



# Caring for Veterans with HIV Disease

Fiscal Year 2002

Barbara R. Phillips, Ph.D.  
Larry A. Mole, Pharm.D.  
Lisa I. Backus, M.D., Ph.D.  
James P. Halloran, R.N., M.S.N., C.N.S.  
Sophia W. Chang, M.D., M.P.H.



Center for Quality Management in Public Health  
Public Health Strategic Health Care Group

Veterans Health Administration  
DEPARTMENT OF VETERANS AFFAIRS

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## GUIDE TO THIS REPORT

The purpose of this report is to characterize the VA National HIV population and their available care. Our goal is to provide information and advice to administrators, policymakers, and clinicians both inside and outside the VA Health Care System. The population views presented here are useful both for assessing how the system as a whole addresses our current population's needs and identifying markers for continued improvement in HIV care. Understanding the population being served is the first crucial step toward enhancing patient safety and quality of care.

This report is intended to address the concerns of a multifaceted audience. The main body of this report is directed toward a general audience with key information represented graphically in figures for clarity and ease of use. To meet the more specific needs of administrators and researchers, detailed information is included both in the tables associated with each chapter and in an appendix describing the measures used in this report.

Chapter 1 opens with a description of the VA Health Care System and the context in which HIV care is provided. Chapter 2 characterizes the overall HIV patient caseload both by region and by station. Chapter 3 depicts the demographic characteristics of veterans receiving care for HIV disease at the VA. Chapter 4 represents the outpatient and inpatient services received by our HIV-infected veterans, and Chapter 5 describes prescription practices and use throughout the system. Chapter 6 discusses previously presented results and describes steps towards improving care.



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# EXECUTIVE SUMMARY

The Department of Veterans Affairs (VA), through the Veterans Health Administration (VHA), is the single largest health care provider in the United States. The VA is also the Nation's largest single provider of care to those with human immunodeficiency virus (HIV) infection.

Since 1998, the VA has tracked the care provided to patients with HIV disease through the Immunology Case Registry (ICR), the source of most of the data for this report. Data for the ICR are drawn from the VA's electronic medical record system, which includes a broad range of information on clinical condition and health care utilization.

This report describes the national population of veterans with HIV disease in VA care. It is a key step toward describing who is being served, determining how the system as a whole is addressing population needs, and identifying systematic strengths and weaknesses. Armed with this knowledge, clinicians and researchers will be better able to improve patient safety and quality of care.

## NUMBER OF PATIENTS IN VA HIV CARE

The VA served 19,346 unique patients with HIV disease during the federal fiscal year 2002 (FY02). The size of the overall HIV caseload changed little between FY00 (the baseline year for this report) and FY02. In each of these fiscal years, slightly less than one-tenth of the patients served were new to VA care for HIV disease.

## DISTRIBUTION OF CARE

The regional distribution of veterans in VA care resembles that of the HIV/AIDS epidemic in the United States. Between FY00 and FY02, caseloads increased in stations in the southern and southwestern regions of the Nation. The largest numbers of HIV patients were served at VA stations in the traditional AIDS epicenters. However, over a third of VA stations provide care to a relatively small number of HIV patients. One of the challenges facing the VA is the provision of high-quality care throughout the system, regardless of the volume of HIV patients.

*Networks.* HIV care in FY02 was widely distributed over all 21 regional Veterans Integrated Service Networks (VISNs). The HIV patient caseload across VISNs ranged from about 200 to about 2,500 veterans, with higher numbers seen in networks that include epicenters of the HIV/AIDS epidemic. Nevertheless, HIV patients represent only a small fraction (0.1 to 1.2 percent) of the patient caseload of any network.

*Stations.* In FY02, all but 2 of the VA's 128 stations provided care for HIV disease (stations consist of a medical center, or centers, and associated satellite facilities). The great majority of HIV patients received care at stations serving larger caseloads of HIV patients. During FY02, 40 stations provided care to 80 percent of the VA HIV population, each caring for over 200 HIV patients. However, 46 stations (representing over a third of all VA stations) served fewer than 50 patients each.

## CHARACTERISTICS OF HIV PATIENTS

Veterans in VA care for HIV disease share some, but not all, of the demographic characteristics of the national HIV population.

*Race/Ethnicity.* As in the national HIV/AIDS epidemic, veterans with HIV disease are predominantly nonwhite. In FY02, almost half of the VA HIV population was black and about 8 percent was of Hispanic origin. Just over a third (almost 36 percent) of the VA HIV population was white.

*Sex.* Unlike the national HIV population (but like the general veteran population), HIV patients in VA care are overwhelmingly male. While women veterans are less than 3 percent of the veterans with HIV disease in VA care, they numbered almost 500 in FY02. The large number of veterans with HIV disease in VA care affords a real opportunity to isolate differences in care and outcomes that may be associated with patient demographic characteristics (age, racial/ethnic group, or sex can be studied).

*Age.* As a group, veterans with HIV disease in VA care are younger than the overall veteran population in VA care. In FY02, about 45 percent of all VA patients were 65 years of age or older, compared with about 5 percent of VA HIV patients. However, the cohort of patients in VA care for HIV disease is aging. For example, 44 percent of VA HIV patients were 50 years of age or older in FY02 compared with 36 percent in FY00.

*Advanced HIV Disease.* In this report, patients are identified as having advanced HIV disease based on their current immunologic condition (CD4 cell counts remaining below 200 cells/mm<sup>3</sup> during the fiscal year). In FY02, 19 percent of the HIV patients in VA care (3,195 patients) had advanced HIV disease. We observed a decrease in the percentage of patients with advanced HIV disease from 23 percent in FY00 to 19 percent in FY02. However, the apparent decrease must be interpreted with caution because an appreciable percentage of HIV patients (14 percent in FY02) are missing CD4 test result data.

*Known Mortality.* Based on ICR data, the known all-cause mortality rate in FY02 for patients with HIV disease in VA care was roughly 5 percent. This compares with a CDC estimate of a 4.3 percent death rate for persons with AIDS in 2001.

## SERVICE UTILIZATION

Once HIV patients are in VA care, we believe that they are accessing HIV expertise and that their care is being managed in the outpatient setting. Consistent with increased access to care by clinicians who specialize in HIV disease, outpatient care for HIV disease appears to have shifted toward care in infectious disease clinics. The reduction in the use of inpatient services is evidence of management of HIV disease in the outpatient setting.

## OUTPATIENT CARE

During FY02, the VA HIV population had over 290,000 outpatient encounters (based on VA primary clinic stops). The median was 6 encounters per recipient. The majority of primary encounters were provided in the three major VA service lines: medicine/primary care, mental health (which includes treatment of substance use disorders), and surgical services.



Over 92 percent of veterans with HIV disease received outpatient care in the medicine/primary care service line (nearly 139,000 encounters). Three-quarters of these visits were to infectious disease and primary care-medicine clinics. Patients with advanced HIV disease averaged almost twice as many medicine/primary care encounters as VA HIV patients generally (15.5 versus 7.8).

Reflecting the prevalence of mental illness and substance use disorders in the HIV population in the United States, just over a third of VA HIV patients received outpatient mental health services during FY02. By far the most common mental health encounters were for treatment of substance use disorders. Based on types of VA services used, it appears that veterans in VA care for HIV disease have higher rates of treatment for substance use disorders than the general VA population.

*Source of Primary Care.* Over 90 percent of veterans with HIV disease in VA care are seen in an outpatient setting in which they are likely to receive primary care. In FY02, almost half were seen in a VA-designated primary-care group clinic (usually in a primary care-medicine clinic). Over three-quarters were seen in an infectious disease clinic, a setting in which many patients with HIV disease receive primary care.

*Shift to Infectious Disease Clinics.* We observed a shift from FY00 to FY02 in the source of VA primary care for all HIV patients away from the primary-care group in favor of infectious disease clinics. The pattern also holds for those with advanced HIV disease.

## INPATIENT SERVICES

*Inpatient Stays.* During FY02, there were a total of 8,855 inpatient stays for patients with HIV disease in VA care. Slightly less than a quarter of all VA HIV patients had a stay compared with over 40 percent of patients with advanced HIV disease. The median length of stay in FY02 for all HIV patients was 5 days.

*Decrease in Use of Inpatient Services.* From FY00 to FY02, the use of inpatient services fell for VA patients with HIV disease. The number of inpatient stays decreased by 7 percent, which is consistent with the trend for the VA as a whole. The percentage of HIV patients with an inpatient stay dropped by about 5 percent; this decrease is concentrated among patients whose disease was not advanced. In addition, the median length of stay for all HIV patients dropped from 6 days to 5.

## PROVISION OF VITAL DRUG THERAPY

Antiretroviral therapy has transformed HIV disease from an imminently fatal illness to a chronic disease. Thus, access to antiretroviral treatment is a vital part of HIV care. All 18 Food and Drug Administration (FDA) approved antiretroviral medications are included on the VA's national formulary and available to veterans with HIV disease by prescription.

While our measures are crude, our results on receipt of drug therapy are consistent with the provision of standard-of-care treatment for HIV disease. The high rate of receipt of antiretroviral medications suggests that the VA is providing the great majority of HIV patients with access to vital antiretroviral therapy. Similarly, among patients with advanced HIV

disease, the high rate of receipt of drugs to prevent *Pneumocystis carinii* pneumonia (PCP) suggests that the VA is providing the great majority of such patients with guideline-recommended prophylaxis.

## ANTIRETROVIRAL THERAPY

*Patients on Therapy.* During FY02, 76 percent of all HIV patients in VA care (14,621 patients) received antiretroviral therapy (had at least one prescription for an antiretroviral medication). However, as reported for other HIV populations, VA HIV patients not on antiretroviral therapy were likely to be younger than those on therapy; they were also more likely to be female and more likely to be nonwhite. From FY00 to FY02, rates of antiretroviral use in the VA increased, both overall (from 71 to 76 percent) and for each of the major racial/ethnic groups.

*Types of Antiretroviral Therapy.* Antiretroviral drugs fall into three classes: nucleoside/nucleotide reverse transcriptase inhibitors (NRTI), non-nucleoside reverse transcriptase inhibitors (nNRTI), and protease inhibitors (PI). At least one product in the NRTI class was dispensed to 98 percent of those on antiretroviral therapy during the last quarter of FY02, with many patients receiving multiple NRTI products. At least one PI product was dispensed to about 55 percent of those on therapy during this quarter. One nNRTI product was dispensed to over 40 percent of those on therapy during this quarter.

*Antiretroviral Regimens.* The guidelines of the U.S. Department of Health and Human Services, which have been adopted by the VA, recommend initial antiretroviral regimens of at least three agents. Over 60 percent of the veterans on antiretroviral therapy during the last quarter of FY02 had regimens containing 1 of 11 three-agent groups. In general, these groups consist of two agents from the NRTI class (lamivudine and either zidovudine or stavudine) and an agent from either the PI class (nelfinavir, indinavir, or lopinavir/ritonavir) or the nNRTI class (efavirenz or nevirapine). No single three-agent group is common; only one was received by more than 10 percent of VA HIV patients.

*Change in Use of Classes and Products.* Between the last quarters of FY00 and FY02, the rate of NRTI use was unchanged, while the rate of PI use fell by almost 15 percent and that for nNRTI use increased by about 6 percent.

## PCP PROPHYLAXIS

One of the common opportunistic infections associated with HIV disease is *Pneumocystis carinii* pneumonia (PCP). PCP can be effectively prevented with drug prophylaxis, and guidelines recommend such prophylaxis for patients with advanced HIV disease. In both FY00 and FY02, almost 90 percent of VA patients with advanced HIV disease had a prescription for a recommended PCP prophylactic drug. Sulfamethoxazole/trimethoprim was prescribed for over 80 percent of them.

## FUTURE DIRECTIONS

The VA may provide a means to better understand effective treatment strategies for antiretroviral medication and PCP prophylaxis in a “real-world” setting (outside of a clinical trial). A better understanding of what regimens are actually taken and tolerated and their

associated outcomes (both short- and long-term) may prove to be helpful, not only for VA HIV patients and their health care providers but also for HIV patients overall.

## IMPROVING CARE

While study is necessary to improve understanding, study alone is not sufficient to improve care. The Center for Quality Management in Public Health (CQM) is also developing clinical tools to improve the quality of care. It has already developed “real-time” clinical tools to provide clinicians with reminders at the point of care. Over the next year, it will be developing tools that clinicians can apply to their local registry data to review, manage, and improve outcomes for HIV patients within their care. CQM is also leading HIV Care Collaboratives\* to hone and support local efforts to improve care quality. The goal is, after all, to provide the best care possible for each and every one of our veterans in VA care.



\*A “collaborative” is a structured way of improving health care services. It involves a series of meetings and other exchanges among medical professionals from several settings to share best practices and implement changes to improve quality.



## THE VA HEALTH CARE SYSTEM: CONTEXT OF HIV CARE

The health care system of the Department of Veterans Affairs (VA) plays a vital role in the provision of health care services to veterans and is the Nation's single largest health care provider to those with Human Immunodeficiency Virus (HIV) disease.

### DESCRIPTION OF OVERALL SYSTEM

The VA has the Nation's largest integrated health care system. At present, the system includes 163 hospitals, over 800 ambulatory care and community-based outpatient clinics, 135 nursing homes, 43 domiciliaries, and 206 counseling centers. (A domiciliary is a facility that provides rehabilitative and long-term health maintenance care for veterans who require minimal medical care.) During Federal fiscal year 2001 (FY01),\* the system served 4.1 million veterans, providing over 570 thousand inpatient stays and over 43 million outpatient visits.<sup>1</sup> Over the past 5 years, the VA has evolved from a hospital-based system into an outpatient-focused system. Today, more patients are using the VA, which provided care to 1 million more veterans in 2001 than in 1995.<sup>2</sup>

The VA health care system is organized into 21 regional administrative groupings known as Veterans Integrated Service Networks (VISNs) (see Figure 1, page 2). Federal funds to support health care services are distributed to these regional networks, each of which oversees the VA health care facilities in its region. The size of the geographical region covered by a network varies. For example, VISN 3 (NY/NJ Veterans Healthcare Network) includes VA facilities in the greater New York City area and southern New York State, while VISN 23 (formed recently by the merger of VISNs 13 and 14) includes all facilities in the states of Minnesota, North Dakota, South Dakota, Iowa, and Nebraska.<sup>3</sup> Within each VISN, hospitals and clinics are grouped into administrative units, called "stations." There are 128 stations in the VA health care system.

Unlike other Federal health programs (such as Medicaid and Medicare), the VA is a direct service provider rather than a health insurer or payer for health care services. The VA offers a standardized Medical Benefits Package that includes a full range of outpatient and inpatient services with an emphasis on preventive and primary care.<sup>4</sup> This package includes:

- Preventive services, including immunizations, screening tests, and health education and training classes
- Primary health care
- Diagnosis and treatment
- Home health care
- Respite (inpatient), hospice, and palliative care
- Urgent and emergent care
- Drugs and pharmaceuticals

\* The Federal fiscal year cycle is October through September, in this case, October 1, 2000 to September 30, 2001.



In addition, some veterans are eligible for the following VA services:

- Nursing home care
- Domiciliary care
- Adult day care
- Limited dental care

VA health care services are generally available to all enrolled, honorably discharged veterans of the U.S. Armed Forces. (To enroll, veterans must provide information about themselves so that their veteran status can be verified.) Priority is given to veterans receiving care for medical conditions or disabilities related to military service (i.e., “service-connected”) or who have low income, few assets, and no health insurance coverage. Therefore, for many veterans, the VA health care system acts as a “safety net” provider.

Copayments for care and medications are required for some veterans, including veterans whose conditions are not service-connected and whose income and assets are above specified thresholds. For example in 2002, the highest copayments were due from higher-income veterans receiving nonservice-connected care; their copayments for an outpatient prescription, primary care visit, and specialty care outpatient visit were \$7, \$15, and \$50, respectively. For each type of copayment, the maximum annual expense per veteran is capped. For example in 2002, the annual copayment expense for pharmacy copayments was capped at \$840 per veteran.

## ROLE OF VA IN HIV CARE AND RESEARCH

As the largest single health care provider in the United States, the VA is similarly the Nation’s largest single health care provider to those with HIV infection. Over 54,000 people with HIV and AIDS (Acquired Immunodeficiency Syndrome) have been treated at the VA since the disease was first recognized in 1981. During FY02, over 19,000 patients with HIV disease were treated at the VA.

The VA has long been at the forefront of HIV care. VA physicians were among the first to report the syndrome. Early in the HIV/AIDS epidemic, a panel of VA HIV experts was convened to develop clinical guidelines for care. In an effort to ensure wide dissemination of scientific information and support optimal care, the panel’s recommendations were distributed to VA clinicians as Information Letters. In 2000, the VA formally adopted as its standard of care the U.S. Department of Health and Human Services’ (DHHS) “Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents” and the U.S. Public Health Service and Infectious Disease Society of America’s “Guidelines for the Prevention of Opportunistic Infections in Persons with Human Immunodeficiency Virus.”<sup>5</sup> All antiretroviral medications approved by the U.S. Food and Drug Administration (FDA) are on VA’s national drug formulary and available to veterans by prescription.

Consistent with its commitment to HIV clinical care, the VA conducts a wide range of HIV-related research, from basic science to clinical trials to cost-effectiveness analyses. Current



collaborative VA HIV research projects include: (1) QUERI (Quality Enhancement Research Initiative) in HIV, which is focused on improving the translation of research into practice; (2) international OPTIMA (Options in Management with Antiretrovirals) study, which examines treatment strategies in patients whose drug regimens have failed; and (3) VACS (Veterans Aging Cohort Study), a multisite observational cohort study including veterans with and without HIV disease.

## THE IMMUNOLOGY CASE REGISTRY

In the early years of the HIV/AIDS epidemic, the VA began tracking the care provided to patients with HIV disease. This began with a national registry in 1983 and was formalized as the Immunology Case Registry (ICR) in 1992. Initially, the primary use of the registry was administrative. Registry data were used to identify facilities entitled to additional funds to support resource-consuming HIV care.

A national ICR database was developed following the implementation of the VA's electronic medical record system, one of the most sophisticated electronic medical records systems in full operation in the United States. This system maintains a broad range of information about health care, including appointments, notes/documentation of inpatient care and outpatient visits, consultations, prescriptions, and laboratory and other diagnostic test results.

The ICR consists of two components. The first component is composed of a local registry file housed at each VA station. An ICR Coordinator at each station maintains the local registry file using local software that also transmits certain records to the national database. In order to be included in the ICR, a patient must be identified locally as having HIV disease and then be entered onto the local registry file by the ICR Coordinator.

The second component of the ICR is the national database, which receives regular, automated updates from the electronic medical record system of each reporting station. The updates contain health care utilization and clinical information for patients on the registry. Due to the sensitive nature of HIV and medical record information, no direct patient identifiers are included in the national ICR. Patient-level data are accumulated on the ICR using encrypted numbers, which ensures the impossibility of identifying any individual from the national database alone.

The ICR is the source of most of the data on which we draw here. It provides a broad and rich foundation for this report.

## THE CENTER FOR QUALITY MANAGEMENT IN PUBLIC HEALTH

The Center for Quality Management in Public Health (CQM), formerly known as the Center for Quality Management in HIV, assumed responsibility for the administration and use of the ICR in 2000. As the first step toward making the ICR more clinically relevant, the CQM has focused to date on the validation and improvement of ICR data. This work included validation of the number of patients in the registry file of each station, enhancements to the software used to maintain the local registry file, and expansion of the types of electronic data sent to the national database (such as additional laboratory test results).



Stations have an incentive to ensure that patients with identified HIV infection are entered in the registry, as it is the source of information that qualifies stations for higher rates of reimbursement for HIV care. Also, the creation of the CQM and its work to improve the ICR apparently has spurred higher rates of patient inclusion.<sup>6</sup> However, it is likely that a small number of VA patients with diagnosed HIV infection have not been added to the ICR (as noted above, this is a manual process).

Over the past year, CQM staff has worked with local and national programmers to fill in “gaps” in the national database (including adding missing historical data), fix errors in local software, and transform the national ICR into a single relational database. This relational database supports timely analysis of available data, including ICD-9 diagnosis and procedure codes, laboratory test results, and prescription records.

Thanks to extensive work done by CQM staff to improve the national database, this report is more comprehensive than CQM’s report on veterans in VA care for HIV disease in FY00-01.<sup>7</sup>



## CHAPTER 1 NOTES

<sup>1</sup> Department of Veterans Affairs Fact Sheet: “VA Health Care and the Medical Benefits Package,” July 2002.

<sup>2</sup> VA Office of Policy and Planning, October 23, 2002.

<sup>3</sup> At the time of the writing of this report, VISN 23 had not yet been named.

<sup>4</sup> Based on Public Law 104-262, the Veteran’s Health Care Eligibility Reform Act of 1996.

<sup>5</sup> VA Policy Directive 2000-18.

<sup>6</sup> For example, “blips” of greater reporting have immediately followed CQM inquiries to the field to validate ICR census numbers. Reports from individual stations have also confirmed that some sites have occasionally had to “catch up” with a backlog of new patient entries to respond to a CQM request.

<sup>7</sup> See “Caring for Veterans with HIV Disease: Characteristics of Veterans in VA Care, Fiscal Years 2000-2001.” Center for Quality Management in Public Health, Public Health Strategic Health Care Group, Veterans Health Administration, Department of Veterans Affairs, December 2001. Because of the correction of errors and the addition of historical data, some of the statistics reported in that report are not directly comparable with those reported here.



# Chapter 2

## VETERANS WITH HIV DISEASE IN VA CARE: CASELOAD AND DISTRIBUTION

Each year, the VA health care system serves many thousands of veterans with HIV disease, caring for them in scores of facilities located across the Nation.

### NUMBERS OF VETERANS SERVED

In fiscal year 2002 (FY02), the VA served 19,346 patients with HIV disease. This count of patients served includes all patients in the Immunology Case Registry (ICR) receiving outpatient, inpatient, laboratory, radiology, or outpatient pharmacy services during the year. The number receiving care during FY02 was slightly less than the number in fiscal year 2000 (FY00), when 19,688 unique patients with HIV disease were served.<sup>1</sup> In other words, the VA's caseload of HIV patients decreased 1.7 percent between FY00 and FY02.<sup>2</sup>

In FY02, 1,857 HIV patients were newly entered in the ICR. These “new” patients represent slightly less than one-tenth (9.6 percent) of the 19,346 registry patients who received care that year. In FY00, new patients similarly represented about one-tenth of the total caseload. Many of the patients newly entered into the ICR had previously received VA care for other conditions. For example, over 40 percent of the patients newly entered into the registry in FY02 received VA care during FY01, and about a quarter of them received care during FY00. Patients should not be assumed to be newly diagnosed with HIV infection at the time of entry into the registry. They may have been diagnosed earlier at a non-VA facility or diagnosed at the VA, but not entered into the ICR in a timely fashion.

### REGIONAL DISTRIBUTION

As described in Chapter 1, the VA health care system is organized into 21 regional networks called VISNs. VISNs generally include several stations; the only exception is VISN 2 (VA Healthcare Network Upstate New York), which has a single reporting station. HIV care was widely distributed over all 21 VISNs during FY02 (see Table 1 for detailed information). The VISN with the smallest overall caseload (VISN 23) still had over 200 HIV patients in care.

Higher numbers of HIV patients were seen in VISNs that include epicenters of the HIV/AIDS epidemic. Indeed, each of eight VISNs provided care to over a thousand HIV patients. In descending order, starting with the VISN with the highest number of patients, these eight higher-volume VISNs are:

- 1 VA Sunshine Healthcare Network (VISN 8), which includes the Miami area
- 2 VA NY/NJ Veterans Healthcare Network (VISN 3), which includes the New York metropolitan area
- 3 The Atlanta Network (VISN 7), which includes all of Alabama, Georgia, and South Carolina
- 4 South Central VA Healthcare Network (VISN 16), which includes the Houston area

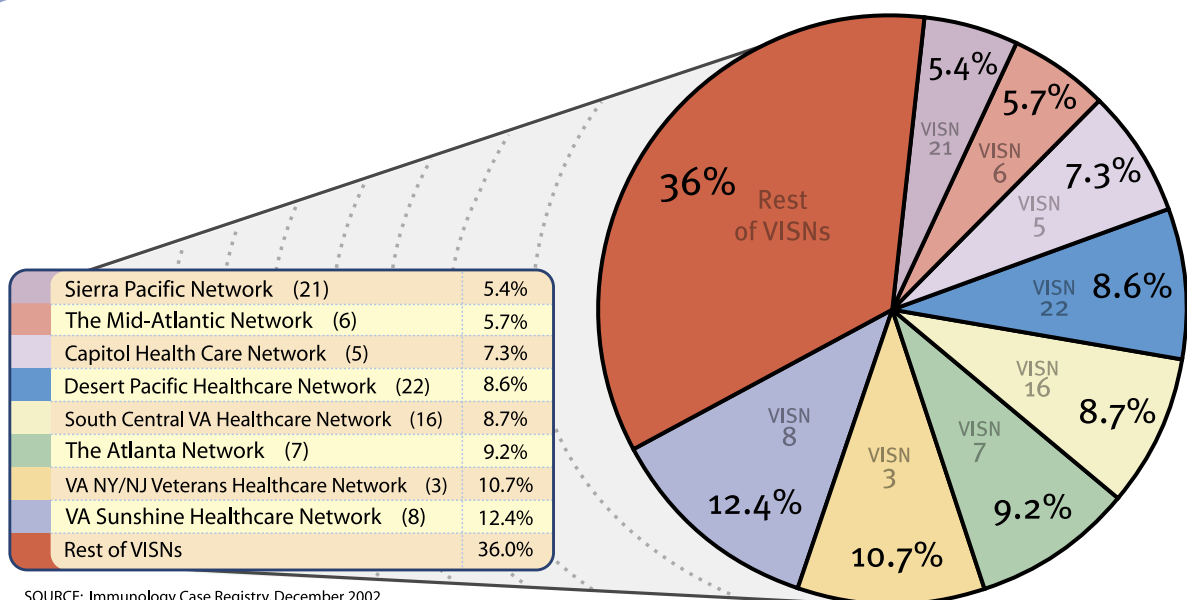
*(continued on page 8)*

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- 5 Desert Pacific Healthcare Network (VISN 22), which includes the Los Angeles and San Diego areas
- 6 Capitol Health Care Network (VISN 5), which includes the Washington, DC area
- 7 The Mid-Atlantic Network (VISN 6), which includes all of North Carolina and Virginia
- 8 Sierra Pacific Network (VISN 21), which includes San Francisco and the Bay Area

As Figure 2 illustrates, the first five of these eight VISNs provided care to almost half of the entire VA HIV population. Together, all eight of these VISNs provided care to almost two-thirds of the entire VA HIV population.

**FIGURE 2** Distribution of HIV Care by VISN, Fiscal Year 2002



SOURCE: Immunology Case Registry, December 2002

While HIV patients represent only a small fraction of the patient caseload of any VISN (see Table 1), the eight VISNs with the highest HIV patient volumes also have the highest “concentrations” of veterans in care for HIV disease, that is, they have the highest ratio of HIV patients to all VA patients. The degree of concentration varies considerably even within these higher volume VISNs. The Capitol Network (VISN 5) serves the Washington, DC area and has the highest concentration of veterans in care for HIV disease. The VA NY/NJ Veterans Healthcare Network (VISN 3) has the next highest concentration, followed by the Desert Pacific Healthcare Network (VISN 22) and the Atlanta Network (VISN 7).

Though the national HIV caseload decreased slightly between FY00 and FY02, the distribution altered such that some regions experienced an increase in HIV caseload (see Table 2). Between FY00 and FY02, 7 of the 21 VISNs had an increase in HIV caseload. All but one of

these seven is located in the South or Southwest—a pattern that is generally consistent with the pattern of growth in the national HIV/AIDS epidemic.<sup>3</sup> Three of the VISNs with increased HIV caseload (the Mid-Atlantic, Atlanta, and Desert Pacific VISNs) are among the eight higher volume VISNs listed above. The other four VISNs experiencing growth in HIV caseload between FY00 and FY02 (the Mid South, Ohio, Heart of Texas, and Southwest VISNs) are moderate-volume providers of HIV care.

## CARE AT VA STATIONS

In FY02, all but 2 of the VA's 128 stations provided care to veterans with HIV disease. A "station" is an administrative unit that generally includes a medical center and associated satellite facilities but may include multiple medical centers and associated facilities. VISNs generally have several stations. VISN 2 (VA Healthcare Network Upstate New York), with a single reporting station, is the only exception.

## HIGH-VOLUME AND HIGH-CONCENTRATION STATIONS

The majority of veterans in VA care for HIV disease receive care at higher volume stations. During FY02, 40 stations provided care to 80 percent of the VA HIV population. Each of these stations cared for at least 200 HIV patients. Sixty-six stations (including the top 40 higher volume stations) provided care to 99 percent of the VA HIV population. Each of the 66 stations cared for over 100 HIV patients in FY02.

The remaining 1 percent of veterans in care for HIV disease during FY02 was treated at 60 stations, which represent almost half of all VA stations. The volume of HIV patients at some of these stations was quite small. Forty-six stations cared for fewer than 50 HIV-infected veterans each in FY02; these 46 stations represent about a third of all VA stations (see Figure 3 on page 10).

Regardless of the volume of HIV patients at a station, they represent only a small fraction of a station's overall veteran population in care. In FY02, HIV patient concentrations ranged from one hundredth of 1 percent to roughly 2 percent across the 126 stations caring for veterans with HIV disease (see Table 3).

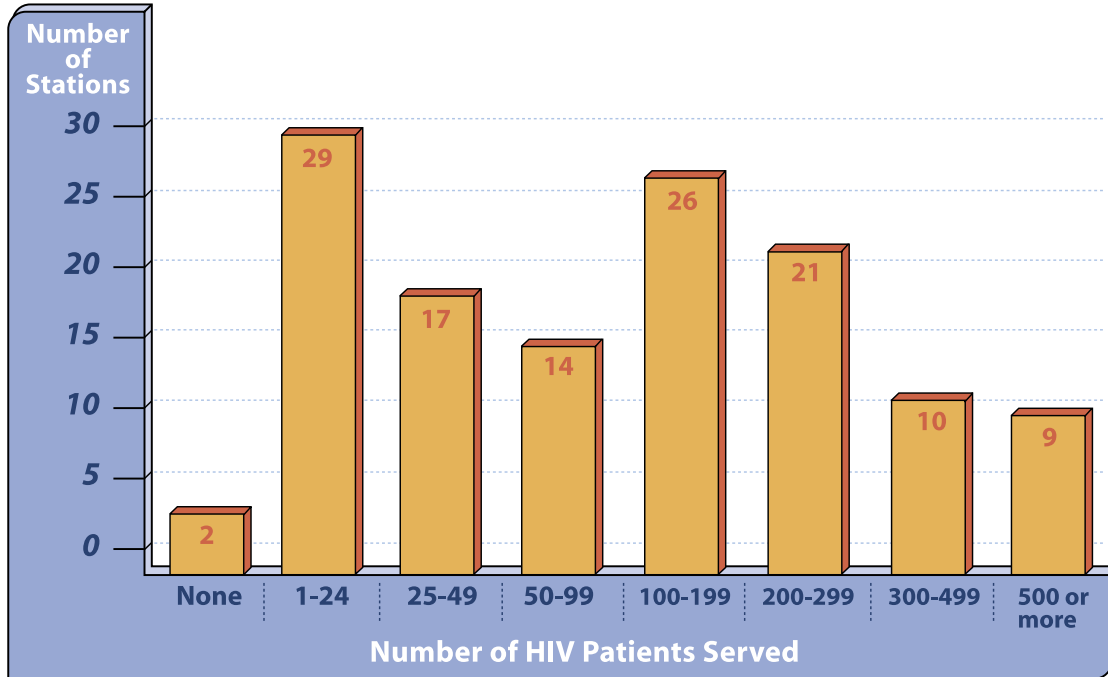
During FY02, 9 stations had HIV patient concentrations greater than 1 percent, and 28 stations had concentrations greater than 0.5 percent. Some of the stations with the highest concentrations are higher volume stations located in HIV/AIDS epicenters (e.g., the stations in Washington, DC and Miami, FL). Other stations with high concentrations (such as the stations in Wilmington, DE and Charleston, SC) are in metropolitan areas with lower estimated HIV prevalence rates (although still among the 100 areas with the highest rates, as estimated by the Centers for Disease Control and Prevention [CDC]).<sup>4</sup>

## GEOGRAPHIC MOBILITY

The geographic mobility of veterans with HIV disease is roughly consistent with the geographical mobility of the U.S. population at large. Overall, about 16 percent of the U.S. population changed their residence during the year ending in March 2000. About 40 percent of those who did move, or about 4 percent of the U.S. population, moved from a different state

FIGURE 3

## Distribution of HIV Caseloads across VA Stations Fiscal Year 2002



SOURCE: Immunology Case Registry, December 2002

or from a different county in the same state.<sup>5</sup> By comparison, about 10 percent of veterans with HIV disease were cared for at more than one station during FY02, and about 4 percent were cared for at stations in more than one VISN.<sup>6</sup>

Some of the HIV-infected veterans cared for at more than one station represent referrals for specialty care rather than patient geographic mobility. An out-of-station referral for specialty care (including specialized HIV care) typically involves referral to another station within the same VISN. About 60 percent of those cared for at more than one station in FY02 were seen at multiple stations within the same VISN.

Perhaps the most telling point with respect to geographic mobility is that the great majority of veterans with HIV disease do not move substantial distances within a year and do not travel to different stations for their VA care. In FY02, 90 percent of veterans with HIV disease received all their treatment at a single VA station.



**TABLE 1**

**Veterans with HIV Disease by VISN (Veterans Integrated Service Network), Fiscal Year 2002**

VISN #	VISN Name	States Served <sup>a</sup>	Total Caseload	HIV Patients	
				Number	% of Total Caseload
1	New England Healthcare System	CT, MA, ME, NH, RI, VT	218,731	551	0.3%
2	VA Healthcare Network Upstate New York	NY	134,184	258	0.2%
3	VA NY/NJ Veterans Healthcare Network	NJ, NY	207,324	2,073	1.0%
4	Stars & Stripes Healthcare Network	DE, PA, WV	270,627	899	0.3%
5	Capitol Health Care Network	DC, MD, WV	117,634	1,415	1.2%
6	The Mid-Atlantic Network	NC, VA, WV	223,481	1,094	0.5%
7	The Atlanta Network	AL, GA, SC	263,817	1,781	0.7%
8	VA Sunshine Healthcare Network	FL, PR	451,813	2,397	0.5%
9	Mid South Veterans Healthcare Network	KY, TN, WV	218,897	579	0.3%
10	VA Healthcare System of Ohio	OH	161,527	451	0.3%
11	Veterans Integrated Service Network	IL, IN, MI	201,195	585	0.3%
12	The Great Lakes Health Care System	IL, MI, WI	202,288	759	0.4%
15	VA Heartland Network	IL, KS, MO	203,257	448	0.2%
16	South Central VA Healthcare Network	AR, LA, MS, OK, TX	398,175	1,681	0.4%
17	VA Heart of Texas Health Care Network	TX	210,942	858	0.4%
18	VA Southwest Health Care Network	AZ, NM, TX	223,963	538	0.2%
19	Rocky Mountain Network	CO, MT, UT, WY	126,607	306	0.2%
20	Northwest Network	AK, ID, OR, WA	179,404	495	0.3%
21	Sierra Pacific Network	CA, HI, NV	207,734	1,047	0.5%
22	Desert Pacific Healthcare Network	CA, NV	240,223	1,672	0.7%
23	Minneapolis and Lincoln Offices <sup>b</sup>	IA, MN, ND, NE, SD	238,501	229	0.1%

SOURCE: HIV Patient Counts: Immunology Case Registry, December 2002.

Total VISN Caseload: VISN Support Services Center. "Unique Patient Report by Fiscal Month FY02."

NOTE: The total caseload and the number of HIV patients is the number of unique patients served at each VISN. Because some patients receive care from multiple facilities in VISNs, the sum of the VISN caseloads is larger than the total caseload for the VA as a whole. Similarly, the sum of the number of HIV patients served at each VISN is larger than the total number of HIV patients served by the VA.

a) A state is listed if one or more stations in a given VISN was located in that state. Different areas of the same state may be served by facilities in different VISNs. In other words, multiple VISNs may have stations located in the same state. Similarly, a single state may be divided in more than one VISN.

b) At the beginning of FY02, VISNs 13 and 14 merged to become VISN 23. For VISN 23, we show the combined data for VISNs 13 and 14.

**TABLE 2**

**Veterans with HIV Disease by VISN  
(Veterans Integrated Service Network), Fiscal Years 2000 and 2002**

VISN #	VISN Name	Veterans with HIV Disease				
		Fiscal Year 2000 Number (A)	Percent (B)	Fiscal Year 2002 Number (C)	Percent (D)	Percent Change 2000-2002 <sup>a</sup>
1	New England Healthcare System	608	2.9%	551	2.7%	- 9.4%
2	VA Healthcare Network Upstate New York	285	1.4%	258	1.3%	- 9.5%
3	VA NY/NJ Veterans Healthcare Network	2,357	11.4%	2,078	10.3%	- 12.0%
4	Stars & Stripes Healthcare Network	957	4.6%	899	4.5%	- 6.1%
5	Capitol Health Care Network	1,434	6.9%	1,415	7.0%	- 1.3%
6	The Mid-Atlantic Network	1,043	5.1%	1,094	5.4%	4.9%
7	The Atlanta Network	1,739	8.4%	1,781	8.9%	2.4%
8	VA Sunshine Healthcare Network	2,476	11.9%	2,397	11.9%	- 2.8%
9	Mid South Veterans Healthcare Network	573	2.8%	579	2.9%	1.0%
10	VA Healthcare System of Ohio	430	2.1%	451	2.2%	4.9%
11	Veterans Integrated Service Network	622	3.0%	585	2.9%	- 5.9%
12	The Great Lakes Health Care System	790	3.8%	759	3.8%	- 3.9%
15	VA Heartland Network	463	2.2%	448	2.2%	- 3.2%
16	South Central VA Healthcare Network	1,722	8.3%	1,681	8.4%	- 2.4%
17	VA Heart of Texas Health Care Network	828	4.0%	858	4.3%	3.6%
18	VA Southwest Health Care Network	516	2.5%	538	2.7%	4.3%
19	Rocky Mountain Network	319	1.5%	306	1.5%	- 4.1%
20	Northwest Network	496	2.4%	495	2.5%	- 0.2%
21	Sierra Pacific Network	1,102	5.3%	1,047	5.2%	- 5.0%
22	Desert Pacific Healthcare Network	1,652	8.0%	1,672	8.3%	1.2%
23	Minneapolis and Lincoln Offices <sup>b</sup>	247	1.2%	229	1.1%	- 7.3%

SOURCE: Immunology Case Registry, December 2002.

NOTE: The number of HIV patients is the number of unique patients served at each VISN. Because some patients receive care from multiple facilities in different VISNs, the sum of the number of HIV patients served at each VISN is larger than the total number of HIV patients served by the VA.

a)  $(C-A)/A \times 100$



## Veterans with HIV Disease by Reporting Station, Fiscal Year 2002

VISN	Station Number	Station Name/Location	Total Caseload	HIV Patients	
				Number	% of Total Caseload
1	518	Bedford	16,859	20	0.12%
1	523	Boston	56,973	221	0.39%
1	608	Manchester	18,968	21	0.11%
1	631	Northampton	13,729	38	0.28%
1	650	Providence	26,956	38	0.14%
1	402	Togus	30,880	15	0.05%
1	689	West Haven	50,679	211	0.42%
1	405	White River Junction	21,784	14	0.06%
2	528	Upstate NY	134,180	258	0.19%
3	526	Bronx	27,256	504	1.85%
3	561	East Orange	60,679	485	0.80%
3	620	Montrose Hudson NY	28,642	159	0.56%
3	630	NY Harbor	59,895	970	1.62%
3	632	Northport	39,754	112	0.28%
4	529	Butler	18,636	2	0.01%
4	540	Clarksburg	18,159	9	0.05%
4	542	Coatesville	21,587	139	0.64%
4	562	Erie	17,540	12	0.07%
4	503	James E Van Zandt	21,716	4	0.02%
4	595	Lebanon	30,596	61	0.20%
4	642	Philadelphia	49,595	488	0.98%
4	646	Pittsburgh-University Dr	53,642	113	0.21%
4	693	Wilkes Barre	36,471	45	0.12%
4	460	Wilmington	20,881	129	0.62%
5	512	Baltimore	51,369	627	1.22%
5	613	Martinsburg	28,820	88	0.31%
5	688	Washington	41,887	773	1.85%
6	637	Asheville-Oteen	24,631	51	0.21%
6	517	Beckley	14,886	8	0.05%
6	558	Durham	41,084	384	0.93%
6	565	Fayetteville NC	33,299	98	0.29%
6	590	Hampton	24,397	250	1.02%
6	652	Richmond	38,477	183	0.48%
6	658	Salem	28,645	74	0.26%
6	659	Salisbury	42,387	158	0.37%
7	508	Atlanta	51,449	849	1.65%
7	509	Augusta	31,275	152	0.49%
7	521	Birmingham	44,201	238	0.54%
7	534	Charleston	34,775	246	0.71%

(continued on page 14)

Veterans with HIV Disease by Reporting Station, Fiscal Year 2002

VISN	Station Number	Station Name/Location	Total Caseload	HIV Patients	
				Number	% of Total Caseload
7	544	Columbia SC	47,434	248	0.52%
7	557	Dublin	23,762	17	0.07%
7	619	Montgomery	33,473	117	0.35%
7	679	Tuscaloosa	14,686	9	0.06%
8	516	Bay Pines	71,130	284	0.40%
8	546	Miami	53,453	719	1.35%
8	573	N Florida/S Georgia	97,238	267	0.27%
8	672	San Juan PR	63,514	433	0.68%
8	673	Tampa	110,296	456	0.41%
8	548	W Palm Beach	68,951	291	0.42%
9	581	Huntington	26,471	21	0.08%
9	596	Lexington-Leestown	28,360	49	0.17%
9	603	Louisville	35,867	96	0.27%
9	614	Memphis	38,164	183	0.48%
9	621	Mountain Home	29,688	38	0.13%
9	626	Mid TN - Nashville	64,462	199	0.31%
10	538	Chillicothe	17,120	24	0.14%
10	539	Cincinnati	26,623	124	0.47%
10	541	Cleveland-Wade Park	72,669	210	0.29%
10	757	Columbus	25,188	33	0.13%
10	552	Dayton	31,953	108	0.34%
11	504	Ann Arbor	32,626	124	0.38%
11	515	Battle Creek	24,820	45	0.18%
11	553	Detroit	34,795	227	0.65%
11	550	Danville IL	30,483	19	0.06%
11	583	Indianapolis	45,914	147	0.32%
11	610	Northern Indiana	31,929	33	0.10%
11	655	Saginaw	21,505	33	0.15%
12	578	Hines	49,646	145	0.29%
12	585	Iron Mountain	15,784	11	0.07%
12	607	Madison	26,839	34	0.13%
12	695	Milwaukee	45,215	97	0.21%
12	556	North Chicago	21,762	67	0.31%
12	676	Tomah	20,356	3	0.01%
12	537	Chicago	43,795	467	1.07%
15	657	Heartland East St Louis	92,780	259	0.28%
15	589	Heartland West Kansas City	111,423	202	0.18%
16	502	Alexandria	27,093	27	0.10%
16	564	Fayetteville AR	33,988	29	0.09%

(continued on page 15)

## Veterans with HIV Disease by Reporting Station, Fiscal Year 2002

VISN	Station Number	Station Name/Location	Total Caseload	HIV Patients	
				Number	% of Total Caseload
16	520	Gulf Coast	47,182	186	0.39%
16	580	Houston	66,748	636	0.95%
16	586	Jackson	41,193	133	0.32%
16	598	Little Rock	53,996	145	0.27%
16	623	Muskogee	27,807	31	0.11%
16	629	New Orleans	36,361	326	0.90%
16	635	Oklahoma City	45,110	156	0.35%
16	667	Shreveport	36,879	86	0.23%
17	549	Dallas	89,817	408	0.45%
17	671	San Antonio	66,054	307	0.46%
17	674	Central Texas	59,441	158	0.27%
18	504	Amarillo	28,629	45	0.16%
18	756	El Paso	20,648	17	0.08%
18	501	New Mexico	56,459	100	0.18%
18	649	Northern Arizona	18,827	4	0.02%
18	644	Phoenix	54,125	222	0.41%
18	678	Southern Arizona	40,562	146	0.36%
18	519	West Texas	16,316	18	0.11%
19	442	Cheyenne	12,838	7	0.05%
19	554	Denver	43,866	228	0.52%
19	436	Fort Harrison	24,167	11	0.05%
19	575	Grand Junction	10,107	3	0.03%
19	660	Salt Lake City	32,311	61	0.19%
19	666	Sheridan	9,539	-	-
20	463	Alaska	12,454	14	0.11%
20	531	Boise	15,976	35	0.22%
20	648	Portland	43,576	205	0.47%
20	663	Puget Sound	59,170	193	0.33%
20	668	Spokane	17,795	31	0.17%
20	653	Roseburg	22,810	26	0.11%
20	687	Walla Walla	12,408	9	0.07%
20	692	White City	9,729	11	0.11%
21	570	Central California	21,876	62	0.28%
21	459	Honolulu	17,523	52	0.30%
21	358	Manila	3,543	-	-
21	612	Northern CA/Martinez	64,421	253	0.39%
21	640	Palo Alto	50,605	190	0.38%
21	662	San Francisco	39,040	522	1.34%
21	654	Sierra Nevada	22,730	64	0.28%

(continued on page 16)

Veterans with HIV Disease by Reporting Station, Fiscal Year 2002

VISN	Station Number	Station Name/Location	Total Caseload	HIV Patients	
				Number	% of Total Caseload
22	691	Greater Los Angeles	76,941	530	0.69%
22	593	Las Vegas	35,809	220	0.61%
22	605	Loma Linda	48,557	264	0.54%
22	600	Long Beach	39,798	235	0.59%
22	664	San Diego	48,759	482	0.99%
23	437	Fargo	23,567	115	0.49%
23	568	Fort Meade	19,887	15	0.08%
23	618	Minneapolis	63,905	7	0.01%
23	438	Sioux Falls	21,586	12	0.06%
23	656	St Cloud	20,886	85	0.41%
23	636	Nebraska-Western Iowa	100,904	7	0.01%

SOURCE: For HIV patients: Immunology Case Registry, December 2002.  
 For Total Patients: VISN Support Service Center. "Unique Patient Report by Fiscal Month FY02."

NOTE: The number of total patients is the number of unique patients served at each station. Because some patients receive care from multiple stations, the sum of the number of patients is larger than the total caseload for the VA as a whole. Similarly, the sum of the number of HIV patients served at each station is larger than the total number of HIV patients served by the VA.

## CHAPTER 2 NOTES

<sup>1</sup> In this report, we compare FY02 number with FY00, using the millennial year as a baseline. HIV patient counts do not differ materially between FY00 and FY01.

<sup>2</sup> The number of unique patients served in FY00 reported here differs appreciably from the comparable number (17,763) reported in our FY00-01 report. (See “Caring for Veterans with HIV Disease: Characteristics of Veterans in VA Care, Fiscal Years 2000-2001,” Center for Quality Management in Public Health, Public Health Strategic Health Care Group, December 2001.) Small differences are to be expected from year to year since the ICR is a dynamic file, with routine adjustments made to records on an ongoing basis. However, a difference of nearly 2,000 patients is almost surely not attributable to routine adjustments. During the last year, we have instituted a major revision of the ICR system. Upon observing this difference in counts of unique patients, we rechecked our data collection procedures and the count algorithm. In addition, we have validated census numbers with reporting stations. We are confident that the current numbers are valid.

<sup>3</sup> Centers for Disease Control and Prevention. “Update: AIDS—United States, 2000.” *Morbidity and Mortality Weekly Report* 2002;51(27): 592-595.

<sup>4</sup> Centers for Disease Control and Prevention. “AIDS Cases by State and Metropolitan Area of Residence, 2000.” Table 6a. Metropolitan area of residence at AIDS diagnosis among adult and adolescent men ranked by number of AIDS cases, reported through December 2000 and during 2000, and estimated AIDS prevalence at the end of 2000, United States, *HIV/AIDS Surveillance Supplemental Report*, 2002; 8 (No. 2): p. 20-21.

<sup>5</sup> Jason Schachter. “Geographical Mobility: Population Characteristics,” *Current Population Reports*, May 2001. Available at <http://landview.census.gov>.

<sup>6</sup> About 14 percent of patients with HIV disease were seen at multiple stations in FY00 compared to the 10 percent seen at multiple stations in FY02. Most of the difference between FY00 and FY02 is attributable to station mergers.





# Chapter 3

## CHARACTERISTICS OF VA PATIENTS WITH HIV DISEASE: DEMOGRAPHICS

The VA cares for veterans with HIV disease of both sexes, a range of ages, and many races and ethnic groups. Their severity of illness varies from asymptomatic HIV disease to AIDS.

### KNOWN POPULATION OF HIV PATIENTS IN CARE

#### SEX

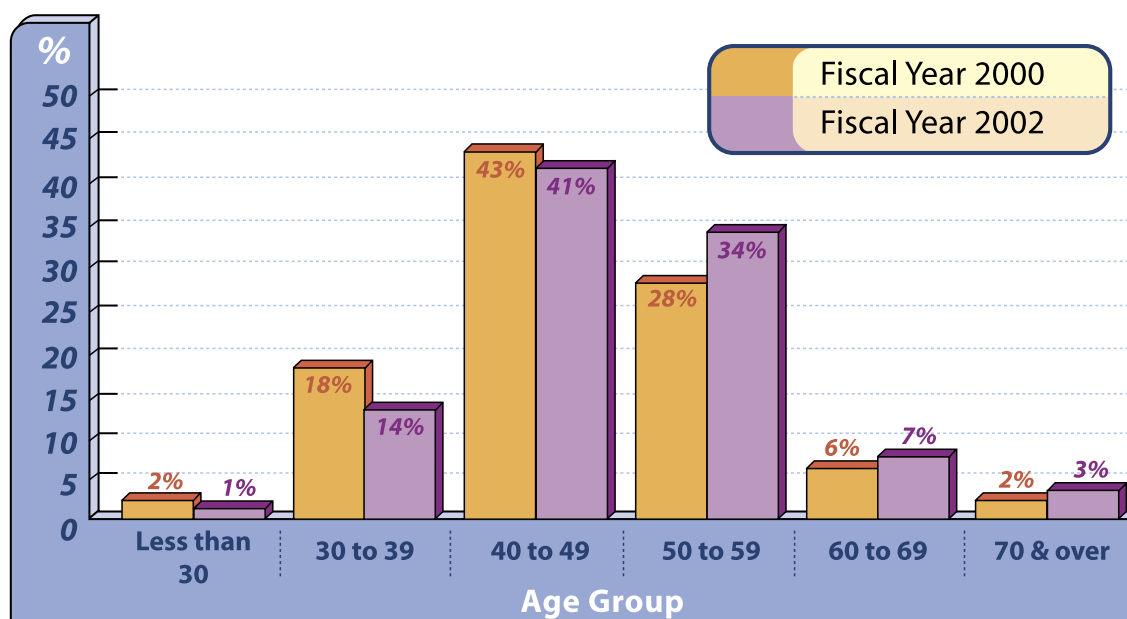
Like the veteran population as a whole, the overwhelming majority of patients in VA care for HIV disease is male (see Table 4). In FY02, males comprised 97.4 percent of the VA HIV population. The percentage of HIV patients who are male has changed little since FY00, when 97.5 percent of the patients in VA care for HIV disease were male.

Women comprise less than 3 percent of VA HIV population. Unlike the male population, the number of women in VA care for HIV disease is growing. Between FY00 and FY02, the number of such women grew by 4.6 percent (460 to 481).

#### AGE

As a group, veterans with HIV disease in VA care are younger than the overall veteran population in VA care. In FY02, about 45 percent of all VA patients were 65 years of age or older compared with about 5 percent of VA patients with HIV disease.<sup>1</sup> Most of those in care for HIV disease are middle-aged. In FY02, over three-quarters of VA HIV patients were between 40 and 64 years of age; about 1 in 6 was less than 40 years of age (see Table 4).

FIGURE 4 Age Distribution of Veterans with HIV in VA Care Fiscal Years 2000 and 2002



SOURCE: Immunology Case Registry, December 2002

Although younger than the overall veteran population in care, the cohort of patients in VA care for HIV disease is aging (see Figure 4). For example, 43.6 percent of the entire population was 50 years of age or older in FY02, compared with 36.5 percent in FY00.<sup>2</sup> The age category with the most prominent increase between FY00 and FY02 was the 50 to 59 year-old category (see Figure 4).

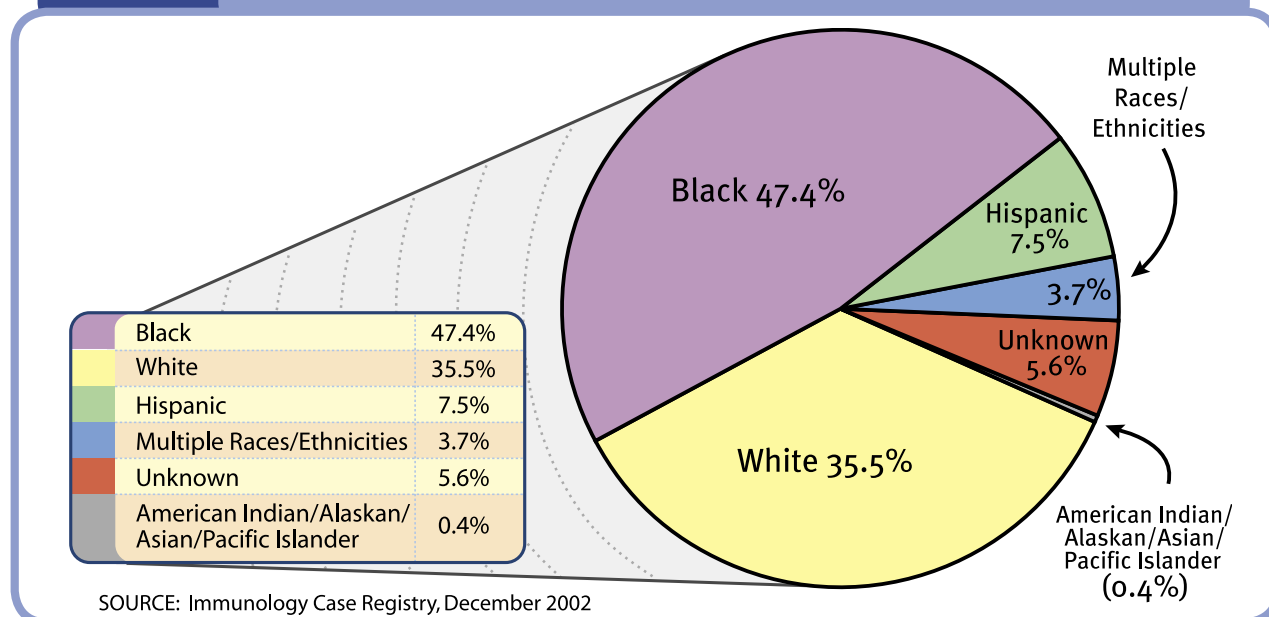
The difference in age distribution between FY00 and FY02 is only attributable in small part to growth in the number of older patients entering VA care for HIV disease. In both fiscal years, the percentage of new patients who were age 50 years or older was somewhat larger than the comparable percentage of all patients with HIV disease. In FY02, for example, 46 percent of new patients were age 50 or older, compared with 43.6 percent of all patients. However, the difference in the age distributions of new patients in FY00 and in FY02 is small and cannot account for the aging of the entire HIV population.

We have not ruled out the possibility that the cohort is aging because younger patients are more likely to die or to leave VA care. Even so, the aging of the VA cohort is consistent with the position that HIV disease has become a chronic condition. The advent of antiretroviral therapy has enabled patients to live longer with HIV disease.

## RACE/ETHNICITY

Consistent with the VA's role as a safety net provider, most patients in VA care for HIV disease are nonwhite.<sup>3</sup> As Figure 5 illustrates below, the most prominent racial/ethnic group receiving VA care for HIV disease is black. In FY02, black veterans comprised almost half of the VA HIV patient population (47.4 percent). Also in FY02, 7.5 percent of HIV patients were Hispanic, and less than 1 percent were American Indian, Alaskan Native, Asian, or Pacific Islander. About a third (35.5 percent) were white, not of Hispanic origin.

**FIGURE 5** Race/Ethnic Distribution of HIV Patients in VA Care Fiscal Year 2002



SOURCE: Immunology Case Registry, December 2002



Multiple races or ethnicities were recorded for about 4 percent of patients in VA care for HIV disease in FY02. Race/ethnicity information was not available for about 6 percent of patients that year.

## ADVANCED HIV DISEASE

In this report, we identify patients with advanced HIV disease based on their current immunologic condition, rather than their clinical history (for example, a past diagnosis of an AIDS-defining condition). Specifically, we define patients with advanced HIV disease as those whose maximum CD4 lymphocyte cell count was less than 200 cells/mm<sup>3</sup> during the fiscal year. This operational definition is not equivalent to the CDC's immunologic criteria for an AIDS diagnosis, which is a CD4 count less than 200 cells/mm<sup>3</sup> *at any time*.<sup>4</sup> We recognize that our measure of advanced HIV disease is imperfect and that some patients not included in our “advanced” group do have clinically significant HIV disease. However, identifying patients with *current* immunosuppression (as we have done) is clinically useful. For example, recommendations for the use of prophylaxis against opportunistic infections are now based on evidence of consistent immune suppression (as measured by suppressed CD4 cell counts).<sup>5</sup>

## NUMBERS OF PATIENTS

In FY02, 3,195 of the patients with at least one CD4 test value had advanced HIV disease (that is, no CD4 result of 200 cells/mm<sup>3</sup> or greater during that fiscal year).<sup>6</sup> These 3,195 patients represent 19.2 percent of the patients with at least one CD4 test value.

We observed a decrease in the percentage of patients in VA care with advanced HIV disease between FY00 and FY02.<sup>7</sup> In FY00, 22.6 percent of patients had no CD4 test result of 200 cells/mm<sup>3</sup> or higher (or 3,463 patients). The change from FY00 to FY02 (from 22.6 to 19.2 percent) represents a 15 percent decrease in the percentage of patients in care with advanced HIV disease.<sup>8</sup>

This apparent decrease must be interpreted with caution. Differential rates of patients with advanced HIV disease entering or leaving VA care between FY00 and FY02 may contribute to this observation.<sup>9</sup> We must also note that an appreciable percentage of VA HIV patients are missing CD4 test result data (22 percent in FY00 and 14 percent in FY02). We cannot rule out that patients with missing CD4 data may be systematically more likely to have advanced HIV disease, although the demographic characteristics of those with CD4 test result data are comparable to those of the entire VA HIV patient caseload.

## DEMOGRAPHIC CHARACTERISTICS

The demographic characteristics of patients with advanced HIV disease differ from those of the entire population of HIV patients in VA care (see Table 5). Patients with advanced HIV disease tend to be somewhat younger than those whose disease is not advanced. In particular, patients who have advanced HIV disease are less likely to be in late middle age or older (over age 50) than those whose disease is not advanced. In FY02, about 39 percent of those with advanced HIV disease were 50 years of age or older compared with about 45 percent of those whose HIV disease was not advanced.<sup>10</sup>

Patients who have advanced HIV disease are more likely to be nonwhite than white. In FY02, about 61 percent of those with advanced HIV disease were black or Hispanic compared with 53 percent of those whose disease was not advanced.<sup>11</sup> The percentage of VA patients with advanced HIV disease who are black or Hispanic is very similar to the percentage of the U.S. population living with AIDS belonging to these minority groups. The CDC estimates that 61.5 percent of living persons with AIDS were black or Hispanic at the end of calendar year 2001.<sup>12</sup> Note, however, that the CDC criteria for AIDS includes those who have ever had a CD4 count less than 200 cells/mm<sup>3</sup> or have ever had a clinical opportunistic infection (or other AIDS-defining condition).

Just as women make up a small fraction of all patients in VA care for HIV disease (2.5 percent in FY02), they also make up a small fraction of VA patients with advanced HIV disease (2.2 percent in FY02). The distribution of HIV patients by sex in the VA contrasts sharply with that for the HIV/AIDS epidemic in the United States. The CDC estimates that women comprised 20 percent of those living with AIDS in the United States at the end of calendar year 2001.<sup>13</sup>

### KNOWN MORTALITY

The ICR automatically obtains information on vital status from the VA patient record. In turn, the information in the patient record is drawn from other VA clinical and administrative records. For example, data on death is added to the patient record if a patient dies during a hospital stay or if the family of a patient (or former patient) requests a VA burial benefit. Since some deaths of former patients would not be known to the VA, and since the process of updating the patient record is manual and subject to delay, the ICR likely undercounts mortality to some extent.

ICR data indicate that the known all-cause mortality rate for patients with HIV disease in VA care was roughly 5 percent in FY02. This rate appears to be generally consistent with that for the HIV/AIDS epidemic in the United States. The CDC estimates a 4.3 percent death rate for persons with AIDS in 2001.<sup>14</sup>



**TABLE 4**

**Demographic Characteristics of Veterans with HIV Disease in VA Care**

Characteristic	Fiscal Year 2000		Fiscal Year 2002		Percent Change <sup>a</sup> 2000-2002	
	Number (A)	Percent (B)	Number (C)	Percent (D)		
<b>Sex<sup>b</sup></b>	Male	19,204	97.5%	18,842	97.4%	-0.1%
	Female	460	2.3%	481	2.5%	+8.7%
<b>Age (in years)<sup>c</sup></b>	Less than 30	408	2.1%	264	1.4%	-34.2%
	30 to 39	3,560	18.1%	2,783	14.4%	-20.4%
	40 to 49	8,527	43.3%	7,878	40.7%	-6.0%
	50 to 59	5,540	28.1%	6,555	33.9%	+20.4%
	60 to 69	1,236	6.3%	1,371	7.1%	+12.9%
	70 and over	417	2.1%	495	2.6%	+20.8%
	<b>Race/Ethnicity<sup>d</sup></b>	Black (not Hispanic)	9,525	48.4%	9,171	47.4%
White (not Hispanic)	6,907	35.1%	6,861	35.5%	+1.1%	
Hispanic	1,527	7.8%	1,459	7.5%	-2.8%	
American Indian/ Alaskan Native/ Asian/Pacific Islander	72	0.4%	73	0.4%	0.0%	
Multiple <sup>e</sup>	807	4.1%	708	3.7%	-10.7%	
Unknown	850	4.3%	1,074	5.6%	28.6%	
<b>Number of Unique Patients</b>	<b>19,688</b>	<b>100.0%</b>	<b>19,346</b>	<b>100.0%</b>	<b>---</b>	

SOURCE: Immunology Case Registry, December 2002.

NOTE: Totals may not add to 100 percent due to rounding and to exclusion from the table of cases with missing or inconsistent data.

a) (D-B)/B × 100

b) For FY02, we excluded 23 cases due to missing or inconsistent data on sex. Sex is missing for 1 patient active in FY02, and sex is recorded (in different records) as both male and female for 22 patients. For FY00, we excluded 24 cases due to inconsistent data on sex.

c) Age is calculated as of the midpoint of the fiscal year.

d) Information on race/ethnicity on the ICR is taken from the VA patient record and is based primarily on staff observation. In calendar year 2003, VA will begin to use OMB definitions and ask for patient self-report, including of mixed race.

e) Indicates that different races or ethnicities are listed in different records for that patient.

**TABLE 5**

**Demographic Characteristics of Veterans with HIV Disease in VA Care:  
All HIV Patients, HIV Patients with CD4 Counts, and Patients with Advanced HIV Disease  
Fiscal Year 2002**

Characteristic		All HIV Patients	HIV Patients with CD4 Counts	Advanced HIV Disease Patients
Sex <sup>a</sup>	Male	97.5%	97.6%	97.7%
	Female	2.4%	2.3%	2.2%
Age (in years) <sup>b</sup>	Less than 30	1.4%	1.4%	0.8%
	30 to 39	14.6%	14.6%	14.5%
	40 to 49	39.2%	40.4%	45.5%
	50 to 59	34.6%	34.1%	32.1%
	60 to 69	7.5%	7.1%	5.4%
	70 & over	2.6%	2.5%	1.8%
Race/Ethnicity <sup>c</sup>	Black (not Hispanic)	45.4%	47.0%	53.6%
	White (not Hispanic)	37.7%	36.1%	29.5%
	Hispanic	7.7%	7.7%	7.6%
	American Indian/ Alaskan Native/ Asian/Pacific Islander	0.3%	0.3%	0.5%
	Multiple <sup>d</sup>	3.6%	3.8%	4.7%
	Unknown	5.3%	5.1%	4.2%
<b>Number of Unique Patients</b>		<b>19,688</b>	<b>16,635</b>	<b>3,195</b>

SOURCE: Immunology Case Registry, December 2002.

NOTE: Patients with advanced HIV disease are a subset of patients with CD4 test results. Patients with advanced HIV disease are those whose CD4 cell count results were less than 200/mm<sup>3</sup> during the fiscal year. Totals may not add to 100 percent due to rounding and to exclusion from the table of cases with missing or inconsistent data.

- a) For patients with advanced HIV disease, we have excluded 3 cases due to inconsistent data on sex. Sex is recorded (in different records) as both male and female for these 3 patients. For patients with CD4 counts, we have excluded 19 cases due to inconsistent data on sex. For all patients, we have excluded 23 cases due to missing or inconsistent data on sex.
- b) Age is calculated as of the midpoint of the fiscal year.
- c) Information on race/ethnicity on the ICR is taken from the VA patient record and is based primarily on staff observation. In calendar year 2003, VA will begin to use OMB definitions and ask for patient self-report, including of self-reports of mixed race.
- d) Indicates that different races or ethnicities are listed in different records for that patient.

## CHAPTER 3 NOTES

<sup>1</sup> VHA Overview, 8/22/02. VHA Communications, Office of the Undersecretary for Health.

<sup>2</sup> Tests of statistical significance are based on the assumption of sampling from a population. ICR data pertains to almost all of the full population of veteran patients with known HIV infection in VA care (rather than a sample). One may argue, therefore, that tests of statistical significance are unnecessary here. However, from another perspective, the veterans in VA care for HIV represent a sample of the veterans with HIV who might come forward for VA care. Therefore, we present tests of statistical significance for selected comparisons. In this case, a Chi-square test of a two-by-two contingency table indicating whether a patient was 50 years of age or older in each of the two fiscal years is statistically significant at the 0.1 level.

<sup>3</sup> Information on race/ethnicity is taken from the VA patient record and is based primarily on staff observation. In calendar year 2003, VA began to use Office of Management and Budget (OMB) definitions and ask for patient self-report, including self-reports of mixed race.

<sup>4</sup> Centers for Disease Control and Prevention. "1993 Revised Classification System for HIV Infection and Expanded Surveillance Case Definition for AIDS Among Adolescents and Adults," *MMWR*, December 18, 1992, 41 RR-17.

<sup>5</sup> "2001 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with HIV," November 28, 2001, p. 10. Available at <http://www.aidsinfo.nih.gov/guidelines>; "Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents," Panel on Clinical Practices for Treatment of HIV Infection convened by the Department of Health and Human Services and the Henry J. Kaiser Family Foundation, February 4, 2002. Available at <http://www.aidsinfo.nih.gov/guidelines>.

<sup>6</sup> Had we used a definition of a single CD4 count less than 200 cells/mm<sup>3</sup>, the FY02 subpopulation with advanced HIV disease would have increased to roughly 30 percent of the population with CD4 test results (or 5,148 patients).

<sup>7</sup> In our FY00-01 report, we used a different measure of advanced HIV disease (one based on a history of an AIDS-defining illness) and also found a decrease in the percentage of patients who were severely ill with HIV disease. See "Caring for Veterans with HIV Disease: Characteristics of Veterans in VA Care, Fiscal Years 2000 and 2001," Center for Quality Management in Public Health, Public Health Strategic Health Care Group, Veterans Health Administration, December 2001.

<sup>8</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient had advanced HIV disease in each of the 2 fiscal years is statistically significant at the 0.1 level.

<sup>9</sup> Between FY00 and FY02, there was a decrease in the percentage of new VA patients who had advanced HIV disease, but this decrease is small. It cannot account for the decrease that we observe for the entire VA HIV population. Among those who died in FY00 and in FY02, there was no material difference in the percentages of patients with advanced HIV disease. We have not investigated the characteristics of those who left VA care (other than due to death) in FY00 and FY02. Thus, we cannot rule out the possibility that there was a systematic difference in the percentage of patients with advanced HIV disease.

<sup>10</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient was in the advanced stage of HIV disease and whether the patient was 50 years of age or older is statistically significant at the 0.1 level.

*(continued on page 26)*

## CHAPTER 3 NOTES

<sup>10</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient was in the advanced stage of HIV disease and whether or not the patient was 50 years of age or older is statistically significant at the 0.1 level.

<sup>11</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient was in the advanced stage of HIV disease and whether or not the patient was black or Hispanic is statistically significant at the 0.1 level.

<sup>12</sup> Centers for Disease Control and Prevention, “HIV/AIDS Surveillance Report, 2001”; 13 (No. 2), Table 29, Estimated Persons Living with AIDS, by Race/Ethnicity and Year, 1993 through 2001, United States, p. 37.

<sup>13</sup> Centers for Disease Control and Prevention, “HIV/AIDS Surveillance Report, 2001”; 13 (No. 2), Table 30, Estimated Persons Living with AIDS, by Age Group, Sex, Exposure Category, and Year, 1993 through 2001, United States, p. 37.

<sup>14</sup> Based on calculations from Table 30 (ibid) and Centers for Disease Control and Prevention, “HIV/AIDS Surveillance Report, 2001”; 13 (No. 2), Table 33, Estimated Deaths of Persons with AIDS, by Age Group, Sex, Exposure Category, and Year of Death, 1993 through 2001, United States, p. 39.



Veterans with HIV disease receive a wide array of clinical services in both outpatient and inpatient settings.

### OUTPATIENT SERVICES

#### UTILIZATION BY SERVICE LINE, FISCAL YEAR 2002

During FY02, the VA HIV population received over 291,000 primary outpatient encounters, for an average of 15.8 encounters per recipient (see Table 6).<sup>1</sup> The median number of encounters per recipient was six. The average is much greater than the median mainly because a small number of patients had almost daily dermatology clinic visits, suggestive of daily wound care.

The majority of all primary encounters were provided in the three major VA service lines (or types of service).<sup>2</sup> In descending order of use, these service lines are medicine/primary care, mental health (including treatment for substance use disorders), and surgical services. A more comprehensive description of the definition of service lines is provided in the appendix.

- **Medicine/Primary Care Service Line**

In FY02, the great majority of veterans with HIV disease (92.2 percent) received outpatient care in the medicine/primary care service line.<sup>3</sup> Nearly 139,000 such encounters were received by veterans with HIV that year, for an average of 7.8 encounters per recipient. Within this service line, the most common encounters were infectious disease clinic visits (almost 75,000 encounters) and primary care-medicine clinic visits (almost 32,000 encounters).<sup>4</sup> Together, visits to these two clinics accounted for over three quarters of the encounters in the medicine/primary care service line.

- **Mental Health Service Line**

Use of outpatient care in the mental health service line by VA HIV patients reflects the prevalence of mental illness and substance use disorders in the entire HIV population.<sup>5</sup> Just over a third (35.2 percent) of all veterans with HIV disease in VA care received outpatient mental health services during FY02. This percentage is consistent with published literature on the prevalence of mental illness and substance use disorders among the HIV population in the United States.<sup>6</sup>

In contrast, the VA HIV population is much more likely to receive outpatient mental health services than the general VA patient population. In FY00, 17 percent of all VA outpatients received outpatient mental health services compared with about 35 percent of veterans in VA care for HIV disease.<sup>7</sup>

VA patients with HIV disease received over 124,000 mental health service encounters in FY02, for an average of 18.2 encounters per recipient. By far the most common mental health service encounters for veterans with HIV disease were for treatment of substance use disorders. Over 25,000 encounters were received for opioid substitution (also known as



methadone maintenance), and about 32,000 encounters were received for either group or individual therapy. Together, these three types of outpatient substance use treatments accounted for 46 percent of all mental health service encounters for veterans with HIV in VA care. The next most common outpatient mental health service encounters were individual counseling (about 10,000 encounters) and work therapy groups (just over 8,000 encounters).

- **Surgical Service Line**

During FY02, over 40 percent of all veterans with HIV disease received outpatient visits in the VA surgical service line.<sup>1</sup> These veterans received almost 29,000 surgical clinic encounters, for an average of 3.4 encounters per recipient. The most common surgical encounters were for eye care (ophthalmology and optometry, with almost 5,000 and over 3,000 encounters, respectively). The next most common surgical clinic encounters were for podiatry and general surgery; in FY02, veterans with HIV disease received about 2,500 of each of these two types of encounters. These findings are consistent with screening/preventive care for sequelae of HIV disease and its treatment, specifically, visual loss and peripheral neuropathy.

- **Nonusers of the Three Major Service Lines**

Because of the comprehensive nature of VA health care services, we are able to capture information about a wide range of outpatient service utilization. In FY02, over 95 percent of veterans with HIV disease received outpatient care in at least one of the three major service lines (medicine/primary care, mental health, or surgical services). Approximately 3.4 percent of HIV patients seen by the VA during FY02 (or 645 patients) did not appear to use any outpatient services in these three major service lines. The majority of these 645 patients apparently used emergency services only. The remainder of them apparently used only (in descending order) pharmacy, laboratory, or inpatient services.

## CARE FOR PATIENTS WITH ADVANCED HIV DISEASE

Among VA patients with advanced HIV disease (almost 20 percent of all HIV patients), use of outpatient care by VA service line is very similar to that for all VA patients with HIV disease.<sup>1</sup> The vast majority of patients with advanced HIV disease received outpatient care in the medicine/primary care service line, just under half received outpatient care in the surgical service line, and just over a third received outpatient care in the mental health service line (see Table 6 for detailed information).

As one might expect, patients with advanced HIV disease had many more medicine/primary care encounters per recipient than did HIV patients generally. In FY02, patients with advanced HIV disease averaged 15.5 such encounters compared with 7.8 encounters for all HIV patients in VA care. In other words, patients with advanced HIV disease averaged more than one encounter a month in the medicine/primary care service line.

## SOURCE OF PRIMARY CARE

The receipt of primary care is an important factor in most health outcomes.<sup>9</sup> Understanding this importance and the range of services that provide primary care, the VA has designated certain clinic stop codes as part of a “primary care group.” This definition includes general medical clinic visits, and home-based care and mental health primary care services.



Almost half (49.7 percent) of veterans with HIV disease received services during FY02 from the VA-designated primary care group (see Table 7).<sup>10</sup> Primary care-medicine clinic visits dominate the primary care group, accounting for about 90 percent of encounters in this group. In addition, communication between CQM staff and front-line VA providers indicates that many veterans with HIV disease receive their primary care in VA infectious disease clinics. In FY02, over three-quarters (76.3 percent) of HIV patients in VA care visited infectious disease clinics. Altogether, 90.8 percent of VA patients with HIV disease received care from the primary care group or from an infectious disease clinic. Therefore, nearly all VA patients with HIV disease are being seen in an outpatient setting where they are likely to receive primary care.

- **Access to Infectious Disease Specialty Care**

Given the increasing complexity of available HIV treatments and the intricacy of their management, access to HIV specialists has been proposed as a marker of “quality care.”<sup>11</sup> Our data do not support a detailed analysis of this issue, but we can identify whether infectious disease clinic use (as a proxy measure for access to HIV expertise) has changed over time.

The source of primary care for veterans with HIV disease appears to have shifted between FY00 and FY02. As illustrated in Figure 6 on the next page, the shift is away from the primary care group and in favor of infectious disease clinics. The percentage of HIV patients with primary care group encounters fell by 20 percent between FY00 and FY02, while the percentage with infectious disease clinic visits rose by 7 percent (see Table 7).<sup>12</sup> The number of patients with both primary care group encounters and infectious disease clinic visits fell by 24 percent.

Patients with advanced HIV disease\* had higher rates of infectious disease clinic use than the overall HIV population in VA care. Eighty-one percent of those with advanced HIV disease had an infectious disease clinic visit in FY02 compared with 76 percent of the overall HIV population.

There was no material change between FY00 to FY02 in the percentage of patients with advanced HIV disease who had infectious disease clinic visits (82 and 81 percent, respectively). However, a larger percentage of patients with advanced HIV disease appeared to be receiving all their HIV care within infectious disease clinics in FY02—a shift similar to that described above for the overall VA HIV population. The percentage of patients with advanced HIV disease who had only a primary care clinic visit fell by 26 percent, and the percentage who had both a primary care and an infectious disease clinic visit fell by about 33 percent.<sup>13</sup>

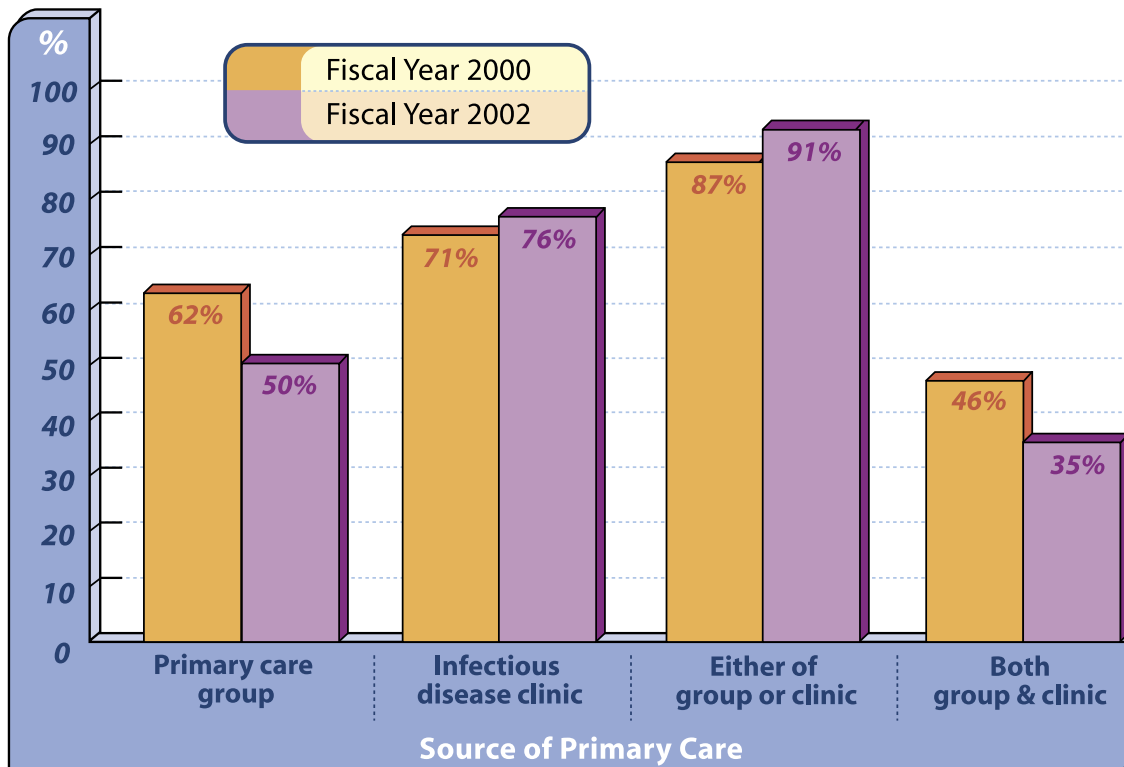
## INPATIENT CARE

VA inpatient care includes a wide spectrum of service types, including acute medical/surgical care, longer-term residential mental health services, and traditional medical long-term care.<sup>14</sup>

\* As described in Chapter 3, we define a patient with advanced HIV disease as one whose maximum CD4 value during a fiscal year is less than 200 cells/mm<sup>3</sup>.

FIGURE 6

## Source of Primary Care Services to Patients with HIV Disease, Fiscal Years 2000 and 2002



SOURCE: Immunology Case Registry, December 2002

### NUMBER AND LENGTH OF INPATIENT STAYS

During FY02, veterans with HIV disease in VA care had 8,929 inpatient stays. Slightly less than a quarter (24.2 percent) of the veterans (or 4,686 patients) had one or more inpatient stay (see Table 8). Most of them had a single stay. Overall, about 14 percent of all HIV patients in VA care had one inpatient stay, about 5 percent had two stays, and about 5 percent had three or more stays.

As one might expect, the percentage of patients with an inpatient stay was much higher among those with advanced HIV disease than among HIV patients generally. About 44 percent of patients with advanced HIV disease had one or more inpatient stays during FY02 compared with about 24 percent of all patients with HIV disease in VA care.<sup>15</sup>

In FY02, the median length of stay for all patients with HIV disease in VA care was 5 days. That year, their mean length of stay was 14 days. Lengthy stays in residential facilities (such as those for treatment of substance use disorders) drive up the mean length of stay compared with the median.

Data on length of inpatient stays for the entire VA patient population are only available for FY00. In FY00, the median length of stay for the entire VA population (4 to 7 days) is roughly comparable to that for VA patients with HIV disease (6 days).<sup>16</sup> However, a larger percentage of VA patients with HIV disease had stays lasting more than a week. Over 20 percent of VA patients with HIV disease had a stay lasting more than a week compared with 15

percent of the entire VA population.<sup>17</sup> This finding is consistent with the higher rates of inpatient mental health treatment (including treatment for substance use disorders) in the VA HIV population.

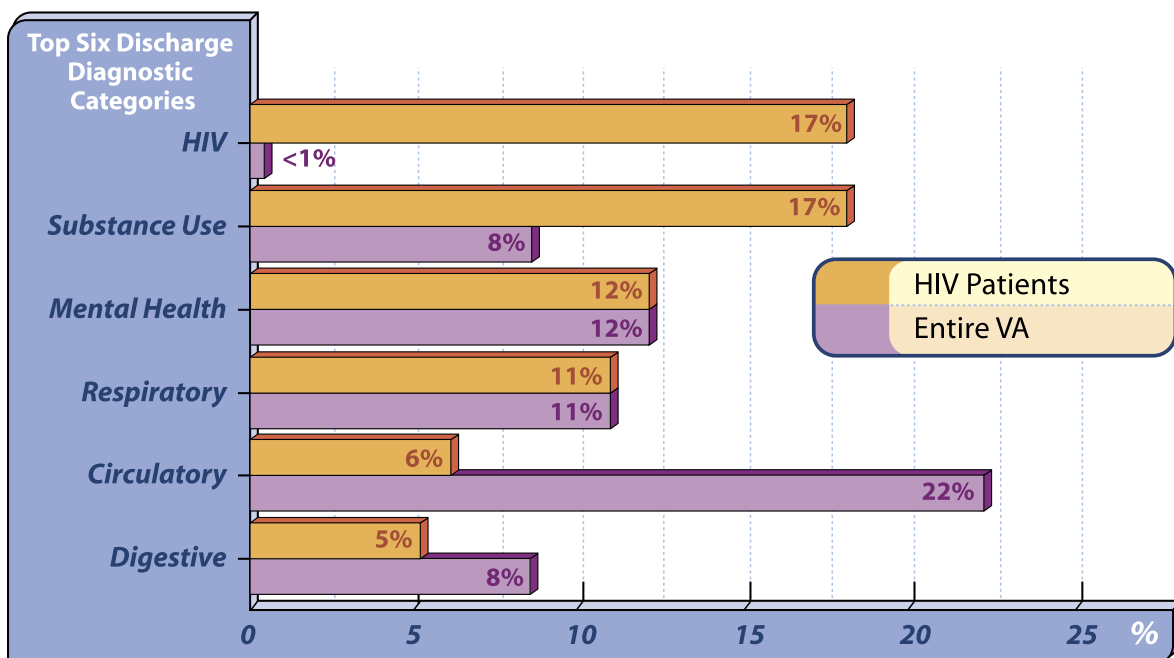
### STAYS BY DIAGNOSTIC CATEGORY

VA inpatient stays are described by 25 mutually exclusive, major diagnostic categories that are based on primary discharge diagnosis (see Table 9). Each category corresponds to a single organ system or etiology, e.g., circulatory system, mental diseases and disorders, injury, and HIV infection.<sup>18</sup>

As expected, the most common discharge diagnosis category among HIV patients is HIV infection (17 percent of discharges in FY00 and 20 percent in FY02). Patients with advanced HIV disease were more than 50 percent more likely to have an inpatient stay for HIV infection than patients whose HIV disease was not advanced.<sup>19</sup>

As Figure 7 shows, in FY00 inpatient stays among HIV patients were much less likely to be for circulatory system diagnoses compared with stays among VA patients generally (about 6 percent versus 22 percent). This difference could be explained by the age difference in the two groups. In FY00, over one-third of all VA patients who had an inpatient stay were 70 years of age or older,<sup>20</sup> while only a small fraction (about 2 percent) of VA patients with HIV disease were age 70 or older.

**FIGURE 7** Top Inpatient Discharge Diagnostic Categories for HIV and VA Populations, Fiscal Year 2000



SOURCE: Immunology Case Registry, December 2002  
 For entire VA, the source is "Select Variable Frequencies from the Medical SAS Inpatient and Outpatient Datasets—FY2000: A VIREC Resource Guide," VA Information Resource Center, August 2001, page 32. For patients with HIV disease, the source is the Immunology Case Registry, December 2002.

In FY00, the likelihood of discharge with a mental health primary diagnosis was similar for VA patients generally (12.4 percent) and for VA patients with HIV disease (12.1 percent). However, HIV patients were roughly twice as likely have a stay with a primary diagnosis involving substance use disorders as VA patients generally (17.1 percent versus 8.3 percent).

## DECREASE IN USE OF INPATIENT CARE

Utilization of inpatient services by HIV patients in VA care decreased between FY00 and FY02 (see Table 8). During that period, the number of inpatient stays decreased for all VA patients with HIV disease (by 9.7 percent) and for those with advanced HIV disease (by 12.5 percent).

In addition, between FY00 and FY02, the percentage of all VA HIV patients with an inpatient stay fell by about 5 percent (5.1 percent).<sup>21</sup> There was no material change in the percentage of patients with advanced HIV disease who had an inpatient stay (decrease of 0.4 percent). Thus, the decrease in the likelihood of an inpatient admission was concentrated among HIV patients whose disease was not advanced.

The median length of stay for all VA patients with HIV disease dropped from 6 days in FY00 to 5 days in FY02 and was unchanged for patients with advanced HIV disease. In both groups, mean length of stay was little changed.

The decrease in the use of inpatient services among veterans with HIV disease is consistent with results reported for other HIV populations. For example, the HIV Research Network reported that hospital length of stay fell during 1999 among HIV patients receiving Highly Active Antiretroviral Therapy (HAART) at 9 primary and specialty care sites in the United States.<sup>22</sup>

The decrease in inpatient stays among veterans with HIV disease is also consistent with the trend for the VA as a whole. Between 1996 and 2001, inpatient admissions fell by 32 percent in the VA as a whole, an average annual decrease of roughly 5 percent.<sup>23</sup> By comparison, inpatient stays fell for VA patients with HIV disease by about 10 percent during the 2 year period from the end of FY00 through FY02, an average annual decrease of about 5 percent.



**TABLE 6**

**Outpatient Services for Selected Service Lines, Fiscal Year 2002**

Service Line	All HIV Patients	Advanced HIV Patients
<b>Percentage of Unique Patients with:</b>		
Medicine /primary care services <sup>a</sup>	92.2%	95.2%
Mental health services <sup>b</sup>	35.2%	34.4%
Surgical services <sup>c</sup>	44.1%	45.7%
Any of the three above service lines	95.2%	97.0%
<b>Encounters:</b>		
Medicine /primary care services <sup>a</sup>		
Number of encounters	138,925	47,306
Per outpatient	7.8	15.5
Mental health services <sup>b</sup>		
Number of encounters	124,150	18,477
Per outpatient	18.2	16.8
Surgical services <sup>c</sup>		
Number of encounters	28,732	4,872
Per outpatient	3.4	3.3
Total of three above types of encounters		
Number of encounters	291,807	70,655
Per outpatient	15.8	22.8
<b>Number of Patients</b>	<b>19,346</b>	<b>3,195</b>

SOURCE: Immunology Case Registry, December 2002.

NOTE: Service lines are defined as in "Fiscal Year 2002 Decision Support System (DSS) Outpatient Identifiers," VHA Directive 2002-041, page 4.

- a) Includes VA primary clinic stops with codes 300 through 399. Most common stops are for infectious disease and primary care/medicine.
- b) Includes VA primary clinic stops with codes 500 through 599. Most common stops are for opioid substitution, substance abuse-group, and substance abuse-individual.
- c) Includes VA primary clinic stops with codes 400 through 449. Most common stops are for ophthalmology, optometry, podiatry, and general surgery.

**TABLE 7**

**Outpatient Encounters by Service Line and Primary Source of Care  
Fiscal Years 2000 and 2002**

Type of Outpatient Care		Fiscal Year 2000	Fiscal Year 2002	Percent Change 2000-2002
<b>All HIV Patients</b>				
Service Type	Medicine and primary care services <sup>a</sup>	89.5%	92.2%	+ 7.8%
	Mental health services <sup>b</sup>	36.9%	35.2%	- 4.6%
	Surgical services <sup>c</sup>	42.8%	44.1%	+ 3.0%
Primary Care	Primary care clinic visit or home-based care <sup>d</sup>	62.3%	49.7%	- 20.2%
	Infectious disease clinic <sup>e</sup>	71.2%	76.3%	+ 7.2%
	Either of the above	87.4%	90.8%	+ 3.9%
	Both of the above	46.1%	35.2%	- 23.6%
<b>Number of Patients</b>		<b>19,688</b>	<b>19,346</b>	<b>--</b>
<b>Patients with Advanced HIV Disease</b>				
Service Type	Medicine and primary care services <sup>a</sup>	96.3%	95.6%	- 0.6%
	Mental health services <sup>b</sup>	37.7%	34.8%	- 7.7%
	Surgical services <sup>c</sup>	49.0%	46.1%	- 5.9%
Primary Care	Primary care clinic visit or home-based care <sup>d</sup>	66.7%	49.3%	- 26.1%
	Infectious disease clinic <sup>e</sup>	82.1%	80.9%	- 1.5%
	Either of the above	94.4%	93.6%	- 0.8%
	Both of the above	54.4%	36.6%	- 32.7%
<b>Number of Patients</b>		<b>3,463</b>	<b>3,195</b>	<b>--</b>

SOURCE: Immunology Case Registry, December 2002.

NOTE: Service lines and primary care are defined as in "Fiscal Year 2002 Decision Support System (DSS) Outpatient Identifiers," VHA Directive 2002-041, pages 4 and G1-G2.

- a) Includes VA primary clinic stops with codes 300 through 399. Most common stops are for infectious disease and primary care medicine.
- b) Includes VA primary clinic stops with codes 500 through 599. Most common stops are for opioid substitution, substance abuse-group, and substance abuse-individual.
- c) Includes VA primary clinic stops with codes 400 through 449. Most common stops are for ophthalmology, optometry, podiatry, and general surgery.
- d) Included in this group are primary clinic stops for the following types of services: primary care medicine (VA clinic stop code 323), which is by far the most common of the clinic stops in this group; primary care geriatrics (350), mental health primary care team-individual (531); mental health primary care team-group (563); home-based primary care (170-177), and women's clinic (322).
- e) Includes a primary clinic stop for infectious disease (310).

TABLE 8

## Inpatient Stays Among Veterans with HIV Disease Fiscal Years 2000 and 2002

Type of Outpatient Care		Fiscal Year 2000	Fiscal Year 2002	Percent Change 2000-2002
<b>All HIV Patients</b>				
Patients with One or More Stay During Year	Number of Patients	5,024	4,686	- 6.7%
	Percent of Patients	25.5%	24.2%	- 5.1%
	Number of inpatient stays	9,889	8,929	- 9.7%
	Mean number of stays	2.0	1.9	- 5.0%
	Mean length of stay (days) <sup>a</sup>	13.8	14.0	+ 1.5%
	Median length of stay (days) <sup>a</sup>	6	5	- 16.7%
<b>Number of Patients</b>		<b>19,688</b>	<b>19,346</b>	<b>--</b>
<b>Patients with Advanced HIV Disease</b>				
Patients with One or More Stay During Year	Number of Patients	1,527	1,422	- 8.1%
	Percent of Patients	44.7%	44.5%	- 0.4%
	Number of inpatient stays	3,472	3,039	- 12.5%
	Mean number of stays	2.2	2.1	- 4.5%
	Mean length of stay (days) <sup>a</sup>	12.6	12.3	- 2.4%
	Median length of stay (days) <sup>a</sup>	6	6	0.0%
<b>Number of Patients</b>		<b>3,463</b>	<b>3,195</b>	<b>--</b>

SOURCE: Immunology Case Registry, December 2002.

NOTE: Includes all types of inpatient facilities, including acute and extended stay hospitals, nursing homes, and domiciliary facilities. A stay is counted only when the patient is discharged.

a) Consistent with the algorithm used by the VA generally, length of stay is measured as the difference between the discharge date and the admission date, even if the admission date is prior to the current fiscal year. See "The Medical SAS Inpatient Datasets—FY2000: A VIREC Resource Guide," VA Information Resource Center, Health Services Research and Development, September 2001, page 75. The VA reports length of stay only in ranges, and stays in which the patient was admitted and discharged on the same day are grouped with stays in which the patient was discharged on the day after admission. (Personal communication with Phil Colin, VA Information Research Analyst, VA Information Resource Center, January 2003.) Consistent with that procedure, we here treat length of stay as one day if the patient was admitted and discharged on the same day.



**TABLE 9**

**Stays by Major Diagnostic Category for Entire VA and Patients with HIV Disease  
Fiscal Years 2000 and 2002**

Major Diagnostic Category (in descending order for entire VA)	Entire VA	Patients with HIV Disease	
	Fiscal Year 2000	Fiscal Year 2000	Fiscal Year 2002
Circulatory System	22.3%	6.1%	6.7%
Mental Diseases and Disorders	12.4%	12.1%	10.6%
Respiratory System	10.9%	10.8%	9.4%
Substance Use and Disorders	8.3%	17.1%	14.9%
Digestive System	8.2%	5.4%	6.1%
Nervous System	6.1%	3.5%	3.1%
Musculoskeletal and Connective Tissue	5.3%	2.1%	2.7%
Kidney and Urinary Tract	4.8%	2.9%	3.5%
Endocrine, Nutrition, Metabolic	3.4%	3.1%	3.0%
Hepatobiliary and Pancreas	3.2%	3.6%	4.1%
Skin, Breast, and Subcutaneous Tissue	2.8%	3.4%	3.7%
Health Status Factors and Other <sup>a</sup>	2.5%	3.0%	2.8%
Myeloproliferative, Neoplasia	1.7%	1.4%	1.5%
Ear, Nose, Throat, and Mouth	1.4%	1.5%	1.5%
Male Reproductive System	1.3%	0.3%	0.5%
Infectious and Parasitic	1.2%	2.6%	2.9%
Hematopoietic, Immunity	1.1%	2.0%	1.9%
Injury, Poisoning, Drug Toxicity	1.1%	1.1%	1.2%
HIV Infections	0.4%	17.4%	19.5%
Eye	0.3%	0.5%	0.4%
Female Reproductive System	0.2%	0.0%	0.1%
<b>Total Number of Discharges</b>	<b>563,921</b>	<b>9,834 <sup>b</sup></b>	<b>8,855 <sup>c</sup></b>

SOURCE: For entire VA: "Select Variable Frequencies from the Medical SAS Inpatient and Outpatient Datasets—FY2000: A VIREC Resource Guide," VA Information Resource Center, August 2001, page 32. For patients with HIV disease: Immunology Case Registry, December 2002.

NOTE: The major diagnostic categories are part of the diagnosis related group (DRG) system developed by the Medicare program. The DRGs are based primarily on ICD diagnoses and procedures. Each DRG corresponds to one distinct major diagnostic category. The VA assigns DRGs using the algorithm (called the DRG "grouper") developed by the Medicare program. See "The Medical SAS Inpatient Datasets—FY2000: A VIREC Resource Guide," VA Information Resource Center, Health Services Research and Development, September 2001, pages 54 and 80. There are 25 major diagnostic categories. We report only 21 here because there were no patients in the VA in either FY00 or FY02 with DRGs in the four omitted categories. Fiscal year 2000 is the most recent year for which data on stays by diagnosis category are available for the VA as a whole. Totals may not add to 100% due to rounding.

a) Includes ICD9 codes (789-799.99) that pertain to symptoms (for example, malaise and fatigue, edema, cyanosis) and to abnormal test results (for example, elevated sedimentation rate) and ICD9 V codes that pertain to screening (for example, cholera contact and radiologic exam).

b) Primary discharge diagnosis is evaluable in 99.4 percent of the discharges of patients with HIV disease in fiscal year 2000.

c) Primary discharge diagnosis is evaluable in 99.2 percent of the discharges of patients with HIV in fiscal year 2002.



## CHAPTER 4 NOTES

- <sup>1</sup> Outpatient services are measured by VA “clinic stop” codes that describe outpatient encounters. While many of these codes refer to a patient’s visit to a VA outpatient clinic, some refer to other types of encounters such as outpatient diagnostic tests, home visits, and telephone consultations.
- <sup>2</sup> The VA groups clinic stop codes into “service lines”; the three most common ones are used here to summarize the data. We do not present data on two service lines: ancillary and support services and other, which tend to carry secondary clinic stop codes. See “Fiscal Year 2002 Decision Support System (DSS) Outpatient Identifiers,” VHA Directive 2002-041.
- <sup>3</sup> The medicine/primary care service line includes VA clinic stop codes 300 through 399.
- <sup>4</sup> “Infectious disease clinic” refers specifically to stop code 310. The primary care-medicine clinic stop code is 323.
- <sup>5</sup> The mental health service line is defined as VA clinic stop codes 500 through 599.
- <sup>6</sup> M. A. Burnam, E. G. Bing, S. C. Morton, C. Sherbourne, J. A. Fleishman, A. S. London, B. Vitiello, M. Stein, S. A. Bozzette, and M. F. Shapiro, “Use of Mental Health and Substance Abuse Treatment Services Among Adults With HIV in the United States,” *Arch Gen Psychiatry* 58 (2001): 729-736.
- <sup>7</sup> J. D. Piette and W. X. Fong, “Health Services for VA Substance Abuse and Psychiatric Patients: Comparison of Utilization in Fiscal Years 2000, 1999, and 1995” (Program Evaluation and Resources Center and HSR&D Center for Health Care Evaluation, VA Palo Alto Health Care System, Palo Alto, CA, July 2001), p. 40.
- <sup>8</sup> The surgical service line includes VA clinic stop codes 400 through 449.
- <sup>9</sup> See S. D. Culler, M. L. Parchman, and M. Przybylski, “Factors Related to Potentially Preventable Hospitalizations among the Elderly,” *Medical Care* 36 (1998): 804-817; A. B. Bindman, K. Grumbach, D. Osmond, M. Komaromy, K. Vranizan, N. Luire, J. Billings, and A. Steward, “Preventable Hospitalizations and Access to Health Care,” *JAMA* 274(4) (1995): 305-311; and J. M. Gill and A. G. Mainous, “The Role of Provider Continuity in Preventing Hospitalizations,” *Archives of Family Medicine* (July/Aug 1998): 352-357.
- <sup>10</sup> The VA-designated primary care group includes clinic stop codes for primary care-medicine, as well as home-based primary care, mental health primary care team (group and individual), women’s clinic, and geriatric primary care.
- <sup>11</sup> See M. Kitahata et al., “Physicians’ Experience with the Acquired Immunodeficiency Syndrome as a Factor in Patients’ Survival,” *The New England Journal of Medicine* 334 (1996): 701-706; W. Holmes, “Quality in HIV/AIDS Care: Specialty-Related or Experience-Related?” *JGIM* 12 (1997): 195-197; F. M. Hecht, et al., “Optimizing Care for Persons with HIV Infection,” Society of General Internal Medicine AIDS Task Force. *Ann Intern Med* 131(2) (July 20, 1999): 136-43; V. E. Stone et al., “Relation of Physician Specialty and HIV/AIDS Experience to Choice of Guideline-Recommended Antiretroviral Therapy,” *J Gen Intern Med* 16 (2001): 360-368; and L. I. Gardner et al., “Use of Highly Active Antiretroviral Therapy in HIV Infected Women: Impact of HIV Specialist Care,” *JAIDS* 29 (2002): 69-75.

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## CHAPTER 4 NOTES

- <sup>12</sup> Counts of patients with infectious disease clinic use include patients with infectious disease encounters only and those with both infectious disease and primary care encounters. A Chi-square test of a two-by-two contingency table indicating whether a patient was seen in a clinic in the primary care group in each of the 2 fiscal years is statistically significant at the .01 level.
- <sup>13</sup> For patients with advanced HIV disease, a Chi-square test of a two-by-two contingency table indicating whether a patient was seen in a clinic in the primary care group in each of the 2 fiscal years is statistically significant at the .01 level.
- <sup>14</sup> Inpatient services reported include all VA inpatient services, both acute and long-term, and are based on discharges. Following VA procedures, length of stay is measured by taking the difference between the discharge date and the admission date, except that “1” is added if the difference is zero (that is, if the patient was admitted and discharged on the same day). Measures of diagnoses are based on the primary diagnosis at discharge, that is, the diagnosis considered most responsible for the length of stay. See “The Medical SAS Inpatient Datasets—FY2000: A ViReC Resource Guide,” (VA Information Resource Center, Health Services Research and Development, September 2001), p. 17.
- <sup>15</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient had one or more inpatient stays and whether a patient had advanced HIV disease is statistically significant at the .01 level.
- <sup>16</sup> Length of stay for the VA as a whole in FY00 is reported only in ranges (such as 4 to 7 days and 8 to 14 days); neither the mean nor the median length of stay is reported. From the range data on length of stay, we can determine that the median length of stay for the VA as a whole was between 4 and 7 days—roughly comparable to the median for patients with HIV disease. Since the ranges used in the VA data are wide (most are from a week to a month or more), mean length of stay cannot be accurately calculated from the range data.
- <sup>17</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient had a stay of 7 days or longer and was any VA patient or a patient with HIV disease is statistically significant at the .01 level.
- <sup>18</sup> The categories are those used by the Medicare system. See “The Medical SAS Inpatient Datasets-FY2000: A ViReC Resource Guide” (VA Information Resource Center, Health Services Research and Development, September 2001), pp. 54 and 80.
- <sup>19</sup> A Chi-square test of a two-by-two contingency table indicating whether a stay was for HIV infection and whether the patient had advanced HIV disease is statistically significant at the .01 level.
- <sup>20</sup> Calculated from “Select Variable Frequencies from the Medical SAS Inpatient and Outpatient Datasets-FY2000: A ViReC Resource Guide” (VA Information Resource Center, Health Services Research and Development, August 2001), p. 3.
- <sup>21</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient with HIV disease had one or more inpatient stay in each of the 2 fiscal years is statistically significant at the .01 level.

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## CHAPTER 4 NOTES

- <sup>22</sup> The HIV Research Network, “Hospital and Outpatient Health Services Utilization among HIV-Infected Patients in Care in 1999,” *J Acquir Immune Defic Syndr* 30(1) (May 1, 2002): 21-6. See S. Paul, H. M. Gilbert, L. Lande, C. M. Vaamonde, J. Jacobs, S. Malak, and K. A. Sepkowitz, “Impact of Antiretroviral Therapy on Decreasing Hospitalization Rates of HIV-Infected Patients in 2001,” *AIDS Res Hum Retroviruses* 18(7) (May 1, 2002): 501-6.
- <sup>23</sup> VHA Overview, August 22, 2002. VHA Communications, Office of the Under Secretary for Health.





## MEDICATIONS FOR VETERANS WITH HIV DISEASE: ANTIRETROVIRALS AND PROPHYLAXIS

Antiretroviral therapy has been a scientific and clinical breakthrough. It has saved thousands of lives and transformed HIV disease from an imminently fatal illness into a chronic disease. Thus, access to antiretroviral treatment is a vital part of HIV care.

### ANTIRETROVIRAL THERAPY

All FDA-approved antiretroviral medications are included on the VA's national formulary and available to veterans with HIV disease in VA care. As of the end of FY02, the formulary included 18 antiretroviral medications, including formulations combining multiple active agents. Three of these antiretroviral medications have been added since the beginning of FY00.<sup>1</sup>

Given the importance of antiretroviral therapy to the treatment of HIV disease, one would expect HIV patients to have a higher rate of pharmaceutical use than the general VA patient population. This is indeed the case. During FY02, the VA filled outpatient prescriptions for over 18,000 veterans with HIV disease, each of whom had 50 prescriptions filled, on average. These 50 prescriptions were for an average of 13 different drugs and other products. During the same period, 3.8 million veterans had outpatient prescriptions filled at the VA, averaging 28 prescriptions filled per recipient.<sup>2</sup> Data are not available on the average number of drugs and other products prescribed annually to VA patients generally.

### PATIENTS ON ANTIRETROVIRAL THERAPY

During FY02, 76 percent of all HIV patients in VA care (14,621 patients) received antiretroviral therapy.<sup>3</sup> HIV patients not on antiretroviral therapy were likely to be younger than those on therapy and more likely to be a member of a minority racial or ethnic group. Specifically, those on therapy in FY02 were more likely to be 50 years of age or older than those not on therapy (78.6 percent versus 73.3 percent, data not shown).<sup>4</sup> As Table 10 shows, black patients were less likely than white patients to be on antiretroviral therapy (72.1 percent versus 80.4 percent) in FY02,<sup>5</sup> and Hispanic patients were less likely than white patients to be on therapy (77.6 percent versus 80.4 percent).<sup>6</sup> This finding is consistent with other reports of antiretroviral use by racial/ethnic subpopulations.<sup>7</sup>

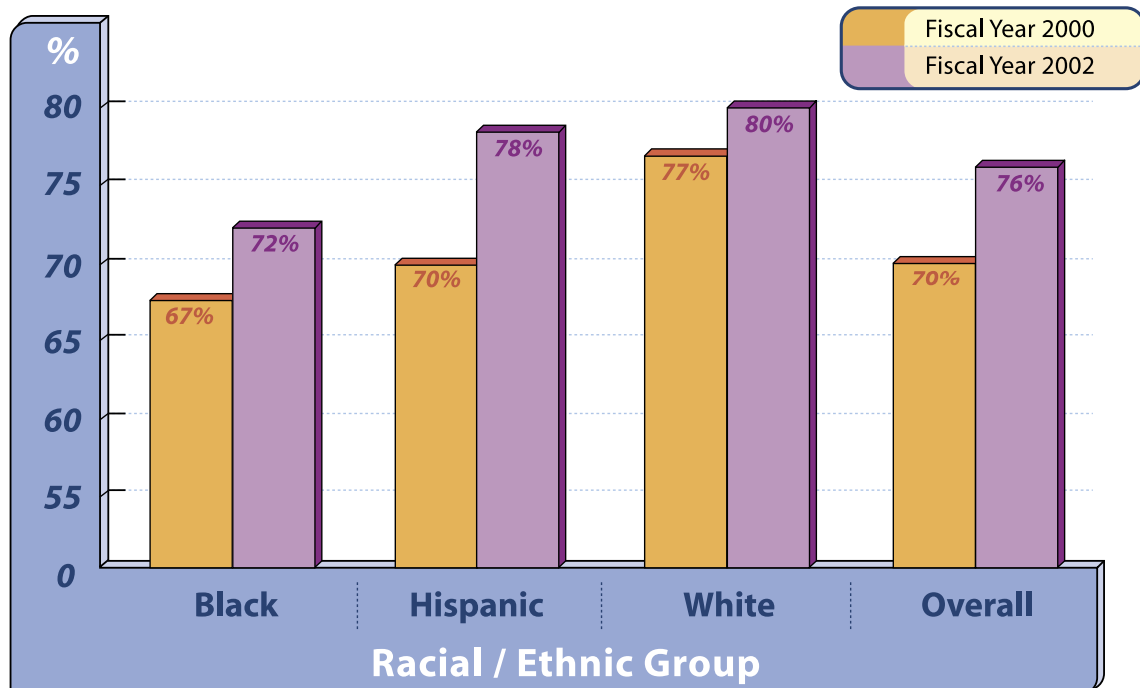
Although women comprise only a very small fraction of HIV patients in VA care, they were less likely than men to be on antiretroviral therapy. In FY02, 65.1 percent of female HIV patients were on antiretroviral therapy compared with 75.9 percent of male HIV patients.<sup>8</sup> This finding is also consistent with other reports of sex differences in antiretroviral use.<sup>9</sup>

- **Change from FY00 to FY02**

Overall, rates of antiretroviral use in the VA have increased in the last 2 years, from 71 percent in FY00 to 76 percent in FY02.<sup>10</sup> As shown in Figure 8, rates of use increased for each of the major racial/ethnic groups as well. The Hispanic population showed an increase in antiretroviral use of over 10 percent, the largest percentage increase among the major racial/ethnic groups.<sup>11</sup>

FIGURE 8

## Patients on Antiretroviral Therapy by Major Racial/Ethnic Group and Overall, Fiscal Years 2000 and 2002



SOURCE: Immunology Case Registry, December 2002

### • Patients with Advanced HIV Disease

Among those with advanced HIV disease, 84 percent (2,680 patients) were on antiretroviral therapy during FY02.<sup>12</sup> As one might expect, we observed a higher rate of antiretroviral therapy use among patients with advanced HIV disease than among the HIV population overall (84 versus 76 percent).<sup>13</sup> However, this finding is confounded by the fact that the overall HIV population includes those with missing CD4 data. The rate for patients with advanced HIV disease is based only on patients who have CD4 test results in the ICR. These “missing-CD4” patients have much lower rates of antiretroviral use (about 29 percent) than other HIV patients. Based on ICR data alone, we cannot determine whether these patients were not tested (perhaps because they received only emergency care from the VA) or whether their test results are simply missing from the database.

Among patients with advanced HIV disease, rates of use of antiretroviral therapy did not change between FY00 and FY02. In FY00, as in FY02, the rate of antiretroviral use among patients with advanced HIV disease was 84 percent.

### CLASSES OF ANTIRETROVIRAL THERAPY RECEIVED

Antiretroviral medications fall into three classes: nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (nNRTIs), and protease inhibitors (PIs).<sup>14</sup> The guidelines for the antiretroviral agents published by the Department of Health and Human Services (and adopted by the VA) recommend an antiretroviral regimen consisting of multiple medications from different classes.<sup>15</sup> The chief

rationale for this strategy is to avoid therapy failure due to the emergence of viral resistance to one or more of the medication classes. The potential combinations of antiretroviral medications are numerous. To date, we are aware of little data that describe the most commonly used combinations of medications.

Describing patterns of use of antiretroviral medications is not straightforward. Prescriptions are filled for specific medications, and different prescriptions within a given patient's regimen may be filled at different times. We characterize a patient as being "on" a given medication if one or more prescriptions for that medication were filled during the period of interest. Because of ongoing changes to patients' regimens, this analysis draws upon prescription data for a single quarter (that is, a quarter is the period of interest) rather than a year. This "snapshot view" minimizes the effect upon our results of changes in a given patient's medication regimen (see appendix for additional discussion of a quarter as the analysis period). Consequently, this analysis of patterns of antiretroviral therapy draws primarily on data for the 16,497 veterans who received VA care for HIV disease during the final quarter of FY02.

About 73 percent of veterans in care for HIV disease during the last quarter of FY02 (12,066 patients) filled a prescription for one or more antiretroviral medications during the quarter. Table 11 presents data on the classes of medications and on the individual products within each class dispensed to these 12,066 patients.

- **Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)**

The most commonly used class of agents is the NRTI class. During the last quarter of FY02, at least one product in the NRTI class was dispensed to 11,784 veterans, or 97.7 percent of those on antiretroviral therapy. Many of them received multiple NRTI products consisting of single agents or combinations of agents (the average is 1.6 NRTI products per recipient).

Stavudine was the most commonly dispensed NRTI product during the last quarter of FY02. It was received by over 4,000 patients, almost 38 percent of patients on any NRTI (see the second panel of Table 11). Lamivudine and the combination lamivudine/zidovudine were each dispensed to roughly a third of the VA patients on any NRTI.

Two products in the NRTI class (lamivudine/zidovudine and abacavir/lamivudine/zidovudine) are combinations of active agents also offered individually. If one considers active agents (rather than products), lamivudine was the most commonly dispensed NRTI. During the last quarter of FY02, lamivudine was dispensed to over 9,000 veterans, or more than three-fourths of the patients on any NRTI (not shown). During this quarter, over 5,000 patients had prescriptions for zidovudine and over 2,500 had prescriptions for abacavir, either individually or in a combination.

- **Protease Inhibitors (PIs)**

At least one protease inhibitor was dispensed to over 6,600 veterans with HIV disease (or 55 percent of those on therapy) during the last quarter of FY02. Multiple products from the PI class were dispensed to some of these veterans; on average, each of them received about 1.2 products from that class.

During the last quarter of FY02, more veterans received nelfinavir than any other PI; it

was dispensed to a third of the patients receiving any PI. The combination lopinavir/ritonavir followed closely; it was dispensed to about 30 percent of the patients on any PI. Indinavir was dispensed to about a quarter of patients on any PI.

- **Non-Nucleoside Reverse Transcriptase Inhibitor (nNRTIs)**

At least one product in the nNRTI class was dispensed to over 5,000 veterans (or over 40 percent of those on antiretroviral therapy) during the last quarter of FY02. Very few veterans received more than one product within the nNRTI class.

Efavirenz was dispensed to about two-thirds of those on any nNRTI during the last quarter of FY02—a larger percentage by far than any other product in the class. Nevirapine was dispensed to about a third of veterans on any nNRTI.

### COMMON REGIMENS IN FISCAL YEAR 2000

The HHS guidelines recommend initial regimens containing three or more agents.<sup>16</sup> The choice of a regimen is difficult and complex, and guidelines offer a broad range of options. Several factors play an important role in the choice of regimen. These factors include medical history (including medication history), social history, results of viral resistance testing, and individual tolerability to historical and expected side effects. Information on these factors is not collected in the ICR, and thus they remain “invisible” in this analysis.

Many patients are on antiretroviral regimens that consist of three agents. Others are on regimens that consist of a minimum (or “backbone”) regimen of three agents, supplemented by additional agents. For regimens containing at least three agents, Table 12 describes the most common three-agent groups dispensed during the last quarter of FY02. We describe 11 different regimens containing three agents; each was received by 300 or more patients during that quarter. In total, these patients comprise over 60 percent (61.7 percent) of the veterans on antiretroviral therapy during that quarter.

All of these three-agent groups are consistent with the recommendations of the HHS Guidelines adopted in February 2002. Reflective of those recommendations, all but one of the 11 three-agent groups consists of:

- Two agents from the NRTI class (lamivudine and either zidovudine or stavudine); and
- An agent from either the PI class (nelfinavir, indinavir, or lopinavir/ritonavir) or the nNRTI class (efavirenz or nevirapine)

No single three-agent group is common. Only one (lamivudine, zidovudine, and efavirenz) was dispensed to over 10 percent of veterans on antiretroviral therapy.



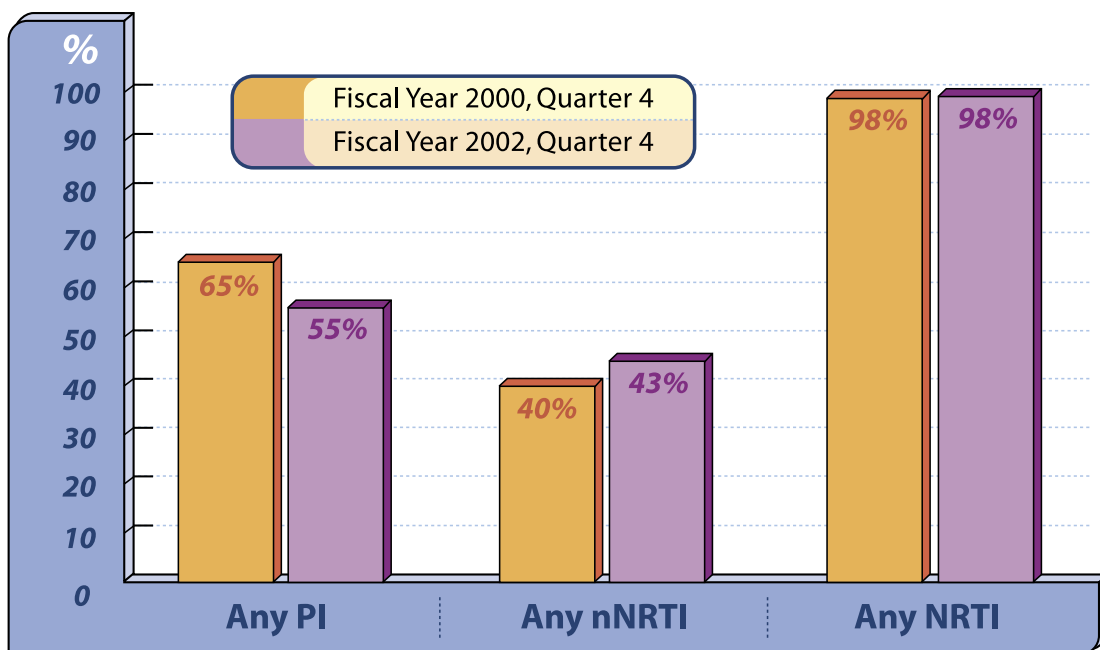
## CHANGES FROM 2000 TO 2002 (SNAPSHOT VIEW)

- By Class

As Figure 9 illustrates, the rate of NRTI use was unchanged (97.7 percent of HIV patients were on therapy in each year), while the rate of nNRTI use increased and the rate of PI use decreased between the last quarters of fiscal years 2000 and 2002. The increase for the nNRTI class was about 6 percent (from 40.4 to 42.9 percent).<sup>17</sup> The decrease for the PI class was more substantial. The percentage of veterans on a PI fell from 64.7 percent in the last quarter of FY00 to 55.2 percent in the last quarter of FY02, a decrease of almost 15 percent.<sup>18</sup>

FIGURE 9

### Use of Antiretrovirals by Drug Class Last Quarter, FY 2000 and 2002



**PI** = Protease Inhibitor

**nNRTI** = Non-Nucleoside Reverse Transcriptase Inhibitor

**NRTI** = Nucleoside/Nucleotide Reverse Transcriptase Inhibitor

SOURCE: Immunology Case Registry, December 2002

- By Product

To examine change in the use of specific antiretroviral products, we ranked the relative usage of each product, within class, for the last quarters of FY00 and FY02. In Table 13, the product used by the highest percentage of patients on any medication in that class is assigned the rank “1” within its class, the second highest is assigned the rank “2,” and so on.

Several antiretroviral products (including new combinations of agents) were added to the VA formulary between fiscal years 2000 and 2002, which in turn affected the use of other antiretroviral products. While rankings of the most commonly prescribed NRTIs were unchanged between FY00 and FY02, rankings for the less commonly prescribed NRTI products changed as a result of the addition of tenofovir and abacavir/lamivudine/zidovudine to the VA formulary before FY02 began. There were changes in relative PI usage between FY00 and

FY02 due to the addition of lopinavir/ritonavir, which was added to the VA formulary in the final month of fiscal year 2000. By FY02, lopinavir/ritonavir was being dispensed to about 30 percent of veterans on a PI and ranked second in the PI class. There were no changes in the relative usage of products in the nNRTI class between FY00 and FY02.

### PRESCRIPTIONS FOR PCP PROPHYLAXIS

One of the common opportunistic infections associated with HIV disease is *Pneumocystis carinii* pneumonia (PCP). *Pneumocystis carinii* causes pneumonia in immune-compromised individuals, primarily those with advanced HIV disease and those being treated with immunosuppressive drugs (e.g., cancer patients and transplant recipients). PCP can usually be effectively prevented with drug prophylaxis. Guidelines recommend drug prophylaxis for HIV patients with consistent immune suppression (defined as CD4 cell counts less than 200 cells/mm<sup>3</sup>); the products recommended for this therapy include atovaquone, dapsone, pentamidine, sulfamethoxazole/trimethoprim, and trimethoprim (alone).<sup>19</sup>

Our measure of PCP prophylaxis is crude. A patient is counted as “on” therapy if s/he has at least one prescription for a PCP prophylaxis medication during a fiscal year. We do not consider whether prophylactic therapy was sustained. Moreover, some of the products are prescribed for other uses. Based on ICR data alone, it is not possible to determine the specific indications for their use in an individual case. We apply this measure of PCP prophylaxis to patients with advanced HIV disease. As discussed in Chapter III, our definition of advanced HIV disease is based on consistent immune suppression (CD4 below 200 cells/mm<sup>3</sup>).

In both fiscal years 2000 and 2002, almost 90 percent of patients with advanced HIV disease had a prescription for one or more PCP prophylactic agents (see Table 14). Sulfamethoxazole/trimethoprim was prescribed for the great majority (over 80 percent) of these patients.



HIV Patients Receiving Antiretroviral Therapy by Demographic Characteristic  
Fiscal Years 2000 and 2002

Characteristic	Fiscal Year 2000		Fiscal Year 2002		Percent Change <sup>a</sup> 2000-2002	
	Number in Group (A)	Percent on Therapy (B)	Number in Group (C)	Percent on Therapy (D)		
Sex <sup>b</sup>	Male	19,204	71.1%	18,842	75.9%	+ 6.8%
	Female	460	62.0%	481	65.1%	+ 5.0%
Age (in years) <sup>c</sup>	Less than 30	408	62.2%	264	59.8%	- 3.9%
	30 to 39	3,560	71.9%	2,783	74.3%	+ 3.3%
	40 to 49	8,527	69.5%	7,878	73.4%	+ 5.6%
	50 to 59	5,540	72.9%	6,555	78.0%	+ 7.0%
	60 to 69	1,236	73.9%	1,371	81.0%	+ 9.9%
	70 & over	417	62.8%	495	78.4%	+ 2.5%
Race/Ethnicity <sup>d</sup>	Black (not Hispanic)	9,525	67.1%	9,171	72.1%	+ 7.1%
	White (not Hispanic)	6,907	77.2%	6,861	80.4%	+ 4.1%
	Hispanic	1,527	70.3%	1,459	77.6%	+ 10.4%
	American Indian/ Alaskan Native/ Asian/Pacific Islander	72	66.7%	73	79.4%	+19.0%
	Multiple <sup>e</sup>	807	74.0%	708	78.8%	+ 6.5%
	Unknown	850	60.7%	1,074	69.3%	+ 14.2%

SOURCE: Immunology Case Registry, December 2002.

NOTE:

- a)  $(D-B)/B \times 100$
- b) For FY00, we excluded 24 cases due to inconsistent data on sex. For FY02, we excluded 23 cases due to missing or inconsistent data on sex.
- c) Age is calculated as of the midpoint of the fiscal year.
- d) Information on race/ethnicity on the ICR is taken from the VA patient record and is based primarily on staff observation. In calendar year 2003, VA will begin to use OMB definitions and ask for patient self-report, including of self-report of mixed race.
- e) Indicates that different races or ethnicities are listed in different records for that patient.

**Patients with Prescriptions for Antiretroviral Products  
Overall and within Class, Last Quarter of Fiscal Year 2002**

I. Overall		
Prescription for:	Number of HIV Patients	Percent of HIV Patients with Any Antiretroviral
Any Antiretroviral	12,066	100.0%
Any NRTI	11,784	97.7%
Any PI	6,665	55.2%
Any nNRTI	5,177	42.9%

II. Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)		
Product	Number of HIV Patients	Percent of HIV Patients with Any NRTI
Stavudine	4,422	37.5%
Lamivudine	4,269	36.2%
Lamivudine/Zidovudine	3,993	33.9%
Didanosine	1,894	16.1%
Abacavir	1,564	13.3%
Tenofovir	1,555	13.2%
Abacavir/Lamivudine/Zidovudine	1,043	8.9%
Zidovudine	485	4.1%
Zalcitabine	65	0.6%

*(continued on page 49)*

**Patients with Prescriptions for Antiretroviral Products**  
**Overall and within Class, Last Quarter of Fiscal Year 2002** (continued)

### III. Protease Inhibitors (PI)

Product	Number of HIV Patients	Percent of HIV Patients with Any PI
Nelfinavir	2,222	33.3%
Lopinavir/Ritonavir	2,024	30.4%
Indinavir	1,635	24.5%
Ritonavir	1,114	16.7%
Saquinavir	628	9.4%
Amprenavir	447	6.7%

### IV. Non-Nucleoside Reverse Transcriptase Inhibitors (nNRTI)

Drug	Number of HIV Patients	Percent of HIV Patients with Any nNRTI
Efavirenz	3,417	66.0%
Nevirapine	1,703	32.9%
Delavirdine	102	2.0%

SOURCE: Immunology Case Registry, December 2002.

NOTE: Patients may have prescriptions for multiple products within a class. Therefore, within a class, the sum of the percentages of patients with specific products may add to more than 100 percent.

**TABLE 12**

**Common Three-Agent Groups in VA Antiretroviral Therapy  
Last Quarter of Fiscal Year 2002**

Class and Drug					Patients on Regimen	
NRTI (1)	NRTI (2)	NRTI (3)	nNRTI	PI	Number	% of Patients on Any Antiretroviral
Lamivudine	Zidovudine	--	Efavirenz	--	1,322	11.0%
Lamivudine	Zidovudine	Abacavir	--	--	1,043	8.6%
Lamivudine	Zidovudine	--	--	Nelfinavir	885	7.3%
Lamivudine	Zidovudine	--	--	Indinavir	731	6.1%
Lamivudine	Stavudine	--	Efavirenz	--	713	5.9%
Lamivudine	Stavudine	--	--	Nelfinavir	682	5.7%
Lamivudine	Zidovudine	--	Nevirapine	--	557	4.6%
Lamivudine	Stavudine	--	--	Indinavir	451	3.7%
Lamivudine	Stavudine	--	Nevirapine	--	417	3.5%
Lamivudine	Zidovudine	--	--	Lopinavir/Ritonavir	329	2.7%
Lamivudine	Stavudine	--	--	Lopinavir/Ritonavir	309	2.6%
<b>Total</b>					<b>7,439</b>	<b>61.7%</b>

SOURCE: Immunology Case Registry, December 2002.

NOTE: The active agents within combinations are considered separately. Regimens may consist of three or more agents. Here we show only the most common three-agent groups within regimens—that is, the minimum or “backbone regimen.” In some cases, patients may have received one or more agents as part of different regimens during the quarter.

**Prescriptions for Antiretroviral Products within Class  
Fiscal Years 2000 and 2002**

**I. Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)**

Drug	Last Quarter FY 2000		Last Quarter FY 2002	
	Percent of Patients on Any Antiretroviral	Class Rank	Percent of Patients on Any Antiretroviral	Class Rank
Stavudine	47.7%	1	37.5%	1
Lamivudine	40.1%	2	36.2%	2
Lamivudine/Zidovudine	38.7%	3	33.9%	3
Didanosine	15.5%	4	16.1%	4
Abacavir	13.2%	5	8.9%	6
Zidovudine	5.4%	6	4.1%	7
Zalcitabine	1.3%	7	0.6%	8
Abacavir/Lamivudine/ Zidovudine	a	a	8.9%	6
Tenofovir	b	b	13.2%	5

**II. Protease Inhibitors (PI)**

Drug	Last Quarter FY 2000		Last Quarter FY 2002	
	Percent of Patients on Any Antiretroviral	Class Rank	Percent of Patients on Any Antiretroviral	Class Rank
Nelfinavir	42.8%	1	33.3%	1
Indinavir	35.1%	2	24.5%	3
Ritonavir	22.9%	3	16.7%	4
Saquinavir	15.6%	4	9.4%	5
Amprenavir	9.6%	5	6.7%	6
Lopinavir/Ritonavir <sup>c</sup>	0.1%	6	30.4%	2

*(continued on page 52)*

**Prescriptions for Antiretroviral Products within Class  
Fiscal Years 2000 and 2002 (continued)**

**III. Non-Nucleoside Reverse Transcriptase Inhibitors (nNRTI)**

Drug	Last Quarter FY 2000		Last Quarter FY 2002	
	Percent of Patients on Any Antiretroviral	Class Rank	Percent of Patients on Any Antiretroviral	Class Rank
Efavirenz	61.1%	1	66.0%	1
Nevirapine	37.8%	2	32.9%	2
Delavirdine	2.3%	3	2.0%	3

SOURCE: Immunology Case Registry, December 2002.

NOTE: Patients may have prescriptions for multiple drugs within a class. Therefore, within a class, the sum of the percentages of patients with specific drugs adds to more than 100 percent.

- a) Abacavir/Lamivudine/Zidovudine was approved by the FDA in November 2000.
- b) Tenofovir was approved by the FDA in October 2001.
- c) Lopinavir/Ritonavir was approved by the FDA in September 2000.



## Prescriptions for PCP Prophylaxis Among Patients with Advanced HIV Disease, Fiscal Years 2000 and 2002

I. Overall				
Patients	Fiscal Year 2000		Fiscal Year 2002	
	Number	Percent	Number	Percent
Patients with Advanced HIV Disease	3,463	--	3,195	--
Patients with Advanced HIV Disease on PCP Prophylaxis	3,060	88.4%	2,830	88.6%

II. Patients with Advanced HIV Disease - By Drug Product				
Product	Fiscal Year 2000		Fiscal Year 2002	
	Number	Percent of Those on Any PCP Prophylaxis	Number	Percent of Those on Any PCP Prophylaxis
Sulfamethoxazole/ Trimethoprim	2,531	82.7%	2,285	80.7%
Dapsone	550	18.0%	580	20.5%
Atovaquone	157	5.1%	173	6.1%
Pentamidine	91	3.0%	71	2.5%
Trimethoprim	20	0.7%	14	0.5%

SOURCE: Immunology Case Registry, December 2002.

NOTE: A patient is counted as "on" therapy if s/he has at least one prescription for a PCP prophylaxis drug. Patients may have prescriptions for multiple prophylactic drugs. Therefore, the sum of the percentages of patients with specific drugs adds to more than 100 percent.

## CHAPTER 5 NOTES

<sup>1</sup> These newer medications are: (1) the combination lopinavir/ritonavir, which was added to the national formulary in September 2000; (2) the combination abacavir/lamivudine/zidovudine, which was added in November 2000; and (3) tenofovir, which was added in October 2001.

<sup>2</sup> The source of these data for the VA as a whole is the VA's Pharmacy Benefits Management (PBM) database.

<sup>3</sup> Defined here as at least one prescription filled for an antiretroviral medication during the observed fiscal year.

<sup>4</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy was younger than 50 years of age is statistically significant at the .01 level.

<sup>5</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy was black or white is statistically significant at the .01 level.

<sup>6</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy was Hispanic or white (and not of Hispanic origin) is statistically significant at the .05 level.

<sup>7</sup> See W. E. Cunningham, L. E. Markson, R. M. Andersen, S. H. Crystal, J. A. Fleishman, C. Golin, A. Gifford, H. H. Liu, T. T. Nakazono, S. Morton, S. A. Bozzette, M. F. Shapiro, and N. S. Wenger, "Prevalence and Predictors of Highly Active Antiretroviral Therapy Use in Persons with HIV Infection in the US," *Journal of Acquired Immune Deficiency Syndromes* 25(2) (2000): 115-123.

<sup>8</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy was male or female is statistically significant at the .01 level.

<sup>9</sup> See Cunningham et al., *op cit*.

<sup>10</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient was on antiretroviral therapy in each of the two fiscal years is statistically significant at the .01 level.

<sup>11</sup> A Chi-square test of a two-by-two contingency table indicating whether a Hispanic patient was on antiretroviral therapy in each of the two fiscal years is statistically significant at the .01 level. Similar tests are also statistically significant at the .01 level for black and white patients.

<sup>12</sup> The number of patients (2,680) is 83.8 percent of those known to have maximum CD4 counts less than 200/mm<sup>3</sup> during the fiscal year.

<sup>13</sup> If we consider only patients with at least one CD4 value, the rates of antiretroviral use for those whose disease was not advanced are very similar to the rates for those whose disease was advanced. Our results differ when we exclude and include patients who have no CD4 values because "missing-CD4" patients have much lower rates of antiretroviral use (see discussion in text).

<sup>14</sup> Tenofovir is a nucleotide reverse transcriptase inhibitor. All other agents in the NRTI class are nucleoside reverse transcriptase inhibitors.

(continued on page 55)

## CHAPTER 5 NOTES

<sup>15</sup> “Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents,” Panel on Clinical Practices for Treatment of HIV Infection Convened by the Department of Health and Human Services and the Henry J. Kaiser Family Foundation, February 4, 2002. Available at <http://www.aidsinfo.nih.gov/guidelines>.

<sup>16</sup> *Ibid.*

<sup>17</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy received a medication in the nNRTI class in each of the 2 fiscal years is statistically significant at the .01 level.

<sup>18</sup> A Chi-square test of a two-by-two contingency table indicating whether a patient on antiretroviral therapy received a medication in the PI class in each of the 2 fiscal years is statistically significant at the .01 level.

<sup>19</sup> “2001 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with HIV,” November 28, 2001. Available at <http://www.aidsinfo.nih.gov/guidelines>.





## TRENDS AND FUTURE DIRECTIONS

This report provides a population view of VA care for HIV disease. The usefulness of such a view lies in increasing understanding of the population being served, measuring how the system as a whole addresses population needs, and identifying unexpected variations.

### TRENDS AND FUTURE DIRECTIONS

In this population view, we have identified several important trends, which help us to understand the HIV population in VA care and assess how the VA health care system is addressing population needs. Some of these trends suggest issues for future study using ICR data, including investigation of variation for subgroups of the veterans in VA care.

### REGIONAL DISTRIBUTION AND VOLUME

The VA cared for over 19,000 veterans with HIV disease in FY02. The regional distribution of the number of veterans in care mimics that of the HIV/AIDS epidemic in the United States as a whole. Although the number of veterans in VA care for HIV disease changed little between FY00 and FY02, there was a geographic shift in their distribution. As in the national HIV/AIDS epidemic, VA HIV caseloads increased at stations in the southern and southwestern regions of the United States.

In FY02, veterans with HIV disease received care at over 125 VA stations across the Nation. The volume of HIV patients served annually varies widely across stations, from over a thousand to fewer than 25 patients. The largest numbers of HIV patients were served at stations in the traditional AIDS epicenters. However, over a third of VA stations provide care to a relatively small number of HIV patients (fewer than 50). One of the VA's challenges is the provision of high-quality care throughout the system, so that outcomes for patients receiving care at a low-volume facility are comparable to outcomes for those receiving care in high-volume HIV-specialty clinics. We expect to compare the process of care and outcomes for veterans in care for HIV disease at low- and high-volume facilities to assess how well the VA is meeting this challenge.

### WHO IS IN CARE?

Veterans in VA care for HIV disease share some, but not all, of the demographic characteristics of the national HIV population. As in the HIV/AIDS epidemic nationally, veterans with HIV disease are predominantly nonwhite. Unlike the national HIV population (but like the general veteran population), HIV patients in VA care are overwhelmingly male.

The large numbers of veterans with HIV disease in VA care affords a real opportunity to isolate differences in care and outcomes that may be associated with patient demographic characteristics. Differences by age, racial/ethnic group, or sex can be studied. Even though women comprise a small percentage of the population in care, they number almost 500.

The cohort of HIV patients in VA care is aging. To understand the causes of this phenomenon, we need to know more about patients "new" to VA care for HIV disease and about those who leave VA care. Approximately 10 percent of patients were new to VA HIV care

in FY02. That year, roughly 5 percent of VA patients with HIV disease died, and another 5 percent left VA care. As part of improving our understanding of those who leave care, more work is needed to assess the accuracy and completeness of mortality data in the ICR. In addition, we plan to explore the role that VA plays in ongoing HIV care of patients who enter and leave VA care. For example, to what extent, are these patients comanaged with providers outside of VA?

About 20 percent of VA HIV patients are in an advanced stage of the disease, as evidenced by measures of immune status (CD4 cell counts). We need to know more about the stage at which veterans are first identified with HIV infection, at what stage they seek VA HIV care, and whether opportunities within the VA system have been missed for earlier diagnosis and possibly treatment. Anecdotal evidence indicates that patients seek HIV care from the VA after other sources of care are no longer available (e.g., loss of private health insurance). Our hope is to better address a problem seen in the HIV/AIDS epidemic in general-patients being diagnosed or first seeking care in later disease stages.

A more comprehensive view of the population's clinical status (based on CD4 cell counts, as well as viral load levels) is needed. Work is underway to improve the quality of laboratory data collected in the national registry and data comparability to allow cross-station comparisons. Further investigation is also needed to better describe the population of patients for whom no CD4 cell count information is available in the national registry.

Based on types of VA services used, we know that veterans in VA care for HIV disease have higher rates of treatment for substance use disorders than the general VA population. There is ample ICR data to ascertain the prevalence of other mental health diagnoses. We hope to study to what degree substance use disorders and other mental health diagnoses affect the management of HIV disease in the VA.

Similarly, we present here only a first look at comorbid medical illnesses in the VA HIV population, based on primary inpatient discharge diagnosis. There is growing concern about medical comorbidities related to HIV disease and its treatment. Moreover, the VA HIV population is aging. Clearly, there is work to do in describing and identifying rates of comorbid medical conditions prevalent in the VA HIV population and studying how these conditions affect the management of HIV disease.

## PATTERNS OF CARE

Once HIV patients are in VA care, we believe that they are accessing HIV expertise and that their care is being managed in the outpatient setting. Consistent with increased access to care by clinicians who specialize in HIV disease, outpatient care for HIV disease appears to have shifted toward care in infectious disease clinics. As evidence of management of HIV disease in the outpatient setting, consider the reduction in the use of inpatient services. Between FY00 and FY02 for example, the percentage of patients with HIV disease who had an inpatient stay fell by about 5 percent, and the number of stays fell by about 10 percent. The ICR provides a unique opportunity for ongoing review of these patterns of utilization across geographic regions within the VA system.

Our review of some basic process of care measures -receipt of antiretroviral medications and of PCP prophylaxis- suggests that the VA system is providing the great majority of HIV patients with access to vital therapies. While our measures are crude, these

results are consistent with the provision of standard-of-care treatment for HIV disease.

The VA and the ICR may provide a means to better understand effective treatment strategies for antiretroviral medication and PCP prophylaxis in a “real world” setting (outside of a clinical trial). Strategies for HIV therapy are continually changing. Very basic questions (such as when to start and when to switch regimens) are still unanswered and subject to changes in guidelines and in expert recommendations. A better understanding of what regimens are actually taken and tolerated and their associated outcomes (both short- and long-term) may prove to be helpful, not only for VA HIV patients and their providers but also for HIV patients overall.

Receipt of antiretroviral therapy increased for members of nonwhite racial/ethnic groups between FY00 and FY02, but they appear to be less likely to receive antiretroviral therapy than whites. Moreover, women appear to be less likely to receive antiretroviral therapy than men. Much more information is needed to assess whether these differences are appropriate, and, if not, how they might be remedied. This includes information on clinical status, comorbid conditions, site of care (both geographic area and medical setting), whether HIV-specific care is available, whether HIV-specific care is received, and patient preferences.

## IMPROVING CARE

While study is necessary to improve understanding, study alone is not sufficient to improve care. The Center for Quality Management in Public Health (CQM) is also developing clinical tools to improve the quality of care within the VA.

The CQM will be using ICR data to provide feedback to individual VA stations about the outcomes of HIV patients in care at that station and to implement tools to help improve the quality of care. Over the next year, the third version of ICR software will be released to VA facilities. This new version will include tools that local clinicians can apply to their local registry data to review, manage, and improve outcomes for HIV patients within their care. Local reports will include a wide range of functions, from graphical interfaces to help document individual patient drug regimens and their clinical responses, to reports that identify patients who appear to be “lost to follow-up.”

In addition, CQM has developed other “real-time” clinical tools to provide clinicians reminders at the point of care. We have organized national-level conferences to bring VA HIV providers the latest information and, more important, to introduce them to one another and help foster cross-facility communication. We are also leading HIV Care Collaboratives to hone and support local efforts to improve care quality, based on the Breakthrough Series model of the Institute for Healthcare Improvement.<sup>1</sup> (A “collaborative” is a structured way of improving health care services. It involves a series of meetings and other exchanges among medical professionals from several settings to share best practices and make changes to improve the quality of care.)

While many of these tools are currently focused on VA providers, the patient remains the most important person on the care team. Many of these tools are meant to summarize information in a cogent way to maximize provider time spent in dialog with patients and minimize time spent culling information from the medical chart. The goal is, after all, to provide the best care possible for each and every one of our veterans in VA care.



## CHAPTER 6 NOTES

<sup>1</sup> D. M. Berwick and T. W. Nolan, “Physicians as Leaders in Improving Health Care: A New Series in *Annals of Internal Medicine*,” *Annals of Internal Medicine* 128 (February 15, 1998): 289-292.





## APPENDIX: MEASURES USED IN THIS REPORT

In this appendix, we provide detailed explanations of terms and measures that are not fully described in the text of this report. Many of these terms and measures follow the definitions adopted by the Veterans Health Administration (VA). Our use of VA definitions facilitates comparison of statistics on patients with HIV disease with those for VA patients generally. VA definitions will already be familiar to many -but not all- readers within the VA. In this appendix, our goal is to make the definitions of terms and measures readily available to readers both inside and outside the VA.

### PATIENTS AND THEIR CHARACTERISTICS

#### PATIENTS AND STATIONS

This report describes unique patients in VA care for HIV disease who were active in the fiscal year of interest. Patients are unduplicated across VA stations, except for the analysis of services by station for which patients are unduplicated within station and for the analysis of services by VISN for which patients are unduplicated *within* VISN. A patient is defined as active in a given fiscal year if s/he received inpatient, outpatient, outpatient prescription, laboratory, or radiology services. The measure of receipt of inpatient services is based on admission to any type of inpatient facility (hospital, nursing home, residence) during the fiscal year. The measure of receipt of outpatient clinic services is based on clinic stop codes (which are described in more detail below). The measure of receipt of outpatient prescription services is based on dispensing records, and the measure of the receipt of radiology services is based on CPT codes for radiological procedures.

Occasionally, a patient in VA care for HIV disease in a given fiscal year may not be added to the ICR until the next fiscal year. In order to include such patients, patients active in a given fiscal year are counted even if they were not entered on the ICR until after that fiscal year. However, this procedure also includes any patients who were in VA care in the earlier fiscal year but who did not begin VA care *for HIV disease* until after that year.

A station is generally a medical center and associated satellite facilities, but may include multiple medical centers (and associated facilities) that have been merged into a single administrative unit. The ICR carries only the station number; thus it is not possible to distinguish in this report between medical centers when there is more than one center in a station.

Patients new to VA care for HIV disease during a given fiscal year are defined as those for whom the first transmission of a record to the ICR occurred during that year and who were active during that fiscal year, with activity defined as described above for all patients.

#### DEMOGRAPHIC CHARACTERISTICS

The VA patient record is the source of ICR data on sex. In general, that information is recorded by a clerk at the time of patient eligibility assessment. For a small number of patients (45 for fiscal years 2000 and 2002 combined), sex is recorded in one record as male and in another record as female. This could occur if sex were recorded differently at different

stations. We have excluded these cases from the tables presenting information on sex. Age is calculated from date of birth on the VA patient record as of the midpoint of the fiscal year. If multiple values of date of birth appear on different records, we selected the earliest date.

The VA patient record is also the source of ICR data on race and ethnic group. Race and ethnic group are generally recorded by a clerk; they are not necessarily based on the patient's self-report. In some cases, race or ethnic group is recorded differently in records from different stations. In such cases, we describe the case in this report as of "mixed" race/ethnicity. In calendar year 2003, VA began to use OMB definitions and ask for patient self-reported information on race/ethnicity, including information on mixed race.

## ADVANCED HIV DISEASE

In this report, we identify patients in the advanced stage of HIV disease based on their current immunologic condition, rather than on a history of AIDS-defining conditions. Specifically, we define patients in the advanced stage of HIV disease as those whose CD4 lymphocyte test result value(s) was less than 200/mm<sup>3</sup> during the fiscal year.

Use of clinical history to identify patients with advanced HIV disease has some important disadvantages, relative to current immunologic condition. First, past diagnoses are not as helpful in describing the current clinical condition of the patient. As evidence of the importance of current clinical condition, consider that some guidelines for care of HIV disease stipulate specific prophylaxis against opportunistic infections when current CD4 values fall below 200 cells/mm<sup>3</sup>. Second, we cannot fully identify all AIDS-defining conditions that patients may have had with the available data. Since the ICR has complete data only for VA care, we cannot take diagnoses outside of VA into account if clinical history is used to measure advanced HIV disease. Also, the ICR does not contain all of the information needed to correctly identify those AIDS-defining conditions for which ICD 9 codes alone are insufficient.

Our measure of advanced HIV disease is problematic, however, in that an appreciable percentage of patients on the ICR have no CD4 test result values. These values are not available on the ICR for about 14 percent of all active patients for the fiscal year 2002 and for about 22 percent of all active patients in fiscal year 2000. Rarely, a patient may not have received a CD4 test. However, most of these cases represent instances in which a CD4 test was given but the result does not appear on the ICR. In some cases, we can trace the cause of the missing data. For example, for idiosyncratic reasons, two large facilities did not enter CD4 counts into the local automated system from which the ICR draws until fiscal year 2000. There are also a small number of cases (36 in fiscal year 2002, for example) that we have treated as missing here because the CD4 test result is not in numerical format (for example, the result might simply read "see comment"). However, we cannot fully explain the causes of the missing data, and thus we cannot rule out the possibility that the patients for whom CD4 test result values are missing are systematically different from those for whom CD4 test result values are available. (The possibility of systematic differences is discussed further in the main body of this report.)

## MORTALITY

The ICR obtains information on vital status from several sources. Data on death of current VA patients are automatically downloaded from other VA files, for example, if a patient dies during a hospital stay. (If different dates of death appear on records from different

stations, we selected the latest date.) Until 1999, a station's ICR Coordinator could manually enter information on vital status into the ICR. A comparison of the dates of death and dates of VA laboratory tests suggests that Coordinators sometimes recorded deaths of former patients many months after that patient left VA care. Nevertheless, VA facilities are often unaware of the death of a former patient. Overall, we expect that there is an undercount of mortality on the ICR.

## PATIENT SERVICES

### OUTPATIENT SERVICES

Our measures of receipt of outpatient services are based on grouping VA “clinic stop” codes following established procedures. While many of these codes refer to a patient's visit to a VA clinic, some refer to other types of encounters such as outpatient diagnostic tests, home visits, and telephone consultations. For administrative purposes, the VA groups clinic stop into five service lines: (1) ancillary and general support services (clinic stop codes 100-299); (2) medicine and primary care services (300-399); (3) surgical services (400-449); (4) mental health services (500-599); and (5) other (450-499, 600-999). <sup>1</sup>

The VA distinguishes between primary and secondary clinic stops. For example, a visit to an outpatient clinic is coded as a primary stop and a blood draw associated with that clinic visit is coded as a secondary clinic stop. Our measures are based only on the primary clinic stop codes; secondary clinic stop codes are not included in the ICR.

Recently, the VA implemented changes in its procedures for coding clinic stops within the ancillary and support service line. As a result, many ancillary and support services delivered in conjunction with an outpatient visit are now coded as secondary clinic stops. Because of this change, we exclude ancillary and support services from consideration. We consider only the service lines that are composed mainly of primary clinic stops -specifically, medicine and primary care services, surgical services, and mental health services.

Our measure of receipt of primary care follows the VA method of grouping clinic stops that deliver primary care for the most part. Included in this group are the following clinic stops: primary care-medicine (code 323), primary care geriatrics (350), mental health primary care team-individual (531), mental health primary care team-group (563), home-based primary care (170-177), and women's clinic (322). <sup>2</sup>

### INPATIENT SERVICES

Our measures of inpatient services are based on discharges and include all VA inpatient services, both acute and long-term. Acute and long-term hospitals, nursing homes, and domiciliary facilities are included. Cases in which patients have not yet been discharged as of the end of a given fiscal year are not counted as stays for that fiscal year.

Analysis of claims and medical records suggests that the vast majority of VA patients with inpatient hospitalizations for HIV disease are included on the ICR. By the middle of fiscal year 2003, the ICR included all but 28 of patients identified on the VA's Patient Treatment File as having an inpatient stay during fiscal years 2001 or 2002 with a primary diagnosis of HIV, confirmed by a manual review of medical records. We estimate that these 28 patients

represent roughly 2 percent of patients with a stay with a primary diagnosis of HIV.<sup>3</sup> Because inpatient stays are common among patients with advanced HIV disease, this result suggests that few VA patients hospitalized for HIV disease are missing from the ICR.

- **Length of Stay**

Following VA procedures, length of stay is measured as the difference between discharge date and admission date.<sup>4</sup> This algorithm is applied even if the admission date predates the current fiscal year. Cases in which the patient was admitted to an inpatient facility and discharged on the same day are counted as inpatient stays. (Examples of such stays include those in which the patient is admitted briefly for observation, discharges him or herself against medical advice, or dies shortly after admission.) The VA reports length of stay only in ranges. In VA reports, stays in which the patient was admitted and discharged on the same day are grouped in the same range with stays in which the patient was discharged on the day following admission.<sup>5</sup> This is equivalent to adding one to the difference between the discharge date and admission date, when that difference is zero. To be as consistent as possible with the VA definition of length of stay, we add one to our measure of length of stay if the patient was admitted and discharged on the same day.

- **Major Diagnostic Categories**

The major diagnostic categories used by the VA are those categories that are part of the diagnosis-related group (DRG) system developed by the Medicare Prospective Payment System. These categories are mutually exclusive, and each of them corresponds to a single organ system or etiology. Each DRG is associated with a single major diagnostic category. DRGs, in turn, are based primarily on ICD diagnoses and procedures. The VA calculates DRGs for administrative purposes; in doing so, the VA uses the DRG grouper codes developed by the Medicare program.<sup>6</sup>

## PRESCRIPTION DRUGS

The ICR draws on data on outpatient medications dispensed. Original fills, refills, and partial fills are included. Medications that are returned to stock (for example, when a prescription is not picked up as expected) are counted as fills on the ICR. However, medications are very seldom returned to stock.

## ANTIRETROVIRAL THERAPY

For the analyses of antiretroviral medications, we draw on prescription data for a single quarter in the year of interest. A patient is characterized as being prescribed a given medication if he or she has one or more prescription for that medication in that quarter. We describe a single quarter, rather than an entire year, to minimize the percentage of cases in which a patient's regimen changed during the study period. One of our goals is to characterize common regimens. If we were to use a year as our study period, our characterization of regimens would be misleading for those patients whose regimens changed during the year, as they would appear to have regimens containing more drugs than was actually the case at a given time.

We draw on data for a quarter rather than a month because many patients do not refill

their prescriptions monthly. While VA prescriptions for antiretroviral medications generally dispense a 30-day supply, that is not always the case, and some patients do not refill their prescriptions in a timely way. Consequently, we would exclude some patients entirely and our statistics would be understated, if we were to characterize prescriptions for antiretroviral medications during a month. Preliminary review of local data at a limited number of sites indicates that less than 10 percent of regimens are changed within a given quarter.

## PROPHYLAXIS FOR PCP

To identify patients with advanced HIV disease who had received prophylaxis for PCP, we searched ICR outpatient prescription records looking for five products recommended for the prevention of PCP: atovaquone, dapsone, pentamidine, sulfamethoxazole/trimethoprim, and trimethoprim. In some cases, these products may *not* have been prescribed for PCP prophylaxis. For example, sulfamethoxazole/trimethoprim can be used for other bacterial infections. Based on ICR data alone, it is not possible to determine the specific indications for the use of these drugs in each case.



## APPENDIX NOTES

<sup>1</sup> See “Fiscal Year 2002 Decision Support System (DSS) Outpatient Identifiers,” VHA Directive 2002-041, pp. G1-G2.

<sup>2</sup> *Ibid*, p. 4.

<sup>3</sup> *Ibid*, pp. G1-G2.

<sup>4</sup> In fiscal year 2002, the ICR included about 19,350 patients. About 10 percent of these patients were new to the ICR that year; thus, about 21,300 ( $19,350 \times 1.1 = 21,285$ ) were on the ICR in either 2001 or 2002. In 2002, 24 percent of patients on the ICR had a VA inpatient stay, and 26 percent of these patients had a stay with a primary diagnosis in the major diagnostic category of HIV infection. This major diagnostic category includes cases with HIV infection as a primary diagnosis AIDS or other HIV infection. We estimate that there were roughly 1,328 patients with an inpatient stay with a primary diagnosis of HIV in the VA in the fiscal years 2001 and 2002 combined. Thus, the 28 patients not included on the ICR would represent about 2 percent of VA patients with an inpatient stay with a primary diagnosis of HIV ( $28/1,328 = 0.021$ ).

<sup>5</sup> See “The Medical SAS Inpatient Datasets—FY2000: A VIREC Resource Guide,” VA Information Resource Center, Health Services Research and Development, September 2001, p. 75.

<sup>6</sup> Personal communication with Phil Colin, VA Information Research Analyst, VA Information Resource Center, January 2003.



## ABOUT CQM

The Center for Quality Management in Public Health

Public Health Strategic Health Care Group  
VA Palo Alto Health Care System  
3801 Miranda Ave., (132)  
Palo Alto, CA 94304  
Tel: (650) 849-0365  
FAX: (650) 849-0266



## MISSION AND DESCRIPTION

The Center is located in the VA Palo Alto Health Care System and is directed by the VA Public Health Strategic Health Care Group at the VA Central Office in Washington, DC.

- Our mission is to catalyze continual innovation and improvement in VA clinical care via the use of quality management techniques and the strategic use of clinical information systems.
- Our goal is to assure and maintain high quality, cost-effective care for veterans.

## CENTER STAFF

The VA's Center for Quality Management in Public Health catalyzes innovation and improvement in patient care using the VA system as a "working laboratory." This is possible because of a unique resource of the VA, its electronic medical record software system. Taking advantage of electronic clinical data, centralized patient registries are developed and enhanced to provide clinicians useful information about their populations of patients in care.

The CQM was first established with a primary focus on HIV care, its mission was expanded to include Hepatitis C issues in January 2001. In September 2001, a sister center, the Center for HIV Research Resources (CHRR), was also formed at the VA Palo Alto Health Care System and is directed by Dr. Mark Holodniy.

Sophia Chang, MD, MPH  
Director

Lary Mole, PharmD  
Deputy Director

Lisa Backus, MD, PhD  
ICR Clinical Manager

Timothy Loomis, PhD  
Technical Project Manager

James Halloran, MSN, RN, CNS  
National Quality Manager

Joanne McDay  
Administrative Officer

Paula Edwards  
Program Assistant

Barbara Phillips, PhD  
Consultant



