European Journal of Internal Medicine 18 (2007) 400–404

EUROPEAN JOURNAL OF INTERNAL MEDICINE

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Original article

Economic evaluation of assistance to HIV patients in a Spanish hospital

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Received 22 May 2006; received in revised form 2 November 2006; accepted 15 December 2006

Abstract

Background: Little is known about the global effects of HAART on the use of medical resources after the complete implementation of this therapy in Spain. This study was designed to determine the use of medical resources and the costs of health care for HIV-infected patients.
Methods: All patients with HIV infection who came to our institution during the year 2002 were included in the study. We analyzed the global assistance data and pharmaceutical costs during the year. Costs were calculated based on a unitary cost for DRG and an officially assigned standard cost for outpatient clinic, visits to the day care unit and to the emergency room (ER), outpatient surgery, and total costs of pharmacy.
Results: The total cost for HIV-related health care assistance was €739,048. The cost related to admissions was €150,766.60; €8631 per first visit and €49,199.40 per successive visit; €5085.10 per day care unit; €14,920 per outpatient surgery; €7655.70 per ER visit; and €491,342.40 per antiretroviral treatment. A significant proportion of the total outpatient assistance was given by physicians other than HIV specialists, namely, 63% of the costs attributed to the first visit and 41% per successive visit.
Conclusion: More than 50% of the costs of caring for HIV-infected patients are still attributed to antiretroviral therapy. Specialists other than infectious disease specialists provide a significant proportion of outpatient assistance. A method to control HIV costs is greatly needed.

Keywords: HIV; Costs; Economics; Health care

1. Introduction

Potent antiretroviral therapy reduces the incidence of opportunistic infections, but its cost is high, antiretroviral pharmacy costing approximately 6500 Euros (€) each year [1]. Recently, HAART has been considered to be more cost-effective than aortic-coronary bypass, hematopoietic stem cell transplantation for lymphoma, or chemotherapy for breast cancer [2].

In Spain, the direct costs of HIV health care have seldom been evaluated. Some authors have shown that HAART is associated with an increase in global costs for HIV patients with more than a 200 CD4/cm^3 count as compared with the pre-HAART period [3]. However, little is known about the global effects of HAART on the use of medical resources after the complete implementation of this therapy in our country.

To determine the use of medical resources and the current costs of medical care for HIV-infected patients, we

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doi:10.1016/j.ejim.2006.12.013

studied a cohort of HIV patients who came to our hospital during the year 2002.

2. Material and methods

The study was carried out in a recently opened (1999) urban secondary teaching hospital in Madrid with 300 beds. The hospital is a referral center and serves a population of about 220,000 inhabitants. All major medical and surgical subspecialties are available on both inpatient and outpatient bases, except for cardiac and thoracic surgery and neurosurgery. To provide care for patients with HIV infection, the hospital has an outpatient HIV clinic and an inpatient ward associated with internal medicine. Patients with HIV infection are admitted by the same physicians who provide medical care in the outpatient clinic, the same physicians who treat them during their hospitalization. Patients who come to the emergency room (ER) are examined by special physicians from the ER department; these same physicians also occasionally request that patients be admitted.

All patients with HIV infection who came to our institution during the year 2002 were included in the study. We analyzed all available data on the global use of health care resources and pharmaceutical costs during that year. Specifically, we evaluated the number of: outpatient visits (both scheduled and unscheduled), ER visits, visits to the day-care unit, outpatient surgeries, and admissions; the number and length of hospital stays were also determined. Clinical and assistance information are registered in an electronic patient record. For the purpose of this study, an episode was defined as any of the following: admission, outpatient visit, or ER visit. All admissions to the hospital for patients with HIV were included, regardless of the admitting diagnosis. The clinical diagnoses corresponding to hospital admissions were codified according to all patient diagnosis-related groups (AP-DRGs, version 14).

Outpatient visits were classified as first visit and successive visits. Other available outpatient resources were the day-care unit and outpatient surgery.

The Spanish health care system is open and free to the entire population. Reimbursement is based on assistance activity: each episode (hospital admission, ER attendance, outpatient visit, and other assistance costs) has a standardized, associated cost, according to the severity of the disease and the amount of time consumed.

For the hospitalization costs, a unitary cost for DRG was calculated from the standardized assigned cost per admission ("Hospital Complexity Unit"). The HCU is a specific Spanish measure of hospitalization cost regarding case mix. Case mix is a standard and international measure of the types of cases being treated by a particular health care provider that is intended to reflect the patients' different needs for resources. Case mix is generally established by estimating the relative frequency of various types of patients seen by the provider during a given time period, and it may be measured by such factors as diagnosis, severity of illness, utilization of services, and provider characteristics. The use of these measures allows comparison of performance and quality across organizations, practitioners, and communities.

The HCU is calculated using the means of the number, type, and severity of illness of the in-hospital admissions, and it is used for each hospital to allocate the cost of the admissions to the provider (Spanish Health Ministry or similar institution). Global HCU costs per year in 2002 were estimated to be €1492. These costs include the direct costs associated with patient care, such as physician fees, nursing care, laboratory and diagnostic testing, supplies, equipment, etc. ER visits that led to admissions were included in the hospitalization cost (HCU).

The cost of individual outpatient visits was calculated using the officially assigned standard costs published by the Spanish Ministry of Health in 2001. Outpatient visits scheduled but not performed were not considered. The costs of a first outpatient visit and successive visits were €67.43 and €40.46, respectively.

We performed an economic evaluation. In this study, only direct costs were included and the societal perspective was not considered.

We also considered the number of pharmacological treatments or transfusions administered in the day-care unit. The cost of each administration was estimated to be €145.29. An emergency visit was considered a visit to the ER department without admission, and the cost was calculated as €78.47.

Pharmacy cost was calculated by adding the unitary cost of each antiretroviral treatment dispensation every month. The annual cost was calculated as €6436.80 per patient.

The cost of laboratory tests (CD4 cell count, viral load determination by polymerase chain reaction, serology, and chemistry) was obtained from the standard rate.

3. Results

A total of 101 patients were included in the study. We did not exclude any patient. Their mean age was 36±10 years, and 68 were men. There were 61 intravenous drug users in the group, and 16 men who had had sex with other men; 15 patients were heterosexual, 11 of them women. Two percent of the patients came from Africa and 2% from the Americas.

Some 61% of the patients were co-infected with hepatitis C and 6% with hepatitis B. The median viral load was 49 copies/ml and the lymphocyte CD4 count was 418 (IQ range 262–612) cells/cm^3. As for antiviral treatment, 25% of the patients had not received any prior antiretroviral therapy, so 75% of the patients received antiretroviral treatment during the study period.

During this time, there were 43 admissions, with a case mix of 2.35. The most frequent DRGs were 710 (admissions of HIV patients with a major diagnosis related to major, multiple diagnoses without tuberculosis) and 714 (those with a related significant diagnosis). Three patients died. There were 47 new visits to the HIV outpatient clinic and 81 to