

Methadone maintenance in general practice: patients, workload, and outcomes

Philip Wilson, Richard Watson, George E Ralston

Abstract

Objective—To assess recruitment to and workload associated with methadone maintenance clinics in general practice; to investigate the characteristics of patients and outcomes associated with treatment.

Design—Study of case notes.

Setting—Methadone maintenance clinics run jointly by general practitioners and drug counsellors in two practices in Glasgow.

Participants—46 injecting drug users receiving methadone maintenance during an 18 month period, 31 of whom were recruited to clinic based methadone maintenance treatment and 15 of whom were already receiving methadone maintenance treatment from the general practitioners. Mean (SD) age of patients entering treatment was 29.6 (5.5) years; 29 were male. They had been injecting opiates for a mean 9.9 (5.1) years, and most had a concurrent history of benzodiazepine misuse. Average reported daily intake of heroin was approximately 0.75 g. Participants in treatment had high levels of pre-existing morbidity, and most stated that they committed crime daily.

Results—2232 patient weeks of treatment were studied. Mean duration of treatment during the study period was 50.7 (21.1) weeks and retention in treatment at 26 weeks was 83%. No evidence of illicit opiate use was obtained at an average of 78% of patients' consultations where methadone had been prescribed in the previous week; for opiate injection the corresponding figure was 86%.

Conclusions—Providing methadone maintenance in general practice is feasible. Although costs are considerable, the reduction in drug use, especially of intravenous opiates, is encouraging. Attending clinics also allows this population, in which morbidity is considerable, to receive other health care.

Introduction

One to two per cent of the adult population of several British cities inject illicit drugs.^{1,2} Well organised methadone maintenance treatment can reduce the intake of illicit opiates in many injecting drug users.^{3,5}

For this major public health problem there is an apparently effective form of treatment, a group of patients who prefer to be treated in general practice,⁶ and evidence of successful treatment of injecting drug users in general practice,^{7,8} so it might seem surprising that most general practitioners either refuse to accept drug misusers onto their lists or adopt a strict non-prescribing policy.⁹⁻¹² Greenwood has cited reasons for the unpopularity of injecting drug users with general practitioners, including feeling deskilled due to lack of training; fear of diversion of prescribed drugs onto the illicit market; doubt about usefulness of interventions; and financial worries.¹³ Kidd and Ralston's work suggests that those general practitioners who attempt

substitute prescribing vary greatly in their approach¹⁴: much of this prescribing may be unhelpful, but information is limited.

Although there have been reports on the use of methadone for rapid detoxification of drug misusers in British general practice,^{7,15} and stable maintenance patients have been treated in primary care in the United States,¹⁶ this is the first report on methadone maintenance prescribing in clinics based in primary care in Britain.

Methods

CLINICS

Methadone maintenance clinics were established in two practices in Glasgow at the beginning of 1992. The clinics, initiated by the general practitioners and set up collaboratively with local drug agencies, were partially funded through NHS health promotion arrangements then in force. Both clinics were based on conjoint work between the general practitioners and drug counsellors. In clinic A, patients were initially seen weekly by both the general practitioners and the counsellor, but this was changed in mid-1992 to a weekly consultation with the counsellor alone; consultations with the doctor were approximately monthly. In clinic B, patients were seen fortnightly by both general practitioner and counsellor. Consultations with the counsellor were generally 15-30 minutes long; those with the doctor lasted 5-15 minutes.

Patients were accepted for methadone maintenance treatment if they stated that they had injected opiates for at least one year and if they had unsuccessfully attempted detoxification. Before being accepted into treatment, patients were interviewed by both the general practitioner and the drug counsellor, and were asked to sign a contract detailing expected standards of behaviour. Records were also kept of patients declaring opiate addiction who approached the practices for treatment during the study period.

In clinic A, doses of methadone were initially low (20-40 mg daily of the 1 mg/ml mixture); in clinic B doses were, in general, higher from the outset (40-100 mg daily). In the first few months of clinic A, patients were excluded from prescribing for 1-4 weeks if they admitted illicit use of opiates or benzodiazepines or evidence of use was obtained from urine testing or from the presence of needle tracks on physical examination. This policy of exclusion was abandoned after six months as a result of an audit showing several episodes of life threatening illness, increased injecting drug use, and criminality during the four week "bans." Average prescribed doses of methadone in clinic A were also increased (to 40-130 mg) after this audit. Urine was collected under supervision at each consultation with the counsellor except when pressure of time prevented urine collection (particularly if patients admitted illicit drug use) and in the first six months of

The Surgery, Glasgow
G42 9JT
Philip Wilson, general
practitioner

The Surgery, Glasgow
G72 8RW
Richard Watson, general
practitioner

Department of Clinical
Psychology, Lansdowne
Clinic, Glasgow G12 0AA
George E Ralston, chartered
clinical psychologist

Correspondence to:
Dr Wilson.

BMJ 1994;309:641-4

clinic A, when urine samples were collected at random on the toss of a coin.

Methadone was prescribed at clinic visits, and prescriptions were to be dispensed daily for at least the first six months of treatment. After the end of 1992 methadone was given under the supervision of a local pharmacist to all patients starting treatment and to patients in clinic A receiving daily doses of methadone of over 60 mg. Reducing doses of diazepam were prescribed for patients who acknowledged current addiction to benzodiazepines.

DATA ON PATIENTS

Data were obtained from records held in the two practices and cover an 18 month period from January 1992. At each consultation, notes were made detailing illicit drug use, including drug, amount, and route of administration, since the previous consultation. These data in the medical case notes (entries were made by both general practitioner and counsellor), together with other information obtained from medical records, form the basis of this study. Information for some patients is incomplete.

Urine samples were screened for benzodiazepines, amphetamine, opiates, and buprenorphine as well as for methadone. Positive opiate results were confirmed by using gas chromatography and mass spectrometry.

RECRUITMENT OF PATIENTS

When the joint clinics began, 15 patients were receiving methadone maintenance treatment from the general practitioner alone. Data presented for these patients relate only to the study period. During this period, 68 patients approached the practices asking for help with opiate addiction, of whom 14 did not meet

admission criteria, two refused to consider methadone, and 12 did not return after an initial consultation. Four patients entered detoxification and 31 patients were accepted into maintenance treatment. At the end of the study period five patients were on a waiting list for methadone maintenance treatment.

PATIENTS RECEIVING METHADONE MAINTENANCE

Forty six patients (29 men; 63%) with a mean (SD) age of 29.6 (5.5) years were given with methadone maintenance treatment during the study period. Patients' drug use at entry is detailed in table 1.

Twenty patients were known to have had major illness related to drug misuse. The most common conditions were jaundice, overdoses, fits, and abscesses requiring drainage.

Eleven of the 16 women for whom data are available had had cervical smears before entry into treatment, but follow up smears were at least six months overdue in all except three. Five women had never had a cervical smear. Twenty two patients had been tested for hepatitis B before entry into methadone maintenance treatment (14 had positive results at some time), and 14 had been tested for HIV antibodies (all with negative results). None had been tested for hepatitis C.

Twenty two patients stated that they had served prison sentences before treatment, and nine patients had children in care. All patients except two admitted to committing crime daily. Four of the women were involved in regular prostitution.

Results

WORKLOAD AND RETENTION IN TREATMENT

A total of 2232 patient weeks were analysed for the 44 patients for whom data are available. The mean (SD; range) duration of treatment during the study period was 51 (21;7-77) weeks. During this time there were 842 scheduled attendances with the general practitioner and 1138 with the counsellor. In addition, there were 51 attendances with the general practitioner outside clinic times. Forty five (5.1%) appointments with the general practitioner and 51 (4.3%) with the counsellor were not kept.

Retention of patients in treatment was 83% at six months and 71% at one year. No patient is known to have become drug free. The mean dose of methadone on termination of treatment was 43.4 (22.6) mg/day. The mean dose for patients continuing in treatment at the end of the study period was 68.7 (28.8) mg/day.

Fourteen episodes of treatment were terminated. Four patients had treatment terminated because of transgressions of clinic rules, three were imprisoned for offences committed before methadone maintenance was started, and seven moved away from the practice area.

ILLICIT DRUG USE WHILE IN TREATMENT

At a total of 1365 scheduled attendances with the general practitioner or counsellor, or both, methadone had been prescribed in the previous week; at 883 of these attendances, urine was collected for screening. Table II gives details of illicit drug use (stated by the patient or detected by toxicology) according to the length of time the patient had been in treatment. Table III provides similar data for the 20 patients who had completed at least one year in methadone treatment.

Of the 10 patients who did not admit to benzodiazepine misuse before starting treatment, four acknowledged use of small amounts of these drugs during treatment and showed toxicological evidence of benzodiazepine misuse. Two patients admitted heavy drinking during treatment.

The four patients treated by methadone detoxifica-

TABLE I—Characteristics of patients entering methadone maintenance treatment

Drug use	No (%) of patients (n=46)
Injecting heroin*	44 (96)
Injecting buprenorphine only	2 (4)
Regular benzodiazepine use†	34 (77)
Injecting benzodiazepines	26 (59)
History of problem drinking	10 (23)
Mean (SD) duration of injecting (years)	9.9 (5.1)
Mean (SD) daily cost of heroin (£)‡	61.2 (36.6)

*Two additional patients in treatment are known to have injected heroin. No other data are available for these patients, who dropped out of treatment after less than four weeks.

†Amounts and types of benzodiazepines varied between patients. Daily use of 200-400 mg temazepam was usual.

‡One gram of street heroin costs approximately £80.

TABLE II—Illicit drug use determined (by either urine toxicology or patient statement) in consultations of 44 patients at which methadone had been prescribed in the previous week. In columns referring to illicit drug use, figures refer only to the consultations of patients who had evidence of such use

Time in treatment (weeks)	No of patients	Mean (range) consultations per patient	Percentage of consultations with drug use detected					
			All opiates (excluding methadone)		Injected opiates*		Benzodiazepines†	
			No of patients	Mean (range)	No of patients	Mean (range)	No of patients	Mean (range)
0-25‡	44	17 (7-32)	39	29 (4-67)	31	24 (4-58)	34	39 (4-100)
26-51	31	13 (3-22)	23	29 (5-68)	16	27 (8-64)	23	49 (6-93)
52-77	20	10 (2-23)	14	22 (9-50)	9	16 (4-33)	12	54 (14-100)
Overall	44	31 (7-60)	40	25 (2-59)	31	19 (4-58)§	38	40 (2-100)

*Toxicological evidence of monoacetylmorphine, morphine, or buprenorphine.

†The principal benzodiazepine metabolite detected by urine toxicology is found in urine up to six weeks after ingestion, the figures probably therefore overestimate frequency of use. Benzodiazepines had been prescribed in the week before 131 (10%) consultations. No toxicological method was available to differentiate injected, as opposed to oral, benzodiazepines.

‡Six patients had two episodes of treatment separated by more than two months. For this analysis, these second episodes are deemed to restart at week zero.

§Quantities were recorded for 129 of 173 consultations at which opiate use was stated (in 32 patients) with the following frequencies: opiates injected once weekly or less, 72 consultations; opiates 2-3 times weekly, 14; opiates injected daily, 20; oral or "snorted" opiates once weekly or less, 27.

TABLE III—*Illicit drug use determined (by either urine toxicology or patient statement) for 20 patients who had more than one year of treatment. Figures relate to consultations at which methadone had been prescribed in the previous week*

Time in treatment (weeks)	Mean (range) consultations per patient	Percentage of consultations with drug use detected					
		All opiates excluding methadone		Injected opiates only*		Benzodiazepines†	
		No of patients	Mean (range)	No of patients	Mean (range)	No of patients	Mean (range)
0-25‡	16 (9-26)	18	30 (4-67)	14	27 (6-58)	15	24 (8-58)
26-51	15 (8-22)	15	30 (5-68)	10	30 (8-64)	14	44 (6-90)
52-77	10 (2-23)	14	22 (9-50)	9	16 (4-33)	12	54 (14-100)
Overall	41 (24-60)	19	24 (2-59)	15	20 (4-58)	18	29 (2-74)

*Toxicological evidence of monoacetylmorphine, morphine, or buprenorphine.

†The principal benzodiazepine metabolite detected by urine toxicology is found in urine up to six weeks after ingestion, the figures therefore probably overestimate frequency of use. No toxicological method was available to differentiate injected, as opposed to oral, benzodiazepines.

‡Six patients had two episodes of treatment separated by more than two months. For this analysis, these second episodes are deemed to restart at week zero.

TABLE IV—*Estimated annual costs of methadone maintenance treatment in general practice. Figures based on average dose of methadone of 60 mg dispensed daily*

	Cost per patient (£)
General practitioner and practice time*	208
Counsellor time†	173
Dispensing fees	806
Methadone	323
Toxicology‡	520
Total	2030

*Three minutes weekly at £80/hour.

†Twenty minutes weekly at £10/hour.

‡Analysis of urine every fortnight.

tion all relapsed into illicit opiate use before the planned end of treatment.

MEDICAL EVENTS DURING TREATMENT

Serious medical events probably related to illicit drug use while in treatment included seizures (three patients), abscesses (four patients), and vascular damage due to arterial injection (one patient). Anxiety or depression became apparent in nine patients, one of whom took an overdose. Three patients developed pelvic inflammatory disease. Minor problems relating to use of methadone, such as weight gain, impotence, and constipation, occurred in several patients.

Twenty one patients were tested for hepatitis B while in treatment, with two positive results. Twelve patients tested for hepatitis C all had positive results. The 18 patients tested for HIV antibody all had negative results.

Twelve of the 13 women for whom cervical cytology data were available and who were late for screening had smear tests since entering treatment: four results were negative, five were borderline, and three were positive (mild to severe dyskaryosis).

Discussion

We have presented a case note review of 46 patients covering 18 months of methadone maintenance treatment in primary care. Despite the relatively small size of the sample, the duration of the study allows some useful conclusions to be drawn.

The proportion of patients approaching us who entered treatment—about half—accords with other studies.¹⁷ Our patients were a mean of five years older than Glasgow heroin users in general,¹ and the mean duration of injecting drug use, 10 years, suggests that it is well established heroin users who are prepared to participate in treatment.

Our patients had considerable physical and social morbidity. All patients tested for hepatitis C proved to be antibody positive, which may have important implications. None of our patients have tested positive for HIV antibodies, which reflects the low prevalence of antibodies to HIV among drug users in the west of Scotland.¹⁸

RESULTS OF TREATMENT

The most striking result of treatment is the reduction in illicit opiate use: the average patient used no illicit opiates for 78% of the time in treatment, and injection of opiates occurred only 14% of the time. Though patients' reports in this population are likely to be unreliable, the reduction in admitted use of illicit opiates is remarkable. Daily heroin injection was acknowledged during less than 2% of the total time in treatment, which compares favourably with an average

daily use of approximately 0.75 g of heroin before treatment. The data in table II suggest that with increasing time in treatment, illicit opiates are used less frequently. Although part of this apparent effect is probably due to attrition among a group of inveterate opiate injectors, the data in table III suggest that patients who are retained in treatment use illicit opiates less commonly over time. These data must be interpreted with caution, however, since our clinical approach (including methadone doses) changed over the study period. Few comparable data are available for methadone treatment services in the United Kingdom,² but our findings compare favourably with these and the best programmes in the United States.¹⁹

Concurrent addiction to opiates and benzodiazepines is particularly prevalent in Scotland²⁰ and most of our patients used both groups of drugs. Of the 10 patients who reported only opiate use at induction, four showed evidence of benzodiazepine use while in treatment. This may represent a failure to report an established pattern of drug use at induction into treatment, but it is possible that benzodiazepine misuse developed after treatment began. Some further support for the possibility of increasing benzodiazepine use with time in treatment is obtained from data in table III. This issue needs further evaluation with instruments assessing changes in benzodiazepine use. Interactions between benzodiazepine intake and the efficacy of methadone treatment²¹ also merit further investigation: our data suggest that patients using large amounts of benzodiazepines when treatment begins are less likely to be retained.

Retention in treatment correlates with positive social, legal, and medical outcomes, as well as reduced illicit drug use. Our retention data compare well with those from effective methadone maintenance programmes in the United States.¹⁹

Some indirect health gains may have resulted from clinic attendance. For example, most women were overdue for cervical smears but agreed to screening while in treatment. More than half of these women had either borderline or positive cytological findings.

THE GENERAL PRACTICE SETTING

The provision of methadone, counselling, and on site medical and psychological services, but not the prescribing of methadone alone, has been shown to be effective in reducing injecting drug use in selected patients.^{22,23} General practice offers an ideal setting for such comprehensive services. General practitioners need cooperation from local drug projects providing counselling, group work, social activities, and psychological services. Close liaison can be attractive both to general practitioners who are unable to provide time for counselling²⁴ and to drug workers who appreciate the low rate of appointment defaulting and the generally satisfactory progress of patients on methadone.

We see methadone maintenance patients in separate clinics within general practice rather than during normal surgeries. This allows work with a drugs counsellor, but it does have the potential problem of congregation of addicts at the surgery. We are strict with patients about arriving on time and leaving after appointments. Working with a counsellor minimises the general practitioner's workload; each doctor can manage 10-20 patients. The general practitioner is mainly involved in initial assessment of patients, stabilisation on methadone, and then with intercurrent illness and serological testing.

The workload involved in methadone maintenance is clearly high and the financial costs are therefore likely to be considerable (table IV). While designated central funding supports many services for injecting drug users, it does not, as yet, cover methadone programmes in general practice. In the study of Leaver

General practice implications

- Up to 2% of adults in British cities may inject opiates
- Long term methadone maintenance is valuable for management of opiate addiction
- Methadone maintenance treatment can be successfully delivered in primary care
- The treatment greatly reduced injecting frequency and illicit drug use
- Providing methadone maintenance in this way may produce a major long term workload, and the costs are likely to be considerable

*et al.*¹⁵ injecting drug users consulted their general practitioner more frequently than did other patients, made more emergency appointments, and required more prescribed items. Such findings may discourage many general practitioners. While our own data are less negative, injecting drug users do require a good deal of medical time, and it may be necessary to pay interested general practitioners for running methadone maintenance clinics.

We believe that methadone maintenance can be offered in general practice, with specialist services being reserved for more complicated patients. There are as yet insufficient data on whether our approach can be generalised. No specialised methadone maintenance service was available locally during the study period, and our patients may therefore have felt privileged, thus increasing our success. Further studies in primary care are needed.

Since it seems to be patients with longstanding opiate misuse who enter treatment, some might have become drug free or reduced consumption if treatment were not available. This crucial issue can be resolved only with large randomised controlled trials comparing methadone maintenance with other treatment methods or no intervention. Randomisation of patients to treatment groups from waiting lists might offer one workable research strategy.

Thanks are due to Mrs Evelyn Hunter, who abstracted most of the information from case notes. Some financial help with this project was provided by Greater Glasgow Health Board through the audit subcommittee of the Glasgow Local

Medical Committee. We are grateful to our coworkers from the drug projects in Cambuslang, Gorbals, and the Southern General Hospital for helpful discussions in the early stages of this project and for accurate data recording. Laurence Gruer, Lynn Jacobs, Steve McDonald, Neil McKegany, Bob Scott, George Davey Smith, Mike Stewart, and Frank Sullivan provided useful comments on the manuscript.

- 1 Frischer M. Estimated prevalence of injecting drug use in Glasgow. *Br J Addiction* 1992;87:235-44.
- 2 Chalmers JWT. Edinburgh's community drug problem service—a pilot evaluation of methadone substitution. *Health Bulletin* 1990;48:62-72.
- 3 Cooper JS. Methadone treatment and acquired immunodeficiency syndrome. *JAMA* 1989;262:1664-8.
- 4 Glass RM. Methadone maintenance—new research on a controversial treatment. *JAMA* 1993;269:1995-6.
- 5 General Accounting Office. *Methadone maintenance—some treatment programs are not effective; greater federal oversight needed*. Washington, DC: US Government Printing Office, 1990. (GAO/HRD-90-104.)
- 6 Bennett T, Wright R. Opioid users' attitudes towards and use of NHS clinics, general practitioners and private doctors. *Br J Addiction* 1986;81:757-63.
- 7 Cohen T, Schamroth A, Nazareth I, Johnston M, Graham S, Thomson D. Problem drug use in a central London general practice. *BMJ* 1992;304:1158-60.
- 8 Robertson JR. Treatment of drug misuse in the general practice setting. *Br J Addiction* 1989;84:377-80.
- 9 Kidd B, Ralston GE. General practice and drug misuse. *Br J Gen Pract* 1992;42:441.
- 10 Glanz A. Findings of a national survey of the role of general practitioners in the treatment of opiate misuse: views on treatment. *BMJ* 1986;293:543-5.
- 11 King MB. Psychological and social problems in HIV infection: initiatives with general practitioners in London. *BMJ* 1989;299:713-7.
- 12 Tantam D, Donmall M, Webster A, Strang J. Do general practitioners and general psychiatrists want to look after drug misusers? Evaluation of a non-specialist treatment policy. *Br J Gen Pract* 1993;43:470-4.
- 13 Greenwood J. Unpopular patients: GPs' attitudes to drug users. *Druglink* 1992 July/August:8-10.
- 14 Kidd BA, Ralston GE. Injecting drug users in Edinburgh: general practitioners reluctant to prescribe. *BMJ* 1993;306:1414.
- 15 Leaver EJ, Eilford J, Morris JK, Cohen J. Use of general practice by intravenous heroin users on a methadone programme. *Br J Gen Pract* 1992;42:465-8.
- 16 Novick DM, Pascarella EF, Joseph H, Salsitz EA, Richman BL *et al*. Methadone maintenance in general medical practice. A preliminary report. *JAMA* 1988;259:3299-302.
- 17 Stark MJ, Campbell BK, Binkerhoff CV. "Hello, may we help you?" A study of attrition prevention at the time of the first phone contact with substance-abusing clients. *Am J Drug Alcohol Abuse* 1990;16:67-76.
- 18 Frischer M, Green ST, Goldberg DJ, Haw S, Bloor M, *et al*. Estimates of HIV infection among injecting drug users in Glasgow, 1985-1990. *AIDS* 1992;6:1371-5.
- 19 Ball JC, Ross A. *The effectiveness of methadone maintenance treatment*. New York: Springer Verlag, 1991.
- 20 Information and Statistics Division, Scottish Health Service Common Services Agency. *Scottish Drug Misuse Database Bulletin* 1993. Edinburgh: ISD Publications, 1993;8-12.
- 21 Bell J, Brown F, Lewis J, Batey R. Serum levels of methadone in maintenance clients who persist in illicit drug use. *Br J Addiction* 1990;85:1599-602.
- 22 McLellan AT, Arndt IO, Metzger DS, Woody GE, O'Brien CP. The effects of psychosocial services in substance abuse treatment. *JAMA* 1993;269:1953-9.
- 23 Ward J, Darke S, Hall W, Mattick R. Methadone maintenance and the human immunodeficiency virus: current issues in treatment and research. *Br J Addiction* 1992;87:447-53.
- 24 Rozewicz L, Caan W, Johns A. Managing drug abuse in general practice. *BMJ* 1992;304:1442.

(Accepted 25 July 1994)

THE ONE MESSAGE I WOULD LIKE TO LEAVE BEHIND

See the patient!

The weather forecast was disturbing—a heavy snowfall with gale force winds and drifting snow, always a hazard in a flat, treeless county. All near term expectant mothers had been taken to safety and seriously ill patients admitted to our two cottage hospitals. Despite this forward planning, essential in winter in a north of Scotland singlehanded practice of 2000, my pride was shaken when returning from our hospital I was suddenly engulfed by drifting snow and white out conditions. With 15 other trapped motorists I spent 16 hours of darkness in a farmhouse consuming all food supplies and the host's home brewed ale. With daylight, weather conditions had not improved. With my medical bag I decided to make for home, a distance of 14 km. One and a half kilometres from home a breathless figure appeared behind me gasping through the snowflakes and a force 9 wind. "Please could I have M and B tablets for my wife. They always settle my wife's kidney condition and before you took over the

practice she got a regular supply." He noted my non-cooperation. But the enticement of a warm bed led to my surrender, and in the wind and snow I dispensed the sulphonamide from my bag.

Alas sleep did not come. One hour later I set forth to visit my patient. It was 11 km in deep snow but fortunately there was a strong gale force following wind, which helped my weary limbs. The story was a classic appendix of two days' duration. On examination, my worse fears were confirmed—a rigid abdomen. We had one resident county surgeon 30 km away. The following morning the RAF came to our rescue and airlifted the patient by helicopter in "Operation Snowdrop." Four weeks later the patient returned to a greener landscape thanks to a competent surgeon aided by antibiotics. To me the episode was a salutary lesson in unseen prescribing, never to be repeated.—
WILLIAM TAYLOR is a retired general practitioner