

ORIGINAL RESEARCH ARTICLE

# The emergence of AIDS in Guatemala: inpatient experience at the Hospital General San Juan de Dios

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**Summary:** Little is known about the effect of human immunodeficiency virus (HIV) infection on the Central American healthcare system. We describe HIV-related admissions in a Guatemalan medical service. The study was conducted at Guatemala City's largest public hospital. Data were derived from standardized data collection sheets maintained by the HIV testing service and by HIV clinic physicians. Data were collected for 295 medicine admissions of 257 HIV-infected adults during an 18-month period in 1999 and 2000; 30% of the patients were women. Average age was 33 years. Only 12.5% of the patients had been diagnosed with HIV infection prior to 1999 and nearly all had symptomatic AIDS. 60.3% of the patients were diagnosed with HIV infection during their hospitalization. The most common discharge diagnoses were tuberculosis (13.9%), toxoplasmosis, diarrhoea, candida and other fungal infections, and meningitis. Mean length of stay for HIV-positive patients was 17 days. 23.7% of the patients died during their hospitalization; this was double the mortality of non-HIV patients. HIV-infected patients represented 5.8% of the total admissions of the general medical wards. In a country where HIV prevalence is thought to be less than 1%, AIDS is now responsible for over 5% of admissions to a large medical service at a cost of \$500,000 per year. These findings underline the importance of HIV infection in Central America and demonstrate the utility of tracking hospital admission data as a method of surveillance.

**Keywords:** Guatemala, Central America, HIV/AIDS, inpatient cohort

## Introduction

Guatemala, Central America's most populous country, is considered a low prevalence country in the HIV pandemic. The Guatemalan Ministry of Health reported the first AIDS cases in 1984 and as of February 2001 a total of 4031 AIDS cases had been reported (3000 in males, 1031 in females). These statistics, however, may represent as much as a 60% under-count<sup>1,2</sup>. Little information is available regarding the epidemiology of the disease and the Ministry does not collect information on HIV infection (as opposed to AIDS). It is generally felt that the prevalence of HIV infection is about 0.5 to 2.0%<sup>1</sup>. The epidemic is thought to be concentrated in risk groups such as commercial sex

workers and their clients and males who have sex with males. However, individuals in these risk groups often maintain heterosexual relations with persons who have no identifiable risks, so that the utility of such risk stratification may be limited.

The impression that HIV was relatively less important in Guatemala contradicted our experience as clinicians working in one of Guatemala's two national hospitals. The AIDS epidemic often manifests itself first through an increase in hospital admissions<sup>3</sup>. Thus, we undertook a systematic survey of all medicine admissions at our institution.

## Methods

### Setting

The Hospital General San Juan de Dios (Hospital General) is an 809 bed national hospital serving as the tertiary referral centre for northern Guatemala. It is one of two national referral hospitals in

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Guatemala, the other is the Roosevelt Hospital, which services southern Guatemala.

The Hospital General provides obstetric, paediatric, surgical and emergency care. It has four medicine wards, two male and two female. Each ward contains 43 beds. Thirty-five of these beds are in large open rooms and the other eight are in four two-bedded rooms that have a door. The smaller rooms are described as 'isolation units' but are not equipped to provide either respiratory or contact isolation.

Outpatient HIV care is provided at the Clínica Familiar Luis Angel Garcia. The clinic is an HIV specialty clinic funded almost entirely by private sources and run by the Asociación de Salud Integral (ASI), a Guatemalan non-governmental organization. In 2000 the clinic performed 2979 HIV tests of which 18% were positive. There were 4400 outpatient visits to the clinic. Clinic physicians provide consultative service to inpatients on the medical, paediatric and surgical services.

### Patients

We studied all HIV-infected adults admitted to the Medical Wards of the Hospital General from April 1, 1999 to October 31, 2000. Patients were identified in several ways. The clinic physicians directly admitted some of these patients. The majority, however, were identified as being at risk by medical housestaff and subsequently referred for HIV testing which was performed by clinic personnel. HIV infection was defined as a two positive enzyme-linked immunosorbent assays. In indeterminate cases a Western blot was used. Six patients were also included in the study who were diagnosed at other facilities: the IGSS (Guatemalan Social Security Institute), Roosevelt Hospital, Inderma, and Aprofam. Discharge books maintained on the floors by ward nurses were reviewed monthly for evidence of HIV-infected patients who might not have been identified. In some cases the hospital discharge books identified patients as having 'HIV', but unless the clinic physicians confirmed this, these patients were excluded from the study.

### Data sources

The HIV counsellors as part of their HIV testing procedure collected data on demographics. Data on clinical outcomes were collected from standardized sheets maintained by the clinicians during the course of their rounds. If a patient had been discharged prior to clinic staff being aware of the admission, the medical record was reviewed. Each patient was assigned up to three admission diagnoses and three discharge diagnoses.

Ward nurses maintained discharge books in which each discharge or death was noted along with name, medical record number, diagnosis and limited

demographic data. To examine the role of HIV on the medical services, we extracted the following data from the discharge books: the total number of discharges (HIV and non-HIV) per month and total number of deaths (HIV and non-HIV) per month. The discharge books were all kept by hand and some of the data were missing or illegible.

### Analysis

The database was maintained in EpiInfo and analysed by STATA 2000.

## Results

### Patients

We examined 295 admissions of 257 HIV-positive patients. Table 1 presents basic demographic data on the patients and Table 2 shows their risk factors. Figure 1 presents the age distribution of the patients. One hundred and fifty-four of 257 (60.3%) of the patients were diagnosed in the course of their hospitalization. Thirty-two of 257 (12.5%) of the patients had been diagnosed with HIV infection prior to 1999. Virtually all patients had symptomatic AIDS.

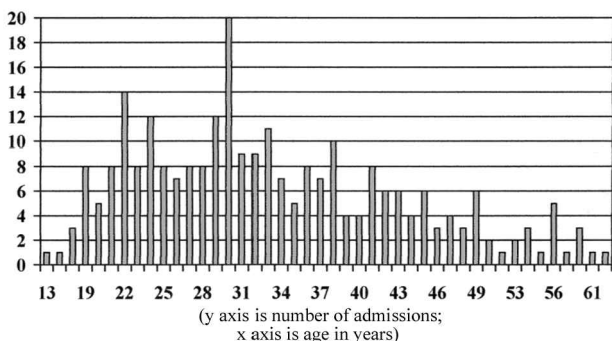
**Table 1** Demographic data

Characteristic	All patients	Female patients	Male patients
Number	257	78	179
Age (s.d.)	33.4 (10.4)	33.2	33.5
Pregnant	8	8	
Civil status			
Single	133	32	101
Married	42	11	31
Common-law relationship	54	20	34
Widowed	1	0	1
Other	22	15	7
Unknown	6	1	5
Children			
Patients with no children	100	10	90
Average number of children	3.5	3.4	3.5
Occupational status			
Salaried	33	9	24
Non-salaried	65	18	47
Unemployed	143	48	95
Other/unknown	4	0	4
Monthly income in quetzales (SD) (7 quetzales=1 US\$)	780 (851)	532 (435)	(870) (946)
Ethnic group			
Indian	96	32	64
Latino	157	46	111
Unknown	1	0	1
Highest grade completed			
No schooling	42	24	18
Primary	131	36	95
Secondary	27	10	27
Vocational school	22	5	17
University	9	0	9
Unknown	14	4	10

**Table 2.** Risk factor data

Risk factor	All patients	Females	Males
<b>Sexual preference</b>			
Heterosexual	209	76	133
Homosexual	16	0	16
Bisexual	19	0	19
Unknown	11	2	11
<b>Other risk factors</b>			
IV drug use	5	0	5
Partner IV drug use	6	1	5
Sexual partner HIV+	43	30	13
Client of sex workers	110	4	106
Sex worker	21	10	11
Received blood product	3	2	1
Health care worker	3	1	2
Military or police	4	0	4

IV = intravenous

**Figure 1.** Age distribution of HIV-infected patients

### Morbidity

Table 3 presents the 12 most common discharge diagnoses. The most common discharge diagnoses were tuberculosis (13.9% of admissions), toxoplasmosis, diarrhoea, candida and other fungal infections, and meningitis. The distribution of admission diagnoses was not substantially different (data not shown).

**Table 3.** Most common discharge diagnoses ( $n=295$  admissions)

	All patients	Females	Males	Length of stay	Deaths	Case fatality rate
Pulmonary tuberculosis	41	8	33	18.4	15	37
Toxoplasmosis	34	11	23	17.2	23	68
Diarrhoea of presumed infectious origin	31	11	20	12.9	16	52
Candidiasis	23	10	13	18.1	13	56
Other mycoses	21	4	17	16.2	6	29
Meningitis	18	7	11	17.6	18	100
Pneumonia, infectious	16	3	13	23.7	9	56
Infectious/parasitic disease	15	5	10	20.6	15	100
Ameobiasis	13	4	9	11.7	2	15
Histoplasmosis	11	3	8	15.8	5	45
Miliary tuberculosis	11	5	6	15.4	5	45
Tuberculosis, extrapulmonary	10	2	8	19.9	7	70

### Outcomes

There were 61 deaths in this cohort of 257 patients. The mortality rate for the 295 admissions was 23.7%, which was more than double the mortality for non-HIV admissions (464/4876, 9.5%). For the 231 admissions that resulted in a discharge, information on place of discharge was available for 227; 208 were discharged home, nine to another hospital and 10 to a hospice. Of the 208 patients sent home, a number did so in order to die, although we did not specifically collect data on this group.

### Role of HIV admissions on the medicine service

Average length of stay for HIV-positive patients was 17 days. Fifty-three of the 295 admissions (18.0%) involved one or more computerized tomography (CT) scans; a total of 79 CT scans were performed. Similarly, 53 of the 295 admissions involved a lumbar puncture and a total of 78 of these were performed: 54 endoscopies were performed in 42 admissions. The study population represented a total of 5027 days of admissions. Based on average 1995 hospitalization costs of 623 quetzales/day (approximately \$150/day), their hospitalization represented an expense of \$754,050 or roughly \$500,000 yearly.

The hospital did not maintain a list of admissions per ward. In order to evaluate the importance of HIV in the medicine services, we looked at discharges occurring during this 18-month period (Table 4). This represented a slightly different cohort of patients from the admissions group, since there were a number of patients admitted in March of 1999 who died in April of 1999. HIV-infected patients represented 5.8% of the total admissions of the general medical wards (301 of 5177 discharges).

### Discussion

The data presented in this paper are consistent with reports from the infectious disease service of

**Table 4.** Importance of HIV in the medicine service

	Wards	HIV	Non-HIV	Total
Discharges (includes deaths)	Female	112 (4.2%)	2605 (95.8%)	2717
	Male	189 (7.7%)	2271 (92.3%)	2460
	All wards	301 (5.8%)	4876 (94.2%)	5177
Deaths	Female	26	220	246
	Male	42	244	286
	All wards	68	464	532
Mortality rate	Female	23.2%	8.4%	
	Male	22.2%	10.7%	
	All wards	22.6%	9.5%	

the Roosevelt Hospital<sup>4</sup> and confirm that HIV infection is having a major impact on Guatemala's national hospitals. The data delineate the clinical manifestations of HIV infection as well as the frightening mortality associated with the disease. Like other countries AIDS patients in Guatemala tend to be young, economically active adults, stricken by pulmonary disease (primarily tuberculosis [TB]), neurological disease (toxoplasmosis, cryptococcal meningitis and presumably tuberculous meningitis) and gastrointestinal disease (diarrhoea).

Several factors may have led to an undercounting of HIV-infected medicine patients. We documented the HIV status only of those patients, a minority of medicine admissions, who were tested for HIV; we think it certain that additional HIV patients were present in the service but went without being diagnosed. Additionally, physicians in the clinic were often not informed of HIV admissions and review of the discharge books and hospital record was, unfortunately, inadequate to provide much needed information. Finally, our data are restricted to the medical service and do not reflect the impact of HIV on paediatric, obstetrical or surgical services.

Despite these limitations our study has important implications for Central American hospitals. These hospitals need to be equipped with functioning HIV and TB diagnostic services. There is an urgent need for isolation rooms and updated TB protocols in places (such as the Hospital General) where they do not exist. Open wards place both patients and healthcare personnel at risk for multi-drug resistant tuberculosis<sup>5</sup>. Regrettably, one of the nurses involved in the clinic's HIV testing programme developed active TB, presumably from exposure to a patient. Protective measures, however, must occur in a context that de-stigmatizes HIV infection.

Our study demonstrates the utility of tracking hospital inpatient data as an inexpensive way to assess the impact of HIV in what is thought to be a low prevalence area. Given the long period of asymptomatic HIV infection, our study probably represents a picture of the epidemic ten years ago. There is no reason to believe that HIV incidence

has decreased since 1990 so that experience in 1999 provides a frightening warning of what is likely to occur in 2009. As in the past, data obtained in the hospital wards can serve as an advance warning of future trends<sup>6</sup>.

The high mortality and high costs of HIV infection also provide a public health rationale for highly active antiretroviral therapy. It is certainly no coincidence that the provision of cost-effective antiretroviral therapy has become an important political question not only in Guatemala<sup>7</sup>, but throughout the developing world<sup>8</sup>.

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