separate questionnaires were designed for each country based on the myths trainers had heard in each country.

Results : Responses to survey questionnaires confirmed that many HIV/AIDS educators have misconceptions about how HIV and other STDs are spread and how people can protect themselves from infection Preliminary analysis of data from Rwanda shows that 35 % of the respondents believe that the foreskin of a non-circumcised person can serve as a natural condom and protect against HIV infection. 15 % said that condoms are deliberately infected with HIV, then sent for use in developing countries. Final data and results will be presented.

Lessons Learned : Factual information is mixed with erroneous information among HIV/AIDS educators who have participated in seminars, conferences and training sessions about HIV/AIDS prevention, Myths and misconceptions about HIV/AIDS are ingrained in social and cultural beliefs. Trainers and designers of training courses need to be aware of these beliefs so that they can improve training to overcome social and cultural barriers to transmitting factual information about HIV/AIDS.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 1, p. 407, Tu.D. 2861.

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HIV-2 as a model for long term non-progression

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Objective : To predict the proportion of HIV-2-infected individuals who may be long term non-progressors as compared to HIV1.

Methods : We have clinically followed 143 HIV-2-positive and 105 HIV-1-positive women from 1985 through 1995 in a cohort of registered sex workers in Dakar, Senegal. Examinations, HIV and STD screening. and CD4 counts have been routinely obtained.

Results : Whether seroincident or seroprevalent cases were examined, we noted that HIV-2-positive women developed abnormal CD4 counts at a rate of about approx. 1 % per year whereas HIV-1-positive women developed abnormal CD4 counts at approx. 10 % per year. The incidence of HIV-2 AIDS overall was 0.15/100 PYO (95 % CI = 0.02-1.029) and HIV-1 AIDS was 3.38/100 PYO (95 % CI = 1.818-6.279), with the following Kaplan-Meier survival analysis comparison of HIV-2 versus HIV-1.

[Schéma non reproduit ici]

Conclusions : The vast majority of HIV-2-infected individuals will fulfill the criteria for long term non-progressors in that the rate of either immune decline or disease development is reduced by several fold vs. HIV-1 .Virologic and immunologic characteristics of HIV-2 infection are discussed and may yield clues as to reducing disease pathogenesis n HIV-1 infection.

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Tu.B. 313.

*Abdoulaye Mbengue*¹

Difficulties to implicate people living with HIV in an association in a country with low AIDS prevalence : the Senegalese case

¹ ASASSFA President, Dakar, Fann (Senegal)

Objectives : To encourage people living with HIV to be involved in ASASSFA members to be better involved on AIDS prevention, activities and counseling.

Methodology : Individual interview, focus group discussion. The Association Sénégalaise d'Aide aux Séropositifs et à leurs Familles (ASASSFA) has among its 200 members about 50 persons living with HIV. Members join the Association after an intra-hospital counseling. ASASSFA Centre is located in Infectious Diseases Clinic (University Hospital - Fann). Members can also be referred by peripheric health services. Adhesion is free of charges, with guarantee of confidentiality on which people insist. Intra-hospital counseling, home visits, food distribution, information about HIV/AIDS for patients are ASASSFA main activities with secure resources. People living with HIV should be greatly involved in AIDS prevention, so they can give a better image of AIDS instead of the negative representation which resumes AIDS to death. Their participation will also help them to overcome stigmatisation related to homosexuality prostitution and sexual perversion or divine malediction. There is a great difference between seropositivity and living positively this status without guiltiness or shame.

Results : After many years of activities with people living with HIV in Dakar and other regions, we found blockage factors such as : high dependence of people on their families, social and economic dependence, sensitiveness of fear to be rejected ; all these factors limit their willingness to participate in AIDS prevention activities.

Conclusion : Since we do not succeed in making lucrative projects to be funded and there is no sponsor who accepts to insure care support of people living with HIV and AIDS and nevertheless the orphans. The best would be to salary seropositive persons in counseling units, prevention units and NGOs.

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Cheikh Seydi Aboubeker Mbengue

The African Regional Network on Ethics, Law and HIV : a selective commitment to promote human rights within the epidemic

Issue : In Africa, HIV/AIDS epidemic raises several legal and ethical issues for which appropriate responses should be necessarily obtained through the creation of networks, at both national and international levels.

Project : The African Regional Network on Ethics, Law and HIV has been created, as an outcome of the Dakar Inter-Country Consultation organized from June 27 to July 1, 1994. The African Regional Network is a coordinating formation that addresses all the National Networks' activities on reflexion, training, information exchange and the action for the human rights protection within the context of the HIV/AIDS epidemic. The African Regional Network ratified a declaration of principles called "The Dakar Declaration" which conceives a legal and ethical framework for policy formulation and collective and individual commitment. The Senegalese National Network is responsible for the coordination of the African Regional Network such a task being performed with the technical and logistical support of UNDP HIV/AIDS and Development Programme, which initiated the process of network's building.

Results : The Dakar Declaration became an indispensable reference for the reflexion and action addressing law and ethics within the HIV/AIDS epidemic in Africa and in the world. That's why the

WHO agency mentioned it in the official bulletin of the World Day, December 1st, 1995. As a responsive effect, associations and NGOs in both of the nine national networks spontaneously come close to said networks to get informed and trained. The IXth International Conference on AIDS in Africa, held on December 1995 in Kampala, Uganda, welcomed a successful presentation of the African Regional Network which resulted to the commitment of 15 countries to create new networks.

Lessons learned : In Africa, the collective commitment of activists, lawyers, physicians and persons living with HIV/AIDS in networks at both national and international levels, can be an effective response to the challenge of legal and ethical issues within the epidemic.

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A meeting place and a starting point for integrated activities the fight against AIDS amongst prostitutes

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Issue : Prostitutes run a high risk of contracting AIDS/HIV. This however is far from being the only hazard that they must face.

Project : A programme of listening and informing was implemented which allowed prostitutes to meet each other in safety and confidentiality. This meeting service lead to many discussions on the different problems identified by the prostitutes : health, AIDS violence, aging, income-generating activities, mutual support.

Results : Providing an independant meeting place removed a large obstacle to facilitating the expression and analysis by prostitutes themselves of the problems associated with prostitution. It also allowed the distribution of information, the organisation of local solidarity actions in several areas and the development of AIDS/Safe Sex awareness-raising activities aimed at the general public.

Lesson learned : Making AIDS/HIV prevention part of the process of consciousness-raising and self-empowerment of prostitutes reduces the risk of exposure to AIDS/HIV, and also influence the other factors affecting prostitution.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 2, p. 415, T.D. 5058.

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Religion : A major component for the prevention of HIV/AIDS and care of HIV infected people. Contribution of "NACP of Senegal"

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² ONG SIDA, Service

³ ONG Djamra

Issue : To demonstrate that religion must to be considered as an effective component in the prevention of HIV and the care of HIV infected people.

Project : An important project on "Aids and Religion" is developed in Senegal since 1988. The NALP has obtained the support of Moslem NGO and Christian NGO to facilitate the access and the engagement of religions leaders.

Two important meetings have been organised with 200 moslem leaders in March 1995 and with 150 Christian leaders in January 1996. Important documents and summary have been published (two on Islam and AIDS, one on Christianity and AIDS). These documents are now used in mosques and

churches.

Results : All the religion leaders are sensibilised and participated actively in the prevention of AIDS by promoting the sustainable changing behaviour and secondary prevention. They are also involved in the promotion of psychological and social component of care of HIV infected people. They argue their position by the Bible and the Koran. And now, a medium term programme is on going.

Lessons learned : The involvement of religion leaders in NACP of Senegal is an example to develop in religious countries, particularly in countries where religion constitutes a barrier in the fight against AIDS.

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Health-seeking behavior for STDs in Senegal : Findings of a targeted intervention research study.

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⁵ FHI/AIDSCAP, USA

Objectives : This study in Senegal used a targeted intervention research approach to assess community patterns in seeking care for STDs in order to improve STD Service delivery and prevention education.

Methods : Interviews to generate a free listing of STD terms were conducted with 253 community members (including community leaders, commercial sex workers, youth, housewives, female workers, heads of households). Thirty-eight in-depth interviews were conducted with key informants who had experienced previous STDs. Entrance and exit interviews were conducted with 108 patients (54 men and 54 women) presenting for STD treatment at family planning, antenatal and STD clinics. Twenty-eight health care workers were also interviewed.

Results : Despite differences in access to medical care there appear to be consistent patterns of behavior in seeking STD care. 65 % of informants reported using traditional healers to treat STDs. Informants also reported self-medicating, with traditional recipes and modern medicine and consulting informally with retired health professionals as well as pharmacists and itinerant drug sellers. Two-thirds of key informants acknowledged using two or more sources of treatment for the same illness. Factors that influenced choice of treatment source included the social construction of symptoms and illnesses (some were considered appropriate only for cure by traditional medicine, others only by modern medicine) ; the social prestige, availability and cultural sensitivity of health providers ; where the personnel come from, when they were available, and how much respect for confidentiality they showed ; and ability to pay for services.

Conclusions : The findings reveal several barriers to the utilization of current clinical services for STD care. The research findings can help improve effective service utilization by informing the design of clinical services (hours, arrangements that provide privacy, etc.), the content of training for health providers in STD case management, and the message about STDs designed for the community.

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Acceptability of female condom in Senegal

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² AIDS National Committee, MOH, Dakar Senegal

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Objectives :To assess the acceptability of the female condom in two cities in Senegal (Kolda and Kaolack) ; to analyze the negotiation process for use of the female condom and the impact of female condom in sexual relations between men and women.

Methods : 15 group discussions were conducted to gather base-line information and 10 recruit volunteers for the use of the female condom. The study population includes married women, adult women engaged in commercial sex work, young unmarried women, married and unmarried women. Forty-five female and five male volunteers were recruited and followed up over a period of 3 months in Kaolack and 6 months in Kolda. Each volunteer received 10 to 80 female condoms, monthly. Semi-structured interviews were conducted with each volunteer

Results : The female condom has been accepted by married women as the most acceptable contraceptive method with less fear for physical or moral consequences. In 2/3 of the responses the lubrication and the inner circle of the female condom was perceived as contributing to increased female sexual pleasure. Eighty percent of female responses acknowledge easier sexual negotiations for the use of the female condom. All female commercial sex workers (10) found the female condom to be more reliable and effective barrier against the transmission of STDs.

Conclusion : The female condom has been accepted as the most reliable method against unwanted pregnancies and the transmission of STDs. Its potential to increase sexual pleasure could promote wider acceptability and use, while also, empowering women in the sexual negotiation processes.

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Superinfection of HIV-2 infected pigtail macaques using two distinct isolates : identification of a window period for susceptibility

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Objective : To establish and study homotypic mixed infections with two phenotypically and genotypically distinct primary isolates of HIV-2 using an established animal modeling system for human retroviral infection.

Methods : Challenge stocks (~10² macaque infectious doses) for a high syncytia-forming isolate from Guinea-Bissau (HIV-2^{GB122}) and a highly cytolytic isolate from Côte-d'Ivoire HIV-2^{CDC618} consisting of infected cells and supernatant were generated by propagation on a heterologous macaque cell pool from consistent donors. Groups of two to four animals, previously infected with either HIV-2^{GB122} or HIV-2^{CDC618} were exposed to the other strain at 2, 4, 8, 12, 14, or 72 wks after primary inoculation. Two animals were also simultaneously exposed to both virus preparations. All macaques were monitored at 2-4 wk intervals for challenge virus by a sensitive, isolate-specific proviral PCR detection assay as well as tissue-culturing methodologies.

Results : Dual retroviral infections could be established by a simultaneous introduction of both heterologous field isolates. Superinfection was also possible, if viral challenge occurred at an early time interval after primary infection, but before a full seroconversion. Viral challenges at 8, 12, 14, or 72 wks post inoculation with the initial infecting strain failed to result in an overt mixed infection. Results of mock infections with activated macaque cells indicated that prior exposure to allotypic cell components did not prevent infection.

Conclusions : A window period for susceptibility to superinfection may exist which could have important implications for the efficacy of retroviral vaccines, especially for individuals who are at very

high risk for exposure to multiple viral strains. Our results also suggest that protection from human retroviral infection is possible, but may require host interactions with a replicative entity. Additional studies using this model should further enhance our understanding of both the observed susceptibility to and protection from superinfection.

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Survey on HIV-1 group O infection in 12 different African countries

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Objective : To determine to what extent HIV-1 group O strains are present in different African countries.

Materials and Methods : 11 985 sera from 12 different African countries were tested (Senegal, Mali, Togo, Burkina Faso, Niger Nigeria, Tchad, Cameroon, Gabon, Congo Burundi, Zambia). The sera were collected among AIDS patients, tuberculosis patients, pregnant women, blood donors, prostitutes and STD patients. All the sera were tested for group O antibodies with an improved ELISA using a combination of V3 peptides from ANT-70 and MVP-5180 (Research product, Innogenetics, Belgium). Sera reactive by Elisa were retested in a line immuno assay (LIA), in which different biotinylated V3 peptides (consensus, MAL, ANT-70, V1686, MVP-5180) were applied as a streptavidin complex in parallel lines on nylon strips (Research product, Innogenetics, Belgium). Samples reactive in Elisa were also retested on an inhouse Western blot for the presence of antibodies to gp120 of HIV-1 ant-70. Sera were considered as positive for HIV-1 group O antibodies if they reacted on LIA exclusively with group O peptides whether or not there was reaction on the ANT-70 WB, or when antibodies to group O and M peptides were revealed by LIA accompanied by reactivity with gp120 on ANT-70 WB. Samples reactive with group O and M peptides without reaction to gp120 on ANT-70 WB were considered as indeterminate for HIV group O antibodies.

Results : Among the 11 985 sera tested, 5 533 were HIV positive, 5 881 were HIV negative and 276 were HIV indeterminate. On the total amount of sera tested, 17 were positive for HIV-1 group O antibodies and 52 were indeterminate.

Sera considered as positive for group O were all previously identified as being HIV positive and were found in 7 of the 12 African countries tested (Senegal (1), Togo (1), Niger (2), Tchad (3), Gabon (2), Cameroon (7) and Nigeria (1)). Among the 52 group O indeterminate sera 51 were HIV positive and 1 was HIV indeterminate and they were identified in all the 12 countries included in this study.

Conclusions : The prevalence of HIV-1 group O viruses is very low (0.3% among HIV-1 positive sera) but is not restricted to Cameroon and neighbouring countries like Gabon and Nigeria and can also be found in West Africa.

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Detection and quantification of HIV-1 subtypes within large populations by serology, heteroduplex mobility assay (HMA) and sequencing

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Objective : To produce and validate an algorithm for the efficient subtyping of HIV-1 in diverse populations, and to apply the algorithm to study strain variation in incidence, transmission and natural history of HIV-1 subtypes.

Methods and Design : Serum from HIV-1 infected subjects from diverse locations were first screened by subtype specific V3 peptide ELISA. HMA was performed in order to validate the serological results (5 %) and in serologically non-reactive cases. VI-V5 *env* sequence analysis was performed when HMA gave negative or ambiguous results. HIV-1 subtypes were analysed by risk factors for infection and other epidemiological data.

Results : The specificity of peptide serology was established using 120 sera from genetically identified subjects from the WHO network representing subtypes A-E. The algorithm was then applied to large number of unknown subjects from The Gambia, Brazil and Russia. In The Gambia, we demonstrated that several HIV-1 subtypes including a recombinant HIV-1 strain exist (A, B, C, D, F, and C/G) ; that subtype A predominates, and is rising from 55 % in 1989 to 65 % in 1992. In Brazil, peptide serology has shown subtype C infection in intravenous drug users, whereas subtypes B and B' are prevalent among homosexual and bisexual men. In Russia, multiple HIV-1 subtypes (A, C, D, G, H) were evident in heterosexual men and women ; however, subtype B is associated with homosexual men and subtype G is prevalent among children who were infected by a nosocomial infection in the south of Russia.

Conclusions : The algorithm allows population-based screening to be undertaken so that epidemiological questions on the significance of genetic subtypes may be addressed ; it also enabled us to identify the new variants subtypes such as G and H (Russia) and C/G (The Gambia).

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A review of sexual behaviour change studies from Sub-Saharan Africa : What lessons can we learn for the future ?

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Issues : Public information campaigns about HIV have occurred in many sub-Saharan African countries with high HIV prevalence. While knowledge about HIV/AIDS has resulted in higher levels of awareness this has not generally been reflected in a consistent reduction of incidence of HIV.

Project : A review of 18 studies of condom use, levels of HIV/AIDS awareness and sexual behaviour change interventions in sub-Saharan Africa was conducted. The study particularly focused on identified barriers to sexual behaviour change.

Results : Most studies indicate that levels of knowledge about HIV transmission are high. Barriers to sexual behaviour change identified are negative attitude toward condom use, desire for children, lack of power to implement change, low socio-economic and educational status of women, perceived invulnerability attribution of HIV to witchcraft. Usually, prevention campaigns rely on information giving without equipping people with the practical skills to implement their new knowledge. Evaluation of HIV prevention campaigns is poor.

Lessons learned : Giving information about HIV does not necessarily help people to change their sexual behaviour. Interventions which incorporate negotiation skills have a greater chance of success. Effective evaluation of such campaigns is necessary in order not to repeat ineffective strategies.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 1, p. 196, Mo.D. 1831.

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Normal range of lymphocyte subsets in a Senegalese population

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Objectives : To establish a reference range of lymphocyte populations by gender and age in an healthy African population.

Methods : Study subjects (n= 114) were at least 18 years of age, but not more than 65, and in addition to other inclusion criteria, had no immunological abnormalities and no serious acute illness, malignancy or history of hospitalization in the previous 2 years. The tests were performed using B-FACScan to measure CD3, CD19, CD8 and NK cells. We also used the FACScout system to measure CD3, CD4 and CD8 cells, and the Coulter counter to measure CBC.

Results :

Cell Types	WBC	LYMPHS	CD19	CD3	CD4	CD8	NK
Percent	—	44.8+/-9.0	8.6+/-3.5	70.5+/-9.0	40.1+/-8.6	28.1+/-8.0	20.5+/-9.0
Cells/mm ³	5.8+/-1.5	2.6+/-0.6	0.2+/-0.1	1.8+/-0.5	1.0+/-0.4	0.7+/-0.3	0.5+/-0.2

The values of CD3, C4. and CD8 are similar using the FACscan and FACScout systems

Conclusion : CD4 cell counts are the most widely used markers of HIV infection. No previous studies have compared CD4 lymphocyte levels in healthy African populations with those of healthy western populations. This study demonstrates that except for NK cells, lymphocyte ranges are quite similar across populations.

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Traditional practices and HIV transmission in Senegal : the example of levirat and sororat.

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Issue : Traditional practices regarding sexual behaviour remain very common in Senegal. Despite the HIV epidemic, these practices still uptodate with a risk of HIV transmission.

Methods : In Africa, marriage constitutes an essential step in the life of nearly everyone. It consecrates the union of two partners of the opposite sex. The practice of *levirat* or wife inheritance, is a traditional form of alliance consisting of the remarriage of a widow to one of the brothers of her deceased husband, usually to his next youngest sibling. *Sororat* is an arranged marriage which aims to redefine a matrimonial alliance by marrying the younger sister of a deceased woman to her surviving husband. This study carried out at the Department of Infectious Diseases at the Dakar University Hospital poses the specific problem of HIV transmission in the family due to traditional socio-cultural marriage practices in Senegal such as *levirat* and *sororat*.

Results : 7 cases of *levirat* with an HIV-1 seropositive widow were collected from January 1991 to December 1995. Of the 7 cases, the 4 new husbands were tested after the collaboration of the wive and their informed consent. Despite the counseling, the 3 remaining HIV positive wives didn't give their consent for announcing the HIV seropositivity to their husband. Three of the tested new husbands were HIV positive, contaminated by their wives throught the *levirat* practice. All these new husbands didn't have any HIV risk factors before their wifes inheriting.

Conclusions : Aside from these practices, the very real problem which surfaces is that of the remarriage of a widow who is HIV positive. These issues highlight the difficulties of HIV prevention and counseling in Africa and the complexities of legal and ethical questions posed by the spread of HIV

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Market Women in Senegal : realities, risks and appropriate interventions

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³ Local Research Assistant

Objective : To determine the needs (AID/STD education) of women who work in market-places in two urban areas in Senegal and to design effective strategies to meet those needs.

Methods : This research had 2 components :

1) To determine the social and economic realities of women in marketplaces that put them at risk — realities that can be used as a basis for education strategies and
2) To conduct a knowledge, attitudes, and behaviors (KAB) needs assessment to further identify women's needs for education and the risks of infection different groups of women face. Four hundred and eighty three market women were interviewed and 8 focus group discussions were conducted over an 11-month period. Thirty men were also interviewed. A female Senegalese research assistant and I worked solely in Wolof, the dominant language of the regions. We worked to integrate ourselves into the marketplaces to develop rapport with the market women to foster honest/open responses.

Results : Market women have shared perspectives and experiences but are not a homogeneous population. They work in a least 3 different market systems, come from at least 15 different ethnic groups, fall into many socioeconomic strata, and belong to at least 22 different types of indigenous women's associations. There are also differences in risk for HIV infection among the subgroups of market women. At least 5 subgroups with higher risk for HIV infection were identified based on their economic activities with markets. All groups of market women share a lack of free time due to their economic and household responsibilities : they prioritize economic needs over health ones. They also tend to have good levels of knowledge about AIDS but do not internalize risks they have in their own lives.

Conclusions : Market women's greatest needs are for help in identifying and internalizing risks in their lives and empowerment to make and carry out decisions to protect themselves. The most effective and cost-efficient way to cause behavior change is to target specific subgroups that have particular risks, existing affinities, indigenous communication channels, and their own leadership structures. Interventions will be most effective if coupled with economic empowerment to alleviate situations placing these women at increased risk and to respond to their perceived needs.

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Sexual behaviour and HIV risk among University students from Portuguese speaking African countries

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Objective : Compare sexual behaviour and risky behaviours for HIV infection between Portuguese speaking African countries migrant students frequenting Portuguese universities, and Portuguese University students.

Methods : A self administered questionnaire was applied in 1996 to 3 000 University students in Lisbon Universities. Data analysis was performed stratifying four cohorts defined by birthplace (Portugal or Africa) and residence before University admission (Portugal or Africa). Statistical analysis was performed using Chi square significance, Fisher test and ANOVA, as appropriate.

Results :

Among males : African students (AS) initiated sexually earlier than Portuguese students (PS) ; more AS are sexually active than PS (98 % Vs 85.3 %) ; both groups have stable sexual partners (60 %) but fidelity among AS is lower (77.2 % Vs 52.9 %) ; perception of male fidelity is lower among AS (50 % Vs 79.7 %) ; condom use is equally frequent in both groups (30 % always, 20 % never) ; more AS ignore the past sexual life of their partners (46.3 % Vs 27.8 %) ; auto-reported prevalence of STD is higher among AS (25.5 % Vs 4.3 %) ; HIV testing is more frequent among AS (34.8 % Vs 15.7 %) ; no infection cases are reported but 52.4 % of AS Vs 26.5 % of PS do not know the result of performed tests.

Among females : AS initiated sexually earlier than PS (mean 15 Vs 17 years) : both groups have stable sexual partners (70 %), fidelity is equal in both groups (90 %) but perception of male fidelity is lower among AS (33 % Vs 80 %) ; condom use is less frequent in AS (7.1 % Vs 17.3 % always ; 34 % never) ; more AS ignore the past sexual life of their partners (40 % Vs 9.8 %) ; HIV testing is less frequent among females (6 % and 9 %) ; no infection cases are reported.

Conclusions : Gender and cultural differences lead to different patterns of sexual behaviour among University students. In spite of higher prevalences of infidelity and STD, African students protect themselves as seldom as Portuguese students. Specifically targeted information is needed to reach young population particularly those with African origins.

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7 years of sentinel surveillance of HIV-2 and HIV-1 infection : the use of an HIV-1 model to estimate the spread of the epidemic

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³ IHS, Dakar

Objectives : To use 7 years (1989-95) of sentinel surveillance data to establish projections for both viruses in a HIV-2 endemic area ; To give decision makers a tool to evaluate the future impact of HIV/AIDS and to plan preventive actions.

Methods : A meta-analysis on main epidemiologic findings was conducted and correction factors on gender ; HIV (% HIV-2 = HIV-1+0.2) and urban/rural (% R = 0.3 U) distribution were calculated. We modified a number of factors, including the progression rate from HIV to AIDS and the perinatal transmission rate from mother to children for HIV-2. This approach seemed most accurate in accounting for HIV-2 specificities.

Results : Seroprevalence varies from 0.5 % in Dakar to 1.6 % in Ziguinchor among pregnant women and from 16.4 % to 39 % among commercial female sex workers in the same locations. Our model suggests that from 1994 to 1998, the number of persons infected in the general population will increase by 162 %, AIDS cases by 185 % and deaths by 158 %. Our projections revealed a variation in seroprevalence from 0.13 % to 2.88 % in 5 years among adults (15-49 years). In 1997, 60 613 individuals will be infected by HIV.

Conclusions : Existing models of HIV-1 progression can be modified for use with HIV-2 if taking into account the natural history of this virus. Those data are helpful to build an efficient health information system and will allow decision makers to improve their understanding of the AIDS crisis and better

monitor the dynamics of the epidemics.

XI^e Conférence Internationale sur le Sida, Vancouver, 7-12 juillet 1996, Abstracts, t. 1, p. 154,
Mo.C. 1577.