ORIGINAL ARTICLES

Clinic Services for Persons with AIDS

Experience in a High-Prevalence State

Leona E. Markson, ScD, Barbara J. Turner, MD, MEd, Jim Cocroft, MA,
Robert Houchens, PhD, Thomas R. Fanning, PhD

OBJECTIVE: To profile characteristics of clinics caring for persons with advanced HIV infection.

DESIGN AND SETTING: Survey of clinic directors in New York State.

PARTICIPANTS: Newly diagnosed Medicaid-enrolled AIDS patients in New York state in federal fiscal years 1987–1992 ($n = 6,184$) managed by 62 HIV specialty, 53 hospital-based general medicine/primary care, 36 community-based primary care, and 28 other clinics.

MEASUREMENTS AND MAIN RESULTS: Telephone survey about clinic hours, emphasis on HIV, staffing, procedures, and directors' rating of care. Estimates of the number of newly diagnosed, Medicaid-enrolled AIDS patients treated in surveyed clinics were obtained from claims data. We found that community-based clinics were significantly more likely to have longer hours, a physician on call, or to accommodate unscheduled care than were hospital-based general medicine/primary care or other types of clinics. Compared with HIV specialty clinics, general medicine/primary care clinics were less likely to have HIV-specific care attributes such as a director of HIV care (98% vs 72%), multidisciplinary conferences on HIV care (83% vs 32%), or a standard initial HIV workup (90% vs 70%). Of general medicine/primary care clinics, most (83%) were staffed by residents and fellows compared with only 68% of HIV or 25% of community-based clinics ($p < .001$). General medicine/primary care clinics were less likely than community-based clinics to perform Pap smears (75% vs 94%) or to have case managers on payroll (21% vs 81%).

CONCLUSIONS: In this sample of clinics, hospital-based general medicine/primary care clinics managing the care of Medicaid enrollees with AIDS appeared to have more limited hours and availability of specific services than HIV specialty or community-based clinics.

KEY WORDS: AIDS care; clinic services; organization of care; primary care.

J GEN INTERN MED 1997;12:141–149.

known about the ambulatory services that have evolved to meet this need. Clinic-based care is an important source of ambulatory care for persons with advanced HIV disease. From the early 1980s through the 1990s, the proportion of HIV-infected patients treated in clinics rose rapidly.³ In addition, persons with advanced HIV infection appear to switch from private physician to clinic care when serious complications develop.^{4,5} Thus, clinics often provide care to the more complex HIV-infected patients and must coordinate the diverse services required by these individuals.

This study describes the array of services offered by 179 clinics managing the care of New York State Medicaid-enrolled patients with advanced HIV infection. Previous analyses of patterns of ambulatory care by HIV-infected, New York State Medicaid enrollees have revealed that care is broadly distributed across diverse specialty clinics.⁴ The data from this survey offer policy makers, program directors, and clinicians an examination of the relative strengths and weaknesses of specific services and organizational features of hospital-based general medicine/primary care and other clinics managing the care of HIV-infected patients. As New York is a major focal point of the AIDS epidemic, this analysis offers insights into ways that clinic services have evolved to meet the needs of large numbers of patients with advanced HIV infection.

METHODS

We developed a survey on services available in clinics serving as the usual source of care for persons with advanced HIV infection or AIDS. Clinics were selected for the

Received from the Center for Research in Medical Education and Health Care, Jefferson Medical College, Philadelphia, Pa. (LEM, BJT, JC); the MEDSTAT Group, Inc., Santa Barbara, Calif. (RH); and the New York State Department of Social Services, Albany (TRF).

Funded by the Agency for Health Care Policy and Research, Department of Health and Human Services, Public Health Service grant R01 HS06465-04.

Address correspondence and reprint requests to Dr. Markson: Merck & Co., Inc., P.O. Box 4, WP39-104, West Point, PA 19486-0004.

From the early years of the HIV epidemic, concern has been voiced about the adequacy of ambulatory services for persons infected with HIV.¹ The importance of ambulatory care for HIV-infected persons has grown as their use of costly inpatient care has declined,² yet little is

survey from analyses of the New York State Medicaid HIV/AIDS Research Data Base, which has enrollment data and longitudinally linked claims for health care of individuals meeting a tested screen for AIDS.^{6,7} According to retrospective analyses, surveyed clinics were the usual source of care (>50% of visits) in 1990 for at least one Medicaid enrollee, who at the time was in the year before, or 6 months after, his or her initial AIDS diagnosis. The date of first AIDS-defining diagnosis was determined using the Severity Index for Adults with AIDS.^{8,9}

To be identified as a clinic, a facility must be certified under Article 28 of the New York State Public Health law and characterized as a hospital outpatient department or independent diagnostic and treatment center that provides services by or under the supervision of a qualified physician. Although Article 28 has numerous provisions, key requirements are that clinic services, billing, and staff compensation are the responsibility of the facility rather than the physicians within the facility. In addition, the organization and management structure of a clinic are so extensive as to exceed the usual space requirements of a private medical office.

We focused on clinics delivering longitudinal medical care to patients so we did not study emergency departments or clinics specializing in radiology, pathology, anesthesiology, methadone maintenance, or psychiatry. Of 197 clinics that met our study criteria, interviews were completed for 179 sites (91%). Eighteen clinics were not surveyed either because we could not obtain an appointment for the survey (13 sites) or because the clinic director refused to participate (5 sites). Nonparticipating clinics included both high- and low-volume HIV providers and were not geographically clustered in any one area of New York. Therefore, we have no reason to believe that the exclusion of these sites would bias our results.

The New York State Medicaid HIV/AIDS Research Data Base for federal fiscal years 1987–1992 offers information on health care of 21,619 patients who survived at least 6 months after AIDS diagnosis. Of these, 11,686 (54%) had a usual source of care (>50% of visits with a minimum of two) in the 3 months after AIDS diagnosis. Excluding individuals younger than 13 years of age (pediatric AIDS) or older than 60 (because the AIDS case finding is less reliable) and persons diagnosed before 1987, we identified 9,115 with a usual source of care. Of these, 7,656 (84%) had a clinic as their usual source of care.

The Survey Instrument

The survey, conducted between December 1993 and March 1994, was administered as a structured telephone interview averaging one-half hour to complete. A panel of five experts in the care of persons with HIV provided advice on the content of the survey. For most survey questions, the medical director was asked about the status of the clinic and how long specific clinic features had been

present. The survey inquired about access to care (e.g., clinic hours, how unscheduled care is handled), characteristics of the patient population served (e.g., insurance status), physician and staffing characteristics (e.g., residents and fellows, case management, nurse practitioners), and availability of selected procedures and treatments (e.g., Pap smears, intravenous infusions, skin biopsies). Focus on HIV/AIDS care was ascertained through questions on the presence of a clinician director of HIV/AIDS services, the proportion of the patient population that was HIV-infected, enrollment of patients in HIV-related clinical trials, use of a standard protocol for the initial HIV workup, use of multidisciplinary conferences to discuss HIV care, and comanagement of AIDS-related complications with other physicians or clinics.

Directors were asked whether they usually (more than 50% of the time) comanage with other clinics or physicians the posthospitalization ambulatory care of patients with *Pneumocystis carinii* pneumonia (PCP), tuberculosis (TB), other serious opportunistic infections, Kaposi's sarcoma, or cervical cancer. Directors were also asked about the proportion of the clinic's HIV population whose primary care provider was at another site of care. Directors were also asked to rate the comprehensiveness, continuity, coordination, availability, and accessibility of HIV and general services provided by their clinic on a scale of 1 (low) to 10 (high). In this article, "availability" refers to the existence of selected services, and "accessibility" refers to whether or not patients are able to receive care when they need it. The survey instrument was pretested by in-depth interviews with clinic directors in New York and Philadelphia regarding the survey content, wording, and length.

Analysis

Clinics were first classified into the following: (1) hospital-based general medicine or primary care, (2) HIV specialty; (3) independent, free-standing (community-based), and (4) other hospital-based clinics, including surgery and obstetrics/gynecology. The hospital-based general medicine/primary care clinics included 43 staffed by general internists and 10 with other primary care practitioners likely to be in family practice. The HIV specialty clinics included infectious disease and sites that directors described as HIV/AIDS clinics, including but not limited to either hospital-based clinics or sites in designated AIDS center hospitals.¹⁰ The surgery and obstetrics/gynecology clinic characteristics are reported together because of their small sample sizes ($n = 15$ and $n = 13$, respectively).

Descriptive statistics are reported on elicited characteristics of clinic care. Variations in clinic attributes are described across the four types of clinics described above. The χ^2 test was used to assess differences across categorical variables. Because of clustering of the responses of the directors' ratings of clinic attributes on a 10-point scale, we used the χ^2 statistic to compare the proportion

with a high self-rating (defined as 8–10) versus a low self-rating (1–7). The results are discussed in terms of the five major domains of the survey: (1) access to care, (2) emphasis on HIV/AIDS care, (3) clinic staffing, (4) availability of selected procedures and treatments, and (5) director ratings of characteristics of clinic care.

RESULTS

The specialties of the 179 clinics completing the survey were distributed as follows: 30% hospital-based general medicine/primary care, 35% self-designated HIV/AIDS or infectious disease, 20% community-based or independent, free-standing, and 16% other types including surgery and obstetrics/gynecology. The majority (84%) of HIV-specialty clinics were hospital-based. In the 1987–1992 federal fiscal years, 6,184 newly diagnosed New York State Medicaid-enrolled AIDS patients used a surveyed clinic for the majority of their ambulatory care, representing 81% of those on the New York State HIV/AIDS Data Base with a clinic as their usual source of care during study years. These patients were distributed within the various specialty clinics as follows: 44% in hospital-based general medicine/primary care clinics; 50.8% in HIV specialty clinics; 4.8% in community-based clinics, and 0.5% in other clinics. Across all surveyed clinics, the directors estimated that nearly two thirds of their clinic patients were covered by Medicaid; this proportion did not vary significantly by clinic type ($p = 0.12$). When the clinic directors estimated the proportion of their HIV-infected population that was covered by Medicaid, the median was 85% across all sites.

Access to Care

As shown in Table 1, access to evening or weekend hours varied substantially by type of clinic, with community-based clinics more likely to offer extended hours. Clinics were open an average of 39 hours per week, with

community-based clinics open the longest (mean of 52 hours per week). General medicine/primary care sites averaged 41 hours (standard deviation 15). Although half of the clinics offered some hours after 5 PM, fewer than one quarter had weekend hours (Table 1). On-call physicians were available for almost three quarters of the clinics, but this coverage was greatest in obstetrics/gynecology and surgery clinics. No significant difference was observed in the availability of telephone consultations for unscheduled care during office hours or the ability to make appointments within 48 hours for new symptoms, such as persistent cough. Obstetrics/gynecology and surgical clinics were most likely to refer unscheduled care during office hours to an emergency department. However, slightly more than one third of general medicine/primary care clinic directors also acknowledged that emergency department services may be necessary for unscheduled care because their clinics had no available appointments, compared with only 17% of community-based clinics.

Emphasis on HIV/AIDS Care

Emphasis on HIV/AIDS care varied substantially across sites. Overall, one third of the clinic patients were HIV-infected, but predictably this proportion was highly associated with clinic type ($p < .001$). On average, HIV-infected patients constituted 67% of the caseload of HIV specialty clinics, compared with 16% of general medicine/primary care, 7% of community-based, and 9% of other clinics. As shown in Table 2, less than one third of general medicine/primary care clinics had a clinician responsible for overseeing or directing HIV/AIDS care on-site compared with nearly all HIV specialty clinics and more than half of the community-based clinics. Overall, most sites (61%) had multidisciplinary conferences to discuss the care of HIV/AIDS patients, but these were held by only approximately one third of the general medicine/primary care clinics compared with 85% of HIV specialty and 75% of community-based clinics. Most surveyed clinics (77%)

Table 1. Proportion of Clinics with Specific Access to Care Attributes

Access to Care Attribute	Type of Clinic, %*				Total	p Value
	General Medicine	HIV Specialty	Community-Based	Other		
Evening hours	45.3	48.4	80.6	28.6	50.8	<.001
Weekend hours	20.8	12.9	50.0	14.3	22.9	<.001
Hours increased since 1986	57.7	82.3	45.7	42.9	61.6	<.001
Physician on-call after hours	66.0	64.5	86.1	89.3	73.2	.02
Telephone consultation for unscheduled care during hours	88.5	87.1	91.4	81.5	87.5	.70
Appointments within 48 hours for new symptoms	86.5	75.8	94.3	80.8	83.4	.11
Clinic usually crowded so emergency dept. may handle unscheduled care	38.5	40.3	17.1	66.7	39.2	.001
Refer unscheduled care to another clinic	17.7	9.7	11.4	59.3	20.0	<.001

* Clinics are classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

Table 2. Proportion of Clinics with Selected Attributes Emphasizing HIV/AIDS Care

HIV/AIDS Care Attribute	Type of Clinic, %*				Total	p Value
	General Medicine	HIV Speciality	Community-Based	Other		
HIV/AIDS director						
In clinic	28.3	83.9	58.3	28.6	53.6	<.001
In institution only	43.4	14.5	8.3	64.3	29.6	
Not available	28.3	1.6	33.3	7.1	16.8	
Multidisciplinary team conferences on AIDS	32.1	85.3	75.0	44.4	61.0	<.001
Standard initial HIV workup	69.8	90.3	86.1	46.4	76.5	<.001
Enrollment in clinical trials						
On-site	24.5	59.0	19.4	21.4	34.8	<.001
Off-site	18.9	19.7	27.8	7.1	19.1	
Not available	56.6	21.3	52.8	71.4	46.1	
Comanagement of						
<i>Pneumocystis carinii</i> pneumonia	60.4	25.8	52.8	96.3	52.3	<.001
Tuberculosis	69.8	48.4	68.6	92.6	65.4	.001
Other serious infections	69.8	46.8	66.7	92.6	64.6	<.001
Kaposi's sarcoma	78.9	75.8	80.0	92.3	80.0	.36
Cervical cancer	78.9	79.0	77.1	66.7	76.7	.61

*Clinics are classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

had either written or standard clinical criteria for the initial workup of a patient newly diagnosed with HIV. Again, general medicine/primary care clinics were less likely to have such a protocol than HIV or community-based clinics. Almost 60% of HIV clinics had on-site enrollment of patients in HIV-related clinical trials, while more than half of general medicine/primary care clinics and community-based clinics did not have access to trials either in the clinic or elsewhere in their institutions.

Most clinics reported that patients with Kaposi's sarcoma and cervical cancer were comanaged with the input of other specialty clinics or physicians. The use of comanagement for these conditions did not vary significantly by type of clinic. Comanagement of PCP, TB, and other serious infections was reported by more than half of the clinics, but was less common for HIV clinics, as expected. The directors reported that the proportion of symptomatic HIV/AIDS patients seen in the clinic whose primary provider was located outside the clinic varied from a low 9% for HIV clinics to a high of 67% for other clinics. As shown, surgery and obstetrics/gynecology clinics were the most deficient in all of these HIV-specific clinic attributes.

Clinic Staffing

Table 3 displays the availability of specific types of physicians within study clinics. Approximately two thirds of the clinics had residents or fellows involved in clinic care, but these physicians-in-training were present in most general medicine/primary care clinics compared with only a quarter of community-based clinics. On a typical clinic day, half of the directors replied that their clinic had five or fewer physicians seeing patients (not shown). General internists practiced in most of the general medi-

cine/primary care, HIV, or community-based clinics. Infectious disease specialists staffed most HIV specialty clinics. Physicians in other internal medical specialties were generally present in less than one third of clinics. Obstetrics/gynecology specialists were available for one half-day or more per week in only approximately one third of general medicine/primary care clinics compared with 67% of community-based clinics. Neurologists were present in more than one third of general medicine/primary care clinics, the highest proportion of all clinic types. However, the proportion of pediatricians in general medicine/primary care clinics was half that reported by community-based clinics. Not shown, approximately one fifth of the clinics had no access to internal medicine subspecialties or to infectious disease specialists at their institution or facility.

Directors were asked whether the specialists practicing in their clinic typically provided primary as well as specialty care. They replied that most infectious disease specialists (87%), obstetrician/gynecologists (73%), and pediatricians (89%) delivered primary care services as well as specialty care. However, the directors reported that physicians in most other specialties were predominantly delivering specialty care.

Table 4 describes the availability of other nonphysician providers within the clinic and institution. Most clinics (76%) had physicians' assistants (PAs) or nurse practitioners (NPs) and use of these providers did not vary significantly by type of clinic. In community-based clinics, PAs or NPs were more likely to act as primary providers for their own panels of patients than in general medicine/primary care of HIV clinics. Social workers and nutritionists were available in most clinics (83%), but most commonly in HIV clinics. However, substance abuse counse-

Table 3. Proportion of Clinics with Specific Physician Staff at Least One Half-Day per Week

Physician Staff	Type of Clinic, %*				Total	p Value
	General Medicine	HIV Speciality	Community-Based	Other		
Residents or fellows	83.0	67.7	25.0	85.7	66.5	<.001
General internal medicine	81.1	77.1	88.9	14.3	70.8	<.001
Infectious disease	24.5	73.8	16.7	10.7	37.6	<.001
Hematology/oncology	32.1	27.9	11.1	10.7	23.0	.04
Allergy/immunology	39.6	18.0	16.7	3.6	21.9	.001
Pulmonary medicine	24.5	31.2	16.7	3.6	21.9	.03
Gastroenterology	28.3	27.9	22.2	7.1	23.6	.138
Obstetrics/gynecology†	37.7	47.5	66.7	46.4	48.3	.06
Ophthalmology	37.7	29.5	38.9	3.6	29.8	.007
Psychiatry	22.6	52.5	41.7	3.6	33.7	<.001
Dermatology	35.9	29.5	36.1	3.6	28.6	.012
Neurology	35.9	21.3	25.0	7.1	24.2	.03
Pediatrics	35.9	29.5	83.3	7.1	38.8	<.001
Nephrology	28.3	16.4	8.3	3.6	16.3	.01

* Clinics are classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

† Provided in 100% of obstetrics and gynecology clinics.

lors, psychologists, and mental health counselors were not as commonly available in the surveyed clinics. Across all clinics, more than a quarter did not have clinic or institutional access to substance abuse counselors. General medicine/primary care clinics were less likely to have substance abuse counselors on-site than either community-based or HIV clinics. Community-based clinics tended to have psychologists or mental health workers more commonly available on-site than did other types of clinics.

Directors were asked to estimate the proportion of their HIV-infected patients with a case manager who generally made patient contact at least once every 3 months (not shown). The directors estimated that only one third of HIV-infected patients in general medicine/primary care (35%) and community-based clinics (37%) received case management, compared with 67% of patients in HIV clinics. Overall, approximately half of the surveyed clinics had case managers on their payroll (Table 4) compared with only one fifth of general medicine/primary care clinics. HIV clinics were more likely than other sites to provide legal counseling or assistance with housing or financial counseling services for their patient population. Training for informal caregivers was provided in more than half of the HIV and community-based clinics, compared with only one fifth of the general medicine/primary care clinics.

Selected Procedures and Treatments

The availability of selected services, procedures, and treatments is reported in Table 5. Approximately three quarters of the general medicine/primary care and HIV clinics performed routine Pap smears compared with almost all (94%) of the community-based clinics. The availability of other procedures in the clinic also varied by setting. Colposcopies were performed in slightly more than

half of the community-based clinics, but at most in one third of the general medicine/primary care and HIV clinics. HIV clinics were much more likely than general medicine/primary care clinics or other sites to provide intravenous infusions, inhaled pentamidine, or transfusions on-site. Only a few clinics (11%) performed endoscopies on-site, and this low rate did not vary significantly by type of clinic. More than half of the clinics (53%) lacked access to methadone maintenance treatment in the clinic or elsewhere in the institution, but institutional access to this care was lowest in the community-based clinics. Access to drug-free substance abuse treatment did not vary significantly by type of clinic.

Directors' Ratings of Services

Table 6 summarizes the directors' self-ratings of the comprehensiveness, continuity, coordination, accessibility, and availability of clinic care. Approximately two thirds of the directors gave a high rating to each of these dimensions of care, with the exception of availability of drug treatment services, which was rated highly by fewer than half of the directors. Self-ratings varied significantly ($p < .05$) by clinic type for all of the dimensions of care except availability of medical services. Directors of general medicine/primary care clinics tended to give lower ratings on these dimensions than directors of other types of clinics. The HIV clinics gave the highest self-ratings for the comprehensiveness of medical care and continuity of physician care.

DISCUSSION

HIV has been described as a primary care disease,¹¹⁻¹³ but diverse specialty services are often needed for pa-

Table 4. Proportion of Clinics with Selected Support Staff and Services

Support Staff and Service	Type of Clinic, %*				Total	p Value
	General Medicine	HIV Speciality	Community-Based	Other		
Physicians' Assistants (PAs) or nurse practitioners (NPs)	71.7	72.6	86.1	78.6	76.0	.38
PAs or NPs serve as primary providers	43.4	53.2	75.0	46.4	53.6	.02
Social caseworkers	75.5	98.4	80.6	67.9	83.2	.001
Nutritionists	62.3	82.3	61.1	64.3	69.3	.06
Substance abuse counselors						
In clinic	17.0	40.3	47.2	17.9	31.3	<.001
In institution only	56.6	37.1	8.3	71.4	42.5	
Not available	26.4	22.6	44.4	10.7	26.3	
Psychologists or mental health counselors						
In clinic	26.4	46.8	61.1	17.9	39.1	<.001
In institution only	56.6	30.7	2.8	75.0	39.7	
Not available	17.0	22.6	36.1	7.1	21.2	
Case managers on clinic payroll	20.8	57.4	80.6	36.8	49.4	<.001
Legal counseling	7.7	40.3	11.1	0.0	18.5	<.001
Assistance with housing	50.9	85.5	52.8	10.7	57.0	<.001
Financial counseling	49.1	69.4	44.4	17.9	50.3	<.001
Informal caregiver training	20.8	54.8	60.0	10.7	38.8	<.001

*Clinics are classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

tients at later stages of infection. As demonstrated by this detailed study of clinic care in New York State, the availability and array of services to meet the complex demands of persons with advanced HIV are somewhat more limited in hospital-based general medicine/primary care clinics than in HIV specialty clinics. Community-based clinics offer HIV-specific services generally similar to those of hospital-based general medicine/primary care clinics but have greater accessibility and delivery of obstetrics/gynecology and pediatric care, permitting the potential for family-based care. Community-based clinics offered a more diverse array of ancillary services than general med-

icine/primary care clinics in hospitals including substance abuse treatment, psychological services, and case managers. These analyses suggest that hospital-based general medicine/primary care clinics serving HIV-infected persons may need to enhance their array of services for this population.

Yet before enhancement of services can be promoted, it is critical to evaluate the effect of these clinic attributes on patient outcomes. In other research on a subset of this study population, we found that clinics offering more HIV-specific features such as an HIV director, conferences on HIV care, or delivery of aerosolized pentamidine were

Table 5. Proportion of Clinics Offering Selected Clinical Services and Procedures

Clinical Services and Procedures	Type of Clinic, %*				Total	p Value
	General Medicine	HIV Speciality	Community-Based	Other		
Available within the clinic						
Pap smears†	73.6	79.0	94.3	57.1	77.0	.007
Colposcopy†	30.2	30.7	54.3	60.7	39.9	<.001
Intravenous infusions	13.2	37.1	5.7	3.6	18.5	<.001
Inhaled pentamidine	11.3	64.5	16.7	0.0	29.1	<.001
Transfusions	5.7	27.4	2.8	14.3	14.0	.001
Lumbar punctures	37.7	48.4	20.0	14.3	34.3	.003
Skin biopsies	35.9	40.3	50.0	42.9	41.3	.61
Endoscopy	3.8	12.9	13.9	17.9	11.2	.20
Available in clinic or institution						
Methadone maintenance	47.2	54.8	19.4	67.9	47.5	.001
Other substance abuse treatments	65.4	66.1	48.6	71.4	63.3	.22

*Clinics are classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

† Provided in 100% of the obstetrics/gynecology clinics.

Table 6. Proportion of Clinics with High Clinic Director Self-Rating of Care Characteristic*

Characteristic of Clinic Care	Type of Clinic, % [†]				Total	p Value
	General Medicine	HIV Specialty	Community-Based	Other		
Comprehensiveness of medical care: ability to provide a full range of medical services to HIV/AIDS patients	66.7	82.0	45.7	75.0	69.0	.003
Continuity of physician care: ability to have the same physician follow an HIV/AIDS patient over time	50.0	76.7	63.9	69.2	64.9	.03
Coordination of medical care: success in organizing care in the hospital and other facilities and in sharing relevant patient data among providers	57.7	75.4	71.4	87.5	70.9	.04
Availability of medical services: adequacy of number of clinicians onsite	62.8	67.2	61.1	88.0	67.6	.11
Availability of social support staff: access to social workers and case managers	53.9	75.4	68.6	83.3	68.6	.03
Drug treatment services availability for HIV/AIDS patients	32.0	65.6	42.9	57.1	49.7	.004
Accessibility of medical service: hours and on-call arrangements meet the needs of clinic HIV/AIDS patients	52.9	73.8	58.3	79.2	65.1	.04

*Rating on a scale of 1 to 10, with 8–10 considered high.

[†]Clinics classified by director's self-designation as: hospital-based general medicine clinics; HIV/AIDS clinics and infectious disease clinics; community-based primary care clinics; and other (surgery and obstetrics/gynecology clinics).

more likely to have patients with advanced HIV or AIDS on PCP prophylaxis and less likely to have patients who develop PCP.¹⁴ Similar research into the association of specific features of care for HIV-infected persons with patient outcomes has substantial policy relevance in the face of shifting HIV-infected Medicaid enrollees into managed care arrangements that might not support a similar array of services.

One key area promoted by managed care organizations is ready access to primary care providers. In this analysis, the greatest accessibility was observed for community-based clinics. Current evidence suggests that accessibility of health care may have an influence on patient functional status. In a study of 205 persons infected with HIV, Cunningham and colleagues reported that patients with lower perceived access to care appeared to have worse health-related quality-of-life scores.¹⁵ We found that nearly 40% of our study clinics were often unable to accommodate urgent, unscheduled care needs during clinic hours. Consequently, if an HIV patient were to develop new symptoms, such as a persistent cough, the patient would be referred to an emergency department. Only half of the clinics offered hours after 5 PM, and less than a quarter of the sites offered any weekend hours. We previously found that limited clinic hours appear to contribute to heavy use of hospital emergency departments.¹⁶

Directors of hospital-based general medicine/primary

care clinics rated continuity of physician care and coordination of medical care lower than either HIV specialty or community-based clinics. In contrast, comprehensiveness of HIV care at general medicine/primary care clinics was rated higher than community-based clinics but lower than HIV specialty clinics. Community-based primary care clinics more often comanaged patients with PCP with other providers and less frequently had infectious disease specialists available on-site. These patterns of responses suggest that patients followed in primary care settings may face tradeoffs between accessibility/continuity and comprehensiveness of care if they choose between community-based and hospital-based primary care settings. Although the HIV clinics clearly had more HIV-specific services, their accessibility on weekends in terms of clinic hours was the lowest of all clinic types.

Responses regarding the availability of all the HIV-specific services examined in the survey tended to confirm the lower rating on comprehensiveness of care by general medicine/primary care clinic directors compared with HIV clinic directors. For example, general medicine/primary care clinics were less likely to have an AIDS care director or case managers on the clinic payroll, potentially compromising overall coordination of care. General medicine/primary care clinics were usually staffed by residents and fellows, thereby having the challenge of teaching and delivering clinical services. A study of attitudes

toward AIDS care among internal medicine and family medicine residents has shown the perceived clinical difficulty of caring for persons with the disease as one of the major issues associated with willingness to provide AIDS care.¹⁷ Our findings suggest that general medicine/primary care training sites are less likely to have the support personnel who could assist residents in delivering care to persons with advanced HIV.

Although community-based clinics often had diverse ancillary services, they relied heavily on PAs and NPs to provide patient care. The impact on patient outcomes of having these types of providers as opposed to physicians-in-training, as in hospital-based general medicine/primary care clinics, is unclear.

Although obstetrics/gynecology and surgical clinics infrequently serve as the usual source of care for HIV patients, directors at these sites were more likely to rate the comprehensiveness of HIV care highly compared with community-based clinics. Contrary to this belief, the obstetrics/gynecology and surgical clinics were less likely than community-based clinics to offer most of the HIV-specific services that were examined in the survey. Perhaps there were other institutional HIV services that we did not inquire about in our survey that inclined the obstetrics/gynecology and surgery clinic directors to believe that they deliver comprehensive HIV care.

One area of concern regarding services for illicit drug users with AIDS was raised by this survey. Over half of New York State Medicaid enrollees diagnosed with AIDS have a history of illicit drug use.¹⁸ Across all types of clinics, director's ratings of the availability of drug treatment services were lower than other aspects of care. Drug-using patients in more than half of the clinics had to go outside their institution for methadone maintenance therapy. Two studies on HIV-infected patients' satisfaction with ambulatory care showed that injection drug users were the least satisfied.^{19,20} Our findings suggest that specific services needed by drug users may be less accessible in many ambulatory care sites. Information about other community-based drug treatment programs will be especially important for providers of HIV care that do not have access to drug treatment services within their organizations.²¹

Providers of ambulatory care for HIV-infected persons are usually confronted with a broad spectrum of social problems experienced by this population. Previous work has shown that housing and financial matters were among the greatest needs for those coping with HIV.²² It is encouraging to observe that at least half of the clinics in our study appear to be integrating medical and social support services in one setting by providing housing assistance and financial counseling services on-site.

Our findings may be limited to clinic sites that served as the usual source of care for New York State Medicaid-enrolled patients with advanced HIV infection. These clinics did not exclusively provide care to Medicaid patients, but on average 60% of their patient population was cov-

ered by Medicaid. Clinic care systems may vary in other sites that largely treat privately insured patients. Because the New York region was among the first in the United States to have high rates of HIV-infected patients, the clinic services that evolved in this region may be more developed than those in other settings with a lower prevalence of HIV-infected persons.

In summary, ambulatory care providers treating persons with advanced HIV infection face many challenges in caring for the complex clinical spectrum of the disease,^{23,24} as well as the array of social, emotional, and economic needs experienced by patients with HIV. Our findings demonstrate that diverse organizational structures exist for delivering ambulatory care to persons with advanced HIV infection. Some of the major tenets of primary care are to deliver accessible, continuous, comprehensive, technically rigorous, and prevention-oriented clinical care.²⁵ It is clear that some clinics have on-site capabilities that may more easily facilitate meeting these goals of primary care. Challenges to delivering primary care services may be posed by the current market-driven changes in medical care in the United States. For example, it is unknown whether many Medicaid enrollees entering new managed care arrangements will be able to be followed in HIV specialty clinics, or if they will have to be seen predominantly by primary care providers. In addition, this research was conducted before several important advances in HIV care such as the widespread use of combination antiretroviral therapy, the introduction of protease inhibitor therapy, and viral load testing—all of which add to the complexity of delivering care to persons with HIV. These changes make investigation of outcomes of HIV care by type of practice setting a high research priority.

We gratefully acknowledge the team of clinical consultants who were instrumental in the design of the clinic survey: Kathryn Anastos, MD, Gary Burke, MD, Jay Dobkin, MD, Nilsa Gutierrez, MD, and David Rose, MD. We also thank Donna Eisenhower, PhD, for assistance with survey design and administration; Susan Howell for her background research and editorial assistance; and Youngling Tu for analytical support.

REFERENCES

1. National Commission on Acquired Immune Deficiency Syndrome. Report No. 1, December 5, 1989.
2. Rietmeijer CA, Davidson AJ, Foster CT, Cohn DL. Cost of care for patients with human immunodeficiency virus infection: patterns of utilization and charges in a public health care system. *Arch Intern Med.* 1993;153:219-25.
3. Keyes MA, Markson LE, Turner BJ. Ambulatory care trends for Medicaid beneficiaries with AIDS in New York State, 1983-1990. *AIDS Pub Pol J.* Fall;1993:142-50.
4. Turner BJ, McKee L, Fanning T, Markson LE. AIDS specialist versus generalist ambulatory care for advanced HIV infection and impact on hospital use. *Med Care.* 1994;32:902-16.
5. Crystal S. Sources of outpatient care and insurance status over the course of AIDS: implications for health policy. *AIDS Pub Pol J.* 1994;9(3):129-37.

6. Fanning TR, Cosler LE, Gallagher P, Chiarella J, Howell EM. The epidemiology of AIDS in the New York and California Medicaid Programs. *J Acquir Immune Defic Syndr*. 1991;4:1025-35.
7. Keyes M, Andrews R, Mason M. A methodology for building an AIDS research file using Medicaid claims and administrative data bases. *J Acquir Immune Defic Syndr*. 1991;4:1015-24.
8. Turner BJ, Markson LE, McKee L, Houchens R, Fanning T. The AIDS-defining diagnosis and subsequent complications. A survival-based severity index. *J Acquir Immune Defic Syndr*. 1991;4:1059-71.
9. Turner BJ, Markson LE, Taroni F. Estimation of survival after AIDS diagnosis: CD4 T lymphocyte count versus clinical severity. *J Clin Epidemiol*. 1996;49:56-65.
10. Designated care programs for patients with AIDS and HIV-related illness in designated centers. *NY State J Med*. 1989;89: 542-3.
11. Northfelt DW, Hayward RA, Shapiro MF. The acquired immunodeficiency syndrome is a primary care disease. *Ann Intern Med*. 1988;109:773-5.
12. Smith MD. Primary care and HIV disease. *J Gen Intern Med*. 1991;6:56-62.
13. Paauw DS, O'Neil JF. Human immunodeficiency virus and the primary care physician. *J Fam Pract*. 1990;31:646-50.
14. Turner BJ, Markson LE, Cocroft J, Haulk WW. Association of clinic services and prevention of *Pneumocystis carinii* pneumonia. *J Gen Intern Med*. 1996;11(Suppl 1):90. Abstract.
15. Cunningham WE, Hays RD, Willimas KW, Beck KC, Dixon WJ, Shapiro MF. Access to medical care and health-related quality of life for low-income persons with symptomatic human immunodeficiency virus. *Med Care*. 1995;33:739-54.
16. Markson LE, Turner BJ, Houchens R, Cocroft J, Fanning TR. Effect of clinic organization on use of emergency room services by patients with advanced HIV infection. *J Gen Intern Med*. 1995;(Suppl):72. Abstract.
17. Hayward RA, Weissfeld JL. Coming to terms with the era of AIDS: attitudes of physicians in US residency programs. *J Gen Intern Med*. 1993;8:10-18.
18. Turner BJ, Markson LE, McKee LJ, Houchens R, Fanning T. Health care delivery, zidovudine use, and survival of women and men with AIDS. *J Acquir Immune Defic Syndr*. 1994;7:1250-62.
19. Stone VE, Weissman JS, Cleary PD. Satisfaction with ambulatory care of persons with AIDS: predictors of patient ratings of quality. *J Gen Intern Med*. 1995;10:239-45.
20. Stein MD, Fleishman J, Mor V, Dresser M. Factors associated with patient satisfaction among symptomatic HIV-infected patients. *Med Care*. 1993;31:182-8.
21. O'Connor PG, Selwyn PA, Schottenfeld RS. Medical care for injection-drug users with human immunodeficiency virus infection. *N Engl J Med*. 1994;331:450-9.
22. Bor R, Elford J, Murray D, et al. Social care services for patients with HIV at a London teaching hospital; an evaluation. *Genitourin Med*. 1992;68:382-5.
23. Bender BS. Outpatient management of patients infected with human immunodeficiency virus. *J Fam Pract*. 1992;34:464-82.
24. Eisenstein SJ, Coleman GC. Organizing outpatient data for care of HIV-infected patients. *J Fam Pract*. 1990;30:569-72.
25. Parker AW, Walsh JM, Coon M. A normative approach to the definition of primary health care. *Milbank Mem Fund Q*. 1976;54: 415-38.