Delivery of HIV Prevention Counseling by Physicians at HIV Medical Care Settings in 4 US Cities

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Objectives. We investigated physicians' delivery of HIV prevention counseling to newly diagnosed and established HIV-positive patients.

Methods. A questionnaire was developed and mailed to 417 HIV physicians in 4 US cities.

Results. Overall, rates of counseling on the part of physicians were low. Physicians reported counseling newly diagnosed patients more than established patients. Factors associated with increased counseling included having sufficient time with patients and familiarity with treatment guidelines. Physicians who perceived their patients to have mental health and substance abuse problems, who served more male patients, and who were infectious disease specialists were less likely to counsel patients.

Conclusions. Intervention strategies with physicians should be developed to overcome barriers to providing counseling to HIV-positive patients. (*Am J Public Health.* 2004;94:1186–1192)

Studies have shown an increase in reported risk behavior among HIV-positive individuals receiving care.[1–5] Similarly, there has been a recent resurgence of syphilis among people with HIV in many cities across the United States.[6–8] These data emphasize the importance of alternative strategies to prevent the continued spread of HIV/AIDS in the United States. National strategies have recognized the importance of incorporating HIV prevention into the medical care setting.[9,10] This approach is consistent with a recent Institute of Medicine report that emphasized the need for prevention services among persons living with HIV and the new HIV prevention strategy of the Centers for Disease Control and Prevention (CDC).[11,12]

Studies consistently demonstrate that patients view their physician as a trusted and authoritative source of health information.[13,14] Studies in other disease prevention areas have shown that brief interventions delivered by physicians can translate into behavior change.[15–17] Recognizing this potential, federal organizations have recommended that physicians play a more active role in delivering prevention messages to their HIV-positive patients.[9–12,18,19] For example, in 1991, the US Public Health Service established as a goal that 75% of primary care and mental health care clinicians provide appropriate counseling regarding prevention of HIV and other sexually transmitted diseases by 2000.[20]

Relatively little is known about the risk reduction practices of HIV care providers with their HIV-positive patients. Earlier studies showed that primary care physicians do not routinely assess or intervene with their patients regarding their risks for HIV infection.[21–23] In 2 studies of HIV-positive individuals,[24,25] approximately 25% and 29% of participants, respectively, reported that a provider had not talked with them about safe sex. However, these studies did not provide information on provider-reported practices, nor did they distinguish delivery of prevention counseling to newly diagnosed and established patients.

To our knowledge, there has been, to date, no comprehensive physician study focusing on the delivery of HIV prevention counseling to HIV-positive patients by physicians within HIV medical care clinics. The current study, which focused on physician practices in 4 major US cities, investigated physicians' delivery of prevention counseling to newly diagnosed and established HIV-positive patients.

METHODS

Participants

We mailed questionnaires to 417 licensed physicians who provided primary care or prescribed antiretroviral treatment to HIV-positive adults in Atlanta, Baltimore, Los Angeles, and Miami between November 2000 and June 2001. We used a variety of sources in compiling clinician lists for each city, including local Medicaid offices, county health departments, state Infectious Diseases Society registries, Ryan White Title I and II programs, and other local medical societies. After preliminary lists had been compiled, all clinician offices were called to verify that contact information was correct and that the listed physicians had seen at least 1 HIV-positive patient in the previous year. The survey population included physicians serving individuals with HIV in community-based outpatient clinics and outpatient clinics associated with large hospitals/medical centers. Physicians in residency training were not included in the sample.

The initial contact included a cover letter, a copy of the questionnaire, and the offer of a small monetary incentive for completing the questionnaire. Names were not included with the questionnaires, and participants were informed that their responses would be confidential. A confidential code was assigned to identify nonresponders for follow-up. Using a modified version of Dillman's total design method for mail and telephone surveys,[26] we continued to follow up with nonresponders for 3 months via postcards, in-person visits, telephone calls, faxes, and questionnaire remailings. At least 5 contacts were attempted before physicians were listed as nonresponders.

Measures

The 61-item survey instrument assessed physicians' demographic and practice charac-

teristics, including the following: perceptions of patient characteristics, attitudes and beliefs regarding patients, perceptions of barriers to providing optimal care, and familiarity and comfort with using current HIV/AIDS treatment guidelines. Physicians were asked to answer questions about HIV-positive patients who were under their care (including hospitalized patients).

To specifically examine the prevention practices of participating physicians, we asked "Of the [newly diagnosed/established] HIV-positive patients you saw in the past month, to what percentage did you provide HIV transmission risk reduction counseling?" This question was asked separately for newly diagnosed and established patients. Providers were given 8 categorical responses from which to choose (0%, 1%–10%, 11%–25%, 26%–40%, 41%–60%, 61%–75%, 76%–90%, and 91%–100%). For the purpose of this analysis, responses were dichotomized: risk reduction counseling provided to more than 90% of patients or 90% or fewer of patients. The 90% cutoff was selected because this was the highest standard listed in the questionnaire. In the present analysis, we were seeking to document the extent to which delivery of prevention counseling was part of every clinical encounter.

Data Analysis

Stata Version 6 (Stata Corp; College Station, Tex) was used in conducting analyses. The outcomes of interest were delivery of transmission reduction counseling to (1) newly diagnosed patients and (2) established patients. Univariate analyses were conducted to assess the relationship between each independent variable and the counseling response variables. Factor analysis and scale construction were used as data reduction tools.

Principal components factor analyses were conducted with 8 items focusing on attitudes toward treatment of HIV-positive patients: (1) provider's perception of whether patients delay seeking HIV care until they experience symptoms, (2) provider's perception that patients want to be active in making decisions about their HIV care, (3) provider's perception that patients understand the meaning of viral load and CD4+ cell count, (4) provider's perception of HIV-positive patients' access to care, (5) provider's perception of the contribution of AIDS Drug Assistance Program support to his or her ability to provide antiretroviral treatment, (6) whether a provider would prescribe highly active antiretroviral therapy (HAART) to an HIV-positive patient who has a problem with illicit drugs, (7) whether a provider would prescribe prophylactic medications to an HIV-positive patient who has a problem with illicit drugs, and (8) whether a provider would see a patient who visited the clinic while high or intoxicated.

The items just described were measured on a 4-point scale ranging from *strongly disagree* to *strongly agree*. Rotated factor loadings ranged from 0.64 to 0.80. A varimax rotation was used in calculating standardized factor scores with a mean of zero; these scores, based on the rotated factors, were used in developing multivariate logistic models. Three factors were identified, and factor scores were calculated: (1) provider's perception of patients' interest and effort in their own care (items 1–3; range: –2.5 to 2), (2) provider's perception of the availability and contribution of community resources to HIV care (items 4 and 5; range: –4.9 to 1.4), and (3) provider's willingness to treat patients with substance abuse problems (items 6–8; range: –4.0 to 1.5).

Two scales were constructed from 9 items addressing providers' perceptions of barriers to HIV care. The original items were measured on a 4-point scale ranging from *not important* (1) to *very important* (4). The resulting scales provided summative scores divided by number of items. Scores ranged from 1 to 4 and measured (1) system barriers (mean=2.5, α=0.69; lack of child care at clinics, inconvenient hours and location, cost of care, transportation problems, unfriendly HIV care setting) and (2) patient barriers (mean=3.0, α=0.75; patients do not want care, lack of social support system, mental health problems, substance abuse problems).

Five items assessed respondents' perceptions of the percentages of their patients with the following problems: depression, other mental illness, alcohol abuse, use of noninjection drugs, and use of injection drugs. The median value for each of these items was 25%. A binary measure was defined to indicate that more than 25% of patients had 1 or more of these problems. In addition, physicians reported the average number of HIV-positive patients seen per month. A categorical measure based on quartiles was created to denote patient load: low (first quartile; 1–18 patients), medium (second and third quartiles; 19–100 patients), and high (fourth quartile; 101–800 patients).

After including in initial models all independent variables that had *P* values of .25 or less in the univariate analysis, we developed multivariate logistic models to allow examination of delivery of transmission reduction counseling to newly diagnosed and established patients. Variables included in initial models but not retained in the final models were type of practice setting (private practice, hospital, other), number of providers, rural/urban location, provider gender, provider race/ethnicity, and years caring for HIV patients. Parsimonious models were then developed through removal of variables that did not significantly contribute to the goodness of fit of initial models according to likelihood ratio tests and Hosmer–Lemeshow goodness-of-fit tests. Covariates were assessed for collinearity and interactions; collinearity was not a problem, and no significant interactions were identified.

RESULTS

Response Rate and Sample Characteristics

Of the 417 questionnaires mailed, 317 were completed, yielding an overall response rate of 76%, higher than those typically reported in physician studies.[27] Response rates at the 4 sites ranged from 62% to 84%. Demographic and practice characteristics of the participating physicians are reported in Table 1. The majority of physicians were male (65.6%), were non-Hispanic White (61.5%), and had been caring for HIV/AIDS patients for more than 8 years (62.2%). Approximately 60% reported caring for more than 25 HIV-positive patients per month. The professional training/background of the physicians varied, with 46.7% board eligible or board certified in infectious diseases, 57.7% board eligible or board certified in internal medicine, 16.1% board eligible or board certified in family practice, and 5.1% in general practice. Among those board eligible or board

TABLE 1—Characteristics of the Participating Physicians (n=317)

	%
Study site	
Atlanta	31.2
Baltimore	14.8
Los Angeles	23.7
Miami	30.3
Male provider	65.6
Provider race/ethnicity	
Hispanic	16.7
Non-Hispanic Black	11.4
Non-Hispanic White	61.5
Other	10.4
Years caring for HIV/AIDS patients	
≤ 4	17.4
5–8	20.5
> 8	62.2
Average no. of HIV-positive patients per month (n = 292)	
≤ 10	20.4
11–25	20.1
26–50	20.1
51–100	20.4
> 100	19.1
Provider training[a]	
Board eligible/certified in internal medicine	57.7
Board eligible/certified in infectious diseases	46.7
Board eligible/certified in family practice	16.1
General practice	5.1
Other professional training	9.5

[a]Categories of provider training do not sum to 100% because some physicians had more than 1 type of training.

certified in internal medicine, 50.8% were also board eligible or certified in infectious diseases. The mean age of the sample was 44 years.

Overall, physicians reported positive practice characteristics. Most (87.7%) spent more than 15 minutes with each patient, and 65% believed that they had sufficient time to spend with their patients. In addition, most (81.4%) believed that they were very familiar with the current antiretroviral treatment guidelines, and 64.6% relied on these guidelines frequently in their efforts to learn about new treatment options.

Patient populations were largely male (an average of 74% of patients), and approximately half of the providers (55%) reported that more than 25% of their patients had problems relating to depression or other mental illness and alcohol use or other substance abuse.

Delivery of Risk Reduction Counseling

Physicians were more likely to provide HIV risk reduction counseling to newly diagnosed patients than to established patients (60% vs 14%; $P<.0001$). Sixty percent reported that they provided counseling to more than 90% of their newly diagnosed patients; 16.8% reported counseling 76% to 90% of their newly diagnosed patients; 7.1% reported counseling 61% to 75% of their newly diagnosed patients; and only 16.5% reported counseling 60% or fewer of their newly diagnosed patients. In contrast, there was a more dispersed distribution in the case of established patients: 14.0% of physicians counseled 91% to 100% of these patients, 9.2% counseled 76% to 90%, 12.7% counseled 61% to 75%, 17.8% counseled 41% to 60%, 9.2% counseled 26% to 40%, 19.4% counseled 11% to 25%, and 17.5% counseled 10% or fewer (Figure 1).

The multivariate analysis (Table 2) showed that physicians who agreed they had sufficient time to spend with patients (adjusted odds ratio [OR]=1.34 for each 1-unit increase on a 4-point agreement scale; 95% confidence interval [CI]=1.04, 1.72) and physicians who reported being very familiar with current antiretroviral treatment guidelines (adjusted OR=2.54; 95% CI=1.32, 4.89) were more likely to provide counseling to more than 90% of their newly diagnosed patients. Physicians who reported that more than 25% of their patients had mental health or drug problems were less likely to provide counseling to newly diagnosed patients (adjusted OR=0.59; 95% CI=0.36, 0.98).

In addition, physicians who saw fewer patients per month were more likely to provide counseling to newly diagnosed patients. Physicians with low patient loads (1–18 patients per month) were almost 3 times as likely as physicians with high patient loads to provide counseling to their newly diagnosed patients. Similarly, physicians with medium patient loads (19–100 patients per

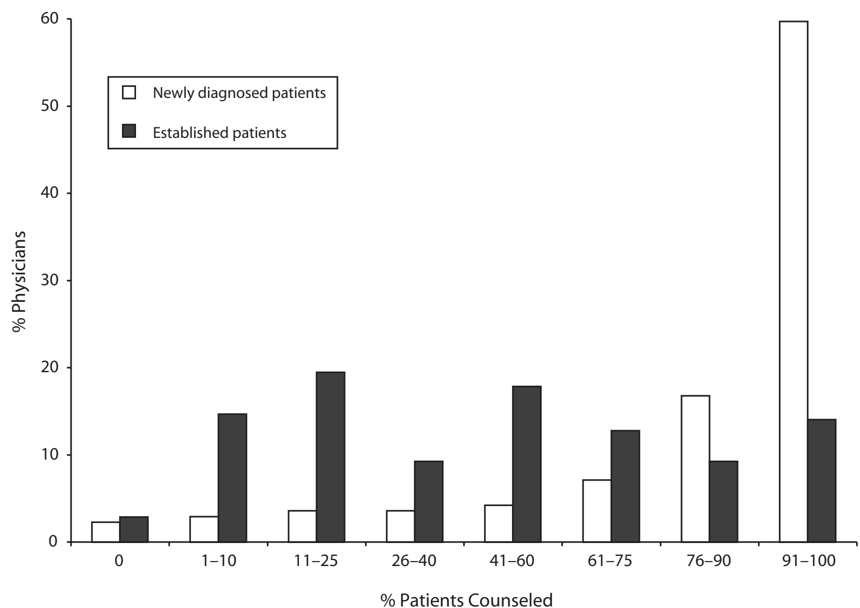

FIGURE 1—Percentages of patients counseled in past month: physicians in 4 US cities.

TABLE 2—Multivariate Logistic Models Focusing on Counseling of More Than 90% of Newly Diagnosed Patients: Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs)

Provider characteristic	OR (95% CI)
Study site	
Atlanta	0.647 (0.353, 1.188)
Baltimore	1.760 (0.758, 4.087)
Los Angeles	0.805 (0.414, 1.566)
Miami	1.000
Average no. of HIV-positive patients per month	
1–18 (low)	2.914 (1.323, 6.415)
19–100 (medium)	1.908 (1.020, 3.571)
101–800 (high)	1.000
Perception that there is sufficient time to provide all care and information needed to patients	1.340 (1.042, 1.722)
Very (vs minimally/moderately) familiar with current antiretroviral treatment guidelines	2.537 (1.317, 4.889)
More than 25% of patients have other health problems (depression or other mental illness, alcohol use, drug use)	0.591 (0.358, 0.975)

TABLE 3—Multivariate Logistic Models Focusing on Counseling of More Than 90% of Established Patients: Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs)

Provider characteristic	OR (95% CI)
Board eligible/certified in infectious disease	0.430 (0.202, 0.916)
Average time spent with patient	
≤30 minutes	1.000
>30 minutes	2.596 (1.153, 5.846)
Frequently uses antiretroviral guidelines to find out about new HIV treatment options	2.292 (1.008, 5.209)
More than 25% of patients have other health problems (depression or other mental illness, alcohol use, drug use)	0.572 (0.278, 1.177)
Patient gender (% male)	0.827 (0.712, 0.961)
Perception that community resources are available and contributed to HIV care	0.804 (0.582, 1.111)
Perception that system barriers are important to HIV care	1.902 (1.104, 3.276)

month) were almost twice as likely as those with high patient loads to provide counseling to these patients.

Physicians who spent an average of more than 30 minutes with patients were more likely to provide counseling to established patients (adjusted OR=2.60; 95% CI=1.15, 5.85); physicians serving more male patients (adjusted OR=0.83 for each 10% increase in male patient percentage; 95% CI=0.71, 0.96) and infectious disease specialists (adjusted OR=0.43; 95% CI=0.20, 0.92) were less likely to counsel such patients (Table 3).

Physicians who frequently relied on antiretroviral treatment guidelines were more likely to provide counseling to more than 90% of their established patients (adjusted OR=2.3; 95% CI=1.01, 5.21). Physicians who perceived health care system characteristics to be important barriers to care seeking among patients also were more likely to provide counseling to a majority of their established patients (adjusted OR=1.90; 95% CI=1.10, 3.28). In contrast to the model describing practices with newly diagnosed patients, study site was not associated with counseling established patients.

DISCUSSION

Medical management of HIV, which is now viewed as a chronic disease, is time consuming because of its complexity, requiring considerable scientific expertise and time for patient assessment. However, unlike most other chronic diseases, HIV is also an infectious disease that can be transmitted to others. Thus, prevention counseling and education regarding strategies to decrease transmission risk should be an integral component—and a priority—of HIV management.

Our data from physicians in 4 US cities suggest that less than optimal HIV prevention counseling is being provided to both new and established patients. Only 60% of physicians reported providing risk reduction counseling to 90% or more of their patients at the first encounter, and this percentage decreased to 14% with established patients. It is possible that patients received prevention counseling from another health care provider during their visit, but previous studies have indicated that physicians are an important source of information regarding HIV transmission and treatment.[3,13] Lack of attention to HIV transmission behavior during a physician visit represents a missed opportunity for delivery of prevention messages.

Several real and perceived barriers exist that contribute to suboptimal provision of transmission reduction counseling to HIV-positive patients. For example, current antiretroviral therapy requires near perfect adherence, and thus providers may be spending a significant amount of time counseling patients about the need to take their medications, leaving little time for discussion of risk reduction. In addition, physicians place different levels of emphasis on provision of this information to newly diagnosed and established patients. In the case of newly diagnosed patients, our findings indicated that perceived time constraints, patient load, and physicians' perception that patients had psychosocial problems were barriers to the delivery of transmission reduction counseling. Consequently, physicians with larger patient loads and those with a higher proportion of patients with mental health or substance abuse problems may have less time to address prevention issues. However, these patients are particularly in need of HIV prevention counseling, in that mental health and substance use problems can have negative effects in terms of medication adher-

ence, viral load suppression, and HIV drug resistance.[28–33]

In regard to established patients, our findings showed that patient gender, physicians' specialty training, and physicians' perception of outside resources available to their patients affected the frequency with which they provided transmission reduction counseling. The finding that physicians with a predominance of male patients were less likely to provide prevention counseling is consistent with other studies showing that female patients communicate more with their physicians, ask more questions than their male counterparts, and are more likely to discuss issues related to sexual matters.[34,35]

The finding that infectious disease specialists were less likely than other physicians to provide prevention counseling to their established patients is consistent with a recent study showing that physicians whose specialty was infectious disease were less confident than physicians with other specialties in assessing patients' sexual risk behaviors.[36] As is the case with many subspecialists, demands on time and effort to keep abreast of their subspecialty may decrease infectious disease specialists' focus on primary prevention. It is also possible that their interest is in management of the complications of HIV and the intricacies of antiretroviral therapy, and they believe counseling is better conducted by other allied health professionals.[37]

Notably, in the case of both newly diagnosed patients and established patients, physicians who reported being very familiar with or who frequently used current antiretroviral treatment guidelines were more likely to provide transmission counseling to the majority of their patients. Although, at the time of the present study, these guidelines did not address prevention, physicians who were more likely to use this resource may also have been more familiar with recent initiatives emphasizing HIV transmission counseling as a priority.

Limitations of our data should be noted. First, nonrespondents may have differed from respondents in terms of their reporting of prevention practices, although this possibility was reduced by the study's response rate. The small number of nonresponders with available data limits the conclusions that can be made regarding nonresponse bias. However, the limited data suggest that response rate did not vary according to gender or type of training. Second, we did not define HIV transmission risk reduction counseling in the survey questionnaire. Future studies similar to the present investigation could refer to the guidelines recently published[10] to define what is meant by prevention counseling so that physicians will have a basis for responding to questions about counseling quality and content.

Third, we asked providers to report on their delivery of counseling practices to patients they had seen in the past month. Providers may have delivered prevention counseling in the past, but not at the most recent medical care visit. Fourth, we lacked data allowing us to evaluate whether delivery of prevention messages led to reductions in new cases of sexually transmitted diseases or in other markers of high-risk transmission behaviors. Finally, the data obtained were self-reported by providers and not confirmed through patient interviews or clinical records. It is unlikely that physicians would underreport their delivery of prevention counseling, given that this is a highly desirable behavior. If any bias had been present, it was most likely in the direction of overreporting, which suggests that overall rates of counseling may be even lower than those observed here.

As we enter the third decade of the HIV/AIDS epidemic in the United States, more people are living with HIV than ever before. At the same time, we are also seeing an increase in risk behaviors among persons living with HIV.[6–8] Physicians caring for HIV-positive individuals have probably been underused as a resource in the national HIV/AIDS prevention strategy. This issue has been recognized in recent national initiatives and studies calling for health care providers to increase the frequency of prevention messages to HIV-positive patients.[9–12,19] However, if they are to provide prevention counseling during medical visits, health care providers will need specific training and tools. Strategies similar to those used in posttest counseling usually delivered to individuals at the time they learn their HIV diagnosis could be incorporated into the medical care visit, including cueing systems that could identify those at highest risk, suggested scripts on how to introduce the topic of prevention,[38] goal-directed counseling,[39] and mechanisms to document patients' progress in reducing high-risk behaviors. Intervention research will also be critical to evaluate different strategies for prevention counseling in the medical care setting.

In addition, it is important to recognize the variability inherent in patient characteristics and clinical care settings.[39] Established patients may have different prevention needs and face different challenges than newly diagnosed patients. For example, some newly diagnosed individuals may be in denial about their HIV and may find it difficult to contemplate and discuss behavior changes related to sexual activity. Established patients may need to be counseled on the interrelationships among risk for HIV transmission, receiving HAART, maintaining adherence, and achieving an undetectable viral load.[40] Some patients, regardless of whether they are newly diagnosed or established, may be engaging in high-risk behaviors, while other patients may not be sexually active. However, individual patient behaviors can change over time and should be assessed at each clinical encounter. Providers also should not make assumptions about the sexual behaviors of their patients without conducting an assessment. Techniques such as stages of change,[41] interactive counseling, and motivational interviewing could be useful in efforts to recognize the individual needs of patients and could allow for tailoring of prevention messages targeted at specific risk behaviors and time periods.[39]

Although there are many constraints placed on physicians who are addressing multiple needs of their HIV-positive patients during a brief encounter, physicians should take an active role in delivering prevention counseling. In turn, physicians can work with other professional clinic staff to ensure that patients receive additional prevention services, if available. New detailed guidelines for physicians and other providers ("Incorporating HIV Prevention Into the Medical Care of Persons Living With HIV"[10]) have recently been released and should be used as a resource. In addition, both public and private forms of insurance might serve as important incentives to compensate physicians sufficiently to allow them to have the time to deliver prevention messages. Incorporating prevention counseling

into the HIV primary care setting and including physicians and other primary care providers in this process represent important new strategies that may assist in targeting populations not reached by current efforts. ■

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This article was accepted October 28, 2003.

Contributors

L.R. Metsch and M. Pereyra wrote the article and analyzed the data, with collaboration from the remaining authors. L.R. Metsch, C. del Rio, W.A. Duffus, G. Dickinson, P. Kerndt, P. Anderson-Mahoney, and S.A. Strathdee contributed to the study design and directed study activities from their respective sites. L. Gardner and A.E. Greenberg conceived the provider study, and L.R. Metsch developed the prevention focus for the study. All of the authors contributed to interpretation of results.

Acknowledgments

This study was supported by the Centers for Disease Control and Prevention (cooperative agreements U64/CCU417672, U64/CCU917638, U64/CCU317654, and U64/CCU417657).

Antiretroviral Treatment and Access Study Group members are as follows: Lytt Gardner, Scott Holmberg, Zaneta Gaul, and Christopher S. Krawczyk, Centers for Disease Control and Prevention; Carlos del Rio, Sonya Green, Maribel Barragan, Wayne A. Duffus, Michael Leonard, Christine O'Daniels, Catherine Abrams, Felicia Berry, Valerie Hunter, Howard Pope, and Giselle C. Hicks, Division of Infectious Diseases, Emory University School of Medicine; Steffanie A. Strathdee, Anita Loughlin, Steven Huettner, Matt Woolf, Ovedia Burt, and Janet Reaves, Johns Hopkins Bloomberg School of Public Health; Pamela Anderson-Mahoney, Peter Kerndt, Bobby Gatson, Brandon Schmidt, Norma Perez, Amy Chan, Lawrence Fernandez Jr, Shannon Curreri, Eric Valera, and Stella Gutierrez, Health Research Association; Lisa R. Metsch, Clyde McCoy, Gordon Dickinson, Toye Brewer, Eduardo Valverde, Wei Zhao, Steve Mulcahy, Lauren Gooden, Samuel Comerford, Faye Yeomans, and Yolanda Davis Camacho, University of Miami School of Medicine; and Harvey A. Siegel, Richard C. Rapp, Teri L. Rust, and Jichuan Wang, Wright State University School of Medicine.

Human Participant Protection

This study was approved by the institutional review boards of the Centers for Disease Control and Prevention, the University of Miami School of Medicine, the Emory University School of Medicine, the Johns Hopkins Bloomberg School of Public Health, and the Health Research Association. Voluntary participation was solicited in a cover letter describing the study, and a response to the questionnaire was considered informed consent.

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Call for Papers American Journal of PUBLIC HEALTH ***Prison Health***

The *American Journal of Public Health* (*AJPH*), in collaboration with the Community Voices Initiative of the National Center for Primary Care, Morehouse School of Medicine, is planning a theme issue dedicated to an examination of quality of care and health disparities in America's Criminal Justice System. Work in communities has led to examination of health disparities along race, age, and gender lines. This work has involved itself with those who live without restraint in our communities. Little systematic scientific evidence is available to permit analysis of the strengths or limitations of the prison health care system and the health status of residents of these facilities. In addition, we are now witnessing a phenomenon of large numbers of people leaving the prison system and returning to our communities, some with compromised health and most with no access to comprehensive health care services. Whether behind the fence or returning to communities, there are public health implications.

The guest editors are soliciting contributions of articles for possible publication, focusing on major research issues and practice activities related to delivery of health services to this special population. All papers will undergo peer review by the AJPH's editorial team and the guest editors. In order to be considered for inclusion in the theme issue, articles must be submitted by October 1, 2004, through the online submission at **http://submit.ajph.org**. This website also provides Instructions for Authors, including specific guidelines for various types of papers. When submitting articles, please select Prison Health under the Theme Issue menu. Additional information concerning the theme issue can be obtained by contacting guest editors: Henrie M. Treadwell, PhD, at **htreadwell@msm.edu** and Joyce Nottingham, PhD, at **joyce_nottingham@msm.edu**.