Methadone Medical Maintenance (MMM):

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Abstract

Methadone Medical Maintenance (MMM) was implemented in 1983 to enable socially rehabilitated methadone patients to be treated in the offices of private physicians rather than in the traditional clinic system. Over a period of 15 years, 158 methadone patients who fulfilled specific criteria within the clinic system entered this program in New York City. Participating patients reported to their physician once a month and received a one-month supply of methadone tablets rather than a one-day liquid dose in a bottle.

Of the 158 patients who entered this program, 132 (83.5%) were compliant with the regulations and proved to be treatable within the hospital-based private practices of internists participating in the program. Compliant MMM patients found it easier to improve their employment status and business situations, finish their educations, and normalize their lives in MMM as opposed to the traditional clinic system because they had simplified reporting schedules and fewer clinical restrictions. Twelve (8%) compliant patients were able to successfully withdraw from methadone after an average of 17.7 years of treatment in both the traditional clinics and MMM. Twenty compliant patients (13%) died from a variety of causes, 40% of which were related to cigarette smoking. None of the deaths were attributable to long-term methadone treatment. Other causes of death included hepatitis C, AIDS, cancer, homicide, complications of morbid obesity and meningitis.

The 26 noncompliant patients (16.5%) were referred back to their clinics for continued treatment or were discharged for failure to report as directed. A major cause of failure in MMM was abuse of crack/cocaine.

Stigma concerning enrollment in methadone treatment was a major social issue that patients faced. Many refused to inform employers, members of their families, friends, and other physicians who treated them for a various of conditions that they were methadone patients. The methadone medical maintenance physician, therefore, functions as a medical ombudsman for the patient, educating other physicians who treat the patient about methadone maintenance and its applicability to the patient. Our results can serve as a model for the expansion of office-based MMM treatment.

Key Words: Heroin addiction, methadone, methadone maintenance, methadone medical maintenance, private practice.

Introduction

Methadone maintenance treatment (MMT) for heroin addiction was first developed at The Rockefeller University as an outpatient clinical program from 1964 to 1970 (1, 2). From the inception of its use in maintenance treatment, methadone has been shown to be effective and medically safe (3, 4). Over the past 35 years, methadone maintenance has been implemented in outpatient clinics throughout most of the United States. Approximately 179,000 patients were in treatment in 1998, about 44,000 of them in New York State (5). Evaluations of methadone maintenance treatment (MMT) over the past 30 years and reviews by the National Institutes of Health and the Institute of Medicine have shown methadone maintenance to be the most effective treatment for heroin addiction (6–9).

Traditional methadone clinics serve an important purpose for methadone patients with social and medical problems, especially when they begin MMT. However, the counseling services available in clinics for patients with serious problems (e.g., abuse of drugs and alcohol, chronic unemployment, homelessness, behavioral problems, emotional instability, etc.) are seldom needed by socially rehabilitated patients (6, 7). Furthermore, the clinics are highly regulated, with specific rules about reporting (6, 7). While useful for patients who need services and structure, they are constricting and counterproductive for socially rehabilitated patients who have stopped using illegal drugs, have obtained steady employment, and fulfill family responsibilities (6, 7).

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For example, approval from various levels of government must be obtained for exemptions to regular policy on issues such as extended travel for business and vacations. Also, patients must stand on lines while waiting to be serviced. The locations of traditional clinics can compromise the confidentiality of patients who may report to neighborhood clinics. They can be identified as patients not only by other patients, but also by neighborhood residents who can observe the patient enter and leave the facility. In traditional methadone maintenance clinics, the medication is dispensed in bottles containing the patient’s daily dose in liquid form. This may cause problems with storage or concealment if the patient receives several bottles to take home or goes on a business trip or vacation.

Supported by the New York State agency now known as the Office of Alcoholism and Substance Abuse Services (OASAS), methadone medical maintenance (MMM) was started in 1983 at The Rockefeller University by Dr. Marie E. Nyswander. Its purpose was to treat rehabilitated methadone maintenance patients who wanted to continue methadone maintenance treatment but did not need the services and structure of traditional methadone clinics (10–12). In MMM, methadone is prescribed and dispensed to patients at least one or more times a month by physicians in the privacy of their offices, in contrast to patients reporting to traditional clinics daily, one or more times a week. Therefore, methadone treatment and methadone patients are better integrated into mainstream medical practice than they would be in the isolated clinics (10–12).

In 1985, the program was transferred to physicians affiliated with the Division of Chemical Dependency in the Department of Medicine of the Beth Israel Medical Center and the Family Care Group Practice at St. Luke’s Hospital in New York City. Subsequently, with the closing of the St. Luke’s Program in 1993, all patients were transferred to the Beth Israel Program. Physicians recruited to treat patients in this program were internists with hospital-based and family care practices at the Beth Israel Medical Center. Only one of these physicians had clinical experience treating methadone patients. These newly recruited doctors integrated the patients into their practices after receiving training supervised by physicians with experience treating methadone patients.

In MMM, patients receive their monthly medication in the form of dry “diskettes” in one or two bottles depending on the dosage prescribed. Dispensing of methadone in diskette form facilitates storage of the medication and its concealment from family members or friends, who may not know the patient is enrolled in the program. The patients allocate the proper daily amount, dilute the diskettes in water or juice, and drink the medication in the privacy of either the physician’s office or their homes, as opposed to taking it in a clinic.

From its inception, MMM operated under a series of IND (Investigational New Drug) permits issued by the Food and Drug Administration (FDA). The program also is approved by the Drug Enforcement Agency (DEA) and the Institutional Review Board of the Beth Israel Medical Center. The New York State OASAS has supported and encouraged the development of this model of MMM.

This article summarizes the MMM program as currently operated at Beth Israel Medical Center in New York City from its inception in June of 1983 at The Rockefeller University through August of 1998, a period of more than 15 years. The criteria for admission, a description of the patient population, retention statistics, the role of the physician, medical problems, reasons for termination, causes of death, stigma issues, and examples of improvements in the patients’ personal and social functioning will be reviewed.

Criteria for Admission

The following criteria were established to select patients who still needed the services provided in the clinics, but who established a pattern of stability, could be treated by a private physician, and could benefit from the program:

- a minimum of 5 years in methadone treatment; this was modified in 1996 to 4 years.
- no patients who applied had less than 6 years of treatment in conventional methadone programs
- for at least three years prior to entry
  - no illicit drug use, excessive alcohol use, or criminal activity
  - stable employment or verified reliable income and/or productive activity such as homemaking, or enrollment in school or college
  - compliance with clinic regulations, submitting of urine tests, reporting as directed to the clinic, responsibility in
handling of medication (e.g., no losses or evidence of diversion)

- emotional stability, as assessed from clinic records and personal interviews

- a verifiable means of financial support to meet payments

- no social ties to illicit drug users or street activities that can precipitate relapse

- a statement from the clinic staff that patient can benefit from methadone medical maintenance and meets the criteria for admission to the program

- patient and referring clinic agree that methadone medical maintenance is important to facilitate improvements in the patient’s quality of life

- if patient is under care for a serious chronic medical condition or emotional disorder and is prescribed medication, the patient must allow the medical maintenance physician to contact the other health care providers to exchange relevant medical information

- the patient enters the program voluntarily

- the patient is not in the armed forces

- the patient can safely store a month’s supply of medication

Recruitment of Patients and Procedures of the Program

Patients are recruited from methadone maintenance programs in the Greater New York City area. Letters are sent to the clinic directors notifying them about the program and the criteria for admission. The clinics then submit records of candidates for MMM to the medical director of the MMM program and to the Bureau of Methadone Planning and Policy of the New York State Office of Alcoholism and Substance Abuse Services, for further evaluation. After the records are approved, the patients are interviewed by the medical director of the MMM program. If appropriate and if the patient agrees, he or she is transferred to the methadone medical maintenance program. The transfer is entered into the New York State Methadone registry operated by Creative Socio-Medics. Alternatively, patients may contact the Medical Director of MMM directly. Patients who initiate their referrals must then go through the same process as other applicants.

Initially, patients report every two weeks for one month to a physician approved by the program and then are placed on monthly reporting schedules. At each office visit, patients submit a urine sample for analysis to determine whether they are refraining from use of illegal drugs and whether they are taking their prescribed methadone. Patients also drink a dose of methadone at the visit, to demonstrate that tolerance to the prescribed dose is maintained. Employment is verified through salary receipts and income tax statements. As in the clinic programs, patients receive annual physical examinations. The physician discusses social and/or personal problems that patients may have encountered and, if indicated, may refer patients for further counseling or assistance. The physician also discusses medical problems that patients present and can either assume responsibility for primary care or refer patients to other physicians. The patient pays a predetermined fee either through personal check or insurance coverage.

At the time of their office visits, the patients receive up to a monthly supply of methadone diskettes. The diskettes are ordered by the physician from the hospital pharmacy. They are stored in a safe in the physician’s office the day before the patients’ appointments.

Patient demographics for the group in this study, as well as their addiction and criminal histories are summarized in Table 1. Continuous variables are expressed as mean with standard deviation. Variables associated with demographics, addiction and criminal histories of patients who were in good standing — those who remained active, received a favorable termination from treatment, or died but were compliant patients when alive — were compared to the variables of patients who received unfavorable terminations. The standard t test and the chi square were employed to determine statistical significance inferred at p < 0.05. Life table analysis using SPSS (Statistical Package for the Social Sciences) was applied to investigate retention of 158 patients for a period of up to fifteen years.

Descriptive Data, Cumulative Retention and Reasons for Discharge

Table 1 summarizes demographic information and the addiction, criminal, and methadone maintenance treatment histories of the 158 patients at the time of their admissions to MMM distributed
according to future compliance or noncompliance with the regulations of the program. The patients in MMM are socially rehabilitated, on the average older than patients who enter the clinic system (13) and economically within the working, middle, and upper-middle classes, with intact families. Of the 158 patients who entered the program, 132 (83.5%) were compliant with the regulations of the program and proved to be treatable within the private-hospital-based medical practices of the internists who were affiliated with the program. The remaining 26 patients (16.5%) were noncompliant and terminated from the methadone medical maintenance.

Statistically significant differences between compliant and noncompliant patients were noted in marital status, number of episodes of methadone maintenance treatment, and the duration of methadone treatment prior to admission to the methadone medical maintenance program. A higher proportion of compliant patients were either married or lived in stable relationships at the time of their admissions, as compared to the noncompliant patients (68% vs. 46%, p < 0.03). This suggests that as a group the patients with stable relationships are more likely to comply with the regulations of the program. Also, a higher proportion of compliant patients had two or more admissions to conventional methadone treatment prior to entering the MMM program than did the noncompliant patients (36% vs. 12%, p < 0.002). This may imply that compliant patients had committed themselves to long-term methadone maintenance treatment because they were unable to abstain from illicit use of heroin following withdrawal from methadone after previous episodes of treatment. Noncompliant patients had significantly shorter durations of treatment in the traditional methadone clinics prior to entering MMM than did compliant patients (12.5 years vs. 15.8 years, p < 0.02). Compliant patients, therefore, had additional time in the traditional clinics to resolve problems that could jeopardize a stable adjustment in MMM.

The figure shows the cumulative retention in MMM of the 158 patients over a period of fifteen years. All of the 158 had sufficient time in treatment for us to calculate the cumulative proportion of those remaining in treatment at the end of one, two and three years (98.7%, 95.6% and 88.6%, respectively). The cumulative proportion of patients enrolled in the program at five (n = 94), ten (n = 48), and fifteen years (n = 10) is 72.4%, 58.8%, and 44.6%, respectively. The declining number of patients over time reflects patients who were discharged and active patients who had short periods of treatment and therefore did not meet the retention criteria for particular intervals of time during the 15-year period of observation. The projected median retention time in MMM for this group of patients is 13.8 years. Sixty-five percent of the group of patients whose participa-

### TABLE 1

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Data for 158 Patients at Time of Admission to the MMM Program</th>
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</thead>
<tbody>
<tr>
<td>1A — Demographic Data</td>
<td>Compliant n = 132</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>27</td>
</tr>
<tr>
<td>Male</td>
<td>73</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12</td>
</tr>
<tr>
<td>Non-Hispanic (White)</td>
<td>81</td>
</tr>
<tr>
<td>Married*</td>
<td>68</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Less than HS</td>
<td>12</td>
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<tr>
<td>HS graduate</td>
<td>63</td>
</tr>
<tr>
<td>College graduate</td>
<td>24</td>
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<tr>
<td>Employment</td>
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<tr>
<td>Full time job</td>
<td>92</td>
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<tr>
<td>Part time/benefit</td>
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</tr>
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</table>

1B — Addiction History

<table>
<thead>
<tr>
<th>Age category</th>
<th>Years</th>
</tr>
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<tbody>
<tr>
<td>Age @ heroin first use</td>
<td>18.5 ± 4.5</td>
</tr>
<tr>
<td>Age @ first use of needles</td>
<td>19.5 ± 4.2</td>
</tr>
<tr>
<td>Duration of heroin use</td>
<td>9 ± 11</td>
</tr>
</tbody>
</table>

1C — Criminal History

| % with known arrests | 70 |
| Age (years) @ first arrest | 20 ± 5 |
| Number of arrests | 6 ± 12 |
| Months incarcerated | 13 ± 27 |

1D — Methadone Treatment History

<table>
<thead>
<tr>
<th>Age first admitted to Methadone Maintenance Treatment</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Treatment Years in Methadone Treatment**</td>
<td>16 ± 5</td>
</tr>
<tr>
<td>% patients with one admission***</td>
<td>64</td>
</tr>
<tr>
<td>% patients with two or more admissions***</td>
<td>36</td>
</tr>
<tr>
<td>Age admitted to MMM</td>
<td>43.8 ± 8.7</td>
</tr>
<tr>
<td>Dose at admission mg/d to MMM</td>
<td>56.9 ± 31.6</td>
</tr>
</tbody>
</table>

Mean ± standard deviation

The difference between compliant and noncompliant patients is not significant except for: * p < 0.03, ** p < 0.002, and *** p < 0.02.
treated for up to fifteen years. Of the 132 patients (83.5%) considered compliant, 99 (62.7%) were alive and active in treatment, reporting once per month for their medication, maintaining their social stability through employment, education, retirement activities, family life, and abstaining from use of illegal drugs. Of the thirteen patients (8.2%) who left alive in good standing, twelve successfully withdrew from methadone. One patient in good standing returned voluntarily to the methadone clinic. This patient worked in the same building in which methadone medical maintenance was administered and was concerned about the possible loss of employment if enrollment in methadone treatment was discovered.

The twelve compliant patients who successfully withdrew from methadone had on the average shorter histories of methadone maintenance treatment in conventional clinics prior to their entry into MMM than the other 120 compliant patients (12.9 ± 3.7 years vs. 16.1 ± 4.9 years, p < 0.002). They remained in MMM for 4.8 ± 2.3 years. The average total years of methadone treatment — the conventional clinic plus MMM — for the patients who successfully withdrew from methadone was 17.7 ± 4.8 years. Eight of the twelve were located and interviewed by phone. They reported that they were abstinent from use of narcotics for periods ranging from one to eight years. One of the former patients reported periods of drug hunger, relapsed to heroin use after five years of abstinence and applied for readmission to methadone maintenance treatment. Another patient in psychotherapy was receiving medication for depression.

Although not statistically significant, a clinical trend that has to be further investigated is that the compliant patients who were able to successfully withdraw from heroin had on the average shorter histories of heroin addiction than other compliant patients (5.8 ± 3.6 years vs. 9.3 ± 10.3 years). This trend coincides with reports in the literature that a duration of heroin addiction of about five years or less, a long duration of methadone maintenance of five or more years, and social stability at time of discharge are associated with successful abstinence after withdrawal (14, 15). However, biological factors may also be a factor in sustained abstinence. (16, 17).

Twenty compliant patients (13%) died from various causes, none of which were attributed to long-term methadone treatment. Eight patients with histories of smoking died from lung cancer (4), heart disease (3), or emphysema (1). Tobacco-related illnesses comprise 40% of the deaths in MMM.
Four patients died from complications related to hepatitis C, and three patients died from complications related to AIDS. Therefore, the number of deaths from smoking-related diseases was greater than the deaths from both AIDS and hepatitis C. The remaining five deaths were caused by cancer (lymphoma), a brain aneurysm, meningitis, complications of morbid obesity and a homicide (street violence). The crude death rate for MMM as of August, 1998 was 17 deaths per 1,000 patient years. The mean age at time of death was 57.7 ± 10.3 years, age range from 37 to 74 years. Patients who died had on the average 79 ± 49 months of treatment in methadone medical maintenance.

Twenty-six patients (16.5%) left MMM for noncompliance after 4 ± 2.67 years in MMM: eleven (6%) did not adhere to regulations of the program by either misusing or losing their medication, failure to report as directed, not meeting their payments, unacceptable behavior in a physician’s office, and two were arrested for fraud and possession of cocaine; fifteen patients (10%) were terminated for serious abuse of cocaine/crack that could not be treated within private practice. Eighteen patients (11%) who left treatment for noncompliance were returned to their clinics of origin, two (1%) were incarcerated and the whereabouts of five noncompliant patients (3%) are unknown.

The majority (58%) of the 26 discharges were involved with cocaine and/or cocaine/crack. Except for two patients who entered treatment in the 1990s, these noncompliant patients were in the first cohort of 100 patients who entered the program during the 1980s at the peak of the cocaine/crack epidemic which began in the early 1980s. Fifty-five patients who entered MMM in the late 1980s and 1990s after the initial years of crack epidemic did not abuse this drug.

Table 3 shows the range of doses for 99 active patients by area of employment as of August 1998. The doses are considered appropriate by both the patients and the physicians, with 42% of the patients in the range of 80 to 120 mg/d. The range of doses in the program demonstrates that doses must be individualized to permit patients to function optimally and to eliminate the use of heroin. There is no correlation between employment and dose, since at every dose level patients are employed in a variety of jobs that demand similar physical and mental skills. For example, of the 9 patients who are CEOs or owners of businesses, 6 are receiving doses in the range of 80 to 120 mg/d and 3 are receiving doses in the range of 5 to 70 mg/d.

### Table 3

<table>
<thead>
<tr>
<th>Dose (Mg/d)</th>
<th>Number of Patients</th>
<th>Area of Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>5–25</td>
<td>10</td>
<td>1 business owner, 3 skilled laborers, 1 drug treatment counselor, 1 waiter, 1 office manager, 1 draftsman, 1 retiree</td>
</tr>
<tr>
<td>30–40</td>
<td>23</td>
<td>1 commercial artist, 2 skilled laborers, 2 drug treatment counselors, 1 construction worker, 4 salespeople, 1 teacher, 2 computer technicians, 5 administrators, 1 secretary, 1 health services, 2 drug counselors, 1 retiree</td>
</tr>
<tr>
<td>50–70</td>
<td>24</td>
<td>2 business owners, 1 laborer, 3 drug treatment counselors, 1 musician, 2 computer technicians, 3 administrators, 4 salespeople, 3 electronic repair workers, 1 paralegal, 1 electrician, 3 retirees</td>
</tr>
<tr>
<td>80</td>
<td>17</td>
<td>4 business owners, 1 skilled laborer, 1 porter, 1 administrator, 2 office services, 1 baker, 1 landscaper, 1 computer technician, 1 pattern maker, 1 drug treatment counselor, 1 bookkeeper, 1 customs officer, 1 homemaker</td>
</tr>
<tr>
<td>90–120</td>
<td>25</td>
<td>2 business owners, 3 administrators, 1 musician, 1 fireman, 1 court stenographer, 1 drug treatment counselor, 3 salespeople, 1 health professional, 1 administrative assistant, 1 computer technician, 2 maintenance service workers, 1 paralegal, 1 psychologist (Ph.D.), 1 electrician, 1 attorney, 1 video producer, 3 retirees</td>
</tr>
</tbody>
</table>

### Discussion

#### Advantages for Patients

The patients in MMM have reported many advantages of being treated by a private physician over the clinic situation, including improved medical care, more secure confidentiality, greater self-confidence to deal with stigma issues, more freedom to pursue educational and business opportunities, and more time for family life, vacations and general social interaction.

In MMM, patients have greater freedom to travel since they report once per month. Therefore, patients are able to take extended vacations without the permission of the clinic. Also patients with jobs or careers that involve extensive travel are able to meet their obligations without relying on emergency approvals and travel arrangements to pick up methadone in other
cities. They are able to change jobs more easily and work overtime or at odd hours without worrying about fixed clinic schedules. Also, patients were able to complete educational programs including advanced graduate degrees without the interference of frequent visits to a clinic. Patients were able to sustain careers in entertainment and law; operate and expand successful businesses in real estate, trucking, construction, jewelry, electronics, and antiques. Those with the proper skills and education obtained jobs in computer technology and business administration. Reporting monthly to a private physician as opposed to the regulated reporting schedules of the clinic was related by patients as a major advantage of MMM which permitted them the time and flexibility to achieve success in their endeavors. Most of the patients’ college and graduate school education was completed when they were enrolled in methadone treatment, and advanced degrees were obtained more easily when the patients were enrolled in MMM. In addition to their regular monthly supply of methadone, MMM patients are permitted to have an additional five-day “insurance supply” of methadone in case of emergencies that would prevent them from keeping previously made physicians’ appointments on specific reporting dates (e.g., inclement weather, deaths in the family, changes in physician’s schedules, sudden illnesses, changes in business and working schedules, etc.). As in the practice of medicine with other conditions, reporting schedules in MMM are flexible to adjust to the requirements of the patients.

Thirty-seven of the 99 active patients also received adjustments in their methadone doses while in MMM. Twenty-seven patients received increases of 10 to 20 mg/d. Twenty-three of these patients reported that they were undermedicated in the clinics and experienced periodic withdrawal symptoms. They did not request increases in their doses for fear of losing privileges and reporting more frequently to the clinics. Four patients indicated that over the course of time in methadone medical maintenance treatment they felt that an increase in dose was indicated since they felt uncomfortable. Ten patients attempting to withdraw from methadone requested reductions in dose but the procedure was discontinued, since the patients felt that they needed to remain in treatment. These patients were restabilized at about 10 mg/d below the doses that they were stabilized on when they entered the program. Sixty-two patients did not request changes and remained on the doses that they were stabilized on in their clinics. In MMM, the prescribed dose is considered a medical rather than a regulatory matter, and appropriate changes are made by the physicians based on consultation with the patients.

Medical Problems and the Role of the Medical Maintenance Physician

In MMM, the patients receive greater attention to their medical problems compared to that received in traditional methadone clinics. The MMM program is staffed with specialists in internal medicine who assume responsibility as the patient’s coordinator of primary health care. The internists have indicated that these compliant, rehabilitated methadone patients fit into their private practices as well as their other patients. The physicians have treated the MMM patients for various acute and chronic illnesses (e.g., asthma, hypertension, diabetes, coronary artery disease, bronchitis, AIDS, hepatitis C, ulcers, anxiety, depression, etc.) or have made referrals to other specialists. The program physician also acts, with the patient’s permission, as an ombudsman for the patients by contacting and working with other specialists, informing them about methadone maintenance, its overall safety, the need for adequate pain management, and the applicability of continued MMM for the patients.

Tobacco-related illnesses are the leading cause of death in MMM, and the second most prevalent problem in active patients. Counseling concerning smoking cessation and the prescribing of nicotine replacements (e.g., patches and sprays), and bupropion are the major therapeutic efforts employed by the physician.

Hepatitis C is the most prevalent serious health problem affecting the patients. Eighty-five (92%) of the 92 patients tested positive for antibodies to hepatitis C virus-RNA (HCV-RNA). A detailed study of 84 patients who underwent confirmatory testing showed that 7 (8%) patients were antibody negative for hepatitis C RNA. Of the remaining 77 HCV-RNA positive patients, 24 (31%) had normal and 53 (69%) had elevated liver function tests. Polymerase chain reaction (PCR) tests administered to the 24 patients with normal liver function tests showed that HCV-RNA was not detected in 17 (22%) of the 77 patients. Of the 53 patients with elevated liver function tests and antibody positive for hepatitis C, 28 underwent biopsies as of 1998. Of the 28 biopsied patients, 20 were in treatment, 3 were formerly in treatment, and 5 were under observation. A study of the treatment environments at the time when the status
of HCV RNA was determined (either positive or negative) for 46 patients, showed that 31 (68%) of the determinations were made in the MMM, 13 (28%) were made by private physicians and 2 (4%) were made in the traditional methadone clinics.

Four patients received liver transplants: three of the patients underwent successful operative and postoperative procedures. One of the patients died from an allergic reaction to a postoperative medication. However, one of the three surviving patients had to undergo a second transplant within three months due to hepatic decompensation with reactivation of hepatitis C. As stated previously, in the group of patients who were included in this report, hepatitis C ranked second as a cause of death within the MMM. Hepatitis C virus in methadone patients is reviewed by Novick elsewhere in this issue (18).

HIV/AIDs affected 3 patients (1.9%) all of whom died. One patient who stopped injection of heroin in 1971 acquired HIV from a sexual partner; the two other patients stopped injection at the beginning of the HIV/AIDS epidemic in 1978 and 1979. Of the 142 patients for whom there exists information on years of needle use, 103 (72%) report they stopped injection between 1964 and 1977, and the remaining thirty-nine (27%) stopped injection by 1987. By the 1980s Novick et al. reported that in studies in London, New York City, and Zurich, the prevalence of HIV was less than 10% among methadone patients who were in long-term treatment and who entered methadone treatment before the onset of increasing prevalence of HIV among drug injectors. In contrast, among untreated heroin addicts in New York City and in Zurich the reported prevalence of HIV infection was greater (58% and 36% respectively) (19).

A previous study of 58 patients from the early years of the MMM program described herein showed that none had antibody to HIV, but 53 (91%) had markers of hepatitis B virus infection. These patients had on the average 16 years of methadone treatment in traditional clinics prior to their admission to MMM. All abused heroin parentally for about 10 years prior to their admissions to methadone treatment. The high prevalence of hepatitis B markers suggests that patients used and shared needles prior to admission to treatment (20). However, during the course of the AIDS epidemic these patients were in methadone treatment and had terminated use of intravenous heroin. Therefore, none contracted HIV infection. Methadone-maintained patients who have engaged in high-risk drug use or sexual behavior after the onset of the HIV/AIDS epidemic are of course at risk for HIV infection.

Stigma Issues

The popular criticism of methadone maintenance treatment — that it just substitutes one addiction for another — trivializes the treatment, and ignores the extensive research and evaluations that show its effectiveness (21, 22). It also blurs the differences between methadone as used as a medication in maintenance and heroin as used in an extended addiction. Thus, the stigma of heroin addiction is transferred in modified form to methadone maintenance (21, 22). Therefore, methadone maintenance patients, especially those who are employed and socially stable, harbor an invisible stigma that affects every aspect of their lives (22). As reported previously in the literature, the decision to conceal or not to conceal their status as methadone patients is a primary consideration when they interact with members of their families, friends, co-workers, employers, and professionals from whom they receive services, including lawyers, physicians, nurses, teachers, and social workers (22, 23).

Most employed patients in the MMM have not used their medical insurance to pay for treatment. They fear that they may lose their jobs if their employers learn about their treatment, and therefore prefer to pay their physicians directly without reimbursement. While almost all MMM patients confide in their spouses, many will conceal their current enrollment in methadone treatment from children, parents, other relatives, and friends. In some instances, patients may tell their families about their previous heroin addiction, but not about their enrollment in methadone treatment.

Patients who see physicians not affiliated with the methadone program or who are hospitalized have refused to inform physicians and nurses about their methadone treatment out of fear that they will not be treated with respect, they will not receive proper pain management, and/or they will be withdrawn from methadone. Patients also refuse to inform people with whom they associate about their enrollment in methadone treatment, since routine fatigue may be misinterpreted as narcotization from methadone, and, as a consequence, they may be socially rejected (18).

Stigma, therefore, is the major social issue that confronts socially rehabilitated methadone patients (22, 23). While methadone medical maintenance does not remove stigma, the program has provided a better means to conceal enrollment and thus avoid the stigma associated.
with methadone maintenance (22). It also helps patients resolve internal doubts and shame about enrollment in the program so they can deal more realistically with social stigma.

Because of the stigma, misunderstandings and ignorance associated with addiction and methadone treatment, the prescribing physicians must be sensitive to stigma and confidentiality issues. The MMM physicians should help patients cope with stigma by educating them and their families about the nature of addictive disease, including the biological basis of methadone treatment and, where applicable, the need for continued methadone treatment.

Conclusions

MMM for a socially rehabilitated group of methadone patients is a viable alternative to treatment in the traditional methadone maintenance clinic system. It can be implemented within hospital-based medical practices of internists and general practitioners. For compliant patients, this program offers an opportunity for further improvements in their social lives, employment, and access to quality medical care. However, physicians must be trained about addiction and methadone maintenance treatment before accepting patients in private medical practice. Medical problems that socially rehabilitated methadone patients present can also be treated in addition to the prescribing of methadone.

In the program described, patients with alcohol and substance abuse problems were screened out by a selection process. The patients who remained had a greater incidence of medical problems related to years of smoking and intravenous addiction. The medical problems identified within this group of patients may be harbingers of some of the problems that will emerge within the younger clinic population of methadone patients as that population ages.

While in MMM, compliant patients have sustained or improved their employment situations, developed successful businesses, completed graduate and professional education, and maintained careers that include extended travel. It is the consensus of the physicians in the program that the behavior and personalities of the rehabilitated methadone patients in this program are similar to those of other patients treated by internists in private practice. Although a small group of compliant patients did manage to withdraw successfully from methadone treatment, a group of noncompliant patients did not succeed in the program for various reasons and had to be returned to their traditional clinics for continued treatment. The clinic system therefore functioned as a safety net for patients who were unable to abide by the regulations of the program.

Different models of MMM can be developed which are similar in concept to the one described in this article but which may differ in administrative structure. To ensure that standards are maintained, evaluations of new models should be undertaken. Federal, state and local regulations should be modified to encourage the development of MMM. A major limiting factor in the expansion of MMM is the recruitment of trained physicians and nurses. Training, education and non-biased attitudes are essential if methadone patients are to be effectively treated.

Acknowledgments

The authors wish to thank Dr. Reuben Norman and William Nottingham for their statistical and computer support, Jorge Fernandez for coding data used in this article, and Dr. Phil Appel for editorial support.

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