

Regular article

A nationwide survey of hepatitis C services provided by drug treatment programs

Shiela M. Strauss, Ph.D.^{a,*}, Gregory P. Falkin, Ph.D.^a, Zdravko Vassilev, M.D., MPH^a,
Don C. Des Jarlais, Ph.D.^b, Janetta Astone, Ph.D.^a

^aNational Development and Research Institutes, Inc., New York, NY, USA

^bBeth Israel Medical Center, New York, NY, USA

Received 3 May 2001; received in revised form 26 October 2001; accepted 18 November 2001

Abstract

Drug treatment programs are a site of opportunity for the delivery of primary and secondary hepatitis C (HCV) prevention services to drug users, a population at great risk for contracting and transmitting the virus. Using data collected from a random nationwide sample ($N = 439$) of drug treatment programs in the United States, this study examines the extent to which various types of HCV services are provided to their patients. Findings indicate that the majority of drug treatment programs educate at least some of their patients about HCV, and provide some type of support for patients who are infected with the virus. Only 29 of the programs in the sample test all of their patients for HCV, however, and 99 programs test none of them. For the most part, residential treatment programs offer more HCV related services than outpatient drug-free programs. © 2002 Elsevier Science Inc. All rights reserved.

Keywords: HCV services; Telephone survey; Drug treatment programs; Treatment modality; Disease prevention

1. Introduction

Drug users are at extremely high risk for infection with hepatitis C virus (HCV), an infection that becomes chronic in about 85% of the individuals who contract the virus (Seeff, 1995). Given the efficiency with which HCV is spread parenterally and the widespread sharing of needles, syringes, and injection drug use paraphernalia (Hagan et al., 1999; Thomas et al., 1995), many new cases are still occurring among drug injectors (Garfein et al., 1998; Villano et al., 1997), both among new injectors and those who have longer histories of injecting (Bell et al., 1990; Zeldis et al., 1992). In addition, high-risk sexual practices (e.g., having multiple sex partners without always using condoms, and engaging in sex exchange for drugs or money), often associated with severe drug and/or alcohol dependence (Ellerbrock et

al., 1995; Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997; Ostrow et al., 1993; Word & Bowser, 1997), play a role in the transmission of HCV infection (Alter et al., 1989; Daikos, Lai, & Fischl, 1994; Lavanchy, 1999; Ndimbie, Kingsley, Nedjar, & Rinaldo, 1996). Thus, many drug users, whether noninjectors, or past or present drug injectors, are at risk for HCV infection or transmission.

Medically underserved and difficult to reach (Bae, 1997; Chitwood, McBride, French, & Comerford, 1999; Contoreggi, Rexroad, & Lange, 1998), many drug users who are at considerable risk for contracting or transmitting HCV are uninformed about the nature and progression of the illness, its means of transmission, their own HCV serostatus, and treatment options available if they are infected with the virus (Best et al., 1999; Stein, Maksad, & Clarke, 2001; Dhopes, Taylor, & Burke, 2000). Drug treatment programs are uniquely situated to provide comprehensive primary and secondary HCV prevention services for drug-addicted individuals (Des Jarlais et al., 1996; Levin, Trumble, Edmunds, Statman, & Petersen, 1993; Needle, Coyle, Normand, Lambert, & Cesari, 1998; Polinsky, Hser, Anglin, & Maglione,

* Corresponding author: National Development and Research Institutes, Inc., 71 West 23 Street, 8th floor, New York, NY 10010, USA. Tel.: +1-212-845-4409; fax: +1-917-438-0894.

E-mail address: strauss@ndri.org (S.M. Strauss).

1998; Selwyn, Budner, Wasserman, & Arno, 1993; Umbricht-Schneider, Ginn, Pabst, & Bigelow, 1994). Many drug treatment programs have assumed this role with regard to HIV/AIDS (Brown & Beschner, 1989; Clapp, 1998; Hubbard, Marsden, Cavanaugh, Rachal, & Ginzburg, 1988; Metzger, Navaline, & Woody, 1998; D'Aunno, Vaughn, & McElroy, 1999; Polinsky et al., 1998; Friedmann, Alexander, & D'Aunno, 1999). The extent of the provision of these HIV related services, however, has been found to vary across drug treatment programs according to organizational and patient characteristics, such as treatment program modality, proportion of injection drug users, hospital affiliation, patient-staff ratios, the proportion of HIV infected patients, and gender (D'Aunno et al., 1999; Friedmann et al., 1999; Grella, Etheridge, Joshi, & Anglin, 2000; Polinsky et al., 1998).

For the most part, the drug treatment program response to the HCV epidemic has not been documented in the literature. One study, reporting on a nationwide survey of hepatitis C testing in 373 drug treatment programs in England and Wales, revealed that 70% of the programs provided hepatitis C testing, but only 24% of them did so routinely (Winstock, Sheridan, Lovell, Farrell, & Strang, 2000). No such study appears in the literature concerning drug treatment program response to the HCV epidemic among drug users in the United States. In addition, while contributing important information about a key aspect of HCV service provision by focusing on antibody testing, the drug treatment survey in England and Wales did not examine the extent of other HCV related services (e.g., education about HCV, or the medical monitoring and management of HCV positive patients). Nor did it distinguish programs according to treatment modality (e.g., methadone maintenance, outpatient drug-free, residential drug-free). Since patient characteristics (e.g., drug use history and severity), program capacity, treatment approach and intensity, and expected length of stay differ across treatment modalities (Anglin, Hser, & Grella, 1997; Etheridge, Hubbard, Anderson, Craddock, & Flynn, 1997), some HCV related services are likely to differ according to drug treatment program type.

Because so little is known about the drug treatment program response to the HCV epidemic among drug users, this article describes the extent to which various types of HCV services, including education and counseling, testing for HCV antibodies, and medical monitoring and management of HCV infection, are provided by a random nationwide sample of drug treatment programs in the United States. In addition, because previous research has reported that patient involvement and patterns of services and staffing vary across different treatment modalities (Broome, Simpson, & Joe, 1999; Schildhaus, Gerstein, Dugoni, Brittingham, & Cerbone, 2000), this article also compares the level of HCV related service provision across outpatient and residential drug treatment programs.

2. Methods

2.1. Sampling frame

The research was conducted by surveying a random sample of drug treatment programs included in the October 1, 2000 Inventory of Substance Abuse Treatment Services (I-SATS), a comprehensive list of organized substance abuse treatment programs known to the Substance Abuse and Mental Health Services Administration (SAMHSA) on that date. To eliminate any possible systematic sources of bias in using the list of 17,160 I-SATS programs, the inventory was randomly ordered using a random number generator in SPSS for Windows, version 9.0 (SPSS, Inc., Chicago, IL).

2.2. Eligibility for the study

The unit of analysis for the survey was the drug treatment program. By “drug treatment program,” we mean a program that primarily provides treatment for drug (not only alcohol) abuse, dependence or addiction on a one-to-one or on a group basis. Programs on the I-SATS list were contacted by telephone to determine their eligibility for inclusion in the project. The programs needed to be located in the United States and provide drug abuse treatment services (1) on-site, (2) to at least 50% of their patients, and (3) services offered had to be more than detoxification or other very short-term treatment (i.e., less than 7 days).

2.3. The screening questionnaire

In addition to screening programs for eligibility, information was gathered from each eligible program regarding the provision of HCV services, including education about hepatitis C and how it spreads; hepatitis C antibody testing at the program; and the types of assistance the programs offered HCV infected patients in obtaining medical care or other support services. Information was also obtained about the program's organizational characteristics (e.g., modality, ownership), patient characteristics (e.g., number of patients treated each month, estimated proportion of drug injectors, estimated proportion of HIV positive and HCV positive patients), and medical orientation (e.g., on-site medical services, medical staff, HIV testing on-site). Before implementation of the 15–20 minute interview, approval was received from the Institutional Review Board (IRB) at the National Development and Research Institutes, Inc.

2.4. Procedures

Three interviewers conducted the survey using a computer-assisted telephone screening questionnaire written in Questionnaire Development System (QDS) software, version 1.1 (NOVA Research Co., Bethesda, MD, 1998). Programs were contacted sequentially according to the

randomly ordered I-SATS list. After describing the purpose of the research, interviews were conducted with either the program manager or the individual most knowledgeable about the medical services the programs provided. The interviews were preceded by a number of assurances regarding the voluntary nature of the research and the confidentiality of responses.

2.5. The study sample

Attempts were made to contact a total of 1063 programs from January through August, 2001. Of these, interviews were completed with 479 programs (45.1%). Among the 584 programs that did not complete interviews for the research: (1) 35.8% were not eligible for the study since fewer than 50% of their patients received drug abuse treatment or the program provided only detoxification services; (2) 35.1% could not be reached after 8 attempts; (3) 15.6% had program managers who opted not to participate in the research; and (4) 13.5% did not participate for some other reason, such as being located outside the United States, were administrative offices only, had disconnected numbers, or were no longer in existence. Assuming that all of the programs that refused to participate were actually eligible for the research, the database for the project reflects a participation rate of 84.2% among the eligible programs that could be contacted.

In all, 40 of the 479 programs that completed the telephone interviews dispensed methadone or LAAM. Previous research has shown that, with respect to HIV/AIDS, outpatient methadone maintenance programs provide more testing and counseling, and more treatment for HIV infection than do outpatient drug-free programs (Friedmann et al., 1999; Polinsky et al., 1998). Thus, to avoid the possible confounding that might occur by combining outpatient methadone maintenance programs and outpatient drug-free programs in an examination of HCV service provision, and in order to shed further light on the services provided by drug treatment modalities that have not received frequent examination in previous research (Sorensen & Copeland, 2000), the analyses in this article involve interview responses only from the 439 drug-free outpatient and residential treatment programs that completed the interview.

The 439 programs varied with respect to treatment modality and location. In all, 274 provided only outpatient services, 109 provided only residential services, and 56 provided both outpatient and residential drug treatment services to their patients. Each of these latter 56 units was reclassified as an outpatient or a residential treatment program depending on whether the majority of its patients were in the outpatient or residential component of the treatment program, respectively. Respondents in these 56 units were asked to answer the interview questions as they related to the component of their unit in which the majority of their patients received treatment. In all, 297 units (67.7%) were classified as outpatient drug-free programs, and 142

(32.3%) were classified as residential drug-free treatment programs. The 439 programs in the study sample include drug treatment programs in 48 of the 50 states and the District of Columbia.

2.6. Statistical analyses

All analyses comparing outpatient and residential drug-free treatment programs involve chi-square tests for statistical significance. We report chi-square values, degrees of freedom, and p -values for results that are significant at the $p = .05$ level or less.

3. Results

3.1. Organizational and patient characteristics

There were a number of statistically significant differences between the outpatient and residential treatment programs. With regard to treatment program ownership, while about an equal percentage of outpatient and residential programs were publicly owned (13.9% and 11.3%, respectively), outpatient programs were significantly more likely than residential programs to be private-for-profit (27.0% and 10.6%, respectively) as opposed to private-not-for-profit ($\chi^2(2) = 17.8, p < .000$). The outpatient programs treated a significantly greater number of patients for drug abuse each month than the residential programs: while 52.4% of outpatient programs treated more than 50 patients each month, only 18.4% of residential drug treatment programs treated more than 50 patients during this time frame ($\chi^2(1) = 45.2, p < .000$). The number of staff, however, who provided direct patient services was significantly smaller in outpatient programs. While 48.0% of the outpatient programs had 5 or more staff members who had direct contact with patients, this was the case for 77.5% of the residential treatment programs ($\chi^2(1) = 34.2, p < .000$).

Because injection drug use is a major risk factor for contracting HCV, we asked respondents to estimate the proportion of patients who had ever injected drugs. We also asked respondents to estimate the proportion of patients who were HIV and/or HCV positive. Almost all (95.1%) of the respondents indicated that at least some of their patients were drug injectors (93.8% of the outpatient programs and 97.9% of the residential programs). Outpatient programs, however, had a significantly smaller proportion of drug injectors than residential programs. In particular, 62.8% of the outpatient programs and 35.0% of the residential programs had drug injectors who constituted up to 10% of their patient population, while 10.7% of the outpatient programs and 27.8% of the residential programs reported that 50% or more of their patients injected drugs ($\chi^2(3) = 41.9, p < .000$). About the same proportion of outpatient and residential programs had some HIV positive patients (69.6% and 68.9%, respectively), but a significantly larger proportion

of residential programs than outpatient programs reported that the proportion of HIV positive patients was 5% or more (42.4% and 29.7%, respectively; $\chi^2(2) = 8.75$, $p = .013$). Similarly, while 78.6% of the outpatient programs and 72.6% of the residential programs reported that some of their patients had hepatitis C, significantly more of the residential programs (25.9%) than the outpatient programs (11.8%) reported that about 10% or more of their patients were HCV antibody positive ($\chi^2(2) = 18.3$, $p < .000$).

3.2. HCV education

Respondents were asked about the HCV related education provided to their patients. In all, 51.9% of the treatment programs provided education concerning hepatitis C and how it spreads to all of their patients, although this was the case among a significantly greater proportion of residential treatment programs (65.7%) than outpatient programs (45.3%). Furthermore, 23.9% of the outpatient drug treatment programs, but only 13.9% of the residential treatment programs did not educate any of their patients about hepatitis C ($\chi^2(2) = 15.6$, $p < .000$). Education about HCV was provided during one or more phases of treatment: at admission, during main treatment, and at reentry. While almost all of the programs (87.6%) provided HCV related education to patients during the main phase of treatment, 23.2% provided education at reentry and 37.6% provided this education at admission. The admission phase of treatment, however, was significantly more frequently a time of HCV education in the outpatient drug treatment programs than in the residential programs (41.9% and 29.7%, respectively; $\chi^2(1) = 4.19$, $p = .027$). Overall, 65% of the programs report providing HCV education during only 1 phase of treatment (usually during main treatment). Residential treatment programs, however, were significantly more likely to provide this education during only 1 phase of treatment than outpatient programs (76.3% vs. 59.0%, respectively), while outpatient programs were more likely than residential programs to provide it during 2 treatment phases (27.0% and 11.0%, respectively; $\chi^2(2) = 12.8$, $p = .002$).

While some programs provided HCV related education by bringing in outside experts, most programs utilized their own staff members to deliver this information, making staff education about HCV an important component of the program's HCV related education effort. In 54.1% of the programs, all staff providing direct patient services received education or in-service training on hepatitis C, while in a minority of the programs (14.2%) none of the staff with direct patient contact received this education. Individuals in a variety of roles provided HCV education to patients in the treatment programs, and in some programs, more than one person educated patients about the disease. HCV related education for patients was most frequently provided by trainers (37.9% of programs), medical staff (37.6%), case managers (32.9%), counselors or intake specialists (26.7%), and HIV counselors (21.5%). Residential programs were

significantly more likely than outpatient programs to have medical staff (44.9% vs. 33.8%, respectively; $\chi^2(1) = 4.07$, $p = .044$) and HIV counselors (28.0% vs. 18.0%, respectively; $\chi^2(1) = 4.52$, $p = .033$) provide the HCV education to their patients, while outpatient programs were significantly more likely to have counselors or intake specialists provide this education (32.3% vs. 16.3%, respectively; $\chi^2(1) = 10.5$, $p = .001$).

3.3. Testing for HCV

Respondents were also asked to indicate the extent to which their patients were tested for HCV antibodies while at the treatment program. Over one-third (39.4%) of the respondents indicated they could not provide an estimate of the percent of their patients who were tested, with a significantly greater proportion of outpatient program respondents (43.8%) than residential program respondents (30.3%) indicating this lack of ability to provide such an estimate ($\chi^2(1) = 7.32$, $p = .007$). Among those who were knowledgeable about the extent of this HCV antibody testing, a significantly greater proportion of outpatient (48.5%) than residential (18.2%) programs indicated that none of their patients were tested for HCV antibodies while at their treatment programs, while a much greater proportion of residential programs (62.6%) than outpatient programs (45.5%) indicated that some, but not all, of their patients had been tested for HCV antibodies while undergoing drug abuse treatment ($\chi^2(2) = 28.8$, $p < .000$).

3.4. Medical monitoring and management of HCV positive patients

Respondents in 361 of the 439 programs in the sample indicated they knew whether or not services were provided at their programs to HCV positive patients, and that at least one patient at their programs was known to the program to be infected with HCV. Of these respondents, 293 (81.2%) indicated that HCV positive patients were assisted in obtaining some medical care or other support services. Among the main types of medical care or other support services to HCV antibody positive patients, respondents indicated that HCV infected patients were most frequently provided with counseling by clinical staff to help them maintain their health, (90.4% of the 293 respondents); were referred to doctors for treatment (87.0%); were monitored by counselors to make sure they kept their medical appointments and took their medications (79.5%); had program staff who advocated for them with other medical providers (74.7%); were given case management to assist them in receiving proper medical care (67.9%); had a physician on staff who provided medical treatment for patients diagnosed as having hepatitis C (18.4%); and provided support groups for patients who have hepatitis C (13.3%).

Some of the types of services that were provided for HCV infected patients differed by treatment program

modality. While a significantly greater proportion of the residential programs (79.0%) than the outpatient programs (61.7%) offered case management for HCV positive patients ($\chi^2(1) = 9.30, p = .002$), a significantly greater proportion of outpatient programs made referrals to doctors for treatment than residential treatment programs (90.4% and 81.0%, respectively; $\chi^2(1) = 5.36, p = .021$). Furthermore, residential treatment programs were significantly more likely than outpatient programs to have a physician on staff who provided medical treatment for patients who had been diagnosed as having hepatitis C (27.6% and 13.3%, respectively; $\chi^2(1) = 9.19, p = .002$), and to have counselors who monitored patients to make sure they kept their medical appointments and took their medications (91.4% and 72.9%, respectively; $\chi^2(1) = 14.2, p < .000$).

4. Discussion

Based on responses from a nationwide random sample of drug abuse treatment programs, this study provides data on the extent to which hepatitis C related services are provided to their patients. Half of the programs educate all of their patients about hepatitis C and how it spreads, and about three-fourths of the programs educate at least some of their patients. Among programs that reported they were aware that at least one patient was infected with hepatitis C, about three-fourths of the programs provide some type of medical support. However, the extent of testing for hepatitis C antibodies, a vital component of hepatitis C related services, appears to be more limited. In approximately one-third of the programs, the respondent could not provide even a rough estimate of the proportion of patients who had been tested. In addition, of those respondents who could provide an estimate of the proportion of patients tested for the virus, only one-tenth indicated their treatment programs test all of their patients for HCV antibodies, and almost half of them do not test any of their patients. Thus, drug treatment programs are likely to be unaware of many of their patients who are infected with hepatitis C, and are therefore unable to assist them in monitoring or helping them manage their illness. It should be emphasized that testing for HCV antibodies would not only enable the drug treatment programs to inform patients about their HCV serostatus, but it would also provide the programs with the vital information needed to identify and provide support services to their HCV seropositive patients.

Some program managers believe that drug treatment programs should only provide limited HCV related services to some of their patients (or none at all), particularly with regard to antibody testing. Certainly, if patients test positive for HCV antibodies they may suffer considerable psychological distress. Furthermore, if others know these results, these HCV infected individuals may be the object of discrimination and stigma. In addition, while HCV can be diagnosed, the most efficacious treatment available at

present produces side effects of depression and anemia that are especially hard to tolerate for people in the early stages of recovery. Furthermore, this treatment is effective in no more than 40% of individuals and it is often not available to addicted patients due to barriers related to funding, stigma, and medical contraindications (Zweben, 2001). From the perspective of these program managers, without effective and widely available treatment, the benefits to patients of learning their HCV status are outweighed by the drawbacks. Treatment options for hepatitis C are rapidly changing, however, as new, more effective retroviral drugs and combination therapies become available (Zeuzem et al., 2000; Manns, Cornberg, & Wedemeyer, 2001). A priority for drug treatment program managers should therefore be to remain knowledgeable about new developments in the clinical practices for optimal management of hepatitis C. Helpful sources for this information are the National Institute of Diabetes and Digestive and Kidney Diseases, the Centers for Disease Control and Prevention, and the American Liver Foundation.

The extremely high rate of HCV infection among drug users (particularly those who inject or injected drugs), and the associated morbidity and mortality suggest the importance of providing education, testing, and medical monitoring and management of HCV infected individuals. Drug treatment programs are in a unique position to provide these primary and secondary prevention services because of their access to drug users at risk for HCV infection. Serving a population with limited ability to negotiate for hepatitis C related services on its own, drug treatment programs can inform these individuals about hepatitis C and its prevention, destigmatize the disease, and correct any misperceptions they may have about the illness and its progression. While testing patients for the virus may result in some drawbacks for individuals who learn they are HCV positive, there are also many benefits. These individuals can be taught to reduce the risk of serious liver disease by severely limiting or eliminating alcohol intake and undergoing periodic liver disease stage testing. In addition, because HCV infected individuals may be asymptomatic for decades, the virus may remain undetected by those affected, thus providing the opportunity to infect others. Those who know they are infected can take steps to minimize the risk of transmission. In addition, while current available treatment options are limited, difficult to tolerate, and only moderately effective at best, the drug treatment program setting offers an excellent opportunity to supervise and monitor patients who are undergoing treatment for the virus. Furthermore, while no vaccine for hepatitis C exists at the present time, safe and effective vaccines for hepatitis A and B are available and indicated for HCV infected persons because concomitant hepatitis A and B can make HCV-related liver disease worse. Drug treatment programs can facilitate the administration of these vaccines.

The results of the research also show that the provision of hepatitis C related services varies widely across drug

treatment programs. For the most part, residential drug-free as compared with outpatient drug-free treatment programs provide more hepatitis C related services in hepatitis C related education and antibody testing to their patients. Our analyses show that residential programs are significantly more likely than outpatient programs to have a lower patient to staff ratio, to have a higher proportion of patients estimated to have injected drugs, and to be publicly owned or private-not-for-profit. Differences in these organizational and patient characteristics are among those that have been shown in previous research to be related to greater levels of primary care and HIV service provision among drug treatment programs (Friedmann et al., 1999, D'Aunno et al., 1999). With regard to hepatitis C related services, the smaller patient-staff ratio in the residential programs relative to the outpatient programs may result in greater availability of counselors to provide medical monitoring and management of HCV infected patients. In addition, residential treatment programs, with a larger percent of patients estimated to have injected drugs, may be providing more hepatitis C related services since their patient populations are at greater risk for contracting and spreading the virus. With a much larger proportion of residential treatment programs identified as public or not-for-profit, there may also be a greater emphasis on providing services, like those related to HCV, that their patients might not otherwise receive in programs motivated by profit. In addition, just as programs having a larger proportion of HIV positive patients have been more likely to provide HIV/AIDS treatment (Friedmann et al., 1999), our analyses show that residential programs, with a greater estimated proportion of HCV positive patients, provide more HCV related services.

The expansion of HCV service provision, especially for the evaluation and treatment of large numbers of currently untreated patients in drug treatment programs, will require more dedicated resources, already in short supply. Just as was the case for HIV/AIDS (Clapp, 1998), drug treatment program managers may need to identify and secure necessary fiscal and staff resources to implement a variety of HCV related services for their patients. For some programs, this service expansion will mean dedicating resources to adapt already existing service provision for HIV/AIDS (including education, prevention, early intervention, patient medication management, and treatment), to include similar HCV related services. Staff will need training to increase their knowledge about HCV, so they can assist patients in taking a more active role in their own health care. Programs will need to provide these services in a manner consistent with their organizational structure. For example, our study demonstrates that outpatient programs will be more likely to refer HCV positive patients to doctors for treatment than residential programs, while residential programs will be more likely to offer case management for patients who are referred out for medical services, and to offer treatment to HCV positive patients by a physician on staff.

Even in programs with very limited resources, however, it should be feasible to educate all patients about the virus because the cost of providing educational services is relatively modest. This education will need to be aimed at helping patients reduce both HCV related risk behavior and unrealistic fears about the progression and implication of the illness. The manner in which this education is provided, who provides the education, and the phase (or phases) of treatment when this education takes place, will likely vary according to the needs and organizational characteristics of the programs. For example, our research indicates that a much larger proportion of outpatient programs than residential programs will likely provide this education at admission. In addition, outpatient programs are much more likely than residential programs to have a counselor or intake specialist who will provide this education, while medical staff and HIV counselors will be more likely to educate residential, rather than outpatient treatment program patients.

There are a number of limitations to the research that should be noted. First, the interview was brief, limited in its scope, and conducted “on the spot” without prior preparation on the part of the respondent. Aware that respondents would generally not have exact information accessible to them during the interview, the interview asked them to report rough estimates of a number of aggregated patient characteristics, among them: the percent of patients who are drug injectors, were tested for HCV, and HCV infected. Respondents were asked to provide estimates for these characteristics by giving answers of either 0%, up to 10%, 25%, 50%, 75%, or 100%. Nonetheless, because these answers were elicited without the benefit of prior preparation, some of these responses may be inaccurate. Second, respondents in this brief interview were not asked in detail about the provision of some hepatitis C services, so the data cannot reflect some important variation between programs. For example, there were no questions about the nature, content and quality of hepatitis C related education, but rather only whether such education was provided and if so, whether to all or some of the programs’ patients. Third, the data reflect the provision of HCV related services by drug treatment programs as reported by a program administrator. Since patients at the treatment programs were not interviewed, the data may not reflect the proportion of patients who actually received these services. Finally, while respondents were either program managers or those most knowledgeable about HCV services at the treatment programs, this level of knowledge likely varied across programs. Thus, these data should be viewed as representing the perceptions of the respondents, which in some cases may be misperceptions. In spite of these limitations, the research gives important information about the current level of drug treatment programs’ HCV service provision to the population most at risk for the virus.

The combination of high current HCV prevalence (especially among injection drug users) and the virulent nature of HCV suggest that gaining control of HCV will be an

enormous public health challenge. Because a vaccine for HCV is unlikely to be developed in the near future, drug treatment programs can play an essential role in controlling the epidemic, at least in part. Our research suggests, however, that drug treatment programs need to be doing much more than they are currently doing to reduce the risk of HCV transmission, and to help those already infected obtain the care they need. Furthermore, drug treatment programs will also need to develop and expand linkages with the health care delivery system for HCV prevention, screening and referral to care so that their patients can maintain their health to the greatest extent possible.

Acknowledgments

Funding for this study was provided by the National Institute on Drug Abuse (grant no. 1-R01 DA13409). Points of view do not represent the official positions of the Federal government, NIDA, or NDRI. We especially wish to thank Deborah Trunzo, of the Office of Applied Studies, SAMHSA, for her kind assistance in arranging for the project's use of the I-SATS database. We also thank Sarah Krassenbaum, Kim Sanders, and Kristine Ziek, the project interviewers, for their consistent efforts to ensure the best possible rate of treatment program participation in the research, and whose high standards are reflected in the excellent quality of the data. An earlier version of this paper was presented at the Sixty-third Annual Scientific Meeting of the College on Problems of Drug Dependence, Scottsdale, AZ, June 2001.

References

- Alter, M. J., Coleman, P. J., Alexander, W. J., Kramer, E., Miller, J. K., Mandel, E., Hadler, S. C., & Margolis, H. S. (1989). Importance of heterosexual activity in the transmission of hepatitis B and non-A, non-B hepatitis. *Journal of the American Medical Association*, 262, 1201–1205.
- Anglin, M. D., Hser, Y. I., & Grella, C. E. (1997). Drug addiction and treatment careers among clients in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, 11, 308–323.
- Bae, J. P. (1997). Assessing the need, use, and developments in mental health/substance abuse care. *Health Care Financing Review*, 18 (3), 1–4.
- Bell, J., Batey, R. G., Garrell, G. C., Crewe, E. B., Cunningham, A. L., & Byth, K. (1990). Hepatitis C virus in intravenous drug users. *Medical Journal of Australia*, 153, 274–276.
- Best, D., Noble, A., Finch, E., Gossop, M., Sidwell, C., & Strang, J. (1999). Accuracy of perceptions of hepatitis B and C status: cross sectional investigation of opiate addicts in treatment. *British Medical Journal*, 319, 290–291.
- Broome, K. M., Simpson, D. D., & Joe, G. W. (1999). Patient and program attributes related to treatment process indicators in DATOS. *Drug & Alcohol Dependence*, 57 (2), 127–135.
- Brown, B. S., & Beschner, G. M. (1989). AIDS and HIV infection- implications for drug abuse treatment. *The Journal of Drug Issues*, 19 (1), 141–162.
- Chitwood, D. D., McBride, D. C., French, M. T., & Comerford, M. (1999). Health care need and utilization: a preliminary comparison of injection drug users, other illicit drug users, and nonusers. *Substance Use and Misuse*, 34 (4–5), 727–746.
- Clapp, J. D. (1998). Organizational factors related to AIDS/HIV education in outpatient substance abuse treatment units. *Journal of Health and Social Policy*, 9 (3), 1–13.
- Contoreggi, C., Rexroad, V. E., & Lange, W. R. (1998). Current management of infectious complications in the injecting drug user. *Journal of Substance Abuse Treatment*, 15 (2), 95–106.
- Daikos, G. L., Lai, S., & Fischl, M. A. (1994). Hepatitis C virus infection in a sexually active inner city population. The potential for heterosexual transmission. *Infection*, 22 (2), 72–76.
- D'Aunno, T., Vaughn, T. E., & McElroy, P. (1999). An institutional analysis of HIV prevention efforts by the nation's outpatient drug abuse treatment units. *Journal of Health and Social Behavior*, 40, 175–192.
- Des Jarlais, D. C., Stimson, G. V., Hagan, H., Perlman, D., Choopanya, K., Bastos, F. I., & Friedman, S. R. (1996). Emerging infectious diseases and the injection of illicit psychoactive drugs. *Current Issues in Public Health*, 2, 130–137.
- Dhopes, V. P., Taylor, K. R., & Burke, W. M. (2000). Survey of hepatitis B and C in an addiction treatment unit. *American Journal of Drug and Alcohol Abuse*, 26 (4), 703–707.
- Ellerbrock, T. V., Harrington, P. E., Bush, T. J., Schoenfish, S. A., Oxtoby, M. J., & Witte, J. J. (1995). Risk of human immunodeficiency virus infection among pregnant crack cocaine users in a rural community. *Obstetrics & Gynecology*, 86 (3), 400–404.
- Etheridge, R. M., Hubbard, R. L., Anderson, J., Craddock, S. G., & Flynn, P. M. (1997). Treatment structure and program services in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, 11, 244–260.
- Friedmann, P. D., Alexander, J. A., & D'Aunno, T. A. (1999). Organizational correlates of access to primary care and mental health services in drug abuse treatment units. *Journal of Substance Abuse Treatment*, 16 (1), 71–80.
- Garfein, R. S., Doherty, M. C., Monterroso, E. R., Thomas, D. L., Nelson, K. E., & Vlahov, D. (1998). Prevalence and incidence of hepatitis C virus infection among young adult injection drug users. *Journal of Acquired Immunodeficiency Syndrome and Human Retrovirology*, 18 (Suppl 1), S11–S19.
- Grella, C. E., Etheridge, R. M., Joshi, V., & Anglin, M. D. (2000). Delivery of HIV risk-reduction services in drug treatment programs. *Journal of Substance Abuse Treatment*, 19, 229–237.
- Hagan, H., McGough, J. P., Thiede, H., Weiss, N. S., Hopkins, S., & Alexander, E. R. (1999). Syringe exchange and risk of infection with hepatitis B and C viruses. *American Journal of Epidemiology*, 149 (3), 203–213.
- Hubbard, R. L., Marsden, M. E., Cavanaugh, E., Rachal, J. V., & Ginzburg, H. M. (1988). Role of drug-abuse treatment in limiting the spread of AIDS. *Review of Infectious Diseases*, 10 (2), 377–384.
- Hubbard, R. L., Craddock, S. G., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, 11 (4), 261–278.
- Lavanchy, D. (1999). Hepatitis C: public strategies. *Journal of Hepatology Supplement*, 31 (1), 146–151.
- Levin, S. M., Trumble, J. G., Edmunds, M., Statman, J. M., & Petersen, R. C. (1993). Perspectives on linkage of primary health care and substance abuse treatment. *Journal of Addictive Diseases*, 12 (2), 1–8.
- Manns, M. P., Cornberg, M., & Wedemeyer, H. (2001). Current and future treatment of hepatitis C. *Indian Journal of Gastroenterology*, (Suppl 20), 47–51.
- Metzger, D. S., Navaline, H., & Woody, G. E. (1998). Drug abuse treatment as AIDS prevention. *Public Health Reports*, 113 (Suppl 1), 97–106.
- Needle, R. H., Coyle, S., Normand, J., Lambert, E., & Cesari, H. (1998). HIV prevention with drug-using populations-current status and future prospects: introduction and overview. *Public Health Reports*, 113 (1), 4–18.

- Ndimbie, O. K., Kingsley, L. A., Nedjar, S., & Rinaldo, C. R. (1996). Hepatitis C virus infection in a male homosexual cohort: risk factor analysis. *Genitourinary Medicine*, 72 (3), 213–216.
- Ostrow, D. G., Beltran, E. D., Joseph, J. G., DiFranceisco, W., Wesch, J., & Chmiel, J. S. (1993). Recreational drugs and sexual behavior in the Chicago MACS/CCS cohort of homosexually active men. Chicago Multicenter AIDS Cohort Study (MACS)/Coping and Change Study. *Journal of Substance Abuse*, 5 (4), 311–325.
- Polinsky, M. L., Hser, Y.-I., Anglin, M. D., & Maglione, M. A. (1998). Drug-user treatment programs in a large metropolitan area. *Substance Use and Misuse*, 33 (8), 1735–1761.
- Schildhaus, S., Gerstein, D., Dugoni, B., Brittingham, A., & Cerbone, F. (2000). Services research outcome study: explanation of treatment effectiveness, using individual-level and programmatic variables. *Substance Use & Misuse*, 35 (12–14), 1879–1910.
- Seeff, L. B. (1995). The natural history of viral hepatitis, type C. *Sem Gastroenterological Diseases*, 6, 20–27.
- Selwyn, P. A., Budner, N. S., Wasserman, W. C., & Arno, P. S. (1993). Utilization of on-site primary care services by HIV-seropositive and seronegative drug users in a methadone maintenance program. *Public Health Reports*, 108 (4), 492–500.
- Sorensen, J., & Copeland, A. (2000). Drug abuse treatment as an HIV prevention strategy: a review. *Drug and Alcohol Dependence*, 59, 17–31.
- Stein, M. D., Maksad, J., & Clarke, J. (2001). Hepatitis C disease among injection drug users: knowledge, perceived risk and willingness to receive treatment. *Drug and Alcohol Dependence*, 61, 211–215.
- Thomas, D. L., Vlahov, D., Solomon, L., Cohn, S., Taylor, E., Garfein, R., & Nelson, K. E. (1995). Correlates of hepatitis C virus infections among injection drug users. *Medicine*, 74 (4), 212–220.
- Umbrecht-Schneiter, A., Ginn, D. H., Pabst, K. M., & Bigelow, E. (1994). Providing medical care to methadone clinic patients: referral vs. on-site care. *American Journal of Public Health*, 84 (2), 207–210.
- Villano, S. A., Vlahov, D., Nelson, K. E., Lyles, C. M., Cohn, S., & Thomas, D. L. (1997). Incidence and risk factors for hepatitis C among injection drug users in Baltimore, Maryland. *Journal of Clinical Microbiology*, 35, 3274–3277.
- Winstock, A. R., Sheridan, J., Lovell, S., Farrell, M., & Strang, J. (2000). National survey of hepatitis testing and vaccination services provided by drug services in England and Wales. *European Journal of Clinical Microbiology and Infectious Diseases*, 19, 823–828.
- Word, C. O., & Bowser, B. (1997). Background to crack cocaine addiction and HIV high-risk behavior: the next epidemic. *American Journal of Drug & Alcohol Abuse*, 23 (1), 67–77.
- Zeldis, J. B., Jain, S., Kuramoto, I. K., Richards, C., Sazama, K., Samuels, S., Holland, P. V., & Flynn, N. (1992). Seroepidemiology of viral infections among intravenous drug users in northern California. *Western Journal of Medicine*, 156, 30–35.
- Zeuzem, S., Feinman, S. V., Rasenack, J., Heathcote, E. J., Lai, M. Y., Gane, E., O'Grady, J., Reichen, J., Diago, M., Lin, A., Hoffman, J., & Brunda, M. J. (2000). Peginterferon alfa-2a in patients with chronic hepatitis C. *New England Journal of Medicine*, 343 (23), 1666–1672.
- Zweben, J. E. (2001). Hepatitis C: education and counseling issues. *Journal of Addictive Diseases*, 20 (1), 33–42.