



**Department of
Veterans Affairs**



The State of Care for Veterans with HIV/AIDS



Public Health
Strategic Health Care Group

**Public Health Strategic Healthcare Group
Office of Public Health and Environmental
Hazards**

**Veterans Health Administration
Department of Veteran Affairs**

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Preface

The purpose of this report is to characterize the US Department of Veterans Affairs' (VA) Veterans Health Administration (VHA) state of care for its population of Veterans in care for HIV disease. The first step in providing responsive care is to learn about the affected population. This State of Care report describes the distribution of Veterans with HIV/AIDS within VHA and provides basic demographic data on this population. Additionally, the report describes pharmacologic treatment, other conditions commonly seen with HIV, monitoring, screening, and vaccinations. This report is intended to provide data which can be used to assess and guide interventions to improve the quality of care VHA delivers to Veterans with HIV/AIDS.

The report has a series of chapters, each covering a limited aspect of VHA care for Veterans with HIV/AIDS. Please refer to the Table of Contents for a quick reference to key section within each chapter. The report contains summary information at the national, regional (Veterans Integrated Service Network, or VISN), and local levels, presented in text, tabular, and graphical formats. To improve readability, large tables appear at the end of this report in the Appendix; smaller tables and figures appear within the text. References and general methods are listed at the end of each Chapter.

It has been several years since the Public Health Strategic Healthcare Group (PHSHG) has presented such a comprehensive summary report on Veterans with HIV/AIDS. At the time of the previous report (2003), access to electronic medical record data was limited to assessing workload/utilization, basic demographics, and antiretroviral medication use. In 2006, the Public Health Strategic Healthcare Group (PHSHG), in conjunction with the Office of Information Technology, launched a new population management tool, the Clinical Case Registry (CCR), which greatly expanded access to medical information both locally and nationally. The current report expands the review of care for Veterans with HIV/AIDS to include co-morbid conditions and indicators of clinical care quality. Where available, comparisons are made between Veterans with HIV/AIDS in recent care and in prior years. PHSHG staff instrumental in the oversight of the CCR and the development of this report, are listed in the acknowledgements section.

We are committed to making these data available to VHA researchers and policy makers to continue to improve care for Veterans with HIV/AIDS. This report would not be possible without the efforts of VHA staff located at VHA facilities across the county. This report is dedicated to them and to the Veterans we serve.

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Executive Summary

The U.S. Department of Veterans Affairs (VA), Veterans Health Administration (VHA) is the largest single provider of HIV care in the United States. To date, nearly 64,000 Veterans with HIV have received care in VHA. In 2008, over 23,000 HIV infected Veterans were seen by VHA clinicians; their care was delivered in every one of VHA's 21 Veterans Integrated Service Networks (VISNs) across the United States. Overall, 5.6 million Veterans were treated by VHA in 2008, thus about one of every 250 Veterans in care at VHA is living with HIV/AIDS. The number of HIV infected Veterans in care has been relatively stable over the past 5 years with approximately 9% entering VHA care and approximately 9% leaving (including deaths) VHA care in a given year. VISN caseloads range from 354 to 3,100 HIV infected Veterans while local healthcare systems care for between 2 and 1,200 such Veterans. The typical Veteran with HIV/AIDS is male (97%), 53 years old, and is receiving antiviral medications to treat HIV (80%). VHA is at the forefront of managing persons with HIV/AIDS who have conditions associated with advancing age including heart disease, diabetes and cancers. The most common co-morbidities in Veterans with HIV/AIDS in 2008 were depression (51%), hypertension (49%), and dyslipidemias (43%). One out of four had chronic hepatitis C virus infection and 7% had chronic hepatitis B virus infection.

Nationally, Veterans with HIV/AIDS receive high quality care at the VHA as reflected in rates of guideline-concordant HIV-specific care, recommended prophylaxis, vaccination, and screening for conditions important to public health, although room for improvement exists. National rates of adherence to specific recommendations for care in VHA for Veterans with HIV/AIDS receiving care in 2008 include: hepatitis C screening 96%, *Pneumocystis jiroveci* pneumonia (PCP) prophylaxis 86%, routine CD4+ lymphocyte count and HIV viral load testing 79%, hepatitis B screening and vaccination 77%, *Mycobacterium avium* complex (MAC) prophylaxis 75%, pneumococcal vaccination 72%, influenza vaccination 59%, tuberculosis screening 59%, and annual syphilis screening 48%. Geographic variability (across VISNs and local healthcare systems) is limited for most of these rates; however enough variation exists for some rates to merit further investigation.

This document provides a descriptive report; it is not meant to be exhaustive nor provide the type of statistical analyses that allow inferences to be drawn. The VA's Public Health Strategic Healthcare Group (PHSHG) uses this data to understand care regionally and locally in order to design targeted interventions and identify topics requiring additional investigation about care delivery, thus assisting to improve care for our nation's Veterans.

Chapter 1 – Background and Perspective

1.1 The Department of Veterans Affairs, Veterans Health Administration

The Department of Veterans Affairs (VA) Veterans Health Administration (VHA) is a federally funded, comprehensive health care system serving eligible, enrolled US veterans. Organizationally, the VHA is divided into 21 geographic regions called Veteran Integrated Service Networks or VISNs, each of which encompasses a number of local healthcare systems. These local systems include over 1,100 facilities consisting of medical centers, community based outpatient clinics (CBOCs), domiciliaries, extended care facilities, hospices, and specialty centers for mental health, blind rehabilitation, spinal cord injury, polytrauma and traumatic brain injury. In federal fiscal year 2008, there were 7.8 million enrollees with 5.6 million (72%) receiving care at VHA facilities. Nationwide, inpatient care involved 641,000 discharges (70% of which were for acute care) totaling 4.3 million bed days of care. Average daily census in nursing homes was 33,782 Veterans. Over 67 million outpatient visits were provided by the VHA in fiscal year 2008, 13.7 million of which were at community-based outpatient clinics. Additional information on the general Veteran population can be found at <http://www1.va.gov/vetdata/>.

1.2 Overview of Program Office and Quality Initiatives

The Office of Public Health and Environmental Hazards (OPHEH) improves Veterans' health through prevention, outreach, treatment and surveillance. OPHEH focuses on specific populations of Veterans including women Veterans, Veterans with HIV/AIDS, Veterans with hepatitis C, and Veterans exposed to hazardous materials during military service. OPHEH also manages VHA's medical response to emergencies and protects the safety and health of VHA employees.

Public Health Strategic Healthcare Group



The Public Health Strategic Health Care Group (PHSHG) is a component of the Office of Public Health and Environmental Hazards. PHSHG's mission is to improve the health of

Veterans through the development of sound policies and programs related to several major public health concerns including: HIV infection, hepatitis C infection, seasonal influenza, smoking and tobacco use, and emerging infections of public health significance - including healthcare associated infections. PSHHG strives to ensure the highest quality, comprehensive care is provided to Veterans and to have that care recognized as the standard by which all healthcare in the United States is measured. PSHHG efforts include patient care activities, clinician education, patient education, prevention activities, policy development, and research directed at continuous improvement of medical and preventive services delivered to Veterans.

Center for Quality Management in Public Health



The PSHHG oversees the HIV/AIDS programs through its National Clinical Public Health Program Office. The Center for Quality Management in Public Health (CQMPH), a component of the PSHHG, is based at the VA Palo Alto Health Care System campus and oversees the Clinical Case Registry (CCR) for HIV. The CQMPH mission is to catalyze continual innovation and improvement in VHA clinical care via the use of quality management techniques and the strategic use of clinical information systems. CQMPH fosters innovation and improvement in patient care using the VHA system as a "working laboratory." This work is possible because of the unique VHA electronic medical record (EMR). Taking advantage of clinical data from the VHA's EMR, CQMPH develops centralized patient registries and structures, and enhances registry data to provide clinicians useful information about their populations of Veterans with HIV. CQMPH staff members provide support to VHA clinicians and administrative staff to enhance their ability to use the CCR. CQMPH also provides other electronic tools such as Clinical Reminders. All these efforts are designed to enhance the quality of care delivered to Veterans.

1.3 Electronic Medical Records, the Clinical Case Registry and CCR Reports



VHA has a state of the art EMR covering all aspects of healthcare delivery and documentation. Electronic tools use healthcare data to provide clinicians with patient-centric reminders and guidance related to care delivery including safety functions such as drug-drug interaction and allergy checks, reminders to provide vaccinations, laboratory tests and screenings, and alerts regarding abnormal results or procedures. The VHA EMR also includes population management tools, such as the CCR. The CCR software, deployed throughout VHA, provides a registry at every VHA facility to support local care delivery and a national clinical database. Staff members at VHA facilities serve as local registry coordinators, reviewing the medical records of Veterans with laboratory results and/or diagnosis codes reflecting potential infection with HIV and confirming their addition to the local CCR if the condition is actually present. Addition to a local registry triggers addition to the national CCR, which is created through extraction of specific clinical data from the local EMR. Extracted data elements include allergies, demographics, diagnoses, discharges, laboratory tests, prescriptions, procedures, and radiology.

Using data from all VHA facilities, periodic summary reports are created on the population of Veterans with HIV/AIDS receiving care through VHA. Each report uses the latest available data, providing information at the national, VISN, and local healthcare system to VHA clinicians, administrators, and researchers. With each extract, CCR data is refreshed with new data for Veterans already in the CCR, as well as current *and* historical data for Veterans *newly* added to the CCR. Because CCR data collection is dynamic, reports from different time periods may not be directly comparable; nonetheless, comparison of information from various summary reports is generally useful for monitoring trends. The ultimate goal of these reports is to provide information to guide clinical and administrative activities directed to assuring safe, effective and efficient care for Veterans with HIV/AIDS.

In addition to the periodic summary reports, local staff has access to population management reporting tools in their local CCR software. While such local reports are based only on data in the local registry (as opposed to the national CCR) they permit the user to examine a variety of process and outcome related questions.

Examples of valuable ways the CCR is used in practice include:

- Measurement of patient volume to inform decisions about how care is delivered, allocation of staff and other resources.

- Describing patient demographic characteristics and co-morbidities to assess types of services likely to be required, such as treatment for age-related issues or chronic conditions.
- Assessment of adherence to national guideline recommendations, such as receipt of appropriate prophylactic medications, and monitoring CD4+ lymphocyte count and HIV viral load levels.
- Identification of trends over time, such as trends in the uptake or monitoring of a specific medication or other treatment
- Measurement of treatment outcomes and effectiveness of current practices, protocols or guidelines
- Performing ongoing comparison across VISNs or healthcare systems of like size to identify rates of variation that may indicate quality issues or opportunities for improvement

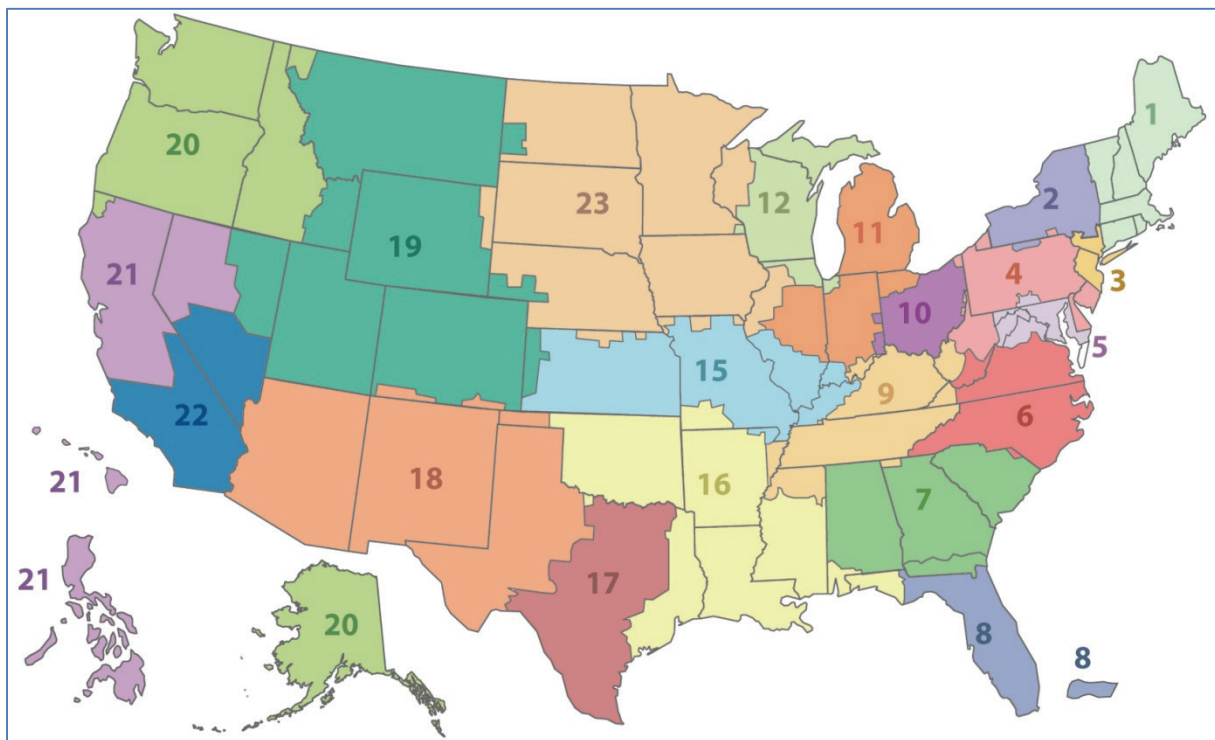
Feedback reporting is a fundamental strategy that PSHHG employs to achieve its mission to assure the highest quality, comprehensive care to Veterans. This State of Care Report joins PSHHG's efforts in clinical surveillance, patient care activities, clinician education, patient education, prevention activities, and research directed at continuous improvement of medical and preventive services delivered to Veterans living with HIV. The report is intended to provide information that will be of interest and use to providers and administrators of care as they plan and deliver services to Veterans with HIV/AIDS. Outside VHA, this information can be used to support quality assessment and improvement efforts and highlight best practices within VHA.

Chapter 2 – Veterans with HIV/AIDS

2.1 Location of Care

Nationally, 23,463 HIV infected Veterans were in VHA care in 2008. The number of HIV infected Veterans per VISN ranged from 354 (VISN 2) to 3,100 at VISN 8. One-half of the VISNs had over 1,000 HIV infected Veterans in care that year (VISNs 3 - 8, 16, 17, 21, and 22).

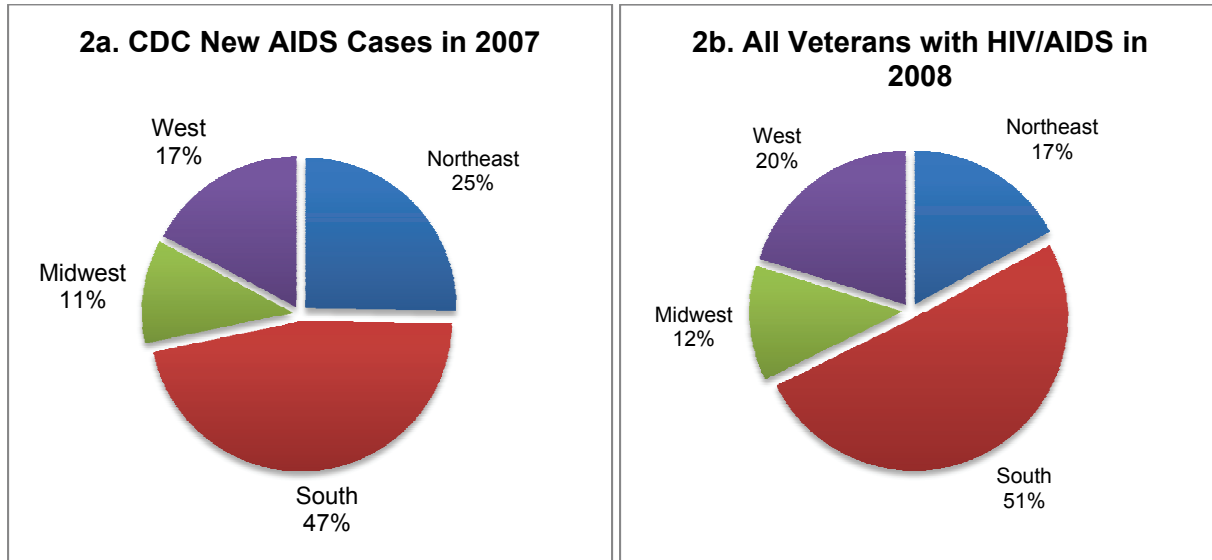
Figure 1. VHA VISN Map



Although the number of HIV infected Veterans in VHA care has changed little over the past several years, there has been a geographic shift in their distribution. Between 2004 and 2008, nine VISNs had an increase in the number of HIV infected patients receiving care while 12 VISNs had a decrease. The number of Veterans with HIV/AIDS fell in the Northeast and increased in the South and Southwest; VISNs 7, 9, and 17 had the largest increases in caseloads of HIV infected Veterans (149, 100, 97, respectively) and VISNs 3, 5, and 1 had the largest decreases in the numbers of HIV infected Veterans in care (-342, -94, -80, respectively).

In 2008, just over 50% of the Veteran population with HIV/AIDS received care in the South, 20% received care in the West, 17% in the Northeast, and 12% in the Midwest. This regional distribution of Veterans with HIV/AIDS in care mirrors the distribution of new U.S. AIDS cases in 2007 (Figure 2a/b).¹

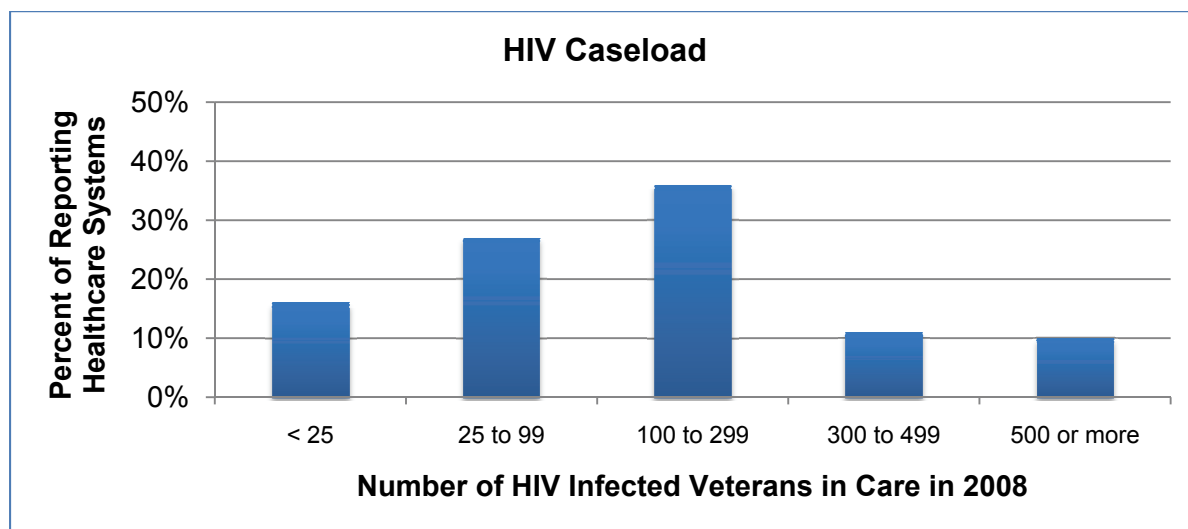
Figure 2a/b. Geographic Comparison of New AIDS Case Reported to Centers for Disease Control and Prevention (CDC) in 2007 and All Veterans in Care with HIV/AIDS in 2008



At least one HIV infected Veteran was seen at each of the 128 reporting local healthcare systems. HIV patient caseloads by healthcare system in 2008 ranged from 2 to almost 1,200 Veterans with about one third of healthcare systems caring for 100 to 299 HIV infected Veterans. Figure 3 depicts the percentage of the 128 VHA healthcare systems by HIV caseload. For example, 16% of healthcare systems have caseloads of less than 25 Veterans with HIV/AIDS. Ten percent of local healthcare systems had caseloads of 500 or more veterans during 2008.

Local healthcare systems with large caseloads (over 300 HIV infected Veterans) cared for over 20% of HIV infected Veterans in VHA care in 2008. Most of these systems are located in traditional epicenters of HIV/AIDS infection - generally large urban areas. Healthcare systems with HIV caseloads between 100 - 299 cared for 35% of the HIV infected VHA Veteran population and facilities with HIV caseloads less than 100 cared for about 43% of the population.

Figure 3. Percentage of VHA Healthcare Systems by HIV Caseload



During 2008, almost 5% of HIV infected Veterans in VHA care received care at more than one VISN and 12% received care at more than one healthcare system. For each VISN and local health care system, tables in the Appendix present the number of HIV infected Veterans in VHA care in 2004 and in 2008.

2.2 Demographics

Sex

The majority of HIV infected Veterans in care are men (97%); nonetheless, the VHA provides care to a substantial number (over 600) of HIV infected women. Although the proportion of HIV infected Veterans in care who are male has remained stable over the past five years, as the number of women Veterans increases, the number of HIV infected women Veterans may also increase. According to CDC estimates, approximately one quarter of those infected with HIV in the US are now women.²

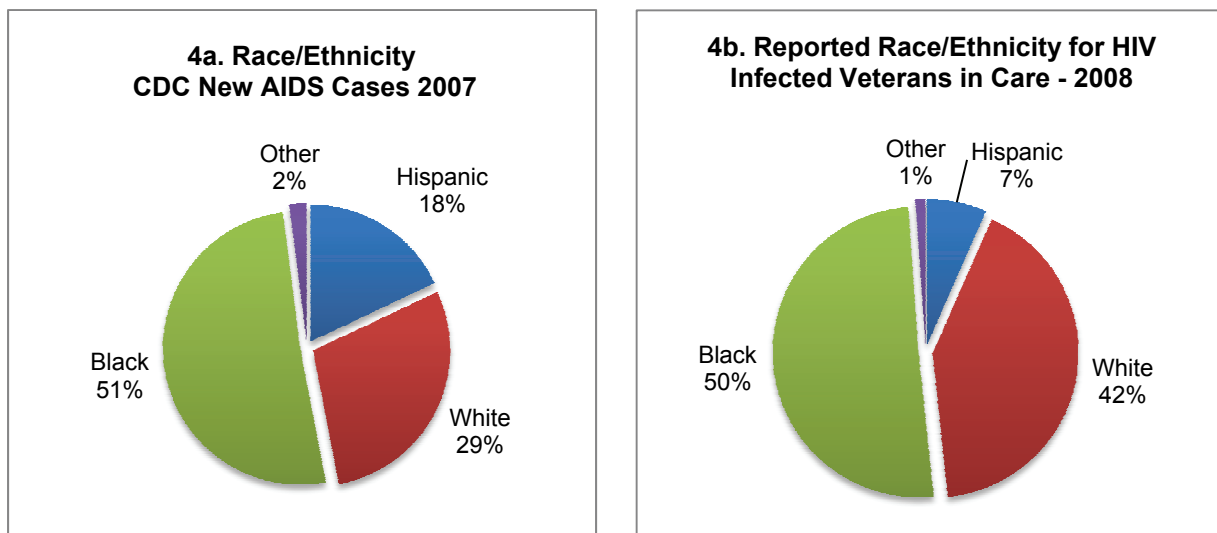
Race/Ethnicity

The majority of Veterans in VHA care for HIV/AIDS are nonwhite. The largest racial group receiving VHA care for HIV disease is Black. In 2008, Blacks comprised half of the VHA HIV infected population (50%), a substantially greater proportion than the overall Veteran population of which 11% is Black. Whites comprise 42% of the VHA HIV infected population.

Seven percent of HIV infected Veterans identified themselves as Hispanic or Latino which is only slightly higher than the six percent of the overall VHA population that is Hispanic. Less than 1% of HIV infected Veterans in VHA care are American Indian, Alaskan Native, Asian, Native Hawaiian, or Pacific Islander. Because reporting of race and of ethnicity among Veterans in care is not complete, the actual percentages may vary slightly from those reported above.

According to the Centers for Disease Control and Prevention (CDC) national reports, Blacks are disproportionately affected by HIV. CDC estimates that of the 42,318 new AIDS cases in 2007 nationwide, 51% were Black, 30% were White, 18% Hispanic, and less than 1% were Asian, American Indian, or Alaskan Native.¹ These proportions are generally similar to those observed in the HIV infected Veteran population with the exception that the reported proportion of Hispanics is smaller in VHA HIV/AIDS care.

Figure 4a/b. Comparison of Race/Ethnicity for New AIDS Cases Reported to the CDC in 2007 and All Veterans with HIV/AIDS in Care in 2008.

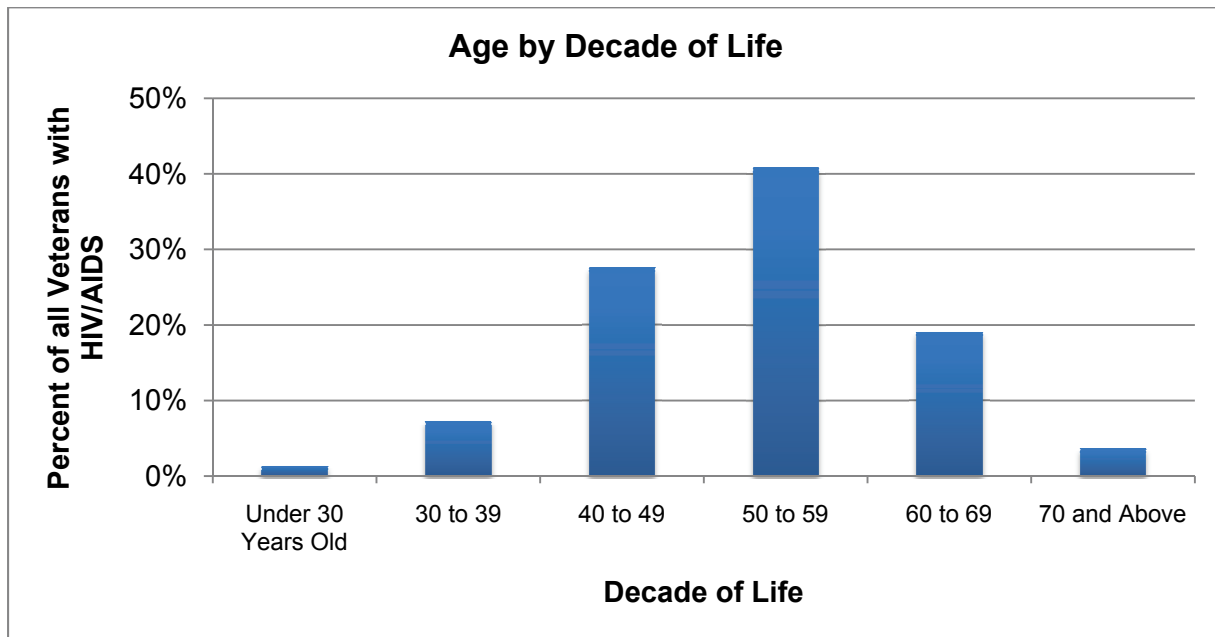


Age

A breakdown of the age of HIV infected Veterans in care in 2008, by decade of life, is presented in Figure 5. Most HIV infected Veterans in care are between the ages of 40 and 59 (68%). Between 2005 and 2008 the mean age of HIV infected Veterans has increased from 50 years to 52.6 years. During this time, the proportion of HIV infected Veterans under the age of 50 has decreased by about 10% and the proportion of Veterans over the age of 60 has increased by almost as much. Today, more than 1 in 5 HIV infected Veterans in VHA care are

over the age of 60. During 2008, persons aged 60 or older constituted 23% of newly identified HIV infected Veterans in VHA care (includes Veterans previously known HIV positive outside of VHA and truly new HIV diagnoses made at VHA). The increase in the number of persons aged 50 years and older living with HIV/AIDS in VHA is partly due to potent antiretroviral therapy, which has made it possible for many HIV-infected persons to live longer.

Figure 5. HIV Infected Veterans in VHA Care 2008 - Age by Decade of Life



The age distribution of those with the HIV infection differs materially between the VHA population and the general US population. The proportion of HIV infected Veterans in VHA care over the age of 50 (64%) is more than double the CDC estimates for the United States HIV population (27%).³

Little is known about the impact of HIV disease on the long term management of other chronic conditions common in the elderly (and vice versa). Given its large population of older HIV patients, VHA is in the unique position to learn from about these issues.

The age distribution of HIV infected Veterans in VHA care may change in the future for two reasons. First, it may change as increasing numbers of younger Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Veterans enter VHA care. Second, according to CDC, more infections are occurring among people under 30 than any other age group (34%), followed by persons 30–39 (31%).² This data confirms the need for VHA to reach new generations of Veterans with HIV prevention and treatment services.

2.3 CD4+ Lymphocyte Count and HIV Viral Load Distribution

A CD4+ lymphocyte count (CD4 count) less than 200 cells/mm³ or a CD4+ lymphocyte percentage of less than 14 % indicates advanced HIV disease or AIDS. In 2008, 14.2% of Veterans in care met the definition of advanced HIV disease/AIDS with either a maximum CD4+ lymphocyte count of less than 200 cells/mm³ and/or a maximum CD4+ percentage of 14 percent. The median nadir CD4 count (the lowest CD4 count ever in VHA records) for HIV infected Veterans in care in VHA in 2008 was 193 cells/mm³, with 57% having a nadir CD4 count below 200 cell/mm³ or a nadir CD4+ lymphocyte percentage below 14%. Among Veterans receiving antiretroviral therapy at the VHA in 2008, the national rate for HIV RNA viral control (defined as a HIV viral load of < 400 copies /mL) was 83%. Across VISNs, the rate ranged between 73% and 89%.

2.4 Veterans New to VHA Care for HIV/AIDS

In 2008, 1,459 Veterans were newly added to the national HIV CCR. This group had a mean age of 50 years, slightly less than the age of the overall HIV/AIDS population in VHA care that year. The majority of newly added Veterans were male (96%); 42% were Black and 35% were White. Six percent were reported themselves to be Hispanic/Latino. These Veterans consist of newly diagnosed as well as Veterans with a historical diagnosis such as Veterans receiving HIV/AIDS care outside the VA transferring into VHA care.

The CD4 count and percentage and the HIV viral load of these Veterans at the time of their addition to the CCR provide an estimate of their clinical status upon entering VHA HIV/AIDS care. About three in ten (31%) of such Veterans with HIV/AIDS had a CD4 count less than 200 cells/mm³ or a CD4 percentage less than 14%, indicating a diagnosis of AIDS. Overall, 44% had a CD4 counts less than 350 cells/mm³, which is the threshold for initiating antiretroviral therapy. At the time of their addition to the CCR, 44% of newly added Veterans had an undetectable HIV viral load, which suggests that a large portion of such Veterans transferred their care to VHA when they were already on antiretroviral therapy.

2.5 Deaths

During the mid-to-late 1990s, advances in HIV treatments slowed the progression of HIV infection to AIDS and led to dramatic decreases in deaths among persons living with AIDS. Subsequently, the trend in the estimated numbers of AIDS deaths in the United States remained stable from 2002 through 2005 then began to decrease in 2006.¹

The trend in all-cause mortality rate for Veterans with HIV/AIDS in VHA care is consistent with the national trend in estimated AIDS deaths. The all-cause mortality rate was 4.4% in 2004 and 2005 but fell to 3.5% in 2008, which represents a 23% decrease relative to the 2005 rate.

Methods:

- 1) Veteran with HIV/AIDS. For all reports in this document, a veteran is considered to have HIV disease if they are confirmed into the CCR for HIV.
- 2) In Care. A Veteran is considered in care for this report if he or she had at least one inpatient admission, an outpatient prescription fill, or one outpatient visit in the defined time period.
- 3) Location of Care. Determined by the state for the reporting facility caring for the veteran. States were aggregated using the same method as the Centers for Disease Control and Prevention.
- 4) Demographics. Age was calculated at the midpoint of the time period under evaluation. Race is classified using the Office of Management and Budget (OMB) categories published in the Federal Register on July 9th, 1997 and include American Indian or Alaskan Native, Asian or Pacific Islander, Black, and White. For Ethnicity, persons are classified as of Hispanic origin or not. For the race/ethnicity, Hispanic veterans (of any race) were identified first based on the veteran's ethnicity field. We then used the race field for remaining veterans to identify if they should be mapped to Black, White, and Other. The "Other" group includes "American Indian or Alaskan Native" and "Asian or Pacific Islander".
- 5) Laboratory test information. Data for CD4+ lymphocyte counts and percentages and HIV viral load tests were identified from the VHA laboratory test package.
- 6) Deaths. Dates of death were obtained from both Veterans Health Administration and the Veterans Benefits Administration files.

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Chapter 3 – Services Provided to Veterans with HIV/AIDS

The 23,463 Veterans with HIV/AIDS in VHA care in 2008 generated 8,831 inpatient discharges and over 708,000 outpatient visits (Table 1). They filled over 1.6 million prescriptions. Compared to the overall VHA population, Veterans with HIV/AIDS had higher use of some VHA services including hospitalizations and prescription fills. Table 1 shows a comparison of general healthcare utilization in the most recent available year for all Veterans (federal fiscal year 2008) and Veterans in care with HIV/AIDS (calendar year 2008).

Table 1. Healthcare Utilization for All Veterans and HIV Infected Veterans

	HIV Infected Veterans CY 2008	All Veterans FY 2008	Ratio (HIV Infected/All)
Number of Veterans	23,463	5.6 million	0.4%
Inpatient Discharges*	8,831	641,400	1.4%
Outpatient Visits	708,552	67.1 million	1.1%
Prescription Fills	1.61 million	244.5 million	0.7%

*Includes acute and non-acute discharges.

With respect to inpatient care, 4,655 HIV infected Veterans had 8,831 discharges in 2008. The average length of stay was 14.6 days with a median of 4 days. The percentage of discharges by major diagnostic groups (where the group accounts for at least one percent of all discharges) is presented in Table 2 for all Veterans and those in VHA care for HIV/AIDS. The groups follow the tabular list of diseases presented in the International Classification of Diseases, 9th revision with the addition of categories for HIV infection and Substance Use and Disorders.

The highest percentage of discharges for HIV infected Veterans carried a mental health primary diagnosis (15.4%) compared to 14.1% for the general VHA population. Veterans with HIV/AIDS had a higher percent of discharges for substance use disorders than the general VHA population (8.2% vs. 6.1%). Veterans with HIV/AIDS also had higher rates of discharges for infectious diseases, excluding inpatient stays for which HIV was the primary diagnosis than the overall VHA Veteran population (5.0% vs. 1.6%). Conversely, the general VHA population had a higher percentage of discharges for diseases of the circulatory system conditions than Veterans with HIV/AIDS (18.7% vs. 9.6%).

Between 2005 and 2008, substance use disorder discharges decreased from 10.2% to 8.2% of all discharges of Veterans with HIV/AIDS. On the other hand, the percentage of

discharges for the circulatory system increased in the HIV/AIDS Veteran population from 8.4% to 9.6% in that period. The percentage of discharges with a primary diagnosis of HIV infection decreased by 36% from 13.2% to 8.5% from 2005 to 2008, respectively.

Table 2. Percentage of Primary Discharge Diagnosis by VHA Major Diagnostic Group

Major Diagnostic Group*	HIV Infected Veterans		All Veterans	
	CY 2005	CY 2008	FY 2005	FY 2008
Mental Disorders	14.6%	15.4%	13.7%	14.1%
Diseases of the Circulatory System	8.4%	9.6%	19.5%	18.7%
Diseases of the Respiratory System	8.2%	8.5%	8.1%	8.4%
HIV Infection	13.2%	8.5%	0.2%	0.1%
Substance Use and Disorders	10.2%	8.2%	7.0%	6.1%
Diseases of the Digestive System	7.1%	8.1%	8.1%	8.4%
Symptoms, Signs, and Ill-defined Conditions	8.0%	7.5%	7.3%	7.0%
Infectious and Parasitic Diseases	4.8%	5.0%	1.4%	1.6%
Injury, Poisoning, Drug Toxicity	3.8%	4.6%	4.8%	4.9%
Kidney and Urinary Tract	2.7%	4.0%	3.7%	4.2%
Health Status Factors	2.9%	4.0%	4.7%	5.2%
Neoplasms	2.5%	3.6%	6.7%	6.4%
Diseases of the Skin and Subcutaneous Tissue	3.8%	3.6%	2.6%	2.5%
Endocrine, Nutritional and Metabolic Diseases, and Immunity Disorders	2.9%	2.6%	3.8%	3.5%
Diseases of the Musculoskeletal System and Connective Tissue	2.3%	2.6%	3.8%	4.2%
Diseases of the Blood and Blood-Forming Organs	2.0%	1.9%	1.3%	1.4%
Diseases of the Nervous System and Sense Organs	1.5%	1.8%	2.4%	2.4%

*Major diagnostic groups representing at least 1% of discharges for the national population in the year are presented.

Veterans with HIV/AIDS may be seen for their HIV infection in primary care, infectious disease clinic or a combination of both—depending how care is organized at their local

healthcare system. Veterans with HIV/AIDS were actively engaged in VHA care in 2008 with a median of 7 outpatient primary care or infectious disease clinic visits that year. In 2008, 39% of HIV/AIDS Veterans had between 2 and 6 such visits, 35% had between 7 and 12 visits and 20% had over 13 visits in the year. Veterans with HIV/AIDS were seen in nearly all types of clinics in VHA including medicine, surgery, and mental health.

Methods:

- 1) VHA data. The data on the entire veteran population can be found at <http://www1.va.gov/vetdata>.
- 2) Diagnostic Subgroup. The distribution of discharges by major diagnostic subgroup was determined using the primary discharge code for each hospitalization using the 17 groups created by the Classification of Diseases and Injuries version ICD-9-CM. Distribution of discharges for the National VA population is based on data from the VA's Decision Support System.
- 3) Federal fiscal year (FY) covers October 1 through September 30 of the following year. For example, FY2008 runs from October 1, 2007 through September 30, 2008.

Chapter 4 – Other Diseases and Conditions

4.1 Other Diseases and Conditions in Veterans with HIV/AIDS

Concurrent health issues, or co-morbid conditions, can add to the complex health needs of Veterans with HIV/AIDS. PSHG routinely reports rates of co-morbid conditions in HIV infected Veterans in VHA care both for those who have ever had the co-morbid condition and those who have a new diagnosis of the co-morbid condition in the year. Understanding the number of existing and new cases of various co-morbid conditions is important to administrators preparing workload and budget projections and to providers who must assess how these conditions affect the management of HIV disease. For example, the level of healthcare utilization for an otherwise healthy Veteran with HIV infection may be very different than for a Veteran with depression, diabetes, and hypertension as well as HIV.

In 2008, several co-morbid conditions requiring chronic medical management were present in approximately one-fifth or more of the HIV population in care at VHA: depression 51%, hypertension 49%, dyslipidemias 43%, anemia 28%, neuroses or anxiety disorders 28%, hepatitis C infection 29%, esophageal disease 22%, and diabetes 19% (Table 3). Other important clinical conditions affecting HIV care included post-traumatic stress disorder 14%, chronic obstructive pulmonary disease (COPD) 12%, hepatitis B infection 12%, ischemic heart disease 11% and chronic renal failure 8%. The prevalence of chronic hepatitis B and C in HIV infected Veterans in care in 2008 is discussed in more detail in Chapter 6 (Sections 6.4 and 6.5, respectively). Substance use is quite prevalent in the HIV infected Veteran population with 34% reporting a history of alcohol abuse and 31% with a history of illicit drug use. In 2008, 17% of HIV infected Veterans had a recent hard drug use diagnosis including use of amphetamines, cocaine, or opioids.

Some of these co-morbid conditions highlight the need for preventative care and close monitoring in this population. Several of these conditions can be exacerbated or caused by long term antiretroviral use and HIV disease itself. That may be the case for the 2.9% of HIV infected Veterans first diagnosed with anemia in 2008, 3.4% first diagnosed with hyperlipidemia, and 1.8% first diagnosed with acute or chronic renal failure.

A more complete list of the rates of both new and historical diagnoses of selected conditions for Veterans with HIV/AIDS in VHA care in 2008 can be found in Table 3.

Table 3. Rates of Co-morbid Conditions for HIV Infected Veterans in VHA Care in 2008

Co-morbid Condition Group	Co-morbid Condition	Percent with <i>First</i> VHA Diagnosis of Condition	Percent with VHA Diagnosis of Condition Ever
Cardiovascular	Cardiomyopathy	0.4%	2.4%
	Cerebral Vascular Conditions	0.4%	2.1%
	Conduction Disorders / Dysrhythmias	1.0%	8.4%
	Congestive Heart Failure	0.7%	4.4%
	Ischemic Heart Disease	1.0%	11.2%
	Hypertension	3.4%	48.9%
Gastrointestinal	Esophageal Disease	1.8%	21.6%
	Pancreatic Disease	0.4%	4.4%
	Ulcers	0.2%	3.5%
Hematologic	Anemia	2.9%	28.4%
Liver Disease	Cirrhosis	0.7%	2.8%
	Decompensated Liver Disease	0.4%	1.3%
Malignancy	Colon / Rectum	0.2%	1.2%
	Hepatocellular Carcinoma	0.2%	0.3%
	Kaposi's Sarcoma	0.1%	2.2%
	Kidney / Renal Pelvis	0.1%	0.4%
	Leukemia	0.0%	0.2%
	Lung / Bronchus	0.3%	1.0%
	Lymphoma	0.3%	2.2%
	Melanoma of the Skin	0.0%	0.4%
	Oral Cavity / Pharynx	0.2%	1.1%
	Pancreatic	0.0%	0.1%
	Prostate	0.4%	2.4%
	Urinary Bladder	0.1%	0.3%
Mental Illness	Bipolar Disorder	0.6%	8.6%

Co-morbid Condition Group	Co-morbid Condition	Percent with <i>First</i> VHA Diagnosis of Condition	Percent with VHA Diagnosis of Condition <i>Ever</i>
	Depression	2.7%	51.2%
	Neuroses and Anxiety States	1.4%	28.3%
	Posttraumatic Stress Disorder (PTSD)	1.1%	13.7%
	Schizophrenia	0.2%	7.1%
Metabolic	Diabetes, Type I	0.1%	3.1%
	Diabetes Type II and Unspecified	1.4%	16.3%
	Dyslipidemias	3.4%	43.3%
	Male Hypogonadism	0.6%	3.1%
Pulmonary	Asthma	0.4%	6.8%
	Chronic obstructive pulmonary disease (COPD)	1.2%	11.5%
	Emphysema	0.2%	1.9%
Renal	Renal Failure, Acute	1.8%	7.7%
	Renal Failure, Chronic	1.6%	7.8%
Substance Use	Alcohol Use	1.4%	34.3%
	Illicit Drug Use	1.1%	30.6%
	Other and Unspecified Drug Use	0.9%	21.6%
	Tobacco Use	3.7%	44.2%
Viral Diseases	Hepatitis B	0.9%	12.6%
	Hepatitis C	1.3%	28.8%

4.2 Conditions Associated with Severe Immune Suppression

In 1993, the Centers for Disease Control and Prevention (CDC) updated its list of AIDS defining infections, conditions, and cancers¹. This categorical system classifies persons with HIV infection as having AIDS based on either diagnosis of an AIDS defining condition or severe immune suppression defined by CD4+ lymphocyte count < 200 cells/mm³ or CD4 percentage < 14%. VHA does not have an internal system for reporting an AIDS diagnosis but rather uses information on diagnoses from inpatient and outpatient care to estimate rates of

AIDS diagnoses. This approach limits the ability to assess clinical AIDS diagnosis where chronic infection (e.g., chronic intestinal, isosporiasis) or recurrence within a specific time period (e.g., recurrent pneumonia) is required to diagnose AIDS. However, VHA can still assess the majority of the conditions associated with an AIDS diagnosis. Using laboratory data, VHA can measure lowest ever VHA values for CD4+ lymphocyte count and percentage to identify an immunologic AIDS diagnosis.

Consistent with trends across the United States, significantly fewer HIV infected Veterans have been diagnosed with AIDS defining conditions in the past few years as compared to the early to mid 1990s.² In 2008, 1.2% of the HIV infected Veteran population in care was diagnosed for with an AIDS defining condition (Table 4). The change in the proportion of Veterans who had a diagnosis of *Pneumocystis jiroveci* pneumonia (formerly PCP) dropped from 1.7 % to 1.2 % between 2004 and 2008 representing a 30% decrease. The decreased incidence in conditions associated with severe immune suppression observed over the past few years highlights the effectiveness of current antiretroviral therapy. Table 4 provides a list of those AIDS defining conditions reported in the target year in at least 0.5% of the population in care in 1999, 2004, or 2008.

Table 4. Rates of Most Frequent Conditions Indicative of Severe Immune Suppression Diagnosed in the Year - 1999, 2004 and 2008

Condition	1999	2004	2008
<i>Pneumocystis jiroveci</i> pneumonia	2.3%	1.7%	1.2%
Lymphoma	1.1%	1.1%	1.3%
Invasive Candidiasis	1.5%	1.2%	1.0%
<i>Mycobacterium tuberculosis</i>	1.4%	0.8%	0.7%
Cryptococcosis	0.7%	0.7%	0.7%
Kaposi's Sarcoma	1.0%	0.8%	0.8%
Cytomegalovirus	0.8%	0.4%	0.3%
Toxoplasmosis	0.5%	0.4%	0.4%
Mycobacterium, disseminated/extra pulmonary	0.4%	0.5%	0.4%

Attributable, in part, to the large proportion of HIV infected Veterans receiving antiretroviral therapy, rates of these conditions having ever been diagnosed in the VHA for HIV infected Veterans currently in care have remained consistently low. For instance, only 8.3% of

HIV infected Veterans in care in 2008 have ever been diagnosed at the VHA with *Pneumocystis jiroveci* pneumonia, 5% with invasive candidiasis, and 4% with tuberculosis (Table 5). These low rates are consistent with the relatively low rates of severe immunologic suppression as measured by CD4+ lymphocyte counts seen in Veterans. Fewer than 10% of the HIV infected Veterans in VHA care during 2008 have all CD4+ lymphocyte counts less than 200 cells/mm³ compared to 19% in 2002, and only 2% are severely immunosuppressed with a CD4+ lymphocyte count less than 50 cells/mm³ as compared to 7% in 2002.

A more complete list of the rates of these AIDS defining conditions diagnosed in 2008 and diagnosed ever for HIV positive Veterans in care in 2008 can be found in Table 5.

Table 5. Rate of Diagnoses of Conditions Indicative of Severe Immune Suppression for HIV Infected Veterans in VHA Care in 2008

Condition	Percent with VA Diagnosis with Condition in 2008	Percent with VHA Diagnosis of Condition Ever
Candidiasis, Invasive	1.0%	5.0%
Cervical Cancer	0.0%	0.0%
Coccidioidomycosis, Disseminated or Extrapulmonary	0.1%	0.3%
Cryptococcosis	0.7%	1.8%
Cryptosporidiosis	0.0%	0.4%
Cytomegalovirus Disease	0.3%	1.4%
Histoplasmosis, Extra pulmonary	0.4%	0.7%
Kaposi's Sarcoma	0.8%	2.2%
Lymphoma	1.3%	2.2%
Mycobacterium, Disseminated or Extra pulmonary	0.4%	1.2%
Mycobacterium Tuberculosis	0.7%	4.0%
<i>Pneumocystis Jiroveci</i> Pneumonia	1.2%	8.3%
Progressive Multifocal Leukoencephalopathy	0.2%	0.5%
Salmonella, Disseminated	0.0%	0.1%
Toxoplasmosis	0.4%	1.0%

Methods:

- 1) Diagnosis. For the co-morbid condition and the conditions of severe immune suppression analysis, a Veteran is counted as having a condition if he or she had at least one diagnosis (ICD-9) from an admission (in any rank), one problem list entry or two outpatient encounters occurring on separate dates. All codes associated with a hospitalization have the discharge date as the official date of diagnosis. For more information, contact the Public Health Strategic Healthcare Group, Center for Quality Management. In the case of outpatient coding, if the two dates span different years, then the condition is recorded as first ever in the year of the first code.

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Chapter 5 – Antiretroviral Therapy

5.1 Veterans Receiving Antiretroviral Therapy

Potent combinations of antiretroviral medications have transformed HIV from an illness with uniformly high rates of fatality to one that more closely resembles a chronic disease. In VHA all 28 currently available Food and Drug Administration (FDA) - approved antiretroviral medications are included on the national VHA formulary and are available to Veterans with HIV/AIDS. HIV infected Veterans fill over one million VHA prescriptions annually, one-third of which are for antiretrovirals. Antiretrovirals are prescribed at all local VHA healthcare systems and uptake of newly introduced antiretroviral medications is generally rapid across the system. In 2008, 80% of HIV infected Veterans had an outpatient prescription for an antiretroviral medication. Antiretroviral treatment rates across VISNs in 2008 ranged from 71% to 85%.

Between 2005 and 2008, the proportion of Veterans prescribed antiretrovirals rose steadily from 71% to 80%. The proportion of Veterans receiving their first ever VHA prescribed antiretroviral has decreased slightly over the same period from 6.3% to 5.7% of those in care. The high percentage of HIV infected Veterans on antiretroviral therapy demonstrates that access to antiretroviral therapy is widespread for Veterans receiving care from the VHA. Table 6 presents the number of Veterans with HIV/AIDS on antiretroviral therapy nationally and at each VISN in 2008.

Table 6. HIV Infected Veterans Receiving Antiretrovirals in 2008

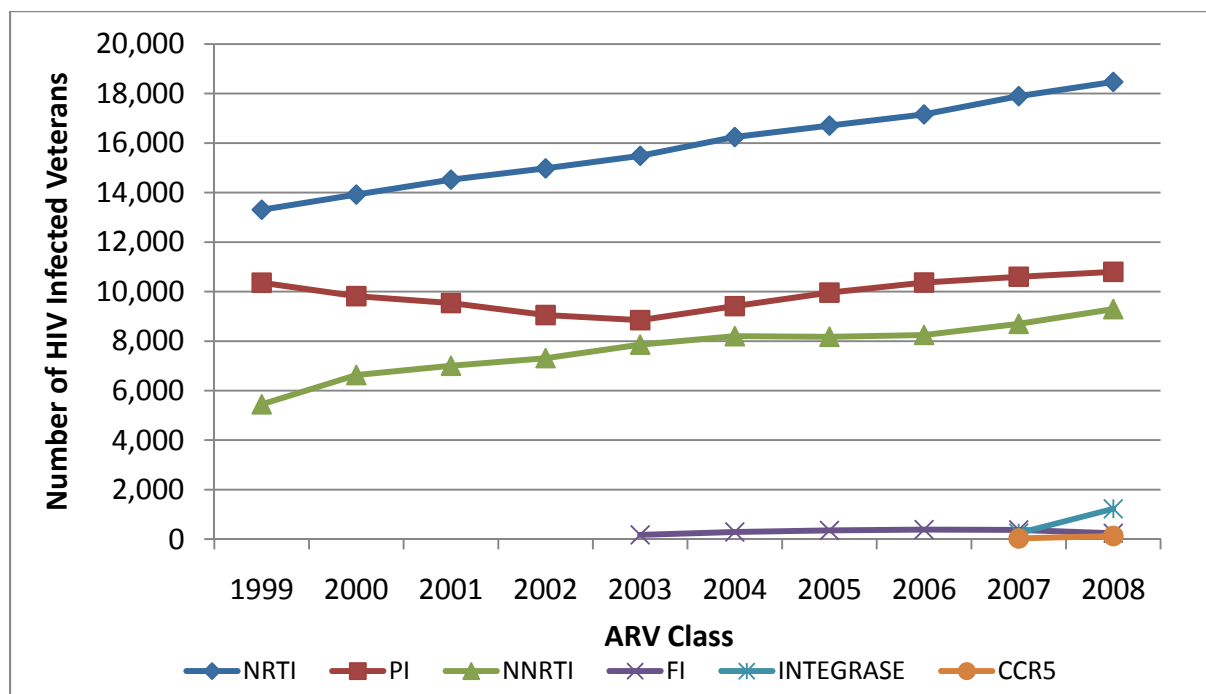
	Number in Care	Number with Antivirals	Percent with Antivirals
Nation	23,463	18,670	80%
VISN (number)			
VA New England Healthcare System (1)	636	482	76%
VA Healthcare Network Upstate New York (2)	354	252	71%
VA NY/NJ Veterans Healthcare Network (3)	1,910	1,481	78%
VA Healthcare - VISN 4 (4)	1,055	827	78%
VA Capitol Health Care Network (5)	1,559	1,186	76%
VA Mid-Atlantic Health Care Network (6)	1,535	1,203	78%
VA Southeast Network (7)	2,459	1,959	80%

	Number in Care	Number with Antivirals	Percent with Antivirals
Nation	23,463	18,670	80%
VISN (number)			
VA Sunshine Healthcare Network (8)	3,100	2,509	81%
VA MidSouth Healthcare Network (9)	852	672	79%
VA Healthcare System of Ohio (10)	544	427	79%
Veterans in Partnership - VISN 11 (11)	775	660	85%
VA Great Lakes Health Care System (12)	787	606	77%
VA Heartland Network (15)	550	450	82%
South Central VA Health Care Network (16)	2,060	1,726	84%
VA Heart of Texas Health Care Network (17)	1,197	981	82%
VA Southwest Health Care Network (18)	749	627	84%
VA Rocky Mountain Network (19)	424	360	85%
VA Northwest Network (20)	719	586	82%
VA Sierra Pacific Network (21)	1,182	939	79%
VA Desert Pacific Healthcare Network (22)	2,025	1,617	80%
VA Midwest Health Care Network (23)	369	304	82%

5.2 Antiretroviral Therapy by Class

Antiretroviral medications are categorized into six classes which include nucleoside/nucleotide reverse transcriptase inhibitors (NRTI), non-nucleoside reverse transcriptase inhibitors (NNRTI), protease inhibitors (PI), fusion inhibitors (FI), CCR5 antagonists (CCR5), and integrase inhibitors (INTEGRASE). Department of Health and Human Services (DHHS) guidelines recommend a combination of two NRTIs plus either one NNRTI or a PI (with or without ritonavir for boosting).¹ In accordance with these guidelines, at least 92% of Veterans on antiretrovirals in 2008 received NRTIs; the backbone of all DHHS preferred regimens. Fifty-seven percent of Veterans received PIs in 2008, 49% received NNRTIs, 6% received an integrase inhibitor, and less than one percent received a fusion inhibitor or CCR5 antagonist. Though the use of individual products within some classes fluctuated, the number of Veterans with HIV/AIDS receiving either a NRTI, PI or NNRTI has slowly increased since 2005 as shown in Figure 6.

Figure 6. Number of HIV Infected Veterans Receiving Antiretroviral Therapy by Class.



5.3 Trends in Specific Antiretroviral Product and Ingredient Use

Of Veterans with HIV/AIDS who were prescribed a PI in 2008, 39% received atazanavir, 33% received lopinavir/ritonavir, and less than 10% received each of the other available PIs. Use of nelfinavir, the third most widely prescribed PI in 2005, fell by 54% between 2005 and 2008. Forty-eight percent of Veterans prescribed a PI in 2008 received ritonavir; it is likely that most received ritonavir as a pharmacologic booster to increase the concentrations of the concomitant PI. This represents a 45% increase in ritonavir use since 2005 and is consistent with the literature showing the benefits of boosted PI regimens compared to unboosted PI regimens in attaining undetectable viral loads.³⁻⁵ All of the current DHHS preferred PI regimens are ritonavir boosted regimens.

Efavirenz is the most widely prescribed NNRTI; 80% of Veterans who received an NNRTI in 2008 were prescribed this agent; 15% received nevirapine and 5% received etravirine. Between 2005 and 2008 there was a 24% increase in the use of efavirenz containing products and a 29% decrease in the use of nevirapine. This is consistent with DHHS treatment guidelines which, since 2004, have recommended efavirenz as the preferred NNRTI.²

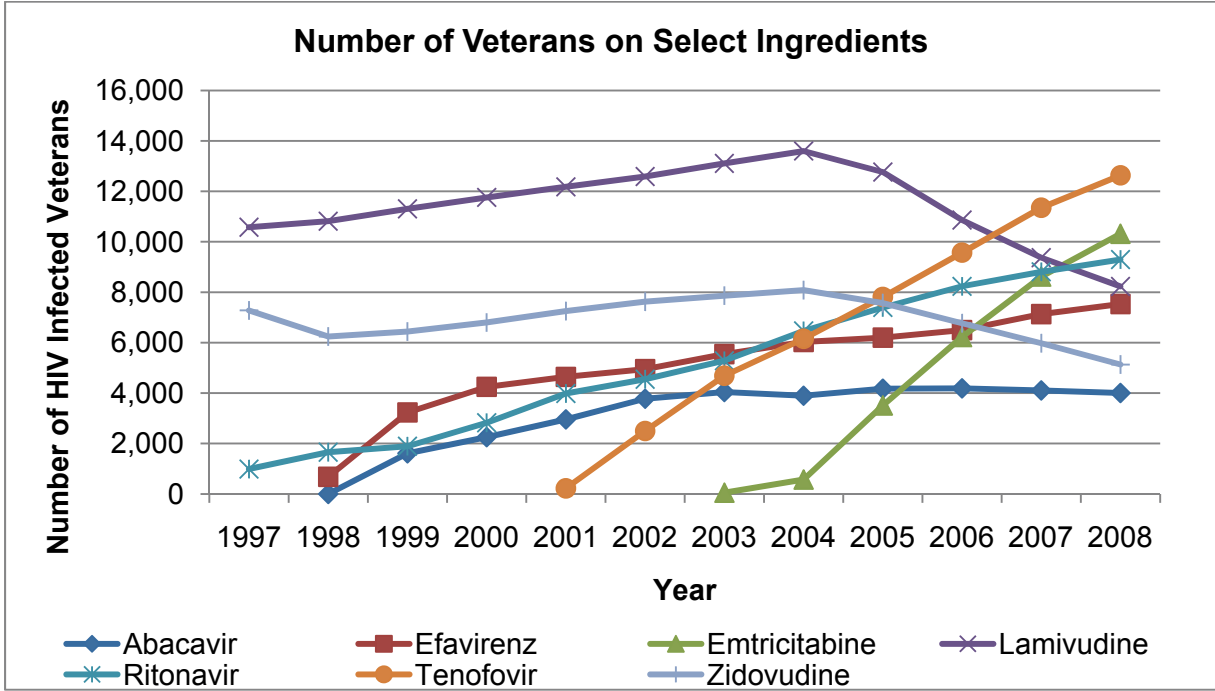
With regard to NRTIs, VHA providers appear to have shifted from zidovudine to tenofovir in accordance with 2008 DHHS guidelines. In 2008, use of zidovudine-containing products had decreased to 27% of those on antiretrovirals compared to 44% in 2005 while use of tenofovir containing products had increased from 46% in 2005 to 67% of those on antiretrovirals in 2008. Didanosine and stavudine use have dramatically decreased since 2005. Abacavir use has remained relatively constant at 24% of all Veterans on antiretrovirals in 2005 and 21% in 2008. Numbers of Veterans with HIV/AIDS prescribed each of the 28 currently available FDA approved products is shown in Table 7 while Figure 7 shows selected antiretroviral ingredient use over the past 12 years.

Table 7. Number of HIV Infected Veterans with Outpatient VHA Antiretroviral (ARV) Prescriptions by Product for Recent Years

Product	2005	2006	2007	2008
Total Number of Veterans on ARV Therapy	16,830	17,312	18,054	18,670
Abacavir	1,973	1,587	1,401	1,284
Abacavir/Lamivudine	1,066	1,481	1,723	1,895
Abacavir/Lamivudine/Zidovudine	1,583	1,400	1,185	999
Atazanavir	3,621	4,071	4,417	4,696
Darunavir	0	175	545	961
Delavirdine	67	49	40	34
Didanosine	2,121	1,531	1,206	941
Efavirenz	6,173	6,160	4,761	3,396
Efavirenz/Emtricitabine/Tenofovir	0	959	3,491	4,691
Emtricitabine	361	237	212	197
Emtricitabine/Tenofovir	3,288	5,575	5,876	6,104
Enfuvirtide	353	387	373	240
Etravirine	0	0	0	443
Fosamprenavir	779	820	852	804
Indinavir	913	626	429	306
Lamivudine	5,188	3,446	2,488	1,957
Lamivudine/Zidovudine	5,403	4,745	4,125	3,468
Lopinavir/Ritonavir	3,840	4,087	4,062	3,944

Product	2005	2006	2007	2008
Total Number of Veterans on ARV Therapy	16,830	17,312	18,054	18,670
Maraviroc	0	0	28	126
Nelfinavir	1,610	1,256	986	746
Nevirapine	2,095	1,866	1,675	1,494
Raltegravir	0	0	245	1,226
Ritonavir	3,977	4,579	5,141	5,748
Saquinavir	541	441	363	290
Stavudine	2,909	1,944	1,349	968
Tenofovir	5,519	4,238	3,435	2,865
Tipranavir	151	252	198	143
Zidovudine	778	772	763	750

Figure 7. Number of HIV Infected Veterans Receiving Selected Antiretroviral Ingredients from VHA by Year



Methods

- 1) Antiretroviral therapy. All FDA approved antiretroviral medications are included in this report. Information on use of antiretroviral medication was obtained from the CCR outpatient prescription files.
- 2) Medication Use by Product. Data for amprenavir and zalcitabine are not presented as these two antiretroviral are no longer available from the manufacturer and neither was used in 2008.

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Chapter 6 – Assessing Quality of Care

As indicated above, the VHA's electronic medical record (EMR) can be used to track and report on specific aspects of quality at the national, VISN, and local healthcare system levels, as well as provide supporting tools to remind and assist clinicians in improving performance on these quality indicators. Beginning in 2006, PSHHG began reviewing data on a select number of clinical topics important in the care of Veterans with HIV/AIDS. The following clinical topics related to the quality of care are considered for 2008: CD4+ lymphocyte count and HIV viral load testing, *Pneumocystis jiroveci* pneumonia (PCP) prophylaxis, *Mycobacterium avium* complex (MAC) prophylaxis, influenza and pneumococcal vaccination, hepatitis B screening and vaccination, hepatitis C screening, tuberculosis screening, syphilis screening, lipid testing, and tobacco cessation. The results of these assessments are presented below for 2008.

A note on the limitations of these care quality measures is warranted. Like any measure, they are dependent on the availability of accurate, complete, and standardized data. Data not captured by the EMR, captured in a non-standard fashion, or recorded using non-standard terms, limits the reliability and validity of the measure. For example, if a Veteran receives a flu vaccination from a neighborhood pharmacy, such a vaccination may not be recorded in the VHA EMR. Further, VHA providers who document diagnoses, outside VHA medications, and other activities only within a progress note will not have that information counted in reports such as these.

6.1 CD4+ Lymphocyte Count and HIV RNA Testing

The CD4+ lymphocyte count serves as the major clinical indicator of immune suppression in patients with HIV infection. It is the most important factor in deciding whether to initiate antiretroviral therapy and opportunistic infection prophylaxis and is a strong predictor of HIV disease progression and survival. Plasma HIV RNA serves as a surrogate marker for antiviral treatment response and can be useful in predicting clinical progression.¹ The Department of Health and Human Services (DHHS) Guidelines recommend that CD4 counts and HIV RNA levels be determined every three to four months.² For patients adherent to treatment and exhibiting a stable, sustained response to therapy, the frequency of CD4 count and HIV RNA monitoring may be extended to every six months.

For HIV infected Veterans receiving care in VHA in the last six months of 2008, 79% had both CD4+ lymphocyte count and HIV RNA testing performed at least once in that six

month period. The rates across the VISNs ranged from 69% to 86% (Table 8). The percentage of Veterans receiving CD4+ lymphocyte count and HIV RNA testing at least every six months has increased from 74% to 79% over the past 4 years.

TABLE 8. CD4+ Lymphocyte Count and HIV RNA Testing: July through December 2008

	Number in Care	Percent with CD4 Only	Percent with HIV RNA Only	Percent with Both
Nation	22,294	2%	1%	79%
VISN (number)				
VA New England Healthcare System (1)	588	2%	1%	75%
VA Healthcare Network Upstate New York (2)	318	1%	3%	71%
VA NY/NJ Veterans Healthcare Network (3)	1,740	2%	1%	80%
VA Healthcare - VISN 4 (4)	978	3%	3%	74%
VA Capitol Health Care Network (5)	1,462	2%	1%	81%
VA Mid-Atlantic Health Care Network (6)	1,440	3%	1%	77%
VA Southeast Network (7)	2,294	2%	1%	81%
VA Sunshine Healthcare Network (8)	2,866	2%	1%	82%
VA MidSouth Healthcare Network (9)	778	3%	1%	78%
VA Healthcare System of Ohio (10)	507	10%	1%	73%
Veterans in Partnership - VISN 11 (11)	725	1%	1%	81%
VA Great Lakes Health Care System (12)	733	2%	2%	80%
VA Heartland Network (15)	516	3%	5%	69%
South Central VA Health Care Network (16)	1,929	2%	3%	76%
VA Heart of Texas Health Care Network (17)	1,120	2%	1%	83%
VA Southwest Health Care Network (18)	707	1%	1%	86%
VA Rocky Mountain Network (19)	398	3%	2%	79%
VA Northwest Network (20)	672	3%	2%	75%
VA Sierra Pacific Network (21)	1,080	2%	2%	76%
VA Desert Pacific Healthcare Network (22)	1,852	1%	1%	84%
VA Midwest Health Care Network (23)	346	1%	1%	86%

6.2 Prophylaxis against PCP and MAC Infections

For over a decade, DHHS and the Kaiser Family Foundation have published preventative practice guidelines for a number of opportunistic infections that can occur with severe immune suppression in HIV, including *Pneumocystis jiroveci* pneumonia (formerly PCP) and *Mycobacterium avium* complex (MAC). According to current DHHS guidelines, HIV infected individuals with CD4 counts of less than 200 cells/mm³ should receive prophylaxis for PCP and individuals with CD4 counts less than 50 cells/mm³ should receive prophylaxis for MAC.³ Assessment of prophylaxis against these two infections in Veterans with CD4 counts below these thresholds is part of the PSHG's annual CCR reporting. HIV infected Veterans who meet the threshold criteria are considered to have received prophylaxis if they had at least one outpatient prescription with a minimum of twenty-seven day supply during the year.

Just over two thousand HIV infected Veterans (9% of those in care) met the threshold criterion for initiation of PCP prophylaxis in 2008. Of these, 86% of Veterans received prophylaxis for PCP through the VHA (Table 9). The range for the 21 VISNs was from 77% to 94%. The number of Veterans meeting the PCP prophylaxis criterion has marginally decreased since 2005 and the proportion receiving PCP prophylaxis has remained between 86% and 88%.

A total of 434 Veterans (1.8% of those in care) met the threshold criterion for MAC prophylaxis in 2008 and 75% of those eligible veterans received the VHA medications recommended for MAC prophylaxis (Table 9). Across the 13 VISNs with at least 10 patients meeting the criterion for MAC prophylaxis, the VHA MAC prophylaxis rates ranged from 50% to 94%. Though the number of eligible Veterans meeting the MAC prophylaxis criterion has decreased slightly over the past few years, the proportion of Veterans receiving MAC prophylaxis has remained around 75%.

TABLE 9. PCP and MAC Prophylaxis Rates in HIV Infected Veterans in VHA Care in 2008

	Percent Meeting PCP Criterion Who Received VHA Prophylaxis	Percent Meeting MAC Criterion Who Received VHA Prophylaxis
Nation	86%	75%
VISN(number)		
VA New England Healthcare System (1)	87%	100%*

	Percent Meeting PCP Criterion Who Received VHA Prophylaxis	Percent Meeting MAC Criterion Who Received VHA Prophylaxis
Nation	86%	75%
VISN(number)		
VA Healthcare Network Upstate New York (2)	85%	50%*
VA NY/NJ Veterans Healthcare Network (3)	86%	78%
VA Healthcare - VISN 4 (4)	81%	50%*
VA Capitol Health Care Network (5)	89%	70%
VA Mid-Atlantic Health Care Network (6)	84%	64%
VA Southeast Network (7)	86%	71%
VA Sunshine Healthcare Network (8)	82%	70%
VA MidSouth Healthcare Network (9)	90%	91%
VA Healthcare System of Ohio (10)	91%	94%
Veterans in Partnership - VISN 11 (11)	92%	67%
VA Great Lakes Health Care System (12)	89%	73%
VA Heartland Network (15)	93%	89%*
South Central VA Health Care Network (16)	89%	91%
VA Heart of Texas Health Care Network (17)	88%	86%
VA Southwest Health Care Network (18)	94%	60%*
VA Rocky Mountain Network (19)	87%	88%*
VA Northwest Network (20)	77%	33%*
VA Sierra Pacific Network (21)	78%	67%*
VA Desert Pacific Healthcare Network (22)	86%	67%
VA Midwest Health Care Network (23)	77%	75%*

* VISNs with 10 or less Veterans eligible for MAC prophylaxis in 2008. Caution should be used when interpreting these rates

6.3 Influenza and Pneumococcal Vaccinations

Each year, VHA conducts a national campaign to maximize influenza vaccination among Veterans and staff. The VHA bases its influenza vaccination program on recommendations of the CDC's Advisory Committee on Immunization Practices (ACIP).⁴ One target group for annual influenza vaccination as identified in these recommendations is

persons who have immune suppression, including immune suppression caused by HIV.⁴ During the 2007/2008 flu season, 59% of HIV infected Veterans in VHA care had CCR documentation that they received an influenza vaccination. The rate of vaccination ranged from 50% to 67% across the VISNs (Table 10). These vaccination rates likely underestimate the number of HIV infected Veterans vaccinated. VHA providers may not consistently document influenza vaccinations received outside of VHA (e.g. in a community program or from a pharmacy). The observed rate of influenza vaccination in HIV infected Veterans is lower than the national rates of influenza vaccination for the general Veteran population which ranged from 69% in Veterans aged 50-64 years to 84% in Veterans aged 65 and older.⁵ However, the national rates are ascertained by chart review which is likely to be more complete since the reviewer can identify vaccinations documented in non-standardized data fields not currently extracted for the CCR.

Table 10. Influenza and Pneumococcal Vaccination Rates in HIV infected Veterans in VHA Care in 2008

	Percent with VHA Flu Vaccine during Oct 07 – March 08*	Percent with VHA Pneumococcal Vaccine Ever*
Nation	59%	72%
VISN (number)		
VA New England Healthcare System (1)	59%	70%
VA Healthcare Network Upstate New York (2)	59%	65%
VA NY/NJ Veterans Healthcare Network (3)	58%	71%
VA Healthcare - VISN 4 (4)	65%	70%
VA Capitol Health Care Network (5)	64%	77%
VA Mid-Atlantic Health Care Network (6)	66%	78%
VA Southeast Network (7)	65%	75%
VA Sunshine Healthcare Network (8)	57%	76%
VA MidSouth Healthcare Network (9)	58%	70%
VA Healthcare System of Ohio (10)	52%	73%
Veterans in Partnership - VISN 11 (11)	59%	64%

	Percent with VHA Flu Vaccine during Oct 07 – March 08*	Percent with VHA Pneumococcal Vaccine Ever*
Nation	59%	72%
VISN (number)		
VA Great Lakes Health Care System (12)	59%	70%
VA Heartland Network (15)	57%	71%
South Central VA Health Care Network (16)	54%	63%
VA Heart of Texas Health Care Network (17)	65%	74%
VA Southwest Health Care Network (18)	50%	69%
VA Rocky Mountain Network (19)	56%	59%
VA Northwest Network (20)	54%	61%
VA Sierra Pacific Network (21)	56%	72%
VA Desert Pacific Healthcare Network (22)	55%	78%
VA Midwest Health Care Network (23)	67%	71%

*Veterans with documented allergy to the influenza vaccine or eggs are considered ineligible for the influenza vaccine

HIV infected persons have a significantly increased incidence of pneumococcal pneumonia⁶ which prompted the CDC’s ACIP to include HIV infection as an indication for pneumococcal vaccination. HIV infected persons should be vaccinated as soon as possible after diagnosis with strong consideration for a single revaccination after five years.⁷ Similar to influenza vaccination, the VHA models its pneumococcal vaccination program on the recommendations set forth by the CDC’s ACIP. Among HIV infected Veterans in care in 2008, 72% had a VHA record of receiving a pneumococcal vaccine while in VHA care, an increase of 4% from the previous year (Table 10). Rates by VISN ranged from 59% to 78%. It is somewhat less likely that HIV infected Veterans would have received pneumococcal vaccination outside of VHA than influenza vaccination. However, some Veterans may have received pneumococcal vaccine from a non-VHA provider and thus rates of pneumococcal vaccination may also be underestimated. The VISNs with the highest pneumococcal vaccination rates also were more likely to have higher rates for influenza vaccination.

6.4 Hepatitis B Screening, Diagnosis and Prevention

Hepatitis B is a blood-borne and sexually transmitted disease with risk factors for acquisition similar to those for HIV.⁸ Once infected with hepatitis B, HIV infected persons are significantly more likely to become chronic hepatitis B carriers and are more likely to have higher levels of hepatitis B viremia than HIV negative persons; thus, HIV infected persons are more likely to infect others with hepatitis B.⁹ Many patients with HIV/AIDS are at risk for acquiring hepatitis B and could benefit from effective hepatitis B vaccination.

Screening for hepatitis B and subsequent vaccination, if indicated, is part of comprehensive HIV medical care recommended by the CDC's ACIP. Ninety-two percent of HIV infected Veterans in VHA care in 2008 were screened for hepatitis B infection. Veterans who do not have VHA evidence of chronic hepatitis B infection during screening are considered eligible for the hepatitis B vaccination. In 2008, of the HIV infected Veterans considered eligible, 77% had either VHA laboratory evidence of hepatitis B immunity (indicating likely prior hepatitis B vaccination) or had received at least one dose of a hepatitis B vaccine from the VHA . The 2008 rate represents an increase of 14% from the prior year. Part of this increase may have been in response to a CQMPH project in early 2008 to notify VHA HIV clinicians of their 2007 hepatitis B screening and vaccination rates. The VISN rates for hepatitis B screening and vaccination in 2008 ranged from 66% to 89% (Table 11).

Table 11. Hepatitis B Screening and Vaccination Rates in HIV Infected Veterans in VHA Care in 2008

	Eligible Number in Care*	Percent with VHA Hepatitis B Vaccine or Hepatitis B Immunity
Nation	21,814	77%
VISN (number)		
VA New England Healthcare System (1)	593	72%
VA Healthcare Network Upstate New York (2)	335	66%
VA NY/NJ Veterans Healthcare Network (3)	1,782	81%
VA Healthcare - VISN 4 (4)	971	80%
VA Capitol Health Care Network (5)	1,450	84%
VA Mid-Atlantic Health Care Network (6)	1,433	76%
VA Southeast Network (7)	2,262	76%

	Eligible Number in Care*	Percent with VHA Hepatitis B Vaccine or Hepatitis B Immunity
Nation	21,814	77%
VISN (number)		
VA Sunshine Healthcare Network (8)	2,824	74%
VA MidSouth Healthcare Network (9)	790	67%
VA Healthcare System of Ohio (10)	514	75%
Veterans in Partnership - VISN 11 (11)	723	73%
VA Great Lakes Health Care System (12)	745	80%
VA Heartland Network (15)	507	75%
South Central VA Health Care Network (16)	1,905	73%
VA Heart of Texas Health Care Network (17)	1,118	83%
VA Southwest Health Care Network (18)	710	79%
VA Rocky Mountain Network (19)	397	76%
VA Northwest Network (20)	679	69%
VA Sierra Pacific Network (21)	1,113	82%
VA Desert Pacific Healthcare Network (22)	1,881	89%
VA Midwest Health Care Network (23)	342	70%

* A Veteran was ineligible if he or she had VHA laboratory evidence of chronic hepatitis B infection.

The national rate for co-infection with chronic hepatitis B (as indicated by a VHA laboratory record of positive hepatitis B surface or 'e' antigen or detectable hepatitis B viral load) was 7%. This is likely an underestimate as approximately 8% of HIV infected Veterans in care in 2008 have not had their hepatitis B infection status assessed and some Veterans only have negative hepatitis B viral load results while receiving antiretroviral medications with activity against hepatitis B. More information on hepatitis B can be found at www.hepatitis.va.gov.

6.5 Hepatitis C Screening and Diagnosis

Hepatitis C is the most common chronic blood borne infection in the United States and shares several risk factors for acquisition with HIV. Several national guidelines, including those from the U.S. Public Health Service, the Infectious Diseases Society of America, the VHA

Hepatitis C Resource Center Program, and National Hepatitis C Program Office recommend that all HIV patients be tested for hepatitis C.^{10,11} Unlike hepatitis A and B, there is no vaccine available to prevent hepatitis C. Patients infected with both HIV and hepatitis C may be at greater risk for liver disease progression than those with hepatitis C infection alone and thus the need for diagnosis and treatment of these individuals is high¹¹. In VHA, 96% of HIV infected Veterans in VHA care in 2008 had been screened for hepatitis C; VISN hepatitis C testing rates ranged from 90% to 98% (Table 12). The high screening rate indicates that VHA organizational initiatives to promote hepatitis C screening among all Veterans, along with specific emphasis on testing HIV infected Veterans for hepatitis C have been successful.

Over 5,400 (24%) of HIV infected Veterans tested for hepatitis C in 2008 had evidence of chronic hepatitis C demonstrated by at least one detectable hepatitis C viral load or an identifiable hepatitis C genotype. At the VISN level, the rate of hepatitis C co-infection in Veterans with HIV/AIDS ranged from 13% to 40% in VISNs 23 and 3, respectively. Four VISNs (numbers 1, 3, 4, and 5), all located in the Northeastern U.S. had rates of co-infection with HIV and chronic hepatitis C above 30%.

Table 12. Hepatitis C Screening Rates in HIV Infected Veterans in VHA Care in 2008

	Number in Care	Percent with VHA Hepatitis C Screening Ever
Nation	23,463	96%
VISN (number)		
VA New England Healthcare System (1)	636	93%
VA Healthcare Network Upstate New York (2)	354	90%
VA NY/NJ Veterans Healthcare Network (3)	1,910	97%
VA Healthcare - VISN 4 (4)	1,055	95%
VA Capitol Health Care Network (5)	1,559	96%
VA Mid-Atlantic Health Care Network (6)	1,535	96%
VA Southeast Network (7)	2,459	96%
VA Sunshine Healthcare Network (8)	3,100	97%
VA MidSouth Healthcare Network (9)	852	95%
VA Healthcare System of Ohio (10)	544	95%
Veterans in Partnership - VISN 11 (11)	775	95%

	Number in Care	Percent with VHA Hepatitis C Screening Ever
Nation	23,463	96%
VISN (number)		
VA Great Lakes Health Care System (12)	787	96%
VA Heartland Network (15)	550	94%
South Central VA Health Care Network (16)	2,060	97%
VA Heart of Texas Health Care Network(17)	1,197	97%
VA Southwest Health Care Network (18)	749	98%
VA Rocky Mountain Network (19)	424	95%
VA Northwest Network (20)	719	95%
VA Sierra Pacific Network (21)	1,182	94%
VA Desert Pacific Healthcare Network (22)	2,025	98%
VA Midwest Health Care Network (23)	369	94%

6.6 Tuberculosis Screening

According to the CDC, the overall number of tuberculosis (TB) cases in the United States has declined from 84,304 in 1953 to 12,904 in 2008. Sixty-two percent of the tuberculosis patients reported to CDC in 2008 (8,010) had HIV test results available and of this subgroup, 10.2% were HIV positive. The rate may be actually be higher for TB/HIV co-infection since the HIV status was not identified to the CDC for 38% of tuberculosis patients nationally.¹² The likelihood of progression from latent TB to active TB has been reported to be from 2.5 to 12 times higher in HIV infected individuals than in those who are not infected.³

The DHHS guidelines for the Prevention of Opportunistic Infections recommend that HIV infected persons be screened for latent tuberculosis infection (LTBI) at the time of HIV diagnosis regardless of other risk factors for TB.³ Screening can be accomplished by traditional tuberculin skin testing or via the newer interferon-gamma release assays. In 2008, just under one thousand (4%) of HIV infected Veterans had a history of TB documented in their VHA electronic medical record and forty had a history of a tuberculin allergy—either of which makes them ineligible for LTBI screening. Among HIV infected Veterans in care in 2008 who were eligible for LTBI screening, 59% had a CCR record of a tuberculin skin test or an interferon

gamma release assay ever performed by the VHA (Table 13). VISN rates for LTBI screening varied from 41% to 79%. Given the known inconsistencies in documentation of tuberculin skin testing in the electronic medical record, these percentages likely underestimate LTBI screening rates. It is possible that many HIV infected Veterans have LTBI screening done prior to entering VHA care and those test results are documented in clinic notes which are not captured by the current CCR.

Table 13. Latent Tuberculosis Infection Screening Rates for HIV infected Veterans in VHA Care in 2008

	Number in Care	Percent with VHA LTBI Screening Ever
Nation	23,463	59%
VISN (number)		
VA New England Healthcare System (1)	636	55%
VA Healthcare Network Upstate New York (2)	354	56%
VA NY/NJ Veterans Healthcare Network (3)	1,910	60%
VA Healthcare - VISN 4 (4)	1,055	57%
VA Capitol Health Care Network (5)	1,559	76%
VA Mid-Atlantic Health Care Network (6)	1,535	53%
VA Southeast Network (7)	2,459	46%
VA Sunshine Healthcare Network (8)	3,100	61%
VA MidSouth Healthcare Network (9)	852	51%
VA Healthcare System of Ohio (10)	544	74%
Veterans in Partnership - VISN 11 (11)	775	46%
VA Great Lakes Health Care System (12)	787	67%
VA Heartland Network (15)	550	59%
South Central VA Health Care Network (16)	2,060	57%
VA Heart of Texas Health Care Network (17)	1,197	79%
VA Southwest Health Care Network (18)	749	62%
VA Rocky Mountain Network (19)	424	64%
VA Northwest Network (20)	719	42%
VA Sierra Pacific Network (21)	1,182	69%

	Number in Care	Percent with VHA LTBI Screening Ever
Nation	23,463	59%
VISN (number)		
VA Desert Pacific Healthcare Network (22)	2,025	59%
VA Midwest Health Care Network (23)	369	41%

6.7 Syphilis Screening

The link between syphilis and HIV is related to high-risk behaviors. The resurgence of syphilis among HIV infected individuals in the United States underscores the importance of prevention and screening.³ Furthermore, co-existent HIV and syphilis can impact the diagnosis and natural history of syphilis; clinical manifestations may be more apparent and progression of syphilitic disease may be accelerated.¹³ Routine serologic screening for syphilis is recommended at least annually for all sexually active HIV infected persons, and various guidelines recommend more frequent testing on the basis of clinical history (e.g. ongoing risk behavior).¹⁴ In 2008, 48% of Veterans with HIV/AIDS received a screening test for syphilis in that same year, this rate was 3% higher than the previous year. Rates of annual syphilis testing across VISNs ranged from 27% to 68% (Table 14).

Syphilis is a recognized issue in the VHA HIV/AIDS population as indicated by the fact that 96% of the HIV infected Veterans in VHA care in 2008 had documentation of at least one syphilis test ever and a median of four tests while in VHA HIV care with testing repeated a median of every 1.87 years. The large variation among VISNs and the low overall annual testing rates nationally indicate that efforts to improve routine syphilis screening across VHA are warranted.

Table 14. Annual Syphilis Screening Rates in HIV Infected Veterans in VHA Care in 2008

	Number in Care	Percent with VHA Syphilis Test in 2008
Nation	23,463	48%
VISN (number)		
VA New England Healthcare System (1)	636	27%
VA Healthcare Network Upstate New York (2)	354	30%
VA NY/NJ Veterans Healthcare Network (3)	1,910	32%

	Number in Care	Percent with VHA Syphilis Test in 2008
Nation	23,463	48%
VISN (number)		
VA Healthcare - VISN 4 (4)	1,055	42%
VA Capitol Health Care Network (5)	1,559	60%
VA Mid-Atlantic Health Care Network (6)	1,535	49%
VA Southeast Network (7)	2,459	67%
VA Sunshine Healthcare Network (8)	3,100	51%
VA MidSouth Healthcare Network (9)	852	32%
VA Healthcare System of Ohio (10)	544	50%
Veterans in Partnership - VISN 11 (11)	775	36%
VA Great Lakes Health Care System (12)	787	61%
VA Heartland Network (15)	550	51%
South Central VA Health Care Network (16)	2,060	48%
VA Heart of Texas Health Care Network (17)	1,197	67%
VA Southwest Health Care Network (18)	749	36%
VA Rocky Mountain Network (19)	424	31%
VA Northwest Network (20)	719	37%
VA Sierra Pacific Network (21)	1,182	38%
VA Desert Pacific Healthcare Network (22)	2,025	68%
VA Midwest Health Care Network (23)	369	43%

6.8 Lipid Testing

Several antiretroviral medications, including most protease inhibitors and efavirenz, have been shown to contribute to the elevation of serum lipids.¹⁵ Since these medications are commonly used, hyperlipidemia occurs in a high proportion of HIV infected Veterans, many of whom have other conditions and characteristics that put them at high risk for coronary heart disease, such as diabetes, hypertension, tobacco use, and being a male over age 45. Once antiretroviral therapy has been initiated, the DHHS Guidelines recommend routine monitoring of key laboratory tests to assess toxicity, including lipid testing (low density cholesterol (LDL) and triglycerides).²

Frequency of monitoring is dictated by a drug’s known side effect profile, the expected time of onset, and duration of use. These guidelines recommend monitoring when initiating antiretroviral therapy, 3 to 6 months after starting a new regimen, then annually or more frequently in high risk patients or patients with abnormal baseline levels. The National Cholesterol Education Program (NCEP) recommends HIV-infected persons at high risk of coronary heart disease receive lipid monitoring every four to six months.¹⁶

Using the more conservative NCEP lipid screening recommendations, 65% of HIV infected Veterans on antiretroviral therapy underwent VHA lipid testing in the last six months of 2008 (July through December). VISN rates ranged from 48% to 83% (Table 15). The percentage of Veterans on antiretroviral therapy who had semi-annual lipid testing has increased by 5% since these rates were first reported in 2005. Although the average rate has increased slightly compared to 2005, there is still a range of 35% between VISNs. Further investigation of local health care systems with lower lipid testing rates is warranted to identify knowledge gaps or process issues impairing higher lipid testing rates.

Table 15. Lipid Testing Rates in HIV Infected Veterans with Antiretrovirals in VHA Care in July-December 2008

	Number on Antivirals	Percent with VHA Lipid Test
Nation	17,665	65%
VISN (number)		
VA New England Healthcare System (1)	436	65%
VA Healthcare Network Upstate New York (2)	230	54%
VA NY/NJ Veterans Healthcare Network (3)	1,343	75%
VA Healthcare - VISN 4 (4)	752	57%
VA Capitol Health Care Network (5)	1,098	64%
VA Mid-Atlantic Health Care Network (6)	1,120	54%
VA Southeast Network (7)	1,840	63%
VA Sunshine Healthcare Network (8)	2,306	72%
VA MidSouth Healthcare Network (9)	608	48%
VA Healthcare System of Ohio (10)	391	61%
Veterans in Partnership - VISN 11 (11)	604	54%

	Number on Antivirals	Percent with VHA Lipid Test
Nation	17,665	65%
VISN (number)		
VA Great Lakes Health Care System (12)	561	66%
VA Heartland Network (15)	418	61%
South Central VA Health Care Network (16)	1,595	63%
VA Heart of Texas Health Care Network (17)	908	69%
VA Southwest Health Care Network (18)	588	83%
VA Rocky Mountain Network (19)	329	53%
VA Northwest Network (20)	551	55%
VA Sierra Pacific Network (21)	865	64%
VA Desert Pacific Healthcare Network (22)	1,485	76%
VA Midwest Health Care Network (23)	285	76%

6.9 Tobacco Cessation

Tobacco dependence is prevalent among HIV infected Veterans; 44% of them have a VHA diagnosis of tobacco use ever (Table 16). Twenty-four percent had a current diagnosis of tobacco dependence in 2008, which is slightly higher than the 22% prevalence in the overall Veteran population and the 21% prevalence in the general population.¹⁷ The 2008 Update of the Public Health Service Clinical Practice Guideline: Treating Tobacco Use and Dependence states that it is essential for clinicians and healthcare delivery systems to consistently identify and document tobacco use status and treat every tobacco user seen in a healthcare setting. Nearly 36% of HIV infected Veteran smokers have ever received a medication to treat their tobacco dependence and 14% received tobacco cessation medications in 2008 (Table 16). VISN rates for treatment with tobacco cessation medications in 2008 were between 12% and 29%. Work is needed to determine how best to assist VHA providers and HIV infected Veterans in achieving higher levels of treatment and tobacco cessation.

Table 16. Tobacco Use and Pharmacotherapy in HIV infected Veterans in VHA Care in 2008

	Number in Care	Percent with VHA DX of Tobacco Use Ever	Percent with VHA DX of Tobacco Use in 2008	Percent with VHA Drug Therapy Ever	Percent with VHA Drug Therapy in 2008
Nation	23,463	44%	24%	36%	14%
VISN (number)					
VA New England Healthcare System (1)	636	54%	28%	46%	23%
VA Healthcare Network Upstate New York (2)	354	59%	30%	47%	20%
VA NY/NJ Veterans Healthcare Network (3)	1,910	41%	21%	35%	14%
VA Healthcare - VISN 4 (4)	1,055	48%	28%	43%	15%
VA Capitol Health Care Network (5)	1,559	41%	20%	40%	15%
VA Mid-Atlantic Health Care Network (6)	1,535	45%	26%	36%	16%
VA Southeast Network (7)	2,459	39%	20%	33%	14%
VA Sunshine Healthcare Network (8)	3,100	47%	29%	31%	12%
VA MidSouth Healthcare Network (9)	852	49%	28%	35%	15%
VA Healthcare System of Ohio (10)	544	62%	39%	44%	20%
Veterans in Partnership - VISN 11 (11)	775	51%	32%	38%	15%
VA Great Lakes Health Care System (12)	787	51%	26%	40%	15%
VA Heartland Network (15)	550	54%	34%	41%	15%
South Central VA Health Care Network (16)	2,060	43%	19%	35%	13%
VA Heart of Texas Health Care Network(17)	1,197	35%	19%	33%	13%
VA Southwest Health	749	49%	30%	34%	12%

	Number in Care	Percent with VHA DX of Tobacco Use Ever	Percent with VHA DX of Tobacco Use in 2008	Percent with VHA Drug Therapy Ever	Percent with VHA Drug Therapy in 2008
Nation	23,463	44%	24%	36%	14%
VISN (number)					
Care Network (18)					
VA Rocky Mountain Network (19)	424	43%	23%	36%	17%
VA Northwest Network (20)	719	49%	26%	42%	15%
VA Sierra Pacific Network (21)	1,182	43%	23%	34%	14%
VA Desert Pacific Healthcare Network (22)	2,025	40%	22%	32%	12%
VA Midwest Health Care Network (23)	369	50%	34%	50%	29%

Methods

- 1) CD4+ lymphocyte count and HIV Viral Load testing. Veterans who had an inpatient admission, outpatient prescription, or outpatient visit between July and December 2008 were assessed for receipt of a CD4+ lymphocyte count and for a HIV viral load in the July through December 2008 period.
- 2) PCP and MAC prophylaxis. Veterans with CD4+ lymphocyte counts below specific thresholds were assessed for receipt of a medication recommended by DHHS Guidelines for Prevention and Treatment with at least a 27 day supply. For PCP, the CD4+ lymphocyte threshold was less than 180 cells/mm³ and qualifying medications included atovaquone, dapsone, and aerosolized pentamidine. For MAC, the CD4+ lymphocyte count threshold was less than 45 cells/mm³ and qualifying medications included sulfamethoxazole/trimethoprim azithromycin, clarithromycin, and rifabutin.
- 3) Influenza and pneumococcal vaccination. For the Influenza vaccination report, veterans with an inpatient admission, outpatient prescription, or outpatient visit during the October 2007 through March 2008 vaccination campaign were assessed for the receipt of a VHA vaccination, documentation that an offer to vaccinate was declined, history of allergy to the vaccine or to eggs, or documentation of vaccination outside of VHA. For pneumococcal vaccination, all veterans with an admission, outpatient prescription, or outpatient visit in 2008, were assessed for the receipt of a VHA vaccination documentation that an offer to vaccinate was declined, or history of allergy to the vaccine or to phenol during or prior to 2008.
- 4) Hepatitis B. Veterans with an inpatient admission, outpatient prescription, or outpatient visit in 2008 were first assessed for the receipt of testing for active hepatitis B infection (positive result for hepatitis B viral load, e antigen, or surface antigen), hepatitis B exposure, or previous vaccination (antibodies to hepatitis B surface or core antigens). Next, those with no evidence of past exposure to hepatitis B, or immune response to prior disease were assessed for the receipt of hepatitis B vaccine. CCR inpatient and outpatient prescription records were reviewed for receipt of hepatitis B vaccine or combination products containing hepatitis B vaccine during or prior to 2008.

- 5) Hepatitis C. Veterans with an inpatient admission, outpatient prescription, or outpatient visit in 2008 were assessed for the receipt of a laboratory test for hepatitis C during or prior to 2008.
- 6) Tuberculosis screening. Veterans with an inpatient admission, outpatient prescription, or outpatient visit in 2008 were first assessed for a history of tuberculosis using ICD-9 diagnosis codes or a history of allergy to tuberculin. Each Veteran without a history of TB infection or allergy was assessed for the receipt of a TB skin test or an interferon gamma release assay during or prior to 2008.
- 7) Syphilis screening. Veterans with an admission, outpatient prescription, or outpatient visit in 2008 were assessed for the receipt of a syphilis test in 2008.
- 8) Lipid screening. Veterans with an outpatient prescription fill for an antiretroviral medication in July through December 2008 were assessed for the receipt of a low density lipoprotein (LDL) or triglyceride (TG) test in that same period.
- 9) Tobacco cessation. Veterans with an admission, outpatient prescription, or outpatient visit in 2008 were assessed for a history of a tobacco dependence diagnosis from ICD-9 codes linked to outpatient visits or admissions. Medications for tobacco cessation included nicotine replacement therapy, bupropion (approved formulations and strengths), and varenicline.

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Chapter 7 – Summary, the Future and Concluding Remarks

7.1 Quality

For the past two years, PSHHG has used national CCR data to assess and report within the VHA on a number of quality indicators which are based on accepted guidelines or treatment recommendations. Information reported here supports the mission of PSHHG to improve the health of Veterans. On a regular basis, reports on patient volume, demographics, rates of common conditions, and accepted indicators of quality are disseminated to all VHA HIV providers. This information, along with assessing trends over time, has been useful within VHA in planning staffing, projecting cost, and understanding where improvements in care can be made.

This State of Care Report builds on the earlier quality indicator reports and presents a broad view of care for HIV infected Veterans. While there are several aspects of the VHA that make it a unique health care system, sharing the VHA HIV experience with other HIV care providers can provide important and useful information. For example, our HIV infected Veteran population, although predominantly male, is almost a decade older than the non-VHA HIV infected population. The difference in age provides insights that may help non-VHA providers understand what to expect as their patients with HIV/AIDS age in the decades ahead.

The National Quality Forum (NQF), a private, not-for-profit, public benefit corporation was established to develop and implement a national strategy for health care quality measurement and reporting. In July 2008, the NQF endorsed 13 new performance measures for evaluating the quality of HIV/AIDS care. Many of the topics included in PSHHG reporting over the past few years are included as NQF performance measures, including Hepatitis B screening and vaccination, Hepatitis C screening, TB screening, syphilis screening, and PCP prophylaxis.

The CQMPH has operationalized many of the NQF performance measures and assessed real world performance in VHA through its regular quality based HIV reporting using CCR data. CCR data can be used to approximate NQF performance measures for VHA nationally, for VISNs, and for local healthcare systems. Thus, the CCR provides a relatively rapid and reproducible way to identify care sites at which the initiation of quality programs might improve comprehensive HIV/AIDS care. Based on 2008 CCR data, national VHA rates for NQF HIV/AIDS performance measures and VHA quality indicators are generally high, although variation exists in the observed rates at facility and VISN levels, suggesting room for improvement.

Sites with higher rates of performance may provide models for replication at other facilities. Several facilities with very large HIV caseloads care for the majority of HIV infected Veterans, leaving many VHA systems with relatively small numbers of HIV patients. A challenge within VHA is to provide high quality care throughout the system so that outcomes for patients receiving care at low volume facilities are comparable to outcomes for those receiving care at high volume HIV facilities.

7.2 Future Initiatives

An important goal of the PSHHG is to support the earliest possible detection of HIV infection and prompt linkage to high quality care, including antiretroviral therapy. Earlier diagnosis of HIV infection allows for prompt clinical intervention, including therapy to decrease rates of disease progression. It is important to know more about the stage at which Veterans are first identified with HIV infection; at what stage they seek VHA care for HIV and how to identify opportunities within the VHA system for earlier diagnosis. The PSHHG currently has an active plan to address this important issue, ranging from policy revision to practice support.

Given the changing epidemiology of HIV with prolonged survival from potent antiretroviral therapy, it is important to understand the medical experience in the aging population living with HIV. Considering the size and age of VHA's HIV population, VHA can provide valuable information on this group. As the Veteran HIV population continues to age, it is important to recognize challenges they will face and to survey for emerging issues in order to ensure that they get the best possible care.

Issues related to therapy fatigue, adherence, and managing multiple co-morbidities will add to treatment complexity for treating HIV/AIDS for both Veterans and their providers. Activities such as consensus development of quality indicators helps capitalize on the knowledge and insight of HIV providers with years of experience as a source of guidance for future providers. Recent changes in VHA regulations to increase access to HIV testing will help identify previously undiagnosed cases of HIV/AIDS. Educating and training new providers to manage the aging cohort of veterans living with HIV is an important priority for the VHA.

New HIV infections continue to occur in the United States. This fact underscores the need for ongoing efforts to increase access to testing for HIV infection. We must ensure that each new generation of Veterans has the knowledge and skills to prevent HIV infection. Toward this goal, it is important to highlight the need for ongoing Veteran targeted programs that increase awareness of HIV testing and prevention throughout the course of Veteran's lives.

Conclusion

This State of Care Report provides a population view of VHA care for HIV disease. It serves to increase our understanding of the population of HIV infected Veterans being served by VHA, how VHA addresses clinical and preventive service needs, and helps to identify significant variations in service from VISN to VISN. It describes the VHA population in care “in the real world” and identifies trends that can help VHA as a system understand the needs of the HIV infected population currently in care and anticipate emerging needs.

The VHA cared for over 23,000 Veterans with HIV disease in 2008. The VHA population with HIV/AIDS is concentrated in the southern United States and receives care predominantly at facilities with 300 or more HIV patients. In general, the VHA’s HIV population is overwhelmingly male, but includes over 600 female Veterans. The population has a median age of 53 years and 20% are age 60 or older. Almost half are Black. The population has substantial rates of mental health diagnoses, dyslipidemias, hypertension, and tobacco dependence. Though more than half of the HIV infected Veteran population in VHA care in 2008 had a history of advanced HIV infection, in that year just over 14% of the population had a CD4+ lymphocyte count below 200 cells/mm³ or a CD4+ lymphocyte percent below 14 percent, indicating clinical AIDS. Most HIV infected Veterans in VHA care have been under that care for quite some time and appear actively engaged in their healthcare as evidenced by the number of primary care or infectious disease clinic visits annually. Rates of monitoring of HIV severity have improved as have rates of receipt of other recommended treatments such as screening and vaccinations where indicated. Although there are some specific areas and sites where the quality of care could be improved, overall performance is good.

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Appendix

The following table (Table 1) shows the number of Veterans in care by VISN. To be counted in a respective year, a Veteran must:

- Exist in the clinical case registry for HIV and
- Have an inpatient admission, outpatient prescription, or outpatient visit in the VISN during the calendar year. A Veteran will be counted in each VISN providing care to the Veteran during the year.

Table 1. HIV Caseload by VISN for 2004 and 2008

VISN (number)	Number in Care 2004	Number in Care 2008
VA New England Healthcare System (1)	729	636
VA Healthcare Network Upstate New York (2)	364	354
VA NY/NJ Veterans Healthcare Network (3)	2,200	1,910
VA Healthcare - VISN 4 (4)	1,074	1,055
VA Capitol Health Care Network (5)	1,698	1,559
VA Mid-Atlantic Health Care Network (6)	1,488	1,535
VA Southeast Network (7)	2,357	2,459
VA Sunshine Healthcare Network (8)	3,282	3,100
VA MidSouth Healthcare Network (9)	798	852
VA Healthcare System of Ohio (10)	556	544
Veterans in Partnership - VISN 11 (11)	808	775
VA Great Lakes Health Care System (12)	806	787
VA Heartland Network (15)	560	550
South Central VA Health Care Network (16)	2,191	2,060
VA Heart of Texas Health Care Network(17)	1,105	1,197
VA Southwest Health Care Network (18)	729	749
VA Rocky Mountain Network (19)	408	424
VA Northwest Network (20)	684	719
VA Sierra Pacific Network (21)	1,177	1,182
VA Desert Pacific Healthcare Network (22)	2,072	2,025
VA Midwest Health Care Network (23)	344	369

The following table (Table 2) shows the number of Veterans in care for by main facility city and associated state. To be counted in a respective year, a Veteran must:

- Exist in the clinical case registry for HIV and
- Had an inpatient admission, outpatient prescription, or outpatient visit at the facility during the calendar year. A Veteran will be counted in each facility providing care to the Veteran during the year.

Table 2. HIV Caseload by State and Main Facility City

State	Main Facility City	2004	2008
AL	Birmingham	253	267
AL	Montgomery	193	188
AL	Tuscaloosa	39	23
AK	Anchorage	27	38
AZ	Phoenix	329	323
AZ	Prescott	13	18
AZ	Tucson	170	172
AR	Fayetteville	68	64
AR	Little Rock	179	192
CA	Fresno	90	86
CA	Loma Linda	340	403
CA	Long Beach	293	246
CA	Los Angeles	663	610
CA	Martinez	273	284
CA	Palo Alto	180	206
CA	San Diego	604	576
CA	San Francisco	565	539
CO	Denver	295	309
CO	Grand Junction	9	12
CT	West Haven	275	239
DE	Wilmington	154	144
DC	District of Columbia	960	906
FL	Bay Pines	374	364

State	Main Facility City	2004	2008
FL	Gainesville	459	508
FL	Miami	1,019	855
FL	Tampa	779	786
FL	West Palm Beach	359	309
GA	Atlanta	1,116	1,192
GA	Augusta	230	263
GA	Dublin	109	130
HI	Honolulu	70	76
ID	Boise	31	40
IL	Chicago	461	405
IL	Danville	56	70
IL	Hines	162	171
IL	Marion	43	47
IL	North Chicago	74	58
IN	Indianapolis	210	227
KY	Lexington	62	59
KY	Louisville	154	150
LA	Alexandria	72	58
LA	New Orleans	399	295
LA	Shreveport	119	135
ME	Togus	51	57
MD	Baltimore	760	658
MA	Bedford	41	33
MA	Boston	246	195
MA	Northampton	59	57
MI	Ann Arbor	161	131
MI	Battle Creek	92	75
MI	Detroit	305	270
MI	Iron Mountain	13	9

State	Main Facility City	2004	2008
MI	Saginaw	42	41
MN	Minneapolis	152	151
MN	St. Cloud	16	12
MS	Jackson	188	203
MS	Biloxi	253	258
MO	Kansas City	281	277
MO	St. Louis	284	279
MT	Fort Harrison	25	19
NE	Omaha	156	172
NV	Las Vegas	260	272
NV	Reno	84	68
NH	Manchester	37	26
NJ	East Orange	528	458
NM	Albuquerque	116	134
NY	Bronx	529	437
NY	Montrose	129	120
NY	Northport	110	93
NY	New York City (Manhattan, Brooklyn)	1,087	961
NY	Upstate New York	364	354
NC	Asheville	73	50
NC	Durham	438	469
NC	Fayetteville	181	191
NC	Salisbury	257	281
ND	Fargo	19	18
OH	Columbus	95	94
OH	Chillicothe	29	23
OH	Cincinnati	158	158
OH	Dayton	140	142
OH	Cleveland	240	232

State	Main Facility City	2004	2008
OK	Muskogee	63	58
OK	Oklahoma City	186	187
OR	Portland	257	270
OR	Roseburg	53	57
OR	White City	29	31
PA	Altoona	7	10
PA	Butler	12	15
PA	Coatesville	185	130
PA	Erie	17	20
PA	Lebanon	97	117
PA	Philadelphia	553	537
PA	Pittsburgh	138	133
PA	Wilkes-Barre	85	73
PI	Manila	1	2
PR	San Juan	466	390
RI	Providence	76	72
SC	Charleston	279	266
SC	Columbia	328	340
SD	Fort Meade	16	19
SD	Sioux Falls	18	18
TN	Memphis	271	274
TN	Mountain Home	46	74
TN	Nashville	245	279
TX	Amarillo	62	59
TX	Big Spring	35	34
TX	Dallas	567	614
TX	El Paso	47	48
TX	Houston	791	766
TX	San Antonio	350	376

State	Main Facility City	2004	2008
TX	Temple	213	237
UT	Salt Lake City	77	79
VT	White River Junction	31	27
VA	Hampton	323	331
VA	Richmond	265	269
VA	Salem	93	81
WA	Seattle	280	278
WA	Spokane	45	53
WA	Walla Walla	24	21
WV	Beckley	10	6
WV	Clarksburg	15	21
WV	Huntington	30	37
WV	Martinsburg	138	132
WI	Madison	56	72
WI	Milwaukee	126	127
WI	Tomah	10	18
WY	Cheyenne	6	9
WY	Sheridan	6	7

Please note that the geographic coverage of a given VISN or main facility can cross state lines and that Veterans can be seen in multiple VISNs and/or facilities.