



Tri-County CHAIN

Report 2007-2

Components of Medical Care

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C.H.A.I.N. REPORT

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Study Overview

Optimal medical care for the HIV positive community can bring to mind a variety of health care models composed of several organizational and service components. These include but are not limited to range of onsite medical specialists, availability of ancillary services, organization of patient care, and cultural sensitivity. The presence or absence of these components varies across medical care organizations, depending on the setting or environment. For example, a private practice, community clinic, or a hospital setting could have similar care standards, but each could be organized in substantially different ways depending on the models employed. This study surveys the components of HIV medical care that distinguish medical care organizations in the Tri-County region. Linking results of the provider survey with data from the Tri-County CHAIN Cohort study, we then examine whether the presence of key organizational components of care is associated with changes in health outcomes for the adult HIV+ patients of the surveyed medical care organizations.

Key Findings

- Thirteen medical care organizations included in this study provided HIV medical care for 85% of the Tri-County CHAIN cohort.
- The Tri-County Health Committee worked with CHAIN staff to identified and organize components of care into the following ten categories: Non HIV specific medical specialty care, HIV care assessment, ancillary care, pharmacy relations, organization of services, availability of medical services, retention efforts, medical records, coordination of referrals, and cultural diversity.
- Five components—specialty care, ancillary services, specialized HIV clinic, pharmacy relations, and peers on staff—were identified for more detailed analysis of their association with patient health outcomes. Using the definitions presented in Tables 1 and 2, 6 of 13 (46%) of the medical care facilities offer a full complement of specialty services on site, 7 offer core ancillary services, 3 organized HIV care as a separate clinic, 4 use peer services, and 8 have a working relationship with a pharmacy.
- The components of care define few models of care that are common to multiple sites. Four and five components are present at just two facilities. In contrast, four facilities have either none or a single component present. Four facilities combine the presence of core medical specialties and ancillary services with working relationships with a pharmacy.
- The five components exhibited weak and inconsistent association with the study's several health outcomes—viral load, CD4 level, mental and physical health functioning or patterns of health seeking behavior—Use of emergency rooms, inpatient stays, adherence to antiretroviral medications, barriers in accessing medical care.

The Provider Survey on HIV Medical Care Components

Methodology

During the summer and fall of 2006 Tri-County CHAIN staff met with - the Health Committee of the Tri-County HIV/AIDS planning council to identify components of medical care that professional experience indicated were important for the quality of HIV Care and consequently patient outcomes. Based upon these discussion, CHAIN Staff designed a survey to gather information on the models of HIV medical care that were characteristic of medical care facilities located in Rockland, Putnam and Westchester Counties. The final survey instrument developed by CHAIN staff and reviewed by members of the Health Committee was a combination of 21 open-ended and structured questions. Survey topics covered onsite availability of medical specialists and social services, linkages to pharmacy, management of HIV patient flow, organization of services, linkages to offsite social service providers, and approaches to culturally competent provision of services for the ethnically diverse consumers in the region. A copy of this survey is available on request from Peter Messeri (pam9@columbia.edu).

Recruitment of study medical care facilities Eligible medical care facilities had to be located in the Tri-County region and mentioned by at least 1 percent of CHAIN cohort members (4 or more participants) as their current source of HIV medical care at the time of the second wave of Tri-County CHAIN interviews conducted in 2003. These criteria yielded thirteen agencies that provided medical care for 85% of the Tri-County cohort. Information collected by the Westchester County Department of Health's provider survey confirmed that these facilities included the major HIV medical care providers serving the Tri-County region. Eligible facilities were sent letters of invitations followed by telephone calls. All thirteen medical care facilities completed the survey. A list of the participating medical care organizations may be found in the appendix to this report. Participating medical care facilities were concentrated in Westchester County south of I-287. Four facilities were located in Westchester County north of I-287, and one facility was located in Rockland. The components of care survey was conducted during the winter and spring of 2007 by telephone and answered by either the study facility's executive director or director of medical care.

Provider Survey Results

Responses to the questionnaire were organized into ten components of medical care

1. Non HIV specific medical specialty care
2. Standards for HIV medical care
3. Ancillary services
4. Pharmacy relations
5. Organization of HIV care
6. Availability of medical services
7. Retention efforts

8. Medical records
9. Coordination of referrals
10. Cultural Diversity

Survey responses for each of these components are summarized below

1. Non HIV specific medical care or specialty care

With Health Committee's advise and information from AMA's current listing of licensed medical specialities, agency informants were asked which of the 13 specialists listed in Table 1 were available at their site. From this table, we see that each of the specialties except for neurology were onsite at 7 or more of the 13 study facilities.

2. Standards for HIV medical care

The quality of HIV medical care was assessed based upon routine administration of vaccines for preventive care (Qx 2), guidelines for transmission risk factor assessment (Qx 3), protocols for drug resistance testing (Qx 4), and adherence planning (Qx 5). Across all sites there was a high degree of consistency regarding the institution of clinic protocols relevant to each area. Immunization for preventable infections (e.g. Hepatitis, Influenza, Tetanus Pneumococcal) was universally reported to be routinely administered to all HIV+ patients. The great majority of facilities, 11 of 13 described protocol for assessing HIV transmission risk factors for HIV+ patients. Facilities were roughly divided between those that incorporated transmission risk assessments at all visits, at fixed intervals, annually or semi-annually, or at the discretion of the physician. The risk assessment was typically performed by a nurse or social worker. Drug resistance testing is also reported as a universal practice. All facilities performed resistance testing at initial visit, when a medical regimen is failing (an increase in viral loads) or a change in medication. About half the facilities also perform routine drug resistance testing, at six month or annual intervals, even when treatment is not failing. Virtually all facilities report providing patients with some form of staff intervention to support medication adherence. Although the details of adherence vary from site to site, the great majority of informants described protocols that were done on a periodic basis by either specially trained adherence counselor or staff responsible for patient case management.

3. Ancillary services

Availability of ancillary or wrap-around services was determined from questions 6 and 7. The first question was a checklist which, determined the presence of staff positions for various ancillary services (e.g case manager, substance abuse counselor, mental health counselor, etc.). A follow up question asked about the organizational ties between medical care and ancillary services. Information regarding ancillary services is summarized in Table 1. The presence of case managers, mental health professionals and treatment adherence counselors were the most frequent ancillary service providers available onsite. Each one was mentioned by a majority of study facilities. In response to question 7, which attempted to assess the level of "integration" between medical care and onsite ancillary services, five informants reported that a case manager met with each HIV patients at every visit and arranged referrals for needed onsite ancillary services. At 8 facilities, ancillary services are not regarded as part of normal HIV medical care. Patients need a specific referral from their doctor or nurse.

4. Pharmacy relations

Question 8 probed the working relationship with local pharmacies. Although only two of the study facilities have onsite pharmacies, informants at 6 other facilities describing working relationships with local pharmacies in which the facility providers routinely called in prescriptions and the pharmacy communicated back to the patient's medical providers regarding re-fills or possible problems with the medications.

5. Organization of HIV care

Two items assessed organization of HIV clinical services. Question 9 distinguished patient flow within the medical facility, and it divided the facilities into two categories. Those with a designated HIV clinic and those in which HIV care was mainstreamed into the facilities usual primary care or internal medicine. Question 10 determined the percentage of patients handled by type of provider either nurses, physician assistants, or medical doctors. A specialized clinic for HIV+ patients was reported by only 3 facilities. The medical care team at surveyed facility typically included a physician and nurses. At 77% of the sites, the physician saw their HIV patients at each visit. Advanced nurse practitioners (at three facilities) and physician assistants (at one facility) were seldom part of the medical care team.

6. Availability of Medical Care Services

Hours of operation and availability of health advice was obtained through four questions. Informants were asked about the (1) average length of time for each patient provider visit (Qx 11), (2) procedures to deal with off hour patients problems (Qx 13), (3) if a protocol exists to address problems during non business hours, lastly (Qx 13) (4) which staff members respond to patient telephone calls regarding advice and information (Qx14). The average length of a visits ranged between 15 and 45 minutes with the average length of a patient visit agencies under 30 minutes at the majority of facilities (N=7). Half of the facilities had night or weekend hours (N= 7), but extended hours were generally restricted to a single day or night. Protocols for responding to off-hour patient needs were handled in a variety of ways that ranged from simple protocols where patients are referred to covering physicians during off hours to elaborate systems involving on call non medical staff who intercept patients prior to their medical referrals.

7. Retention Efforts

Patient follow up and retention methods were documented in three questions. Informants were asked to describe the processes by which patients are reminded of upcoming appointments (Qx 15), how patients are contacted to reschedule missed appointments (Qx16) and whether an outside agency is involved in making contact with hard to reach patients (Qx 16a and b). All facilities report some protocol for retaining patients. All facilities send out letters or make telephone calls to remind patients of scheduled appointments. The facilities vary in efforts to retain patients who chronically miss appoints. All facilities make an effort to contact these patients through letters and telephone calls; five send staff on home visits and two specifically report turning over the most difficult cases to staff social workers.

8. Medical records

Accessibility of patient medical records was measured by two questions. One of which assessed if records were on site during appointments (Qx 17) and the other asked whether or not records were maintained electronically or on hard copy (Qx 17a). All providers said records were on site during patient visits and only 3 or 25% maintain electronic patient records.

9. Coordination of referrals

Informants were asked to describe their agency's referral procedure, identify whether there was a dedicated staff person to coordinate referrals for external services, and the follow-up process, if any, for external referrals (Qx 18). Eleven of the 13 study facility informants described various ways in which patients are assisted with arranging for services with other agencies. No clear differences emerge in how such coordination is accomplished. The large majority of facilities (N=9) report some procedure for following up outside referrals. Five facilities call patients to remind them of scheduled visits to outside agencies, and three may send a case manager to accompany the patient to a referral site. Four agencies followed-up referrals either during subsequent patient visits or direct communications with the agencies receiving the referrals.

10. Cultural Diversity

Three questions probed efforts to promote staff sensitivity and competency to care for a diverse patient population. The first question probed for possible ways peer volunteers or staff were involved in the care of HIV patients (Qx 19). Five facilities reported some intentional use of peer staff and volunteers to support HIV care. The two remaining questions asked about diversity issues with respect to percentage of non-English speaking patients (Qx 20) and organizational guidelines for serving a culturally diverse client base (Qx 21). Facilities ranged from none of their patients to 60% requiring translation services. Six or 46% of study facilities reported that 25% or more of their patients as not English speaking. Almost all facilities (N=11) report one or more strategies to improve staff cultural competency. Nine facilities have bilingual staff, five facilities require staff to attend cultural competency training programs, and three facilities have translators or use translation services..

Table 1. Distribution of medical specialties and inclusion criteria for medical components

Medical Specialty	Facilities with specialty		Reason for inclusion /exclusion
Dental	54%	included	Specific concerns for HIV patients
Gynecology	77%	included	Specific concerns for HIV patients
Internal Medicine	100%		no variance among providers
Neurology	23%		too few providers have the service
Obstetrics	69%		limited value for our sample
Ophthalmology	69%		limited information in our sample
Laboratory Services	85%	included	Specific services for HIV patients
Pediatrics	70%		limited in value for our sample
Psychiatry	69%	included	MCS scores indicate a need for mental health services (1)
Radiology	69%		limited in value for our sample
Surgery	54%		limited in value for our sample
Urgent Care	54%		Not specific to HIV care/ widely available service
Urology	54%		limited in value for our sample

Table 1. (Continued) Distribution of ancillary services and inclusion criteria

Ancillary Service	Facilities with service(N=13)		Reason for inclusion or exclusion in this analysis
Case manager	77%	included	Major component of HIV care
MSW	46%		Included in Case manager
Nutritionist	38%		limited our working definition
Health educator	46%		limited our working definition
Drug treatment counselor	30%		too few providers with service
Harm reduction counselor	23%		too few providers
Mental health professional	77%	include	Component of interest in HIV care
Treatment adherence	54%	included	Component of interest in HIV care
Home care/ Visiting nurse	15%		too few providers with service
Cobra case manager	23%		too few providers with service
Out reach worker	46%		limited our working definition

Medical Components and Health Outcomes.

Measuring Medical Care Components

For purposes of investigating the relationship between components of medical care and patient health outcomes, we narrowed the number of components of care to five: medical specialties, ancillary services, pharmacy relations, organization of HIV care, cultural sensitivity. The remaining five were eliminated either because they were very uniform across sites (standards of HIV care) or there was no sharply delineated inter-agency differences (availability of medical services, retention efforts, medical records, coordination of referrals). The five components of care were selected for the health outcomes analysis: set of core HIV medical specialties, selected ancillary services, pharmacy relations, peers presence. Table 2 presents operational definitions for the presence or absence of each component.

Table 3 summarizes the percentage of agencies in which each of the five components is present and percentage of all individuals interviews receiving medical care at facilities with each component. At one extreme 62 percent of facilities that treat 81 percent Tri-County cohort have some level of working relationships with either an on or off site pharmacy. At the other extreme, only three facilities that served 37% of the Tri-County cohort provide HIV care in a specialized clinic. When we examine the presence of the combination components, few common models of care emerge. Two facilities have four and five components present. Three facilities have no components present and a fourth has only a working relationship with a pharmacy. Among the 6 facilities with three or more components present, four combine the medical care specialties, onsite ancillary services and working relationship with a pharmacy.

Table 2. Care Component Measures and definitions	Component	Definition
Which of the following medical specialities I am about to describe are available at your office?	Medical Specialities	The agency has all of the following: Dental Gynecological Laboratory Psychiatry
Dental, Dermatology, Gynecology, Internal Medicine specialties, i.e., Gastrointestinal or Cardiovascular , Neurology, Obstetrics, Ophthalmology, Laboratory Services, Pediatrics, Psychiatry, Radiology, Surgery, Urgent Care, and Urology?		
For which of the following specific services is there a dedicated staff position at your office?	Ancillary Services	The agency has all of the following dedicated positions: Case manager Mental Health Professional Treatment adherence counselor
Case manager, MSW, Nutritionist, Health educator, Drug treatment/Substance abuse counselor, Harm Reduction counselor, Mental health professional, Treatment adherence counselor, Home care / Visiting nurse, Cobra case manager, Outreach worker?		
Would you say that Pharmacists are in contact with your office staff regarding the status of medication delivery or refills for your HIV patients? Please describe how this occurs.	Pharmacy relations	The agency has this relationship with a pharmacy(ies)
In what capacity does your office utilize peers, whether staff or voluntary, in the care of HIV patients?	Peers	The agency has peers on staff or as volunteers
Do you have a separate HIV-specialty clinic or do HIV clients attend the same clinic as other patients?	HIV specialized medical care	Yes to question

Table 3. Medical components used in health outcomes

Component	Definition	Percent of Providers with service (n=13)	Percent of cohort attending primary care facilities with this service.... (n=1095)
Specialties	Dental, Gyn, laboratory & Psychiatry services on site	46% (N=6)	79%
Ancillary services	Mental health professional, case manger and a treatment adherence counselor on site	54% (N=7)	73%
Organization of HIV Care	HIV care provided by specialized Clinic	23% (N=3)	36%
Pharmacy relations	having a working relation with a local pharmacy(s), whether on site or not	62% (N=8)	81%
Peers on staff	Provider expressed using peers as paid or voluntary staff	31% (N=4)	27%

Measuring Patient-level Variables

Tri-County CHAIN Cohort Interviews

Patient-level data for this study were obtained through face-to-face interviews with HIV+ residents living in the Tri-County region. The original Tri-County cohort comprised 398 participants randomly recruited during 2002 from 32 sites with HIV clients dispersed throughout Westchester, Putnam and Rockland counties. An additional 82 participants were recruited from these clinics between 2004 and 2006. Details on recruitment and sampling methods are outline elsewhere¹. Between 2002 and 2006 eligible individuals were interviewed at approximately one year intervals, up to four times. They completed 480 baseline interviews and 775 follow up interviews. We excluded 160 interviews for this analysis, when the participant was not receiving medical care at one of the 13 study medical care facilities

Patient Variables

Patient composition of study facilities was measured with respect to gender, ethnicity, age, HIV risk and place of residence. The HIV risk variable was composed of four groups, men who have sex with men (MSM), problem drug users (PDU), MSM&PDU, and individuals not otherwise identified in these groups (Other). Problem drug users included cohort members who reported ever using drugs 3 or more times per week for one month or more. Other was comprised of heterosexual risk group. For place of residence, the Tri-County region was divided into three regions: Rockland, Putnam and Westchester north of I-287, and Westchester south I-287.

Health outcomes included measures of health status, health behavior and health services utilization. Measures of HIV health status were a four-level grouping of CD4 T-cell counts and three-level viral load classification. We also examined continuous measures of general physical and mental health status that are constructed from a multi-item instrument that has been extensively validated in HIV patient populations. These scales have values that may range between 1 and 100, with higher values indicating better physical and mental well being. Health behavior measures included adherence to medications and barriers in accessing medical care. Participants were categorized as non adherent to antiretroviral medications if in the previous two days they were off schedule or missed any of their HIV pills, or if within the last six months they sometimes skipped a medication dose or they forgot to take their pills. Participants were also divided between those who did or did not experience one or more barriers to medical care. Use of expensive medical services was measured by two binary variables, one or more emergency room stays and a day or more inpatient stay in the six months preceding the interview.

For statistical analysis, we pooled observations across all rounds of interviews (any particular cohort member could contribute between one and four interviews). We compared the distribution for each demographic characteristic and health outcome, for all patients from medical care facilities in which each medical component was present or absent. Tests of statistical significance were performed to assess whether differences in means between groupings of patients from medical care organizations with and without a medical component were meaningful. Comparison of cross sectional differences may be a misleading basis to assess quality of care as clinics may serve patient populations with very different health profiles when patients first enter care. For example, medical care providers that offer the most comprehensive care may also attract patients with the most advanced cases of AIDS. Therefore, comprehensive medical care may be erroneously associated with poorer health outcomes because facilities with this component may treat patients with more advanced HIV disease. To obtain a more valid assessment of the possible effects of each medical care component, we further examined change in CD 4 and viral load levels, physical and mental health status between successive interviews for

individuals who had been patients of a clinic for a year or longer.

Findings

Table 4 compares the demographics of patients receiving care at facilities with and without each medical component. Tables 5 and 6 presents findings for each of the health outcomes measures. Table 7 reports changes in the health status measures. When reading tables 4,5 and 6, the percentages are tabulated as column percentages. The percentages for a variable within each column of the table add up to 100%. The presence of a medical component is associated with a patient characteristic when the column percentages differ between the Yes and No columns. For example from Table 4, females constitute 55% of patients receiving HIV medical care at medical facilities with onsite medical specialists, but only 44% of patients of facilities without onsite specialists. We can conclude that the onsite presence medical specialists is associated with higher concentration of women patients. The asterisk indicates that we can interpret this difference as a greater than chance association.

There are few demographic differences between clinics with and without each of the five medical care components (Table 4). There presence of each medical care component is a associated with a slight tendency towards increased concentration of minority patients. This trend is most pronounced for facilities with a specialized HIV clinic and those that include HIV+ peers among their paid and volunteer staff. Facilities providing core ancillary services and peer services have increased proportions of problem drug users among their patients. Possibly the most notable differences is the spatial clustering of facilities with different medical care components, although the nature of the geographic distribution is not easily summarized. Medical care facilities with onsite access to core ancillary services and peer staff are concentrated in the urbanized, southern half of Westchester clinic. Medical care facilities in northern Westchester and Putnam Counties are distinguished by above average tendency to have onsite ancillary services. The medical care facilities that service HIV+ residents of Rockland county, which has the smallest number of CHAIN cohort members among the three regions, are more likely than facilities in other regions to operate specialized HIV clinics, have core non HIV medical specialists and have developed a working relationship with an onsite or local pharmacies.

Health outcomes displayed in Tables 5, 6 and 7 show minimal and inconsistent associations with positive health outcomes. Table 5 suggests a very slight tendency for individuals at more advanced stages of HIV, as measured by low CD4 Counts and elevated viral loads receive their care from facilities where non HIV medical care specialist are present or where clinics have a working relationship with a pharmacy. General mental and physical functioning of patients differ little with respect to the presence or absence of medical components. Patients of medical care facilities where medical specialties are present or clinics with a working relationship with a pharmacy give a very slight indication of lower rates of adherence to HIV medical regimens. Table 6 finds no association between the presence of medical components and use of expensive medical care services as indicated by visits to emergency rooms or inpatient hospital stays.

Table 7 presents results of our most rigorous assessment of the possible health benefits of medical care components. In this table we present the average of individual change between successive interviews in the four health status measures. Positive change indicates improved health status. There are no significant trends relating medical care components with change in CD4 counts, viral loads or mental health functioning. The presence of medical care components are consistently associated with improvements in physical health status,. These generally weak associations, rise to a level of marginal statistical significance for the presence of medical specialties and having a working relationship with a local or onsite pharmacy. Even at their largest these average change in clinic level outcomes are very small relative to the variation in individual change in physical health status that is approximately a 12 point difference.

Table 4. Patient Demographics by components of HIV medical care

Demographic	Medical Care Components (Percent distribution of patient characteristics by presence or absence of each component)									
	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Gender										
Female	55%*	44%	52%	54%	57%	50%	54%	48%	55%	51%
Male	45%	56%	48%	46%	43%	50%	46%	52%	45%	49%
Ethnicity										
White	18%	18%	16%	23%	15%*	19%	17%	20%	10%+	22%
Black	53%	60%	55%	53%	46%	59%	54%	57%	59%	52%
Latino	27%	19%	27%	20%	34%	21%	27%	20%	25%	23%
Other	2%	3%	2%	4%	4%	1%	2%	3%	1%	3%
Age										
mean age	45*	49	46.0	45.7	46.0	45.8	45.3	48.3	47.1	45.2
Risk factor										
MSM	14%	13%	13% +	15%	13%	14%	14%	14%	8%*	17%
Drug use	41%	51%	46%	33%	46%	41%	42%	47%	57%	35%
MSM & Prob Drug user	4%	5%	4%	4%	3%	5%	4%	5%	4%	4%
Other	41%	31%	36%	48%	37%	41%	41%	33%	31%	44%
	Medical Care Components									

	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Geographic area										
resides in urban Westchester	55%*	68%	63%	43%	61%*	56%	53%*	75%	74%*	48%
resides in Suburban Westchester/Putnam	27%	31%	34%	14%	5%	40%	29%	24%	26%	30%
resides in Rockland	18%	1%	3%	43%	34%	4%	18%	1%	<1%	22%

Note: + p<.10 *p<.05 ** p<.001 *** p<.000

Table 5. Health status and behaviors by components of HIV care

Health Status	Medical Care Components (Percent distribution of patient characteristics by presence or absence of each component)									
	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
CD4 Count										
<=200	21%**	15%	20%	18%	23%	18%	21%	16%	19%	20%
201-350	21%	18%	20%	20	21%	20%	21%	19%	20%	20%
350-500	26%	29%	27%	26	24%	28%	26%	31%	26%	27%
500+	32%	37%	33%	35	32%	34%	33%	35%	34%	33%
Viral load										
10,000+/bad	20%**	14%	20%	14%*	19%	18%	19%+	15%	19%	18%
9999-400	26%	18%	24%	26%	28%	23%	26%	19%	24%	25%
400</good	54%	68%	56%	60%	53%	59%	55%	66%	57%	57%
Mental Health										
mean MCS score	41.3	43.1	41.3	42.7	41.1	41.9	41.4	42.6	41.0	42.0
Physical Health										
Mean PCS score	43.0	41.6	42.4	43.6	42.8	42.7	43	41.6	42.2	43.0
	Medical Care Components									

	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Adherence to HIV medications										
adherent to HIV medications	65%*	73%	66%	68%	68%	66%	65%+	72%	66%	67%
not completely adherent	35%	27%	34%	32%	32%	34%	35%	28%	34%	33%
Expressed barriers to care										
Expressed barriers to care	17%	13%	16%	17%	17%	15%	17%	13%	15%	16%
No expressed barriers to care	83%	87%	84%	83%	83%	85%	83%	87%	85%	84%

Note: + p<.10 *p<.05 ** p<.001 *** p<.000

Table 6. Health service utilization by components of HIV care

Health Service Utilization	Medical Care Components (Percent distribution of patient characteristics by presence or absence of each component)									
	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Emergency room use										
Used emergency room services	34%	34%	35%	33%	37%	33%	34%	34%	41% *	30%
No emergency room services	66%	66%	65%	67%	63%	67%	66%	66%	59%	70%
Inpatient Hospital stay										
Reported in patient hospital use	21%+	16%	21%	18%	21%	19%	21%	17%	23%	18%
No inpatient hospital use	79%	84%	79%	82%	79%	81%	79%	83%	77%	82%

Note: + p<.10 *p<.05 ** p<.001 *** p<.000

Table 7. Health status change by components of HIV care

health status	Medical Care Components (Average change scores for the presence and absence of each component)									
	Specialties		Ancillary Services		HIV Clinic		Pharmacy Relations		Peers	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	N
CD4 count										
Mean Change in CD4 groups*	.0	-.01	.04	-.1	-.29	.08	.0	.02	-.05	.04
viral load										
Mean Change in viral Load groups*	.03	-.04	.02	-.02	.01	.02	.03	-.06	.01	.02
Mental Health										
mean MCS score change*	-1.2	-.2	-.80	-1.37	-.97	-.94	-1.3	.47	-1.03	-.90
Physical Health										
Mean PCS score change*	.1+	-2.2	-.20	-.68	-.06	-.46	.1+	-2.2	.36	-.30

*positive values indicate improved health status

DISCUSSION

This study was motivated by a general policy interest to better understand the connection between the organization or models of medical care and patient health outcomes. Rather than attempting to specify directly what holistic models of medical care might look like, we re-framed the question in a manner more amenable to empirical study. We asked what were the organizational components or aspects of HIV care that our panel of HIV health care specialists thought might make a difference in successful treatment of HIV. We then translated these conceptions into a short questionnaire to document the presence or absence of each component as well as their variable features. Since we wanted to give our informants as much latitude to describe each component as fully as possible almost all our questions included an open ended component that we field coded for later statistical analysis. The results of our study are two-fold. The first asked what do these components look like as refracted through our survey and the second asked does the presence and absence of selected components result in measurable differences in patient-level health outcomes.

An analysis of the questionnaire distilled five components: onsite availability of selected medical specialists, onsite availability of core ancillary services, working relationship with a pharmacy, and whether or not HIV care was provided in a specialized clinic, and the employment of HIV+ staff or use of volunteers to provide peer presence in the delivery of HIV care. In interpreting study findings, we do not rule out that there might be other components of care that matter, but these were the ones for which we had the best data for making reliable distinctions. We would further caution that to operationally define the presence or absence of each component entailed considerable simplification from the richness of their actual organizational forms in the facilities studied. The difficulties of evaluating the impact of one component at a time, underscore the very much greater challenges of attempting to compare the limited number of facilities in the study with respect to more holistic, multi-component models of care.

In summary, the analysis failed to uncover any substantively meaningful pattern linking the presence of any single component to various medical care and health outcomes. Several reasons for the null findings may be advanced. The number of facilities, 13, was too small for reliable statistical analysis. Possibly, but it would have been more encouraging if consistent trends, though not statistically significant were evident. This was not the case. We of course, as described above, might have selected the wrong components. If so, and we believe that the way medical is organized matters, this study might stimulate a re-examination of what dimensions we should be looking at and possibly better ways to measure them. Another reason for the null finding is the absence of sharp differences in average health outcomes across study facilities. For all the outcomes examined, we find that the within clinic patient variation is considerably larger than the average difference between sites. For example, the variation in CD4 counts among patients within each facilities is about 10 times larger than the variation in average CD4 counts across facilities. Similarly the range of patient visits for inpatient care across facilities fluctuates in a very small range of less than half a percent. Turning to one final example, individual variation on the physical health functioning scale is about 12 points compared to the inter agency variation is an order of magnitude of 1.0. That is to say, the medical components may not have a measurable effect on health outcomes because the overall inter-agency variation is very small to begin. Furthermore while the data might suggest that the getting the measured services onsite doesn't matter for patient, it should not be concluded that the component services are irrelevant to care. It is possible and entirely likely that patients at medical sites without a component, may nonetheless access needed medical specialists, ancillary services, pharmacy assistance, and peer support from other agencies. Lastly, the uniformity of agency-

level outcomes may reflect the fact that all study facilities report similar standards of HIV care. This study has presented evidence on differences and similarities along major dimensions of the organization of care among major providers of HIV medical care in the Tri-County Regions. It also points to the challenges of devising methodologically sound ways to assess the relative benefits of different models of medical care.

Appendix 1

Tri-County Providers participating in the components of Medical Care Survey.

1. Mount Vernon Hospital, Mount Vernon, - Westchester
2. Open Door Family Medicine, Ossining, - Westchester
3. Hudson River Health Care, Peekskill, - Westchester
4. Rockland County Department of Health, Pomona - Rockland
5. Sound Shore Medical, New Rochelle, - Westchester
6. Saint Joseph's Community Clinic, Yonkers, - Westchester
7. Saint John's Hospital, Park Pavilion Yonkers, - Westchester
8. VA Hudson Valley, Montrose, - Westchester
9. Westchester Medical Center, Valhalla, - Westchester
10. Mount Vernon Neighborhood Health, Mount Vernon, - Westchester
11. Thomas Rush, MD, Briarcliff Manor, - Westchester
12. Scarsdale Medical Group, Greenburgh, - Westchester
13. White Plains Hospital Center, White Plains, - Westchester

2. Abramson, D., Bennet, B., Tri-County CHAIN Field Notes: Recruiting a longitudinal cohort. Nov 2002 Tri-County CHAIN Reports 2002-2.
3. Abramson, D., Berk, S., Service Gaps update:2005. 2005 Tri-County CHAIN Reports 2005-5.