

219

HIV / AIDS IN COSTA RICA: EPIDEMIOLOGICAL AND SOCIOLOGICAL FEATURES, 1993

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Abstract - Acquired immunodeficiency syndrome (AIDS) was first detected in Costa Rica in 1983. For four years most known cases were in hemophiliac men. Thereafter, AIDS in homosexual and bisexual men predominated. By December 31 of 1993, 563 persons had been diagnosed with the syndrome, 71% of them homosexual and bisexual men, 10% heterosexual men and women, 6% hemophiliacs, 2% intravenous drug abusers (IVDA's), 2% women and men who had blood transfusions, 1.4% infants born to HIV-infected mothers and 7% unknown. The epidemics in homosexual/bisexual men and in heterosexual women and men are rising; cases in infants and in persons who received blood or coagulation factors, are stagnant. The steady increase in AIDS among women is linked to exposure to bisexual partners. The moderate nature of the national epidemic reflects, in part, the low incidence of IVDA, the universal screening of blood donors for antibodies to the human immunodeficiency virus (HIV) since 1985, and the prompt banning of unsafe coagulation factors. The projection of AIDS for the year 2000 is 2,304 cases (606 accumulated incidence per million inhabitants). A national educational campaign, radio and television programs and other preventive actions, apparently did not influence the rate of receptive anal intercourse without condom (about 80%) during 9 years of the epidemic. Persons with HIV/AIDS often are deprived of social and medical benefits or are subjected to harassment and exploitation by the health sector. More efficient prevention must target children, adolescents and adults in reproductive age, to promote safer lifestyles, through education and counseling effected through primary health care.

Key words: AIDS, HIV, Costa Rica, homosexual, bisexual, hemophiliac, sex worker, receptive anal intercourse, tourism, AIDS projections, HIV / AIDS prevention

INTRODUCTION

Costa Rica is a nation of 3,268,000 people, located 10 degrees north of the Equator. With Cuba, Jamaica and Chile, it has the best health indicators in Latin America and the Caribbean (Mata and Rosero, 1988; Grant, 1994). In 1992, the infant mortality was 13.7 per thousand, the mortality in under-fives was 16 per thousand and the life expectancy at birth was 76. Diarrheal diseases and malnutrition have been brought under control (Mata, 1983). Almost all the population is provided with piped water supply, fecal waste disposal and social security

(Grant, 1994; Ministerio de Salud, 1994). AIDS was first diagnosed in 1983, in the wife of a hemophiliac and HIV antibodies were retrospectively detected in her in 1985. In mid 1985, 4 of the first 104 homosexual and bisexual men included in our studies were found with HIV antibodies (Mata and Ramírez, 1986). The AIDS epidemic probably is running its 15th year of evolution, accumulating 563 cases as of December 31, 1993. Until 1986, most cases had been in young hemophiliacs treated with unsafe Factors VIII and IX. Thereafter, the increase in cases was mainly in homosexual and bisexual men (Mata and Herrera,

1988). This study discusses the overall HIV/AIDS epidemic, the contribution of particular risks and behaviors and the advantages and drawbacks of control and prevention strategies as they apply to Costa Rica and probably to other countries with similar epidemics.

MATERIALS AND METHODS

National AIDS Casuistry

All the AIDS cases reported to the Ministry of Health were made available to us by the Office of Epidemiological Surveillance. Under reporting has been estimated at 10-15%. Age, sex, date of onset and date of diagnosis of the syndrome, risk factor and place of residence, were recorded for most cases (Marranghello, 1994).

Studies of homosexual / bisexual Men

We studied 1063 men who stated that they were homosexual or bisexual, as follows: 878 "gays" (see below), 112 sex workers and 73 inmates of the main prison ("La Reforma"). All subjects were volunteers, free to withdraw from the study at any time. In view of the nature of the investigation, some data could not be obtained. For instance, age was known for 979 men (92.1%); information on onset of first homosexual experience was known for 525 (49.4%) and data on receptive anal sex without condom was available for 438 men (41.2%). After obtaining informed consent, we had a confidential interview of 30 to 60 min. duration with each man, before testing for HIV-antibody and upon delivery of the test result. Homosexual/bisexual men were interviewed at the University, sex workers generally at their working places and prisoners at La Reforma.

HIV-testing was done with the passive particle agglutination test (Fugirebio, Tokyo) or the enzyme-linked-immunosorbent assay (Abbott Lab., West Germany). Reactive individuals in the screening were confirmed by Western blot (Dupont, Wilmington, DE; Organon Teknika, Durham, NC). All data were coded, filed on hard disks and handled confidentially. HIV tests, counseling and all other services were provided free of charge (Mata *et al.*, 1988b).

Homosexual / bisexual Population

Estimates of the size of the male and female homosexual populations in Costa Rica were calculated by applying the rates of homosexuality in the United States (Michael *et al.*, 1994) to the Costa Rican 18 to 60 years old population, interpolated from the "Latin America Population Projections" (CELADE, 1993). Such rates are 4% for women and 5% for men.

AIDS Incidence by sexual Preference

Accumulated incidences of AIDS were calculated for homosexual/bisexual men, heterosexual men and women, and homosexual women. To illustrate, the specific incidence in homosexual/bisexual men was obtained by dividing the number of AIDS cases in these men, by the estimated number of homosexual males, as described above, per million. The same procedure was used to calculate other specific rates.

AIDS Projections for 1994-2000

The evolution of the epidemic was estimated by fitting the cases of AIDS to the quadratic equation:

$$y = a + b(x) + cx^2$$

where y is the number of cases; a : the intercept; b : the coefficient of linear x ; x : time and c : the coefficient of x^2 . The population estimate for the year 2000 is 3,797,737 (CELADE, 1993).

AIDS incidence in the Americas

The accumulated incidence for 1992, for each country and territory, were calculated by dividing the cases reported to the Pan American Health Organization (PAHO, 1994), by the population estimates of CELADE (1993). For small countries and territories, the populations were those referenced in the World Almanac (1994). Rates were per million.

RESULTS

AIDS Epidemic in Costa Rica

By December 31, 1993, there were 563 cases (172 accumulated incidence per million) categorized by risk (Table 1) as follows: 400 (71%) homosexual/bisexual men; 56 (9.9%) heterosexual women and men; 36 (6.4%) hemophiliacs; 12 (2.1%) IVDA's;

Table 1 Yearly cases of AIDS to December 31, 1993, by risk, Costa Rica

Risk	83	84	85	86	87	88	89	90	91	92	93	Total
Homosexual Sex	0	0	3	6	19	40	41	54	64	89	84	400
Heterosexual Sex	0	0	0	1	0	3	5	4	9	15	19	56
Coagulation Factors	3	3	3	3	4	5	1	4	3	4	3	36
IVDA	0	0	0	0	0	1	1	4	2	0	4	12
Blood Transfusion	0	0	0	1	0	0	2	4	3	1	0	11
Perinatal Transmission	0	0	0	0	0	1	3	3	0	0	1	8
Unknown	0	0	0	0	1	2	2	4	4	8	19	40
Total	3	3	6	11	24	52	55	77	85	117	130	563

11 (1.9%) persons who received blood transfusions; 8 (1.4%) infants infected perinatally and 40 (7.1 %) unknowns. The accumulated cases built from table 1 (Fig. 1) show that the largest and fastest growing epidemic was in homosexual/bisexual men, followed by the epidemic in heterosexual men/women, which however, was considerably smaller. The number of cases in hemophiliacs, IVDA's, persons who received transfusions and infants, all remained stable or actually decreased (blood transfusion).

Typology and Behavior of homosexual/bisexual Men
 The typology (Fig. 2, Table 2) was derived from the interviews of 1047 of the 1063 homosexual/bisexual men. Eighty five per cent self-identified as of the "gay" type, which includes those "in the closet", referred to in this study as "cryptics". Cryptics had a reserved attitude towards stating their sexual preference, when compared to more open gays. Cryptics did not visit bars, discotheques, saunas and bath houses, as much as open gays did. Otherwise,

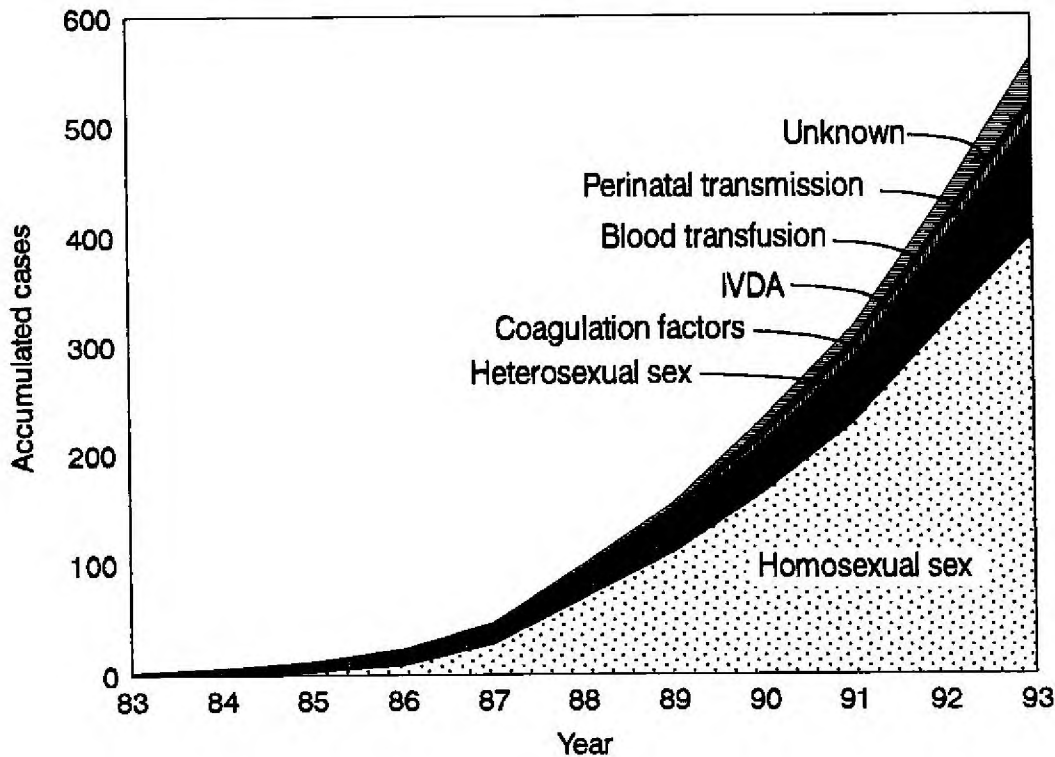


Fig. 1 Accumulated cases of AIDS in Costa Rica, by Risk, 1983-1993.

Table 2 Numbers and age distribution, 1047 homosexual men, three types, Costa Rica

Type	Age in Years				Total
	15-24	25-34	35-44	45-74	
Gay	375 (43.1)*	396 (45.5)	76 (8.7)	23 (2.6)	870
Sex Worker	57 (52.3)	41 (37.6)	10 (9.2)	1 (0.9)	109
Prisoner	31 (45.6)	29 (42.6)	7 (10.3)	1 (1.4)	68

*Number of men (% that type, that age)

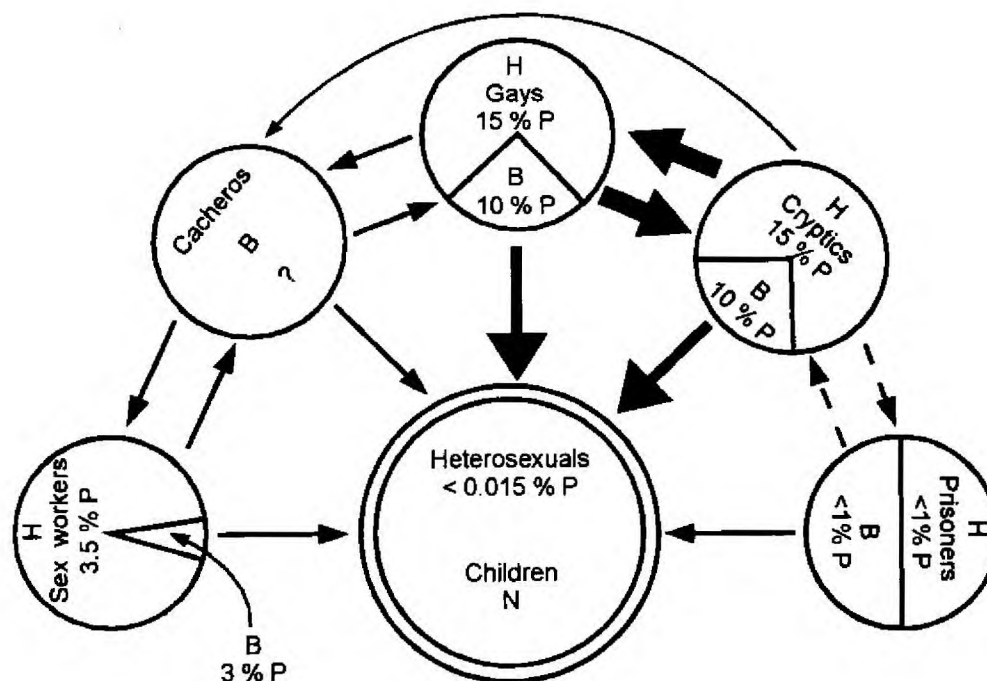


Fig. 2 Typology, 1063 homosexual men, Costa Rica, 1993. H: exclusive homosexual; B: bisexual; P: HIV-positive; N: HIV-negative; ?: unknown HIV prevalence. Arrows show the main direction of infection: — = proven, - - = presumed, outside the prison.

the sexual behavior and socio-economic factors of both groups were similar, and therefore they were merged for tabulation. Two additional types were studied, namely, sex workers (predominantly transvestites) and prisoners. Other existing types were not represented in our study: clients of the sex workers ("cacheros") and pimps ("chulos") who also function as sex workers serving foreigners in hotels, beaches and other tourist environments. As will be described, a proportion of the men self-identified as gay, sex worker, cachero or chulo, exhibited bisexual behavior.

About 90% of the men were under 35 years of age (Table 2). Gays were mostly from the upper and middle social strata, and were employed or studying and some had travelled widely. Sex workers and their clients (cacheros) mostly belonged to the low social classes. Prisoners and chulos generally were of the middle and low social strata. These findings expand pre-liminary information gathered at an earlier stage of the study (Mata and Ramírez, 1986; Mata *et al.*, 1988b).

Bisexuality

A high frequency of bisexuality was found in all types, except for sex workers, most of whom were exclusively homosexual. Bisexual behavior was reported by 26% of the gays, 48% of the prisoners and 3.5% of the sex workers (Fig. 3). Many prisoners were "transient homosexuals", who returned to heterosexual behavior once freed from jail.

HIV Infection in homosexual Men

The prevalence of HIV infection was significantly greater in gays than in sex workers (Fig. 4). Gays 15-24 years old had an HIV seroprevalence of 11.7%, which increased to 26% in the 45+ year olds. In sex workers, HIV infection also correlated with age, increasing from 3.5% in 15-25 year olds, to 10% in the 35-44 years old men. The HIV infection rate was slightly higher in exclusively homosexual (15%) than in bisexual males (10.5%) (Table 3).

AIDS incidence in homosexual Populations

The "sexual preference-specific" incidence rates of

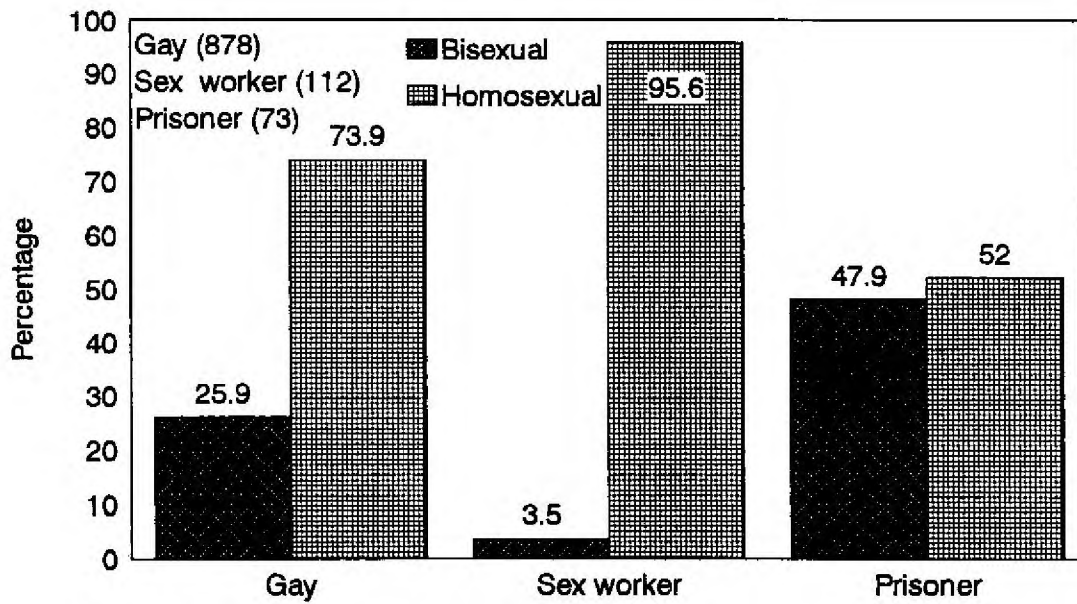
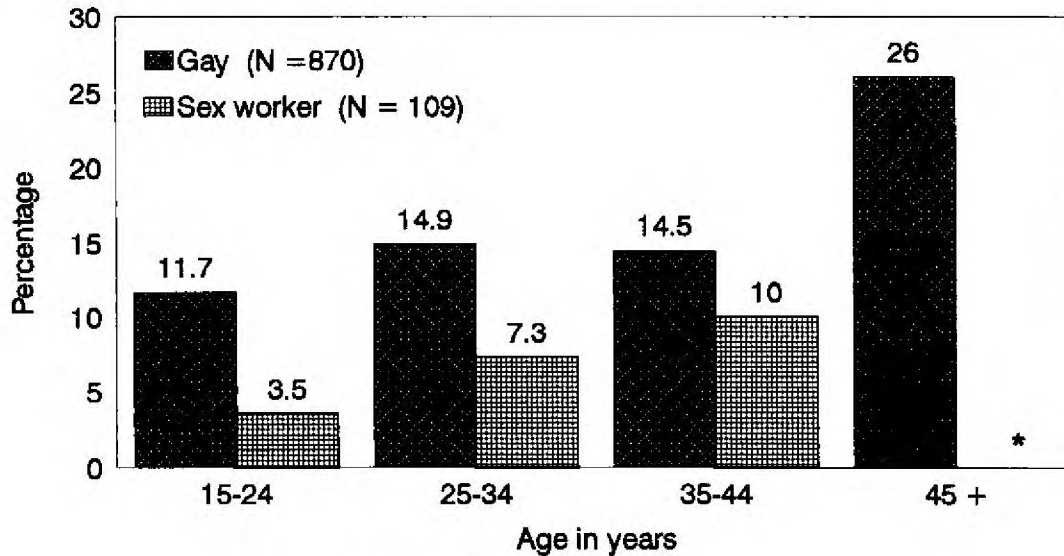


Fig. 3 Prevalence of bisexuality, 1063 homosexual men, Costa Rica



* Only one man in age group

Fig. 4 Prevalence of HIV+, 979 homosexual men, by type and age, Costa Rica

Table 3 Prevalence of HIV infection among 1063 homosexual men, Costa Rica

Sexual Preference and HIV Infection	Gay N= 878	Sex Worker N= 112	Prisoner N= 73
Exclusive Homosexuals	650	108	38
Number HIV+ (%)	98 (15.1)	5 (4.6)	0
Bisexuals	228	4	35
Number HIV+ (%)	24 (10.5)	1 (25)	0

AIDS (accumulated), were 9,156 cases per million homosexual men; 38.5 per million heterosexual men and 29.2 cases per million heterosexual women (Table 4). In other words, AIDS was 238 times more frequent in homosexual than in heterosexual men, and 314 times more frequent in homosexual men than in heterosexual women. The heterosexual male/female ratio was 1.31. No infections were known in lesbians.

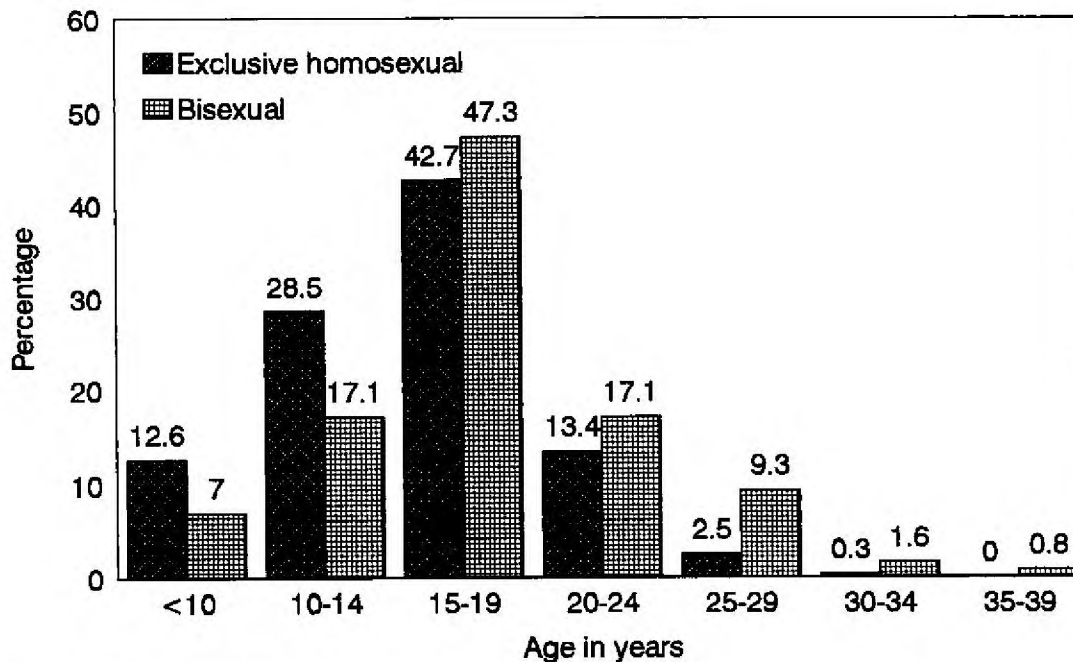


Fig. 5 Age at first homosexual experience, 525 men, Costa Rica

Table 4 Accumulated incidence of AIDS in populations with different risk, to December 31, 1993, Costa Rica

Population 18-60 Years old*	Estimated Population	Observed Cases	Rate per Million
Homo/bisexual Men	43,687	400	9,156.0
Heterosexual Men	830,048	32	38.5
Heterosexual Women	822,468	24	29.2
Homosexual Women	34,269	0	0

* Total population 18-60 years old, 1995: 873, 735 men; 856,737 women

Onset of homosexual Behavior

Seven per cent of the gays, 14% of the prisoners and 24% of the male sex workers had some homosexual experience before the age of 10 (Table 5). Exclusively homosexual men were exposed to homosexual behavior earlier than bisexual men, although the difference was not significant (Fig. 5). By age 20 years, 94% of the gays, 93% of the prisoners and 99% of the sex workers were active homosexuals.

Receptive anal Sex without Condom

After 8 years of education and information stressing

the risk carried by anal sex without condom, no change has been observed in the prevalence of such practice. For instance, 82% of homosexual/bisexual men, joining the study from July 1985 through June 1987, performed receptive anal sex without condom, compared with 80% in the period July 1991-June 1993 (Table 6). Furthermore, rates in 15-24 years old men were very similar to rates in 25-75 years olds, indicating that young men have not learned to protect themselves.

Table 5 Age at first homosexual experience, 525 men, Costa Rica

Age, Year	Accumulated Percentage		
	Gay	Prisoner	Sex Worker
<10	7.1	13.6	24.5
10-14	29.1	40.7	62.7
15-19	77.2	74.6	97
20-24	94.2	93.2	99
25-29	99.4	96.6	100
30-34	99.7	100	
35-39	100		

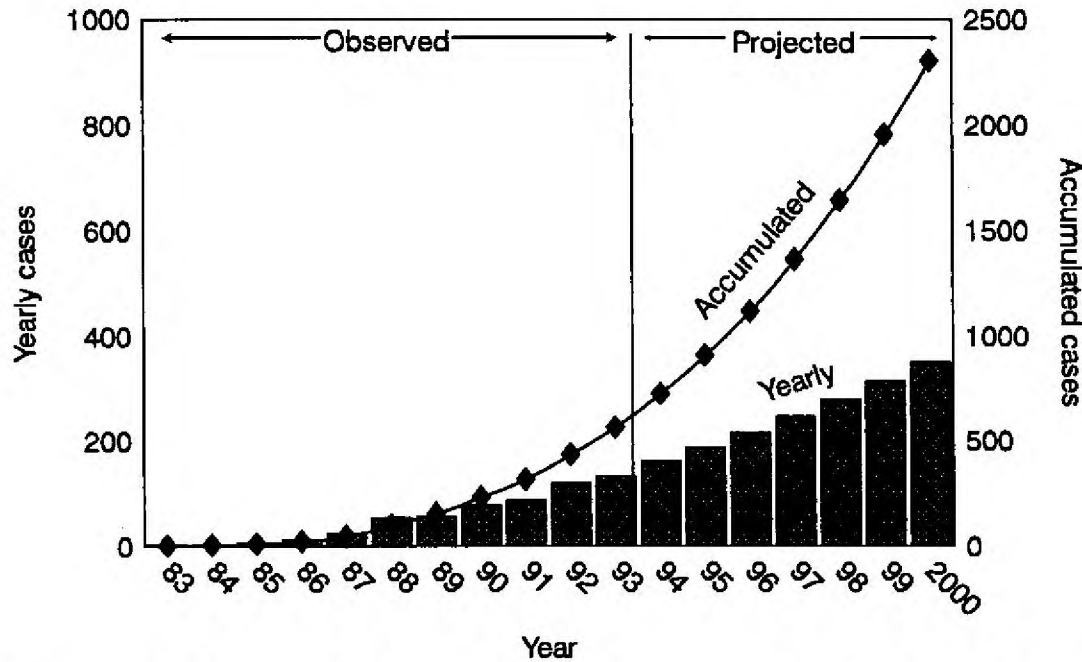


Fig. 6 Cases of AIDS in Costa Rica: observed (1984-1993) and projected (1994-2000). Left scale: yearly cases; right scale: yearly accumulated cases.

Table 6 Prevalence of receptive anal intercourse without condom, 438 men, Costa Rica

Period	Number	Age in Years (prevalence)		Total
		15-24	25-74	
July 85- June 87	106	33/40* (82)	54/66 (82)	87 (82)
July 87-June 89	155	58/70 (83)	77/85 (90)	135 (87)
July 89-June 91	71	27/33 (82)	30/38 (79)	57 (80)
July 91-June 93	106	41/48 (85)	44/58 (76)	85 (80)

* Men that had receptive anal intercourse without condom / Total men of that age; below (relative percentage)

AIDS Estimates for 1994-2000

Since the prevalence of anal sex without condom among persons with several partners is the same now as it was 8 years ago, the trend of the epidemic probably will not be substantially modified. The

AIDS projection for the year 2000 is 2,304 cases (606 per million), with a highly significant regression coefficient ($r = 0.99236$) (Fig. 6). The rate is similar to current rates in countries experiencing severe epidemics, like Trinidad/Tobago, Martinique, Guadeloupe, Cayman Islands and Haiti (Table 7).

DISCUSSION

The AIDS epidemic in Costa Rica is mild when compared to the rest of the nations in the Americas (see Table 7). Such favorable situation is accounted for by its low incidence of IVDA, universal HIV-screening of blood donors, and the fact that the epidemic started in homosexual men and not in heterosexuals. The improved hygiene and nutrition of the country is another possible contributor; Costa Rica has a wide range of coverage with health services (Mata and Rosero, 1988).

There have been no surveys in the general population to estimate the prevalence of HIV infection. In 1993, the prevalence of HIV-antibodies in Costa Rican blood donors ranged from 0.03% to 0.25%;

Table 7 Accumulated rate of AIDS per million, countries and territories of the Americas

Rate	Country / Territory
2001-4500:	Bahamas, Puerto Rico, Bermuda, French Guiana
1001-2000:	Turks/Caicos, Barbados, USA
501-1000:	Trinidad/Tobago, Angilla, Martinique, Guadeloupe, Cayman Islands, Haiti
251-500:	Honduras, Guyana, Belize, Saint Vincent/Grenadines, Saint Lucia, Virgin Islands, Surinam, Dominican Republic, Canada
101-250:	Brazil, Dominica, Panama, Jamaica, Costa Rica, Mexico, Venezuela, Colombia, Uruguay
8-100:	El Salvador, Argentina, Chile, Guatemala, Ecuador, Cuba, Paraguay, Nicaragua, Bolivia

donors are voluntary and unpaid (Costa Rican Social Security Bursar, unpublished). But an extrapolation of these prevalences to the general population is inadvisable, because many persons with risk behavior visit blood banks to secure free HIV-tests, probably magnifying the rate.

A previous AIDS projection using the quadratic equation for the considerably smaller casuistry reported before 1990, gave excellent results for the period 1990-1994 (Mata *et al.*, 1990). Using data to December 31, 1993, the projection for the year 2000 indicates 1,741 additional cases, to total 2,304 (606 accumulated incidence per million). Since 34% of HIV-seropositives progress to AIDS in 6-7 years (Lifson *et al.*, 1989), there must have been no more than 5,100 seropositives in 1993, to back our projections.

The estimates of homosexual populations in Costa Rica enabled calculation of rates of AIDS by sexual preference. These showed that the epidemic in homosexual/bisexual men was 238 times greater than in heterosexual men, and 314 times larger than in heterosexual women. No cases were reported for lesbian women, but some might have occurred from sexual exposure to bisexual men, to appear disguised as cases in heterosexual women.

About 10% of the homosexual men in our study were 35 years old or older, an aberrant distribution. It is possible that men older than 35 years did not join our study because they were "in the closet". But it is also possible that there was a lesser proclivity towards homosexuality some decades ago. Many of

the older homosexual and heterosexual men stated that 35 years ago, there were no transvestites, male sex workers, male brothels and organized gay groups in Costa Rica. The data showed a precocious sexual exposure of children and adolescents to homosexual behavior, generally effected by older men. This occurrence could be similar to experience among heterosexual children and adolescents. For instance, a study of university students showed that 32% of the girls and 13% of the boys had a history of sexual abuse in childhood (median age of onset of abuse, 7-8 years) (Krugman *et al.*, 1992). Sex of children with adults increases the risk of HIV.

Tourism increased dramatically in Costa Rica after 1987, prompted by its democracy, political stability, and biodiversity (Mata, 1983; Mata and Rosero, 1988). In 1993, 680,000 tourists visited our country (population = 3.2 million) (ICT, 1994). Nearly 40% of them were single men, many of whom likely engaged in sex with local men. Prostitution of young males, unheard of a few years ago, has now come to the public's attention. Further, Costa Rica has been considered a potential gay paradise (Itiel, 1993). As a result, infections originating in tourists may contribute significantly to the nation's AIDS burden (Mata, 1993). It should be noted that The Bahamas, Puerto Rico, Bermuda and French Guiana - all with massive tourism linked to advanced nations - have the highest AIDS incidence rates in the Americas.

Public health agencies should better address the persistence of risk behaviors of homosexual/bisexual

men and heterosexual men and women; the exposure of children and adolescents to sex with adults; and the risk of HIV infection from tourism. Of all these, risk behaviors of homosexual men, bisexual men and heterosexual men and women are the most relevant. In addition, women may get HIV from paid sex, IVDA and blood transfusion, the latter two uncommon in Costa Rica.

The highest HIV prevalence was in exclusively homosexual men, contrasting with a lower prevalence in bisexual men, because these share sexual time with women who for the most part are HIV-negative. On the other hand, the gays/cryptics had considerably higher HIV-prevalence than sex workers and prisoners. Male sex workers relate predominantly to *cacheros*, while they have minimal sexual contact with foreigners and gays who exhibited the higher rates of infection. Prevalence of HIV infection in *cacheros* probably is very low, because they practice active anal sex mainly with sex workers, and vaginal and anal sex with women, both of these groups with a low HIV infection rate. *Chulos* presumably have a higher infection rate, because they interact with foreigners and tourists.

Most HIV-infected women were discovered during routine medical examinations, blood donations or when a husband or sexual partner was suspected or diagnosed with HIV/AIDS (Marranghello, 1994). Most had not been concerned about being tested or being infected with HIV. On the other hand, only 17% of the sexually active women of Costa Rica use condoms regularly (Rosero, 1994). The lack of concern of women about becoming infected with HIV runs parallel with the widespread belief that AIDS does not readily infect and cause disease in women as it does in men. Such concepts were reiterated by certain physicians and journalists during television broadcasts in 1989-1993, with tolerance of the Ministry of Health.

A relatively high frequency of bisexuality was found in self-identified homosexuals, but we have found that this does not apply to self-identified heterosexual men (unpublished). Bisexuality accounts for most

of the transmission of HIV from the large homosexual pool to women who, as a group are mostly HIV-negative. The rare occurrence of HIV in women in the reproductive age (including sex workers) accounts for the low incidence of perinatal AIDS. But such perinatal infections probably will increase as more women get HIV-infected in the future.

Currently, the number of cases in hemophiliacs is stagnant, as a result of measures effected in mid 1985 to only authorize blood coagulation factors prepared from HIV-negative blood and heated to destroy the virus (Cordero *et al.*, 1988).

Human rights have not always been respected during the HIV/AIDS epidemic in Costa Rica. In a leading hospital, staff refuse to examine the blood of persons known or suspected of being HIV-positive. The Costa Rican Social Security Bursar does not purchase zidovudine, while it acquires only some of the drugs for opportunistic infections. In most hospitals, patients are subjected to discrimination, neglect, crowding and inadequate care. Appropriate counseling and confidentiality are not guaranteed. In many places, a negative HIV test is required for employment. Life insurance is denied to HIV infected persons. Commercial exploitation by health professionals has occurred, taking advantage of the fear, hypochondria and stigma associated with HIV/AIDS.

When the syndrome was officially recognized in 1985, the reaction was overt homophobia and intolerance. In Costa Rica an educational campaign began in 1987, similar to that of England (Mata *et al.*, 1988a). The British pamphlet "AIDS: Don't Die of Ignorance" was translated into Spanish, and more than 500,000 copies were distributed among the 2.5 million population. Seminars, lectures and forums with health authorities were broadcasted by radio and television. Brochures on safe-sex and the "double-condom technique" (for greater safety and sensitivity) were distributed in environments frequented by persons with greater risks. The emphasis was on "safe sex" and on "super safe sex", this being the monogamous relation of two healthy partners without allusion to gender.

This program was substituted in 1989-1990 by an intense promotion of condoms by radio and television. The main distributor of condoms reported annual increases in sales from 0.5 million in 1985-1986 (pre-campaign) to 1.8 million in 1988 (the peak of the first campaign) and 5 million in 1993-1994 (four years after the second program) (PROFAMILIA, 1994). However, this supply was insufficient to provide for the sexually active population. In the last 4 years, the Government and feminist groups have told women that they are being infected by men, ignoring the fact that heterosexual men also are being infected by women, especially through paid sex. HIV-infected female sex workers continue having sex, more often than not, without the use of condoms.

No evaluation of the educational efforts has been made. Surveys of opinion, knowledge, attitudes and practices performed by independent workers, showed a relatively good level of correct information in the general population with regard to origin, prevention and control of HIV/AIDS (Madrigal, 1988; Madrigal and Shifter, 1990; Poltronieri and Piza, 1989; Tashima *et al.*, 1988). There is no evidence of a significant change in risk behavior of sexually active men and women in general, especially regarding anal and vaginal sex without condom. For instance, the annual incidence of unwed mothers is 38% (Mata and Rosero, 1988).

HIV/AIDS is a good example of a neglected area of research in less developed countries (LDC's) - where most of the HIV/AIDS problem exists. Foreign agencies and international organizations have channeled most funds to industrialized nations. The considerably smaller resources destined to LDC's, have gone to governments and not to qualified scientists. In the last few years, Europe has supported non-governmental organizations (NGO's), yet still excluded scientists; there continue to be inadequate support for the behavioral, educational, sociological and economic research needed to tackle sex education, health promotion, medical care and human rights.

Government, universities, NGO's and other entities should develop strategies targeting homosexual/bisexual men and other affected groups, as well as children, adolescents and young adults with the ultimate aim of promoting safer lifestyles, diagnosis, counseling, and human rights, all within the framework of primary health care.

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Continued from the outside back cover

- M.A. VAZQUEZ-PADUA, N. MAYOL and M. LÓPEZ S113 Uptake and distribution of 2',3'-dideoxyinosine and its derivatives in a human monocytoïd cell line
- Y. YAMAMURA, N. RODRIGUEZ, A. SCHWARTZ, E. EYLAR, B. BAGWELL and N. YANO S121 A new flow cytometric method for quantitative assessment of lymphocyte mitogenic potentials
- Y. YAMAMURA, N. RODRIGUEZ, A. SCHWARTZ, E. EYLAR and N. YANO S133 Anti-CD4 cytotoxic T lymphocyte (CTL) activity in HIV⁺ patients: Flow cytometric analysis
- R. YANAGIHARA, N. SAITOU, V.R. NERURKAR, K.-J. SONG, I. BASTIAN, G. FRANCHINI and D.C. GAJDUSEK S145 Molecular phylogeny and dissemination of human T-cell lymphotropic virus type 1 viewed within the context of primate evolution and human migration

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CELLULAR AND MOLECULAR BIOLOGY™

Volume 41, Supplement I

1995

Contents

- | | | |
|---|------|--|
| R.F. OCHILLO | Si | Preface |
| S.A. MCNAIRY | Siii | Message from the director of the RCMi program |
| M.I. BALAGOPALA, A.P. OLLAPALLY and H.J. LEE | S1 | Synthesis and anti-HIV activity of steroidal prodrugs of 3'-azido-3'deoxythymidine (AZT) |
| V. BALOGH-NAIR, C.E. BRATHWAITE, C.X. CHEN and J. VARGAS JR. | S9 | Synthesis, activity and toxicity of novel macrocyclic ligands against HIV-1 in Jurkat and CEM-SS cell lines |
| M.A. ENIGBOKAN, D. WEST, J. PRESTON and J.O. THOMPSON | S15 | Calmodulin inhibitors and calcium channel blockers influence dideoxycytidine renal excretion |
| A. ESFANDIARI, W.C. JORDAN and C.P. BROWN | S19 | Prevalence of enteric parasitic infection among HIV-infected attendees of an inner city AIDS clinic |
| E.H. EYLAR, I. BAEZ, A. VÁZQUEZ, S.L. COLÓN-MARTÍNEZ and Y. YAMAMURA | S25 | Suppressed proliferative response and interleukin-2 production in Hispanic HIV+ and AIDS T-cell subsets |
| E.H. EYLAR, I. BAEZ, A. VÁZQUEZ and Y. YAMAMURA | S35 | N-acetylcysteine (NAC) enhances interleukin-2 but suppresses interleukin-4 secretion from normal and HIV+ CD4+ T-cells |
| E.N. KRAISELBURD and J.V. TORRES | S41 | Properties of virus-like particles produced by SIV-chronically infected human cell clones |
| L. MATA, G. RAMÍREZ and J. QUESADA | S53 | HIV/AIDS in Costa Rica: Epidemiological and sociological features, 1993 |
| E.G. MDURVWA, P.O. OGUNBIYI, P.G. REDDY, H.S. GAKOU, S.O. SODEKE and A.J. CARTY | S65 | Changes in serum antioxidant concentrations during infection with caprine lentivirus |
| A. PRAMANIK, M. MARTINEZ, J.F. Mc.KOY, R. OSPINA, J. DALY and C.W. MOORE | S73 | A mutant approach and molecular strategy to study fungal cell walls |
| J.P. RILEY, G.A. PESTANO, K. HAREWOOD, L.J. ALFRED, J. GUYDEN and W.M.O. BOTO | S83 | Distribution of linear antigenic epitopes on gp120 encoded in sibling clones of novel New York HIV-1 subtype B isolates |
| Z. RÍOS, E.O. RÍOS, M.I. GARCIA, C. DE LEÓN, L.M. GUZMAN, W. RODRIGUEZ, D. ROMERO and R. HUNTER | S93 | Changes in viral expression and cytokine profile induced by a polyantigenic immunomodulator in HIV-infected peripheral blood mononuclear cells |
| P. URSO, M.J. MAJEKODUNMI, J.R. COBB, T. LEMON, A.A. ETEMADI, T.M. JONES and Y.G. WIRSIY | S103 | Zidovudine as an immunomodulatory agent |

Continued on the inside back cover

Indexed/Abstracted in:

Current Contents, Index Medicus,
MEDLINE, BIOSIS Database, SUBIS,
PASCAL/CNRS Database, Cam. Sci. Abstr.,
CAB Inter., Chem. Abstr. Service, RIS in Reference Update

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