Pat Ward and Richard Mattick

Health Care Utilisation and cost under the Commonwealth Medicare Benefit Scheme by Methadone Maintenance treatment patients in NSW

NDARC Technical Report No. 240

HEALTH CARE UTILISATION AND COSTS UNDER THE COMMONWEALTH MEDICARE BENEFIT SCHEME BY METHADONE MAINTENANCE TREATMENT PATIENTS IN NSW

Pat Ward & Richard P. Mattick

NDARC Technical Report Number 240

ISBN:0 7334 2314 0

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ACKNOWLEDGEMENTS

The authors would like to acknowledge the commitment of the Commonwealth Department of Health and Aged Care and the NSW Department of Health in providing funding for the project and in supporting it through the various approval and ethics processes. In addition, we would like to thank the following organizations and individuals who made the study possible: Mr John Lumby and his staff at the Pharmaceutical Services Branch within the NSW Department of Health who provided us with access to their NSW Methadone Maintenance Treatment data base, and Ms Annette Hume and her staff, in particular Ms Melissa Crocker, at the Health Insurance Commission who provided data from the Commonwealth Medicare Benefit Scheme and Pharmaceutical Benefits Scheme data bases and who were generous enough to give of their time to answer the many questions we had of the data.

There were also a number of people employed on the project who spent many hours cleaning and preparing the data into a user-friendly format to whom we are grateful. They are: Ms Mary-Ellen Harrod, Dr Jim Lemon, Ms Susan Phillips and Mr Neil Simon. Thanks also to those at the National Drug and Alcohol Research Centre (NDARC) who provided support and comments on the analyses: Dr Kevin Bird, Professor Wayne Hall, Ms Mary-Ellen Harrod and Dr Erol Digiusto. And finally we would like to acknowledge the support of Ms Eva Congreve, the archivist at NDARC who relentlessly tracked down articles and was always on the look out for relevant material and Mr Paul Adamson of NDARC for his IT support throughout the project.

GLOSSARY

There are several terms used throughout the report that have a specific meaning within the context of the study. In understanding the data it is important that the reader is familiar with these terms.

Continuous program:

Patients may change doctors and, therefore, programs. Where there were seven or less days between discontinuing with one doctor and registering with another, patients were considered to have been continuously engaged in MMT even though there was more than one doctor and program identified. The length of the program was determined by subtracting the last program end date from the first program start date.

Doctor consultations:

A doctor consultation is what is referred to in the Medicare Benefits Schedule book (Commonwealth Department of Health and Family Services, 1997) as a 'professional attendance'. The personal attendance of a medical practitioner upon a patient is necessary before a 'consultation'/'professional attendance' can be considered to have occurred. Advice provided by telephone or any other medium, therefore, is not claimable as a doctor consultation.

Doctor consultations involve referred and unreferred visits. Referred visits involve specialists and require the patient to be referred to the treating doctor by a medical practitioner. Not all specialist consultations are 'referred'. Potential MMT patients may well present to a clinic for assessment without a referral and find that the available doctor is a specialist. Under those circumstances the initial visit with the specialist would be charged at generalist rates and future visits could only be charged at specialists rates if another medical practitioner subsequently referred the patient to the specialist.

MMT service:

For the purpose of this study, a MMT service was defined as a consultation (category 1 under the CMBS) provided by any authorized private methadone doctor and/or a urine drug test (item numbers 66343 and 66626) with the accompanying collection item provided during an in-treatment period.

It was recognized that not all consultations with a methadone doctor would be for MMT, or indeed that even the entire consultation would be devoted to drug treatment issues. Many patients, particularly in inner Sydney, could (unbeknown to them) visit a doctor who just happens to be a methadone prescriber. Others still may choose to see a methadone doctor for primary health care-related issues to avoid stigmatization and the possibility of encountering a judgemental/unsympathetic doctor. Of all the consultations provided to patients with private practitioners during treatment, 18.6 per cent were provided by a methadone doctor that was not the authorised treating practitioner. It appears that many private methadone clinics work as collective practices with patients seeing whatever doctor is on duty. It was felt analyses restricted to only those consultations provided by the registered methadone doctor would be more inaccurate than selecting all services provided by any methadone prescriber.

Non-MMT service:

All services that were provided during non-MMT periods are non-MMT services. During MMT periods, consultations with doctors who are not approved methadone prescribers and all other services, excluding urine drug testing, are non-MMT services. Furthermore, urine drug tests and consultations by approved methadone prescribers provided to public patients during MMT are also defined as non-MMT services.

Private practitioner:

A private practitioner is a doctor (either a GP or specialist) who receives payment in part, or full, for the service provided from the Commonwealth Government under the CMBS.

Program:

Legislation in NSW is concerned with ensuring that doctors are approved to treat opioid dependent individuals and that they have authorisation to treat each of their patients. As such, a treatment program refers to the period spent under the care of an individual doctor. When a patient changes doctor, they are exited from one program and enrolled in another program with the new methadone prescriber.

Public doctor:

A public doctor is a doctor employed by an Area Health Service and reimbursed through monies provided to the Area Health Service from the State Government to provide services to methadone patients.

EXECUTIVE SUMMARY

The 2045 methadone patients selected in the study were representative of the overall methadone maintenance treatment (MMT) population in NSW. During the two-year study period they enrolled in 3252 programs, an average of 1.59 programs each, of which 81.2 per cent were managed by private practitioners and 73.9 per cent involved private sector dosing. These patients remained in treatment, on average, for 13.5 of the 24 months with 29.5 per cent of patients retained in treatment for the duration of the study period. Older MMT patients were found to spend significantly longer periods in MMT, while there was no difference between males and females or urban and rural residents with respect to the time spent in treatment.

Overall, these patients accessed health care services at 3 to 3.5 times the rate and cost of the general population of NSW, having averaged 41.5 services per annum at a cost of $1045. The additional services were comprised of doctor consultations and pathology services, with MMT patients using diagnostic procedures and investigations, therapeutic procedures, oral and maxillofacial services and diagnostic imaging services at a lower rate than the general population. This is noteworthy given that opioid dependent individuals would be expected to experience high levels of co-morbidity. For the 2045 MMT patients, women, those who lived in rural NSW and/or those who had spent longer in treatment, used more health care services, and cost more under the Commonwealth Medical Benefits Scheme (CMBS). In addition, being older led to an increase in the benefits paid under the CMBS for health care but not the number of services accessed, most likely attributable to the finding that psychiatrists treated more long-term patients than general practitioners.

For the 2640 programs provided by private practitioners, MMT on average involved 41.3 MMT services a year for which the Commonwealth Government expended $1024 per patient under the CMBS. MMT was comprised of 24.2 doctor consultations, 8.6 urine drug tests and 8.6 pathology collection items. While 4.5 doctor consultations, on average, were provided by an approved methadone prescriber other than the registered methadone doctor, it is likely that these services were for the purposes of providing MMT. The lower and upper boundaries for the cost of MMT might, therefore, be considered to be $888 and $1024, respectively. There

was no difference in the length of methadone and non-methadone consultations provided by general practitioners but MMT psychiatric consultations were briefer than non-MMT psychiatric consultations, lasting for 15 minutes or less in 47.4 per cent of cases.

Looking at only those 1190 patients who had experienced both a non-treatment period and a treatment period under the care of a private practitioner, being in MMT resulted in a threefold increase in health care utilisation and costs. When in MMT patients accessed on average 69.1 services per annum at a cost of $1688 and when not in MMT patients accessed 21.8 services for which the Commonwealth Government paid $572 in benefits under the CMBS. The increase in health care use appears to be due solely to the provision of MMT as a health intervention since there was no difference in non-MMT service utilisation and costs between MMT and non-MMT periods. It is unknown however, what proportion of MMT services were spent in attending to general health care needs.

Being in MMT, while not reducing the number of non-MMT services did have an impact on the nature of those non-MMT services accessed. There was a decrease in doctor consultations that may have been the result of reduced "doctor-shopping" and/or better integration of health care services. On the other hand, there was an increase in pathology services, suggesting that a higher level of monitoring for illnesses relevant to the opioid dependent population may have occurred when patients were in MMT. The extent to which the finding that there was no difference in non-MMT utilization between treatment and non-treatment periods may have been the result of the restricted study period and, subsequently, the relatively brief time spent in treatment by these 1190 is unknown and requires further investigation. It could well be that over time being in MMT results in cost-offsets for non-MMT services.

As would be expected, the longer a patient remained in treatment the more MMT services they accessed and the greater the cost of MMT. Controlling for treatment length, the number of MMT services utilised could be predicted by knowing the patient's place of residence and the type of dosing facility. Being an urban resident and attending a specialist facility, in particular a private clinic, led to an increase in the number of services accessed. MMT costs on the other hand, after controlling for the length of time in MMT, were determined by whether the patient lived in urban NSW, whether the registered doctor was a specialist and whether the dosing facility was a specialist clinic, all of which led to increased MMT costs. Unlike health care

access in the general population, the composition and cost of MMT was unaffected by gender and age.

The number of MMT services provided, and consequently the cost of MMT, during stabilisation was greater than in subsequent months. After three months in treatment both the frequency and cost of MMT services were reduced by approximately 50 per cent.

In all dosing facilities the rate of MMT service access was higher in the first three months of MMT compared to subsequent months with privately operated clinics having been found to provide the most MMT services. Private clinics were also found to provide more services during the maintenance phase of treatment raising the question of whether the higher levels of servicing were appropriate and /or enhanced treatment outcomes. It may be that within the private clinic setting, methadone doctors provided counselling and case management services that in the other dose settings were provided by other health professionals. That there was no difference between the various dosing facilities with respect to non-MMT services either during stabilization or the maintenance phase suggests at least that there were no health care utilization offsets associated with the higher level of MMT service provision.

The cost of MMT was always determined, regardless of what phase of MMT the patient was in by whether the patient lived in urban NSW or whether the registered doctor was a specialist. Under either of those conditions the cost of MMT was greater.

There was little in the current study, other than gender and, for the maintenance phase in treatment, length of time in treatment, that influenced the number or cost of non-MMT services accessed. As with the general population, women used more services at a greater cost than men. While the patient's clinical presentation would be expected to be a significant predictor of non-MMT service access, it may also be that non-MMT services during treatment periods were determined by the individual practices of the registered methadone doctor. Given that non-MMT service access during MMT involved less doctor consultations and a greater number of pathology services as compared to non-MMT periods (section 3.3), it could be that the level and cost of non-MMT services was to some extent dependent on whether the methadone doctor was in the habit of undertaking a battery of routine health investigations.

The findings suggest that a 'capitation' fee approach to funding methadone services (using for example $700 per annum per patient) would be inadequate, *on average*, to cover the methadone services currently being provided by private doctors. Such a fee, with CPI adjustments, however, would be sufficient to cover the expenses presently incurred by general practitioners, but there is ample evidence to suggest that general practitioners are generally dissatisfied with the rebate provisions under the CMBS. More specifically, general practitioners are not particularly willing to become involved in the Methadone Program. Recent studies (Lintzeris, Koutroulis, Odgers, Ezard, Lanagan, Muhleisen & Stowe, 1996; Abouyanni, Stevens, Harris, Wickes, Ramakrishna, Ta & Knowlden, 2000) have indicated that those who are willing to become involved in the Methadone Program believe that the structure of the CMBS provides disincentives for spending adequate time with patients and does not provide adequate financial compensation for the administrative requirements of the program and the demanding nature of the patients.

There was no difference in the number of MMT services provided by general practitioners and specialist but there was a significant difference in the cost of MMT. At an average cost of $1226 per patient per annum there is no question that a 'capitation' fee of $700 would not have been sufficient to compensate specialists for the services provided in 1997 and 1998. A 'capitation' fee set too low would therefore, in all likelihood, result in either the resignation of specialists from the Methadone Program or a reduction in the number of services they provide to patients, both of which would be unsatisfactory outcomes in those jurisdictions where specialists provide MMT. However, given that there appears to be no difference in the time spent with patients between general practitioners and specialists, and the fact that psychiatrists tended to provide services to longer term methadone patients, there is little to suggest that specialist prescribers treated those MMT patients with more complex co-morbid conditions. As such, the Commonwealth Government's concern about the additional funds expended on specialists may well be justified. It would seem appropriate that the role of specialists in the provision of MMT ought to be reviewed and the system reconfigured such that, where appropriate, methadone patients with significant mental health problems are treated by psychiatrists.

Given, that under the 'capitation' model put forward, methadone patients would have continued to access the CMBS for their general health care needs, it is questionable whether a 'capitation' fee approach would have resulted in reduced expenditure on MMT. There are many inherent incentives and opportunities contained within a 'capitation' model that removes methadone treatment from the CMBS and artificially separates it from general health care. Cost-shifting between the two types of services may have occurred, resulting in an increase in the real cost for MMT. Alternatively, the potential to under-service could have compromised treatment outcomes.

The fundamental goal of the methadone treatment system in Australia should be the provision of cost-effective, quality services that improve health and social outcomes for patients. At present the State Government, the Commonwealth Government and methadone patients contribute to the funding of MMT, with patients generally incurring the highest treatment cost. The focus should not be simply on who pays what but rather on what services should be provided to which patients, for what outcome and at what price. While the Commonwealth has decided not to proceed with a 'capitation' approach for MMT, the current study provides a reference point from which service providers can begin to build a model of MMT which identifies appropriate levels of service provision to meet the differing needs of patients and which looks more holistically at the total health care needs of these patients. In so doing, the model of MMT service delivery should address the current discrepancies in levels of care between the various dosing facilities and the differences in treatment costs found between specialists and general practitioners.

1. INTRODUCTION

There has been a steady and substantial increase in the number of people enrolled in methadone maintenance treatment (MMT) across Australia since its endorsement in 1985 as an effective strategy in the treatment of opioid dependence. In NSW, where over half of the methadone population resides, treatment numbers have risen from 840 in February 1985 (Gaughwin, Kliewer, Ali, Faulkner, Wodak & Anderson, 1993) to 12,549 in June 1999 (Hall, Ross, Lynskey, Law & Degenhardt, 2000).

It is of significance that growth in the provision of MMT services over the last decade has been predominantly through the private sector. This has occurred as a result of the increased involvement of private practitioners in the medical management of patients and the increased participation of private clinics (in NSW only) and community pharmacies in methadone dosing. Given the structure of health care in Australia, this has meant that the financial burden of MMT expansion has fallen disproportionately on the Commonwealth Government through the Commonwealth Medicare Benefits Scheme (CMBS) and on patients through dosing fees.

All the indicators suggest that demand for MMT will continue to grow in the future. The national estimate of heroin dependence in 1997 was 74,000, representing more than a one hundred percent increase on the 1984 – 1987 estimate of 34,000 (Hall et al, 2000). Furthermore, growth in program numbers is testimony to the ability of MMT to continue to attract and retain heroin users in treatment. In planning for the delivery of MMT, NSW as have other jurisdictions, signaled its intention to pursue a strategy of increased MMT access primarily through the expansion of the private sector (NSW Department of Health, 1998 unpublished report; NSW Department of Health, 2000). Such a strategy, while financially attractive to jurisdictions since they can increase capacity at no additional cost, should not merely be viewed as an exercise in 'cost-shifting'. There are other significant advantages. Providing MMT through an array of general practitioners and community pharmacies disperses the treatment population, thereby reducing the visibility of the program and community concern. For patients too, pharmacies are often more accessible with respect to

their hours of operation and location, and provide patients with a more normalized treatment environment.

Not surprisingly, the Commonwealth Department of Human Services and Health has been concerned for some time about the unchecked growth in MMT funding and its burgeoning financial responsibility. Since 1989 the Commonwealth Government has been trying to introduce measures to contain MMT costs, finally succeeding in July 1993, after initial opposition from the jurisdictions, in restricting the number of urine drug tests permitted under the CMBS to 21 per annum.

Still concerned about rising costs (within the context of a rapidly expanding Medicare budget), in 1995 the Commonwealth Department of Human Services and Health commissioned a review of MMT service delivery in Australia. The review was hampered by methodological problems (described later in the text), but reported, amongst other things, that there were variations in practice between jurisdictions and that within NSW there were even differences between general practitioners and psychiatrists in relation to the frequency of visits. One of the key recommendations from the report was that consideration be given to changing the funding arrangements for MMT. At a unit level, it was recommended that there be a single fee for MMT regardless of the treating doctor's specialty. At a systemic level, it was suggested that either a separate MMT item under the CMBS be established or, alternatively, that MMT be removed from the CMBS entirely, and doctors providing MMT services be paid a set annual fee per patient. The latter is known as a 'capitation' payment model.

'Capitation' is one of the types of financial arrangements available under 'managed care' in the United States. Managed care encompasses a broad range of organizational forms, regulatory mechanisms and financial devices (Mechanic, Schlesinger, & McAlpine, 1995) and aims to improve the quality and cost-effectiveness of health care while at the same time controlling expenditure growth (Sekhri, 2000). The key hazard of a 'capitation' system is that the fee will be too low and/or, alternatively, those with a more chronic or disabling condition will require more services than provided for in the set fee. Under these conditions, the service provider will be placed in an ethical dilemma of having to choose

between financial loss and inadequate patient care (Lehman, 1987). On the other hand, one of the key benefits is the underlying paradigm shift in that instead of being paid for illness, as in the fee for service system, providers will make money if they can keep people well (Sekhri, 2000). A concerning potential outcome under both of these scenarios is that providers may engage in patient selection managing only those patients who present as being a low risk and, therefore, those most in need of care may be denied access to services or become the responsibility of the public sector.

There is evidence that 'managed care' systems as applied to mental health and substance abuse can reduce treatment costs, but these cost-savings have largely been achieved through reductions in hospital utilization (Mechanic, Schlesinger & McAlpine, 1995).
Such reductions are, therefore, more likely to be realized in detoxification services where it is possible to reduce the length of stay in hospital or run the service on an ambulatory basis. For services such as MMT that are already relatively cheap (Ward, Sutton & Mattick, 2000) and have been proven to be cost-effective (Barnett & Hui, 2000; Barnett, 1999) there may be little financial gain and reducing services may have a detrimental impact on treatment outcomes.

In the 1997 – 1998 Australian Federal Budget the government announced that methadone-related services would be removed from the CMBS and a 'capitation' system introduced (Budget Paper No. 2, 1999). The funds, based on the average number of private treatment places over the previous year and a negotiated growth rate, were to be provided as a grant to the jurisdictions. The proposed fee of $800 per patient (treatment space) per annum included an administration fee of $100 and was to cover the cost of medical consultations for MMT, pathology (specifically urine drug testing and an associated collection item) and counselling/case management. It was projected that these funding changes would result in net savings in the order of $19 million over a three-year period.

There are, however, no reliable estimates of the cost of MMT as provided through private doctors under the CMBS. The only attempts to date were undertaken as part of the *Review of Methadone Treatment in Australia* (Commonwealth Department of Human Services and Health, 1995) and were limited by the investigators' inability to identify methadone patients. Health

care use had to be calculated on the basis of a sample of patients utilising the CMBS item 66343, a urine drug test for those participating in drug abuse programs or those treated for drug effects. The problems inherent in this sampling technique were evident from the finding that in Victoria the number of individuals identified was two to three times that of the total MMT population in the state. Putting the methodological issues aside, at best what could be provided was an estimate of total health care utilization of methadone patients, not the MMT component of health care. The review found that methadone patients in NSW each used, on average, 63 services per year at a cost of $1407 (Commonwealth Department of Human Services and Health, 1995).

In an attempt to look at the question of MMT service utilization and costs specifically, the investigators in the course of the review sought to survey methadone doctors in NSW and Victoria about their practices. Only 17 doctors in NSW responded, of whom nine were general practitioners and eight were psychiatrists. From this very limited and possibly highly selective sample they found that in the first year of treatment MMT was comprised, on average, of 31.5 methadone consultations and 12.2 urine drug tests as compared to 19.7 methadone consultations and 10.2 urine drug tests in subsequent years of treatment. Psychiatrists were found to provide 50 per cent more and 100 per cent more consults in the first and subsequent years of MMT respectively, and to order twice as many urine drug tests in both phases of treatment. From these figures they estimated the mean cost over the two years to be $552 per annum for general practitioners and $1728 for psychiatrists (Commonwealth Department of Health and Human Services, 1995).

It was based on these findings that a 'capitation' level of $700 per patient per annum was set for a trial of an alternative model of MMT funding – 'capitation'. Of note, during the course of this investigation, the Commonwealth announced that it would not proceed with 'capitation' for MMT. In stark contrast, it introduced 'Enhanced Primary Care' items under the CMBS for general practitioners. These items allow general practitioners to provide extended care at adequate remuneration levels to patients with chronic and complex health problems. Methadone patients, with their high rates of comorbidity, drug-related health problems and the chronic relapsing nature of dependence itself, fall within this category.

1.1 Study Aims:

The current study sought to examine health care utilization and costs under the CMBS for methadone patients in NSW. Specifically, the aims of the study were as follows:

1. To more accurately determine the nature of methadone practice in NSW for the purpose of establishing potential benchmarks and to assist in service evaluation and planning;

2. To investigate the cost and composition of MMT provided through private practitioners and funded under the CMBS and the adequacy of a 'capitation' fee approach to MMT funding;

3. To determine the impact of MMT on overall, and non-MMT, health care utilization and costs;

4. To determine whether particular patient characteristics and treatment settings influence the cost and composition of MMT provided through private practitioners; and

5. To examine the MMT and non-MMT service access and costs in the first three months of treatment as compared to subsequent months.

2. METHOD

2.1 Procedure:

Australia has a national health insurance system providing universal access to health care. Public hospitals are operated and funded by the states (out of revenue provided by the Commonwealth Government) while all other health care provided through private practitioners is funded and operated by the Commonwealth Government through the Medicare Benefit Scheme. Information about access to private health care services is held by the Health Insurance Commission (HIC) a Commonwealth statutory authority responsible for the administration of an extensive range of health and allied programs including Medicare.

In NSW, the *Poisons and Therapeutic Goods Act, 1966* requires that individuals receiving Methadone Maintenance Treatment (MMT) be registered with the state Health Department and that doctors wishing to prescribe methadone to opioid dependent individuals be approved to do so by the Director-General of the NSW Department of Health. This information is held by the Pharmaceutical Services Branch (PSB) within the NSW Department of Health.

To determine levels of health care utilisation by methadone patients under the Commonwealth Medicare Benefit Scheme (CMBS), it was therefore necessary to access data from both of these sources.

2.1.1 Selection Criteria:

To be eligible for the study, methadone patients had to be enrolled in MMT between January 1, 1997 and December 31, 1998. Any patient who had been enrolled in a methadone program with a jail prescriber or who had jail as a dosing point during the two-year period was excluded from the study. Since prisoners do not have access to Medicare (health services in a correctional facility are provided through the State Government), their inclusion in the study would have reduced its potential to examine health care utilisation patterns under the CMBS for methadone patients when in and out of MMT.

A sample of 4000 patients who met these criteria was randomly generated by computer from the records held by PSB and sent to the HIC. These 4000 patients had been enrolled in 6647 programs over the two-year study period.

It was not possible to obtain patient consent to utilize information contained within the two databases held by PSB and the HIC. This was because of the retrospective nature of the study coupled with the transient lifestyle of methadone patients, the size of the sample, and the potential for subjects to be drawn from all areas in NSW. Ethics approval, however, was obtained from the Statewide Health and Confidentiality Ethics Committee (SHCEC) and the HIC for access to, and linkage of, the data, and a number of procedures were put in place to ensure the anonymity and confidentiality of the patients selected.

2.1.2 The Matching Process:

For each patient selected, data as to their name, date of birth and gender was extracted from the NSW Department of Health records. This information was used by the HIC to match these individuals against their database and to obtain information relating to all services accessed under the CMBS over the study period.

There is no specific CMBS item for MMT. To estimate the cost and composition of MMT provided through private practitioners, however, it was necessary to be able to distinguish between methadone and non-methadone doctors and services. Information was, therefore, provided to the HIC as to the identity of the approved methadone doctors operating in NSW in 1999 (the time at which the data were being extracted).

NDARC identified the doctor registration numbers for methadone prescribers from the NSW Medical Registration Board database held by the NSW Department of Health. At the time the data were extracted there were 433 active community-based methadone doctors. There were another 7 doctors added to the list who were known by the investigators to be prescribing during the study-period although they were no longer practicing at the time the data were obtained. Of these 440 doctors, only 9 registration numbers could not be obtained. The HIC was then able to generate a numerical code that distinguished these 431

doctors from all other doctors who provided services under the CMBS to the 4000 selected patients during the two-year study period.

After completing the matching and data extraction, all patient identifying information – name and date of birth and doctor identifying data – name and NSW registration number – were deleted, and the data forwarded to NDARC for analysis.

2.1.3 The Cleaning Process:

The HIC provided NDARC with 1,014,128 records pertaining to the 4000 patients selected for the study. Of the 4000 names sent to the HIC, however, only 361 (9.0%) were exact matches – that is, there were no inconsistencies between the PSB and HIC databases on name, gender and date of birth. There were 1103 MMT patients for whom no match could be found, and the remaining 2536 individuals represented "fuzzy" matches. A "fuzzy" match was one in which there was some variation in the name or date of birth between the PSB and HIC records. In the majority of cases (2514) it was the date of birth, rather than the name (22) that was incongruent.

A protracted cleaning process was undertaken to improve the accuracy of the data received and to ensure that the "fuzzy" matches were, in fact, MMT patients. In the first instance all 1103 patients for whom there was no match were removed from the database.

In relation to the HIC data, because of the manner in which the data had been matched, the file received contained a large number of duplicate records (737,903), as well as a number of services that either occurred outside the study period or were invalid. These records were all removed. In addition, there were a number of methadone doctors that the HIC was unable to identify either because there was no match in their database or because NDARC had not provided relevant details, being unaware that the doctor was providing MMT during the study period. As a consequence, where the methadone doctor could not be identified it was impossible to ascertain the cost of MMT – only those services provided by 'other' known methadone doctors, not the registered treating methadone doctor, would have been identified as methadone services. Therefore, all those individuals who had one or more programs where the registered methadone doctor was unknown were deleted.

In relation to the NSW Department of Health Pharmaceutical Services Branch data, during the selection process only programs that occurred in a correctional setting, rather than any individual who had received MMT in prison during 1997 – 1998, were suppressed. All patients therefore, who had been enrolled in MMT in a jail facility (as depicted by non-sequential program numbering, that is information was available about programs 3 and 5 but not program 4)m were deleted. Furthermore, patients who had incongruent methadone treatment dates (missing dates, program end dates that occurred before the program start date), who were enrolled in more than 5 programs (n = 30) over the two years; or who had spent only one day in treatment during the study period were also deleted.

Finally, checks were undertaken to ensure that the patients selected were methadone patients and not non-methadone patients with similar names and/or dates of birth. To do this, all patients who had been enrolled in a program with a private practitioner, but had not received any consultations from their registered methadone doctor, were identified. The records of each of these patients were reviewed and a decision made as to whether the individual was a MMT patient. There were 542 patients who did not have a consultation with their registered prescriber of whom 261 were deleted. Those who were retained had either been seen by other methadone doctors or had been seen in the three days prior to the program start date but subsequently dropped out of MMT, typically within a week. The lag between the MMT consultation and the program start date was the time it took for the request to commence MMT to be processed by the Health Department.

After completion of the cleaning processes, the sample was comprised of 2045 patients who had enrolled in 3252 programs and for whom there were 169,775 records from the HIC.

2.2 Data:

Individual rather than aggregate data were requested from PSB and the HIC, as the study was particularly concerned with health care utilisation at different stages of an individual's treatment career and the effect of personal characteristics and treatment settings on the cost and use of health care services.

2.2.1 PSB Information:

The data extracted from the PSB database included basic demographics: gender, age (expressed in five-year bands – a requirement of the SHCEC), and place of residence (identified as either urban or rural based on Area Health Service demarcations – a requirement of SHCEC); the total number of programs each patient had been enrolled in up until 31 December 1998 and, more specifically, the start and end dates for each program enrolled in during the study period; de-identified information concerning the registered methadone doctor; and the setting – public clinic, private clinic, community pharmacy or hospital pharmacy – in which dosing occurred for the MMT program. The registered methadone doctor's specialty was ascertained from cross-referencing against the HIC service item data and added in the dataset.

2.2.2 HIC Information:

Information on all services accessed under the CMBS by the study group during the 1997 and 1998 calendar years was obtained. This included general medical services (consultations, diagnostic procedures and investigations, therapeutic procedures), oral and maxillofacial services, diagnostic imaging services and pathology services.

For each service utilised, the HIC provided data on: the item number, service category, group and subgroup, the service provider, the date on which the service occurred (day, month, year), the service charge (benefit plus patient contribution), and the benefit paid. The unique identifier generated for each service provider distinguished between methadone doctors and non-methadone doctors.

2.3 Statistical Analyses:

The data were analysed using SPSS for Windows (Version 10.1) and the level of Type I error (α) was specified as .01. This was done to reduce the probability of rejecting the null hypothesis when it was actually true, given the size of the sample in the current study and the power to detect differences and the number of statistical analyses undertaken.

To investigate the significance of group differences, T-tests were used where the dependent variable was continuous and there was one discrete independent variable. In examining

differences between the study sample and the MMT population in NSW a one-sample t-test was used. Paired t-tests were undertaken when looking at differences between MMT and non-MMT periods involving the same subjects (repeat measures). Where there was one continuous dependent variable but several categorical independent variables of interest factorial, ANOVAs were performed to determine the significance of group differences. The chi-square statistic was used when the dependent variable was categorical.

Standard linear regressions were undertaken to examine the degree of relationship between variables. In particular the relationship between the number of services accessed and the cost (dependent variables), and the length of time in MMT, age, gender, place of residence, type of dosing facility and the specialty of the registered methadone doctor (independent or predictor variables) were of interest. Predictor variables that were categorical were dummy coded prior to being entered into the regression. Since the dependent variables were not normally distributed, square root and log transformations were undertaken to reduce skewness and kurtosis. In all instances, this did not alter the overall findings and so the standard regressions have been presented for ease of interpretation.

3. RESULTS AND DISCUSSION

The results are divided into five sections reflecting the different questions being asked of the data and, consequently, the various samples required for the analyses. Section 3.1 provides details on the demographic profile, as well as the MMT experiences and health care service consumption (through the CMBS) during the study period, of all 2045 methadone patients selected. Section 3.2 identifies the cost and composition of MMT when provided by private practitioners and involves those 1697 patients who had a program with a private doctor. Section 3.3 looks at what effect being in MMT had on health care utilization and costs both in terms of overall usage and, more specifically, non-MMT services. Of the 1697 patients involved in the previous section only 1190 were included in these analyses. Section 3.4 examines what factors, if any, effect the composition and cost of MMT. Only 947 of the 1697 patients met the necessary criteria for these analyses. Finally, Section 3.5 investigates the impact of retention on both methadone and non-MMT service access during treatment and identifies those factors that predict the frequency of service access and, subsequently, the cost during the early and latter stages of treatment. In total, 312 methadone patients were entered into these analyses.

3.1 Overall Characteristics of the Sample:

3.1.1 Demographics:

There were 2045 individuals identified as MMT patients in the study, the majority of whom were male (64.4%), lived in urban NSW (87.3%) and were aged between 26 and 40 years of age (59.6%). By way of contrast, as at 30 June 1998, there were 12,107 patients enrolled in MMT in NSW, of whom 63.8 per cent were male, 85.2 per cent lived in the ten urban Area Health Services, and 64 per cent were aged between 25 and 39 years of age (NSW Department of Health, 1998, unpublished report). Based on these demographics, the sample appeared to be generally representative of the MMT population in NSW with one exception. Those in the current study were slightly younger, with more aged between 21 and 25 years of age and less between 36 and 40 years of age ($\chi^2 = 84.7$; df = 8; $p < .001$). As with the methadone treatment population, females in the current study tended to be slightly younger

than their male counterparts (χ^2 = 42.9; df = 10; p < .001) with 61.5 per cent of women in the study group aged between 21 and 35 years of age compared to 51.1 per cent of men.

3.1.2 MMT Participation:

The 2045 study subjects had been enrolled in a total of 3252 programs in the two-year study period, an average of 1.59 programs each. With respect to prescribing, 81.2 per cent of all programs were managed by private practitioners. Public doctors provided treatment in almost one fifth of all programs (18.8% -see Table 1).

TABLE 1: MMT SERVICE DELIVERY IN NSW: DOSING SITE BY TYPE OF DOCTOR

DOSING SITE	PUBLIC DOCTOR	PRIVATE DOCTOR			TOTAL
		GP	Physician	Psychiatrist	
Public clinic	479	185	8	80	752
Private clinic	6	1146	148	390	1690
Community pharmacy	121	463	20	172	776
Hospital pharmacy	5	23	0	5	33
Unknown	1	0	0	0	1
TOTAL	612	1817	176	647	3252

Similarly, methadone dosing for the 3252 programs occurred predominantly in the private sector, whether in private clinics (52.0%) or community pharmacies (23.9%). Public health facilities provided dosing services for the remaining 785 programs (24.1%). In the main, these public facilities were special purpose methadone clinics or services (23.1%). Very occasionally (for 33, or 1% of all programs), hospital pharmacies provided dosing (see Table 1). This occurred when patients were admitted to hospital or in rural/remote areas where there was no access to either specialist public methadone services or community pharmacies participating in the MMT program. Not surprisingly, given the distribution of methadone clinics in NSW (particularly private clinics), methadone dosing was provided mainly through community pharmacies (59.3%) in rural areas and specialist clinics (80.0%) in urban NSW.

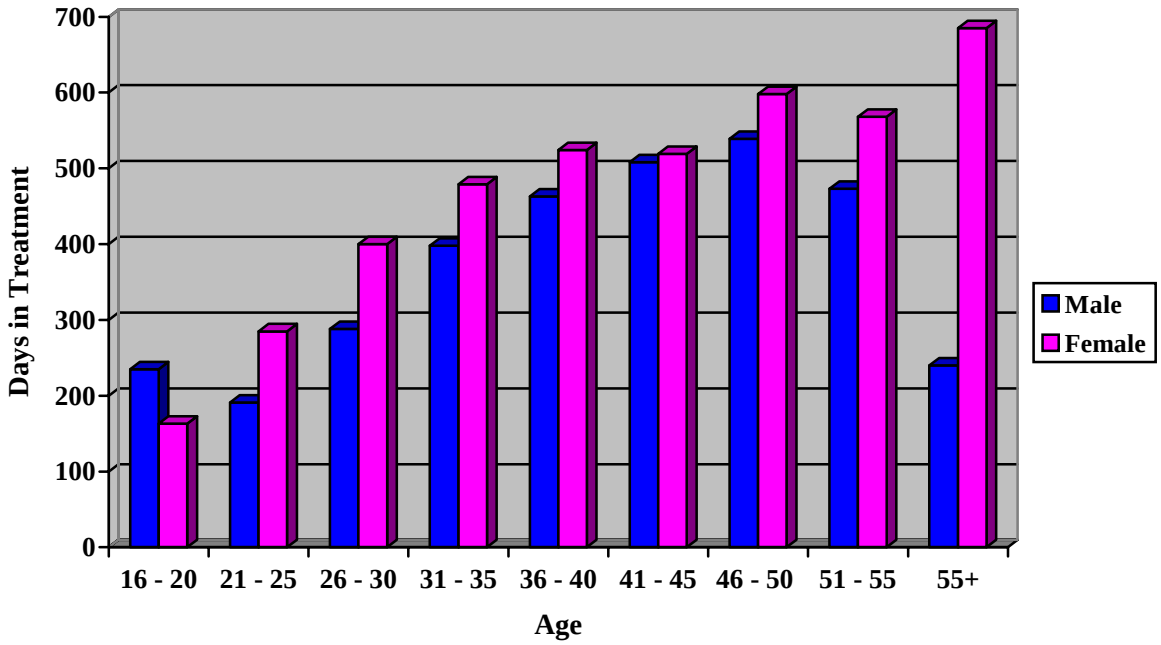
Compared to the MMT population in NSW, more programs were provided through private clinics – 52.0 per cent as against 38.5 per cent for the state methadone program – and less through community and hospital pharmacies (χ^2 = 445.4; df = 3; p <.001). In the current study, 23.1 per cent, 23.9 per cent and 1.0 per cent of programs were dosed in public clinics, community pharmacies and hospital pharmacies respectively, as compared to 23.8 per cent in public clinics, 32.6 per cent in community pharmacies and 5.0 per cent hospital pharmacies for the MMT population as a whole in 1998 (NSW Department of Health, 1998 – unpublished report). Rather than reflecting a bias in the sample selection, however, it is more likely the apparent differences are due to the measurement techniques employed. The state figures refer to a demographic profile of the population at a point in time, while this study provided a profile for a group of MMT patients who were in treatment for at least one day during the two-year study period. In NSW, entry to MMT is through clinics. Given increased 'drop-out rates' early in treatment and increased retention rates for patients transferred to pharmacies, the likelihood of randomly selecting a patient treated in a clinic is greater than that of selecting one in a community pharmacy. The converse is true when a 'point in time' technique is used.

As such, the current sample provided a more realistic representation of the MMT population in NSW in 1997 and 1998 and was more appropriate for the purposes of identifying MMT costs since long-term patients were not disproportionately represented. That new entrants were more highly represented in the current sample, and yet fewer programs were dosed through public facilities (clinics and hospital pharmacies) compared to the state figures, suggests that the public sector was not effectively operating as an access point in 1997 and 1998.

Increasing the provision of MMT has involved partnerships between the private and public sectors. Reflecting this partnership was the finding that over one third (36.3%) of all programs dosed in specialist public clinics/services were managed by private practitioners. Conversely, of the 612 programs managed by public doctors, one in five (20.8%) involved private sector dosing, almost exclusively through the use of community pharmacies (see Table 1).

On average, patients were in treatment for a total of 411 days (13.5 months) of the 730-day study period, with the mean length of programs being 259 days (8.5 months). In all, 601 (29.5%) patients had been in MMT for the entire two years. These figures do not provide a retention rate. The time in MMT refers to the total time spent in treatment combining the time spent in all programs and does not, therefore, distinguish between that which was experienced as a continuous episode of care and that which occurred at different times throughout the course of the study period. Furthermore, the calculation of time spent in treatment is restricted to the calendar years 1997 and 1998. As such, patients in treatment at the start of the study period (44 %) would not receive credit for the time spent in MMT prior to 1 January 1997.

FIGURE 1: Mean length of time in treatment by age and gender



A factorial ANOVA was undertaken to determine whether there were any differences between male and females, those living in urban and rural NSW and the various age groups in relation to time spent in MMT during the study period. The analyses revealed that older patients were found to spend significantly more time in MMT than younger patients (F =

9.72; df = 10; $p < .001$). By way of comparison, patients aged between 16 and 20 years were in MMT for 191 days while those aged between 46 and 50 years of age spent 551 days in MMT (see Figure 1). There was, however, no difference in the amount of time spent in MMT between males and females or patients living in urban and rural NSW. There were no interaction effects.

3.1.3 Health Care Utilisation and Costs:

3.1.3.1 Frequency, type and cost of services:

Over the two-year study period these 2045 methadone patients received a total of 169,838 services under the CMBS at a cost of $4,272,847. Per annum, they used on average 41.5 services each, which cost the Commonwealth Government $1045 per patient. Health care access by these MMT patients was significantly greater than the 11.7 ($t = 10.3$; df = 2044; $p < .001$) services costing $367 ($t = 10.6$; df = 2044; $p < .001$) used on average by persons living in NSW in 1997/1998 (Health Insurance Commission, 1998). Furthermore, only 4.4 per cent of the NSW population used 41 or more services in 1996/1997, putting these methadone patients, who averaged 41.5 services, among the highest consumers of health care (top 5th percentile) in NSW despite the age and gender composition of the sample.

By far the greatest proportion of services were for doctor consultations (66.8%), referred (10.1%) and unreferred (56.7%), and pathology (30.7%), with only 2.5 per cent of services being for diagnostic procedures and investigations, therapeutic procedures, oral and maxillofacial services and diagnostic imaging services combined. While doctor consultations (59.6%) and pathology (26.3%) made up the bulk of services provided to the general population of NSW, it was at significantly lower levels than that of methadone patients. Conversely, the general population consumed significantly more other health care services (14.1%) offered under the CMBS ($\chi^2 = 18{,}816$; df = 2; $p < .001$). Table 2 provides a breakdown of the broad type of service utilization by methadone patients in this study (both including and excluding MMT services) and the general population in NSW, based on HIC classifications.

MMT services by definition only include doctor consultations with approved methadone prescribers and particular urine drug testing items. When MMT services were removed, these patients were found to access 95,057 non-MMT services – an average of 23.2 services per patient per annum. Non-MMT services were comprised of an even higher proportion of doctor consultations, less of which were provided by specialists.

TABLE 2: COMPARISON OF THE BROAD TYPES OF SERVICES UTILIZED BY MMT PATIENTS AND THE GENERAL POPULATION OF NSW

SERVICE TYPE	ALL SERVICES		NON-MMT SERVICES ONLY		NSW POPULATION
	No.	%	No.	%	%
All unreferred consultations	96,262	56.67	66,471	69.93	*50.43*
Referred consultations	17,102	10.07	3,111	3.27	*9.15*
Obstetrics	109	0.06	109	0.11	*0.68*
Anaesthetics	147	0.08	147	0.15	*0.74*
All pathology	52,147	30.70	21,143	22.24	*26.30*
Diagnostic imaging	2,314	1.36	2,314	2.44	*5.58*
Operations	794	0.47	794	0.84	*2.67*
Assistance with operations	6	0.00	6	0.01	*0.09*
Optometry	380	0.22	380	0.40	*1.75*
Radio & nuclear therapy	25	0.01	25	0.03	*0.26*
Miscellaneous	552	0.33	552	0.58	*2.33*
Total	169,838	100	95,057	100	*100*

Note: Service use for methadone patients is over the two year study period while the general population proportions relate to a single year.

With the removal of MMT services, the average rate of access to other health care services (notconsultations) was less than that of the general population for all but pathology services. While, with the removal of MMT services, methadone patients accessed proportionately less pathology services than the general population (22.2% as compared to 26.3%), they still used

more services per person per annum than the average NSW resident (5.2 as compared to 3.1 services per annum) (see Table 2).

The lower use of referred consultations and other health services is particularly noteworthy given the level of illness associated with opioid dependence (Hedge, Flaherty, & MacAvoy, 1991) and the significantly increased prevalence of co-existing psychiatric disorders amongst this population (Andrews, Hall, Teesson & Henderson, 1999; Ward, Mattick & Hall, 1998). While these patients accessed unreferred doctor consultations on a far more regular basis than the general population, there were few referrals or, alternatively, little uptake of referrals, to specialist (referred) services.

3.1.3.2 Factors influencing frequency and cost of services:

Two standard multiple regressions were performed to assess the relationship between the number and cost of services under the CMBS (as the dependent variables), and length of time in MMT during the study period, gender, place of residence and age as predictor (or independent) variables. Table 3 and 4 display the regression models with the unstandardised regression coefficients (B) that quantify the effect of the predictor on the dependent variable, the standardized regression coefficients which provide a comparison of the relative explanatory power of the predictors on the dependent variable, t-value and significance levels.

Three of the four independent variables significantly contributed to the prediction of the number of services accessed – gender, place of residence and length of time in MMT, with the latter accounting for more variance than the other two predictors (see Table 3). For every additional 12 days spent in MMT, patients accessed one more health care service under the CMBS (the 95% confidence interval being between 11 and 14 days). Over the two-year study period, women and those living in urban NSW accessed 16 (the 95% confidence interval being between 10 and 22) and 32 (the 95% confidence interval being between 23 and 41) more services respectively than their counterparts. The gender and place of residence effect are consistent with patterns of health care utilisation found in the general population (HealthWIZ, 2000).

TABLE 3: NUMBER OF HEALTH CARE SERVICES ACCESSED AS PREDICTED BY GENDER, PLACE OF RESIDENCE, AGE AND LENGTH OF TIME IN TREATMENT

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	20.78	7.53		2.76*
Gender	-15.84	3.23	-0.10	-4.91*
Age	1.61	1.02	0.04	1.58
Place of residence	32.12	4.57	0.14	7.03*
Length of time in MMT	0.08	0.01	0.32	14.42*

Notes: R = .38; R square = .14; Adjusted R square = .14.; * = p<.01.

Gender: 0 = female, 1 = male; Place of residence: 0 = rural, 1 = urban.

In relation to the number of services used, R for regression was significantly different from zero, F (4, 2040) = 84.93, p < .001, and altogether 14 per cent of the variability in health care access was predicted by knowing scores on these four independent variables.

The following is an illustration of how the regression results can be used to calculate the number of health care services that would be used by a 36 year-old male MMT patient living in Dubbo who had been in MMT for only 45 days over the two-year study period.

No. of health services $= 20.78 - (15.84 * 1) + (1.61 * 8) + (32.12 * 0) + (0.08 * 45)$

$= 20.78 - 15.84 + 12.88 + 0 + 3.6$

$= 21.42$

With respect to cost of health care utilization over the study period, all four independent variables significantly contributed to the prediction of expenditure under the CMBS, with the number of days spent in MMT again accounting for more variance than any of the other predictors (see Table 4). For every additional day spent in MMT in 1997 and 1998 it cost an extra $1.97 in Medicare rebates (the 95% confidence interval being between $1.68 and $2.25). Over the two years it cost an additional $460 to provide health care services to

women as compared to men (the 95% confidence interval being between $300 and $620) and an extra $802 was paid in CMBS benefits to methadone patients living in urban areas as compared to those residing in rural NSW (the 95% confidence interval being between $575 and $1029). While older methadone patients did not use more services, those services that they did use cost significantly more than those used by younger patients. With each five-year increment in age the Commonwealth Government expended an additional $71 in health care services (the 95% confidence interval being between $20 and $121) over the study period.

TABLE 4: COST OF HEALTH CARE AS PREDICTED BY GENDER, PLACE OF RESIDENCE, AGE AND LENGTH OF TIME IN TREATMENT

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	431.45	190.71		2.26
Gender	-460.07	81.71	-0.12	-5.63*
Age	70.83	25.73	0.06	2.75*
Place of residence	802.33	115.69	0.14	6.94*
Length of time in MMT	1.97	0.15	0.30	13.43*

Notes: R = .37; R square = .14; Adjusted R square = .14; * = p<.01.

Gender: 0 = female 1, = male; Place of residence: 0 = rural, 1 = urban.

In relation to the benefit paid under the CMBS, R for regression was significantly different from zero, F (4, 2040) = 82.32, p < .001, and altogether 14 per cent of the variability in health care costs was predicted by knowing scores on each of the independent variables.

Using the results of the regression analyses, the cost of the 21.42 health care services accessed by the 26 year-old male MMT living in Dubbo would be estimated to be $626.67. The calculations are as follows:

Cost of health care $= 431.45 – (460.07 * 1) + (70.83 * 8) + (802.33 * 0) + (1.97 * 45)$

$= 431.45 – 460.07 + 566.64 + 0 + 88.65$

$= \$626.67$

Summary:

The 2045 MMT patients selected in the study were representative of the overall MMT population in NSW. During the two-year study period they enrolled in 3252 programs, an average of 1.59 programs each, of which 81.2 per cent were managed by private practitioners and 73.9 per cent involved private sector dosing. That there were differences between the study sample and the state MMT population, with respect to the type of dosing facility accessed, reflects differences in the measurement techniques used. Long-term MMT patients are over-represented in point in time snapshots. The study group was, therefore, comparatively less 'stable' and the data suggest that access to MMT in 1997 and 1998 was predominantly through private clinics with little capacity found in the public sector. These patients remained in treatment, on average, for 13.5 of the 24 months with 29.5 per cent of patients retained in treatment for the duration of the study period. Older MMT patients were found to spend significantly longer periods in MMT.

Overall, these patients accessed health care services at 3 to 3.5 times the rate and cost of the general population of NSW, having averaged 41.5 services at a cost of $1045 per annum. The additional services were comprised of doctor consultations and pathology services, with MMT patients using diagnostic procedures and investigations, therapeutic procedures, oral and maxillofacial services and diagnostic imaging services at a lower rate than the general population. This is noteworthy given that opioid dependent individuals would be expected to experience high levels of co-morbidity. For the 2045 methadone patients, women, those who lived in rural NSW and/or who had spent longer in treatment, used more health care services and costed more under the CMBS. In addition, being older led to an increase in the benefits paid under the CMBS for health care but not the number of services used.

3.2 What is the Cost and Composition of MMT Provided Through Private Practitioners?

The Commonwealth Government funds the medical component of MMT for those patients registered with a private practitioner. To determine what the Commonwealth Government paid for MMT therefore, all patients with at least one program provided by a private practitioner were selected. There were 1697 patients who met this criterion.

These patients had been enrolled in a total of 2837 programs, an average of 1.67 programs each, slightly higher than the overall average of 1.59. Of these, 2640 were under the care of

private practitioners, the majority of whom were general practitioners (68.8%). Psychiatrists provided medical services for 647 programs (24.5%) and physicians managed the remaining 176 programs (6.7%). Methadone dosing for these programs occurred largely in private clinics (63.8%), with community pharmacies, public clinics and hospital pharmacies providing services for 24.8 per cent, 10.3 per cent and 1.1 per cent of all programs respectively. Patients spent, on average, 13.6 months of the 72 months in treatment of which 12.8 months was spent in the 2,640 private programs.

3.2.1 MMT Health Care Utilisation and Costs:

These patients accessed a total of 154,625 services during 1997 and 1998. There were 74,781 MMT services provided during the 12.8 months that they were in MMT with a private doctor. MMT, therefore, consisted of an average of 41.3 services per annum per patient and was comprised of 24.2 consultations with any methadone doctor, 8.6 urine drug tests and 8.6 pathology collection items. The benefit paid under the CMBS for these MMT services amounted in total to $1,853,456, or $1,024 per patient per annum.

In NSW, doctors must be approved by the Director-General of the NSW Department of Health to provide MMT and must also receive authorization for each patient treated. The above estimate of the cost and composition of MMT was based on the assumption that any consultation with an approved methadone prescriber, regardless of whether the methadone doctor providing the service was the patient's registered doctor, was for the purpose of providing MMT. A more conservative estimate would be to limit MMT consultations to only those consultations provided by the patient's registered doctor. While this modification made no difference to the number of MMT pathology items, the number of methadone consultations accessed was reduced from 43,736 to 35,615, with the remaining 8,121 (18.6%) assumed not to be for the purposes of MMT. Consequently, MMT consisted of 36.8 services per annum and was comprised of 19.7 consultations, 8.6 urine drug tests and 8.6 pathology collection items costing $888 per annum.

It is likely, indeed probable, however, that many of the 8,121 consultations were in fact MMT services and that the true cost, therefore, of providing MMT through private practitioners was closer to $1024 per annum. Methadone patients would have received

MMT services from other methadone doctors on those occasions that they presented to the clinic/surgery and the registered doctor was unavailable. This would have occurred when the registered doctor was either on leave or, since many clinics/surgeries operate along the lines of a group practice, when the registered doctor was not rostered on duty. As such, $888 and $1024 represent the lower and upper boundaries respectively of the cost of MMT per annum under the CMBS.

3.2.2 Nature of MMT Consultations:

Of the 74,781 MMT services, 31,045 (41.5%) were for pathology (15,543 urine drug tests and 15,502 collection items). The remaining 43,736 services were MMT consultations. General practitioners provided 29,856 (68.3%) of these services, 13,128 were referred consultations with specialists (30%) and 752 (1.7%) were for other unreferred consultations. In relation to referred specialist consultations, the majority (12,180) were provided by psychiatrists with only 948 being provided by physicians.

Under the Medicare Benefits Schedule (Commonwealth Department of Health and Family Services, 1997), consultations with general practitioners can be less than 5 minutes (brief); more than 5 but less than 20 minutes (standard); more than 20 but less than 45 minutes (long); or more than 40 minutes (prolonged) in duration, each of which attracts a different rebate. In the main (80.6%), the MMT consultations provided by general practitioners were of a "standard" length with only 16.3 per cent and 1.9 per cent being of a long or prolonged length, respectively. This compares to 82.1 per cent, 11.5 per cent and 2.3 per cent of non-MMT consultations being of a standard, long and prolonged length. While a slightly higher percentage of MMT consultations were for "long" consultations (presumably for the purposes of assessment and patient review), overall there was no difference in the length of MMT and non-MMT consultations as provided by general practitioners. Interestingly, based on self-reported data, Victorian general practitioners appear to spend more time with MMT patients, with 26.9 per cent and 7.2 per cent reporting that they most commonly engaged in long and prolonged consultations respectively with their patients (Lintzeris et al., 1996).

With respect to psychiatric consultations, 84.0 per cent of those provided as MMT services were for 30 minutes or less. Sessions were of 15 minutes or less duration in 47.4 per cent of

cases and between 15 and 30 minutes on 36.6 per cent of occasions. Non-MMT psychiatric services, on the few occasions that patients accessed them, were for less than 30 minutes duration for only 26.4 per cent of cases. The majority (60.7%) of sessions ran for longer time periods with 21.5 per cent, 35.7 per cent and 3.5 per cent lasting between 30 and 45 minutes, 45 and 75 minutes, or for longer than 75 minutes respectively. The length of consultations provided by psychiatrists varied quite markedly, therefore, depending on whether patients were in MMT.

Summary:

For the study group, 81.2 per cent of all MMT programs were provided by private practitioners. On average, patients enrolled in these programs accessed 41.3 MMT services a year for which the Commonwealth Government expended $1024 under the CMBS. MMT was comprised of 24.2 doctor consultations, 8.6 urine drug tests and 8.6 pathology collection items. While 4.5 doctor consultations, on average, were provided by an approved methadone prescriber other than the registered methadone doctor, it is likely that these services were for the purposes of providing MMT. The lower and upper boundaries of the cost of MMT might, therefore, be considered to be $888 and $1024 respectively. There was no difference in the length of methadone and non-methadone consultations provided by general practitioners, but MMT psychiatric consultations were briefer than non-MMT psychiatric consultations, lasting for 15 minutes or less in 47.4 per cent of cases.

3.3 What Effect Does Being in MMT Have on Health Care Utilisation and Costs?

While section 3.2 was concerned with identifying the cost and service composition of MMT, this section is interested in the impact that being in MMT had on health care utilisation and costs. It could be argued that cost-offsets might have resulted from either reduced "doctor-shopping" and/or better integration of primary health care services, particularly where MMT was provided through general practitioners. Alternatively, it could be hypothesised that the provision of MMT and other health care would be kept quite separate. If this were the case it might be expected that there would be no difference between non-MMT services between in and out of MMT periods or, indeed, that entry to MMT might have resulted in increased service access, as hitherto ignored primary health care needs were attended to. As such,

overall health care utilisation and costs and, more specifically, non-MMT service use and costs were compared during in and out of treatment periods

To do this it was necessary to select from the 1697 patients who had enrolled in a MMT program with a private practitioner only those who had also experienced a non-MMT period during the two years. There were 1190 patients who met this criterion. Between them they had enrolled in 2030 programs, of which 1895 were with private practitioners (an average of 1.71 each), and had remained in treatment for 9.1 of the 24 months, 8.5 months of which were spent in programs with private practitioners. Compared to the larger study group of 1697, therefore, they had engaged in more programs but spent less time in MMT. A higher proportion of these programs were managed by general practitioners (71.2%) and dosed through private clinics (72.2%). On average they were younger than the 1697 patients, which is consistent with the previous finding that older patients remained in treatment for longer periods of time (section 3.1.2).

3.3.1 Overall Care Utilisation and Costs:

Of the 92,678 services accessed in total, one third of the services (32,265) occurred during the 14.9 months that these patients were not in MMT. The remaining 60,413 services occurred during MMT periods of which 58,283 services were consumed during the 8.5 months that patients were enrolled in MMT with private practitioners. On average then, these patients used 69.1 health care services per year costing $1,688 while receiving MMT from a private doctor, as compared to 21.8 services per annum at a cost of $572 when not in MMT. Being in MMT, therefore, resulted in a threefold increase in health care utilization and costs.

To determine whether the difference was significant, an annualized use and cost rate during MMT and non-MMT periods was computed for each of the 1190 patients and a paired sample t-test undertaken. The analysis revealed that the differences in health care access rates ($t = 24.9$; $df = 1189$; $p < .001$) and the benefits payable ($t = 20.0$; $df = 1189$; $p < .001$) under the CMBS between MMT and non-MMT periods were significant.

3.3.2 Non-MMT Service Utilisation and Costs:

There were 52,521 non-MMT services provided over the study period at a cost of $1,356,386. The overall average, per person per annum, was 22.1 services for which the Commonwealth Government paid $570 under the CMBS. Of interest, however, was a comparison of non-MMT utilisation and cost rates during MMT and non-MMT periods.

The average annualised non-MMT access rate was 21.5 services costing $540 when in MMT and 21.8 services costing $572 when not in MMT. For the 8.5 months that these patients were in MMT they used a total of 18,126 non-MMT services at a cost of $454,918. Conversely, for the 14.9 months that they were not in MMT, they utilised 32,265 health care services (all non-MMT by definition), which cost $844,852 under the CMBS. A paired t-test using annualized access and cost rates computed for each patient during in and out of MMT periods revealed that there was no significant difference in either use rates ($t = 1.7$; $df = 1177$; $p = .095$) or funds expended under the CMBS ($t = 1.3$; $df = 1177$; $p = .181$) for non-MMT services.

There were, however, differences in the types of non-MMT services accessed during MMT and non-MMT periods. When in MMT, patients engaged in fewer doctor consultations, received more pathology services and slightly higher levels of therapeutic procedures and diagnostic imaging ($\chi^2 = 1840.5$; $df = 5$; $p < .001$). Table 5 provides a breakdown of service utilisation by health care categories (as classified by the HIC) for MMT and non-MMT periods. The reduction in doctor consultations during MMT was mainly due to a decrease in visits to psychiatrists, with only a slight decrease occurring in general practitioner and other specialist utilisation. The one exception to the overall trend of reduced non-MMT consultations while in MMT was an increase in the number of services provided by physicians. The difference in consultation patterns between in treatment and non-treatment periods was significant ($\chi^2 = 125.5$; $df = 3$; $p < .001$).

TABLE 5: TYPES OF NON-MMT SERVICES UTILIZED DURING MMT AND NON-MMT PERIODS

SERVICE CATEGORY	IN MMT		OUT OF MMT	
	No.	%	No.	%
Doctor consultations	11,302	62.3	24,427	75.7
Diagnostic procedures	82	0.5	130	0.4
Therapeutic procedures	293	1.6	410	1.3
Oral & maxillofacial	1	0	3	0
Diagnostic imaging	481	2.7	701	2.2
Pathology	5,967	32.9	6,594	20.4
Total	18,126	100.0	32,265	100.0

Note: Doctor consultations are called "professional attendances" by the HIC and include referred and unreferred services.

Counterbalancing the decrease in consultations while in MMT was an increase in pathology services. When in MMT, patients received more blood, urine, liver function and hepatitis testing but had proportionally fewer pathology collection items. The reduced proportion of pathology collection items may have been the result of the MMT service definition, in that there was always one collection item assigned as a MMT service wherever a urine drug test was undertaken regardless of whether there were other pathology tests collected at the same time.

On average, these 1190 patients were only in treatment for 8.5 months over the study period. The relative brevity of the treatment period experienced by these individuals may have had an impact on the observed differences between non-MMT utilization during treatment and non-treatment periods. It may be that, as time in MMT increases, differences in non-MMT utilization would emerge. It might be expected that doctor consultations would be reduced even further as would pathology services resulting in an overall reduction in non-MMT services when in MMT. Without further investigation, however, no conclusions can be drawn other than that there was no reduction in non-MMT service utilization when in MMT.

Summary:

Being in MMT resulted in a threefold increase in health care utilisation and costs. When in MMT, patients accessed, on average, 69.1 services per annum at a cost of $1688 and, when not in MMT, patients accessed 21.8 services for which the Commonwealth Government paid $572 in benefits under the CMBS. The increase in health care use appears to be due solely to the provision of MMT as a health intervention since there was no difference in non-MMT service utilisation and costs between MMT and non-MMT periods. It is unknown, however, what proportion of MMT services were spent in attending to general health care needs.

Being in MMT, while not reducing the number of non-MMT services, did have an impact on the nature of those non-MMT services accessed. There was a decrease in doctor consultations that may have been the result of reduced "doctor-shopping" and/or better integration of health care services. On the other hand, there was an increase in pathology services suggesting that a higher level of monitoring for illnesses relevant to the opioid dependent population may have occurred when patients were in MMT.

The extent to which the finding that there was no difference in non-MMT utilization between treatment and non-treatment periods was the result of the restricted study period and, subsequently, the relatively brief time spent in treatment by these 1190, is unknown and requires further investigation.

3.4 What Factors Influence the Cost and Composition of MMT?

Of particular interest, was the identification of factors that could predict the number of MMT services utilized and the cost of these services. The variables available for analyses were the total length of time spent in MMT, gender, age, place of residence, the type of dosing facility (2), and the specialty of the registered methadone doctor. Due to the small number of patients represented in each of the following groups, patients dosed in hospital pharmacies (n = 14), treated by physicians (n = 31) and/or aged 16 to 20 years and 56 to 70 years (n = 32) were excluded from the analyses. This resulted in the removal of 59 patients.

While gender, age and place of residence are unique to each individual, the type of dosing facility and/or the specialty of the registered doctor can vary with each program. As such, only two groups of patients could be included in the analyses. The first involved only those

patients from the 1697 who had had one program during the study period. The second comprised those patients from the 1697 who had a continuous episode of care involving more than one program, but where all of the programs had been managed by a private practitioner and had involved the same type of dosing facility and doctor specialty throughout. To be considered a continuous episode of care there had to have been seven days or less between each program start date and the previous program end date. The length of time in treatment was recalculated to accord with the programs included in the analyses.

There were 947 patients who met the above criteria. They had enrolled in a total of 1046 programs (an average of 1.1 each), with 90.8 per cent having only experienced one treatment program during the two years. Compared to the 1697 patients who had been treated by a private practitioner during the study period, these 947 patients had more programs, managed by general practitioners (75.4%) and dosed through community pharmacies (32.9%). Furthermore, despite having participated in fewer treatment programs patients had only spent slightly less time in treatment over the two years - 12.7 months as compared to 13.6 months overall, or 12.8 months for the private program component of MMT for the 1697 patients.

3.4.1 Factors Influencing the Composition of MMT:

Of the 79,392 services utilised, 38,647 were MMT services. Given that these patients remained in treatment for 12.7 months, then MMT consisted of 38.6 services per annum per patient and was comprised of 22.7 consultations with any approved methadone doctor, 7.9 urine drug tests, and 8.0 pathology collection items.

Altogether, 60 per cent of the variability in the number of MMT services accessed by these patients was predicted by knowing scores on the seven independent variables – length of time in MMT, gender, age, place of residence, type of dosing facility (2), and doctor specialty. Table 6 displays the regression model with the unstandardised regression coefficients (B) that quantify the effect of the predictor on the dependent variable, the standardized regression coefficients which provide a comparison of the relative explanatory power of the predictors on the dependent variable, t-value and significance levels.

There were four factors that contributed significantly to the prediction of the number of MMT services accessed by patients - the length of time in treatment, whether the dosing point was a specialist facility, whether the specialist clinic was privately or publicly operated and the patient's place of residence. Not surprisingly, the longer a patient remained in treatment the more MMT services they used, with an additional MMT service being accessed every 9 to 10 days. This was the predictor that accounted for most of the variance as indicated by the standardized coefficient. Of the remaining predictors, over the 12.7 months these patients were in treatment, those dosed in specialist clinics used 6.8 more MMT services (the 95% confident interval being between 5.4 and 8.1) than those dosed in community pharmacies, while those dosed in privately operated clinics received an additional 7.1 MMT services (the 95% confident interval being between 4.3 and 9.9) compared to those patients dosed in publicly managed clinics. Finally, patients living in urban NSW received 9.8 more services (the 95% confident interval being between 4.7 and 14.9) than their rural counterparts. Table 7 provides a breakdown of average MMT service utilisation and costs for the different types of dosing facilities.

TABLE 6: PREDICTORS OF THE NUMBER OF MMT SERVICES PROVIDED DURING MMT

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	-3.26	4.6		0.73
Gender	-3.09	1.71	-.04	1.81
Age	-0.83	0.57	-.03	1.46
Place of residence	9.82	2.59	.09	3 .79*
Length of time in MMT	0.11	00.0	.80	3.29*
Private vs. public clinics	7.10	1.41	.13	5.03*
Clinics vs. pharmacy	6.78	0.68	.25	9.94*
Doctor specialty	-1.96	1.91	-.02	- 1.03

Notes: R =.77; R square=.60; Adjusted R=.60

Sex: 0 = female, 1 = male Place of residence: 0 = rural, 1= urban

Private vs. Public Clinics: 1 = private; -1 = public

Clinic vs. Pharmacy: 1 = private; 1= public; -2 = community pharmacy

Doctor specialty: 0 = psychiatrist; 1 = GP

With regard to the number of methadone services provided, R was significantly different from zero, $F(7, 939) = 199.59$, $p < .001$.

Unlike overall health care utilization for the study sample (2045), females did not receive more MMT services than males, and being older did not lead to an increase in the number of MMT services provided (section 3.1.3.2). Of particular interest was the finding that, while controlling for the other six independent variables, there was no difference between specialists and general practitioners in relation to the number of MMT services provided to patients.

TABLE 7: MMT composition & Cost per annum by type of dosing facility

	Private Clinic N = 525	Public Clinic N = 108	Pharmacy N = 314
No. of consultations	27.7	20.4	18.3
No. of urine drug tests	12.7	6.5	3.8
Total MMT services	53.1	33.4	25.8
Mean cost per service	$21.44	$29.00	$29.24
Total MMT cost	$1139.00	$968.00	$755.00

The following is an illustration of how the regression results can be used to predict MMT service utilization. A 26 year-old female living in Parramatta who had been in treatment for 274 days (9 months) under the care of a general practitioner and dosed in a community pharmacy would be expected to use 16.2 MMT services.

$$\begin{aligned} \textit{No. of MMT services} &= -3.26 - (3.09 * 0) - (0.83 * 6) + (9.82 * 1) + (0.11 * 274) \\ &\quad + (7.1 * 0) + (6.78 * -2) - (1.96 * 1) \\ &= -3.26 - 0 - 4.98 + 9.82 + 30.14 + 0 - 13.56 - 1.96 \\ &= 16.2 \end{aligned}$$

3.4.2 Factors Influencing the Cost of MMT:

Overall, 57 per cent of the variability in the cost of MMT was predicted by knowing scores on each of the seven independent variables – length of time in treatment, gender, age, place of residence, type of dosing facility (2) and doctor specialty. Table 8 displays the regression model with the unstandardised regression coefficients (B) that quantify the effect of the predictor on the dependent variable, the standardized regression coefficients which provide a comparison of the relative explanatory power of the predictors on the dependent variable, t-value and significance levels.

While knowing the specialty of the registered methadone doctor did not reliably increase the prediction of the number of MMT services received, it did significantly contribute to the prediction of MMT costs. Even after controlling for the effects of dose setting, place of residence, individual characteristics and time spent in MMT, being registered with a psychiatrist increased the cost of MMT by $505 (the 95% confidence interval being between $407 and $602) over the 12.7 months, as compared to being under the care of a general practitioner. Given that specialists attract a higher rebate under the CMBS than general practitioners, this is hardly a surprising result.

Consistent with the findings in relation to the number of MMT services accessed, the time spent in treatment over the 12.7 months was the factor that accounted for most of the variance in treatment costs. The cost of MMT increased by $2.36 (the 95% confidence interval being between $2.20 and $2.52) for every additional day that a patient was retained in treatment. In addition, over the 12.7 month treatment period, being dosed in a specialist clinic as compared to a community pharmacy, resulted in a $94 (the 95% confidence interval being between $60 and $129) increase in treatment costs, and MMT costs for those living in urban NSW were $364 (the 95% confidence interval being between $231 and $497) higher than for rural residents.

Three of the independent variables, however, did not significantly contribute to the prediction of MMT costs – age, gender and type of specialist clinic. While patients in private clinics received 7.1 more MMT services over the 12.7 months that they were in treatment

than those private patients dosed in public clinics, there was no difference between the two with respect to the benefit paid under the CMBS. This can be explained by the finding that the mean cost per service was higher in public clinics ($29) than private clinics ($21). The higher mean cost per service in public clinics may result from more programs in public clinics being managed by specialists (31.3% as compared to 22.7%) and a greater proportion of MMT services being consultations (51% as compared to 61%), with consultations costing more under the CMBS than urine drug tests (see Table 7).

TABLE 8: PREDICTORS OF THE COST OF MMT

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	315.70	16.41		2.71*
Gender	-63.03	44.57	-0.03	28.19
Age	-19.90	14.78	-0.03	-1.41
Place of residence	364.29	67.69	0.13	-1.35*
Length of time in MMT	2.36	0.08	0.70	5.38*
Private vs. public clinics	12.97	36.87	0.01	0.35
Clinics vs. pharmacy	94.46	17.81	0.14	5.31*
Doctor specialty	-504.79	49.74	-0.22	-10.15*

Notes: R = .76; R square = .57; Adjusted R = .57

Sex: 0 = female, 1 = male Place of residence: 0 = rural, 1 = urban

Private vs. Public Clinics: 1 = private; -1 = public

Clinic vs. Pharmacy: 1 = private; 1= public; -2 = community pharmacy

Doctor specialty: 0 = psychiatrist; 1 = GP

In relation to the cost of MMT, R was significantly different from zero, F (7, 939) = 181.08, $p < .001$.

Using the results from the regression, the cost of MMT for the female client in the previous example would be $513.52. The calculation is as follows:

Cost of MMT = *315.70 – (63.03 * 0) – (19.90 * 6) + (364.29 * 1) + (2.36 * 274) + (12.97 * 0) + (94.46 * -2) – (504.79 * 1)*

= *315.70 – 0 – 119.40 + 364.29 + 646.64 + 0 – 188.92 – 504.79*

= *$513.52*

Summary:

As would be expected, the longer a patient remained in treatment the more MMT services they accessed, and the greater the cost of MMT. Controlling for treatment length, though, the number of MMT services utilised could also be predicted by knowing the patient's place of residence and the type of dosing facility. Being an urban resident and attending a specialist facility, in particular a private clinic, led to an increase in the number of services accessed. MMT costs, on the other hand, after controlling for the length of time in MMT, were determined by whether the patient lived in urban NSW, whether the registered doctor was a specialist and whether the dosing facility was a specialist clinic, all of which led to increased MMT costs. Unlike health care access in the general population, the composition and cost of MMT was unaffected by gender and age.

3.5 Does Retention in Treatment Effect the Composition and Cost of MMT?

As would be expected, in section 3.4 it was found that the longer a patient remained in MMT the more MMT services they accessed, and the greater the cost of MMT to the Commonwealth Government. Of interest, however, is the question of whether the frequency of MMT services and, consequently, the overall cost per annum of MMT decreases, as the time spent in MMT increases and patients become more 'stable'.

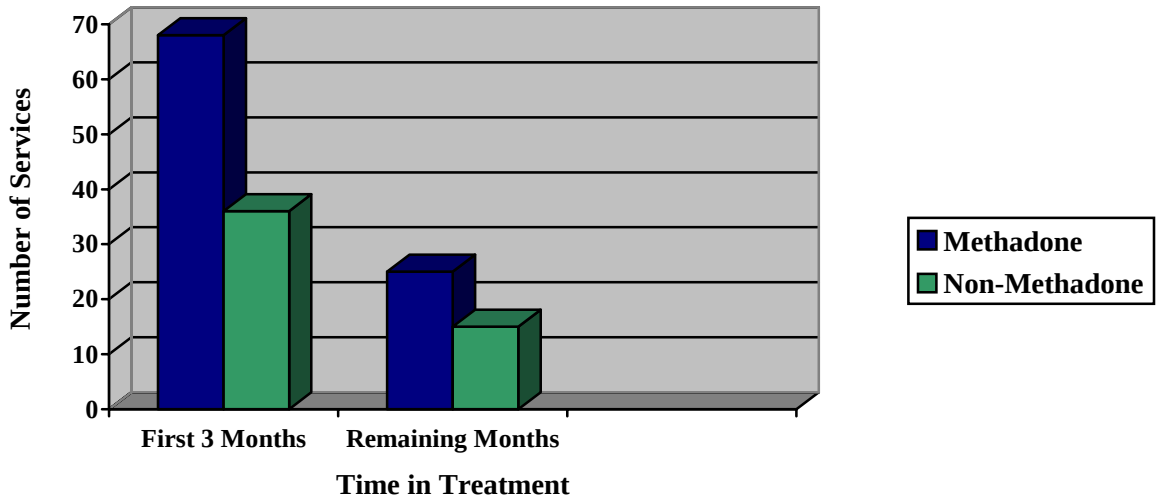
To address this question the level of MMT and non-MMT service use and costs in the first three months of MMT (stabilisation phase) were compared with those in the remaining months. From the 947 patients only those who had commenced MMT on or after 15 January 1997 and who had remained in treatment for longer than three months were selected. Restricting the commencement date was done to ensure that there was at least 14 days between the program start date and the previous program end date, so that, as much as

possible, the new program did not simply involve the transfer of a stabilised patient from one doctor to another. There were 312 patients who met these criteria.

Annualised use and expenditure rates were computed and paired t-tests undertaken to determine the significance of any variations found. In addition, standard regressions were performed to assess the relationship between the number and cost of MMT and non-MMT services used in the first three and remaining months of treatment (the dependent variables) and a number of predictor (or independent) variables. The predictors were gender, age, place of residence, specialty of the registered doctor and type of dosing facility (2) and when looking at predictors of MMT and non-MMT service use and cost in the post-stabilisation period length of time spent in the remaining months of MMT.

With respect to MMT services, the average annualised level of access per patient in the first three months of treatment was 68.5 services costing $1615 under the CMBS. Following the initial three-month stabilisation period, the average annualised level of MMT service utilisation per patient was 36.2 services for which $812 was paid in benefits. There was, therefore, a 50 per cent reduction in methadone service intensity following the first three months of treatment (see figures 2 and 3). These differences in health care utilisation ($t = 14.9$; $df = 311$; $p < .001$) and expenditure ($t = 15.9$; $df = 311$; $p < .001$) between the stabilization and maintenances phases of MMT were significant.

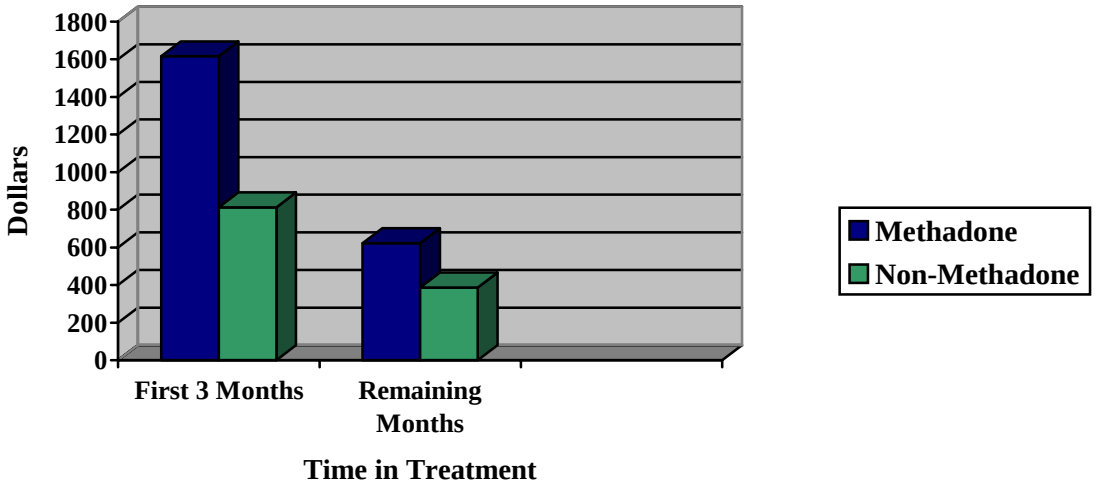
FIGURE 2: Mean number of services accessed by time in treatment and service type



The average annualized level of non-MMT health care utilization during the stabilization phase of MMT was 25.1 services costing $622. After three months access, levels dropped to 14.6 services per annum at a cost of $387. While the reduction was slightly less marked than that found in relation to MMT services, it was still significant both in terms of levels of use ($t = 5.7$; $df = 311$; $p < .001$) and costs under the CMBS ($t = 4.5$; $df = 311$; $p < .001$).

It should be noted that the number and cost of both MMT and non-MMT services in the maintenance phase of MMT could be an underestimate because of problems with the accuracy of program end dates. While this would affect the magnitude of the reduction in service use and cost, given the size of the reductions, it would not affect the overall finding that there was a significant reduction in both MMT and non-MMT service use and costs between the stabilization and maintenance phases of treatment.

FIGURE 3: Mean cost of health care utilization by time in treatment and service type



3.5.1 MMT Service Access and Cost During Stabilisation (First 3 Months):

Two of the independent variables - place of residence and type of specialist clinic - contributed significantly to the prediction of the level of MMT service access during stabilization. These results are generally consistent with the overall findings in section 3.4.1 regarding what factors impacted on the number of MMT services provided to patients. There was, however, one exception. While those dosed in specialist facilities accessed more services than those attending community pharmacies over the entire treatment period, this was not found to be the case during the first three months. During stabilization the only difference found with respect to the type of dosing facility was between privately and publicly operated clinics, with patients in private clinics receiving, on average, 2.1 (the 95% confidence interval being between 0.5 and 3.8) more MMT services over the three months than those in public clinics. In addition, patients residing in urban areas of NSW accessed 8.5 (the 95% confidence interval being between 5.4 and 11.6) additional MMT services, on average, in the first three months, as compared to those living in rural areas (see Table A1, Appendix A).

With regard to the cost of MMT services during the stabilization phase of treatment, the results were also consistent with those found in section 3.4.2, with the patient's place of

residence and the specialty of the registered methadone prescriber being the only independent variables that contributed significantly to the prediction of treatment costs. As would be expected - given they accessed 8.5 fewer MMT services during stabilization - expenditure on MMT under the CMBS was $221 (the 95% confidence interval being between $139 and $302) less in the first three months for rural patients. While the number of MMT services provided for patients during stabilization was the same regardless of whether the registered doctor was a specialist or a general practitioner, this was not the case when it came to the cost of MMT. For patients under the care of a specialist, MMT cost the Commonwealth Government an additional $264 (the 95% confidence interval being between $192 and $335) in the first three months of treatment (see Table A2, Apendix A).

Again, while MMT provided to patients in specialist facilities was found to cost more than for those attending community pharmacies when looking at the cost of MMT over the entire treatment period, this was not the case in the first three months. Just as there was no difference in the number of services received by those in clinics as compared to pharmacies during stabilization, so too was there no difference in the cost of MMT. (See Table A2, Appendix A).

3.5.2 MMT Service Access and Cost After Stabilisation:

As would be expected on the basis of the findings in section 3.4.1, the number of MMT services accessed during the maintenance phase of MMT was predicted by knowing the patient's place of residence, whether they were dosed in a specialist facility, whether the specialist facility was privately operated and the number of days that they remained in treatment. Patients who lived in urban NSW, who attended clinics for dosing, (particularly those run by private operators) and who were retained in treatment for longer periods of time, all accessed more MMT services (see Table A3, Appendix A).

With respect to the cost of MMT, again the findings were consistent with those found in section 3.4.2 – the patient's place of residence, the registered doctor's specialty and the number of days that a patient remained in treatment all significantly contributed to the prediction of the cost of MMT. Again, in keeping with previous results, while patients attending private clinics used more services on average per annum than those attending

public clinics, there was no difference found between the two groups in expenditure on MMT under the CMBS. As already identified, this resulted from publicly operated clinics having on average a higher cost per service (see Table A4, Appendix A).

There was, however, one discrepancy between these results and earlier findings. As found during the stabilization phase of MMT, there was no difference in the cost of MMT between those dosed in specialist clinics as compared to those attending community pharmacies, as might be expected given that this was a significant predictor in determining the overall cost of MMT (section 3.4.2). By way of explanation, it is likely that the intensity of MMT service provision is reduced over an extended period of time and that maintenance is not reached, for many patients, by the end of the first three months. The 947 patients included in the analyses in section 3.4.2 had, on average, been in treatment for a minimum of 22.7 months by the end of the study period (when not restricting the start date to 1 January 1997) as compared to only 11.4 months for these 312 patients. It is probable, therefore, that these patients as a group were less stable and were being more closely monitored or supervised. Supporting this supposition is the finding that, although significant, the difference between the various dose settings with regard to the number of MMT services provided to these patients was less than that found in section 3.4.2 (see Table A4, Appendix A). As a consequence, it is hypothesized that the cost differential between specialist clinics and community pharmacies was not yet apparent in this group because of the restricted study-period. Alternatively, it could be that, with only a third of the subjects eligible for these analyses, there was insufficient power to detect a difference.

3.5.3 Non-MMT Service Access and Cost During MMT:

Unlike MMT services, analyses revealed that the level of access to, and the cost of, non-MMT services in the first three-months of MMT was not predicted by the six independent variables overall and accounted for very little of the variance (see Tables A5 and A6, Appendix A). Gender, however, was significant within the model. Females used 3.3 (the 95% confidence interval being between 1.1 and 5.4) more non-MMT services at an additional cost of $91 (the 95% confidence interval being between 27 and $155) in the first three months compared to male methadone patients.

With respect to the post-stabilization phase of treatment, two of the independent variables – place of residence and the number of days spent in treatment – contributed significantly to the prediction of the number and cost of non-MMT services provided to these 312 patients (see Tables A7 and A8, Appendix A). Women continued to use more services at a greater cost than their male counterparts. Over the 8.4 month post stabilization period observed in the study, women accessed an additional 9.2 services (the 95% confidence interval being between 4.8 and 13.7) at a cost of $247 (the 95% confidence interval being between $127 and $366). Furthermore, $1.18 was spent on non-MMT services every day that a patient remained in MMT with non-MMT services being accessed, on average, once every 23 days.

Summary:

The number of MMT services provided, and consequently the cost of MMT, during stabilisation was greater than in subsequent months. After three months in treatment both the intensity and cost of MMT service was reduced by approximately 50 per cent.

In all dosing facilities the rate of MMT service access was higher in the first three months of MMT compared to subsequent months, with privately operated clinics having been found to provide the most MMT services. Private clinics were also found to provide more services during the maintenance phase of treatment, raising the question of whether the higher levels of servicing were appropriate and/or enhanced treatment outcomes. It may be that, within the private clinic setting, methadone doctors provided counselling and case management services that in the other dose settings were provided by other health professionals. That there was no difference between the various dosing facilities with respect to non-MMT services, either during stabilization or the maintenance phase, suggests at least that there were no health care utilization offsets associated with the higher level of MMT service provision.

The cost of MMT was always determined, regardless of what phase of MMT the patient was in, by whether the patient lived in urban NSW or whether the registered doctor was a specialist. Under either of those conditions the cost of MMT was greater.

There was little in the current study, other than gender and - for the maintenance phase in treatment - length of time in treatment that influenced the number or cost of non-MMT services accessed. As with the general population, women used more services at a greater cost than men. While the patient's clinical presentation would be expected to be a significant predictor of non-MMT service access, it may also be that non-MMT

services during treatment periods were determined by the individual practices of the registered methadone doctor. Given that non-MMT service access during MMT involved less doctor consultations and greater numbers of pathology services as compared to non-MMT periods (section 3.3), it could be that the level and cost of non-MMT services was to some extent dependent on whether the methadone doctor was in the habit of undertaking a battery of routine health investigations.

4. CONCLUSION

In NSW, between 1 January 1997 and 31 December 1998, the private health care sector was the primary provider of MMT. Of the 3,252 programs included in the study, 81.2 per cent were managed by private practitioners and 75.9 per cent involved private sector dosing. This reflects a continued and growing reliance on the private sector to meet demand for MMT. The NSW Drug Treatment Services Plan (2000) recommends that there be a substantial increase in MMT/pharmacotherapy places such that 40 per cent to 45 per cent of the opioid dependent population would have access to treatment in any given year. While NSW proposes to increase the capacity of the public sector to medically manage and dose methadone patients, the plan also explicitly identifies the need to increase general practitioner and community pharmacy involvement in the program. The net effect of the plan, then, is a continued growth in the number of patients treated in the private sector.

Increasing MMT access through the private sector has a direct economic impact upon patients and the Commonwealth Government. Patients incur a dispensing fee when dosed at private clinics or community pharmacies. While fees vary, if the average daily dispensing fee at a pharmacy is assumed to be $4.00, then the annual cost to the patient is $1460. Similarly, if one assumes the average daily dispensing fee to be $7.50 at private clinics, then a patient would outlay $2737 for dosing over a 12-month period.

While patients do not generally incur expenses for the medical component of MMT (97% of all MMT services in the current study were bulk billed), the financial burden is borne by the Commonwealth Government. On average, during 1997 and 1998 MMT, under the care of a private practitioner was comprised of between 19.7 and 24.2 consultations and 8.6 urine drug tests per annum, and cost the Commonwealth Government between $888 and $1024 per patient per annum under the CMBS.

Clearly there is disparity in a system where jurisdictions are responsible for developing the model of service delivery and access levels and the Commonwealth Government is responsible for financing that system as is the case in MMT. Recognising this dissonance, the Commonwealth Government has for some time been concerned about what it has

perceived as "cost-shifting" as jurisdictions have actively sought to increase MMT availability in the face of rising demand by pursuing strategies to increase private practitioner involvement in the program. Inadequate monitoring systems and the inherent potential for over-servicing in a fee for service system have further exacerbated their concern about unchecked growth in MMT funding and the increasing financial burden being shouldered by the Commonwealth Government.

4.1 Adequacy of the "Capitated" MMT Fee:

The Commonwealth Government first attempted to exercise some control over expenditure on MMT by limiting the number of urine drug tests available to patients. As of July 1993 only 21 urine drug tests per patient per year can be claimed under the CMBS. The finding that the average number of tests per year per patient is 8.6 in the current study is testament to the success of that strategy.

The Commonwealth Government announced the possibility of introducing a 'capitation' fee payment model for MMT in its 1997/1998 budget measures (Budget Paper No. 2, 1999), to be finally determined by the outcome of trials of the alternative funding system and this analysis of the HIC data. This study has demonstrated that, on average, the proposed payment of $700 per patient per year would not, on average, be sufficient to cover the cost of the services provided to the 1697 patients who received MMT from a private doctor during 1997 and 1998. The trials also proved difficult to implement and, consequently, the Commonwealth has subsequently decided not to proceed with a 'capitation' system for methadone.

4.1.1 General Practitioners:

It is true, however, that while specialists did not provide any more services than general practitioners, the cost of MMT was significantly greater (some $477 per annum) when provided by a specialist. For the 1817 (68.8%) programs provided by general practitioners, the average annual cost of treatment was only $816 as compared to the overall average of $1024. It was further found that 18.6 per cent of all MMT consultations were provided by doctors other than the registered doctor, and accounted for 13.3 per cent of MMT

expenditure. If this was also true for the 1817 programs managed by general practitioners and the definition of MMT was restricted to those services provided by the registered doctor, then the average annual cost of MMT provided by a general practitioner would have been approximately $708.

For general practitioners, then, after adjusting the fee in line with the Consumer Price Index (CPI), it could be argued that a 'capitation' fee of $700 per annum would be sufficient. Such a conclusion, however, assumes that general practitioners believe that Medicare rebates are adequate in the first place and, more specifically, that those doctors providing MMT feel that they are sufficiently remunerated under the CMBS structure. There is evidence to suggest that both assumptions are false. Recently the Royal Australian College of General Practitioners (RAGCP, 2001) and the Australian Medical Association (AMA, *Sydney Morning Herald*, 2001) declared that the rebate for consultations with general practitioners is too low. This is said to be due to a failure to pass on full price indexation over time and to the growing complexity of cases as general practitioners are increasingly expected to provide counselling and preventative care services to those with mental health, family and social problems. Recognising the concerns of the RAGCP and the AMA, the Commonwealth has recently introduced 'Enhanced Primary Care' items under the CMBS that allow general practitioners to provide extended care to those with complex and chronic illnesses.

That only a small number of general practitioners (approximately 450) in NSW participate in the methadone program is evidence that there are obstacles to providing MMT through primary care. The reluctance of general practitioners to become involved is multifaceted but includes things such as the difficult, unreliable and time-consuming nature of patients; fear of violence and critical incidents; concern that if treatment is provided then demand will be excessive; concern that these patients are manipulative and will demand medication; lack of familiarity or knowledge about drug use and appropriate interventions; disillusionment with relapse rates; lack of support from specialist services; opposition from practice partners; and personal attitudes about drug use (Seivewright, 2000; Greenwood, 1992, Edwards, Roche, Gill, Polkinghorne, Evershed & Mant, 1995).

More specifically, and particularly relevant to the question at hand, concerning 'capitation', two recent Australian studies have identified the lack of adequate remuneration and time as

issues (Abouyanni et al., 2000; Lintzeris et al., 1996). Lintzeris et al. (1996) found that 81.3 per cent of methadone prescribers interviewed believed that the fees provided under the CMBS were inadequate to fully compensate for the administrative requirements of the program and the demanding, difficult and time-consuming nature of methadone patients. Furthermore, practitioners felt that the structure of the CMBS was such that there were disincentives to providing patients with the time they needed.

In setting a 'capitation' fee, therefore, whether or not the fee is adequate to meet the costs of services already provided by general practitioners is not the only question of relevance. Jurisdictions have expressed opposition to the proposal on the grounds that their ability to recruit general practitioners to the MMT system would be reduced. Increasing the number of doctors involved creates capacity and disperses the treatment population, reducing the visibility of the program and community concern. The difficulty of engaging the medical profession in drug and alcohol medicine has long been recognised and has led to the establishment of a specialty in drug and alcohol medicine. Any rebate set above that of a general practitioner for drug and alcohol specialists would immediately render the "capitation" fee of $700 inadequate, as would a failure of the capitated fee to keep pace with the CPI or any rebate increases negotiated for doctors under the CMBS.

4.1.2 Specialist Practitioners:

For those 823 (31.2%) programs provided by specialists (be they psychiatrists or physicians) in the current study the mean cost per annum per patient was $1226. Without question, a 'capitation' fee of $700 would be insufficient to cover the cost of services provided by these specialist methadone prescribers. Since these doctors are unlikely to accept a 45 per cent reduction in their yearly income generated from treating methadone patients, the only options available to them would be to reduce the level of service provided to patients or to cease their involvement in the methadone program. The loss of 2649 (as at October 1999) treatment places in NSW at a time when the prevalence of heroin use is increasing (Hall et al., 2000), demand for treatment is high and recruitment of suitable practitioners is difficult (Abouyanni et al., 2000) would have substantial social and public health outcomes. Alternatively, reducing the mean number of consults from 24 to 11 could also have a negative impact on treatment outcomes. Of particular concern would be the safety

implications for those patients entering treatment who require regular supervision to ensure appropriate dosing.

The current study has identified that, while MMT provided by specialists costs more under the CMBS, specialists do not see their patients on a more regular basis as was suggested in the *Review of Methadone Treatment in Australia* (Commonwealth Department of Human Services and Health, 1995). It provides no qualitative information, however, as to the nature of the patients treated and the outcomes achieved. If there is no difference in the type of patients treated by specialists and general practitioners and no discernible difference in the outcomes achieved, the Commonwealth Government's concern about the additional funds expended on specialists may well be justified. That psychiatrists spent no more time with patients than general practitioners, with 47.4 per cent of MMT consultations provided by psychiatrists being of 15 minutes or less duration, indicates that little time was spent in the management of complex cases. Furthermore, the finding that psychiatrists were more likely to be treating long-term rather than new patients suggests that who a patient is treated by is determined more by doctor availability than the patient's clinical presentation.

On the other hand, drug dependence is a psychiatric disorder under the DSM-IV. Furthermore, it has been consistently reported that psychiatric disorders are more prevalent amongst those with opioid dependence than the general population (Ward, Mattick and Hall, 1998). The involvement of psychiatrists, therefore, in the treatment of methadone patients may be highly appropriate if they are effectively treating the more complex and difficult patients. There needs to be a review of the role of psychiatrists in the treatment of methadone patients to ensure that patients with co-morbid conditions have access to adequate and appropriate specialist services so that the treatment and health outcomes of these patients can be maximized and the additional rebates paid to psychiatrists under the CMBS can be justified.

At a time when a specialty in drug and alcohol medicine has just been established and when the involvement of specialists in MMT is declining, it would seem counter-productive to remove the specialist rebate and risk alienating the Royal Australian and New Zealand College of Psychiatrists (RANZCP). Since NSW embarked on a drive to increase general

practitioner participation in the program and to introduce accreditation, specialists have been playing a diminishing role in the delivery of methadone services. The proportion of approved private methadone doctors who are specialists has decreased from 40.9 per cent in July 1994 to 14.9 per cent in October 1999 and, similarly, the proportion of patients treated by these specialists has also declined from 62.2 per cent to 21.5 per cent over the same time period. Reflecting this trend, this study demonstrated that general practitioners were more likely to be an access point to treatment, being disproportionately responsible for treating those with multiple program admissions or new admissions over the two-year study period. Specialists, on the other hand, were more highly represented amongst those who had been in treatment for the entire two-year period than those who had had multiple admissions. It could safely be predicted, therefore, that GPs will increasingly manage more programs as more are recruited and those new prescribers increase their patient numbers.

4.2 The Effectiveness of 'Capitation' as a Model for MMT:

The broader and more fundamental question is whether the introduction of a 'capitation' model of funding would have the effect of reducing Commonwealth Government expenditure on MMT. An essential flaw in the system that was proposed was the quarantining of methadone services from other general health care services provided by private practitioners. With the exception of MMT services, methadone patients would have continued to access medical services under the CMBS. This creates an inherent demarcation problem of what does and does not constitute a MMT consultation and, subsequently, renders the system almost impossible to monitor.

The 'capitation' model proposed appeared to provide an incentive for doctors to compartmentalize consultations and to bill separately for the general health care component of the visit. Alternatively, doctors may have sought to supplement the fee by billing the methadone consultation as a general health care visit. Should the 'capitated' fee be attached to a particular patient, another means by which doctors could have made the fee adequate, in a system with many methadone group practices, would have been to co-manage the patient with another methadone prescriber. Under such a scenario, the registered methadone doctor would have received $700 for the patient and another prescriber would have been able to bill

for the additional methadone services provided under the CMBS. The net effect would be that the line item cost of methadone would appear to be reduced but that the true cost of providing MMT would be masked and may, in fact, increase.

In building MMT service models that have involved general practitioners, health care providers have been attempting to integrate drug and alcohol and primary health care services to better ensure that the broader health and psychosocial needs of MMT patients are met. The proposed 'capitation' model reinforced the disintegration of MMT and other health care services, posing the real risk that the primary health care needs of these patients either would not be attended to or would be poorly coordinated. The overall outcome would be an increase in health care expenditure and reduced health outcomes as a result of fragmented service delivery or patients presenting for more expensive emergency care when the problems progress unattended to a more serious/acute level (Morrison, Elliot & Gruer, 1997, French, McGeary, Chitwood & McCoy, 2000).

If fee-for-service systems promote over-servicing, then any system of 'capitation' runs the risk of encouraging under-servicing. The potential exists for practitioners to "make do" with a nominated fee. This could be achieved by limiting service provision which could have detrimental effects on treatment outcomes or, alternatively, by restricting treatment to more stable, less complex patients. The impact of patient selection would be to reduce treatment access for those patients most in need of care and for those patients living in remote areas, where community-based services are the only option. It would also undoubtedly put pressure on the public sector to take responsibility for these complex and/or rural patients, thereby increasing public sector per capita operational costs and limiting capacity. Patient selection is a phenomenon that has been observed in countries using managed care models such as the United States where it was necessary to introduce legislation to ensure that patients with chronic illness (such as mental health or substance dependence) were not denied access to health care, and to introduce "carve-out" programs for mental health and substance abuse (Frank, Huskamp, McGuire & Newhouse, 1996). Structural patient selection is also a real possibility under a 'capitation' model of funding, with newly approved methadone prescribers, who necessarily have patient vacancies, being disproportionately

responsible for the treatment of less stable, short-term patients for whom a pro-rata capitated fee of $700 per annum would be clearly insufficient.

4.3 Where to From Here?

The fundamental goal of the methadone treatment system in Australia should be the provision of cost-effective, quality services that improve health and social outcomes for patients. Apart from the Commonwealth Government, patients and State Governments also fund MMT. This study demonstrated that, in NSW, three out of four methadone patients (those dosed in the private sector) make the single largest contribution to MMT costs (up to $2700 per annum) despite their level of economic disadvantage. In 1993/1994 the mean cost of providing MMT through public clinics was $2885 per patient per annum of which the State Government contributed approximately $2403 (Ward, Sutton & Mattick,). This figure would be higher now as there has been an increase in funding for MMT following the NSW Drug Summit in May 1999.

Clearly, from an overall governmental perspective (state and federal) it is cheaper to provide MMT through private practitioners and private dosing facilities where the largest cost (methadone dispensing) can be met by patients. Numerous studies, however, (Maddux, Prihoda & Desmond, 1994; Britton, 1994; Rosenbaum, Irwin & Murphy, 1988) have suggested that such an approach may come at a price with respect to treatment outcomes, especially in relation to patient access and retention. The focus should, therefore, not simply be on <u>who</u> pays <u>what</u> but rather which services should be provided to which patients, for what outcome and at what price. The current study establishes a benchmark as to the economic and service composition of MMT as well as non-MMT health care utilisation. The data provide a reference point from which clinicians and health care providers could determine what constitutes an appropriate level of service provision in MMT, reviewing in particular discrepancies in the level of service provided between the various types of dosing facilities, the level of care required by patients during stabilization and maintenance phases of treatment, and the role of psychiatrists in the management of patients with significant co-morbidity.

The NSW Drug Treatment Services Plan (2000) outlines a model in which the public sector would become the primary access point for patients wishing to enrol in MMT, providing specialist intervention and support during stabilization after which patients would be transferred to the private sector for treatment. Since treatment costs are higher in the first 3 months of MMT as compared to subsequent months, a greater involvement of the public sector in MMT initiation and stabilisation could reduce the overall cost to the Commonwealth Government under the CMBS. Furthermore, it would also remove any economic barriers to MMT resulting from the imposition of dispensing fees in the private sector. Such a system may not be possible under the current Medicare Agreement on two counts and would, therefore, require negotiation between the Commonwealth Government and jurisdictions. In the first instance, to implement such a policy NSW would have to introduce patient charges after a period of 'stabilisation' as an incentive for patients to leave the public system. This may not be allowed under the Medicare Agreement. In the second instance, referral from the public sector to the private sector may be viewed as "cost-shifting" by the Commonwealth and not in accord with the Medicare Agreement.

It may also be opportune to take a more holistic view of health care provision for methadone patients. Even excluding MMT services, these patients access 22 health care services per annum, almost twice as many as the general public in NSW, whether in or out of MMT. While there is no question that opioid dependence is associated with a range of adverse health consequences (Hedge, Flaherty & MacAvoy, 1991) it is uncertain whether these additional services resulted in better health outcomes. It could well be that the extra "consultations" involved patients' self-diagnosing and receiving desired medications. The 2045 individuals included in the current study received, on average, 17.7 and 16.7 services under the Pharmaceutical Benefits Scheme in 1997 and 1998 respectively, as compared to an average of 7.1 services per person per annum for the general population in NSW for the financial year 1997/1998 (Ward & Mattick, in progress). Instead of simply capping MMT funding it may be more effective to identify an adequate pool of funds from which both general health care services and MMT would be funded, and to pilot a coordinated care trial with the aim of providing a more integrated, holistic and effective health care service to methadone patients.

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APPENDIX A

For the purpose of interpreting the following tables the following should be noted:

Sex: 0 = female, 1 = male;

Place of residence: 0 = rural, urban = 1;

Doctor specialty: 0 = psychiatrist, 1 = GP;

Private vs. Public Clinics: 1 = private, -1 = public;

Clinic vs. Pharmacy: 1 = private; 1= public; -2 = community pharmacy.

TABLE A1: PREDICTORS OF THE NUMBER OF MMT SERVICES ACCESSED DURING STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	13.81	2.81		4.92*
Gender	-0.84	1.08	-0.04	-0.77
Place of residence	8.48	1.56	0.33	5.43*
Age	-0.43	0.35	-0.06	-1.25
Doctor specialty	-1.49	1.37	-0.06	-1.09
Private vs. public clinics	2.12	0.84	0.15	2.52[1]
Clinics vs. pharmacy	0.65	0.42	0.09	1.55

Notes: R = .49; R square = .24; Adjusted R = .23; * = p<.01.

1. When transformed p = .003

R for regression was significantly different from zero, F (6, 305) = 16.02, p < .001, and altogether 24 per cent of the variability in the number of MMT service access during stabilisation was predicted by knowing scores on the six independent variables.

TABLE A2: PREDICTORS OF THE COST OF MMT DURING STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	526.61	74.46		7.07*
Gender	-5.55	28.71	-0.01	0.19
Place of residence	220.80	41.43	0.32	5.33*
Age	-12.05	9.14	-0.07	-1.32
Doctor specialty	-263.70	36.31	-0.37	-7.26*
Private vs. public clinics	-13.58	22.27	-0.04	-0.61
Clinics vs. pharmacy	4.31	11.19	0.02	0.39

Notes: R = .52; R square = .27; Adjusted R = .26; * = p<.01

R for regression was significantly different from zero, F (6, 305) = 18.89, p <.001, and altogether 27 per cent of the variability in the cost of MMT during stabilisation was predicted by knowing scores on the six independent variables.

TABLE A3: PREDICTORS OF THE NUMBER OF MMT SERVICES ACCESSED AFTER STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	11.47	4.93		-2.33
Gender	-0.89	1.91	-0.02	-0.47
Place of residence	10.66	2.78	0.17	3.83*
Age	0.94	0.62	0.06	1.51
Doctor specialty	-5.04	2.41	-0.08	-2.01
Private vs. public clinics	4.28	1.50	0.12	2.86*
Clinics vs. pharmacy	2.50	0.75	0.14	3.38*
Subsequent days in treatment	0.10	0.01	0.74	19.80*

Notes: R = .79; R square = .63; Adjusted R = .62* = P<.01.

R for regression was significantly different from zero, F (7, 304) = 72.79, p < .001, and altogether, 63 per cent of the variability in the number of services accessed post-stabilisation was predicted by knowing scores on the seven independent variables.

TABLE A4: PREDICTORS OF THE COST OF MMT AFTER STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	-84.18	122.23		-0.69
Gender	-16.21	47.35	-0.01	-0.34
Place of residence	313.51	69.03	0.20	4.54*
Age	27.97	15.45	0.07	1.81
Doctor specialty	-393.86	59.86	-0.24	-6.58*
Private vs. public clinics	13.96	37.15	0.02	0.38
Clinics vs. pharmacy	29.20	18.58	0.07	1.57
Subsequent days in treatment	2.30	0.13	0.69	18.20*

Notes: R = .78; R square = .62; Adjusted R = .61 * = p<.01.

R for regression was significantly different from zero, F (7 304) = 69.29, p <.001, and althogether, 62 per cent of the variability in the cost of MMT post-stabilisation was predicted by knowing scores on the seven independent variables.

TABLE A5: PREDICTORS OF THE NUMBER OF NON-MMT SERVICES ACCESSED DURING STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	4.79	2.87		1.67
Gender	-3.25	1.12	-0.17	-2.94*
Place of residence	1.41	1.60	0.06	0.88
Age	0.23	0.35	0.04	0.64
Doctor specialty	1.35	1.40	0.06	0.97
Private vs. public clinics	0.09	0.86	0.01	0.10
Clinics vs. pharmacy	0.35	0.43	0.05	0.80

Notes: R = .19; R square = .04; Adjusted R = .02 * p<.01.

R for regression was not ignificantly different from zero, F (6, 305) = 1.89, p = .083, and altogether only 4 per cent of the variability in the number of non-MMT service access during stabilisation was predicted by knowing scores on the six independent variables.

TABLE A6: PREDICTORS OF THE COST OF NON-MMT SERVICES DURING STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	70.79	84.55		0.84
Gender	-91.15	32.59	-0.16	-2.80*
Place of residence	56.12	47.05	0.08	1.19
Age	12.79	10.38	0.07	1.23
Doctor specialty	28.64	41.23	0.04	0.70
Private vs. public clinics	1.89	25.29	0.01	0.08
Clinics vs. pharmacy	-3.49	12.71	-0.02	-0.28

Notes: R = .18; R square = .03; Adjusted R = .01 * = p<.01.

R for regression was not significantly different from zero, F (6, 305) = 1.63, p =.139, and altogether only 3 per cent of the variability in the cost of non-MMT services during stabilisation was predicted by knowing scores on the six independent variables.

TABLE A7: PREDICTORS OF THE NUMBER OF NON-MMT SERVICES ACCESSED AFTER STABILISATION

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	-5.14	5.78		-0.89
Gender	-9.25	2.24	-0.21	-4.13*
Place of residence	4.02	3.26	0.08	1.23
Age	1.44	0.73	0.10	1.98
Doctor specialty	0.17	2.83	0.00	0.06
Private vs. public clinics	-2.39	1.76	-0.08	-1.36
Clinics vs. pharmacy	1.76	0.88	0.12	2.01
Subsequent days in treatment	0.04	0.01	0.39	7.32*

Notes: R = .50; R square = .25; Adjusted R = .23* = p<.01.

R for regression was significantly different from zero, F (7, 304) = 14.57, p < .001, and altogether 25 per cent of the variability in the number of non-MMT services accessed post-stabilisation was predicted by knowing scores on the seven independent variables.

TABLE 8A: Predictors of the cost of non-MMT services after stabilisation

MODEL	UNSTANDARDISED CO-EFFICIENTS (B)	Std. Error	STANDARDISED CO-EFFICIENTS (β)	T
Constant	112.65	156.85		-0.72
Gender	-246.56	60.76	-0.21	-4.06*
Place of residence	98.14	88.58	0.07	1.11
Age	35.24	19.82	0.09	1.78
Doctor specialty	-16.55	76.81	-0.01	-0.22
Private vs. public clinics	-33.68	47.67	-0.04	-0.71
Clinics vs. pharmacy	34.14	23.84	0.08	1.43
Subsequent days in treatment	1.18	0.16	0.39	7.31*

Notes: R = .49; R square = .24; Adjusted R = .22* = p<.01.

R for regression was significantly different from zero, F (7 304) = 13.62, p <.001, and altogether 24 per cent of the variability in the cost of non-MMT services post-stabilisation was predicted by knowing scores on the seven independent variables.