

**Access and Quality of Care
for HIV and AIDS
in Tennessee's TennCare Program:
1992-1997**

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I. Introduction

Overview

In most states a large percentage of persons with HIV/AIDS patients are uninsured or underinsured and their care is costly. High quality outpatient care can effectively reduce the morbidity and mortality of HIV/AIDS and improve patient quality of life. Beginning in January of 1994, Tennessee initiated a series of innovative statewide efforts to expand access and increase quality of HIV/AIDS care by becoming the first state to provide universal coverage of uninsured HIV/AIDS patients through the TennCare program. Since the initiation of the TennCare program, state government and TennCare MCOs have worked closely with established providers with recognized expertise in HIV/AIDS care to improve HIV/AIDS care statewide, through the ongoing development of an AIDS Centers of Excellence (COEs) program. The COEs program has brought together expert providers, patients and advocates, and TennCare MCO and State representatives in order to improve and standardize HIV/AIDS care under supervision of COEs. The impact of this investment to improve health care for persons living with HIV and AIDS is unknown. This report will document changes in access, quality and outcomes of care for persons with HIV and AIDS in Tennessee during the period in which these important statewide interventions were introduced. In particular, this report documents the health care utilization experience and clinical outcomes of persons with HIV and AIDS served by Tennessee's Medicaid (1992 – 93) and TennCare (1994 - 97) programs.

The data are presented in eight sections (Sections II – IX). These sections employ various data sources and methodologies, which are described in detail in each respective section. Section II describes how administrative claims data and State Health Department HIV/AIDS Reporting and Surveillance (HARS) data were used to identify persons with HIV and AIDS served by the Medicaid and TennCare programs for subsequent reporting purposes. Section III presents the final criteria used for defining the Medicaid/TennCare HIV and AIDS populations for reporting purposes in Sections IV through VII, and the numbers of individuals meeting these definitions in each year 1992 – 1997. Section IV presents data on changes in access to public insurance through Medicaid and TennCare for persons with HIV and AIDS in Tennessee from 1992 – 1997. Section V reports the changes in the demographics of the HIV and AIDS populations served by the Medicaid and TennCare programs from 1992 – 1997. Section VI reports

health care utilization trends for persons with HIV and AIDS during this period. This section generally presents data as defined in the Health Plan Employer Data and Information Set (HEDIS 3.0) developed by the National Committee for Quality Assurance (NCQA) to allow meaningful health plan comparisons. Section VII reports drug utilization trends for persons with HIV and AIDS during this period. Section VIII reports trends in major outcomes of care including mortality, incidence of opportunistic infections and rate of conversion to AIDS for HIV positive persons served by the Medicaid and TennCare programs from 1992 –1997. Lastly, Section IX presents national mortality data for the study period from states with the same reporting requirements for HIV and AIDS as Tennessee to see if expansion of access through the TennCare program and initiation of the COEs program in 1996-1998 is associated with greater improvements in HIV and AIDS mortality in Tennessee as compared with other states.

This study was supported by a grant from the Center for Health Care Strategies. More specifically, this report is in fulfillment of the contract with Tennessee Opportunity Programs, Inc. (TOPS) for the Center for Health Care Strategies, as part of Tennessee’s AIDS Centers of Excellence Project, to evaluate and monitor the health status of persons with HIV and AIDS in the Medicaid and TennCare programs and to assess the impact of TennCare and the AIDS COEs program on HIV/AIDS care in Tennessee. Medicaid managed care approaches have the potential to impact access and quality of care for HIV/AIDS. Tennessee’s experimental program proposed to markedly expand insurance coverage for persons with HIV and AIDS but its full impact of access and quality of care remains unclear. This study sought to describe changes in access, utilization and quality of care subsequent to the initiation of a statewide Medicaid managed care program and an innovative AIDS Centers of Excellence program in Tennessee.

Methodology

Data Sources

Existing data within the State of Tennessee served as the foundation for this evaluation. Key data sources listed below were used to identify HIV infected patients in Tennessee, determine which patients were enrolled in the Medicaid and TennCare programs, track changes in enrollment over time and to monitor survival. The following data sources were brought together, data completeness was assessed and data linkages were achieved to allow comprehensive monitoring of the characteristics, health status, utilization and major outcomes for the Medicaid/ TennCare HIV and AIDS populations:

a. Statewide HIV/AIDS Reporting and Surveillance System. The statewide HIV/AIDS Reporting and Surveillance System (HARS) is mandated by law and consists of a collection of computer programs and data files that were developed by the Centers for Disease Control (CDC) in an attempt to simplify the management of HIV and AIDS surveillance data. The HIV/AIDS Reporting System is a statewide, confidential, patient reporting and data analysis system for persons with HIV and AIDS. Records include basic patient information, risk factors, diseases indicative of AIDS, and laboratory data. Reports are received from physicians, nurses, and other health professionals as required by communicable disease reporting regulations. Data are used by State Health Departments and the CDC to monitor trends of HIV infection and to plan the appropriate response.

b. Medicaid and TennCare Enrollment/Eligibility Files. Medicaid and TennCare enrollment files provide a central registry for all Medicaid and TennCare enrollees. They can be used to identify all persons enrolled in Medicaid and TennCare, the TennCare MCO in which they are enrolled, and to ascertain periods of eligibility. Because this file determines the number and amount of capitation payments provided to MCOs, it is audited carefully for accuracy and completeness. The enrollment file contains: 1) the Medicaid/TennCare enrollee ID number and social security number; 2) demographic characteristics: date of birth, gender, race, and county of residence; 3) name and address; and 4) eligibility status and the beginning and ending date of eligibility. Generally, each enrollee has a single TennCare number. However, there are some circumstances in which multiple numbers may be assigned to a single person. The most common are presumptive eligibility for pregnant women, in which a temporary number is assigned while the TennCare application is processed, and re-enrollment of a former enrollee who does not inform the case worker of a past Medicaid or TennCare number. These duplicates can be detected and all records linked for a single enrollee.

c. Medicaid and TennCare Encounter Files. Medicaid and TennCare encounter files consist of records of patient encounters with health care providers. Records for inpatient and outpatient encounters were used to identify services provided to HIV patients. The inpatient file contains the records of hospitalizations for Medicaid/TennCare enrollees. There is one record per hospital stay, which includes: 1) enrollee ID; 2) hospital ID; 3) hospital admission and discharge dates; 4) primary and secondary diagnoses, 5) up to two surgical procedures; and 6) estimated cost and other fiscal information. Diagnoses are

coded using ICD-9-CM diagnosis codes and procedures are coded using CPT-4 procedure codes.

Similarly, the outpatient and professional files consist of encounter records for emergency room, hospital outpatient department, outpatient surgical facility, and provider visits for Medicaid/TennCare enrollees. Because the encounter files contain a record of every service performed, a single office visit may generate several encounter records, one for each procedure performed (physician services, radiology or laboratory etc.). Other encounter files include pharmacy files, nursing home files, home health care, ambulance services, vision and dental services, durable medical equipment, and other miscellaneous services.

Medicaid and TennCare pharmacy files include records of all prescriptions obtained by enrollees from participating pharmacies under Medicaid and TennCare. The pharmacy prescription profiles include medication, dose, amount, and prescription date. On-line pharmacies electronically submit pharmaceutical claims for TennCare enrollees to a centralized computer database. The pharmacy database accurately reflects prescription medications obtained by HIV/AIDS TennCare enrollees because of the following factors: a) enrollees can obtain only one month's supply of medication at a time, b) HIV/AIDS medications are expensive and likely to be obtained by enrollees through their TennCare pharmacy benefit, c) Most pharmacies in Tennessee participate in TennCare and enter data directly into the pharmacy database at the point of service, and d) the Tennessee Medicaid pharmacy database, which is very similar, has been previously validated.

d. Vital Records. Birth and death certificate files are available through the Tennessee Center for Health Statistics on an annual basis. These records can be linked with Medicaid and TennCare enrollment files as well as HARS records. The birth certificate file establishes Tennessee residence and provides additional information on characteristics of the mother, the pregnancy, and the infant. The death certificate file contains date of death and underlying cause of death.

e. National HIV/AIDS Mortality Statistics. Descriptive tabulations of information reported on death certificates is reported in the National Vital Statistics Report (prior to 1998 known as Monthly Vital Statistics) This national data base is maintained via the vital Statistics Cooperative Program of the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention. Similar tabulations of Information from each mandated statewide HIV/AIDS Reporting and Surveillance System (HARS) is reported in the HIV/AIDS Surveillance Report.

Performance Indicator Development

A major goal of this study was to develop encounter data derived performance indicators for HIV/AIDS care for ongoing monitoring of quality and accessibility of HIV/AIDS care. Performance indicators, such as those defined in HEDIS 3.0, are increasingly recognized as valuable tools for monitoring quality and accessibility of health care. Performance indicators are traditionally based on existing data sources to facilitate cost-effective quality monitoring. Performance indicators are commonly developed by consensus with expert providers but are seldom subjected to rigorous external validation, so it is often unknown whether these indicators truly measure what they report to measure or whether the measured processes are truly linked to outcomes. Such indicators are deemed most valuable when they monitor a processes known to directly impact outcomes of care. When linkage between processes and outcomes of care are strong, improvements in processes can be assumed to lead to improvements in outcomes of care. This project sought to develop performance indicators based on encounter data which reflect performance in areas clearly linked to outcomes of care for HIV and AIDS.

Although performance indicators have been developed for care for variety of chronic diseases, no published research has documented the development and use of performance indicators based on encounter data for HIV/AIDS care. The development of these indicators for HIV and AIDS patients in Tennessee was based on models developed for evaluating processes of care for the chronic diseases. To develop HIV and AIDS performance indicators, first, a series of focus groups were held between September 1998 and September 1999 to consult expert HIV/AIDS providers and researchers. Focus group members reviewed alternative claims based performance indicators for HIV and AIDS care and evaluated their appropriateness and face validity based on their current understanding of the factors of effecting outcomes of HIV and AIDS care. Once preliminary performance indicators were refined and revised with the assistance of focus groups and literature review, the feasibility of their use was tested using claims data.

Analysis

These data sources were linked following strict procedures to maintain patient confidentiality with the assistance of Tennessee Department of Health and Bureau of TennCare personnel as described under Methodology in Section II. Analyses in this

report in Sections IV through VIII consist of the calculation and comparison of rates and percentages for reporting populations defined in Sections II and III. In general, analyses were performed for all those persons identified in the HARS system as HIV positive who were served by the Medicaid or TennCare program, as indicated by enrollment files, at any time during the period from 1992 through 1997 inclusive. Data presented are stratified where appropriate according to HIV and AIDS status. Methodologies used in respective analyses were consistently applied so that valid comparisons could be made to all relevant populations. Specific measures employed will be discussed in each respective section. Results of the analyses are displayed in designated charts and tables in the report narrative in each section.

Statistical Significance

The data analyzed for this report represent entire respective populations. Thus, no sampling error is realized, and any differences between groups are real differences. However, results should be interpreted with caution. Differences are sometimes low in magnitude and may not be of practical significance.

Disclaimers

During the time period of the study protease inhibitors were introduced and many other improvements were made in HIV/AIDS care. The current study is unable to determine whether changes in hospitalizations, morbidity and mortality during the study period are caused by the introduction of the TennCare program, the COEs Program, the introduction of protease inhibitors or other historical factors.

All mortality statistics presented are based on all cause mortality from vital records for each study participant and do not differentiate cause of death. For HIV and AIDS all cause mortality is reported accurately but it is estimated that up to 15% of deaths in persons with HIV and AIDS are due to causes unrelated to their underlying disease. For the purposes of this study, if a patient with HIV/AIDS dies, they are counted as an HIV/AIDS death.

Also, because mandatory HIV reporting was initiated in 1992 for Tennessee denominators used for reporting purposes in the first one year of the study may slightly underestimate actual HIV cases in Tennessee in this year.

II. Using Claims Data for HIV/AIDS Surveillance

Introduction

Administrative claims data is routinely collected on millions of Americans in a fairly uniform fashion and documents many details of health services utilization. Many investigators have proposed using this data for quality assurance (Goldfield & Villani, 1996; McGlynn & Asch, 1998; Palmer, 1997; Spoeri & Ullman, 1997). The economy of this approach is unmistakable, but because claims data may inaccurately represent certain diagnoses or types of health services utilization, reliance on claims data is only advisable following its validation through comparison with trusted information sources. Once claims data are shown to correspond to the HARS data sources where the two databases overlap (i.e., identification of HIV and AIDS status), we assume acceptable validity of the data for other purposes where validation is not possible. Subsequent calculations of performance indicators for HIV/AIDS will include all persons identified with HIV or AIDS using either the HARS system or claims case-finding methods.

This section therefore examines the ability of Tennessee's Medicaid/TennCare administrative claims database to identify enrollees with HIV and AIDS. The ability of the two data sets to agree on the HIV and/or AIDS status of enrollees constitutes a type of concurrent validity for disease status. Because we do not have the actual health status from verified sources available to validate the use of claims in this context, we must look at agreement with trusted sources as a proxy for true validity assessment. It should be noted, however, that the validity estimates from one method (i.e., using diagnosis data) may not generalize to other analyses (using procedure data, for example). The current study was done simply to get an idea of how well-matched the claims case-finding method matched a mandatory reporting method, and how close in time the two methods are in their ability to assign time of status change.

The criterion measure is the state's mandatory HIV/AIDS Reporting System (HARS) into which all cases of HIV are by law required to be reported by physicians and registered as part of public health policy. These two data sources differ dramatically in their purpose and functions; the TennCare database reflects data derived from claims, meaning that the purpose of recording was to obtain payment for services rendered. The HARS database, on the other hand, is implemented as a public health surveillance system whose function is not confounded with contingencies for reimbursement. In Tennessee, it is a legal

mandate for health care providers who identify an individual with HIV to report this information to the state's public health office. The current study uses the HARS database as a criterion variable by which to validate the use of health care claims data as an HIV surveillance tool. This study assessed the validity of a method for using Medicaid claims data for HIV surveillance in Tennessee for a period covering both traditional Medicaid and Medicaid managed care, and examined the time interval between identification in the state's HIV/AIDS reporting system (HARS) and detection using a claims case-finding method.

Methodology

Participants

The criterion data source was the HIV/AIDS Reporting System (HARS) database, age matched to the cohort of available cases within the Medicaid database in years 1992 through 1997. In years 1992 and 1993, Medicaid in Tennessee was operated under the fee-for-service model, and for the subsequent years Medicaid operated under an experimental Medicaid Managed Care (MMC) model called TennCare. Medicaid recipients who were \geq age 13 by 1997 were candidates for analysis. The study population included all 1.4 million recipients of Medicaid services in TN. All personal identifiers and demographic data that would allow linkage to specific individuals was encoded and concealed from the investigators by the Department of Health to maintain confidentiality. Of the 1.4 million beneficiaries, 7,232 persons were identified as HIV+ during the study period of 1992-1997.

Analysis

Tennessee's Medicaid claims data for the years 1992-1997 were compared to the state Health Department's HARS records. HARS was considered the criterion variable as it is the database for the mandated HIV reporting laws. All Medicaid claims data were examined for indicators of HIV+ status. Recipients who had health care claims containing ICD Code 042 (HIV) or V08 (asymptomatic HIV), or antiretroviral drug utilization were considered HIV+ for study purposes. For AIDS status, we followed the algorithm of Mathematica Policy Research, Inc. (1997).

After identifying each enrollee that received Medicaid services as either HIV+ or HIV-, the HARS database was searched for all HIV+ cases that were Medicaid eligible. Failure

to be represented in the HARS database is considered to be equivalent of a determination of “HIV-“ for analysis purposes. Because of the low base rate for HIV and AIDS among the general population, probability is highest that the databases will agree on the absence of HIV. This makes the use of percentage agreement inadvisable, as the agreement rates would be inflated by this chance agreement on the absence of HIV. The Kappa statistic corrects for such chance agreement and allows for more accurate assessment of criterion validity (Rosner, 1990). Because data extraction was done as a single block for the entire period, a single Kappa for agreement was calculated for the study period. In addition to agreement rates, we were interested in seeing if either data source was more likely to identify a subject as HIV+ in cases where disagreement occurred. For this we employed McNemar’s test, which tests the differences of identification bias in cases of disagreement (Rosner, 1990, p. 345). Finally, a time interval was computed between the HARS date of identification and the first qualifying entry from the claims, with correspondence rates for ± 30 days, ± 6 months, and ± 1 year intervals described for both HIV+ status and AIDS onset.

Human Subjects

Data confidentiality was maintained by multiple methods. In constructing the database, only appropriate State Department of Health personnel had access to direct and indirect identifiers for enrollees to find matching records. Once the linkage was completed and relevant data regarding HIV/AIDS status were obtained, all direct and indirect identifiers were permanently removed from the final database and a randomly generated case identifier for each record was inserted to prevent identification of individual enrollees. Subject confidentiality was further protected by maintaining the data in a secure environment and carefully limiting access. Federal guidelines, including those from the Centers for Disease Control and Prevention and the Council of State and Territorial Epidemiologist, were followed throughout the study period. All data linkage and other research procedures were reviewed and approved by the responsible agency administrators and by the University of Tennessee institutional review board.

Results

Table II.1 below shows rates of agreement and disagreement between the HARS system and the claims case-finding method.

Table II.1: Contingency Table for HIV Status comparing Claims Case-finding (“Claim”) to mandatory HIV/AIDS Reporting System (“HARS”)

	Claim "No"	Claim "Yes"	Totals
HARS "No"	1,408,757	788	1,409,545
HARS "Yes"	2,051	4,395	6,446
<i>Totals</i>	<i>1,410,808</i>	<i>5,183</i>	<i>1,415,991</i>

The corresponding Kappa value for agreement between the two case-finding methods was calculated to be .755 which is greater than the .75 cutoff for “excellent agreement” as described by Rosner as interpretive convention for the Kappa statistic. McNemar’s test was significant with $p < .0001$, indicating that where there is disagreement about HIV status, the HARS database is significantly more likely to have identified an individual as HIV+. This indicates that the claims case-finding method under-represents actual aids cases, providing a valid, though conservative, estimate of HIV cases in the TennCare population.

Of the 788 cases identified by claims and not by HARS a limited chart review conducted by the State Health Department confirmed that 187 of these cases were in fact true positives.

Table II.2: Interval Matching between Claims Case-finding (“Claim”) to mandatory HIV/AIDS Reporting System (“HARS”)

For HIV+ dates

± 30 days of HARS	6.2%
± 6 months of HARS	19.2%
± one year of HARS	28.5%

For AIDS dates

± 30 days of HARS	12.9%
± 6 months of HARS	24.7%
± one year of HARS	33.3%

The case-finding method's ability to accurately identify the date of onset, however, was not very good. Table II.2 summarized the agreement rates for interval matching within the study period. In summary, even with a two-year window of error, only 28% of HIV cases are identified by both methods. For AIDS, 33% are found by both systems within a two-year window.

Discussion

Claims case finding methods appear to be useful for HIV surveillance during the period 1992-97 in the Tennessee Medicaid population. However, assigning time of disease onset or change of status from HIV to AIDS is less accurate, making this method more appropriate for period prevalence estimates over longer time spans than for period prevalence over short time spans. Research that depends on assessment of time at risk should be cautious in its use of claims data, attempting to validate data from outside sources such as chart or laboratory data. Claims case finding methods underestimated the rate of HIV infection compared to the HARS mandatory reporting system in our data, but claims may serve as a useful adjunct to other surveillance systems.

III. Medicaid/TennCare HIV and AIDS Reporting Populations

Overview

Based on the surveillance study (see Section II) it was ascertained that the use of claims data did not effectively supplement our ability to identify HIV and AIDS patients for reporting purposes since 1) few individuals were identified using claims data alone and those thus identified who were confirmed to be true positives by Health Department review were added to the HARS database, and 2) for those identified in the HARS and claims databases there was little correspondence with regard to the time when an individual was identified as having HIV or AIDS. Therefore, the dates calculated from claims data for onset of HIV and AIDS were not employed for assigning individuals to HIV and AIDS reporting populations for each reporting year. Instead, 2 methodologies were developed using components of the HARS database (dates of HIV diagnosis and of AIDS diagnosis), vital records (date of death where applicable) and the Medicaid/TennCare encounter files (days of eligibility and third party liability) in order to assign individuals to HIV and AIDS reporting populations for each reporting year.

The first methodology has broad inclusion criteria, which correspond to CDC surveillance reporting definitions for those “Living with HIV” and those “Living with AIDS”. This methodology is used to define the reporting populations for Sections IV and V which present data regarding access to Medicaid/TennCare and the demographics of the population served by these programs at any time during the study period.

The second methodology has narrow inclusion criteria respectively, which correspond more closely to typical performance indicator reporting definitions for the HIV and AIDS populations respectively. These “performance indicator” denominators exclude persons for whom complete claims data is unlikely to be available for the reporting year. This methodology is used to define the reporting populations for Sections VI through VIII which present data regarding utilization and outcomes for the HIV and AIDS populations served by the Medicaid and TennCare programs at any time during the study period.

Methodology

The following inclusion criteria are used to define the reporting populations for those “Living with HIV” and those “Living with AIDS”. The reporting population for those Living with HIV includes all enrollees who meet all of the following criteria for a given year*:

- HIV diagnosis date in reporting year or any year prior (HARS).
- No AIDS diagnosis date in reporting year or any year prior (HARS).
- No death date in reporting year or any year prior (vital records).
- > 320 days eligibility in year (Medicaid/TennCare encounter file)
- Age \geq 13 by January 1, 1997 (Medicaid/TennCare encounter file)

The reporting population for those “Living with AIDS” includes all enrollees who meet all of the following criteria for a given year*:

- HIV diagnosis date in reporting year or any year prior (HARS).
- AIDS diagnosis date in reporting year or any year prior (HARS).
- No death date in reporting year or any year prior (vital records).
- > 320 days eligibility in year (Medicaid/TennCare encounter file)
- Age \geq 13 by January 1, 1997 (Medicaid/TennCare encounter file)

For these populations the number of enrollees is also reported with \geq 1 day of eligibility in the year to ascertain whether some individuals experienced short periods of eligibility within each year. The total population “Living with HIV/AIDS” includes all those either “Living with HIV” or “Living with AIDS”.

Similarly, the following inclusion criteria are used to define the reporting populations for performance indicators for “HIV” and “AIDS” respectively. The performance indicator reporting population for HIV includes all enrollees who meet all of the following criteria for a given year*:

- HIV diagnosis date in any year prior to reporting year (HARS).
- No AIDS diagnosis date in any year prior to reporting year (HARS).

* The source of the criterion variable for each criterion is given in parentheses

- No death date in any year prior to reporting year (vital records).
- > 320 days eligibility in year (Medicaid/TennCare encounter file)
- Not dually eligible for TennCare and Medicare in reporting year (Medicaid/TennCare encounter file)
- Age \geq 13 by January 1, 1997 (Medicaid/TennCare encounter file)

The reporting population for performance indicators for “AIDS” includes all enrollees who meet all the following criteria for a given year*:

- HIV diagnosis date in any year prior to reporting year (HARS).
- AIDS diagnosis date in any year prior to reporting year (HARS).
- No death date in any year prior to reporting year (vital records).
- > 320 days eligibility in year (Medicaid/TennCare encounter file)
- Not dually eligible for TennCare and Medicare in reporting year (Medicaid/TennCare encounter file)
- Age \geq 13 by January 1, 1997 (Medicaid/TennCare encounter file)

The total reporting population with “HIV/AIDS” for performance indicators includes all those in either the “HIV” or “AIDS” performance indicator reporting populations as defined above.

Results

Although a total of 7232 individuals were identified in the Medicaid/TennCare database

Table III.1: The Medicaid/TennCare Population Living with HIV

Year	>320	\geq1
1992	337	572
1993	508	731
1994	898	1470
1995	1332	1711
1996	1271	1757
1997	1488	1879

* The source of the criterion variable for each criterion is given in parentheses

who were age ≥ 13 and had either: a claim with a diagnosis code of 042 (HIV) or V08 (asymptomatic HIV), or a claim for an anti-retroviral drug, or were identified as HIV by the HARS system during the study period, a much smaller number were found to meet the stricter inclusion criteria listed above. The reporting populations, or denominators, for those living with HIV and living with AIDS are listed in Tables III.1 and III.2. When the reporting population inclusion criteria were broadened to include those with any period of eligibility during the year, the denominators increased substantially, demonstrating that many individuals experienced short periods of eligibility within certain years.

Table III.2: The Medicaid/TennCare Population Living with AIDS

Year	>320	≥ 1
1992	256	494
1993	487	749
1994	698	974
1995	911	1145
1996	1080	1396
1997	1330	1616

The reporting populations, or denominators, for performance indicators for HIV and AIDS are listed in Tables III.3 and III.4.

Table III.3: The Medicaid/TennCare Performance Indicator Reporting Population with HIV

Year	
1992	231
1993	468
1994	711
1995	1083
1996	1088
1997	1267

**Table III.4: The Medicaid/TennCare Performance Indicator Reporting Population
with AIDS**

Year	
1992	135
1993	323
1994	485
1995	587
1996	677
1997	984

IV. Access to Care

Overview

A central question for this study to address was whether the initiation of the TennCare program resulted in expanded access to public insurance coverage through this Medicaid managed care system for persons living with HIV and AIDS. The TennCare program remains unique among state Medicaid programs in providing universal access to insurance coverage for persons with HIV and AIDS. Thus, it was anticipated that the initiation of TennCare in 1994 would result in dramatically expanded benefits for people with HIV and AIDS which might significantly improve outcomes for this population on the long term. Persons with HIV and AIDS were broadly eligible for coverage by the TennCare program under two eligibility categories in the first year of TennCare (1994), namely uninsured status and uninsurable status. However, after the first year of TennCare, enrollment by virtue of uninsured status was closed requiring persons with HIV and AIDS to demonstrate uninsurability prior to enrollment. It was anticipated that the restricted eligibility requirements in the second and subsequent years of TennCare (1995 – 1997) would lead to progressive decreases in persons eligible on the basis of uninsured status.

Methodology

For this aim, those persons “Living with HIV” and “Living with AIDS” with both ≥ 1 day of eligibility and > 320 days of eligibility in the Medicaid or TennCare programs as defined in Section III served as our study populations. For each year, the percentage of persons in Tennessee with HIV and AIDS enrolled in either the Medicaid or TennCare program was calculated by dividing the absolute numbers of Medicaid/TennCare enrollees living with HIV and AIDS in each year by the numbers living with HIV and AIDS in Tennessee overall according to Tennessee’s HARS system. Specifically, the numbers of persons “Living with HIV” and “Living with AIDS” with both ≥ 1 day of eligibility and > 320 days of eligibility in the Medicaid or TennCare programs in each year served as the numerators. Similarly, the numbers of persons living with HIV and AIDS in Tennessee overall reported to Tennessee’s HARS system in each year served as the denominators.

Figures for the denominators were obtained from published sources (HIVAIDS Surveillance Reports, 1993 – 1997). Because these figures were not available for years prior to 1993, 1992 was not included in this analysis. Also, in 1993, the first year for which these figures were available, the reported numbers of persons living with HIV and AIDS were not stratified by age so that individuals less than 13 years of age were included in the denominator in all years studied for consistency. Since less than 1.1% of the individuals contributing to the total HIV/AIDS denominator in the years 1994 – 1997 were less than 13 years of age, the inclusion of these individuals in the denominator should not have significantly altered the overall results and any alteration should have affected all years to a similar extent.

It is important to note that the HIVAIDS Surveillance reports give minimum estimates of those living with HIV and AIDS. The numbers reflect “alive” status for those whom follow-up can be done and states vary in the frequency of review of vital status. Some individuals living with HIV and AIDS may be lost to follow-up due to circumstances such as moves and military service. Also there are some delays in reporting vital status and HIV and AIDS diagnoses to the CDC. Nationally, the CDC estimates 50% of AIDS cases are reported within 3 months of diagnosis and 80% within 1 year. Similarly, for HIV, since January 1994, these numbers are 70% and 95% (HIVAIDS Surveillance Reports, 1993 – 1997). However, Tennessee’s Department of Health reviews vital records annually in order to report these figures using the same methodology used to confirm vital status employed for determining the numerator populations in this study. And since HIV and AIDS status was determined for the study using the same system (HARS) and methodology as used for State reporting to the CDC this should not have significantly biased our calculations.

Basis of eligibility or program category was ascertained for persons living with HIV and AIDS for each year focusing only on those with greater than 320 days of eligibility per year using Medicaid/TennCare enrollment/eligibility files and grouping eligibility status according to predetermined major categories.

Results

As seen in Section III, Tables III.1 and III.2, the absolute numbers of persons living with HIV and AIDS enrolled in the Medicaid and TennCare programs continued to rise sharply from 1992 through 1997. However, this substantial growth in the HIV and AIDS populations was accompanied by similar growth in Tennessee’s HIV and AIDS

populations. As shown in Figures IV.1 and IV.2 below this led to relative stability in the percentages of persons living with HIV and AIDS served by the Medicaid and TennCare programs. Despite substantial increases in Tennessee's HIV and AIDS populations during this period Tennessee has continued to provide public insurance coverage for a large percentage of the overall population during the study period.

Figure IV.1: Percentage of Persons Living with HIV or AIDS Enrolled in Medicaid/TennCare > 320 days/year

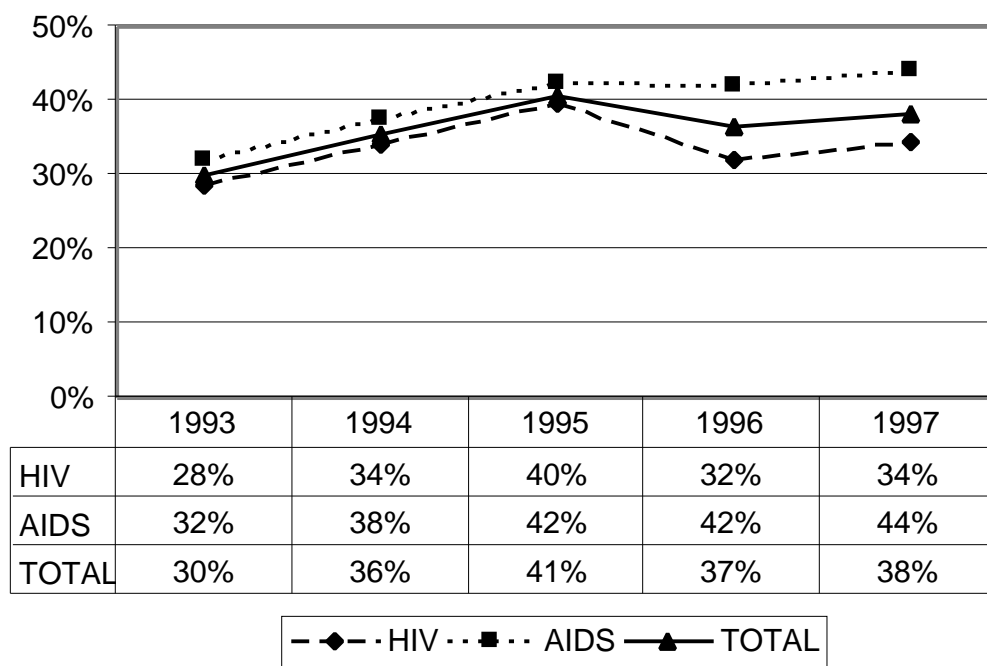


Figure IV.3: Eligibility Status for Medicaid/TennCare Enrollees Living with HIV

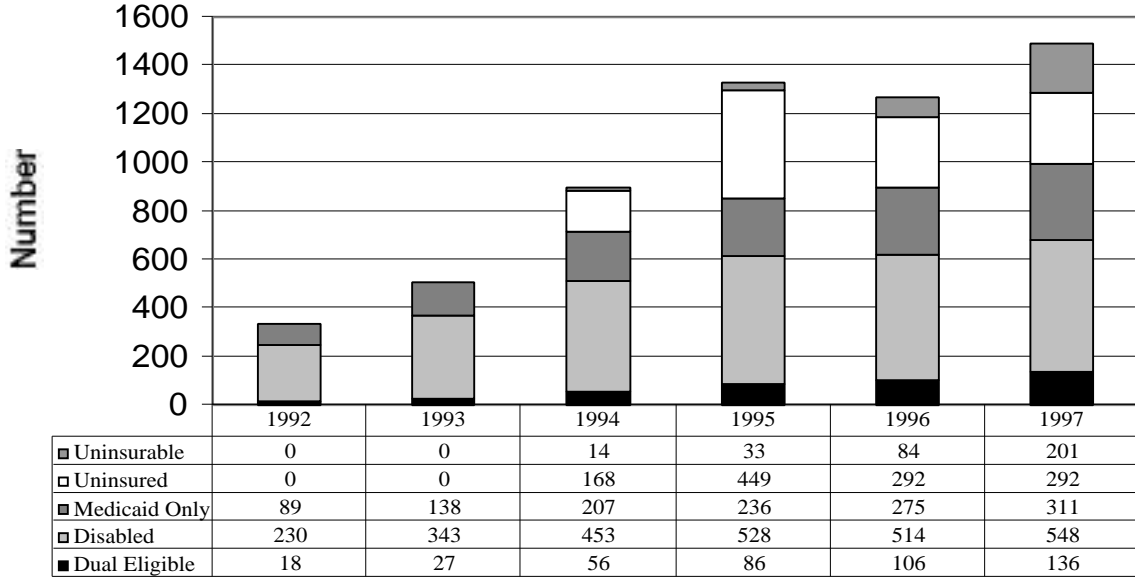
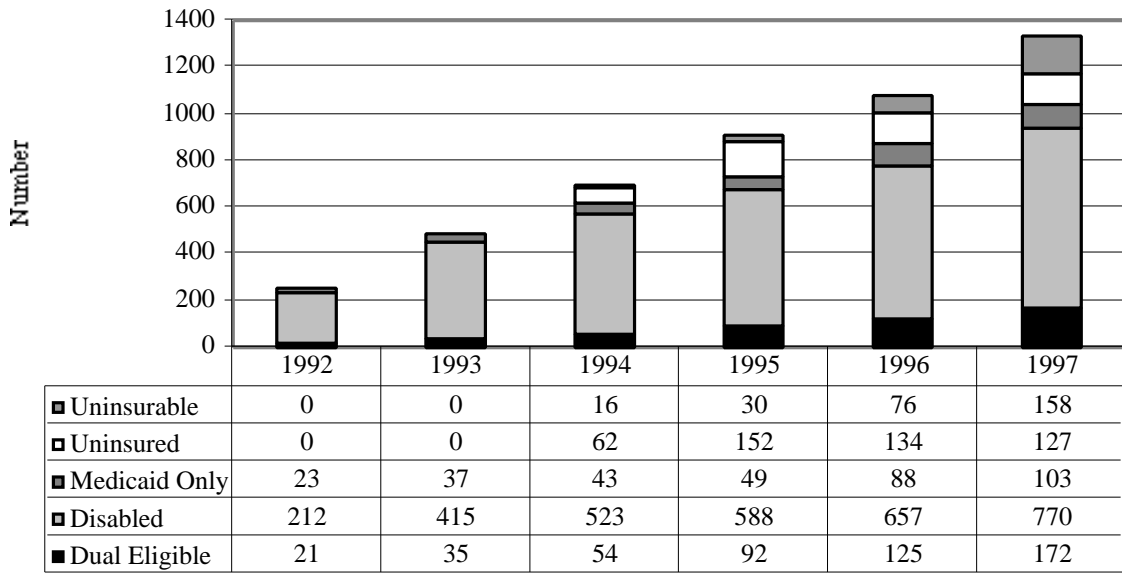


Figure IV.4: Eligibility Status for Medicaid/TennCare Enrollees Living with AIDS



Conclusions

Although TennCare does appear to have markedly increased the numbers of persons living with HIV and AIDS receiving insurance coverage through Medicaid or Medicaid managed care, it is notable that the overall percentages of persons with HIV and AIDS in Tennessee receiving coverage through this system has remained essentially unchanged. This likely reflects the advancing course of the HIV/AIDS epidemic in Tennessee but also might reflect smaller demand for insurance coverage in the HIV positive community than was anticipated or ineffective enrollment of the newly diagnosed or other historical trends.

V. DEMOGRAPHICS

Overview

This section documents the demographic characteristics of the persons living with HIV and AIDS served by the Medicaid and TennCare programs from 1992 through 1997. A central question to be addressed here is to determine whether the expansion of access to insurance in Tennessee through the TennCare program affected different demographic groups differently.

Methodology

For this aim, those persons “Living with HIV” and “Living with AIDS” with > 320 days of eligibility in the Medicaid or TennCare programs as defined in Section III served as our study populations. Demographic characteristics were ascertained for persons living with HIV and AIDS for each year focusing only on those with greater than 320 days of eligibility per year using Medicaid/TennCare enrollment/eligibility files. Demographic characteristics are reported according to predetermined major categories.

Results

Figures V.1 and V.2 below demonstrate that the gender of the Medicaid/TennCare HIV and AIDS population has remained predominantly male. This is particularly true for AIDS, however the progressive increases in the female HIV population suggest that trends for AIDS will soon follow. Figures V.3 and V.4 below demonstrate that the race of the Medicaid/TennCare HIV population is predominantly black whereas for AIDS the population has remained predominantly white although the number of blacks with AIDS are increasing at a faster rate than whites during this period. Figure V.5 shows that most of HIV/AIDS patients in Medicaid/TennCare live in urban areas and the greatest portion of the increase in enrollment in 1994 appears to have occurred in these areas.

Figure V.1: Gender of Medicaid/TennCare HIV Population

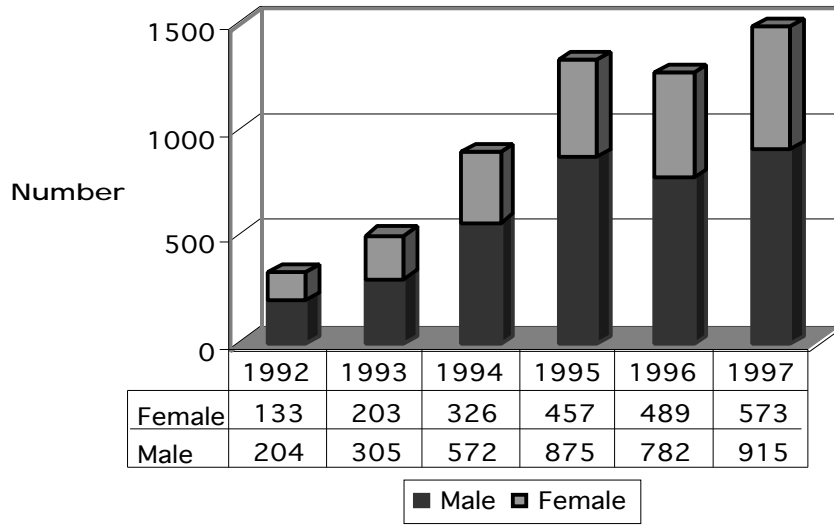


Figure V.2: Gender of Medicaid/TennCare AIDS Population

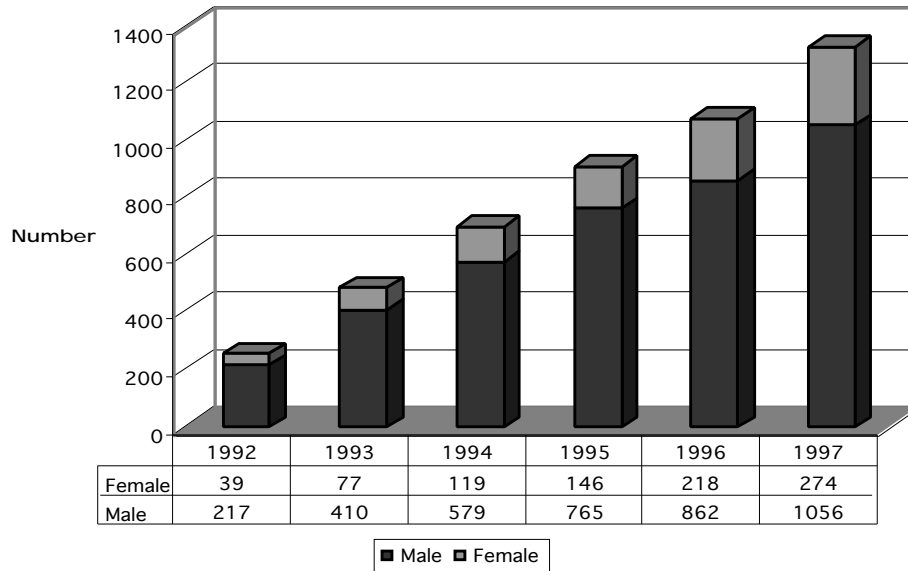


Figure V.3: Race of Medicaid/TennCare HIV Population

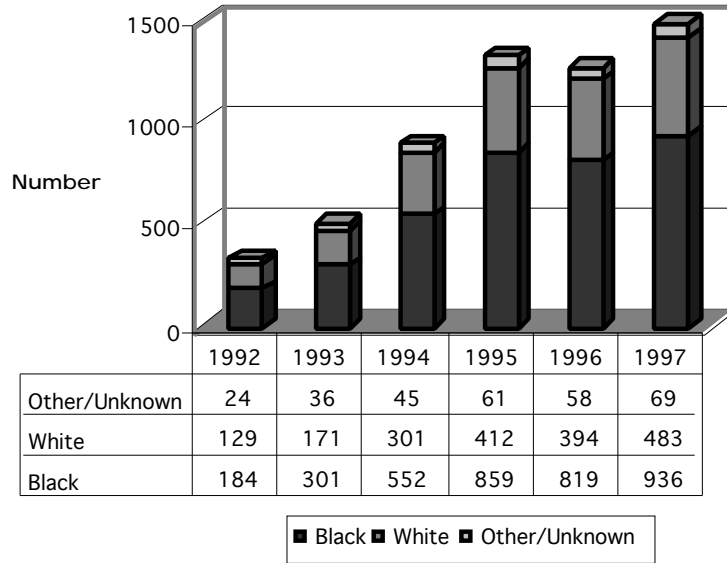


Figure V.4: Race of Medicaid/TennCare AIDS Population

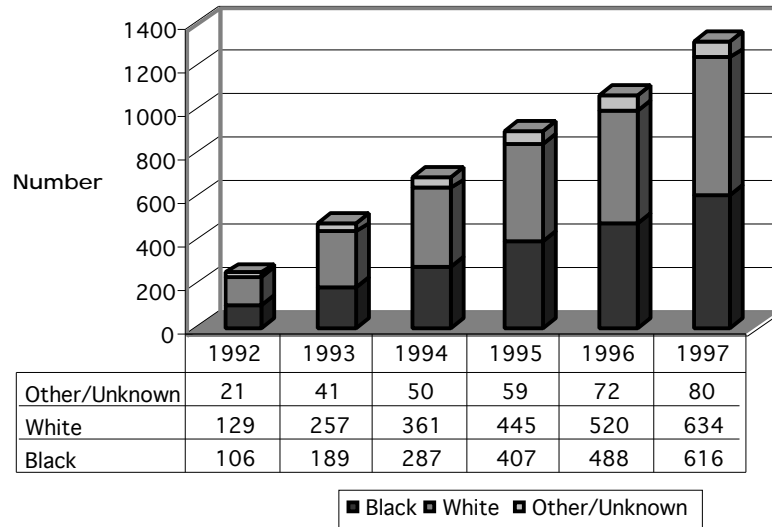
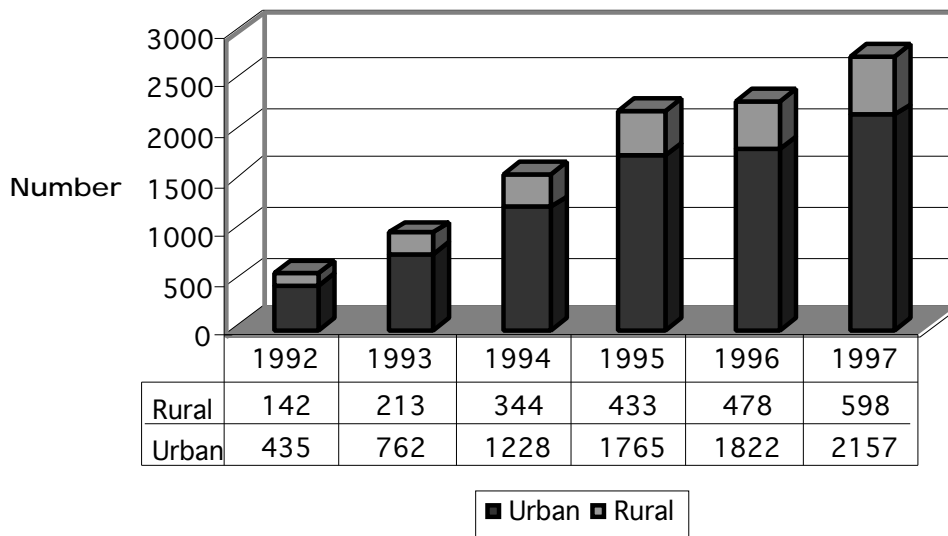


Figure V.5: Urban/Rural Status of Medicaid/TennCare HIV/AIDS Population



VI. Health Care Utilization

Overview

This section documents the health care utilization patterns of the HIV and AIDS populations served by the Medicaid and TennCare programs from 1992 through 1997. Medicaid managed care has purportedly led to increased emphasis on outpatient care in order to prevent hospitalizations for avoidable complications of chronic diseases such as AIDS. Simultaneously, the advent of protease inhibitors has led to decreased hospitalizations and complications for persons with HIV and AIDS nationwide. Health care utilization trends for the Medicaid/TennCare HIV and AIDS populations should reflect these influences in Tennessee. Health care utilization patterns will be examined to determine whether outpatient care utilization increases and inpatient and emergency care utilization decreases following the initiation of the TennCare program and the introduction of protease inhibitors in Tennessee.

Methodology

For this aim, the reporting populations for performance indicators for “HIV” and “AIDS” as defined in Section III served as our study populations. Performance indicators for HIV/AIDS care were developed using extensive literature review and expert focus groups as described in Section 1. Health care utilization patterns were ascertained for persons with HIV and AIDS for each year using Medicaid/TennCare encounter files. Health care utilization patterns are reported according to predetermined major categories.

Measures

Outpatient Visits: The number of unduplicated professional claims for outpatient clinic visits, designated by a CPT-4 code of 99201-99205 (New patient), 99211-99215 (Established patient), 99241-99245 (Outpatient consultations), 99354 –99355 (Prolonged physician service in the outpatient setting), 99384-99387 (New patient preventive medicine), 99394-99397 (Established patient preventive medicine), 99401-99404, 99411-99412, and 99420-99429 (Preventive medicine counseling/testing), 90750-90764 (Preventive medicine), 90300-90470 (Nursing home visits), 99301-99303 (Comprehensive nursing facility assessments), 99311-99313 (Subsequent nursing facility

care), 99321-99323 and 99331-99333 (Rest home services), 99499 (Other E & M services codes), and 92002-92014 (Ophthalmology) consistent with the HEDIS 3.0 Access to Primary/Preventive Care measure criteria, submitted for individuals in the reporting population as described above.

Emergency Visits: The number of unduplicated professional claims for emergency care, designated by a CPT-4 code 99281-99285 (Emergency department visits), submitted for individuals in the reporting population as described above.

Inpatient Admissions: The number of unduplicated inpatient claims for hospital admissions submitted for individuals in the reporting population as described above.

Results

Figure VI.1 and VI.2 show that the percentages of the Medicaid/TennCare HIV and AIDS populations with one or more outpatient visits have remained fairly stable from 1992 – 1997. Similarly, Figure VI.3 and VI.4 show that the average numbers of outpatient visits for the Medicaid/TennCare HIV and AIDS populations have remained fairly stable from 1992 – 1997. Figure VI.5 and VI.6 show that the percentages of the Medicaid/TennCare HIV and AIDS populations with one or more emergency department visits have progressively decreased from 1992 – 1997. Similarly, Figure VI.7 and VI.8 show that the average numbers of emergency department visits for the Medicaid/TennCare HIV and AIDS populations have progressively decreased from 1992 – 1997. Figure VI.9 and VI.10 show that the percentages of the Medicaid/TennCare HIV and AIDS populations with one or more hospitalizations have progressively decreased from 1992 – 1997. Similarly, Figure VI.11 and VI.12 show that the average numbers of hospitalizations for the Medicaid/TennCare HIV and AIDS populations have progressively decreased from 1992 – 1997. Similarly, Figure VI.13 and VI.14 show that the average numbers of hospital days for the Medicaid/TennCare HIV and AIDS populations have progressively decreased from 1992 – 1997.

Figure VI.1: Percent of Medicaid/TennCare HIV Population with One or More Outpatient Visits

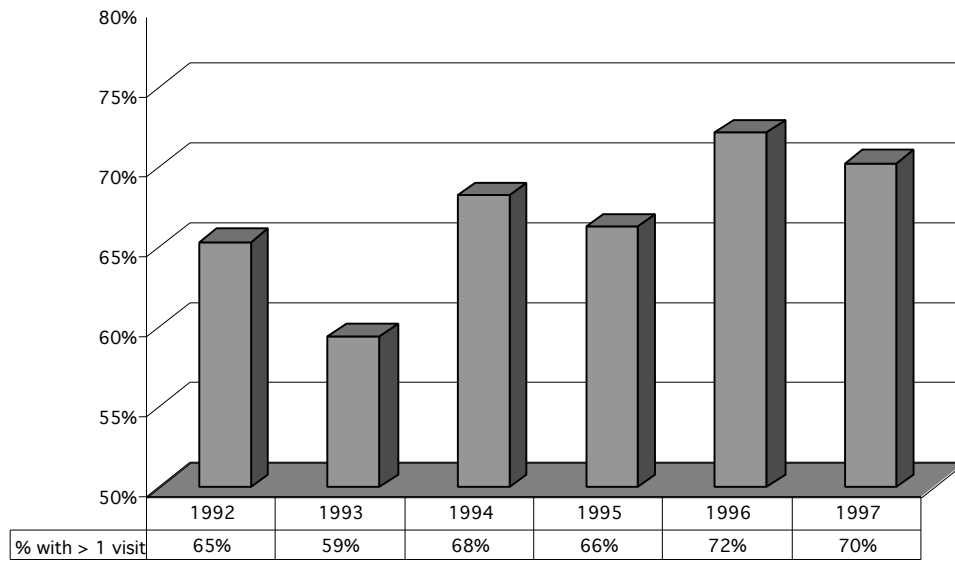


Figure VI.2: Percent of Medicaid/TennCare AIDS Population with One or More Outpatient Visit

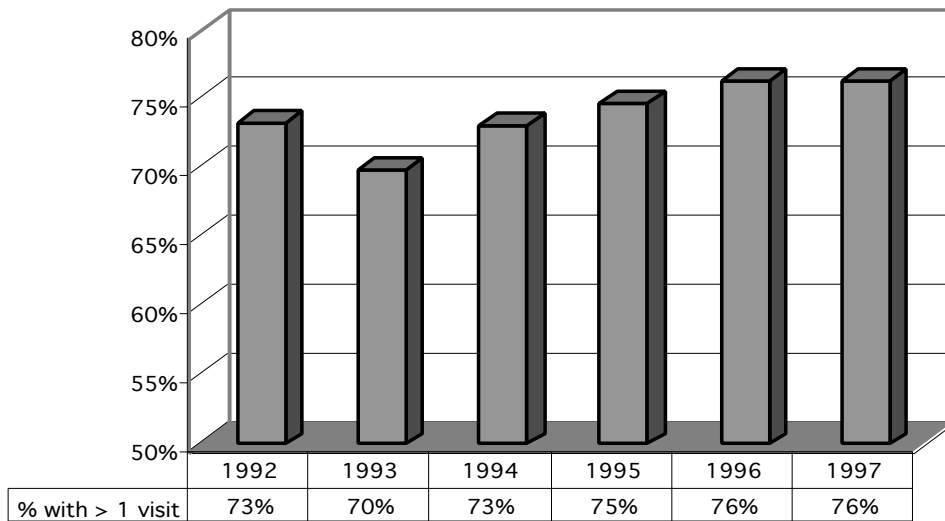


Figure VI.3: Average Number of Outpatient Visits for Medicaid/TennCare HIV Population

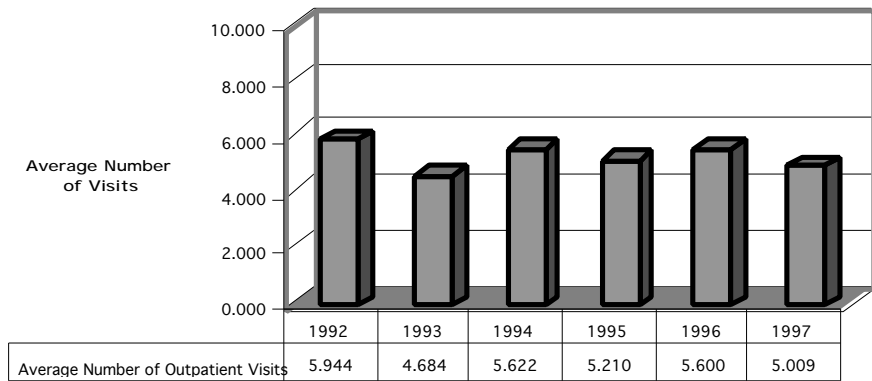


Figure VI.4: Average Number of Outpatient Visits for Medicaid/TennCare AIDS Population

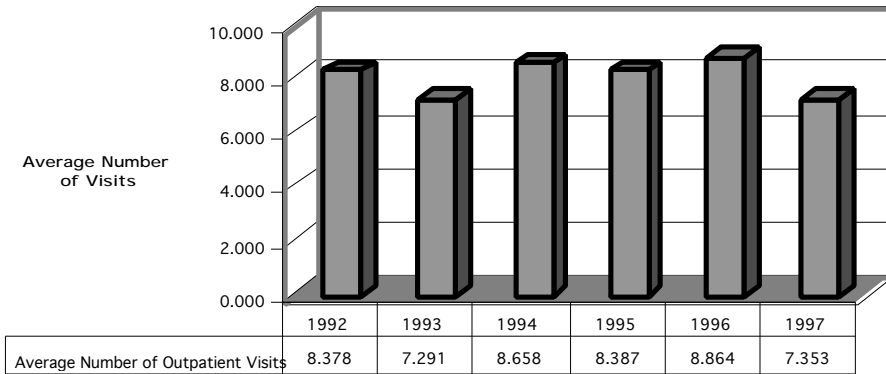


Figure VI.5: Percent of Medicaid/TennCare HIV Population with One or More Emergency Department Visits

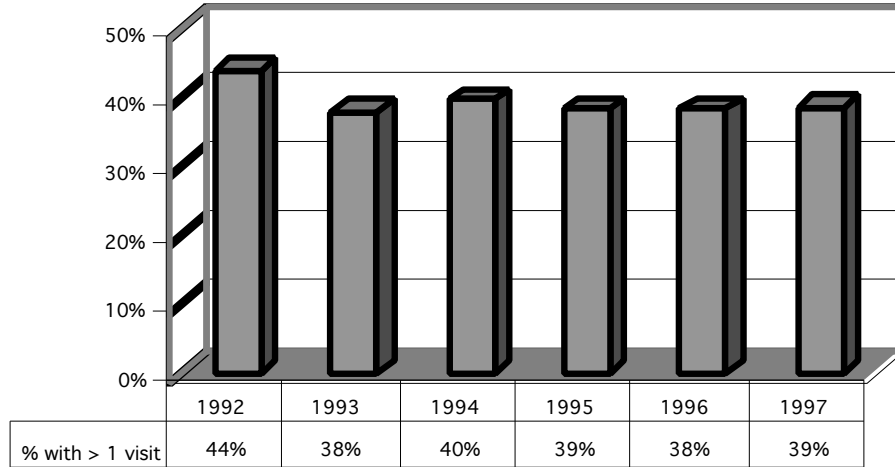


Figure VI.6: Percent of Medicaid/TennCare AIDS Population with One or More Emergency Visits

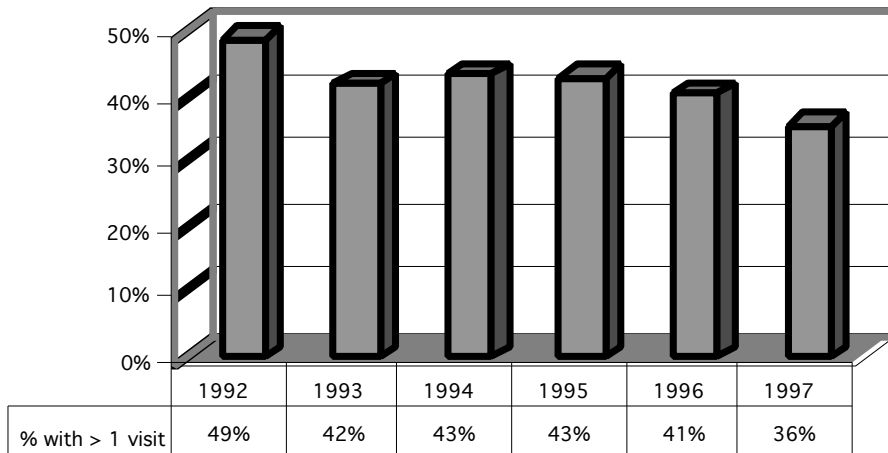


Figure VI.7: Average Number of Emergency Visits for Medicaid/TennCare HIV Population

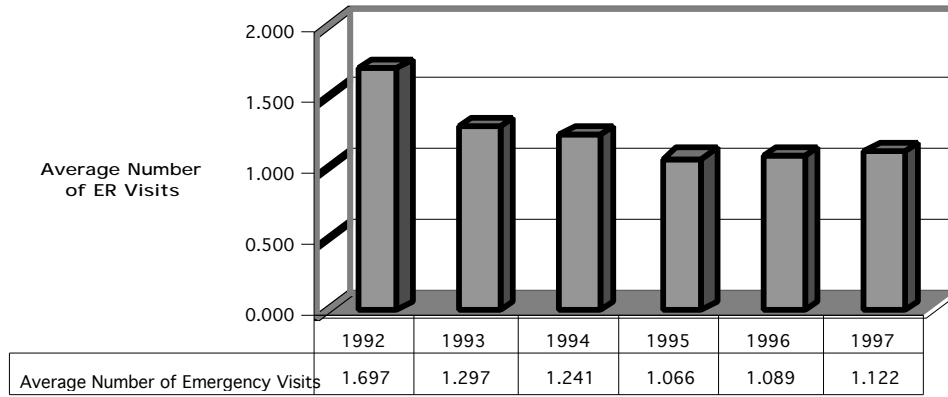


Figure VI.8: Average Number of Emergency Visits for Medicaid/TennCare AIDS Population

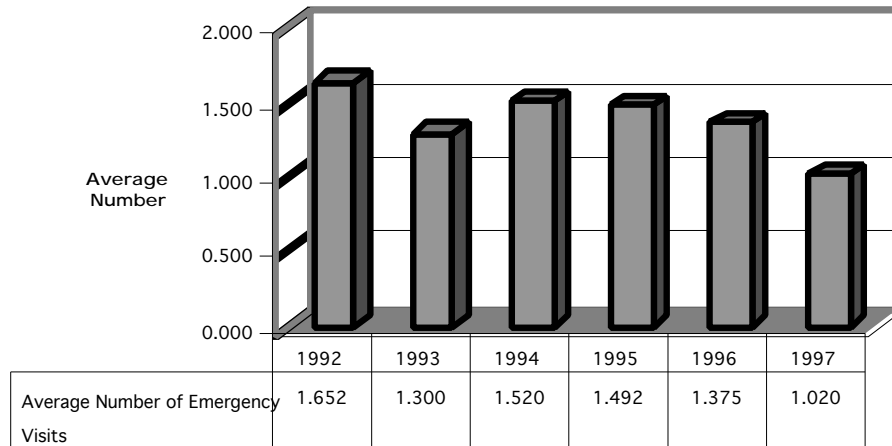


Figure VI.9: Percent of Medicaid/TennCare HIV Population with One or More Hospitalization

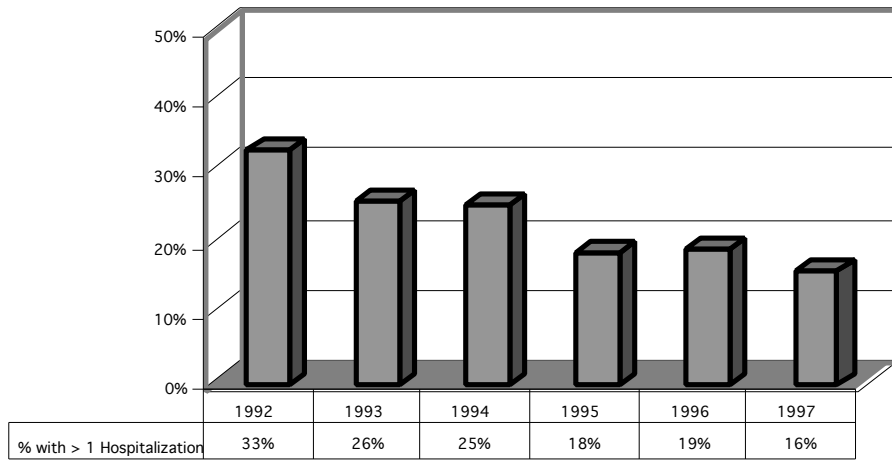


Figure VI.10: Percent of Medicaid/TennCare AIDS Population with One or More Hospitalization

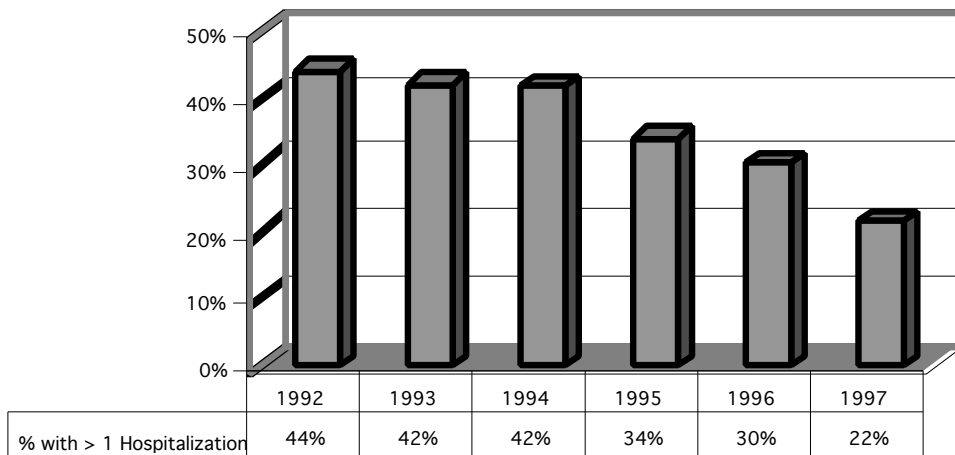


Figure VI.11: Average Number of Hospitalizations for Medicaid/TennCare HIV Population

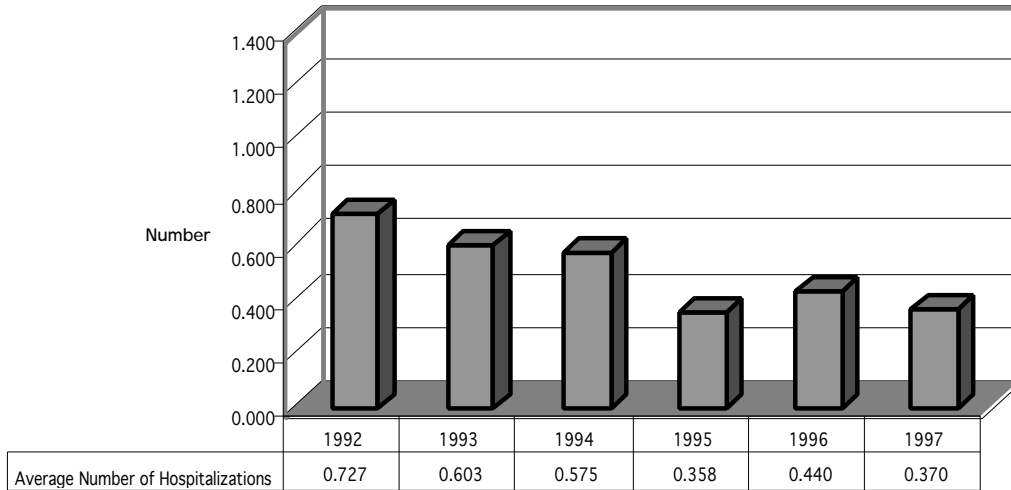


Figure VI.12: Average Number of Hospitalizations for Medicaid/TennCare AIDS Population

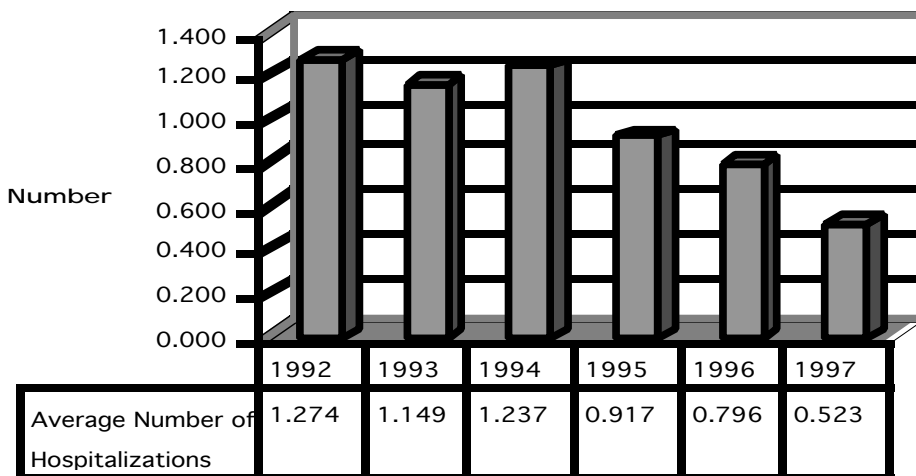


Figure VI.13: Average Number of Hospital Days for Medicaid/TennCare HIV Population

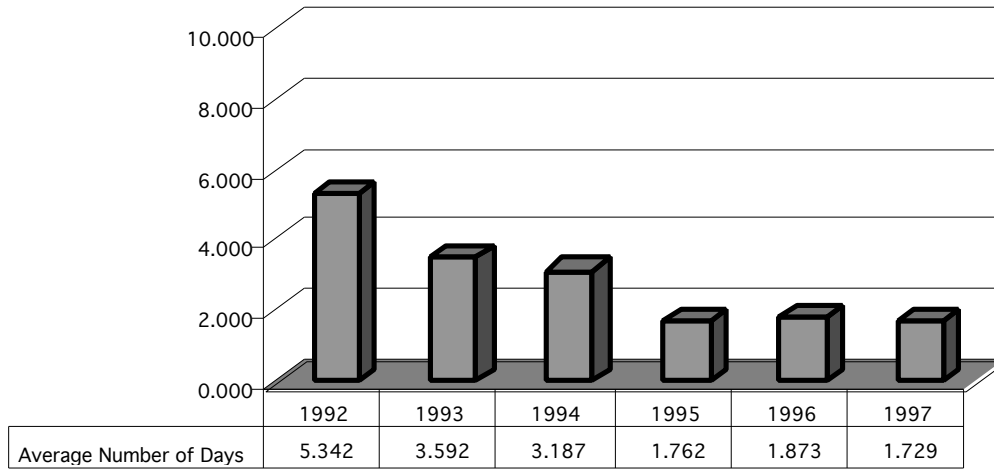
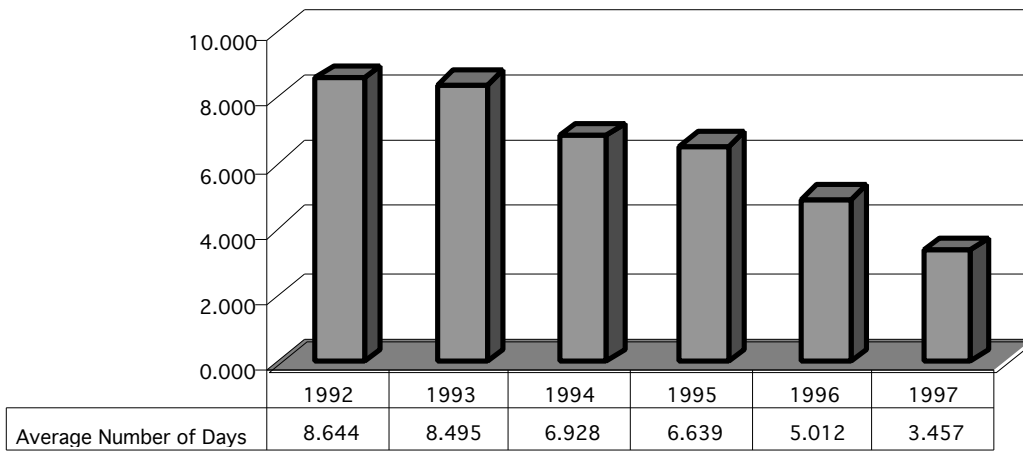


Figure VI.14: Average Number of Hospital Days for Medicaid/TennCare AIDS Population



VII. Drug Utilization

Overview

This section documents the medication utilization patterns of the HIV and AIDS populations served by the Medicaid and TennCare programs from 1992 through 1997. Medicaid managed care has purportedly led to increased emphasis on outpatient care and prevention. For HIV and AIDS the key to effective outpatient management is medication therapy. Antiretroviral therapy has been shown to be effective in preventing opportunistic infections and progression to AIDS, as well as extending life for persons with HIV and AIDS. Furthermore, the advent of protease inhibitors has led to decreased hospitalizations and complications for persons with HIV and AIDS nationwide. Similarly, pneumocystis pneumonia (PCP) prevention with prophylactic medication has been shown to be highly effective for persons with AIDS or low CD4 count in preventing infection and avoiding hospitalizations. Drug utilization trends for the Medicaid/TennCare HIV and AIDS populations should reflect these influences in Tennessee. Medication utilization patterns will be examined to determine whether antiretroviral medication utilization and medication use for PCP prophylaxis increases following the initiation of the TennCare program and the introduction of protease inhibitors in Tennessee.

Methodology

For this aim, the reporting populations for performance indicators for “HIV” and “AIDS” as defined in Section III served as our study populations. These performance indicators for HIV/AIDS care were developed using extensive literature review and expert focus groups as described in Section 1. Medication utilization patterns were ascertained for persons with HIV and AIDS for each year using Medicaid/TennCare pharmacy encounter files. Medication utilization patterns are reported according to predetermined major categories listed below.

Measures

The following primary measures will be used to report on antiretroviral medication utilization and medication use for PCP prophylaxis.

Refill Adherence: Refill adherence is an indicator of medication compliance for a drug class (e.g. antiretroviral medications or medications for PCP prophylaxis). Following the method of Steiner et. al., including each unique generic drug within the drug class being studied for which an individual has 3 or more pharmacy claims in a year with unique dates of service, refill adherence is defined as the sum of all days supplied for all qualifying drugs divided by the sum of all days for all qualifying drugs from the date of the first qualifying claim in the year to the date of the last qualifying claim in the year.

Regimen Complexity: Regimen complexity indicates the most common regimen prescribed (rather than most common regimen taken) for the year. Including each unique generic drug within the drug class being studied for which an individual has 3 or more pharmacy claims in a year with unique dates of service, regimen complexity is defined as the sum of all days during the period in which a medication was prescribed (from the date of the first qualifying claim in the year to the date of the last qualifying claim in the year) for all qualifying drugs, divided by 12.

Drug Variety Exposure: Drug variety exposure indicates for each individual the number of unique generic medications in the class being studied for which prescriptions were filled in the year.

Results

Figures VII.1 and VII.2 show that the percentages of the Medicaid/TennCare HIV and AIDS populations on any antiretroviral medication decreased from 1992 – 1994 and increased from 1995 - 1997. Figures VII.3 and VII.4 show that antiretroviral medication mean refill adherence for the Medicaid/TennCare HIV and AIDS populations have increased since 1994. Figure VII.5 and VII.6 show that the mean numbers of antiretroviral medications filled for the Medicaid/TennCare HIV and AIDS populations have progressively increased since 1994.

Figure VII.1: Percent of Medicaid/TennCare HIV Population on any Antiretroviral Medication

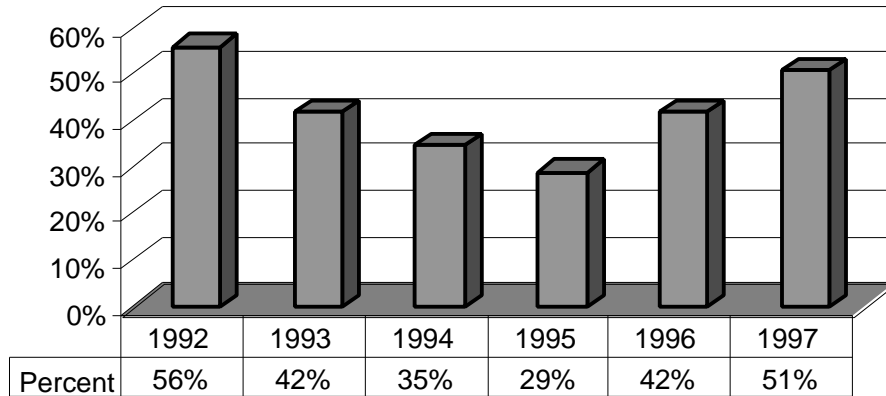


Figure VII.2: Percent of Medicaid/TennCare AIDS Population on any Antiretroviral Medication

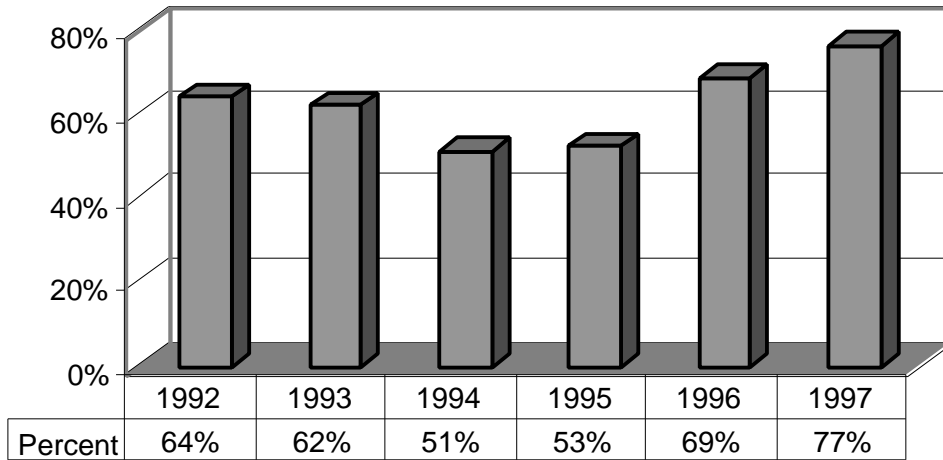


Figure VII.3: Mean Refill Adherence for Medicaid/TennCare HIV Population on Antiretroviral Medication

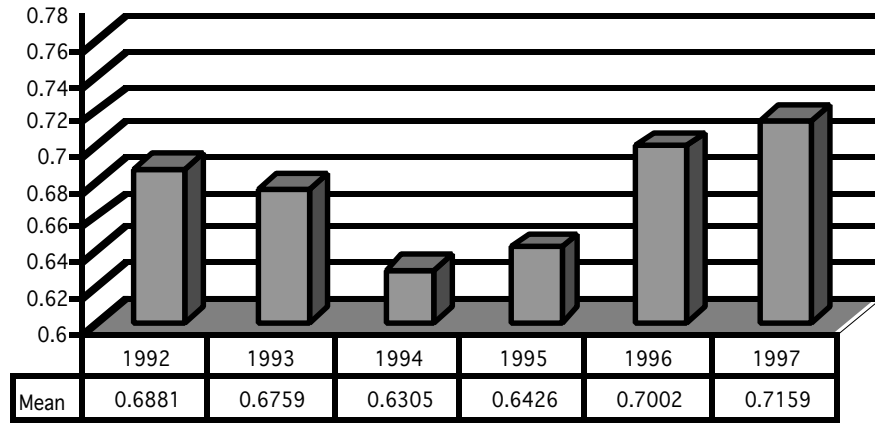


Figure VII.4: Mean Refill Adherence for Medicaid/TennCare AIDS Population on Antiretroviral Medication

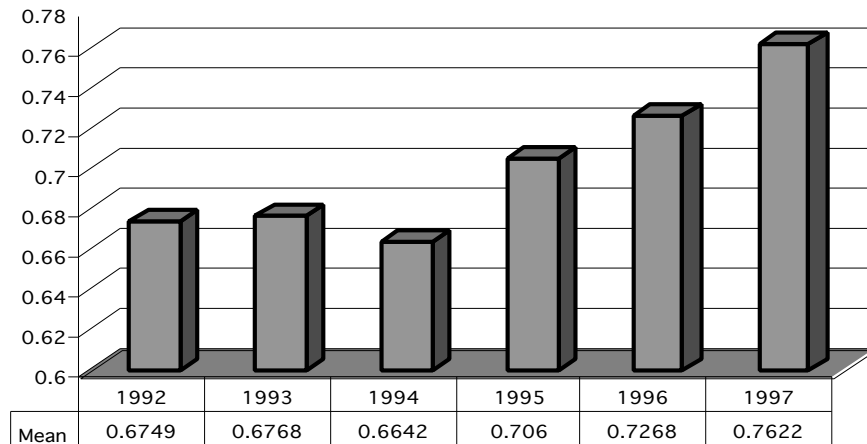


Figure VII.5: Mean Number of Antiretroviral Medications Filled for Medicaid/TennCare HIV Population

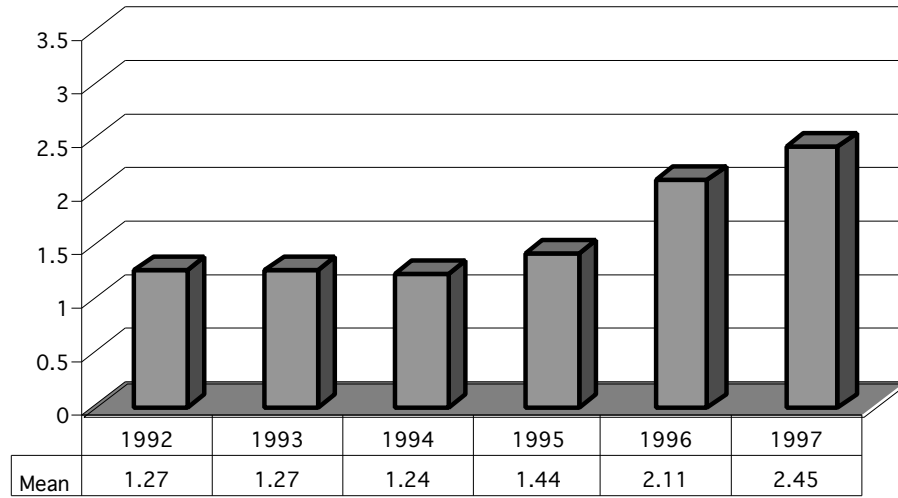
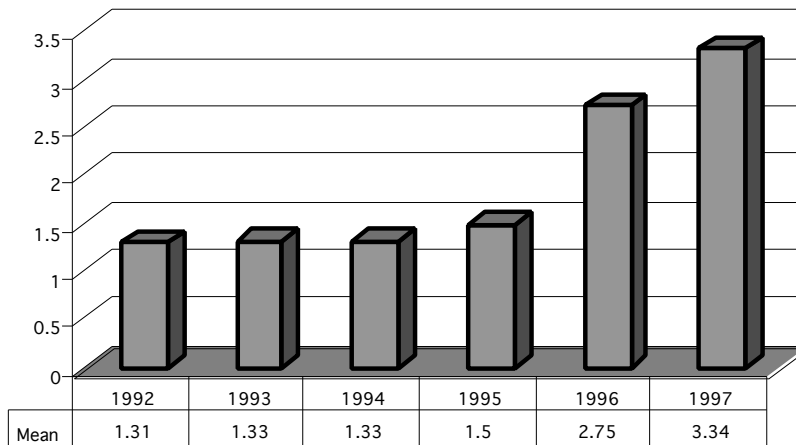


Figure VII.6: Mean Number of Antiretroviral Medications for Medicaid/TennCare AIDS Population



Figures VII.7 shows that the percentage of the Medicaid/TennCare AIDS population on any medication for prophylaxis for pneumocystis pneumonia (PCP) increased from 1992 – 1997. Figures VII.8 and VII.9 show that PCP prophylaxis medication mean refill adherence has improved for the Medicaid/TennCare HIV and AIDS populations since 1994.

Figure VII.7: Percent of Medicaid/TennCare AIDS Population on any PCP Prophylaxis Medication

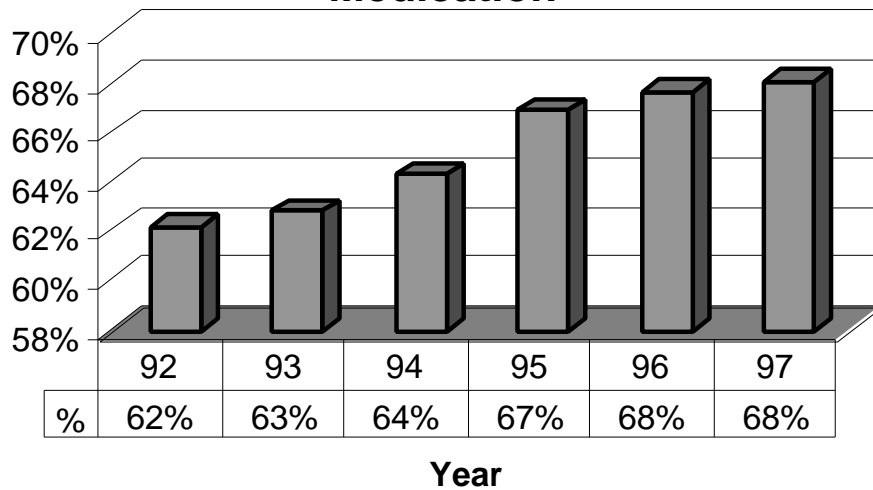


Figure VII.8: Mean Refill Adherence for Medicaid/TennCare HIV Population on PCI Prophylaxis Medication

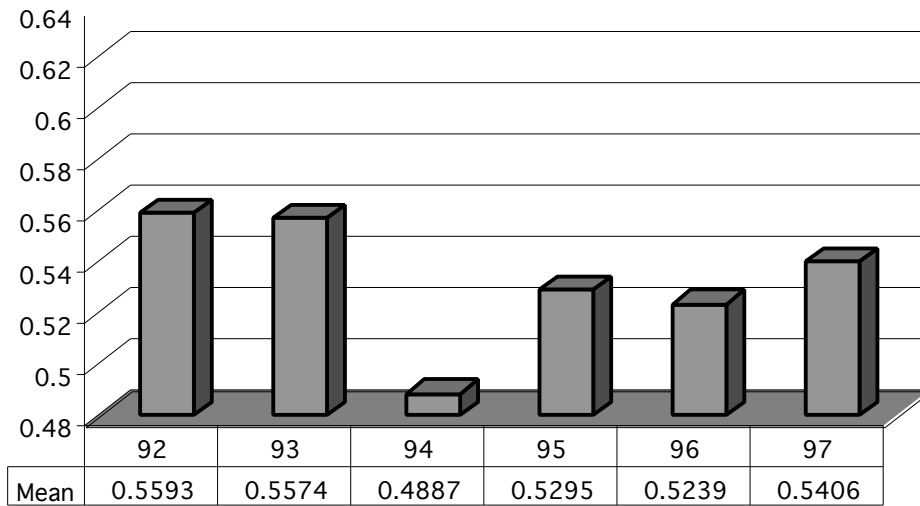
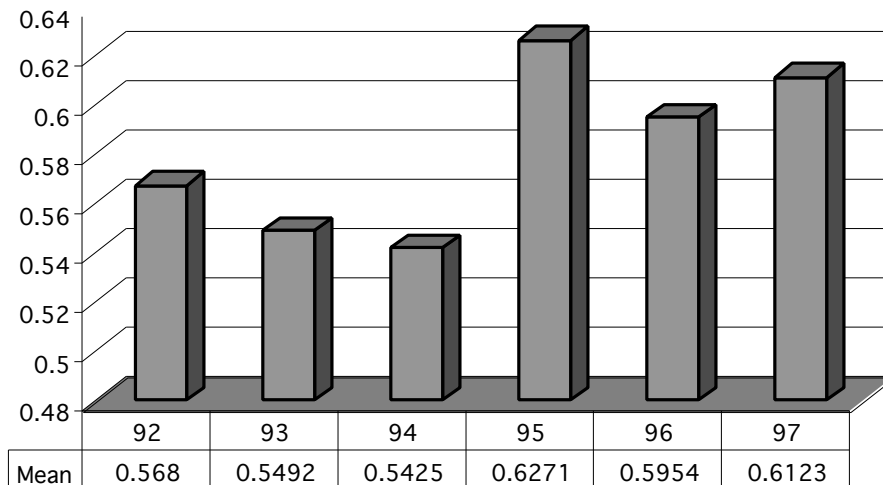


Figure VII.9: Mean Refill Adherence for Medicaid/TennCare AIDS Population on PCI Prophylaxis Medication



VIII. Outcomes of Care

Overview

This section documents the health outcomes of the HIV and AIDS populations served by the Medicaid and TennCare programs from 1992 through 1997. If processes and effectiveness of care for HIV and AIDS have really improved during the period from 1992 through 1997 improved patient outcomes should result. Health outcomes will be examined to determine whether opportunistic infection rates, AIDS conversion rates and mortality decrease following the initiation of TennCare and the AIDS COEs program and the introduction of protease inhibitors in Tennessee.

Methodology

For this aim, the reporting populations for performance indicators for “HIV” and “AIDS” as defined in Section III served as our study populations. Outcome measures for HIV and AIDS were developed using extensive literature review and expert focus groups as described in Section 1. Health outcomes were ascertained for persons with HIV and AIDS for each year using Medicaid/TennCare encounter files. Health outcomes are reported according to predetermined major categories.

Measures

Prevalence of Opportunistic Infections: Prevalence of opportunistic infections (OIs) was calculated for the reporting populations in each year, with prevalence of the given OI indicated by the submission of at least one inpatient, outpatient or professional claim with a ICD-9 diagnosis code for the OI of concern.

AIDS Incidence: AIDS incidence was calculated for the HIV reporting population only and was indicated by the presence of an AIDS diagnosis reporting date in the HARS system database.

Mortality: Mortality was calculated for the HIV and AIDS reporting populations in each year and was indicated by the presence of date of death in the vital records.

Results

Figure VIII.1: Incidence of PCP for the Medicaid/TennCare AIDS Population

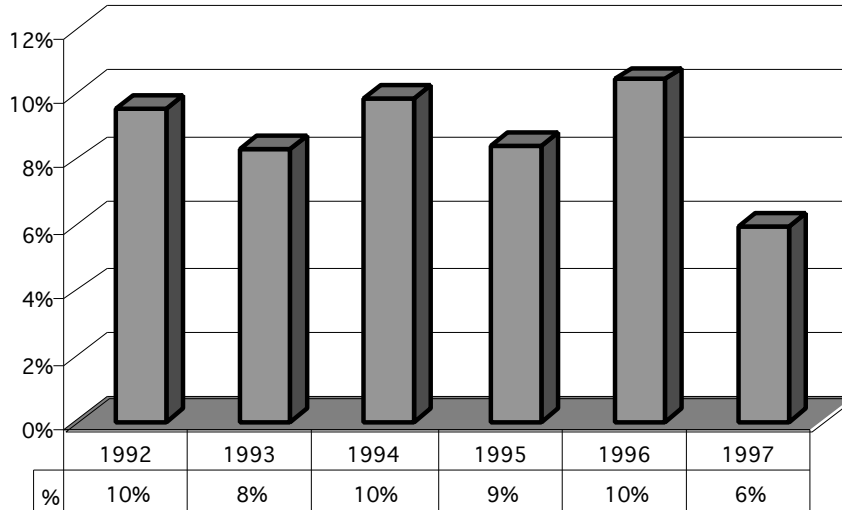


Figure VIII.2: Incidence of TB for Medicaid/TennCare AIDS Population

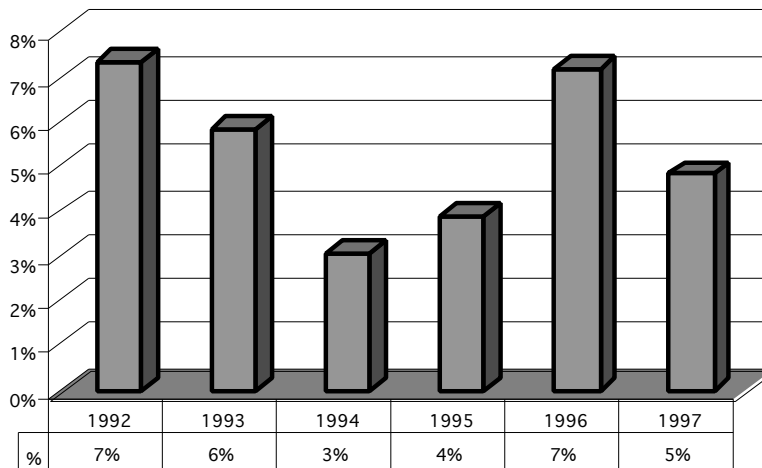


Figure VIII.3: Incidence of Pneumonia for Medicaid/TennCare HIV Population

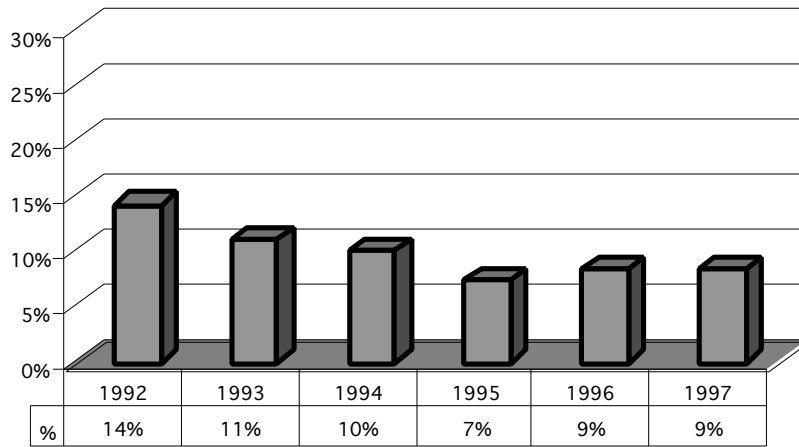


Figure VIII.4: Incidence of Pneumonia for Medicaid/TennCare AIDS Population

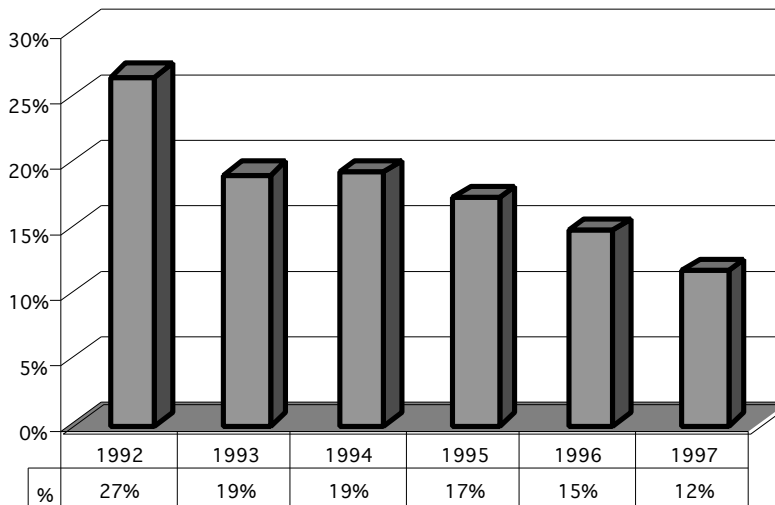


Figure VIII.5: Incidence of AIDS for Medicaid/TennCare HIV Population

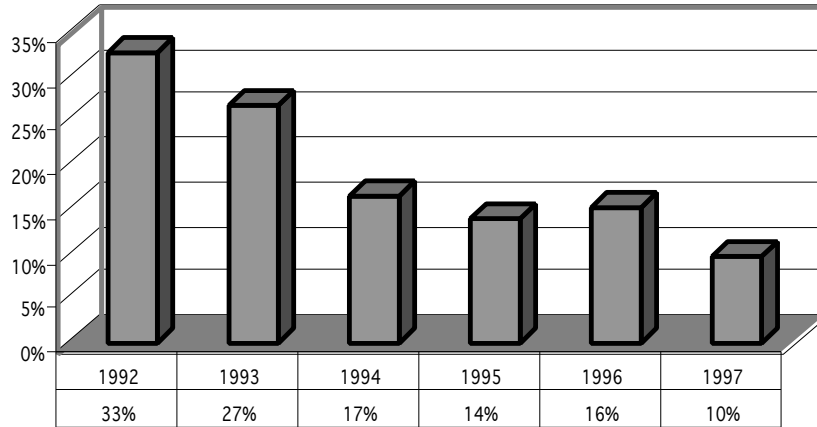


Figure VIII.6: Annual Mortality for Medicaid/TennCare HIV Population

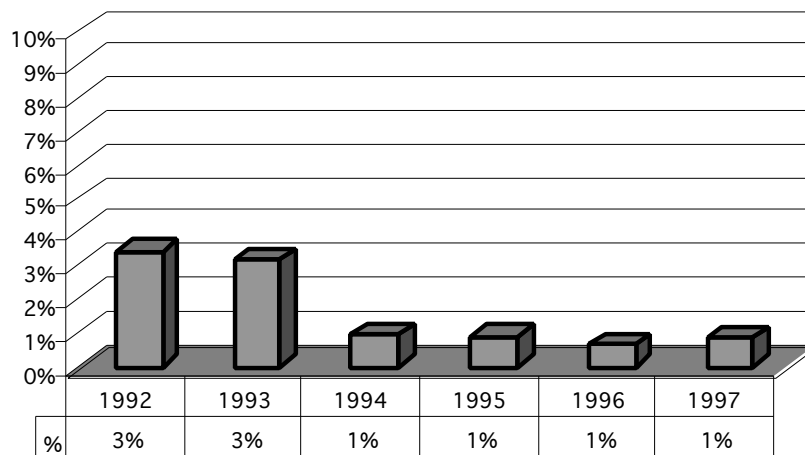


Figure VIII.7: Annual Mortality for Medicaid/TennCare AIDS Population

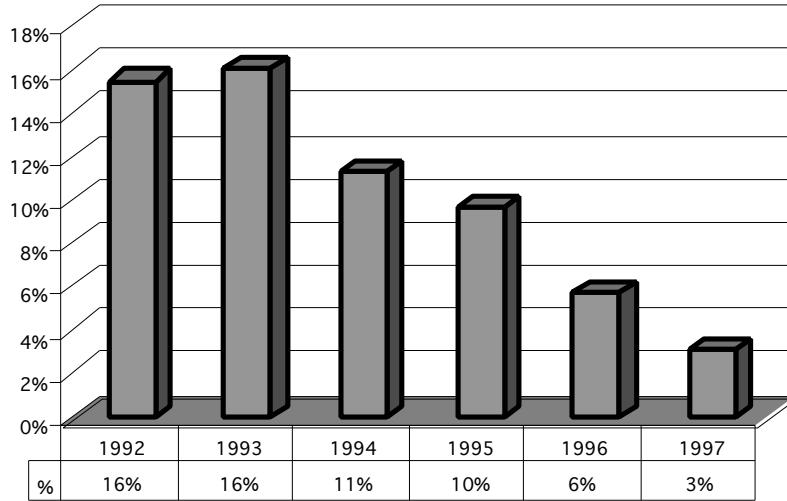
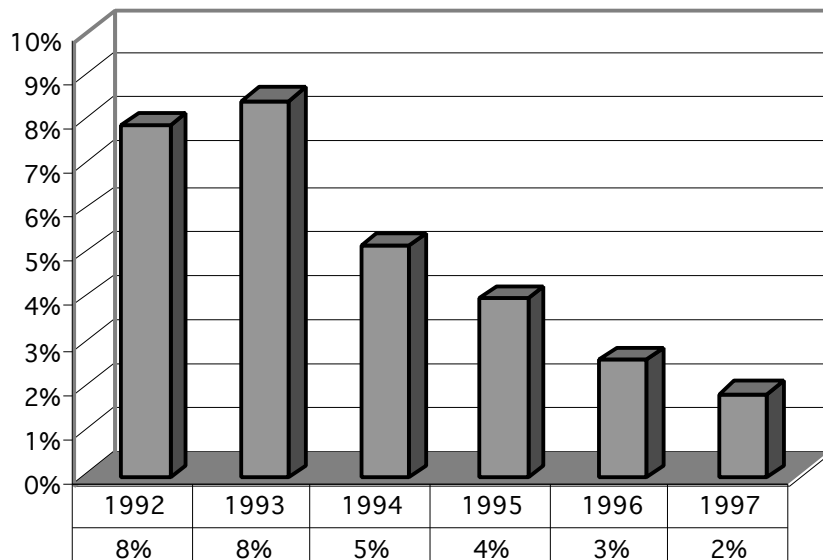


Figure VIII.8: Overall Mortality Rate for Medicaid/TennCare HIV/AIDS Population



IX. Multi-State Study

Overview

This section presents national mortality data for the study period from states with the same reporting requirements for HIV and AIDS as Tennessee, in order to see if expansion of access through the TennCare program and initiation of the COEs program in 1996-1998 were associated with greater improvements in HIV and AIDS mortality in Tennessee as compared with other states. It was understood that TennCare and the AIDS COEs program only affected a portion of the state's entire HIV and AIDS populations and also that the most important improvement in care during this period was associated with the advent of protease inhibitors. However, it was hypothesized that improvements in access to care might have resulted in the mortality rate for HIV and AIDS in Tennessee declining more rapidly than in those states during the period of the initiation of TennCare and the AIDS COEs program.

Methodology

For this aim, the reporting populations included the all those persons with HIV and AIDS reported to the CDC by Tennessee's HARS system. For comparability, it was decided to only look at states who have had similar surveillance systems in place at least as long as Tennessee.

States meeting this criterion included:

<u>State</u>	<u>Date Implemented</u>
Minnesota	Oct-85
Colorado	Nov-85
Wisconsin	Nov-85
South Carolina	Feb-86
Idaho	Jun-86
Arizona	Jan-87
Missouri	Oct-87
Alabama	Jan-88
North Dakota	Jan-88
South Dakota	Jan-88
Oklahoma	Jun-88

Indiana	Jul-88
Mississippi	Aug-88
West Virginia	Jan-89
Utah	Apr-89
Wyoming	Jun-89
Arkansas	Jul-89
Virginia	Jul-89
North Carolina	Feb-90
Ohio	Jun-90
New Jersey	Jan-92
Tennessee	Jan-92

Due to unavailability of data for some of the study years, Idaho, North Dakota, South Dakota and Wyoming were eliminated from the analysis.

Death Rates: Death rates for HIV/AIDS were obtained from the Vital Statistics reports for 1992 – 1997. State rankings of death rates using these rates were compared by year for the study period. States were ranked in nominal order with the highest death rate categorized as a 1. Then the death rate for Tennessee was compared with the average rate for all states meeting study criteria and with the subgroup of southern states meeting study criteria. Subsequently the annual rate of change in death rate was calculated for these same categories to provide further trend analysis. The annual rate of change in death rate was calculated by the following formula: (death rate for current year – death rate for previous year)/ death rate for previous year. As noted, the analysis was limited to states with surveillance systems similar to that of Tennessee for the duration of the period of the study.

Percentage Dying Annually: The percentage of those living with HIV and AIDS dying annually was also calculated to provide an alternative way to assess mortality for the HIV/AIDS population in Tennessee and comparison states. Numbers of those living with HIV/AIDS by state in each year were obtained from the annual HIV/AIDS Surveillance Reports for 1993 – 1997. Numbers of deaths was obtained from the National Vital Statistics Report by state in each year. The percentage of those living with HIV and AIDS dying annually was calculated as the number of deaths/ (number living cases + the number of deaths) in each of the study years and states. Then the rate for Tennessee was compared with the average rate for all states meeting study criteria and with the subgroup of southern states meeting study criteria.

Living with HIV/AIDS: The annual rate of change in the number of persons living with

HIV and AIDS was calculated by the following formula: (Number living current year – number living previous year)/Number living previous year.

Results

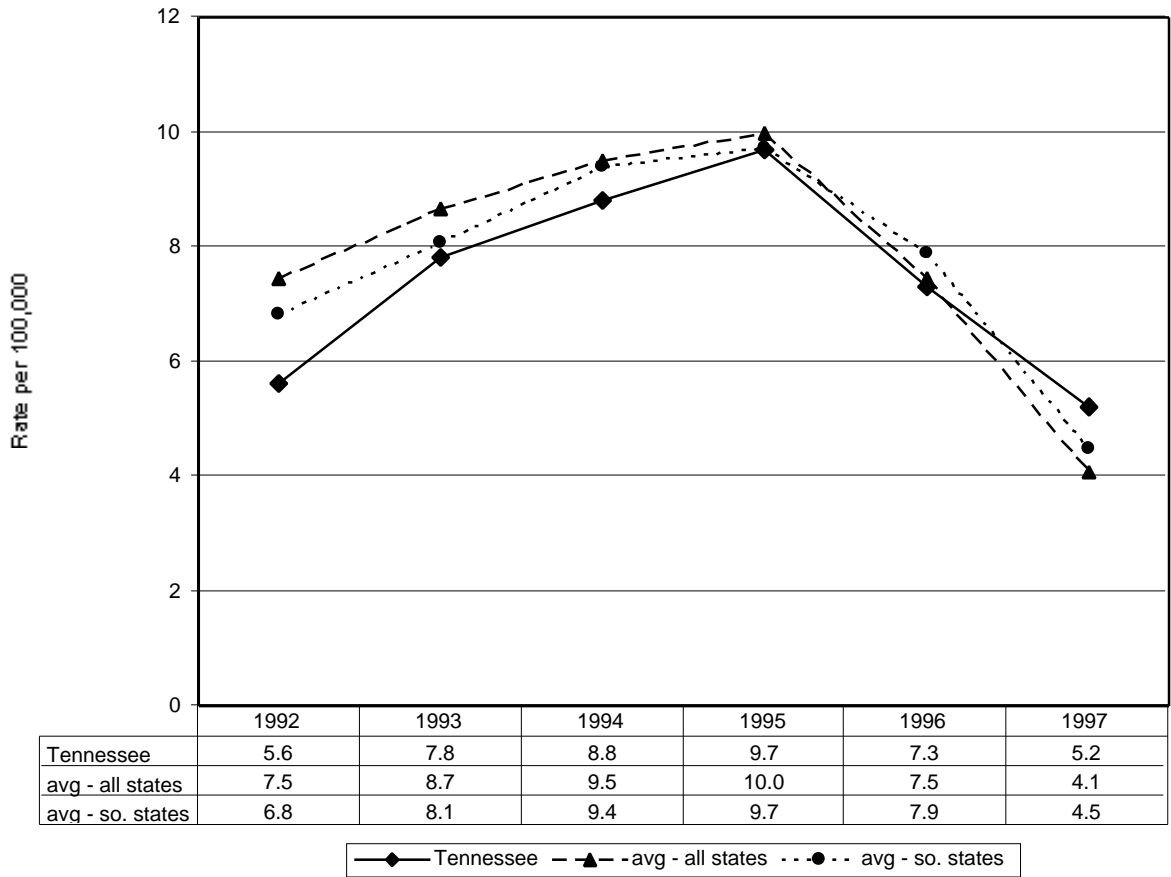
**TABLE IX.1
RANKING OF STATES BY HIV/AIDS DEATH
RATES**

	1992	1993	1994	1995	1996	1997
Alabama	12	12	8	9	6	7
Arizona	6	5.5	5	5	7	8
Arkansas	15	15.5	13	13	13	13
Colorado	2.5	2	6	6	9	10
Indiana	13	13	15	14	14	13
Minnesota	15	14	14	15	15	16.5
Mississippi	8.5	9	7	8	5	4
Missouri	7	7	10	10	10	11
New Jersey	1	1	1	1	1	1
North Carolina	4	4	3	3	3	3
Ohio	10.5	10	12	11	11	13
Oklahoma	8.5	8	11	12	12	9
South Carolina	2.5	3	2	2	2	2
Tennessee	10.5	11	9	7	8	5
Utah	17	17	16	16	16	17
Virginia	5	5.5	4	4	4	6
West Virginia	18	18	17	17.5	17.5	15
Wisconsin	15	15.5	16	17.5	17.5	16.5

SOURCE: Monthly Vital Statistics Report
1998 became National Vital Statistics
Report

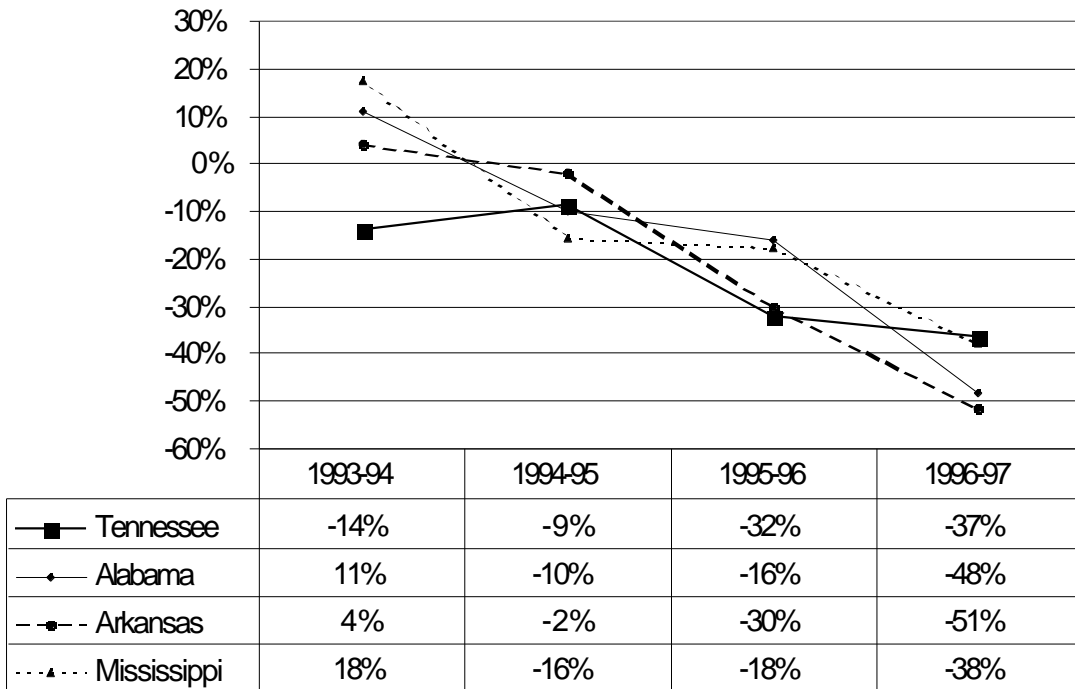
For the majority of states, rankings remained fairly stable. During the study period the mortality rate ranking for Tennessee increased more than that of any other state studied, and Colorado's ranking decreased more than that of any other state.

Figure IX.1: HIV/AIDS Death Rates



All states showed increases in mortality rates from 1992 to 1995. These increases are seen consistently across all states. Similarly, mortality rates decreased in all states in the study from 1995 to 1997. Tennessee's decrease in mortality rate during the period 1995 to 1997 was smaller than the average decrease for the other states considered.

Figure IX.2: Rate of Change in Death Rate

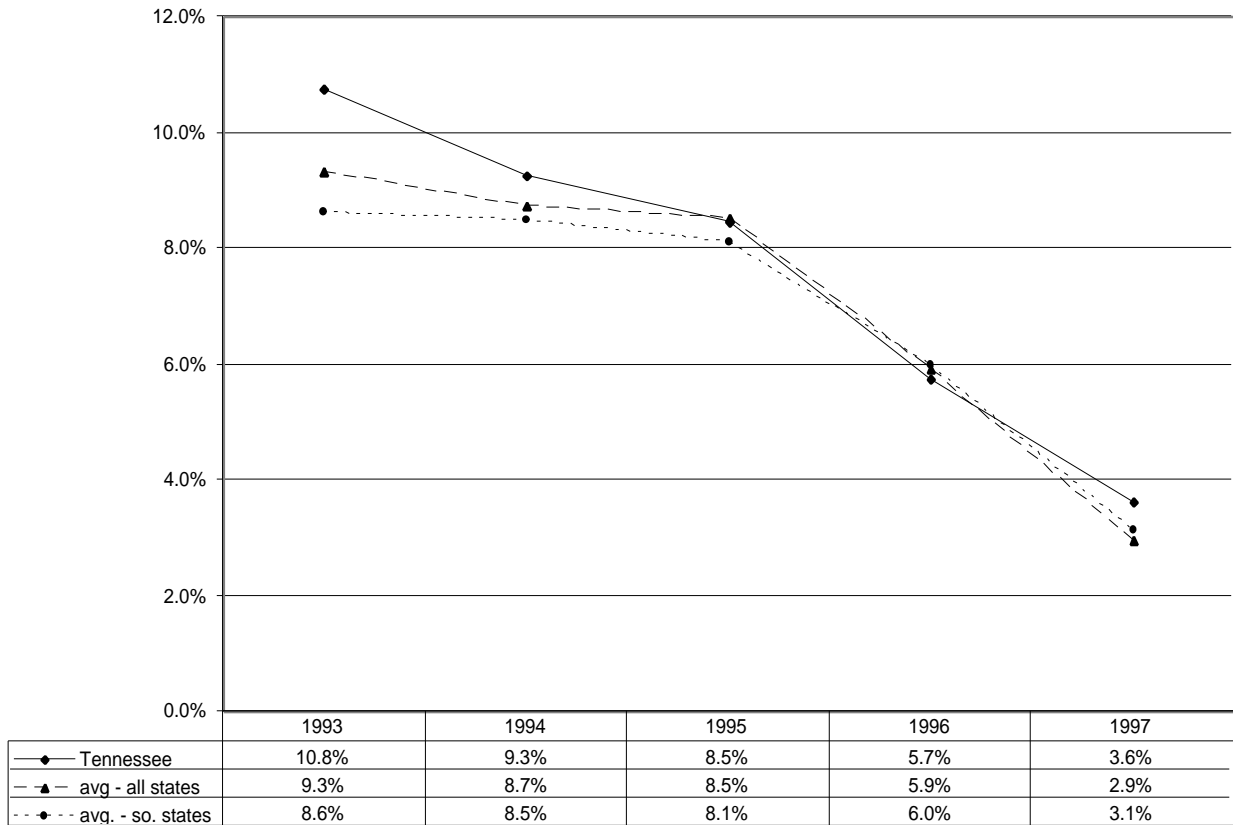


All states showed an overall decline in death rate throughout the study period. Looking at selected Southern states bordering Tennessee, it is noted that the rate of decline in Tennessee is similar to that in other states.

Table IX.2: Percent of HIV/AIDS PATIENTS DYING ANNUAL
no. deaths/ (no living cases + no deaths)

	1993	1994	1995	1996	1997
Alabama	6.7%	7.4%	6.7%	5.6%	2.9%
Arizona	9.8%	9.7%	9.9%	6.5%	3.0%
Arkansas	6.7%	7.0%	6.9%	4.8%	2.3%
Colorado	5.6%	5.4%	5.5%	3.3%	1.6%
Indiana	8.0%	7.6%	8.6%	4.9%	3.0%
Minnesota	7.0%	8.0%	7.9%	5.2%	1.9%
Mississippi	6.1%	7.1%	6.0%	4.9%	3.1%
Missouri	7.4%	7.5%	7.2%	4.7%	2.0%
New Jersey	16.3%	11.9%	10.9%	7.4%	4.1%
North Carolina	12.6%	12.5%	10.6%	8.3%	4.5%
Ohio	18.8%	16.1%	15.3%	9.8%	4.0%
Oklahoma	8.4%	9.6%	8.5%	6.0%	3.4%
South Carolina	6.6%	6.7%	6.6%	5.9%	3.3%
Utah	6.2%	6.2%	7.0%	4.6%	1.7%
Virginia	9.2%	8.5%	8.5%	5.8%	3.0%
West Virginia	13.8%	10.0%	11.9%	7.7%	3.7%
Wisconsin	9.1%	7.0%	7.0%	5.0%	2.4%
Average	9.3%	8.7%	8.5%	5.9%	2.9%
Tennessee	10.8%	9.3%	8.5%	5.7%	3.6%

Figure IX.3: HIV/AIDS PATIENTS DYING ANNUALLY



As seen on the figure above, the percentage of HIV/AIDS patients dying annually dropped at a faster rate for Tennessee in 1993 and 1994 than for other states and other Southern states on the average. The rate of decline from 1996 to 1997 was not as high as the average for other states and Southern states.

Figure IX.4: Rate of Change in those Living with HIV/AIDS

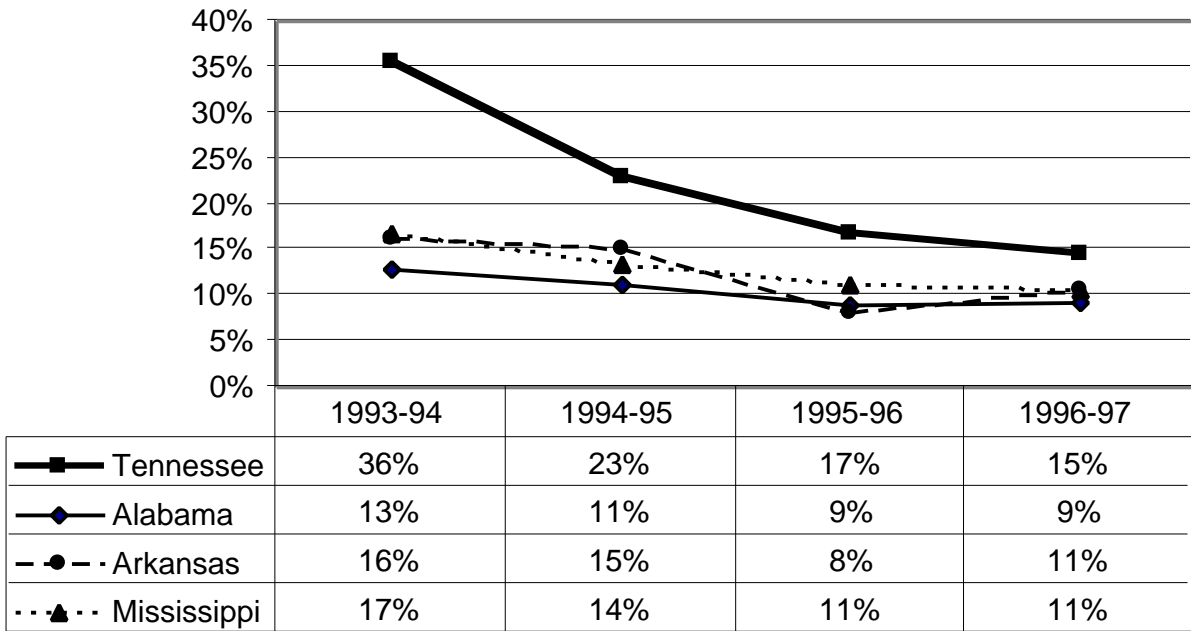


Figure IX.4 shows that the number of persons living with HIV and AIDS increased by a greater percentage in Tennessee in each interval in the study period than it did in other Southern states nearby. Tennessee experienced a larger percentage increase in the numbers living with HIV and AIDS than these other Southern neighbors.

X. CONCLUSIONS

This report documents important changes in access, quality and outcomes of care for persons with HIV and AIDS in Tennessee during the period in which important statewide interventions were introduced. The major findings of the study are as follows:

- Administrative claims data can be used as a helpful adjunct to more accurate case-finding Health Department HIV/AIDS Reporting and Surveillance (HARS) systems. But because claims case finding methods underestimated the rate of HIV infection and are particularly less accurate for assigning time of disease onset or change of status from HIV to AIDS they can not be relied upon as a primary case finding method for quality monitoring in this population.
- The number of persons with HIV and AIDS receiving insurance coverage through the Medicaid and TennCare programs progressively increased in each year from 1992 – 1997. Many individuals had short periods of eligibility within given years. Tennessee’s experimental program proposed to markedly expand insurance coverage for persons with HIV and AIDS. This objective appears to have been partially realized. The substantial growth in the HIV and AIDS populations was accompanied by similar growth in Tennessee’s HIV and AIDS populations leading to relative stability in the percentages of persons living with HIV and AIDS served by the Medicaid and TennCare programs throughout the study period.
- Persons with HIV and AIDS served by the TennCare program are primarily urban dwelling and male. However, growing numbers of women with HIV and AIDS are being served by TennCare. Persons of black race are making up a progressively larger proportion of this population.
- In general, hospitalization and emergency room utilization has decreased for persons with HIV and AIDS during this period particularly since the introduction of protease inhibitor medications.
- Antiretroviral medication use has progressively increased over the study period.
- In general, mortality, incidence of opportunistic infections and rate of conversion to AIDS for for HIV positive persons has decreased for persons with HIV and AIDS

during this period particularly since the introduction of protease inhibitor medications.

- Comparison of state mortality data for the study period suggests that Tennessee may be falling behind other states in overall mortality for persons with HIV and AIDS despite its ongoing health system expansion and other initiatives.

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