Intravenous Drug Abuse and One Academic Health Center

Peter E. Dans, MD; Roseanne M. Matricciani, RN, JD; Sharon E. Otter; Daniel S. Reuland

Increasing reports of management problems involving intravenous drug abuse patients prompted our study. From 1983 to 1988, the recorded inpatient prevalence of diagnoses consistent with drug abuse/dependence, other than alcohol or nicotine, rose hospitalwide from 0.6% to 3.5%. Disruptive behavior was documented in the records of 38 of 71 active cocaine or heroin users admitted during 1986 vs 12 of 64 matched control subjects. Care and teaching focused principally on secondary complications of intravenous drug use. Study recommendations included (1) establishment of a comprehensive substance abuse treatment, education, and research program with a dedicated inpatient unit; (2) use of an explicit social contract between patients and care givers; and (3) staff education about legal limits in managing disruptive patients and searching for illegal substances. Primary and secondary prevention, including combating societal enabling of substance abuse, should be the institution's long-term goals.

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PATIENTS using cocaine or heroin present complex clinical management problems and have been responsible for reports of such antisocial behavior as abuse of staff and drug trafficking. An ad hoc committee was convened to define these problems and to determine solutions. In conjunction with this effort, we conducted a study of the prevalence and management of intravenous drug abuse in hospitalized patients during the last 6 years. Our findings indicate a need to reorganize patient care and teaching regarding substance abuse and to develop a better system for documenting and monitoring its extent and associated problems.

METHODS

For the period from fiscal years 1983 to 1988, we determined the prevalence of patients with documented drug abuse or dependence, exclusive of alcohol and nicotine, admitted to The Johns Hopkins Hospital, a 1036-bed acute-care general hospital with 51 nursing units. We queried the hospital's computerized clinical database for patients with intravenous drug-related International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes listed in their top five discharge diagnoses (Table 1). The patients were then aggregated by clinical department and year; their diagnosis related group, length of stay, and charges were obtained during phase 1 of the study. Drug-dependent mothers and infants were later identified using separate codes, and some independent analyses were conducted (Table 2).

During phase 2, we attempted to obtain a profile of patients in the Department of Medicine currently engaging in intravenous drug use. The 349 patients discharged in fiscal year 1988 with an intravenous drug-related ICD-9-CM discharge code were listed chronologically, and every fourth patient was selected for chart review. Patients were assumed to be using cocaine or heroin if (1) they admitted use, (2) a urine toxicological screen was positive for opiates or cocaine metabolites, or (3) a physician or substance abuse counselor strongly suspected it and documented such evidence as "track marks" or withdrawal symptoms. After exclusion, 71 patients remained; they were matched with control patients according to the following criteria: (1) the chronologically nearest patient discharged from the same medical nursing unit without an ICD-9-CM drug-related code, (2) sex, and (3) age within 10 years of the index patient. Of 71 control patients, 7 were found on chart review to meet the above criteria for current use and were deleted. Average age was 33.9 years for study and 35.9 years for controls.

On chart review an experienced clinical research nurse determined the principal and four secondary diagnoses, payer status, demographic information, previous admissions to the hospital, drug use patterns, and any treatment for drug abuse where it was noted. Data were entered on a large-scale mainframe computer and analyzed statistically by \( x^2 \) analysis and Student's \( t \) test, where appropriate, using a computer program based on the SAS User's Guide (SAS Institute Inc, Cary, NC, 1982).

RESULTS

Phase 1

We identified 2742 patients discharged from all hospital services between 1983 and 1988 with a diagnostic code listed in Table 1 for drug abuse or dependence, exclusive of alcohol and nicotine. The number of hospital discharges for this group was 2971. Hospital discharges with the survey codes rose from 180 in fiscal year 1983 to 983 in 1988 (Table 1). The increase was particularly striking between 1985 and 1988 \((P<.0001)\). Adding the mothers and infants discharged with separate codes for drug dependence (Table 2), the patient prevalence rose from 0.6% to 3.5% during the study period.

To estimate possible ascertainment bias, we identified all discharges from any service for the 956 patients who had a study-related diagnosis during any admission to the Department of Medicine in the 6-year period. A discharge diagnosis consistent with drug abuse/dependence was assigned in 1205 of the 1986 discharges. If this diagnosis had been
Table 1.—Frequency of Discharge Coding for Abuse or Dependence of Drugs Other Than Alcohol or Nicotine on All Services

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<tbody>
<tr>
<td>Opioid</td>
<td>304.0, 304.7, and 305.5</td>
<td>62</td>
<td>52</td>
<td>44</td>
<td>172</td>
<td>313</td>
<td>268</td>
</tr>
<tr>
<td>Cocaine</td>
<td>304.2 and 305.6</td>
<td>2</td>
<td>3</td>
<td>11</td>
<td>43</td>
<td>89</td>
<td>253</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>304.1 and 305.4</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>29</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Cannabis</td>
<td>304.3 and 305.2</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>18</td>
<td>32</td>
<td>39</td>
</tr>
<tr>
<td>Other*</td>
<td>304.5, 304.4, 304.6, 304.8, 305.3, 305.7, and 305.8</td>
<td>5</td>
<td>17</td>
<td>30</td>
<td>58</td>
<td>30</td>
<td>50</td>
</tr>
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Table 2.—Discharges With Special Drug Dependence Codes

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<tbody>
<tr>
<td>Mothers with drug code 64631 or 64632†</td>
<td>13</td>
<td>7</td>
<td>22</td>
<td>25</td>
<td>81</td>
<td>148</td>
</tr>
<tr>
<td>Babies with drug code 760.72 and/or 7795¶</td>
<td>0</td>
<td>3</td>
<td>27</td>
<td>29</td>
<td>103</td>
<td>199</td>
</tr>
<tr>
<td>Instances where mother and baby were both assigned a drug dependence code§</td>
<td>0 (1)</td>
<td>10 (2)</td>
<td>9 (5)</td>
<td>54 (7)</td>
<td>82 (9)</td>
<td></td>
</tr>
<tr>
<td>Pregnant women with codes 64836, 64633, and 64834 64834</td>
<td>21</td>
<td>10</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td>29</td>
</tr>
</tbody>
</table>

*Numbers in parentheses are instances where no hospital number was assigned to an infant to indicate stillbirth or fetal death; thus, a match would not be expected.
†Codes for drug dependence in pregnancy without delivery (either not specified, antepartum, or postpartum).
‡Includes amphetamine, combinations of drugs other than opioid, and hallucinogens such as LSD.

appropriate during each admission, the rate of underidentification or undercoding would have been 39%.

Another estimate of undercoding was obtained by our phase 2 review of the records of control patients discharged in fiscal year 1988. Twenty of 71 control patients either were using heroin or cocaine or had a history of drug use for which the codes listed in Table 1 would have been appropriate. Although our data may underestimate the extent of drug abuse and dependence by about 30% to 40%, they are sufficiently representative for a general description of the problem and trend analysis.

The prevalence of comorbidities indicative of drug abuse/dependence exclusive of alcohol and nicotine rose from 0.9% to 4.7% from 1983 to 1988 in the Department of Medicine. Whereas overall average length of stay in the Department of Medicine fell from 10.2 to 7.5 days from 1983 to 1988, the length of stay for patients with these comorbidities rose from 7.7 to 8.7 days.

The average charges for patients in the Department of Medicine with these comorbidities rose slightly when corrected for 1988 dollars from $5075 in 1983 to $6496 in 1988, but their aggregate charges rose dramatically from $345,100 to $2.27 million. The proportion of the total charges for all patients discharged from the Department of Medicine accounted for by this group rose from less than 1% to 4%.

On the psychiatry service, the prevalence of this comorbidity rose from 4.9% in 1983 to 18.5% in 1988, and the length of stay increased from 16.4 to 22.7 days during the same period. Concurrently, the overall length of stay for psychiatric inpatients fell from 22.1 to 14.9 days. The total charges for this inpatient group on the psychiatry service rose in 1988 dollars from $503,974 in 1983 to $2.50 million in 1988.

On the surgical service, the prevalence of this comorbidity rose from 0.4% in 1983 to 2.9% in 1986. The length of stay for this patient group dropped from 10.5 to 8.0 days between 1983 and 1988, paralleling a similar decline in overall departmental length of stay from 12.0 to 9.3 days. Nevertheless, the increase in the volume of patients with this comorbidity resulted in a rise in the total charges in 1988 dollars from $192,763 in 1989 to $1.58 million in 1988.

Analysis of principal discharge diagnoses for these patients revealed that, except on the psychiatry service, treatment was directed mainly at the secondary complications of substance abuse or associated drug dependencies. The most frequent primary discharge diagnoses of patients on the medical service were cellulitis, 8.5%; alcoholic psychosis, 6.0%; diseases of the esophagus, stomach, duodenum, and intestine, 5.8%; liver disease and hepatitis, 5.2%; endocarditis, 5.0%; pancreatitis and pneumonia, 4.7% each; poisoning by drugs, 4.5%; acquired immunodeficiency syndrome, 3.9%; chronic obstructive pulmonary disease and asthma, 3.7%; diabetes, 3.6%; nephritis, 2.5%; and pylonephritis 1.9%. The number of patients discharged with the diagnoses of acquired immunodeficiency syndrome and drug abuse rose from 0 in fiscal year 1983 to 37 in fiscal year 1988 for the Department of Medicine alone.

For the Department of Surgery, the principal diagnoses, in order of frequency, were cellulitis, 23.8%; open wound, 11.8%; fracture, 10.0%; and diseases of the digestive system, including enteritis and colitis, 7.1%. Twenty-seven patients were discharged during the 6-year period after cardiac valve replacement. As in other studies, the principal diagnoses for patients discharged from the psychiatry service were related to primary substance abuse 17.3% or well-known associated psychoses, 24.6%; and psychic factors associated with medical diseases, 17.3%.

The problem of addicted mothers and infants rose at least 10-fold during the period, mostly in the last 2 years (P < .001) (Table 2). Because coding of mothers and their live infants is done separately in our hospital, we found evidence of underidentification and undercoding despite substantial improvement (Table 2).

Phase 2

Of the 71 patients in the Department of Medicine currently using cocaine or heroin 98% were black, 4% white, and 1% Hispanic; of the 64 control patients who were not current users, 75% were black, 23% white, and 2% Asian. Evidence of disruptive behavior was anecdotal except for a few hospital incident reports. However, on chart review, 33

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Table 3.—Reported Drug Use Among 71 Patients
With Current Intravenous Drug Use

<table>
<thead>
<tr>
<th>Drug</th>
<th>No. (%) of Patients</th>
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<tbody>
<tr>
<td>Cocaine</td>
<td>62 (87)</td>
</tr>
<tr>
<td>Heroin</td>
<td>59 (83)</td>
</tr>
<tr>
<td>Nicotine</td>
<td>57 (80)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>45 (63)</td>
</tr>
<tr>
<td>Cannabis</td>
<td>11 (15)</td>
</tr>
<tr>
<td>Methadone</td>
<td>7 (10)</td>
</tr>
<tr>
<td>Phencyclidine</td>
<td>2 (3)</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>1 (1)</td>
</tr>
</tbody>
</table>

study patients (54%) as opposed to 12 control patients (19%) had some documented evidence of such behaviors (P<.0001). The behaviors in study and control patients, respectively, were drug-seeking behavior, 12 vs 5; uncooperativeness, 12 vs 5; leaving the hospital against medical advice, 8 vs 1; and hostility, 6 vs 1. Fifteen study patients and 1 control patient had a history of incarceration or probation (P<.0001).

Both cocaine and heroin were used by 50 patients (70%); of these, 88% also used alcohol and/or nicotine (Table 3). Of the 71 current intravenous drug users, 42% were human immunodeficiency virus (HIV) positive, 31% were negative, and 27% had unknown status. Thus, when HIV status was known, it was positive 73% of the time. Acquired immunodeficiency syndrome was the diagnosis in 7% of these patients in 1988. Furthermore, 21% of the group reported that they currently were sharing needles, while another 14% stated that they had shared needles in the past.

Five study and 5 control patients did not survive hospitalization. Of the 66 study patient survivors, 38 (58%) were referred for treatment of substance abuse either during the admission or on discharge. Twenty-nine had failed previous treatment. No record of previous treatment or of referral for treatment was found for 28 cases.

SERVICES, FINANCING, AND EDUCATION

Existing clinical services for drug abuse and dependence include a substance abuse intervention counseling program and general consultation services in internal medicine, psychiatry, and neurology, but no detoxification unit. A survey of the health system resulting from the recent merger of four hospitals revealed that almost all components of a comprehensive substance abuse treatment program existed somewhere; however, there was no formal coordination or integration of these services. Limited insurance coverage, especially for Medicaid patients, was reported to severely hamper the ability of even affiliated institutions to provide primary substance abuse treatment.

An informal survey revealed that education of medical students and trainees is directed at secondary complications rather than primary management of cocaine and heroin use. Of the 387 clinical and senior clinical fellows directly employed at or rotating through our hospital, only one was planning to enter a training program in the management of substance abuse in fiscal year 1990. By comparison, 30 fellows each are training in cardiology and oncology and 17 in pulmonary disease.

COMMENT

Despite evidence of well-known deficiencies in the identification and coding of substance abuse, there was a striking increase in inpatient prevalence of intravenous drug abuse in the past 3 years. Quantifying instances of disruptive patient behavior was less successful because of the lack of systematic reporting. However, on chart review, the intravenous drug abuse patients were found to be much more disruptive than matched control patients. The committee recommended were increased education in the identification and coding of drug abuse and dependence as well as improved documentation of verbal and physical abuse of care givers. Such education must cover resolving disagreements among care givers as to what constitutes drug abuse/dependence; physician reluctance to write the diagnosis in the chart because of concerns about liability and confidentiality; and how hospital coders should use the various ICD-9-CM codes for drug dependence.

Because of the general nature of our hospital and its lack of a comprehensive drug treatment program, most patients are treated for the secondary complications of their drug abuse/dependence. They are then referred to substance abuse programs at other institutions. The lack of integration with the general clinics where patients are followed up for the organ system complications of their drug abuse is important because this patient group is already prone to noncompliance.

As expected, the prevalence of HIV infection was high in those using intravenous drugs, and a substantial number of patients were engaging in risky behavior for HIV transmission. This underscores the need for targeted treatment services. The committee recommended establishing a comprehensive, coordinated program of patient care, education, and research in substance abuse management, including an inpatient nursing unit with a specially trained staff. A dedicated unit is important for patient care, training, and to signal institutional commitment to the issue. Because substance abuse is a life-long problem that requires long-term management, this unit must be linked to expanded ambulatory, residential, and self-help activities.

On a positive note, we identified many components of such a program throughout the health system. This inventory has been useful for inservice education, for detecting important service gaps, and for encouraging integration of services. However, departmental and institutional autonomy makes such integration difficult. In fact, we found financial disincentives to the use of primary substance abuse treatment services even at affiliated institutions because of restrictions by third-party payers, which do reimburse more costly care of secondary problems. Lack of acute treatment slots for Medicaid recipients and the uninsured has created long waiting lists. Concurrently, expanded treatment facilities for the affluent are being built at the expense of benefits. Our patchwork and increasingly competitive health care delivery and payment system cannot resolve such paradoxes.

The establishment of an organized system for managing substance abuse patients has also been hampered by the lack of training programs, especially for nonpsychiatric professionals. It is estimated that only 60 fellows are being trained in alcohol and drug abuse nationally. In contrast, 7475 internal medicine subspecialty fellows were in training in 1987 and 1988. Of these, cardiology, hematology/oncology, pulmonary diseases, and gastroenterology accounted for 64%, whereas general medicine, the closest relevant unit, accounted for only 2%. The decreased number of trained professionals has effectively muted the call for more funding of treatment and research. Consequently, the committee recommended the development of a substance abuse fellowship program to be built into the previously mentioned comprehensive substance abuse program and improved education in substance abuse management. Fellows would generate more attention to important research and clinical questions as well as the education of students and trainees in clinical management now limited mainly to treatment of secondary complications. In a setting where substance abuse is associated with almost 30% of hospital discharges, a multidisciplinary educational program is clearly necessary.

Experience with education in alcohol management shows that it must go be-
yond teaching drug abuse identification.24 Lacking a next step perceived as helpful, trainees who struggle to survive difficult days may find avoidance to be more pragmatic. To develop a sense of optimism rather than the all-too-prevalent despair, they must see treatment as possible. Illustrating this is a most difficult challenge because (1) most patients are poly-dependent and without a stake in the society and (2) students and trainees frequently change services and locations. Initiatives might include special clinics and more on-site expertise in the general continuity clinics to assist trainees in managing substance abuse.

The committee also identified resentment among nurses and physicians who were expected to be responsive when patients sought care after another bout of self-destructive behavior, but are powerless when they refuse to cooperate in treatment or are abusive. Indeed, hospitals present easy targets for patients who wish to take advantage of their openness to steal, deal drugs, or act in an otherwise disruptive manner. To the extent to which hospitals respond by becoming fortunes, they become less congruent for general patient care. A balance must be struck between heightened security and the traditional ethos of openness and caring. One approach is to set expectations of patients and providers. To this end, the committee developed and urged the use of a social contract that specifies patient and provider expectations from less to more restrictive. This contract can make the ground rules explicit between patients and care givers and also assure that care givers agree on the management plan. In addition, the law office initiated a draft policy regarding the legal limits in discharging noncompliant patients and in conducting patient searches for illegal substances. Information about both issues will be incorporated into regular risk management sessions.

Finally, our study recalled the adage by Peabody that "the secret of patient care is in caring for the patient." In fact, the secret of caring for others is being cared for oneself. This is especially true in inner-city hospitals, where frontline care givers are being asked to deal with society's most difficult problem without a clear social mandate and with an overwhelming mismatch between patient need and available resources. The resulting frustration can lead to distancing the patient through the use of pejorative terms like "dirtball."25 This must be addressed if intellectually gifted and compassionate care givers are to be recruited to the field. As with acquired immunodeficiency syndrome, only when a critical mass of care givers and a coherent care system are assembled will intravenous drug abuse be dealt with systematically.26 To signal institutional awareness of this toll, the committee recommended that a formal program be developed to help care givers cope with frustrations in managing this difficult group of patients.

CONCLUSION

We have outlined some initiatives our institution (and comparable ones) should consider. Other issues being addressed separately are drug abuse and pregnancy, drug testing policies, and the care of HIV-infected addicts.27 The magnitude and complexity of the associated problems make a better organized approach to substance abuse mandatory. Such institutions can also use their considerable capacity for moral suasion to confront society's enabling of substance abuse. The latter involves (1) the association of alcohol and tobacco in the media and in advertising with youth, glamorous parties, rock concerts, and sporting events; (2) the failure to provide sufficient preventive measures such as education, jobs, housing, and an enhanced sense of community in surrounding neighborhoods where substance abuse is endemic; and (3) the inadequate financing of substance abuse treatment. In short, the community and not just individuals must be our patient.

Indeed, our society must face the fact that we commit substantial resources to help chronically ill patients (poor and affluent) become well enough to return to the setting where their substance abuse flourished. In some respects, this is like the enabling behavior of well-meaning relatives who cover for the patient under the belief that they are helping. This may unwittingly foster the patient's denial rather than confront the substance abuse constructively. Clearly, health care institutions must continue to treat patients for such secondary complications as alcoholic cirrhosis or intravenous drug-related infections and trauma. However, if that is where we continue to expend most of our energies, we may merely contribute to the patients' downward spiral and its vortex effect on those around them.

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