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A shift in referral patterns for HIV/AIDS patients

This follow-up study shows that FPs are more likely to make quick referrals of HIV/AIDS patients than a decade ago

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Practice recommendations

- Funding for specific training programs on HIV/AIDS care should be targeted to community health centers, where there is sufficient volume of HIV patients and an already demonstrated expertise amongst clinical faculty.

Abstract

Purpose With the rapid development (and complex prescribing patterns) of drugs for HIV/AIDS care, it is challenging for physicians to keep current. We conducted a follow-up study to a 1994 cohort study to see how care and referral patterns have changed over the last decade. In this study, we examined how family physicians in Massachusetts were caring for their HIV-infected patients, and explored whether FPs were referring more patients to specialists for care compared with a decade ago.

Methods We designed a cross-sectional survey as an 11-year follow-up to a previous study. It was mailed in 2005 to the active membership of the Massachusetts Academy of Family Physicians.

Results Compared with the cohort of 1994, the number of HIV+ patients in individual practices remained about the same, but the number of practices with no AIDS patients was significantly higher. 85.3% of FPs noted that they were more likely to refer HIV/AIDS patients immediately compared with their own practice patterns a decade ago. In this study, 39.0% of current respondents referred HIV+ patients immediately, 57.0% co-managed patients, and 4.1% managed these patients alone (the data for the 1994 cohort was 7.0%, 45.8%, and 47.2%, respectively; $P<.0001$).

Similar changes were seen in regard to care patterns for AIDS patients. Among the current cohort, 61.7% reported that they referred patients immediately, compared with only 18.3% in 1994; 36.8% noted that they co-managed these patients (vs 74.3% in 1994); and only 1.5% reported that they managed these patients alone (vs 7.4% in 1994; $P<.0001$).

Conclusions A significant shift amongst FPs with regard to their referral patterns for patients with HIV/AIDS has occurred over the last decade. The community health center has emerged as a resource for patients with HIV/AIDS. Funding for specific training programs on HIV/AIDS care should be targeted to community health centers.

In June 2008, it will be 27 years since the first reported clusters of *Pneumocystis* pneumonia cases, which were the earliest published reports of the HIV

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epidemic.[1] There are now more than a million individuals infected with HIV in the United States.[2]

Since the first antiretroviral drug, azidothymidine (AZT), was approved in 1987, more than a dozen medications have been introduced to treat this illness.[2] Care for patients with HIV/AIDS is rapidly evolving—so much so that the International AIDS Society publishes revised treatment guidelines every 2 years.[3] The US Department of Health and Human Services also issues frequent guidelines for HIV care.[4]

The role of the FP in the care of HIV/AIDS patients

Rapid drug development has made lifesaving agents available quickly to patients, but it is challenging for physicians to keep current with the most effective treatments. Managing the drug interactions and long-term toxicity of these medications, as well as monitoring patients' viral loads and drug resistances, increases the complexity of HIV care.

In this milieu, a discussion has ensued as to which medical specialties are best suited to provide HIV care. Screening seems to fall within the realm of primary care, as prevention strategies are key to containing this infection.[5,6] Increased survival rates have resulted in more HIV+ patients requiring treatment for cardiovascular disease, cancer, and substance abuse—areas typically managed by primary care providers.[7] However, some have questioned the interest and ability of primary care physicians to care for this illness.[8,9]

In the 1990s, only a few studies had been published that examine primary care physicians' attitudes, knowledge, and practices for HIV care, including our own 1994 survey.[10–12] At that time, FPs in Massachusetts were seeing an increasing number of HIV+ patients; the majority reported caring for those patients either alone or co-managing with a specialist. We concluded in 1994 that there needed to be more continuing medical education activity concerning the primary care of this condition.[12]

Given the complexity of treating this disease, we conducted a follow-up study to see how care and referral patterns have changed over the decade since we published our first survey.[12] We were curious to see how FPs were caring for HIV-infected patients, and whether more patients were being referred to specialists. Knowledge of referral patterns and management issues might be helpful in identifying where to direct support for the care of patients, as well as the education of providers who actively treat this condition.

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A third of FPs in the survey reported that ≥15% of their patients engaged in behaviors that put them at high risk for HIV

Methods

Asking FPs about their HIV/AIDS management practices

This cross-sectional survey was designed as an 11-year follow-up to a previous research study, described in greater detail elsewhere.[12]

In June 2005, we obtained a membership listing from the Massachusetts Academy of Family Physicians (MAFP). Using the total design methodology described by Dillman,[13] a cover letter and survey instrument were mailed to current MAFP members (N=777). Nonresponders were sent a reminder postcard 2 weeks later, and a second survey 2 weeks after that. A final reminder and survey were mailed to the remaining nonrespondents a month later. No incentives were offered for the completion of the survey.

The survey instrument was developed using the original data collection tool from 1994, supplemented by questions assessing any changes in patient management over the previous 11 years. The 31-item survey included questions about the sociodemographic and practice characteristics of the respondents, their patient mix, their education, and their management of patients with HIV/AIDS, as well as a series of Likert-type attitudinal questions assessing their

TABLE 1

Demographics of FPs responding (1994 vs 2005)

SOCIODEMOGRAPHIC AND PRACTICE FACTORS	1994 SURVEY (N=281)* N (%)	2005 SURVEY (N=369)* N (%)	*P* VALUE
Gender			
Male	205 (74.0%)	188 (50.9%)	<.0001
Female	72 (26.0%)	181 (49.1%)	
Year of residency completion			
After 1994	—	163 (44.8%)	not tested
1986–1994	117 (44.5%)	107 (29.4%)	
Before 1986	146 (55.5%)	94 (25.8%)	
Practice location			
Urban	81 (29.0%)	135 (37.4%)	
Suburban/rural	198 (71.0%)	226 (62.6%)	.026
Practice type			
Solo/single specialty	169 (61.0%)	200 (54.9%)	
Multispecialty/HMO/CHC	90 (32.5%)	134 (36.8%)	
Hospital-based clinic	18 (6.5%)	30 (8.2%)	.289
Teach medical students regularly			
Yes	127 (45.7%)	193 (52.9%)	
No	151 (54.3%)	172 (47.1%)	.071
Teach residents regularly			
Yes	72 (25.9%)	112 (30.9%)	
No	206 (74.1%)	251 (69.1%)	.169
% of patients who engage in high-risk behavior			
≥15%	74 (29.4%)	123 (34.2%)	
6%–14%	75 (29.8%)	140 (38.9%)	
≤5%	103 (40.9%)	97 (26.9%)	.0012
Number of HIV+ patients in practice			
≥3 patients	88 (31.4%)	89 (24.5%)	
1–2 patients	103 (36.8%)	143 (39.3%)	
None	89 (31.8%)	132 (36.3%)	.136
Number of AIDS patients in practice			
≥3 patients	43 (15.5%)	47 (12.9%)	
1–2 patients	95 (34.2%)	95 (26.1%)	
None	140 (50.3%)	222 (61.0%)	.025

HMO, health maintenance organization; CHC, community health center.

* Some numbers may not total to the individual cohort N because of sporadic missing data. The response rate for the 1994 survey was 60% and for the 2005 survey it was 50%. Percentages are based on the number of responders to each question, not the total number of respondents.

knowledge, access to specialists, and safety concerns regarding HIV.

Outcomes measured: Changes in care and referral patterns

The main outcomes of the survey were changes in the management of patients with HIV/AIDS, particularly regarding referral patterns compared with the previous decade. Univariate and bivariate statistics, frequency and percentile distributions, as well as means and medians, were used to characterize the physician cohort, their practice characteristics, referral patterns, and attitudes. We also examined a variety of relationships (eg, differences by gender, years of practice, and involvement in teaching), including changes from the data we collected in 1994 (using a repeated cross-sectional design approach).

Data were analyzed using SPSS for Windows, version 14 (SPSS, Inc, Chicago, Ill). Depending on the categorical or

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More FPs had no patients with AIDS in their practice when compared with the decade before

TABLE 2

Care of asymptomatic HIV+ patients—which FPs refer, which co-manage?

	REFER IMMEDIATELY (N=134)*	CO-MANAGE (N=196)*	*P* VALUE
Practice type			
Solo practice	24 (17.9%)	30 (15.6%)	.001
Single specialty	58 (43.3%)	70 (36.5%)	
HMO	3 (2.2%)	0 (0.0%)	
Multispecialty	22 (16.4%)	20 (10.4%)	
CHC	14 (10.4%)	57 (29.7%)	
Hospital-based clinic	13 (9.7%)	15 (7.8%)	
Teach medical students regularly			
Yes	51 (38.1%)	118 (61.5%)	<.001
No	83 (61.9%)	74 (38.5%)	
Teach residents regularly			
Yes	20 (15.0%)	78 (40.8%)	<.001
No	113 (85.0%)	113 (59.2%)	
Number of HIV+ patients in practice			
<3 patients	121 (91.0%)	132 (68.0%)	<.001
≥3 patients	12 (9.0%)	62 (32.0%)	
Number of AIDS patients in practice			
<3 patients	128 (96.2%)	165 (85.1%)	.001
≥3 patients	5 (3.8%)	29 (14.9%)	
% of patients who engage in high-risk behavior			
0%–5%	44 (33.1%)	44 (23.0%)	.133
6%–15%	46 (34.6%)	78 (40.8%)	
>15%	43 (32.3%)	69 (36.1%)	

HMO, health maintenance organization; CHC, community health center.

* Total N=369. We removed those physicians who noted "manage alone" because of the small sample size. Each item's total may not be the total number of respondents due to unanswered questions. Percentages are based on the total number of responders to each question, not the total number of respondents.

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The overwhelming majority reported being far less likely to manage HIV/AIDS patients alone than a decade ago

continuous nature of the data, chi-square and *t*-tests were used to assess significance at the .05 level. These bivariate analyses were subsequently used to select which independent variables we would include in the stepwise logistic regression analyses.

This study was reviewed by the University of Massachusetts' Institutional Review Board for the conduct of human subject research and received an exemption from formal review.

Results

Who were the respondents?

In all, 369 completed surveys were returned, along with 44 uncompleted surveys (returned as undeliverable or with an indication that the respondent was no longer practicing), for a response rate of 53.2% (413/777) and a completion rate of 47.4% (369/777).

The respondents included an equal representation of male and female physicians. The majority practiced in nonurban settings (62.6%), and nearly one half (44.8%) had finished their residency since the first survey was sent. Half (54.9%) participated in a solo or single-specialty practice. FPs more often reported teaching medical students regularly (52.9%) than being involved in residency education (30.9%). More than a third (34.2%) reported that ≥15% of their patients participated in "high-risk" behaviors for HIV. (The definition of high-risk was left to the individual respondent.)

Compared with our earlier survey,

respondents are now more likely to be female, more likely to be practicing in an urban setting, and slightly more likely to teach medical students. Current respondents also reported that they had fewer patients involved in high-risk behaviors.

The majority (63.8%) indicated that they had at least one HIV+ patient in their practice, with 39.0% also reporting at least one AIDS patient. Compared with the previous cohort studied, HIV+ patient numbers remained about the same; however, the number of practices caring for at least 1 AIDS patient was significantly lower (**TABLE 1**).

HIV/AIDS care and changing referral patterns

When asked how referral patterns had changed over the past decade, the overwhelming majority (94.4%) reported being far less likely to manage HIV/AIDS patients alone. Just over half (56.2%) of the physicians in the current survey indicated being more likely to co-manage patients, and an impressive 85.3% noted that they were more likely to refer patients immediately compared with their own practice patterns a decade ago.

Changing care patterns for asymptomatic HIV+ patients. A total of 39.0% of current respondents referred patients immediately, 57.0% co-managed patients, while only 4.1% managed these patients alone (the data for the 1994 cohort was 7.0%, 45.8%, and 47.2%, respectively; $P<.0001$).

AIDS patients have similar patterns. Similar changes were seen in regard to care patterns for AIDS patients. Among the current cohort, 61.7% reported that they referred these patients immediately, compared with only 18.3% in 1994; 36.8% noted that they co-managed these patients (vs 74.3% in 1994); and only 1.5% reported that they managed these patients alone (vs 7.4% in 1994; $P<.0001$).

Use of resources. When they were asked which resources they used to help provide care for HIV patients, 39.9% indicated an HIV clinic at the closest teaching hospital (vs 28.4% in 1994); 41.4% noted a specialist at the community hospital where they practiced (vs 52.6% in 1994); and the remainder were fairly equally distributed (in both cohort years) between a local community health center that treats HIV+ patients, a consultant requested by the patient, or an FP colleague ($P=.0003$).

Which FPs are likely to refer? Given the small number of respondents who manage asymptomatic HIV+ and AIDS patients alone, we focused our analyses between those who refer immediately and those who co-manage care.

Those who reported referring asymptomatic HIV+ patients immediately were less likely to have ≥3 HIV+ or ≥3 AIDS patients in their current practice. They were significantly more likely to be in a group practice and significantly less likely to work at a community health center. They also reported being less likely to teach medical students and residents (**TABLE 2**).

Similar findings in referral patterns were also seen in the management of symptomatic HIV+/AIDS patients (**TABLE 3**). In addition, those physicians who immediately refer AIDS patients were also less likely to report that >15% of their patients were involved in high-risk behaviors.

Who is caring for HIV/AIDS patients? Those FPs who reported an increase over 11 years in the number of patients with HIV/AIDS in their practices were more likely to practice in a community health center ($P<.001$), and were more likely to teach medical students ($P=.002$) and residents ($P<.001$). Additionally, these FPs reported a higher percentage of patients with high-risk behaviors ($P=.008$). These FPs were less likely to report that they didn't have time to care for HIV/AIDS patients ($P=.037$). They felt more knowledgeable about HIV ($P=.005$) and AIDS care ($P<.001$), and were more likely to learn about HIV/AIDS care through formal CME ($P=.001$).

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More than 60% of FPs referred AIDS patients immediately, compared with only 18% in 1994

TABLE 3

Care of symptomatic HIV+/AIDS patients—which FPs refer, which co-manage?

	REFER IMMEDIATELY (N=134)*	CO-MANAGE (N=196)*	*P* VALUE
Practice type			
Solo practice	37 (17.7%)	17 (13.7%)	< .001
Single specialty	91 (43.5%)	42 (33.9%)	
HMO	3 (1.4%)	0 (0.0%)	
Multispecialty	34 (16.3%)	10 (8.1%)	
CHC	25 (12.0%)	46 (37.1%)	
Hospital-based clinic	19 (9.1%)	9 (7.2%)	
Teach medical students regularly			
Yes	92 (43.6%)	82 (67.2%)	
No	119 (56.4%)	40 (32.8%)	< .001
Teach residents regularly			
Yes	40 (19.1%)	60 (49.2%)	
No	169 (80.9%)	62 (50.8%)	< .001
Number of HIV+ patients in practice			
<3 patients	180 (86.1%)	77 (61.6%)	
≥3 patients	29 (13.9%)	48 (38.4%)	< .001
Number of AIDS patients in practice			
<3 patients	203 (97.1%)	93 (74.4%)	
≥3 patients	6 (2.9%)	32 (25.6%)	< .001
% of patients who engage in high-risk behavior			
0%–5%	67 (32.1%)	21 (17.2%)	
6%–15%	83 (39.7%)	49 (40.2%)	
>15%	59 (28.2%)	52 (42.6%)	.004

HMO, health maintenance organization; CHC, community health center.

* Total N=369. We removed those physicians who noted "manage alone" because of small sample size. Each item's total may not be the total number of respondents due to unanswered questions. Percentages are based on the total number of responders to each question, not the total number of respondents.

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FPs reporting an increase in HIV/AIDS patients in their practices were more likely to practice in a community health center

In contrast, those FPs with <10 HIV/AIDS patients in their practice were more likely to be in rural practices (*P*=.006), to have been in practice longer (mean, 14.75 vs 12.35 years; *P*=.042), and to teach medical students (*P*=.045). There were no differences noted between gender, practice arrangement, or residency education.

Multivariate analyses

To identify factors that contributed the most to the immediate referral of asymptomatic HIV+ patients, we employed a stepwise logistic regression analysis based on the results of our bivariate analyses.

FPs were *less likely* to refer immediately if they were female, practiced in a community health center, had a higher number of HIV patients in their practice, learned about HIV/AIDS care during residency as well as through formal CME programs, taught medical students regularly, and felt more knowledgeable about HIV/AIDS care. They were *more likely* to refer these patients if they reported having no time to care for HIV/AIDS patients. A similar model was observed for the referral of symptomatic AIDS patients (**TABLE 4**).

Discussion

Referral patterns change with demographics and new treatments

In comparing data with our survey from 1994, we found significant differences in care and referral patterns for HIV/AIDS patients.

FPs are more likely to refer, and right away. FPs are more likely to refer HIV patients immediately, compared with a decade ago; this likely results from many factors. The complexity of this disease and the rapid rate of change in management have been well documented.[3] Keeping up-to-date with current practice guidelines and managing complications of treatment protocols can be time-consuming. Also, more physicians in our current survey reported having no AIDS patients in their practices compared with 1994.

The emergence of community health centers. Another interesting finding, based on the results of both our bivariate and multivariate analyses, was to see the community health center emerge as a resource for patients with HIV/AIDS. This may reflect the more urban location of community health centers and the higher prevalence of HIV/AIDS patients in those locales, an increased involvement with teaching, and an increased volume of patients with HIV/AIDS—all resulting in an increased knowledge of HIV/AIDS care. Additionally, community health centers are capable of providing a more comprehensive range of services than a traditional practice, through the support of the Federal Ryan White CARE Act. This likely plays a role in the increasing numbers of such patients being cared for in this setting.

Implications for future training of FPs. Optimal care of HIV patients requires a combination of disease-specific expertise and primary care skills and organization.[14] Recent literature demonstrates that generalist physicians are able to develop condition-specific knowledge similar to those with specialty training—if they have a substantial caseload, and if they make an effort to stay current in a particular area.[15] Residency training sites, particularly community health centers, will likely emerge as leaders in the training of primary care physicians to care for this disease. The ongoing expertise of faculty in these sites will be a vital aspect of this training.

Limitations of this study

Our survey was limited to members of the MAFP, and may not be generalizable to other primary care providers. It also may not be generalizable to other states, given the demographics of Massachusetts and the availability of health care in a more urban environment. The availability of HIV resources and referral centers may vary from state to state.

The survey relied upon self-report and may be prone to either over- or under-reporting of current practice and recall of changes over the past decade.

Also, a higher response rate among male FPs, with females being less likely to refer patients, may have understated the relationship between gender and referral patterns for these patients.

Quality of care? It's still a question. The quality of care provided by the subset of family physicians that are caring for their HIV/AIDS patients was not studied in this article. As this group continues to train new physicians and provide ongoing care for these patients, it will be important to measure the quality of care being provided.[9,16]

Conclusion

Will the role of the FP in HIV/AIDS care expand?

Our study demonstrates a significant shift amongst FPs with regard to their referral patterns for patients with HIV/AIDS over the last decade. This overall shift likely reflects the complexity of caring for these patients.

However, as these patients have longer survival rates, primary care offices will likely be seeing more individuals with HIV disease. While these patients may be followed by specialists, the role of the primary care physician in providing care may well expand. Funding for specific training programs on HIV/AIDS care should be targeted to community health centers where there is sufficient volume of HIV patients and an already demonstrated expertise amongst clinical faculty. ■

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Residency training sites, especially community health centers, will likely emerge as leaders in training for primary care providers

TABLE 4

Multivariate analyses of factors related to referring patients *immediately* vs *co-managing*

INDEPENDENT FACTORS	IMMEDIATE REFERRALS FOR ASYMPTOMATIC HIV+ PATIENTS (N=297) OR* (95% CI)	IMMEDIATE REFERRALS FOR SYMPTOMATIC HIV+/AIDS PATIENTS (N=302) OR* (95% CI)
Gender		
Male	1.0	1.0
Female	0.505 (0.283–0.901)	0.311 (0.168–0.576)
Practice location: Community health center		
No	1.0	ns†
Yes	0.402 (0.178–0.910)	
Number of HIV+ patients in practice		
4-level ordinal variable: 1=None; 2=1-2; 3=3-10; 4≥10	0.637 (0.440–0.923)	not in model
Number of AIDS patients in practice		
4-level ordinal variable: 1=None; 2=1-2; 3=3-10; 4≥10	ns†	0.514 (0.343–0.769)
Learned about HIV/AIDS care during residency		
No	1.0	ns†
Yes	0.476 (0.243–0.930)	
Learned about HIV/AIDS care from formal CME programs		
No	1.0	1.0
Yes	0.468 (0.257–0.851)	0.375 (0.204–0.691)
Participate in teaching medical students regularly		
No	1.0	1.0
Yes	0.417 (0.238–0.732)	0.531 (0.281–1.003)
Participate in teaching residents regularly		
No	ns†	1.0
Yes		0.537 (0.279–1.035)
Feel knowledgeable about HIV care		
No	1.0	1.0
Yes	0.345 (0.187–0.638)	0.357 (0.176–0.728)
Have no time in my practice to care for HIV/AIDS patients		
No	1.0	1.0
Yes	2.076 (1.155–3.729)	4.306 (2.098–8.838)

* An OR of 1.0 reflects the referent category within each of the independent factors.

† ns = not significant in the stepwise regression model.

OR, odds ratio; CI, confidence interval; CME, continuing medical education.

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As patients with AIDS live longer, primary care offices are likely to see more of them

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Disclosure

The authors reported no potential conflict of interest relevant to this article.

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