

# **Evaluating the Feasibility of Accepting a Capitation Payment for People with HIV or AIDS: The Experience of a Community Health Center**



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## **OVERVIEW**

This report describes the experience of a community health center in assessing its capacity to accept capitation payments for health center patients with HIV or AIDS. Massachusetts, like many states, operates a Medicaid managed care program that includes people with HIV and AIDS. With the growth of managed care as a financing mechanism, community health centers that have developed special capacity to serve people with HIV face new challenges. Health centers find that they need to participate in managed care provider networks in order to continue serving their communities. At the same time, they need to understand the implications of delivering high quality care within the confines of a capitated payment for this higher-than-average cost population.

Some of the issues that need to be addressed in navigating the managed care marketplace are affected by the fact that state-of-the-art HIV care includes ever-changing therapies. These constant changes make it difficult for health centers to predict future cost experience and risk. Some states have introduced risk-adjusted or health-based payments for people with AIDS, while others have implemented risk sharing. Furthermore, some health plans continue to pay some members of their provider network on a fee-for-service or partially capitated basis, making it possible to care for a high-cost population without assuming too much of the risk.

In this report we describe the East Boston Neighborhood Health Center's (EBNHC) HIV/AIDS program and examine the Medicaid and managed care context in which the health center operates. We describe the methods used to collect cost and utilization information, and how the information was analyzed. Then we present the results and compare the EBNHC experience to the current Medicaid managed care financing arrangements. Finally, we discuss the options available to EBNHC given the findings and present alternative strategies for surviving in a managed care environment.

## **ACKNOWLEDGEMENTS**

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## I. INTRODUCTION

In 1994, the East Boston Neighborhood Health Center (EBNHC) received a grant from the Health Resources Services Administration (HRSA) under the Special Projects of National Significance (SPNS) program to develop an integrated model of care for individuals with HIV/AIDS. Project SHINE (Support, Healthcare, Intervention and Education) was designed as a community-based program that used a multi-disciplinary team approach to caring for people with HIV/AIDS.

As part of the demonstration project, EBNHC conducted an evaluation of service use and costs for program enrollees. The major purpose of this evaluation was to determine the feasibility of accepting a capitation payment for HIV/AIDS care under managed care contracting. This report describes the EBNHC experience in serving people with HIV/AIDS and the health center's analysis of the feasibility of accepting risk under capitated managed care.

With the growth of managed care as a financing and delivery mechanism for health care services, health care organizations everywhere are having to adjust to this system. Community health centers, such as EBNHC, face particular challenges as they tend to draw their patient population from low income, uninsured, or working poor communities. Health centers often operate on the margin, receiving much of their insurance-based payments from public programs such as Medicaid and Medicare, and using surpluses (when they exist) to deliver care to the uninsured. As many states, including Massachusetts, turn to managed care for their Medicaid and uninsured populations, community health centers need to participate in managed care provider networks in order to continue serving their communities.

A central issue for community-based providers is the feasibility of accepting risk for managed care enrollees in general, and for patients with HIV/AIDS in particular. Managed care has the *potential* to support innovative service delivery models for individuals with HIV/AIDS, but it also poses serious risks. The potential includes the ability to invest in preventive care and treatment, a multi-disciplinary team approach to care, and care coordination. The risks of managed care stem from the much higher than average costs for this population, the variability in costs within the population, and the ever-changing therapies that make it difficult for providers to predict future experience (and therefore risk). Inadequate payment systems can encourage rationing or denial of care that can be life threatening to patients.

Community health centers face other challenges. In caring for people with HIV/AIDS, health centers experience competition from tertiary care hospitals with dedicated HIV or infectious disease specialty clinics. The concentration of expertise in hospital-based clinics is often very attractive to people with HIV. Hospital systems also have greater access to the sophisticated infrastructure requirements necessary for managed care, such as information systems, financial management, billing departments, and capital reserves.

On the other hand, the hospital-based clinics can be intimidating to people with HIV. Physician specialists may be difficult to contact outside of clinic hours, and people experiencing new symptoms are likely to be referred to emergency rooms where they do not know the providers. Often located outside of the neighborhoods where people with HIV live, the hospital clinics may be difficult to get to, and staff may not know the culture or speak the language of patients.

Community health centers are more likely to reflect the communities they serve and have better access to neighborhood-based support services. One of the major questions for health centers such as EBNHC is whether they must remain content to serve as primary care referral sources for the tertiary care hospitals or whether they can develop and support more comprehensive programs at the community level by accepting more of the payment and risk for service delivery.

## **II. BACKGROUND**

### **East Boston Neighborhood Health Center**

EBNHC was established in 1975 as a community-owned and operated health center. EBNHC serves the low income and working class communities of Chelsea, Revere, East Boston, and Winthrop, communities that are geographically isolated from the city of Boston proper by congested tunnels and bridges. The EBNHC service area includes immigrant communities, populated initially by Italians, and since the 1980's by Central Americans, Brazilians, and Asians. Many residents are undocumented, and thus uninsured, while others have private health insurance, Medicaid, or Medicare.

The health center provides a full complement of primary care services, including adult medicine, pediatrics, obstetrics and gynecology; a full spectrum of specialty care; mental health services; a 24-hour urgent care facility; laboratory; radiology; and special procedures. EBNHC is affiliated with two hospitals: Massachusetts General Hospital and Boston Medical Center and provides over 300,000 visits annually. It is the largest community health center in New England.

EBNHC has been in the forefront of developing community-based services for both the general population and special needs populations in its service area. In 1987, EBNHC implemented a capitated program for frail elders known as the Elder Service Plan (ESP), one of the first replications of the Program for All Inclusive Care for the Elderly (PACE). The ESP is based on a multidisciplinary team approach to care, network of contracted facilities, and system of adult day health centers. From the experience of the ESP, EBNHC learned many of the advantages of pre-paid, capitated financing. These include:

- the opportunity to create multidisciplinary provider teams for individuals with complex needs because it is not necessary to generate a "billable" visit for provider time;
- the ability to develop alternative interventions, such as home visits and nursing on-call services, that are not funded under fee-for-service insurance;

- the capacity to devote more time to patient education and patient visits, which may lead to reduced emergency room utilization;
- improved coordination through designated staff and referral relationships with provider network;
- increased integration of primary care with specialty care and of primary care with behavioral health care; and
- an opportunity to focus on developing clinical expertise and quality improvement.

In 1992, the health center decided to extend this experience to develop and implement comprehensive, capitated programs for other complex patient populations, including people with HIV and AIDS.

### **The Status of Medicaid and Managed Care for People with HIV/AIDS in Massachusetts**

According to Massachusetts Medicaid's Draft 1115 Waiver Report, in FY98 535,700 of the 711,500 people who receive Medicaid benefits in Massachusetts were enrolled in managed care. Massachusetts Medicaid, also known as MassHealth, requires most beneficiaries to enroll in one of the following types of managed care programs:

- The HMO program, in which people receive medical services and behavioral health services through a managed care organization; or
- The Primary Care Clinician (PCC) program, in which people receive medical services on a fee-for-service basis when authorized by their primary care provider, and behavioral health services through a managed behavioral health care carve-out plan.

Thus, most individuals with HIV or AIDS who are insured through Medicaid are enrolled in one of the two managed care programs. An important exception is individuals who are dually eligible for Medicaid and Medicare.

In recent years, a large segment of the uninsured population has also been enrolled in MassHealth managed care. The state received and implemented an 1115 Medicaid waiver in 1997 that expands income eligibility for Medicaid for pregnant women and children up to 200% of the federal poverty level for families and children, and up to 133% for the long-term unemployed. This latter group includes a significant number of single or child-less adults, including individuals with HIV.

Most people with AIDS who receive MassHealth are enrolled in the PCC program. However in 1992 Massachusetts Medicaid introduced an enhanced capitation rate for health plans that developed specialized programs for enrollees with advanced AIDS. Community Medical Alliance (CMA) became the first health plan to develop a specialized managed care program for people with AIDS, and EBNHC has been part of CMA's provider network since 1992.

## **Capitated Medicaid Managed Care Programs**

In the Boston area, the major participating Medicaid managed care plans include Neighborhood Health Plan, which now includes the CMA AIDS program, and Boston Health Net (BHN). EBNHC is part of the provider networks for both health plans and is a primary care provider site for the PCC program. In most of these arrangements EBNHC is paid either a primary care capitation or on a fee-for-service basis. However, under other managed care contracts, such as HPHC's First Seniority program for Medicare, EBNHC assumes full risk for services.

## **HRSA SPNS Grant**

As mentioned above, the HRSA SPNS grant provided an excellent opportunity to collect the data and conduct the program evaluation necessary for EBNHC to make informed decisions. A major difficulty for community health centers and most HIV/AIDS service providers is the absence of data on the full use and cost of services. Unless a provider is fortunate enough to obtain Medicaid data, an unlikely event in most states, or is already capitated and therefore paying all the bills, the only cost data available comes from the health center billing system and thus includes only those services delivered directly by the health center.

The HRSA SPNS grant made it possible for EBNHC to establish systems to capture some of the service use and costs for offsite services and to manipulate its on-site service information to analyze service use and costs per "member"/month. Although this information is not as reliable as insurance claims data, it contributes to a more complete picture of the opportunities and risks in accepting capitation.

## **III. DATA COLLECTION**

The first step in designing the evaluation was to determine the data elements and sources that would help answer the questions raised above. As discussed above, health insurance claims data is the most inclusive source of information about service use and cost, but in most states providers are not able to access Medicaid claims data. Private insurance data is even more difficult to obtain. Some researchers use patient self-reports to obtain information about service use and then apply cost factors to services in order to estimate costs. This method of data collection is less reliable, particularly when a portion of the population is transient or has neurological deficits.

On the other hand, even the most complete claims data does not include the clinical information necessary to adjust for case mix, such as CD4 count, disease stage, or viral load. Nor does it include non-billable services, such as care coordination, collateral work, patient education, or information and referral services. All of these services are important components of the clinical model and entail costs.

Given these limitations, EBNHC's strategy was to identify readily available data sources, establish new systems to collect as much of the missing information as possible, and

develop a relational database to integrate existing data sources with the new information. This strategy did not result in a perfectly comprehensive data set. There were some areas where the data collection methods could not address known gaps, particularly for certain off-site services and pharmacy. To the extent possible, we used information from other sources, such as research studies or local health plan experience, to fill in the gaps.

### **Member Months Calculation**

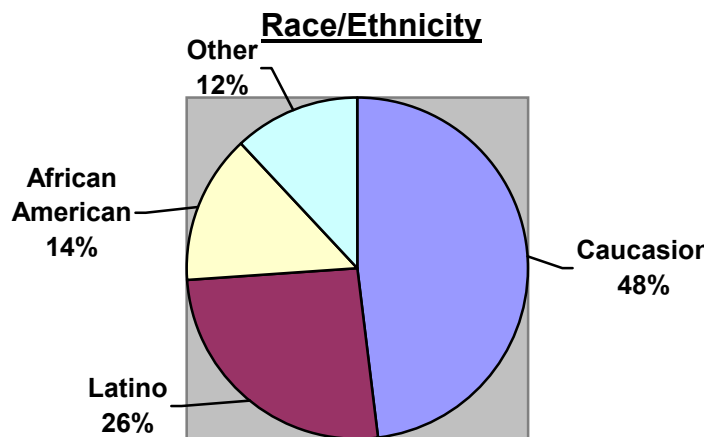
Capitation payments are made on a per member per month basis. Massachusetts Medicaid reimburses health plans at different rates based on their Category of Assistance. For the purposes of this program, the four categories include ADFC/TANF, the long-term unemployed, SSI, and a special Medicaid rate for individuals with advanced AIDS. People with HIV are most likely to enroll in the first two categories, while people with AIDS would enroll in one of the latter two categories based on the severity of their illness.

Because disease stage and severity of illness change over time, our analysis needed to link disease stage/illness severity with member months and account for the changes from one stage to another. We also wanted to explore other possible predictors of cost on a per member per month basis, given the richness of our clinical data set. See Appendix A for our analyses of costs by disease stage and CD4 count.

## **IV. RESULTS**

Over the four years of the project, 141 individuals enrolled in Project SHINE. Approximately one third of the enrollees were female and half were Caucasian. One third of the enrollees were Latino and the remaining 28 percent were African American or another nationality, primarily Haitian or Caribbean.

The transmission/risk factor for 43 percent of the population was injection drug use.

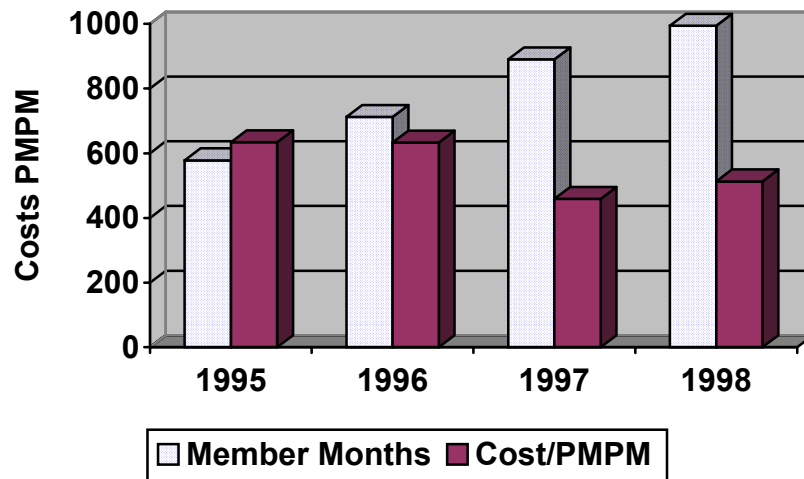


Thirty percent reported heterosexual transmission, and 26 percent were men who reported having sex with men. Slightly less than half the population reported living in stable housing, 8 percent were homeless at some point in time, and 46 percent reported living in unstable housing. At the time of enrollment, the most common forms of health insurance were Medicaid (53 percent) and none (26 percent). Less than 10 percent of the population had private insurance.

The 141 program enrollees accounted for a total of 3,174 enrollee months. Enrollment increased steadily over the four-year period from 578 member months in 1995 to 994 member months in 1998.

Overall, service use and costs per enrollee per month declined over the four-year period. This finding is consistent with other studies that document the impact of protease inhibitors (introduced in mid-1996) and HAART on health status. In addition, it is likely that the evolving service delivery model at EBNHC also served to reduce inpatient hospital admissions and lengths of stay over time.

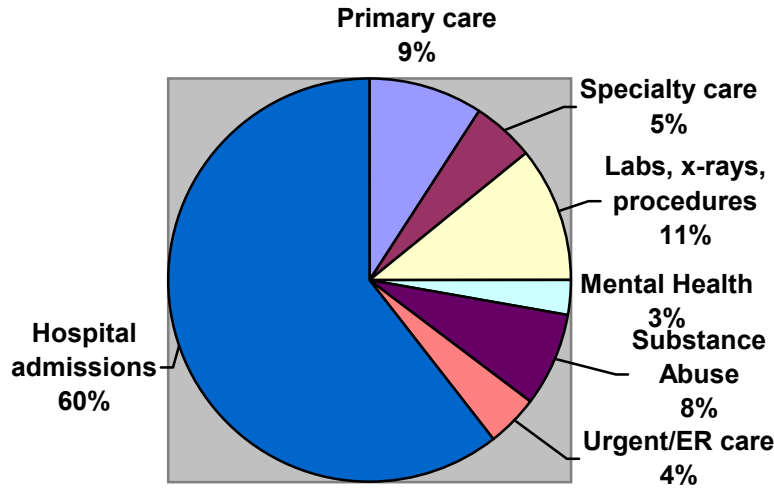
**Program Profile: Member Months and Average Costs**





In 1998, the last year for which we have a full twelve months of data, hospital costs accounted for 60 percent of total costs (excluding pharmacy and home health).

**Distribution of Costs: 1998**



The overall picture, however, masks important differences in the service utilization and costs of particular sub-populations within Project SHINE. These differences were highlighted when we stratified the population by clinical factors (see Appendix A).

**Comparison of EBNHC Cost Data with Current Medicaid Capitation Rates**

Once EBNHC cost data were calculated we compared them to the current rates for Medicaid managed care programs. The state Medicaid program bases its capitation rates on what is known as the “Upper Payment Limit” or UPL. This is the amount, or upper limit, Medicaid would pay for the same population in the fee-for-service program. Under federal regulations, capitation payments cannot exceed the UPL. They can, however, be less than the UPL.

Our final comparison of the EBNHC cost experience, adjusted for uncaptured costs, Medicaid UPLs, and managed care savings, absent pharmacy costs is presented below. For a description of how we carried out the comparison, see Appendix B.

Category	EBNHC Experience	Medicaid UPL
HIV	\$414	\$162-\$180
AIDS	\$817	\$399
CD4<50; Advanced AIDS	\$1,804	\$1,799

## V. DISCUSSION

The comparison above demonstrates that EBNHC will need to adopt different strategies for subsets of its Project SHINE enrollees. The health center might be able to accept a capitation rate for enrollees with advanced AIDS that includes many of the services covered under the Medicaid managed care benefit package. However, for individuals with CDC-defined AIDS who have not had major opportunistic infections, and for individuals with HIV, the capitation rates are totally inadequate for the delivery of basic health care services, even if the adjustments upward for services not captured in the study are removed. Therefore, capitation, if considered at all, would need to exclude most of the high cost or unpredictable services.

Small providers, such as EBNHC, usually negotiate with health plans that hold contracts with the Medicaid program rather than negotiating directly with the state. Therefore, it is also possible to think about negotiating a partial capitation for a subset of the benefit package. In considering the scope of capitation it is important to look at other factors besides the adequacy of the rate. For example, it is important to know what information is available to the health center about its own costs, the predictability of these costs, and the health center's capacity to manage the care and costs associated with both on and off-site benefits.

### **Pharmacy**

For all populations, we would argue that pharmacy should be excluded from the sub-capitation. The most important reason is that these costs are the most unpredictable, given changes in treatment and standards of care. It is highly problematic for a health plan to assume risk for this benefit, and potentially disastrous for a small community-based organization. In addition, a health plan is in a better position than a single provider to negotiate pharmacy stop-loss provisions with the state or for the exclusion of new treatments from the capitation rate until a history of costs is established.

### **On-Site Services: Primary and Specialty Care, Labs, and X-Rays**

On the other hand, EBNHC is in a good position to accept capitation for primary and specialty care, labs and x-rays, and possibly urgent care, because these are all services offered on-site and are under the control of the health center. Furthermore, the use and cost of these services has been relatively predictable over time. The capitation rate for people with advanced AIDS is clearly sufficient to cover these services. The other capitation rates do not appear sufficient, but EBNHC now has the information it needs to negotiate with a health plan about the size of a primary/specialty care capitation for these populations.

### **Inpatient Hospital and Emergency Room Care**

As noted earlier, inpatient hospital care is the most significant expenditure across all populations and disease stages. In 1998, hospital costs accounted for 60 percent of all

expenditures across the entire program. Inpatient hospital costs have also fluctuated dramatically over the four years. For enrollees with AIDS, inpatient hospital costs dropped dramatically between 1996 and 1997, and rose again in 1998. For enrollees with HIV, inpatient hospital costs have nearly doubled since 1996. The relatively small number of potential program enrollees, 56 members per year with Medicaid coverage in all three rating categories, makes prediction even more difficult.

We conducted a small sub-study to examine hospital expenditures more closely, and discovered that 10 out of 141 enrollees (7 percent) accounted for more than 50 percent of all inpatient hospital admissions. Thus, a change of one or two people in the enrollment pool could have a major effect on costs.

For Project SHINE enrollees with HIV or uncomplicated AIDS, the basic capitation rates are insufficient to cover inpatient hospital costs, independent of any judgement about the predictability of service use and costs. For enrollees with advanced AIDS, however, the capitation rate is significantly higher, and might be sufficient if costs were more predictable.

There is a compelling argument to include inpatient hospital costs in the health center capitation rate. Some of the dollars currently spent on inpatient hospital care could be invested in enhanced primary and specialty care, coordination of medical services with behavioral health services, and resources to develop improved adherence strategies. These interventions have significant potential to improve health status and reduce inpatient hospital costs. However, the small size of the program and the enormous impact that can be made by a small number of program enrollees raises serious questions about the feasibility of accepting full risk for inpatient hospital care.

One alternative for a health center such as EBNHC is to accept partial risk for inpatient hospital care. Under this arrangement, a small portion of the inpatient hospital dollars would be included as part of the primary care capitation to allow the health center to invest in enhanced primary care and adherence support services. Hospital inpatient day targets would be established. If the health center's inpatient days came in lower than the target, the health center would share in any savings. If the health center met the targets, the arrangements would be continued for the subsequent year. If the health center did not meet the targets, the enhanced capitation rate would be renegotiated. This arrangement keeps the risk with the health plan, but provides the health center with the primary care and support service funding and the incentives to reduce inpatient hospital expenditures.

A similar arrangement could be made with emergency room visits, which are often linked to inpatient hospital admissions. EBNHC maintains its own urgent care center. If provided with financial incentives to reduce emergency room visits, as well as support (in the form of an enhanced primary/specialty/urgent care capitation rate) to fund enhanced 24-hour on-call coverage by HIV specialists, the program might well be able to reduce emergency room utilization. Targets could be established in the manner described above.

## **Mental Health and Addiction Treatment Services**

It is common practice for health plans to carve out these benefits to behavioral health managed care organizations. When behavioral health services are handled in this way, the behavioral health managed care organization receives the capitation for these services and is responsible for managing the care. NHP and the HealthNet Plan both carve out behavioral health services. The only managed care program that integrates mental health and addiction treatment services with medical care is the CMA/NHP program for people with advanced AIDS. Thus, EBNHC has no option for including these benefits as part of their subcapitation except for individuals with advanced AIDS. This poses a problem for any capitated HIV/AIDS program. If mental health and substance abuse treatment services are not well managed or coordinated, there can be a major impact on HAART use, adherence, and other related medical conditions, as well as an impact on costs.

For this population, a decision to include or exclude the mental health/addiction treatment benefits in the capitation rate is dependent on several factors: reliability of the data about service use and costs, predictability of service use and costs, ability of the health center to effectively manage addiction treatment, all of which is provided off-site, and ability of the health center to effectively manage psychiatric admissions. The EBNHC's data in these service areas is only an estimate based on referrals and the average costs of care as obtained from another health plan, thus it is not fully reliable.

## **Other Service Areas**

Very little is known about the costs of off-site procedures and home care. In addition to the lack of information about the experience of Project SHINE enrollees, it is unclear how the use of these services has changed in general with advances in treatment. These are strong arguments for excluding these services from any sub-capitated arrangement, leaving the risk and management with the health plan. In EBNHC's case, where the health center has its own home health care agency, this benefit might be phased in after one or two years of experience in a partially capitated arrangement.

## **Support for Partially Capitated Arrangements**

Under any partially capitated arrangement, it is essential to include financial support for care management services, support to implement adherence strategies, and home visits to follow up on home-bound patients or individuals who have not returned for follow-up visits. Without this additional financial support, the health center would be placed in the untenable position of limiting primary and preventive services or facing financial losses. However, it would be understandable from the health plan perspective, to want to see improved performance in emergency room utilization and inpatient hospital admissions in return for the enhanced primary care payment. Therefore, a system of targets, rewards, or reconsideration as described above, could be implemented.

## VI. CONCLUSIONS

In summary, we would advise health centers such as EBNHC to avoid, if possible, capitated arrangements for their patients who have HIV and AIDS with no complications, unless health plans are willing to enter into partial capitation arrangements that include enhanced support for primary care, care coordination, and adherence. Without this commitment, both the health center and patient are better off with fee-for-service reimbursement. The health center would then need to continue to supplement its fee-for-service programs with grants to support care coordination and adherence. The health plans would maintain all risk for emergency room utilization and inpatient hospital care.

This is not the most desirable arrangement because a risk-sharing arrangement would provide strong incentives to promote prevention. However, in the absence of sufficient dollars, a community-based provider cannot afford to assume the financial liability of bringing costs in line with the experience of a non-HIV positive population, which is the basis of the current capitation rates for people with HIV and AIDS with no complications.

For enrollees with AIDS who would qualify for the enhanced capitation rates, a health center could accept risk for on-site services, as long as the capitation arrangement included a primary care enhancement provision and shared savings for the reduction of emergency room and inpatient hospital utilization. We would also recommend that the health center examine the number of individuals eligible for this enhanced rate and develop a staffing plan and budgets for the services necessary to manage and coordinate behavioral health care and inpatient care. If the costs of these additional clinical and support services can be supported by the difference between health center expenditures and the current capitation rate, then the health center could consider accepting risk for these services. If there is any question about the number of potential enrollees or the ability to support these staff functions, we would recommend that the health center negotiate for a limited risk arrangement with shared savings for exceeding targets on emergency room and inpatient hospital utilization.

HIV/AIDS is in many ways a litmus test of our changing health care environment. The higher than average costs of care, need for coordination among different components of the health care system, and promise of new treatments, create tremendous opportunities for innovation and improvement that can be generalized to the management of individuals with other chronic or disabling conditions. Managed care, in theory, could be a strong vehicle for this improvement. With a focus on primary and preventive care, care coordination, and quality improvement, the tools exist to make this a reality for individuals living with HIV/AIDS. Unfortunately, the capitation payment rates from payers do not fully recognize the needs of people with HIV, even in enlightened systems such as those in Massachusetts.

In addition, the rapidly changing health care environment with its mergers, acquisitions, and failures of health plans, is an unstable setting in which to provide care. This instability makes it very difficult for community-based providers to anticipate the

potential impact of these changes. Community-based providers typically seek contracts with multiple payers in order to maintain their patient base. Each of these providers has different payment rates, provider networks, and authorization rules. Even health centers such as EBNHC, that have a relatively large number of patients with HIV/AIDS by community standards, may have insufficient numbers to make a major investment in disease-specific care without the assurance that this investment will be covered by capitation savings or grant funding. Currently, the investment is covered by grant funding. It remains to be seen if the investment can be sustained under managed care.

## APPENDIX A

### ANALYSIS OF COSTS BY DISEASE STAGE AND CD4 COUNT

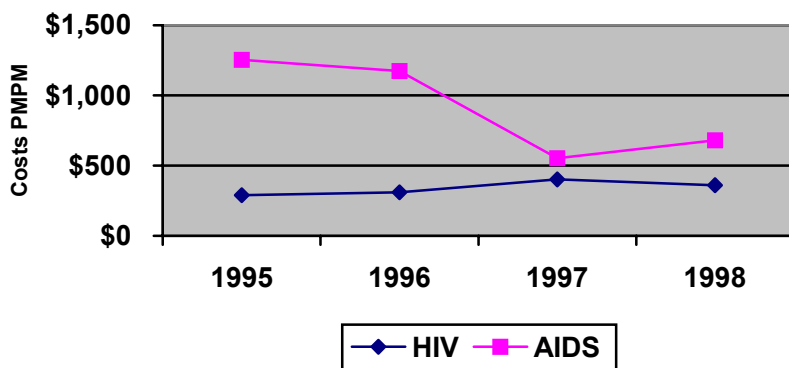
We stratified the EBNHC study population by the clinical factors of disease stage and CD4 count in order to highlight the important differences in the service utilization and costs of particular sub-populations. Described below are the process we used and our findings.

#### Disease Stage

For disease stage, we started our analysis with four groupings within HIV/AIDS: HIV asymptomatic; HIV symptomatic; AIDS; and advanced AIDS. As the project progressed, our analysis of cost and service use by disease stage was simplified to distinguish between only HIV and AIDS as defined by the Centers for Disease Control (CDC). We simplified to two categories for two reasons: 1) Medicaid capitation payments are not risk-adjusted for HIV symptomatic or asymptomatic status, and 2) advances in the treatment of HIV disease blurred the distinction between AIDS and advanced AIDS.

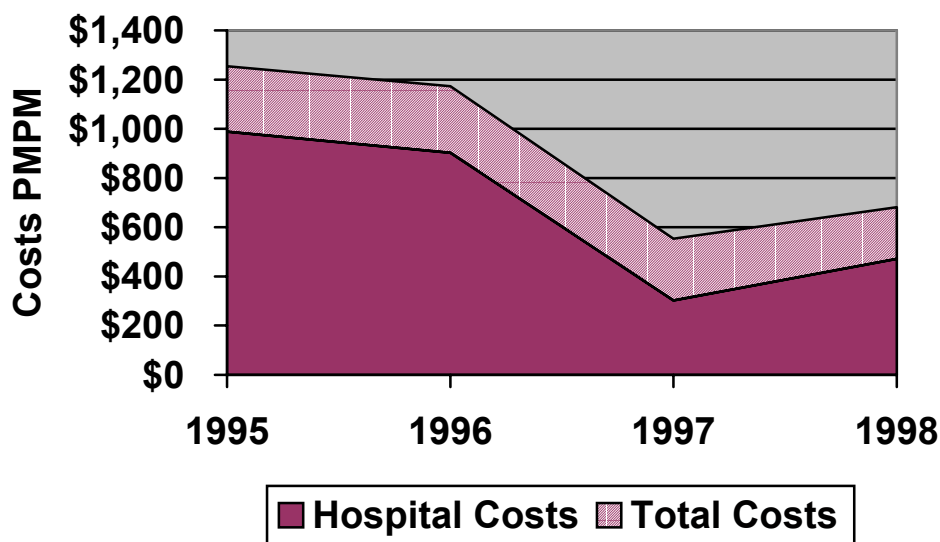
Disease stage was the first clinical factor we examined partly because it corresponds most closely with the different categories of assistance in Massachusetts Medicaid. For program enrollees with AIDS, for example, costs per member per month declined from \$1,254 in 1995 to \$680 in 1998 (excluding pharmaceuticals, home health, and durable medical equipment). Over four years, the service costs for people with AIDS were reduced by nearly 50 percent. In contrast, service costs for enrollees with HIV rose by 24 percent during this period, from \$290 per member per month in 1995 to \$360 per member per month in 1998.

#### Changes in Costs by Disease Stage



The driving force in these changes in service costs for enrollees with AIDS and HIV was inpatient hospital admissions. Our inpatient hospital data includes both medical and psychiatric admissions. Hospital costs for enrollees with AIDS accounted for two-thirds

### Hospital Costs as a Percent of Total Costs: AIDS



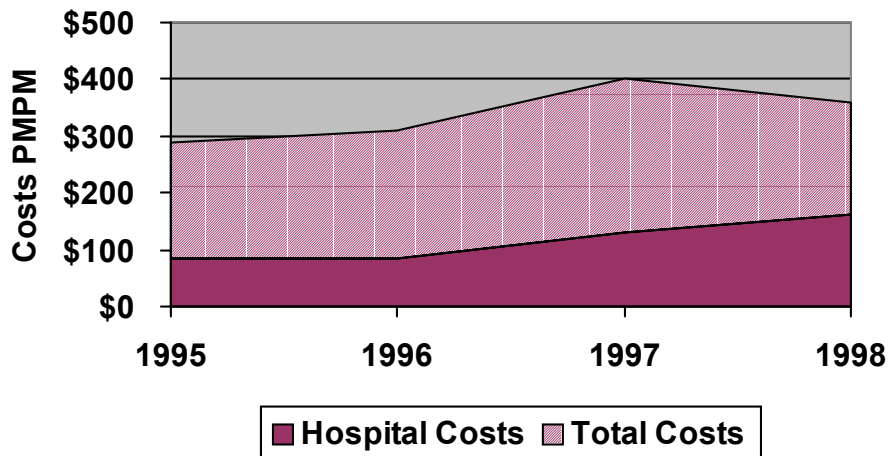
or more of the total costs of care per year, ranging from 55 percent to 79 percent of total costs. During the first two years of the project (before the widespread use of HAART) overall costs were much higher, and over 75 percent of the costs were attributable to inpatient hospital admissions.

As overall costs declined significantly, so did the percentage of costs attributable to inpatient hospital admissions. Although service use for primary care, specialty care, labs, x-rays and procedures declined slightly over the four-year period, service costs in these areas became an increasingly important factor in total costs as inpatient hospital admissions declined.

Service use and costs for enrollees with HIV averaged one third the service use and costs for enrollees with AIDS during the project period. The percentage of total costs attributable to inpatient hospital admissions for enrollees with HIV was also much lower, ranging from 27 percent to 45 percent of total costs. This is not unexpected because people with HIV are less likely than people with AIDS to become severely ill and require hospital admission.



### Hospital Costs as a Percent of Total Costs: HIV



Finally, it is interesting to look at service use and costs for urgent and emergency room care for both groups of program enrollees. For enrollees with AIDS, these costs fluctuated dramatically over the four-year period, demonstrating no consistent trends. However, for enrollees with HIV, service use and costs for urgent and emergency room care increased dramatically over the four years. Urgent care visits climbed from .08 per member per month (\$9.33) to .15 per member per month (\$16.44), nearly doubling over the four-year period. Emergency room visits went from .01 per member per month (\$2.42) to .03 per member per month (\$9.26). This trend corresponds with the increasing number of inpatient hospital admissions for enrollees with HIV during the project period. These trends have implications for risk adjustment. They are addressed in the discussion section of this paper.

### Service Costs Per Enrollee Per Month By Disease Stage

	AIDS				HIV			
	1995	1996	1997	1998	1995	1996	1997	1998
Primary care	\$78	\$75	\$54	\$49	\$46	\$51	\$50	\$42
Specialty care	\$49	\$47	\$43	\$31	\$48	\$31	\$45	\$23
Labs, x-rays, procedures	\$69	\$60	\$70	\$57	\$40	\$52	\$67	\$54
Behavioral Health	\$51	\$63	\$69	\$53	\$61	\$70	\$82	\$52
Urgent/Emergency care	\$18	\$25	\$13	\$20	\$11	\$23	\$27	\$25
Hospital admissions	\$989	\$902	\$302	\$472	\$84	\$84	\$129	\$163
<b>Total Costs PMPM</b>	<b>\$1,254</b>	<b>\$1,172</b>	<b>\$551</b>	<b>\$682</b>	<b>\$290</b>	<b>\$311</b>	<b>\$400</b>	<b>\$359</b>

### CD4 Count

Although the distinction between HIV and AIDS corresponds best with the methodology used by Massachusetts Medicaid to set capitation rates, we also looked at service use and costs by CD4 count in order to identify trends that might be useful either for rate-setting or clinical management.

For CD4 count ranges we used the following values: CD4 count under 50, 50-200, 200-500, and over 500. A CD4 count under 50 generally indicates that an individual is severely ill with AIDS and is likely to be in the terminal stages of illness unless a new therapy is able to reverse the trend. The Centers for Disease Control considers a CD4 count of 200 as a definition of AIDS, regardless of any other symptoms. Individuals with CD4 counts under 200 are therefore eligible for SSI and SSDI (depending on their income, assets, and/or work histories). According to the U.S. Public Health Service guidelines they should receive HAART and prophylaxis for opportunistic infections. Some individuals with CD4 counts above 200 also have CDC-defined AIDS as a result of the occurrence of certain HIV-related symptoms or infections.

Individuals with CD4 counts under 500 are considered to have compromised immune systems and should receive HAART. Those with a CD4 count between 200 and 500 include many whose HIV has not progressed to the point of AIDS. Individuals with CD4 counts over 500 are considered to be relatively healthy and at lower risk of experiencing complications with HIV.

Over the four-year study period, the average costs of care varied significantly by CD4 count, as the chart below demonstrates.

#### **Four Year Average Costs Per Enrollee Per Enrollee Month by CD4 Count**

<b>CD4 count</b>	<b>&lt;50</b>	<b>50-200</b>	<b>200-500</b>	<b>&gt;500</b>
Total average costs	\$2,502	\$848	\$380	\$354
Average hospital inpatient costs	\$2194	\$561	\$168	\$124
Hospital costs as a % of total costs	88%	66%	44%	35%

By far the highest service use and costs are incurred when CD4 counts are below 50. The expenditures in this category are triple the expenditures for the group in the next highest CD4 count range, 50-200. Most of this difference can be attributed to inpatient hospital admissions. In fact, inpatient hospital costs are nearly four times as high when CD4 are counts below 50 compared to when they range from 50 to 200.

There is also a significant difference between costs incurred when CD4 counts are between 50 and 200 and when they are between 200 and 500. Over the four-year period, when individuals had CD4 counts between 50 and 200 they incurred costs that were more than double those of individuals with CD4 counts above 200. Again, much of this difference can be attributed to inpatient hospital admissions. Once CD4 counts rise above 200, however, the differences in service use and costs diminish between categories.

### Costs By CD4 Count Over Four Years



In examining trends over the four-year period we found major differences in service use and cost trends from year to year. As the table below demonstrates, there was a 59 percent reduction in service costs for CD4 counts under 50 and a 15 percent reduction in service costs for CD4 counts between 50 and 200 over the four years. However, for the higher CD4 counts, service use and costs *increased* over the four-year period.

**Changes in Costs by CD4 Count Over a Four Year Period**

<b>CD 4 count ranges</b>	<b>1995</b>	<b>1998</b>	<b>% change</b>
<50	\$ 3,699.00	\$1,503.00	-59%
50-200	\$ 906.00	\$ 770.00	-15%
200-500	\$ 403.00	\$ 410.00	+2%
>500	\$ 282.00	\$ 385.00	+37%

Although it might be expected that this increase in service use is related to more frequent primary and specialty care visits for monitoring new treatments, in fact primary care visits remained fairly stable over the four-year period for those with CD4 counts > 500. The major increase was due to increased hospitalizations, most likely for reasons not related to HIV or for complications related to co-morbid conditions, such as substance abuse or mental health disorders.

## APPENDIX B

### COMPARISON OF EBNHC WITH CURRENT CAPITATION RATES

In this appendix we compared the 1998 EBNHC data with the capitation rates that Medicaid was likely to pay in that year.

#### The Medicaid Upper Payment Limit

The Massachusetts Medicaid program bases its capitation rates on what is known as the “Upper Payment Limit” or “UPL.” This is the amount, or upper limit, Medicaid would pay for the same population in the fee-for-service program. Under federal regulations, capitation payments cannot exceed the UPL. They can, however, be less than the UPL. Some states set their capitation payments at a percent below the UPL (such as 5 percent or 10 percent) in order to guarantee savings to the state. Other states accept HMO-proposed rates as long as the rates are lower than the UPL.

UPLs, and therefore capitation payments made by Medicaid, vary from one year to the next. The most recent UPLs for the Massachusetts Medicaid program that might apply to enrollees with HIV/AIDS fall into four main categories:

1. AFDC or TANF: The UPL was \$183.33 per member per month, including all medical services, behavioral health, and pharmacy. Some individuals with HIV but no disability, who are also members of families with dependent children, would receive this capitation rate.
2. Long-term unemployed: The UPL was \$189.41 per member per month, including all medical services and behavioral health. This benefit package does not include pharmacy, and therefore those costs are excluded from the UPL. Some individuals with HIV without dependent children and a long history of unemployment would receive this capitation rate.
3. SSI: The UPL is \$556.53 per member per month, including all medical services, pharmacy, and behavioral health. Individuals with AIDS but no serious complications of illness, or with another disability and HIV, would receive this capitation rate.
4. Advanced AIDS rate: The UPL is \$2600 per member per month, including all medical services, pharmacy, and behavioral health. A subset of people with both CDC-defined AIDS *and* a history of certain opportunistic infections would receive this capitation rate.

For the remainder of this analysis we grouped the first two categories together because the UPLs are fairly similar and both rates would apply to individuals with HIV rather than AIDS.

To determine if EBNHC could accept these rates we first backed out the pharmacy costs from the UPLs because pharmacy costs were not included in the EBNHC data. The

Medicaid UPL includes a separate line for pharmacy, which we backed out of the total UPL. The revised UPLs without pharmacy costs were:

HIV	=	\$170.86 - \$189.41 per member per month
AIDS	=	\$420.10 per member per month
Advanced AIDS	=	\$1,850.00 per member per month

Second, we needed to adjust the UPLs for the state’s managed care “savings.” As noted above, the savings are different from state to state and also differ over time from one year to the next. For the purposes of this analysis, we assumed the state wanted a 5 percent managed care savings.

The revised UPLs without pharmacy costs and with the managed care savings became:

HIV	=	\$162 - \$180 per member per month
AIDS	=	\$399 per member per month
Advanced AIDS	=	\$1,795 per member per month

### **EBNHC Experience**

Next, we matched EBNHC patients to the categories established by Medicaid for the payment rates. The EBNHC data included a category for HIV that matched fairly well with the Medicaid grouping. Medicaid’s two AIDS groups were more problematic because the EBNHC data did not distinguish within AIDS other than by CD4 count (e.g. CD4<50, and CD4 50-200). For the purposes of this exercise, we compared the EBNHC experience with individuals whose CD4 count was less than 50 to Medicaid’s Advanced AIDS category. We did this with the understanding that the EBNHC group was likely to be at a more advanced stage of illness, and therefore more costly than the comparable Medicaid group. The unadjusted 1998 EBNHC per member per month costs for the potentially relevant categories were:

HIV	\$360 per member per month
AIDS	\$681 per member per month
CD4 < 50	\$1,503 per member per month

Finally, the EBNHC cost data needed to be adjusted to account for off-site or out-of-network services that were missing (e.g. home health) or not captured completely (e.g. off-site specialty care, out-of-network hospitalizations). We assumed that for all categories (HIV, AIDS and the two CD4 count groups) another 10 percent would be added to costs under a capitated system as a result of out-of-network service use. This has been the experience of other health plans, particularly in the early start-up period when enrollees are not as familiar with the provider network. We also adjusted the HIV category by 5 percent and the other categories by 10 percent for services not included in the EBNHC data that would be included under a capitated arrangement – home health, private duty nursing, and durable medical equipment.

**EBNHC Cost Adjustments:**

HIV	\$414 per member per month
AIDS	\$817 per member per month
CD4 < 50	\$1,804 per member per month

Our final comparison of the EBNHC cost experience, adjusted for uncaptured costs, Medicaid UPLs, and managed care savings, absent pharmacy costs is presented below.

<b>Category</b>	<b>EBNHC Experience</b>	<b>Medicaid UPL</b>
HIV	\$414	\$162-\$180
AIDS	\$817	\$399
CD4<50; Advanced AIDS	\$1,804	\$1,799