

**DELIVERY OF TREATMENT FOR PEOPLE WITH
OPIOID DEPENDENCE IN NEW ZEALAND:
OPTIONS AND RECOMMENDATIONS**

A COMMISSIONED PAPER FOR THE MINISTRY OF HEALTH

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CORRESPONDENCE

Dr Doug Sellman
National Centre for Treatment Development
Department of Psychological Medicine
Christchurch School of Medicine
PO Box 4345
CHRISTCHURCH
tel: 03-3720400
fax: 03-3720407
email: dsellman@chmeds.ac.nz

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EXECUTIVE SUMMARY

- a. There are an estimated 13,500-26,600 people with opioid dependence in New Zealand currently, a number predicted to grow by 15% per year for the foreseeable future.
- b. The rate of both lifetime opioid dependence and current opioid use in New Zealand prisoners is relatively high and estimated to be at least 10-20 times that of the general population.
- c. With about 2,500 opioid dependent patients currently in methadone treatment in New Zealand, there is a significant pool of untreated patients, reflected in growing waiting lists, who pose a risk to the community. This risk is not only in terms of such things as costs from crime and lack of productivity as well as spread of this disorder, but also the spread of Hepatitis C and HIV to the general population.
- d. Methadone maintenance treatment, which aims to retain patients with opioid dependence in treatment, sometimes indefinitely, has been shown to be the most effective intervention available for opioid dependence. However, despite it being the most evaluated treatment in the alcohol and drug treatment field, it continues to arouse professional and political controversy in some quarters.
- e. The cost of treating one opioid dependent patient, for one year, with methadone maintenance treatment is estimated to be about \$4,400. This compares favourably with the estimated \$50,000+ annual cost of incarceration in a New Zealand prison.
- f. Methadone maintenance treatment services for people with opioid dependence in New Zealand are currently based on a relatively specialist focused, centralized approach compared with services in Australia (Victoria), Denmark, the Netherlands and Britain. These overseas models rely much more on the active involvement of general medical practitioners compared with the services in New Zealand.
- g. Five models of service provision for people with opioid dependence are compared in this paper. These range from a specialist focused, centralized, abstinence orientated model to a despecialist, decentralized approach. Taking into account cost and quality of service provision, as well as the capability of significant increase in volumes, a new, integrated service structure is recommended which combines active care by both GPs and specialist clinics.
- h. In this integrated model, 80% of opioid dependent patients would be cared for directly by GPs, following initial registration and assessment at a regional specialist clinic. The remaining 20%, comprising the most complex/special-needs patients, would be case managed by the specialist clinic. The specialist clinic would also provide highly accessible backup consultation to GPs.
- i. Two models which were based on a mandatory attempt at abstinence through residential treatment before the provision of methadone treatment were found to be not only significantly more expensive to run, but also to risk the loss of significant economic benefits from untreated patients.

- j. It is concluded that withdrawal from opioids along with residential treatment are not effective mandatory options for the majority of patients prior to methadone treatment. However, these options should be actively presented to all opioid dependent patients, not only at the outset, but also intermittently throughout the period of methadone treatment. Active support of patients who choose withdrawal should be available, as well as access to structured aftercare. Prompt re-initiation on methadone treatment, should be available to all ex-patients, if relapse occurs.
- k. The overall cost of treating 2,500 opioid dependent patients within current service structures is estimated to be \$11 million. The overall cost of treating (as soon as possible) the recommended 4,500 opioid dependent patients utilizing the new service structure is estimated to be a little less than \$14 million, ie about \$3 million extra funding for 2,000 new patients.
- l. A critical aspect of the new service structure is whether there will be enough of a GP workforce that is willing, interested and capable of taking clinical responsibility for about 80% of opioid dependent patients in the different regions of New Zealand. The satisfaction of treating patients from the outset, along with some financial incentives in addition to GMS, is likely to attract a number of GPs to this work. However, the credibility and reliability of specialist clinics for backup consultation and where necessary backup management, is likely to be an additional key element influencing whether GPs in a region become interested in treating people with opioid dependence. Appropriate monitoring and audit procedures will be necessary to ensure ongoing quality of service provision.

LIST OF RECOMMENDATIONS

Service Provision

1. That there be an increase of a minimum of 2,000 methadone places in New Zealand as soon as possible.
2. That strategic health care plans include provision for the expansion of services for people with opioid dependence by at least 15% per annum over the next five years, following the urgent increase of a minimum of 2,000 methadone places as in Recommendation 1.
3. That an integrated service model involving GP primary care with specialist clinic backup and support be promoted as a new structure for delivering treatment to opioid dependants in New Zealand.
4. That in the first instance, a pilot project be undertaken in one region based on this integrated model; while at the same time all patients who have been in the care of a specialist clinic for at least two years be identified and where appropriate and possible, transferred on authority to GP care according to current protocols.
5. That a second pilot project be undertaken of private methadone treatment in a region where there is particular concern about the length of the methadone treatment waiting list.
6. That provision of treatment to opioid dependants "captured" in the Justice service, on probation, in prison and on release from prison be actively pursued.
7. That specialist clinics provide consultation and shared management arrangements where appropriate for patients with special needs; of particular note, adolescents, pregnant women, parents of young children, Maori and other ethnic groups, patients who are HIV/Hepatitis C infected or have other significant medical problems and patients who have significant psychiatric problems.
8. That residential services continue to be made available to people with opioid dependence, particularly therapeutic communities that provide longer than three months treatment. These services should be encouraged to provide a methadone "count down" after initial stabilization during the first three months, in order to make residential treatment more accessible to severely dependent patients.
9. That urgent investigation of ways in which naltrexone and LAAM could be made available to patients with opioid dependence in New Zealand as alternatives to methadone treatment be undertaken.
10. That a national strategy be developed to address prevention, screening and treatment issues of blood-borne virus infection, particularly Hepatitis C and HIV, among intravenous drug users.

Research

1. That research be undertaken into the effectiveness of a range of early intervention strategies with adolescents and young adults in New Zealand who are (i) beginning to use opioids (ii) beginning to show early signs of opioid dependence and (iii) already severely opioid dependent.
2. That a controlled study of Justice clients in New Zealand be commissioned (perhaps jointly funded by Health and Justice) to investigate the effectiveness of active recruitment into methadone treatment of people identified with opioid dependence within Justice services, including a cost-benefit analysis.
3. That an accurate estimate be obtained of the current number of opioid dependants in New Zealand, using appropriate methodologies. This would include study of how people are initiated into using opioid drugs in New Zealand, as well as investigation of possible regional and ethnic differences in prevalence, with particular focus on Maori rates.

1. TERMS OF REFERENCE

The National Centre for Treatment Development (Alcohol, Drugs and Addiction) was commissioned to produce a report on options and recommendations for the delivery of treatment for opioid dependence in New Zealand.

The report was to pull together information from a number of published and unpublished sources and particularly consider the applicability of international information to the New Zealand context.

The report was required to:

- * Identify the current and projected need for treatment services for opioid dependence;
- * Identify a range of service delivery options (or models) for opioid dependence, including a range of methadone treatment options. It was expected that these would be both publicly funded services as well as services provided at partial cost to the service user;
- * Describe each model of service delivery, including the advantages and disadvantages of the model and its benefits and costs. It would also identify the consumer group(s) for which its provision will result in net benefits to the publicly-funded health sector, and/or to taxpayers;
- * Recommend the range and level(s) of service delivery which will meet treatment needs with optimum cost-effectiveness, in both the short and longer term (within the next ten years).

Target readership

The report was primarily for use by officials of the Ministry of Health, other health sector personnel and consumer representatives involved in planning delivery of treatment services for people with opioid dependence.

Time frame

A relatively short time frame was necessitated for the paper's completion by 16 September 1996.

What the paper is not

This paper was not intended to be a reference document for opioid dependence. Although some background material on opioid dependence is given, as both historical and clinical information, this material is not put forward as a comprehensive review of opioid dependence and it is acknowledged that there are a number of gaps in the overall information outlined. We have, however, attempted to provide enough pertinent information that supports the key findings and recommendations of the paper.

2. METHODOLOGY

This paper was prepared primarily by Dr Doug Sellman, Director of the National Centre for Treatment Development (Alcohol, Drugs and Addiction) in conjunction with Mr John Hannifin, Director of Alcohol and Drug Issues Ltd, and Ms Daryle Deering, Manager, Youth Specialty Service, Healthlink South, Christchurch (past Manager of Alcohol and Drug Services, Healthlink South) with input from a number of other experts in the field.

Nationally, these included:

Dr Geoffrey Robinson, Medical Director, Alcohol and Drug Service, Wellington;

Dr Alfred Dell'Ario, Clinical Director, Alcohol and Drug Services, Healthlink South, Christchurch;

Ms Margaret Gruys, Director, Alcohol and Drug Issues Ltd;

Dr John Dobson, Psychiatrist, Christchurch (past Head of the Christchurch Methadone Service).

International consultation occurred with the following experts:

Dr John Strang, London;

Professor Mary Jeanne Kreek, New York;

Professor Wayne Hall, Sydney.

Dr Pim Borren, Senior Lecturer, Department of Economics, University of Canterbury provided specific expert cost/benefit analysis.

A variety of literature was examined to determine:

- (i) the extent of opioid dependence in New Zealand at the current time, likely projections over the next ten years and likely demand for treatment over this time period;
- (ii) current service delivery in New Zealand;
- (iii) options for new service delivery.

Five options for new service delivery were formulated to cover the range from a centralized, abstinence focused structure to a decentralized harm reduction approach. These were then circulated amongst the consultants for comment. At the same time a focus group of six opioid dependents (two on methadone treatment, three from the methadone treatment waiting list and one graduate of Odyssey House) was held to gather consumer feedback.

Responses were collated, cost-benefit analysis completed and final recommendations arrived at. A first draft was subsequently prepared for Ministry of Health personnel as well as circulated to members of the Canterbury Methadone Education Organisation (CAMEO) for comment.

3. BACKGROUND

3.1 Opioid Dependence

Opioid dependence is defined as one of the substance dependencies in the Diagnostic and Statistical Manual, Fourth Edition (DSMIV) [APA 1994a] featuring a cluster of cognitive, behavioural and physiological symptoms related to a central phenomenon "that afflicted individuals will continue to use opioids despite significant substance-related problems". (see Appendix A for specific diagnostic criteria of DSMIV opioid dependence). Most individuals with opioid dependence have significant levels of tolerance and experience withdrawal symptoms on abrupt cessation of opioids. People with opioid dependence tend to develop regular patterns of compulsive opioid use such that daily activities are typically planned around obtaining and using opioids. The combination of increasing severe tolerance and the illegality of opioids leads dependent users into lives of crime in order to support the costs of an opioid habit, in the region of \$1000 per week. Wide ranging impairments are the rule and include social, vocational, academic and parental functioning. Comorbid general medical problems are common [APA 1995] and may be related to 1) the use of unsterile needles for intravenous drug administration (eg HIV infection, abscesses etc); 2) poor self-care and adverse living conditions (eg tuberculosis, malnutrition etc); and 3) the drug-using lifestyle and membership of an antisocial subculture (eg violence resulting in head trauma etc). Comorbid psychiatric conditions are also very common and include mood, anxiety, eating and personality disorders as well as co-existing use/dependence of other substances, particularly cannabis, benzodiazepines and alcohol in New Zealand. Opioid dependence is associated with a high death rate - approximately 10 per 1,000 per year among untreated persons [APA 1995]. Death generally results from drug overdose, accidents and injuries (often associated with buying or selling drugs) or other general medical complications (of particular concern viral borne illnesses such as HIV and Hepatitis C and secondary medical complications from these).

The differences between opioid use, regular use of opioids and opioid dependence need emphasizing, although these terms are not uncommonly used interchangeably. Opioid use parallels alcohol use in that not all users are, or will become, dependent. However, given the illegality of non-medical use of opioid drugs, the type of person who will nevertheless take the risk and seek out opportunities to take opioids (high novelty seeking, low harm avoidance) in contemporary New Zealand is at increased risk of developing dependence [Cloninger 1987]. Further, the escalating tolerance that is a feature of opioid use, particularly when injected, adds to the risk of dependence in these users who become regular users [Schuckit 1995]. There are no reliable New Zealand data that precisely identify the proportion of current opioid users who are regular users, and more importantly for this paper, what proportion of regular users are opioid dependent.

3.2 The natural history of opioid dependence

The long term course of opioid dependence is variable. Some untreated individuals improve without formal treatment [Rounsaville & Kleber 1985]. For example, only about 10% of service personnel who became dependent on opioids in Vietnam continued use after their return to the United States, (although a substantial minority did become dependent on alcohol or amphetamines) [Robins et al 1975]. However, the course for many is such that even after long periods of abstinence (eg after incarceration), relapse is

common. Again, there are no good New Zealand data on either the natural history of opioid dependence in New Zealand or the long-term outcome from treatment.

Vaillant (1970) has provided some of the best insights into the natural history of opioid dependence. He suggests that the natural history of addiction, like that of adolescence, is that the likelihood of recovery improves with time, a different pattern from most other mental illness. However, in contrast to adolescence, the narcotic addict does not mature spontaneously. He suggests that the addict needs help both in achieving independence via employment and in discovering more socially integrative means of gratification. Data are presented indicating an annual 2% recovery rate in opioid dependence which is paralleled by an annual 2% death rate. Three treatments which have been shown to change these sobering statistics are methadone maintenance, Synanon-like therapeutic communities and parole. All three depend on close and prolonged supervision in the community.

Vaillant (1970) draws attention to the fact that opioid dependants are multiple drug users who begin using a range of other drugs (including nicotine, alcohol and cannabis) prior to intravenous opioid use, but most particularly begin using them at an earlier age than their peers. This point is reiterated by Robins (1984) who comments on marijuana as a prelude to more serious drug use. She demonstrates from other data [Kandel & Logan 1984] that marijuana is a good predictor of more serious drug use only if it begins early, similar to early alcohol use predicting later marijuana use. She maintains that introductory drug use cannot be treated as a risk factor for more serious drugs independently of the age of the person at their onset. Thus the concept of so-called "gateway drugs" is flawed unless careful attention is given to the age of first use. This suggests that factors other than the drug itself are paramount in the progression of drug use.

Although some opioid dependent patients are able to become abstinent from all opioid drugs in the short term (ie before middle age), this appears to be the exception and many require and benefit from opiate agonist maintenance treatment (eg with methadone).

3.3 Clarification of key terms

The terms "opioid" and "opiate" are used by different authors as the generic term to cover this group of substances. They will be used interchangeably in this paper. Further, intravenous drug user and opioid dependant will be used synonymously. Although there is some intravenous drug use in New Zealand which does not involve opioid drugs, the majority appears to be opioid. This is in contrast to some overseas patterns where there are higher rates of stimulant drug misuse.

The term "opioid dependant" might arouse some to the view that the patient or person with the disorder is lost in this terminology. We agree with this potential limitation. We have, however, used opioid dependant in places to refer to the people concerned simply for the sake of economy of verbiage and ask the reader to bear with us using this shorthand.

There are a variety of terms defining types of methadone service delivery. The National Policy on Methadone in Australia [MWP 1993] outlined two main types of methadone treatment: high intervention and low intervention. High intervention methadone treatment is for people who are judged to be endeavouring to achieve change and consists of provision, or availability facilitated, of a comprehensive range of treatment and

rehabilitation services. Low intervention methadone treatment is subdivided into low supervision and high supervision. Low supervision is for stable patients and includes takeaway doses of methadone, flexible attendance times, community pharmacy dosing, infrequent urine drug testing and access to ancillary services. High supervision, on the other hand, is for people with minimal treatment goals and/or little stability. This type is described as "essentially drug substitution" and involves daily supervised dosing with no takeaways, infrequent urine drug testing, regular but infrequent clinical monitoring.

"Medical maintenance" is essentially an American term which is the equivalent of low supervision/low intervention methadone treatment for highly stable patients.

Finally, there are ongoing debates about what the consumers of services should be called. In this paper client, consumer, patient and resident are used interchangeably.

3.4 Background history

A history of 19th century opioid use in the United States and England [Brecher et al 1972] reveals a dramatically different social environment and set of public attitudes towards the use of opioids than that which exists in these countries (including New Zealand) today (see Appendix B for more detail). Essentially there was extensive use of nonprescribed opioids for general medical ailments and while legal, the nonmedical use of opiates was not considered respectable. There was little support for prohibition of opiate use because using opioids was not viewed as a menace to society. One of the key turning points in the US was in 1914 when Congress passed the Harrison Narcotic Act, a law which, under the tide of increasing prohibition for a variety of vices in the early part of the century, spearheaded increasing restriction on the use of opioids, a move which has been paralleled by increasing associated social problems.

The history of intravenous opioid dependence as a serious public health problem in New Zealand dates back only about 30 years [Dobson 1995], six to eight years behind the United Kingdom [Dobson 1992], although the first concern about opioids began with the use of opium by Chinese immigrants (mainly in the goldfields), which led the Opium Prohibition Act in 1901. The past 30 years has featured a steady development of methadone prescribing for opioid dependants despite opposition (fierce in some quarters) to the treatment as well as increasing scientific evidence for its cost-effectiveness. Appendix C outlines this history in more detail.

3.5 Social context

The social setting in which any health service is available is critical to treatment effectiveness and acceptability by both consumers and the public. Brecher et al (1972) argue that an assaultive approach to the drug problem, exemplified by "declaring war on drugs" has a history of being an ineffective strategy at best and runs the significant risk of making the situation worse. They advocate a "domestication model" and conclude their report with a list of six recommendations for struggling with the drug problem. These are included as Appendix D as background for thinking about the development of improved services for people with opioid dependence.

3.6 Methadone treatment

Methadone treatment is the most widely used treatment for opioid dependence as well as being the most extensively evaluated [Farrell et al 1994]. Methadone treatment is one of the most controversial medical treatments currently being practiced. Despite five randomized controlled trials of reasonable quality underlying its efficacy [Dole et al 1969, Newman & Whitehall 1979, Gunne & Gronbladh 1981, Vanichseni et al 1991, Yancovitz et al 1991] and reports supporting its appropriateness and benefits [Gerstein & Harwood 1990, Mattick & Hall 1993], the treatment is not comfortably accepted by either health professionals in general or the public at large. Even within the alcohol and drug field itself there are outspoken opponents of the treatment [Senay 1988]. A recent editorial [Hall 1993] has criticized the way such factions of the alcohol and drug treatment field limit its effectiveness by being overly idealistic. This attitude is aligned to a general "moralism" suggested [Farr et al 1994] to underlie negative attitudes towards methadone treatment.

Despite this ambivalence, however, the number of people being treated with methadone in New Zealand over the past 20 years has steadily increased as will be elaborated below, paralleling the Australian experience [Ward et al 1992].

3.7 Harm reduction

This is a term which has become popularized in the alcohol and drug treatment field in recent times, largely following the discovery of HIV and the perceived threat of an AIDS epidemic in the mid 1980s. A harm reduction approach led to a strong call from public health authorities for expansions of services for opioid dependants, who were viewed as a high risk group for the spread of HIV infection into the mainstream population. In New Zealand, the Public Health Commission's advice to the Ministry of Health [PHC 1994] included "increased access to drug substitution programmes (especially methadone)". One of the outcomes for treatment services was a shift in emphasis towards potentially recruiting as many opioid dependants into treatment as possible as part of a public health strategy of reducing the spread of HIV.

Harm reduction has subsequently become a term used in alcohol and drug treatment which refers to the pragmatic acceptance of less than an abstinence goal as being appropriate. Within the alcohol and drug treatment field, however, is a caucus promoting the extreme view that abstinence from all drugs is the only appropriate goal for alcohol and drug treatment. Harm reduction is sometimes used by people of this persuasion to describe an equally extreme polar opposite of the ideal of abstinence as a pejorative term to refer to treatment that is not considered "right". Methadone treatment and so-called controlled drinking programmes have at times been impugned by this judgement and because of the strong face validity of the notion that drug withdrawal is the essential starting point for rehabilitation, these views have found not inconsiderable public support.

In fact there is nothing new about harm reduction from a clinical point of view. Treatment does not generally bring about perfect results for any condition and patients continue to exhibit symptoms and signs of partial remission following treatment of drug dependence, in the same way that patients with depression, schizophrenia or diabetes continue to show signs of these disorders despite the best treatment available. Harm reduction is part and parcel of all good clinical care, emanating from adequate comprehensive assessment and individualized management that is appropriate and acceptable to each patient.

4. DEMAND FOR TREATMENT SERVICES FOR PEOPLE WITH OPIOID DEPENDENCE

4.1 Need versus demand

It is useful in economic terms to distinguish between the concepts of need and demand for health care treatment. The term "need" is derived from necessity, which is a common concept in economics and relates to the elasticity of demand for a commodity or service. It can be inferred then that need is simply a component of demand.

It is important to note that the concept of need is not an absolute. Need for one individual differs from need for another and is a subjective concept. An individual has a "need" for treatment if they have a highly inelastic demand (ie they would give up just about anything in order to receive the treatment or they would be prepared to pay almost any price). Clearly, therefore an individual's initial endowment regarding both health status and social and economic resources will affect the value placed on treatment. Social efficiency requires that those who value treatment most highly receive priority in allocation.

Since aggregate demand is simply the sum of individual demand functions, it is most likely that the elasticity of demand will vary along the aggregate demand curve (ie the degree of need varies along the aggregate demand curve). If a commodity or service is considered a necessity then an individual (or society) will still demand almost as much, even if the price (or cost to society) increases substantially. Usually the degree of necessity will vary between individuals. An example may be the ownership of a television set. While one person might regard a television as a necessity (and be prepared to pay almost any price for one), somebody else may have a more elastic demand (eg they could live without a television if the ownership cost increased). When these two individual demands are summed, the joint demand curve will incorporate the more elastic component at lower television prices. At a sufficiently high price (the second individual no longer demands the television), the joint demand curve is simply the first individual's demand function incorporating their inelastic demand for all higher prices. If we add more and more individual demands (the whole market demand) to formulate an aggregate demand function, demand elasticity will almost certainly vary along the curve (at each price/cost level).

In reality need is only one factor of demand and as such, where it is used as the sole criterion, misallocation of resources is likely to occur. The concept of need as some minimum requirement of treatment for all individuals is important in terms of both equity and social efficiency where such a minimum level of treatment impacts on the utility of others. In this case it is assumed that the utilization of treatment has an externality effect on the welfare of others, and therefore consumption of services can be regarded as a public good (in the economic sense of the term). Public supply or subsidy can therefore be justified if the benefits to the taxpayer outweigh the costs. This will be demonstrated to be the case for the treatment of opioid dependence as discussed in Chapter 9 below.

In determining the public contribution to the supply of treatment services to opioid dependants, it is critical to examine the components of demand, including private and public benefits. It is equally critical to examine the private and public costs of such treatment services to achieve a socially efficient allocation of resources. This occurs

where the marginal social cost of treating one more individual just equals the marginal social benefit derived from such treatment.

4.2 Estimating the prevalence of opioid dependence

The first step in estimating the demand for treatment services for people with opioid dependence is to estimate the number of people with the disorder.

Estimating the numbers of people with opioid dependence in New Zealand is a difficult and complex task. The problems associated with such an exercise in Australia have been reviewed [CDHSH 1995] and include illegality and stigma issues, the lack of consensus over definitions of regular versus dependent use and the lack of well tested and unbiased methods of making credible estimates of such "hidden populations". A variety of methods can be used, the most obvious one being surveys, particularly random population surveys.

4.3 Prevalence of opioid dependence from survey data

There have been two major population surveys of drug use in New Zealand over the past decade: a random telephone survey [Black & Casswell 1991] and the Christchurch Psychiatric Epidemiology Study [Wells et al 1989]. Population surveys of illegal activities, such as intravenous opioid use, run the risk of serious underestimation.

The Black & Casswell (1991) survey, completed in 1990, found that an estimated 11,000 people between 15 and 45 had used opioids in the previous year. Three percent of the total sample reported lifetime use of drugs, with 6% of men in the 20-39 age group reporting lifetime use of opioids. By way of comparison, a similar study in Australia [Makkai & McAlister 1993] found that an estimated 73,000 people had used opioids. Smith (1994) has translated these data into rates per head of population which are 3.5 per 1,000 for New Zealand and 4.2 per 1,000 for Australia.

The Christchurch Psychiatric Epidemiology Study (CPES) [Wells et al 1989] found that 0.9% had ever used opioids five times or more, 0.5% had used opioids daily for at least two weeks, 0.1% had experienced problems with opioid use in the previous year and the lifetime prevalence rate was 0.6%. These New Zealand data are not dissimilar to the 0.8% lifetime prevalence of opioid abuse/dependence found in the ECA Study [Anthony & Helzer 1991].

Other data include those from studies of needle usage by patients attending sexual health clinics. Dickson (1994) found that 4.5% self-reported as having ever injected drugs from this population and McKenna et al (1994) reported that 5.2% disclosed having used needles and syringes for injecting. This compares with <1% of people surveyed in the Black & Casswell (1991) general population study. Age differences possibly contribute to the differences in these data, although the nature of the samples and the method of data collection is probably more important.

Although these survey data of the population at large are probably serious underestimates, they nevertheless indicate that there has been a not insignificant degree of opioid use in New Zealand over the past decade. This degree of opioid use is highlighted when prison populations are considered. As will be elaborated in Section 6.5.4, there is a high rate of opioid use and dependence among prisoners.

4.4 Two estimates of the prevalence of opioid dependence

In addition to population surveys of drug use, two other methods have been used to estimate the prevalence of opioid use: multiplier methods, where an estimate is made of the number of opioid dependants in the total population from the number of patients in treatment, by multiplying by a estimated factor; and capture-recapture methods, derived from methodology in population based biology research.

There have been no New Zealand studies utilizing capture-recapture methodology for estimating the rate of opioid dependence and neither have there been studies published which have attempted to derive a relevant factor for a multiplier method of estimating the rate of opioid dependence in the community, based on the number in treatment. A World Health Organization report [WHO 1990] has suggested that the numbers of "registered addicts" probably underestimates the number in the population by a factor of 5-8. MacGregor (1990) quotes a United States estimate that only about 10% of intravenous drug users (IVDU) enter treatment, which, assuming IVDU=opioid dependent, would mean a ratio of opioid dependent patients to potential patients of 1:10.

4.4.1 Multiplier estimate

In 1996 there were 2,700+ "registered" intravenous opioid dependants in New Zealand (2,337 being prescribed methadone treatment and 420 on waiting lists, as of 30 June 1996). Taking the lower WHO (1990) multiplier factor of five, a figure supported by Strang & Farrell (1989), this yields a population of 13,500 opioid dependants in New Zealand at the current time.

4.4.2 Extrapolated/combined estimate

The preferred approach to estimating prevalence rates of populations such as opioid dependants is to come to a conservative estimate based on data from a variety of strategies. The estimate here is based on Australian data assembled by this combined method. An authoritative estimate of regular heroin users in Australia was made by combining data from population surveys, multiplier and capture-recapture methods [CDHSH 1995] and found it to be about 7.2 in 1990, having risen 60% from 4.5 in 1986, ie a rise of 15% per year.

Taking the Smith (1994) data above of a New Zealand rate of opioid use being about three quarters that of Australia, the rate of regular opioid use in New Zealand in 1990 would be about five per 1,000 of the population. But regular use of opioids does not necessarily mean opioid dependence. However, the majority of regular opioid users are likely to be dependent [Schuckit 1995] and support for this assertion being relevant in the New Zealand context can be inferred from the CPES [Wells et al 1989]. The rate of (DSMIII, [APA 1980]) opioid abuse or dependence (0.6%) was within the range of having ever used five times (0.9%) and having used daily for at least two weeks (0.5%). Substance abuse as a diagnosis in DSMIII [APA 1980], as was used in the CPES, was considerably closer to a diagnosis of substance dependence than in DSMIV [APA 1994], where abuse criteria do not overlap with dependence criteria and abuse as a diagnosis is residual to a diagnosis of dependence [Sellman 1994].

There are no clear data (and certainly no clear New Zealand data) which indicate how many regular users of opioids would meet diagnostic criteria for opioid dependence. From the discussion above it would appear to be high. If an estimate that 50-80% of

regular users will be opioid dependent were accepted, then in 1990 there was a rate of opioid dependence in New Zealand of 2.5-4 per 1,000 of the population.

As will be discussed later, there has been a four-fold increase in people on methadone in New Zealand from 1991 to 1996 and the observed replacement rate of people on waiting lists for methadone treatment when small cohorts are recruited onto methadone programmes in response to an increase in funded places, support this rapid growth.

An estimate of the number of current opioid dependants can be made on the basis of the estimated rate in 1990 increasing by 15% per year (as also found in the increase in the rate of regular users of opioids in Australia 1986-1990). This would place the current rate of opioid dependence in New Zealand in the range 5.8-9.4 per 1,000 of the population.

Taking the mean (7.6 per 1,000) would yield a total of 26,600 people with opioid dependence at the current time in New Zealand, using this extrapolated/combined method of estimation.

4.4.3 Conclusion

Based on these two estimates, the number of opioid dependants in New Zealand at the current time is probably somewhere between 13,500 and 26,600, but could be nearer 33,000 using less conservative estimates above.

It must be stressed, however, that these are estimates only and not based on quality New Zealand data. There is a serious lack of such research data at the current time, including ethnic data. This situation parallels that in many other countries [Farrell et al 1995]. The scarcity of reliable information leads to problems and potential delay in the provision of appropriate volumes and types of services for opioid dependants.

It must also be stressed that it is unlikely that the number of opioid dependants is evenly distributed throughout New Zealand. It appears, for instance, that there is a greater density per head of population of opioid dependants in Christchurch. It is also not known whether opioid dependence is more prevalent amongst Maori, as is the case in alcohol dependence [Pomare 1995].

Finally, by way of international comparison, the Institute of Medicine's report [Gerstein & Harwood 1990] estimated that at least 2% of the total US population over the age of 12 clearly need, or probably need, drug treatment. It is important to note that this report was not specifically on opioid dependence, but concentrated on the whole range of drug problems. The report identified the group to be two thirds male, predominantly between the ages of 18 and 34 (9% adolescents under the age of 18). It was found that 20% of the group who "probably need" treatment and 40% of the "clearly need" treatment group are under the supervision of the Criminal Justice System as parolees, on probation, or are inmates.

Estimates (considered of dubious quality) of the prevalence of opioid dependence in Europe range from 150-300 per 100,000 [Farrell et al 1995], which appear to be less than those estimated above for New Zealand, based in part on Australian estimates.

One source of potentially informative data on the rate of opioid dependence in New Zealand might be the well utilised needle-exchange clinics.

4.5 Potential demand for services

Simply assuming that the demand for services is going to be the gap between those currently in treatment (about 2,500 mainly methadone maintenance treatment, see Chapter 6 below for elaboration) and a number somewhere between 13,500 and 26,600 is simplistic. Firstly, not all opioid dependants are interested in treatment in general, or in methadone maintenance treatment in particular. Secondly, an unknown but probably substantial minority will cease their use without any professional assistance, particularly those with less severe dependence and lack of serious comorbidity. Thirdly, demand for services will be affected by a whole range of factors including availability, access, cost and attractiveness etc to potential consumers. However, even accepting these caveats, there appears to be a serious gap between those currently receiving treatment and the probable numbers of people who may need it. The Institute of Medicine's report [Gerstein & Harwood 1990], in considering the enormous costs of drug abuse to the community advocate broad entry criteria for treatment. It states firstly that "treatment is justified and appropriate for any individual if there are clinically significant signs of dependence or chronic abuse" and secondly, that "the general goal of (publicly funded drug treatment) should be to provide adequate support for appropriate and timely admission, as well as completion or maintenance of good quality treatment of individuals who cannot pay for it, whenever such individuals need treatment according to the best professional judgement and seek treatment, or can be induced through acceptable means to pursue it".

There is a literature indicating that a proportion of opioid dependants can and will go into remission without formal treatment [Deering 1996]. However, there remains, for many who would benefit from treatment, a problem of fluctuating motivation for treatment. This motivation is likely to be influenced by how treatment services are perceived by potential patients. Services that are primarily geared towards serving patients' individual treatment needs are likely to enhance the rate of attracting and retaining patients in treatment.

Even with high quality services there will remain a proportion of potential patients who do not access services readily. The Institute of Medicine's report [Gerstein & Harwood 1990] refers to "general disinclination" in describing the attitude of such people towards treatment. Goldstein (1994), in commenting on drug policy, states "the immediate need is for expansion of methadone treatment so that all who wish treatment can obtain it easily" and in advocating easy access services suggests "the Dutch system of "low threshold" treatment programmes has much to recommend it, based on the reality that when motivation to seek treatment is weak, it is in the society's best interest to "go the extra mile" to bring addicts into treatment". It may in fact be of greater economic benefit to treat those patients who are less inclined towards treatment (if it were possible) than those who more readily attempt to access services.

If only a third of opioid dependants would, firstly, want treatment if it were available and, secondly, be deemed appropriate to have treatment according to professional judgement for formal treatment, an estimate of the potential demand for opioid treatment based on the gap between those currently in treatment and those who would be in treatment if it were available, can be made.

Given that about 2,500 are currently in treatment in New Zealand, there is a gap of somewhere between 2,000 (13,500/3 - 2,500) and 6,367 (26,600/3 - 2,500) treatment places for people with opioid dependence in New Zealand at the current time. NB: These are conservative figures and may be a significant underestimate of the degree of untreated opioid dependence. For instance, it would be a 50% underestimate if the number of opioid dependants who would both want and be appropriate for treatment if it

were available and accessible were 2/3 rather than 1/3 of the total estimate of opioid dependants. The important point, however, is that there does appear to be a relatively large number of untreated opioid dependants at the current time.

The extent of this untreated pool of people with opioid dependence raises the worrying issue of "infectivity" and potential epidemic. These terms, which generally relate to diseases caused by the spread of pathogenic micro-organisms, appear to be applicable to opioid dependence. Thomas Bewley as early as 1965 wrote of heroin addiction as a contagious disorder of young people and at the time advocated separate inpatient units for opioid dependants in order not to "spread the disorder" to other patients [Bewley 1965]. Lee Robins (1984) has also commented on the contagion effect of opioid dependence and referred to unpredictable, episodic, substantial increases in prevalence rates of addiction in defined geographical regions. The extent of the untreated pool of opioid dependants in New Zealand, reflected in the growing waiting lists for methadone treatment, is of concern in this regard. Waiting lists for methadone treatment should be considered different from those of disorders with more static disability. For instance, people with osteoarthritis of the hip certainly suffer and contribute to loss of productivity, but are not known to "infect" others with osteoarthritis. A more appropriate analogy to waiting lists for methadone treatment would be waiting lists for antituberculous medication for TB sufferers.

The extent of the untreated pool of potential patients is critical for the consideration of options for new service delivery later in this paper. New models will not only have to be cost-efficient but also be structured in such a way that they can cope with significantly increased numbers of patients. From these estimates it is recommended that there be an increase of a minimum of 2,000 methadone places in New Zealand as soon as possible.

4.6 Growth in demand for services

In Australia the number of patients being treated with methadone maintenance has steadily expanded over the past ten years from 2,000 in 1985 to approximately 15,000 in 1994 [CDHSH 1995]. However, even though methadone maintenance treatment has substantially increased, less than half of regular heroin users have been enrolled in treatment. Experience in Christchurch over the past two years has been that as soon as a new cohort of patients are recruited from the waiting list, those places are very soon filled by new recruits onto the waiting list, indicating significant background demand for treatment which becomes apparent as soon as the feasibility of treatment rises. There has been a steady rise of around 15% per annum in the rate of regular opioid use in Australia over the past decade as described above. This is paralleled by an even steeper rise in the number of patients on methadone treatment in New Zealand over the past five years from about 500 patients in 1991 to over 2,000 patients in 1996 (as will be elaborated in Chapter 6). It is not known precisely why there is this contemporary rise in opioid use in Australia and New Zealand paralleling rises in other countries of the Western World. Equally there are no obvious contingencies of factors which suggest this rise is not likely to continue for the foreseeable future. It is therefore considered prudent to expect the demand for opioid services to continue to rise significantly for the foreseeable future, ie at a rate of at least 15% per annum (and possibly double this) over the next five years and beyond. Strategic health plans would be advised to anticipate this rise in demand.

5. EFFECTIVENESS OF TREATMENT FOR OPIOID DEPENDENCE

5.1 Overview

The general goals of treatment for patients with substance dependence, including opioid dependence, have been described [APA 1995] as: 1) abstinence or reduction in the use and effects of substances; 2) reduction in the frequency and severity of relapse; and 3) improvement in psychological and social/adaptive functioning. It is acknowledged [APA 1995] that some opioid dependants are able to achieve abstinence from all opioid drugs, but that the majority require and benefit from opiate agonist maintenance in the achievement of the above goals. The most widely used opiate agonist used is methadone.

5.2 Methadone treatment

Methadone is a synthetic opioid drug (6-dimethylamino-4,4-diphenyl-3-heptanone) first used in the management of opioid withdrawal in the 1940s [Isbell et al 1948]. In 1965 Dole and Nyswander began to use it as a maintenance treatment for opioid dependent patients [Dole & Nyswander 1965]. Methadone acts primarily at mu opioid receptor sites and has equivalent analgesic properties to morphine. Its usefulness as a medication for opioid dependence lies in the fact that methadone is active orally and has a half-life of 13-55 hours (average 25). This pharmacodynamic profile allows the majority of patients to be stabilized relatively easily on one supervised dose of methadone per day. Relatively low peak plasma levels are achieved from an oral dose, so that in a steady state situation there is a relatively low difference between peak and trough serum methadone concentrations and patients do not experience acute euphoric intoxication characteristic of intravenous opioid use. Peak levels occur two to six hours following an oral dose and the aim of treatment pharmacologically, is to achieve an ongoing steady state in which trough serum methadone concentrations are adequate to ensure constant bioavailability of methadone at mu opioid receptor sites and the abolition of withdrawal symptoms throughout the 24 hour period. Tolerance to this withdrawal prevention effect is not usually important once patients are stabilized on adequate doses of methadone, which achieve adequate serum concentrations. Methadone is generally very well tolerated by patients. The most common side effect is increased sweating, affecting up to about 50% of patients [Kreek 1973]. Other side effects affecting 10-20% of patients are constipation, sleep disturbance and sexual dysfunction. It is, however, rare for intravenous opioid patients to discontinue treatment because of the side effects of methadone (compared with chronic patients who do so more commonly).

5.3 Components of a quality methadone treatment service

There has been a long debate about what the most important active ingredient of methadone treatment is [Farrell et al 1994], particularly centring on the need for concomitant counselling. It is clear that an adequate dose of methadone is a critical factor determining effectiveness (see Section 6.2.5). Whether the provision of an adequate opioid substitute in a controlled environment is sufficient, or whether for all patients additional counselling and other support services are required, has not been fully tested in controlled research. One randomized controlled study which supports the provision of psychosocial services [McLellan et al 1993] investigated opioid dependent patients for six months and found that the group with the most ancillary service yielded the best treatment outcome.

There does appear to be considerable variation in the treatment success of programmes. A number of key ingredients are widely thought of as important in determining effectiveness as listed below, [Ball & Ross 1991, Mattick & Hall 1994, Deering & Sellman 1996].

- * flexible in structure;
- * integrated with primary health care;
- * comprise but one component of a system of care for intravenous drug users;
- * are well managed, properly funded with adequate numbers of well trained and supported staff;
- * have year to year organizational stability and long-term funding security;
- * establish good staff/patient/community relationships to reduce stigmatization;
- * are accessible with no long waiting lists;
- * have clear and updated treatment philosophy, protocols and policies;
- * admit patients following a comprehensive mental health assessment, consideration of all treatment options and informed consent;
- * provide individualized treatment planning and continuity of care or episodes of care over time;
- * prescribe individualized therapeutic methadone doses;
- * plan medical and caseload numbers around the specific needs of the programme's population;
- * match intensity of treatment with patient needs;
- * develop different models of care that respond to individual patient needs during different phases of treatment;
- * provide access to a comprehensive range of treatment components including a structured aftercare programme;
- * develop a partnership with consumers and encourage the establishment of peer-support groups and strong links with self-help groups;
- * use standardized performance-based outcome measures.

A quality assurance project [Mattick & Hall 1993] made a number of recommendations regarding these ingredients, in terms of their place in treatment at the current time, given the present state of knowledge. These will be outlined below (see Section 5.6).

5.4 Duration of treatment

This is an important issue, because long term treatments such as long term methadone maintenance run the risk of "clogging up" service provision, to the point that resources are fully accounted for by current patients and new patients are not able to access treatment.

The American Psychiatric Association has addressed this issue in its official position statement on methadone maintenance treatment [APA 1994b]. It is stated that many patients need methadone maintenance treatment for five to ten years and that some may need a lifetime of treatment "like a diabetic needs insulin". It is further stated that two years appears to be the minimum duration of treatment before detoxification should be attempted. These statements support a treatment philosophy which emphasizes retention rather than a "through-put" approach. They suggest that a key measure of the effectiveness of a methadone treatment service should be its ability to attract patients into treatment and retain them for at least two years.

A critical problem is how long to keep those patients on methadone treatment who continue to use illicit drugs and fail at psychosocial rehabilitation. This is a particularly agonizing problem where there is the pressure of a waiting list. It would be understandable if clinicians incline to thinking that there are likely to be people waiting for methadone treatment who are more "deserving". However, withdrawing treatment from patients who are making only minimal gains on the basis that they are not making adequate progress, is not a treatment philosophy that would sit easily with other mental health conditions. For example, take a person with severe depression who makes only minimal gains with an antidepressant medication. Rather than communicating to the patient that because they continue to have suicidal thoughts while on the medication they will be withdrawn from treatment, the clinician is more likely to consider increasing the dose, switching to another antidepressant, or trying combination treatment. This normal, pragmatic, clinical practice is not always applied to patients with opioid dependence.

5.5 Detoxification as treatment

Detoxification programmes provide supervised withdrawal from a drug of dependence so that the severity of withdrawal symptoms and serious medical complications are reduced to a minimum. Unlike the alcohol withdrawal syndrome, the opioid withdrawal syndrome is very rarely life-threatening [Farrell 1994], but is sufficiently aversive to often be a major obstacle to opioid dependants achieving stable abstinence in the short term.

Methadone assisted withdrawal for opioid dependants has been demonstrated to be an effective method of achieving opioid withdrawal over a period of a week to ten days and superior to clonidine assisted withdrawal [Mattick & Hall 1996]. However, given the high rate of relapse following withdrawal from opioids, opiate detoxification should not be considered a treatment in its own right [Gerstein & Harwood 1990]. It is recommended that individuals with opioid dependence must have some form of continuous treatment for at least three months post-detoxification to accrue benefits beyond those of detoxification alone [Ali et al 1992].

5.6 Australian Quality Assurance Project

Mattick & Hall (1993) prepared an extensive report on treatment outlines for the management of opioid dependence in Australia. The work was based on three sources of information:

- * A literature review of controlled research on the effects of intervention and treatment(s) for opioid dependence;
- * A survey of currently used treatments for opioid dependence in Australia; and
- * The views of persons nominated as expert in the management of opioid dependence.

The authors are clear that the aim of the project was to detail the types of intervention of value, but not to elaborate "how to" deliver these interventions in the most cost-effective manner, which is the main focus of this paper and will be addressed in subsequent chapters. However, below is a summary of those conclusions and recommendations from this extensive and authoritative work which relate to the treatment of opioid dependents.

1. The evidence from placebo, wait-list and no-treatment comparisons is consistent and clearly shows that methadone is an effective treatment option.

2. Methadone maintenance is the best researched of all of the treatment options for opiate dependent individuals, being the only major treatment intervention that has been demonstrated to possess clear effectiveness in randomized controlled trials.
3. Methadone maintenance is currently a central and very important approach to the management of opiate dependence that must be widely available in a range of options to meet the needs of those who are dependent on opioids.
4. As with many accepted interventions for serious health problems, there are a number of potential adverse consequences from methadone maintenance treatment. These include the economic cost of the intervention, the personal costs to the patient, some negative side-effects, and the possibility of methadone diversion. Despite these costs, the benefits of methadone to patients and the community are still substantial and appear to greatly outweigh any adverse effects.
5. Methadone maintenance is an effective treatment for opiate dependence when it is delivered according to the broad features of the Dole and Nyswander model of treatment. This model has three defining characteristics: the prescribing of relatively high doses of methadone (more than 60mg per day); a commitment to methadone maintenance rather than abstinence from all opioids including methadone; and the provision of sufficient support services to meet the needs of patients.
6. Methadone maintenance should not be seen as the automatic choice for those who are seeking treatment for opiate dependence, even in the presence of long-standing dependence and neuroadaptation. In all cases, the full range of treatment options available (including methadone maintenance) should be fully discussed with the patient and the advantages and the disadvantages of each form of intervention considered.
7. The research evidence suggests that patients in methadone maintenance treatment act responsibly when allowed to adjust their own methadone dose.
8. In general, a reward-based contingency management system in which take-home methadone is offered to patients contingent upon abstinence from illicit drug use, is supported by a reasonable body of research.
9. The evidence for the use of psychotherapy as a general adjunct to methadone maintenance treatment is equivocal. Psychotherapy should only be provided as an option for those patients who have serious psychiatric problems and wish to be involved in this form of treatment.
10. Methadone patients have higher rates of comorbid psychiatric disorders than the general population, with depressive disorders, antisocial personality disorder and alcohol problems being the most common.
11. There is suggestive evidence that making the administration of methadone contingent upon the ingestion of disulphiram may reduce drinking among patients with more severe alcohol problems.
12. LAAM has a number of advantages over methadone as a maintenance drug due to its longer half-life, enabling dosing to occur every second or third day. LAAM may

be particularly important for patients who are working or studying and for those for whom daily attendance is difficult.

13. The range of pharmacological treatment interventions available for opiate dependence is limited. It is recommended that the acceptability, impact and possible uses of LAAM, buprenorphine and other opiate replacements for heroin be investigated with a view to making these available in New Zealand.
14. Naltrexone has some potential as a useful treatment for selected patients.
15. Longer duration of methadone maintenance treatment is associated with continued improvements in functioning. For most patients, more than two or three years of methadone maintenance treatment is necessary before significant behaviour change is likely to occur and become stable. However, arbitrary setting of the duration of methadone maintenance treatment to this time limit has been found to have extreme negative consequences for the patients most in need of it. It is recommended that there be no arbitrary time limit placed on the duration of methadone maintenance treatment.
16. The following ancillary services should be available to patients receiving methadone maintenance, either in the programme or else by efficient referral: crisis management counselling, general supportive counselling; health monitoring and medical services, especially for disorders and diseases known to be associated with injecting drug use; HIV testing, with followup counselling and HIV education to reduce risk-taking behaviours; vocational counselling and guidance; psychiatric liaison, social welfare and accommodation; sexually-transmitted diseases services; and budget skills training, life skills training, parenting skills training, and interpersonal relationship skills training.
17. Withdrawal from methadone is recommended when a decision to do so is reached jointly by the prescribing doctor, clinic team and the patient. It is recommended that the dose be reduced at a rate no greater than ten percent of the current dose each week, based on the previous week's level.
18. Intervention through methadone maintenance programmes does not finish at the cessation of methadone maintenance dosing. Aftercare programmes should be available within the programme or by referral to other agencies.
19. Urinalysis has not been shown to reduce illicit drug use. The value and role that urinalysis has in the context of methadone maintenance programmes is still largely undetermined. Research should be conducted.
20. Therapeutic communities offer an effective form of treatment for a small proportion of drug users who suffer the more severe consequences of their drug use, criminal activity and social disadvantage. Stays in excess of three months and perhaps as long as a year are necessary before enduring changes in drug use and criminal behaviour can be expected.
21. Therapeutic community approaches to illicit drug dependence lie on a continuum in terms of structure and rules. A significant trend world-wide over the last decade has seen a shift towards the centre of this continuum.

22. It is notable that many people come into treatment with strong preferences about the form of assistance that they require and the therapeutic community approach will not suit the majority of these people. It is nonetheless an important treatment option with apparent cost-benefits.
23. Certain activities should be offered by all therapeutic communities. These include: stress management, initially using simple techniques plus more sophisticated procedures as the programme progresses; social, occupational and assertiveness skills training; relapse prevention; a gradual reintegration into the general community using progressively more risky situations; harm-reduction strategies; and aftercare procedures.
24. It is recommended that therapeutic communities work co-operatively with methadone maintenance programmes wherever possible to facilitate cross-referral of clients who repeatedly relapse under either treatment approach.
25. Family therapy may be an effective intervention with selected clients in methadone maintenance programmes.
26. The range of treatment options available for illicit drug users is currently too narrow and insufficiently attractive.
27. There is insufficient research on the possibility that "matching" drug-dependent individuals to differing types of intervention, based on their specific needs or characteristics, will improve outcome. Clinicians should guide their patients into interventions based upon their clinical expertise and through providing them with a comprehensive and clear listing of the treatment alternatives so that the patient can make an informed decision.
28. The potential of matching patients to different intensity of service delivery within methadone maintenance treatment has been termed "streaming". Research is needed before confident recommendations can be reached about the value of this procedure.
29. All clients who have been dependent on opiates should be made aware of the service provided by meetings of Narcotics Anonymous, and those clients who are interested should be encouraged to attend Narcotics Anonymous for at least three visits so that they can assess the suitability of this approach for themselves. Care should be taken to attempt to match the opiate-dependent individual with a Narcotics Anonymous group comprised of individuals with a similar social background.
30. All drug counsellors should know where and how to refer a client to Narcotics Anonymous, should be acquainted with some local Narcotics Anonymous sponsors and attend Narcotics Anonymous open meetings.
31. A number of general therapist qualities have been shown to be important in intervening with people who have drug and alcohol problems. These abilities include quickly forming a warm and supportive relationship with clients, keeping careful case and progress notes, anticipating client difficulties, dealing effectively with problem.

32. There should be highly detailed written treatment protocols specifying treatment procedures and including instructions on how interventions are to be implemented. These should be continuously updated as new procedures and evidence become available.
33. There should be supervision and ongoing monitoring of individual therapists to ensure adherence to protocols.

These conclusions and guidelines are consistent with a number of other authoritative papers and reports [APA 1995, APA 1994b, Gerstein & Harwood1990].

5.7 Diversion of methadone takeaways

For some, this is perhaps one of the most controversial issues of methadone treatment. How much of a problem is it and how can it be prevented? Lipton & Magura (1991) cite research in the USA showing that on the one hand a small minority (about 10%) of patients on methadone will sell or share some of their methadone most of the time and about one third will never divert it. Regular diverters include those who continue to be heavily involved with cocaine and selling drugs and those with a spouse or friend who does not, or cannot, become a patient in a methadone clinic. Stable, compliant patients who have many takehome privileges were found to rarely sell their methadone, while it was much more likely to be the patient with a small number of takeaways who did so.

Methadone is generally not considered a high priority opioid drug. However, if supply of more sought-after alternatives is tight, then methadone will become a sought-after commodity and command an attractive market price. Supply of alternative opioid drugs at any given time, however, is greatly influenced by the number of people seeking drugs. Demand for methadone is therefore going to be enhanced in regions where there are significant waiting lists of people with severe untreated opioid dependence. The pressure on patients undertaking methadone treatment in these circumstances to divert some or all of their methadone can be great, not only because of an attractive market price, but also through direct intimidation by prospective buyers. If methadone treatment were made more available in these regions, then the "black market" for methadone would collapse and the pressure on diversion will subside.

5.8 Further issues

A number of further issues and problems related to quality and effectiveness in the delivery of methadone treatment can be summarized as follows [Deering 1996]:

1. Philosophical conflicts related to abstinence vs harm reduction - shifting paradigms have led to rehabilitation having a greater emphasis on a public health perspective resulting in role overload and confusion amongst treatment staff;
2. Attitudes, beliefs and lack of understanding amongst the general public, politicians, purchasers, administrators and mental health workers related to the misuse of drugs, intravenous drug use and opioid dependence leading to stigmatization, shame and trivialization and a gulf between the findings of the scientific literature and clinical practice;

3. Polydrug use/comorbidities lead to the need for individualized treatment for patients - good clinical practice;
4. Lack of visibility of successful MTP patients and a strong consumer movement ?due to stigmatization;
5. Variation in philosophy, practice and effectiveness between MTPs [D'Aunno & Vaugh 1992] together with a lack of descriptive data about how treatment is provided and what is provided within individual MTPs leading to the coining of the phrase "the black box" of treatment [Ball & Ross 1991];
6. Unrealistic expectations of alcohol and drug workers in MTPs to actively recruit IDUs into treatment to limit the spread of HIV and Hep B and C, while at the same time retaining patients in treatment, often for many years and provide an increasing range of specialist services eg comorbidity, programmes for pregnant women, parents of young children, Justice department clients and adolescents/youth;
7. Lack of systematic provision of after-care services and provision for accessible re-entry to methadone prescribing, despite evidence for high relapse rates following termination of methadone prescribing and the knowledge that for many, opioid dependence is a chronic relapsing disorder;
8. Inability of current alcohol and drug service resources to meet demand for service, resulting in overloaded MTPs, waiting lists and an untreated pool of IDUs who continue to use, reinforcing negative societal attitudes, increasing stigmatization and leading to the development of conflict between Methadone Programme staff and the client group;
9. Inability of GPs to prescribe opiates for the treatment of opioid dependence without authorization from a gazetted service, even when the local service has a waiting list for admission;
10. Maintaining a balance between attempting to meet demand and providing a quality service;
11. Staff burnout and high staff turnover - need for high quality staff but how can they be recruited?;
12. Lack of a body at national and local levels to provide co-ordination, policy direction, data collection, leadership, public education, advocacy, training, to disseminate "best practice guidelines" and to undertake clinical research and evaluation.

The above 12 issues have resulted in many instances in MTPs which are inaccessible and inadequately resourced and organized to meet the complex needs of people with opioid dependence and their families, necessitating a review of service organization and delivery as is being undertaken in this paper.

5.9 General conclusion

For the purposes of this paper, therefore, two key general conclusions are warranted, which set the scene for discussion about options for new service delivery for people with opioid dependence in New Zealand.

- a. Opioid agonist maintenance treatment (eg with methadone) is the central element of treatment which has been demonstrated to be effective for people with opioid dependence.
- b. A minority of opioid dependants achieve stable abstinence through abstinence-focused treatment, generally (but not exclusively) of three months duration or longer, in therapeutic communities. Thus abstinence- focused treatment should continue, at the very least, to be offered along with opioid agonist maintenance treatment.

The latter part of this paper will be devoted to considering the ways in which these two main arms of treatment can be delivered to opioid dependants in New Zealand, so that cost-benefit is optimized. Next however, is an overview of current services for opioid dependants in New Zealand.

6. OVERVIEW OF CURRENT SERVICES FOR PEOPLE WITH OPIOID DEPENDENCE

6.1 Introduction

The majority of people treated for opioid dependence receive methadone treatment through 20 gazetted methadone treatment centres and associated general medical practitioners. There have been significant developments and changes over the past 25 years in the treatment available for these patients. Appendix C elaborates this history further. Below (7.2) is a description of some of the trends in methadone treatment that have been outlined previously [Sellman et al 1995].

Some patients with opioid dependence access treatment in short-term residential programmes and therapeutic communities and some attempt drug free outpatient treatment. There are limited New Zealand data available on the numbers involved in these alternatives to methadone treatment. Nine percent of the residents in the Auckland Odyssey programme, in the year to September 1996, named opioids as their drug of choice. The routes to these abstinence focused treatment programmes are varied. However, many of the opioid dependent patients who access treatment in therapeutic communities do so as an alternative to prison and are referred by the courts.

6.2 Changing trends in methadone treatment

The modus operandi of methadone treatment has varied over the past 25 years in New Zealand in parallel with developments internationally. Different rationale and emphases have guided treatment delivery at different times as follows:

6.2.1 *Opioid dependence-a disorder of the endogenous opioid system*

When first put forward as a treatment for opioid dependence, Dole and Nyswander (1965) suggested that methadone was acting in a similar fashion to the treatment of other deficiency diseases by providing something the body was lacking, in this case an effective internal opioid system. They argued that an adequate dose of methadone would right this imbalance and render the individual free of the need or desire to indulge in additional opioid drug use. In the early days of methadone treatment patients were often given high doses of methadone with the expectation that they may stay on the medication for many years and in some cases for life. This view is still held by leading writers in the field including Dole (1988) and Kreek (1992).

6.2.2 *Methadone for opioid dependence-conflict with the abstinence model*

A second phase occurred around the early 1980s. At the time there was a strong caucus of alcohol and drug workers who were strictly "abstinence-focused", for whom prescription of an addictive drug was anathema to their clinical practice. This was also a time of great debate in relation to controlled drinking strategies in alcoholism. There was also an increasingly judgemental public and critical media who did not view "drug addicts" as suffering from an illness, but rather as being a group of irresponsible, weak-willed people, lacking "moral fibre", who certainly were not deserving of a treatment like methadone, the prescribing of which seemed like a soft option in contrast to detoxification. In this phase, patients were encouraged to stabilize on low doses, usually less than 40mg per day and to withdraw from the dose over a period of less than 12 months. Urine testing for additional drug use was enthusiastically endorsed and discharge from the programme for

non-compliance a common occurrence. The catch cry was; "methadone treatment is like giving gin to an alcoholic".

6.2.3 HIV/AIDS-more life threatening than opioid dependence

The start of this epidemic in the early 1980s spearheaded a third phase which has had a major impact on the philosophies of methadone programmes ever since. Here was a phenomenon (acquired immunodeficiency syndrome (AIDS)) which posed an even greater threat to intravenous drugs users (IDUs) (and the general population) than the lifestyle and risks of their opioid dependence [DAC 1992]. Harm reduction became the new catchphrase and programmes were expected to become more accessible, less insistent on complete abstinence from all drugs, other than prescribed methadone and to deliver methadone efficiently to as many IDUs as possible. The strategy was aimed at meeting the public health objective of limiting the spread of HIV amongst IDUs and from IDUs to the wider community. More recently has been the increasing awareness of large numbers of IDUs who are Hepatitis C positive. It is estimated that perhaps upwards of 80% of patients on methadone programmes in New Zealand at the current time are Hepatitis C positive [Woodfield 1993]. There is now a trend towards more comprehensive medical workup of patients presenting for methadone treatment, with particular emphasis on their contact with blood-borne viruses (HIV, Hepatitis B and Hepatitis C), along with other less common medical complications of intravenous drug use. The degree of Hepatitis C infection among opioid dependent patients, as well as the potential for HIV spread, is of major concern, not only in terms of the life expectancy implications for patients but also the not inconsiderable health costs that can be expected as a result of these disorders. These costs will be discussed later.

6.2.4 Opioid dependence and psychiatric comorbidity

A fourth phase has come about since the mid-1980s with greater awareness developing of the relatively high rate of additional psychiatric conditions in patients with alcohol and drug disorders. In opioid dependent patients in particular there has been acknowledgement of the high rate of antisocial personality dysfunction, major depression and suicide risk [Strain et al 1991, Nightingale et al 1993]. This general growing awareness has led to increasing pressure on methadone programmes to have specialist psychiatric expertise close at hand, and for alcohol and drug services to be better integrated with general psychiatric services [Sellman 1989]. Increasing psychiatric competence amongst alcohol and drug staff working with opioid dependent patients is likely to grow.

6.2.5 The optimum use of methadone prescribing

Finally, over the past three or four years there has been somewhat of a return to the initial rationale for methadone treatment as outlined by Dole and Nyswander (1965), with an emphasis on prescribing "adequate" doses of methadone, which block opioid receptors from the effect of additional exogenous opioid. The harm reduction trend, in its enthusiasm to reach out to as many IDUs as possible, may have been at a cost of less supervision and individualized care of each individual patient in the service. One of the critical aspects of a quality intervention is the tailoring of an adequate dose of methadone for each individual. Two significant advances in helping clinicians achieve this have been firstly, new technology which can estimate accurate serum methadone concentrations and secondly, data predicting therapeutic serum methadone concentrations. A recent summary of the literature [Sellman & Sharman 1993] reported that methadone doses which achieve trough serum concentrations of less than 200ng/ml (650nmol/L) are less

likely to prevent continuing intravenous opioid use, compared with concentrations greater than this.

There has also been increasing recognition of the importance of a ratio of the peak (2-4 hours post dose) to trough (24 hours post dose) serum concentrations of <2.5 (Thomas Payte, personal communication) in determining an appropriate dose.

These pharmacological guidelines are a significant step forward in helping clinicians deliver adequate doses of methadone to their opioid dependent patients, particularly those who have proved difficult to stabilize.

It is noteworthy that average doses of methadone have doubled in New Zealand from 33mg in 1991 to 60mg in 1996. The percentage of doses above 70mg increased from 4% in 1991 to 18% in 1993.

6.3 Further background history

Appendix C outlines the early development of services up to the early 1980s. In 1979 there were 219 opioid dependent patients being treated with methadone in New Zealand. The number of methadone services and total number of clients grew steadily in the late 1980s and particularly the 1990s as outlined in Table 1 below. This was in no small part fuelled by the discovery of HIV and the perceived threat of AIDS. The first methadone census undertaken by the Drugs Advisory Committee in February 1991 [DAC 1992] showed there were 537 people on methadone with no waiting list which by June 1996 had risen to 2,352 people on methadone with at least 420 opioid dependent patients on waiting lists.

Table 1 The number of patients being prescribed methadone for the treatment of drug dependence in New Zealand by year.

<u>Year</u>	<u>Number of patients</u>	<u>% increase per annum</u>
1991	537	
1992	892	66%
1993	1,037	16%
1994	1,628	57%
1995	2,079* (estimated)	28%
1996	2,352 (plus 420+ on waiting lists)	13%

* Data from some small centres were missing in a 1995 methadone conference census and were estimated.

Regional Health Authorities are reported to be planning to purchase more methadone places during this financial year so it is likely that by June 1997 there will be close to 3,000 opioid dependent patients being treated with methadone (even in the absence of the accelerated growth in service volumes recommended in this paper).

In the earliest days of methadone treatment in New Zealand the leaning was towards long term methadone maintenance. In the early 1980s this changed in some programmes towards a focus on short term withdrawal orientated regimes. This meant that some opioid dependants would have multiple methadone treatment programmes featuring a

pattern of three month methadone contracts, withdrawal and then a "stand down" period instituted before they were able to return for a new short term methadone programme. Some clinics would also only place patients on methadone treatment if they had a commitment to go on to a residential treatment programme at the end of the programme. This was not always easy as residential treatment centres were often reluctant for a time to take persons with opioid problems.

Methadone doses were also often low, on the unfounded belief that the lower the dose the easier the withdrawal to abstinence would be. This was different from the 1970s when methadone was used as advocated by the originators of methadone treatment [Dole and Nyswander 1965] as "blockade treatment" in higher doses.

Technical ability, knowledge and clinical experience was relatively low as there was no formal training available and limited distribution of international literature on key areas such as the effective ingredients of methadone treatment.

The advent of HIV/AIDS and the articulation of a harm reduction approach was a further influence on methadone programmes in New Zealand in the late 1980s. Practices varied widely throughout the country with no described consensus on the basis for methadone treatment or on treatment parameters. The Drugs Advisory Committee held a series of meetings in 1990/91 on clinical standards for placing and maintaining persons on methadone treatment. This led to the publishing of the first national protocol for methadone programmes, in February 1992. This stated clear objectives for methadone treatment in terms of reduction in mortality and morbidity and an improvement in health and social functioning for the opioid using population, together with reducing the risk of transmission of communicable diseases amongst intravenous opioid drug users and the general population [DAC 1992]. The protocol also supported the long term maintenance of persons on methadone and the care of assessed and stabilised clients by general medical practitioners. A revised national methadone protocol in 1996 has confirmed these objectives and given increased attention and encouragement to the provision of methadone treatment in the primary health system.

6.4 Variation in methadone programmes

There is currently considerable variation in methadone programmes in New Zealand. This variation is related to staffing issues, past practices and philosophies. While managers and staff will often comment that their programme is guided by a "harm reduction philosophy" there is little common understanding or agreement about what this term might mean. Programmes are also confronted by the numbers of clients placed on methadone treatment over the past few years, sometimes with conflicting guidelines and programme induction. Where staff are not clear about programme frameworks, it is likely that clients will also be confused about programme expectations, parameters and goals.

A study undertaken in 1992 [Hannifin & McDonald 1992] to compare New Zealand methadone treatment approaches to those in the USA as described by D'Aunno (1992), found that the majority of programmes in New Zealand had increased average dose levels since the adoption of the National Methadone Treatment Protocol (NMTP) [DAC 1992]. Sixty-one percent of clinics reported that the NMTP was a "great" or "very great" influence on practice. Centres which had adopted higher dose levels reported increased average length of time clients stayed in the programme. These same clinics also tended to be those with higher levels of professional staffing.

Further results from this study were that NZ clients are more aware of their dose level, are more able to influence their dose, are more able to have takeaway doses, generally have higher doses and are able to stay on methadone for longer periods of time prior to active encouragement to undergo withdrawal.

These data are important, given that length of time in treatment is the strongest predictor of treatment success [Harwood et al 1989] and that one of the greatest influences on retention is adequate dose [Ball & Ross 1991].

6.5 Profile of people with opioid dependence in New Zealand

There are a variety of New Zealand data available, mainly from methadone programmes and needle exchange services, which describe a demographic and clinical profile of intravenous drug users.

6.5.1 Age at first intravenous drug use

The age at which people first use drugs intravenously is useful in considering early intervention strategies and for gaining an overview of the progression of opioid dependence in New Zealanders. Table 2 shows age distribution data of a sample of intravenous drug users [Lungley 1988] (70% in treatment, 30% not in treatment recruited through "snowball" methodology), that 50% have used intravenously before the age of 18 and 85% before the age of 22.

Table 2 Age of first use of drugs intravenously in a New Zealand sample of intravenous drug users (n=309)

<u>Age</u>	<u>Number</u>	<u>%</u>
10-13	30	10
14-17	125	40
18-21	111	36
22-25	31	10
>25	12	4

Table 3 shows the age distribution of 264 new patients to methadone treatment in New Zealand, January 1996 - June 1996 [Hannifin 1996]. About three-quarters are between the age of 20 and 34 with a peak in the 25-29 year old age group. Less than 2% of people under the age of 20 are in treatment.

Table 3 Age distribution of new patients to a methadone programme in the first six months of 1996 (n=264)

<u>Age</u>	<u>Number</u>	<u>%</u>
<20	5	2
20-24	40	15
25-29	90	34
30-34	66	25
35-39	42	16
>39	21	8

In 1992, there was a greater percentage of methadone patients over the age of 25 years compared with the 1996 data above and a larger proportion over the age of 30 years perhaps indicating a trend towards an increasingly younger age group of people with opioid dependence in treatment [Hannifin & McDonald 1992]. However, although one would generally be expected that there would be a younger age amongst new recruits compared with an existing treatment sample, these data may suggest an increasingly younger population of people becoming dependent on opioids in New Zealand. Another explanation may be that accessibility to treatment services may be increasing for the younger age group. For instance this may have come about as part of a drive in the late 1980s to recruit people with opioid dependence into treatment, stemming from concern about the alarming possibilities related to the spread of viral-borne illness especially HIV and Hepatitis C.

Currently, there is some (anecdotal only) evidence of increasing numbers of adolescents (15-18 years) who are regular intravenous opioid users.

6.5.2 Duration of drug use

Table 4 shows the years of intravenous drug use by a New Zealand sample of intravenous drug users (as above) [Lungley 1988]. Although nearly a quarter were users for less than six years, the majority (74%) had been users from 6-20 years.

Table 4 Years of intravenous drug use by a New Zealand sample of intravenous drug users (n=293)

<u>Years used</u>	<u>Number</u>	<u>%</u>
< 6	66	23
6 - 10	89	30
11 - 15	82	28
16 - 20	46	16
> 20	11	4

6.5.3 Opioids used

There have been a number of trends in the different opioid drugs used by intravenous drug users. Heroin was readily available for "street supply" in the 1970s. Due to the relatively successful closing of the borders to heroin in the late 1970s, people turned to a variety of opioid alternatives including buprenorphine, homebake morphine and heroin

from codeine products sold "over the counter" [Bedford et al 1987], opioid derivatives from poppies and more recently the favoured opioid has been morphine sulphate tablets which in turn can be reasonably easily "baked" into heroin (diamorphine). Indeed, an enduring feature of the New Zealand opioid drug scene has been the relative lack of quality imported heroin on the one hand and the "do it yourself" Kiwi approach to manufacturing heroin in home laboratories from a variety of opioid sources. The annual poppy season continues to feature in the calendar of most methadone programmes, or at least the end of it, when, as supply becomes scarce, the degree of dependence for some becomes apparent and assistance is sought. In the late 1980s buprenorphine was a particularly sought-after opioid by street users and in one sample [Orchard & Kew 1989] was the most used opioid drug reported in outpatient statistics, followed by "morphine" and "homebake". At the current time, MST appears to be the most sought-after opioid in New Zealand, fetching about \$2 per mg on the street market.

6.5.4 Crime and imprisonment

There is a high imprisonment rate among intravenous drug users. Kemp (personal communication) found of a sample of 296 needle exchange consumers, 38% reported having been in prison. There is also a relatively high rate of intravenous drug use in prisons. Pattern (1991) reported an alarming 26% of prison inmates who inject drugs while in prison. This high rate of opioid use in prisons is confirmed in a recent investigation of the prevalence of psychiatric disorder amongst New Zealand prisoners [Brinded et al 1995]. This study, funded by the Justice Department, revealed high rates of opioid dependence and use of opioids in prisons, as can be seen in Table 5.

Table 5 The rate of opioid dependence in New Zealand prisoners.		
	<u>Female</u> (n=37)	<u>Male</u> (n=101)
Lifetime diagnosis	24%	34%
Use of opioids during current sentence	11%	19%
Use of opioid in the 2 weeks prior to interview	11%	16%

Comparing these rates with general population data, highlights the extent of opioid problems in prisoners. For instance, the lifetime diagnosis of opioid dependence in the general population in New Zealand was less than 1% [Wells et al 1989], so that even allowing for an increasing rate of opioid dependence in the New Zealand population over the past 7 years, the rate of opioid dependence in prisoners is still likely to be in the order of 10-20 times greater than that of the general population.

Finally, in terms of costs, the average cost of criminal activity of people on a methadone treatment programme waiting list was found to be \$1,079 per week [Adamson et al 1996]. This will be returned to later when considering costs of untreated opioid dependence in relation to different options for service delivery.

6.5.5 Needle sharing

In terms of needle and syringe sharing, there is a relatively high rate of sharing amongst intravenous drug users. Lungley (1988) found in a sample of intravenous drug users in 1987/88, that 57% had shared a needle and syringe in the previous three months, while

three to six months after the introduction of a needle exchange scheme the rate in a similar sample had dropped to 41% [Lungley & Baker 1990].

The rate of Hepatitis C infection amongst intravenous drug users ranges between 64% and 84% [Hannifin 1995]. Rates appear to be correlated with the length of injecting history. Australian data [Crofts 1995] indicate that 66% of intravenous drug users will become Hepatitis C positive within two years of commencing regular injecting and that 100% will be Hepatitis C positive after eight years of injecting.

6.5.6 Gender

Substance use disorders are more common in men than in women. For example, the lifetime prevalence rates of drug abuse/dependence in males from the Christchurch Psychiatric Epidemiological Study [Wells et al 1989] was 7.2% compared with 4.1% in females, ie a 1.8:1 ratio in favour of males. These drug data were largely accounted for by cannabis and not opioid drugs.

Data from two methadone programmes' censuses [Hannifin & McDonald 1992; Hannifin 1996] indicate that males are only marginally more commonly found in treatment than females, with a male to female ratio of 56% vs 44% and 53% and 47% respectively. The ratio of males to females in a methadone waiting list sample [Adamson et al 1996] however, was 66% vs 34% ie 1.9:1, suggesting that females are more successful in being recruited from waiting lists for methadone treatment.

6.5.7 Ethnicity

In terms of ethnicity, the Maori/non-Maori ratio in the two methadone programmes' censuses [Hannifin & McDonald 1992; Hannifin 1996] were 16% vs 84% and 12% vs 88% respectively. The methadone waiting list data [Adamson et al 1996] showed 5% Maori and 95% non-Maori. Although this suggests that Maori are more successful in being recruited from waiting lists for methadone treatment, it must be kept in mind that the sample was a South Island (Christchurch) one. Two further pieces of data suggest there may be access problems for Maori who are opioid dependent. First, Maori tend to feature in general alcohol and drug outpatient statistics in New Zealand up to 25% [Hughes 1992], which contrasts with the 12-16% Maori prevalence in methadone programmes found above. Secondly, a needle exchange service found 33% of consumers were Maori [Nimmo 1996], suggesting that perhaps there is a larger intravenous problem amongst Maori, compared with non-Maori and that access to methadone treatment for Maori is compromised.

However, it is currently not known whether Maori are more susceptible to opioid dependence than non-Maori or what the actual Maori prevalence rate of opioid dependence is. Therefore it is only speculation about whether there are indeed access problems for opioid dependent Maori.

6.5.8 Summary

Intravenous drug users in New Zealand appear to typically begin intravenous drug use in their teens, but <3% of people in their teens are in treatment, the majority (75%) being in the range 20-34 years. Although the rate of drug dependence is higher in men than women, reflected in the ratio of men to women on a methadone waiting list, women appear to be more successful in being recruited into treatment compared with men. Maori appear to be over-represented in needle exchange services compared with methadone waiting list or methadone treatment data, suggesting that access to methadone may be

problematic for Maori with opioid dependence. The rate of both lifetime opioid dependence and current opioid use in New Zealand prisoners is relatively high and estimated to be at least 10-20 times that of the general population.

6.6 Methadone treatment and general medical practitioners (GPs)

Methadone and other opioid substitution prescribing was provided by a number of GPs until the mid-1970s, before the setting up of specialist methadone clinics. GPs have continued to work as medical officers in methadone programmes and in rural areas in particular have provided methadone prescribing and general medical input to methadone programmes. In some areas, eg Taupo, Rotorua and Tauranga, GPs have provided methadone treatment without any formal attachment to a clinic. Elsewhere, on the other hand, for example Southland, it is difficult to find GPs who want to become involved with methadone treatment.

The transfer of a patient to GP care is made possible through an authorisation under Section 24 of the Misuse of Drugs Act 1975. Formalizing this option as a routine aspect of a specialist methadone clinic was first instituted by the programme in Wellington [Robinson & Thornton 1994]. This strategy has become more widespread in recent years so that the number of GPs involved in prescribing methadone in 1995 was 164, increasing to 193 in 1996. The overall percentage of patients being prescribed by GPs in 1995 was 18%, rising to 20% in 1996 [Hannifin 1996]. While this practice may have been commenced as a pragmatic solution to the rising demand for methadone treatment, it may have also contributed to a change in orientation away from centralization in specialist clinics towards more integration in primary care, with backup from specialist clinics. However, there remains a strong view amongst some that opioids (including methadone) are such dangerous drugs and that people with opioid dependence are such difficult patients to treat that if there are to be methadone programmes, they must be run very strictly from a centralized base. One negative aspect for patients attending their GP instead of a specialist clinic is the fee for service. Some patients will have a Community Services Card which attracts a reduced fee, but some may resist transfer to a GP because of the fee.

6.7 Methadone dispensing issues

From the 1970s into the 1980s the dispensing of methadone occurred in some cities mainly at methadone clinics, such as the Parnell Clinic in Auckland, which opened seven days a week. As clients stayed longer on methadone, it was possible to have takeaway doses of methadone two or three times a week. In other centres, such as Dunedin, methadone has always (since 1978) been dispensed through community pharmacies. It was not until 1986 that Wellington, one of the largest clinics, made the move to having all methadone dispensed through community clinics, which is now the norm with all methadone programmes in New Zealand.

The importance of the role of community pharmacists is widely acknowledged by both staff and patients involved in methadone programmes. Over time, with regular attendance, a therapeutic relationship develops and the pharmacist becomes an integral member of the overall treatment team. Through frequent contact, changes in clinical condition can be monitored by the pharmacist and deterioration reported back to the clinic [Graham 1993].

As more clinics moved to community dispensing, the costs accrued in this area rose significantly. It is estimated in 1995 that the expenditure on dispensing methadone prescriptions was almost \$4million (including drug and dispensing costs) [Health Benefits Ltd 1995 6A(i)008]. This expenditure will be reduced with the introduction of commercially prepared methadone solution approved by Pharmac. This change has created problems and at the present time there are discussions occurring among Pharmac, the Regional Health Authorities, the Pharmacy Guild of New Zealand and the Pharmaceutical Society of New Zealand. Some pharmacies are said to be threatening to stop dispensing methadone under the new pricing arrangements.

6.8 Impressions from current consultation with services and providers

Currently, there remains a lack of agreement and consensus, firstly on the objectives and also on the execution of treatment for people with opioid dependence. A contributing factor is the continuation of conflict in some quarters between an abstinence focused approach and a drug substitution approach. The former aims at withdrawing patients from opioid drugs as the first step in rehabilitation, while the latter aims at pharmacological stabilization of patients with opioid drugs as the first step in rehabilitation. Even in the latter, some clinicians remain uneasy about long term maintenance for opioid dependants on methadone treatment.

There is some scepticism about the ability of general medical practitioners to be able to get more involved in methadone treatment, whereas some clinics have up to a third of the overall case load already on GP authority. The percentage of clients who have been on methadone treatment for over two years is as high as 75% in some programmes, so it could be expected that a sizeable proportion of patients currently being treated in specialist clinics would be stable enough for ongoing GP care.

There is also uncertainty about the necessary components of rehabilitation to methadone treatment through the provision of counselling and other services.

There is a diversity of practice regarding "takeaway" doses of methadone. While diversion does occur (for example 30% of persons attending needle exchanges in one survey [ref] had used "street methadone") there is uncertainty as to the problems that this creates, apart from the "bad impression". There have been reports from the Otago area of some drug overdoses being related to diverted methadone. As clients stay longer on methadone and move away from the subculture of intravenous drug users, there is the possibility of longer takeaway arrangements which could reduce dispensing costs.

There appears to be an unevenness to the distribution of methadone treatment in New Zealand, as can be seen in the following data of methadone places funded by the four Regional Health Authorities [Hannifin 1996].

Northern	755
Midland	322
Central	518
Southern	742
Total	2,337

7. NEW OPTIONS FOR SERVICE DELIVERY

7.1 Introduction

One of the features of treatment services for opioid dependants over the past few years in New Zealand has been the growth of waiting lists for methadone treatment. It is notable, when talking with clinicians, how often the comment is made that they seem to be spending an exhausting amount of time managing people on the waiting list. Essentially this work appears to involve informing desperate people and their families that there is no methadone treatment available in the foreseeable future, which in some regions means for at least a year. There are ethical issues related to whether waiting list patients are the medico-legal responsibility of clinics or not. There are also economic issues related to the time, often considerable, spent by methadone treatment staff attempting to arrange less effective, yet considerably more expensive treatment options such as detoxification and short-term residential treatment programmes, for waiting list opioid dependents.

The demoralization of treatment staff who are spending many hours each week trying to deal with the pleas of patients and their families needs to be kept in mind in relation to the issue of staff recruitment and retention. The situation for patients on waiting lists is acute. It is also notable that a good proportion would pay for treatment if it were available. In the focus group run for the purposes of assessing the options outlined below in this paper, there was agreement that many patients currently on methadone waiting lists would pay up to \$1,000 to be initiated on methadone treatment and up to \$100/month for ongoing treatment.

Detoxification has been declared by the Institute of Medicine [Gerstein & Harwood 1990] as an unacceptable treatment alone for opioid dependence, given the extremely high rates of relapse following such an approach. As elaborated above, this authoritative report points to long term therapeutic community treatment as the next most effective treatment for drug addiction after methadone treatment, although only acceptable to a small proportion of opioid dependants. The consideration of new options for service delivery needs to be practical and cost-effective. Methadone treatment is the only current, viable treatment which meets these criteria for the treatment of opioid dependence. Therefore consideration of new options for service delivery must revolve around variants of methadone treatment.

A New Zealand paper [Sellman et al 1995] submitted prior to the most recent escalation of concern about waiting lists for methadone treatment, outlined a staged approach using GPs as a way of optimizing the clinical benefit of methadone treatment. Five stages of treatment outlined were Stabilization, Rehabilitation, Community Reintegration, Withdrawal and Followup. It was noted that for methadone treatment programmes to work at the optimum level outlined, there would need to be sufficient experienced medical specialists, trained case managers and willing, competent general practitioners available. These resources are scarce and not all regions in New Zealand have them. It was suggested that special incentives may be required to attract appropriate staff to work in methadone treatment programmes in order to ensure their quality. These issues will be addressed in the final chapter.

Since the above paper was prepared, there has been a noticeable rise in pressure on existing methadone programmes reflected in rises in waiting lists throughout the country, especially in Christchurch. The model outlined [Sellman et al 1995] relied on initial

stabilization and rehabilitation being carried out in the context of a specialist clinic, with GP involvement following this initial treatment. The present pressure on services raises the question of whether alternatives to this centralized structure might be able to be found, which retain control and quality of treatment while increasing access to the rising numbers of opioid dependent patients demanding treatment. A key to this change of structure may be found in the earlier utilization of GPs in treating opioid dependants.

7.2 General medical practitioner (GP) involvement

Although the utilization of GPs in the treatment of opioid dependence may seem an obvious avenue to explore, there are potentially a number of barriers to this working in practice. Firstly, opioid dependants are not likely to be the most favoured of patients. In fact, in one Sydney survey of GPs, opiate users were considered to be the least favoured of all patients [Roche 1991] and a degree of hostility was expressed towards them by most GPs. There is, therefore, an attitudinal barrier of possibly considerable proportions, extending from doctors to potential patients. These attitudes have been noted by patients. For instance, 116 heroin users reported GPs attitudes towards them as generally unfavourable [Telfer 1990]. Along with a general dislike of opioid dependants by GPs there might be a widespread feeling that these patients pose problems that are both beyond GPs' competence, as well as primary care resources. This is certainly what was found in a random survey of 5% of GPs in England and Wales in the mid-1980s [Glanz 1986].

Another barrier may be cost. It has already been noted by two New Zealand GPs [Gray & James 1994] that patients referred out to GPs may at times commit crime to meet their GP fees. One of the issues for seriously disabled opioid dependent patients is that their level of chaos at times compromises their ability to access social welfare services they are entitled to, including disability allowance for health costs. GPs who offer a comprehensive general medical service are likely to be proactive in helping their patients in this regard.

However, despite these potential problems, Robinson & Thornton (1994) have outlined extensive positive experience with the involvement of general practitioners in prescribing methadone for patients under authorisation from the Wellington methadone service. They reported that 25% of methadone maintenance patients were being treated on authority by GPs and that this made a large contribution to the minimal waiting list for the clinic in 1994. The current figure in Wellington is 33% managed by GPs. In this model, patients are first stabilized at the specialist clinic and subsequently transferred to GPs for ongoing care. This ongoing care and rehabilitation of methadone maintenance patients in physicians' offices rather than specialist clinics has been termed "medical maintenance" and is supported by an international literature. Novick et al (1994) report a study of the effectiveness of "medical maintenance", in which one hundred selected patients in New York were found to have a high retention rate and low incidence of substance abuse and lost medication using this strategy. The authors conclude that medical maintenance should be more widely utilized. Another pocket of positive GP experience is the Tauranga GP-led methadone service established by Dr Derry Seddon, which has been providing successful methadone treatment for a number of opioid dependants for about 20 years.

A key advantage of methadone treatment being undertaken in GP surgeries is the normalisation of the treatment and integration of drug treatment within mainstream health services. Primary care treatment facilitates patients' disassociation from the subculture of intravenous drug users in contrast to the herding of large numbers of patients through

specialist clinics and central dispensing outlets, which runs the serious risk of perpetuating this subculture of "uniquely expensive citizens".

Some of the problems have already been touched on above. These largely stem from the fact that there has been 20 years or so of relative dislocation of GPs in New Zealand from thinking of themselves as legitimate clinicians in the treatment of opioid dependence, paralleling the previous (but now increasingly rectified) poor situation of alcohol and drug teaching in medical schools. This situation will not be improved overnight and is perhaps the biggest limiting factor in the improvement of opioid services in New Zealand. The final chapter in this paper will attempt to outline possible ways to bridge this gap. An important skill in the treatment of opioid dependants is negotiation of management plans which for some clinicians is quite a different approach from normal "prescribing" [Bell 1995]. There is perhaps an analogy here between the approach required for effectively treating adolescents (with any mental health difficulties), where much more attention needs to be given to developing rapport over a period of time. There is a need for clinicians to tolerate non-compliance in the short term for the sake of achieving longer term goals and the necessity to tolerate and contain anger, conflict and ambivalence without countertransference acting out.

Greater utilization of GPs in the treatment of opioid dependence would be congruent with similar initiatives in other mental health problems in New Zealand. For instance, a recent Central RHA initiative reported in *New Zealand Doctor* (7 August 1996) involves nine GPs who will RHA receive incentive funding and booster training in the detection and treatment of psychiatric illness. The aim is to improve the overall health of people with mental illness in the region by cutting financial barriers that currently exist, so that GPs can become more actively involved in primary care of such patients.

7.3 The use of alternative opioid substitution medication to methadone

Methadone remains the most widely used and most extensively tested medication in opioid substitution therapy [Farrell et al 1994]. However, there are a number of alternatives which may offer some advantages in a number of patients for whom methadone is unsuitable.

7.3.1 LAAM

LAAM (levo-alpha acetyl methadol) is the most extensively investigated pharmacological alternative to methadone and studies have shown no significant differences in outcome for patients prescribed high dose LAAM compared with patients prescribed high dose methadone [Mattick & Hall 1993]. It has a half-life of around 92 hours, permitting dosing every two or three days rather than daily permitting more flexibility for patients and the potential for less diversion through takeaway methadone. It is likely to be particularly useful for patients who are working, as well as for the less stable patient. In terms of the latter for instance, it has been proposed [Mattick & Hall 1993] that some patients might be provided methadone Monday - Thursday and then a dose of LAAM on Fridays to cover the weekends, thus avoiding takeaway methadone doses.

However, LAAM has not gained final approval for use in the United States and as the patent has expired, there is now no financial incentive for any pharmaceutical company to conduct the necessary clinical trials for it to gain approval.

7.3.2 Buprenorphine

Buprenorphine is a potentially valuable alternative opioid substitute to methadone. Because of its mixed agonist/antagonist pharmacological profile it has been considered an ideal medication for the treatment of opioid dependence and has been shown to be an effective maintenance medication with efficacy equal to that of methadone [Johnson et al 1992]. It also appears to be associated with a minimal to mild withdrawal syndrome on abrupt cessation, a property which could be of considerable practical advantage to methadone, where the problems with withdrawal are a significant barrier to a good number of patients considering detoxification, even following successful psychosocial rehabilitation. Experience in New Zealand in the mid-1980s indicated that it soon became a very sought-after street drug and interest in its therapeutic use waned. However, there has been a recent revival of interest in buprenorphine. There is now a sublingual preparation available in New Zealand, Temgesic-nX, which contains 0.2mg buprenorphine and 0.171mg naloxone, which, if taken as prescribed, causes no difficulties because the naloxone is deactivated. However if injected, the additional naloxone will block the effects of Temgesic [Robinson et al 1993]. This pharmacological strategy has not, to our knowledge, been used for methadone, where the same result would be expected.

A further possible advantage of buprenorphine over methadone may be in benzodiazepine-misusing opioid dependent patients. There is one report [Kosten 1994] of decreased benzodiazepine use in a sample of buprenorphine treated patients, compared with those prescribed methadone.

The first randomized controlled trial of buprenorphine versus methadone is currently underway, coordinated by the National Drug and Alcohol Research Centre, Sydney.

7.3.3 *Dihydrocodeine*

There has been a recent report from Edinburgh [Robertson 1996] advocating the use of dihydrocodeine as a safe alternative to methadone, for patients who are not likely to accept the constant state effect of methadone but who prefer an "up and down" pattern. They suggest these patients are likely to be younger and therefore important to target with a harm minimization approach. They report no deaths in 15 years of using dihydrocodeine in the range 180mg - 1,500mg per day. An observation is that when injected, dihydrocodeine produces a severe dysphoric effect, thus intravenous misuse of the medication is likely to be less than with methadone. Finally, given the shorter half-life of dihydrocodeine compared with methadone, withdrawal from treatment is likely to be easier, with more acute symptoms which pass more quickly.

7.3.4 *Diamorphine (Heroin)*

In recognition that methadone treatment is not an effective option for all opioid dependants, an Australian task force has been working on plans for a pilot study on heroin treatment to be undertaken in Canberra [HPTF 1996]. The rationale is that, although methadone treatment is effective, not all opioid dependants want it and taking a harm minimization approach, providing heroin may access patients early and at least reduce some of the harm associated with opioid dependence. The study would be able to shed light on the benefit of providing injectable heroin in a clinical setting not only for individual patients, but the community at large. Similar therapeutic approaches have been taken in other countries.

7.4 Overseas variants of delivering methadone treatment

7.4.1 Amsterdam Methadone Dispensing Circuit (MDC)

This model of service delivery emphasized a public health perspective and harm reduction policy. It was initiated in 1980 and aims to maintain contact with every addict in the city. It is estimated that about 80% of heroin addicts are on methadone treatment in Amsterdam [van Brussel 1995]. The initiation of the system was due to an explosive drug epidemic resulting from an influx of heroin and immigrants susceptible to addiction, of particular note an influx of Surinamese.

Over the last decade the drug using population of Amsterdam has stabilised and there appear to be only limited numbers of new users. This change is thought to be largely related to the widespread availability of treatment [HCN 1995].

The methadone service comprises three levels of programme: low, medium and high threshold.

1. Low-threshold programmes offered by the municipal health service in three methadone dispensing services and one mobile bus. Methadone is dispensed in liquid form, free, on a daily basis and continued drug use is tolerated. The focus is on public health, particularly to maintain contact with those at risk of viral transmission in the community, such as prostitutes and those already infected with HIV. Only basic care is supplied, with limited goals of decreasing needle sharing and helping reduce crime. About half of the people dispensed methadone in the MDC are through these low-threshold programmes.
2. GPs and psychiatrists account for up to 40% of the methadone prescriptions in Amsterdam [van Brussel 1995]. There are 400 GPs in Amsterdam and 50% work with methadone. Each doctor can prescribe up to a maximum of 10 patients, who must show a degree of stability. This is considered a medium-threshold service and the main advantage is the lack of stigmatization of patients cared for in this way. Doctors can prescribe up to two weeks supply, which is covered by standard health insurance. These arrangements date from 1981 when there were agreements made with the Amsterdam General Practitioners Association.
3. High-threshold dispensing accounts for about 5% of MDC clients. The main criterion is motivation to work on improving their condition. There is regular urine sampling and a focus on reducing drug use.

Clients can circulate amongst these programmes. There is a principle of self-responsibility, although people can be promoted and demoted. There is also dispensing outside of the MDC (about 20%), eg to those arrested to relieve withdrawal symptoms as well as "mega-dispensers"-GPs and psychiatrists who dispense to people out of their area and to more than agreed numbers.

In terms of outcomes and impact, improvement in public order is reported as well as improved health status of opioid dependents; for example there is a low rate of drug related deaths. Some of the negative effects predicted such as multiple dispensing, diversion to "black market" and large influx of addicts have not occurred. The MDC approach was adopted in 1985 as government policy and is known as the "Dutch Model".

7.4.2 The Victorian Model

The State of Victoria is unique in its delivery of methadone treatment in Australia [Lintzeris & Kutin 1996]. Since the early 1980s, more than 90% of methadone treatment has been delivered in community based settings, through general medical practitioners and

community pharmacies and there are currently about 2,600 methadone clients. Some of the planned developments include:

1. Better support for GPs through training, a 24 hour telephone clinical advisory service and improved specialist referral services;
2. Development of specialist methadone services to manage clients who require more intensive treatment, eg unstable psychiatric conditions, high risk patterns of alcohol and drug use, chronic pain problems plus opioid abuse, serious medical conditions such as HIV and Hepatitis C infection;
3. Specialist services are expected to have 40-60 each in four sites across metropolitan area, which is a substantial increase;
4. Specialist service will provide: (i) intensive services to MTP clients whose needs cannot be met adequately by GP; (ii) a limited duration back up service to methadone prescribers who do not have the resources to manage clients with special short-term needs; (iii) training and consultation services;
5. The Victorian Medical PG Foundation is assuming responsibility for prescriber training;
6. The Alcohol and Drug Centre (Turning Point), affiliated with the University of Melbourne and St Vincents, will provide leadership in terms of providing specialist clinical services, telephone consultation services, research, education and training, information such as epidemiological data, primary care programmes;
7. There is also a plan to develop a more co-ordinated system involving Welfare and Justice.

Although no official information is available, it has been reported more than once in the course of researching this paper, that in earlier times, there were a number of deaths in Victoria due ostensibly to inappropriately high starting doses of methadone by inexperienced GP prescribers. It would appear that this is not such an issue any longer, but it may be important to keep this piece of informal information alive in this context if a new service delivery structure is contemplated, which liberalizes the prescribing of methadone by GPs in New Zealand.

7.4.3 The Edinburgh Model

A Community Drug Problem Service (CDPS) was set up in the mid-1980s in response to high prevalence of HIV infection and lack of statutory drug services [Greenwood 1992]. A policy of shared care with GPs and other drug and primary workers was promoted. Evaluation after 800 referrals revealed the following service:

1. The service aim was to try and contact all possible problem drug users, taking a harm reduction approach;
2. Referrals are seen by the team (mobile assessment if necessary), comprehensive assessments are completed including urinalysis and information brought to a multidisciplinary management meeting attended by the patient. A report is sent to the GP, who is negotiated by the patient, not the team;
3. A provisional agreement signed by the patient is validated once the GP consents to prescribe. Terms of the agreement include CDPS to negotiate medication and changes in schedule, named keyworker to be seen regularly, random urine sampling, continued chaotic use of streets drugs will result in cessation of methadone prescribing, lost prescriptions etc not tolerated, periodic review, trial of agreed period with review if GP unsure;

4. Three day course of clinic-administered methadone followed by three weeks of CDPS for first admissions (to titrate appropriate dose) before care transferred to GPs;
5. Provision that unstable patients can return to a three week restabilization clinic. Found that about 10% of the most difficult patients have ongoing prescribing by the specialist clinic;
6. Case conference called in difficult cases which may include social workers, children and young person services, home visitors etc;
7. Sectorization of CPNs and clinical assistants with increased CDPS staff to serve a particular number of practices and non-statutory drug agencies. Increase in caseloads led to consultation meetings by CPNs with GPs to review cases.
8. Development of liaison meetings including specialist staff, needle exchange staff, police, teachers, social workers, health visitors, youth workers etc;
9. Support from policy documents and national co-ordinating body;
10. Newsheet "Local AIDS" circulated free to all GPs by local GP subcommittee plus articles in local media helped change GP attitudes;
11. After three years the average referral rate doubled to about ten new patients/week;
12. Fifty percent of patients begun on methadone plus a benzodiazepine withdrawal regime as many were multiple drug users, some with histories of withdrawal convulsions;
13. There was a significant number lost to followup. Of those who stayed on the programme there were significant reductions in injecting behaviour and less criminal activity;
14. High patient satisfaction with counselling occurred and it was found that depression and anxiety disorders emerged often after years of contact with the service and then treated;
15. Significantly, the incidence of HIV infection amongst referrals decreased from 37% to 11% (due partly to increased number of non-injecting drug users referred more recently);
16. Moves underway to increase assistance to those in prison, such as withdrawal programmes, medical assistance, counselling and support on release.

The programme appears to have worked because of a number of factors. There was a general climate of goodwill and AIDS prevention seen as an appropriate GP role by many (reluctantly by some). Non-statutory agencies accepted specialist team with relief, despite initial concerns regarding a harm reduction approach. The author and psychiatrist was well known and was held in high regard. Also she had previously been a GP. CPNs now advise GPs and have an increased role with GP support. Increasing duration of prescribing and increase in positive attitudes towards patients from GPs.

There were a number of advantages of this decentralized service. A centralized configuration could not have managed the volume of referrals with the size of the team even when it had increased to ten CPNs, two clinical assistants, one psychologist, one secretary and one psychiatrist. The regular contact of intravenous drug users with GPs allows positive therapeutic relationships to develop and results in increased understanding of these patients by GPs and more positive attitudes to develop. Contact with GPs and regular pharmacists "normalizes" opioid dependence and decreases stigma. It was felt that the service was cost-efficient in terms of using generalists backed up by a relatively small specialist team. The overall sense of responsibility is shared across the generalist/specialist spectrum with the burden of anxiety shared also in this way. Having GPs involved as primary workers provided excellent access for patients to medical care.

There were a number of disadvantages. In terms of resources, energy was needed to persuade reluctant GPs to prescribe in the short term. There was considerable variation in the quality of care provided, given the relatively large pool of prescribers. There is a balance between having a big enough GP pool to ensure an adequate sharing of the clinical load as well as achieve good patient/GP fits, while not too large so that the variation compromises quality control. Because of the shared decision making, conflict can arise and forging partnerships between the generalists and specialists can be challenging. The question of diversion arises when not all methadone is consumed at pharmacy premises. There is an issue of GP compliance to protocols related to such things as reluctance to prescribe methadone or benzodiazepines when indicated, or initiating treatment before referral processes have been completed etc. It was found that some GPs were rather cavalier in their prescribing while others were far too legalistic. As GPs become more experienced they may wish to manage cases totally. This may give rise to patients gaining multiple prescribing and other forms of deception. A Central register may be required in this case. Shared care arrangements generally preclude this difficulty. Finally, the issue of extra payment to GPs is beginning to arise.

7.4.4 The Danish Experience

Jepsen (1996) has reported some significant changes in the provision of services to opioid dependants in Denmark. Denmark has had, for a number of years in recent times, the largest per capita consumption of methadone in Europe. This is thought to be largely due to a liberal GP-administered substitution programme for heroin addicts which took over in the late 1980s and early 1990s from inpatient abstinence-orientated treatment as the preferred treatment. However, treatment has come to be virtually a methadone prescription without accompanying case management, based on an active therapeutic relationship between doctor and patient. High rates of methadone diversion are reported to have occurred over recent years and there is increasing concerns about the effectiveness of the current service. In January 1996, a new Danish law came into force prohibiting GPs from prescribing methadone and in its place there has been the development of specialist county clinics. These clinics are reported to be highly controlling with frequent urine testing "to prevent abuse". A prospective study is in place to follow the consequences of these changes.

7.4.5 Low Threshold Clinics

Low threshold has been interpreted in a variety of ways, but a hallmark of most definitions is the use of lowish doses of methadone, but in a way that increases accessibility of methadone to patients. It has been essentially a response in the drug treatment area to the threat of HIV/AIDS, rather than being seen as a quality drug treatment strategy in its own right. However, there have been reports of its efficacy in at least reducing the health and social consequences of opioid dependence. For instance, Yancovitz et al (1991) report a study in New York of "interim methadone maintenance", described as a method of providing a service to opioid dependents waiting for treatment in the standard comprehensive methadone maintenance programmes. A clinic was set up that provided initial medical evaluation, methadone medication and AIDS education, but not any formal drug and alcohol counselling or other social support services. A sample of 310 volunteer subjects were recruited from a methadone treatment waiting list and randomized to immediate entry into the interim clinic or a control group. At one month review, those in the interim clinic showed significant reduction in their heroin use compared with controls and at 16 month followup a significantly higher percentage of interim clinic patients were in standardized methadone maintenance treatment. The authors conclude that the findings strongly support the provision of interim services rather than leaving drug users

on waiting lists for conventional treatment. A major limitation of this study is the very short followup time ie one month.

The widespread use of a low threshold methadone dosing strategy as a primary treatment for opioid dependence runs the risk of wasting scarce drug treatment resources by failing to reach an adequate threshold of treatment effectiveness ie adequate dose supported by adequate case management.

7.5 Other new pharmacological strategies

As discussed in Section 6.2.4, there is now greater general awareness of the relatively high rate of additional psychiatric conditions in opioid dependent patients and the need, at times, for treatment of these conditions with psychotropic medication.

Of more immediate relevance to this paper is consideration of medications for patients who are wanting to withdraw from opioids. Stepwise reduction of methadone, possibly in combination with low doses of benzodiazepines of short duration and/or clonidine, tends to be the standard approach in outpatient and inpatient settings. However, active pharmacological help to withdrawing opioid dependent patients is not always the norm. This is perhaps largely due to withdrawal not generally being a voluntary procedure and therefore a degree of animosity exists between clinician and patient when the question of withdrawal arises.

Lofexidine, a new medication, is pharmacologically similar to clonidine but with less hypotensive action. Naltrexone as a pharmacological support in the immediate post-detoxification period is another medication that is not currently available to people with opioid dependence in New Zealand.

7.6 Conclusions

The structure of services for opioid dependants in New Zealand in relation to that in other countries is at the high control, centralized end of the spectrum, where the focus of treatment is the specialised drug clinic and where GPs largely play a minor role. It is noteworthy that some of the more decentralized approaches such as in Victoria and Denmark, where services have been essentially at the other end of the spectrum focused on GP primary care, are currently modifying towards more centralized control of treatment services and the development of specialist clinics. This would suggest that there is a place for involvement of both GP primary care and specialist clinic backup in a structure which combines the two. It seems likely that a middle path between the two extremes, which makes the best use of both GP primary care and the expertise of a specialist clinic, without emphasizing one to the exclusion of the other, might be the best way of providing cost-effective services for opioid dependants. Services in New Zealand would need to restructure in the opposite direction to the current developments in Victoria and Denmark, towards much greater involvement of GPs in the treatment of opioid dependants. An important consideration in this possible restructuring is cost. This will be addressed in the next chapter. Two other critical issues are recruitment and training of GPs and the maintenance of quality in service provision when moved towards a more decentralized structure. These issues will be addressed in the final chapter.

8. FIVE GENERIC OPTIONS FOR SERVICE DELIVERY FOR OPIOID DEPENDENTS

Five generic options are discussed below which are variants of methadone treatment. These options were assembled to represent a range of service delivery for the main purpose of comparative cost analysis. The options range from a high control/abstinence orientation focused with methadone treatment delivered primarily by a central specialist clinic, through to a despecialist model focused almost solely on primary care of opioid dependants. Each is generic in the sense that there is no consideration of individual patients or special needs patients. The important issue of taking into account the heterogeneity of opioid dependants' treatment needs is not addressed here. Services for adolescents, parents of young children, pregnant woman and opioid dependants who are also Justice clients will be addressed to some extent in the final chapter.

Each generic option is first described and then applied to 100 new patients in order to estimate treatment outcome within the service model. Next, advantages and disadvantages from a service/clinical point of view are discussed and the cost of treating 100 new patients for one year with the hypothetical model is estimated. Finally, an estimate of the loss of treatment benefit for each option is outlined; an elaboration of these costs is included in Section 9.11.

The overall approach taken with this relative cost analysis combines a dynamic model of initiating treatment for 100 new patients within a static framework of stabilization. For example, in Options 1 and 2 where there is a mandatory effort required of patients to undertake an alternative to methadone treatment before it is initiated, an estimate of what actually would happen to 100 new patients within these constraints is made, ie a dynamic model is estimated. Once initiation on methadone is achieved by a proportion of patients, static proportions of patients being treated at a specialist clinic versus GP surgeries is made in order to estimate the methadone treatment costs.

This approach was taken in order to simplify the algebra involved in cost estimation but also to gain a cost estimate of treatment that is more than simply treatment initiation costs.

Given the estimated gap between the prevalence of opioid dependence (13,500-26,600, see Chapter 4 above) and the current number of patients in treatment (2,500) the models below are based on the assumption that these are 100 new patients being recruited from a methadone treatment waiting list. Each model is considered separately as if it were the only service delivery structure available.

8.1 Option 1: Specialist focused model (residential treatment)

8.1.1 Philosophy of Option 1

In this option, it is mandatory before gaining access to methadone treatment, that a person makes a genuine attempt at withdrawal from opioids and participates in a short-term residential treatment programme of six weeks duration.

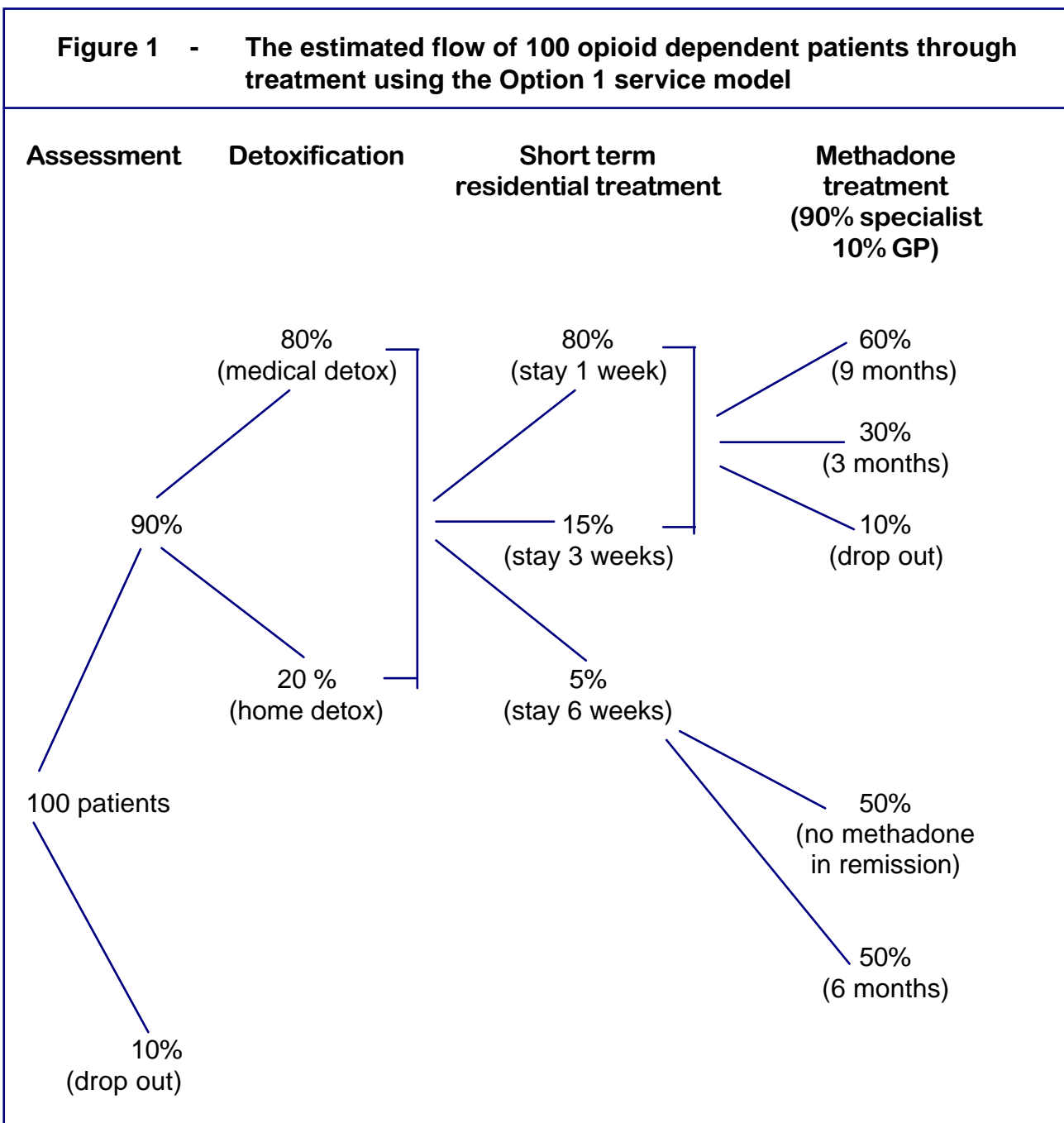
Those who are unsuccessful with this initial treatment would then be eligible to be enrolled in a methadone programme. The specialist clinic has a philosophy of high

control which involves being not greatly tolerant of any IV use, other drug use or the occurrence of crime in its treatment population. Patients who do not stabilize within three months are given "count down scripts". Stabilization means abolition of all intravenous drug use, significant reduction in all other drugs including alcohol and no crime. Any transgression of these aspects would be met with a formal warning and further transgression would result in a 30 day count down script.

In this model only the highly stabilized patients are transferred to GPs for ongoing treatment.

8.1.2 Treatment outcome from Option 1

Figure 1 shows the estimated overall flow of 100 patients through treatment using this service model.



In this model, it is mandatory for patients to firstly make a genuine effort to withdraw from opioids and enter treatment in an abstinence-focused residential therapeutic programme. There are no data which indicate the proportion of patients who would take up detoxification as a mandatory part of treatment, what proportion would take up the option of inpatient detoxification prior to residential treatment and what the post-detoxification outcome would be.

For the purposes of this model a number of assumptions and estimates were made, extrapolating from what data there is and gaining "ball park" figures from consultants and consumers. Treatment outcome for Option 1 using figures derived in this way, is as follows:

1. 90% of patients would at least attempt detoxification, with only 10% electing to return to opioid use in the community untreated.

There is a caucus of feeling within the public and health services in New Zealand that this is an appropriate starting point for the treatment of opioid dependence and should be at least tried. Although 90% may seem to some a very high figure, people presenting for help with opioid dependence are generally desperate. They are a group who have spent years going out of their way to secure an opioid supply and the majority would view the requirement to make a genuine attempt at detoxification and residential treatment as at least a clear criterion for gaining access to methadone treatment were detoxification and short term residential treatment not to be successful. There would be a miscellaneous group of people who would not take up the option; for example, single parents with very young children, clients outraged by the mandatory requirement etc. In fact, when this option was put to the consumer focus group, there was great concern expressed at the mandatory nature of the requirement for detoxification, largely because all had experience of themselves and others for whom this option simply did not work.

2. 20% would complete withdrawal without the need for a ten day medical detoxification prior to entering residential treatment.

The majority would enter medical detoxification prior to a residential treatment programme if one were available. This estimate is made, however, on the assumption that methadone treatment would be available to those not able to achieve this, despite "genuinely" trying.

3. 80% would leave the residential programme within the first week, 15% would leave prematurely after one week but before the end of six weeks (use average of three weeks); and 5% would complete the residential programme.

The starting point for discussion with consultants and consumers for this estimate was put as thirds as follows:

33% would leave the residential programme within the first week;
33% would leave prematurely before the end of six weeks; and
33% would complete the residential programme.

However there was strong opinion that these were far too optimistic, particularly if there was to be the option of methadone for those who had been judged as having made a "genuine" effort at this form of treatment. Even a 5% estimate of programme completion was considered too high by some, in the context of a methadone treatment being available following a "genuine" attempt at residential treatment.

4. Half of the 5% of patients who complete the therapeutic programme would remain in remission for the rest of the 12 months, while the other half would relapse.

Some would say this is an optimistic simplification, as it is saying in effect that there is a 100% remission rate amongst those opioid dependents who complete the six week residential programme, despite there being the option of methadone treatment for those who relapse in this hypothetical situation. However, others would say this is a pessimistic simplification because more than 5% would be expected to complete the programme. Based on the literature outlined in Chapter 6, it is expected that even though it is still a relatively small number of patients who benefit from residential treatment, the evidence is that short-term programmes (of less than three months) are less effective than therapeutic communities (of greater than three months). For the sake of relativities, the same approach was used in Option 2, but with slightly better outcome in those who complete the first three months of a TC.

5. Of the 95% of patients who do not complete the therapeutic programme, assume that 60% would subsequently be enrolled in methadone treatment for 9 months of the year, 30% for three months of the year and 10% would not be enrolled.

The thinking here was that following the therapeutic programme not all patients would necessarily be recruited onto methadone for a variety of reasons. First, there would be some who, on leaving the therapeutic programme, would return to illicit opioid use for a variety of reasons and no longer want methadone treatment. These reasons may include stress over premature departure from the programme and feeling "mucked around by the system", having been without opioids for several weeks and experiencing severe craving, especially returning home from a residential therapeutic programme, the crisis which initiated this treatment seeking episode having passed, a new supply of illicit opioids having become available etc. Second, there would probably be a proportion who would be judged by the specialist methadone clinic as not having made a "genuine" attempt at a short-term therapeutic programme. Third, there may be some who, on leaving the therapeutic programme (albeit prematurely) and having gained something from it, would decide to struggle on without methadone in the short-term, but who would subsequently re-contact the programme for methadone treatment.

These complex dynamics were simplified in the numbers used for this model of 60% entering methadone treatment soon after the residential therapeutic programme and thus having nine months of methadone treatment, 30% entering treatment later and having three months of methadone treatment and a final 10% who would not be recruited into methadone treatment in the 12 month period.

6. 10% of methadone patients are treated on authority by GPs.
7. The number of visits to the GP each year is 15 (see Appendix E for rationale);

8.1.3 Advantages and disadvantages of Option 1

Advantages

The philosophy of Option 1 might appeal to a sector of both the New Zealand public and alcohol and drug clinicians who view abstinence from opioids as the most important goal of treatment of opioid dependence from the outset.

A specialist centred service such as Option 1 provides better opportunities for research compared with more decentralized options from an organizational point of view.

A specialist centred service such as Option 1, allows for better monitoring of quality within the service, compared with more decentralized options.

Disadvantages

The majority of patients are likely to leave residential treatment prematurely. This "treatment failure" is likely to constitute a negative experience both for patients as well as staff.

"Count down" prescriptions for people who do not stabilize could be viewed as punitive given that the same behaviour was an inclusion criteria for admission to treatment. This approach would run the risk of seriously compromising the development of a therapeutic relationship between patient and clinician from the outset and lead to an ongoing system of deception between clients and staff. There is likely to be a good proportion of patients who lose access to methadone treatment because they do not become ideally stable. This group may subsequently contribute disproportionately to the cost of untreated opioid dependence because their instability probably reflects severity of addiction and severity of consequences of addiction such as crime etc. Even if it were relatively small, the numbers of patients lost to treatment in this model are likely to contribute significantly to the loss of economic benefit from intention to treat 100 new patients.

The number of methadone treatment places would be limited in this model by the size of a specialist clinic.

A centralized specialist clinic treating the vast majority of patients would provide ongoing congregation of numbers of opioid dependent patients. This runs the risk of perpetuating a subculture of opioid dependents rather than facilitating integration of these patients in to the mainstream.

This option assumes the immediate availability of residential treatment for opioid dependents which may not be the case, extending the time (and therefore cost) of untreated opioid dependence. If this option were to be recommended the current capacities of short-term residential treatment programmes would be exceeded, necessitating expanding these, which would add considerably to capital costs.

Even if a residential treatment space is available, not all residential services will admit opioid dependants.

In this scenario, where a proportion of patients could be expected to be putting on a "good show" of treatment in order to qualify for methadone treatment, there could be a degree of undermining and disruption of residential treatment by this stream of "unmotivated" opioid dependent patients.

8.1.4 Cost of Option 1

The following assumptions were made in relation to costs of providing treatment:

1. The cost of medical detoxification is \$2,500.

This is based on an estimated cost for medical detoxification of \$250/day for a ten day inpatient stay. This is a low estimate for costs of medical detoxification as it is based on the average cost of a psychiatric bed. The cost could in fact be considerably higher, for example \$475/day was another figure given (in confidence) for the cost of a medical detoxification bed in a psychiatric hospital and up to \$600/day for a general hospital bed.

On the other hand, if this option were real, it is quite possible that cheaper options for detoxification outside of hospitals could be found. \$250 is viewed as a compromise between this variation.

2. The cost of short term residential treatment is \$7,500;

This estimate is based on 1994 data [Gregory 1994] stating that it costs \$155 per bed per day at the Queen Mary Centre and assuming a six week treatment programme. Short term treatment programmes of no longer than three weeks have been suggested as a more supportable treatment length [NACCHDSS 1994]. However this benchmark was arrived at largely from the standpoint of alcoholism treatment rather than that for opioid dependence. Given that short term programmes, termed "chemical dependency programs" in the United States, have been shown to be less effective for clients whose primary problem is drugs compared with those whose primary problem is alcohol [Gerstein & Harwood 1990], it is perhaps not unreasonable to suggest that six weeks may be a more effective treatment length for opioid dependence as opposed to three weeks. However there are no data that clearly support the notion that six week programmes have better treatment outcomes for opioid dependence compared with three weeks. In fact, it has been suggested that any residential treatment of less than three months for drug problems is no more effective than detoxification [Gerstein & Harwood 1990].

There remains a strong belief amongst some that detoxification followed by a short term treatment programme is a legitimate treatment option for opioid dependence and people can be found who have recovered from opioid dependence in this fashion. Short term programmes tend to vary in length from several weeks up to 12 weeks. Six weeks was chosen for this model as a mid-way treatment length.

In this model it could be assumed that \$1,250 per week per patient is evenly distributed across the 6 weeks of treatment. In fact, there are more costs in the initial part of the programme than in the latter part, particularly related to admission arrangements and initial assessments. Given that there is anticipated to be a relatively large drop out rate from treatment in this model, it was considered necessary to make some allowance for the lack of uniform cost across the full six weeks of the treatment programme. It was estimated that 1/3 of the costs would be in the first week of the programme (\$2,500), a further 1/3 of the cost would be in the next two weeks, and the final third in the next three weeks. Thus a patient who stayed one week would cost \$2,500, a patient who stayed three weeks would cost \$5,000 and a patient who finished the programme would cost \$7,500.

3. The cost of methadone treatment in this option would be \$1,500 per patient per year for the 95% of patients at the specialist clinic and \$600 per year for the 5% of patients on authority at GPs (see Appendix E for rationale of these costs);

4. The cost of methadone and methadone dispensing would be \$5 per average 80mg dose for 20 days per month (see Appendix F for rationale of these costs);

5. 10% of methadone patients would be given "count down" scripts each year.

This figure is accounted for in the estimate of loss of benefit from not treating patients (see Section 9.11)

Table 6 The cost of treating 100 new opioid dependent patients with the Option 1 service delivery model

PUBLIC COST	
<u>DETOXIFICATION/RESIDENTIAL TREATMENT</u>	
<u>Detoxification</u>	
90 patients x 80% x \$2,500	180,000
<u>Residential Treatment</u>	
90 patients x 80% x \$2,500	180,000
90 patients x 15% x \$5,000	67,500
90 patients x 5% x \$7,500	33,750
TOTAL	461,250
 METHADONE TREATMENT	
<u>Methadone cost</u>	
90 patients x 95% x 60% x 9 months x 20 doses x \$5	46,170
90 patients x 95% x 30% x 3 months x 20 doses x \$5	7,695
90 patients x 5% x 50% x 6 months x 20 doses x \$5	1,350
<u>Specialist Clinic</u>	
90 patients x 95% x 60% x 9/12 x 90% x \$1,500	51,941
90 patients x 95% x 30% x 3/12 x 90% x \$1,500	8,657
90 patients x 5% x 50% x 6/12 x 90% x \$1,500	1,519
<u>GP</u>	
90 patients x 95% x 60% x 9/12 x 10% x \$600	2,309
90 patients x 95% x 60% x 9/12 x 10% x \$13.33 x 15	769
90 patients x 95% x 30% x 3/12 x 10% x \$600	385
90 patients x 95% x 30% x 3/12 x 10% x \$13.33 x 15	128
90 patients x 5% x 50% x 6/12 x 10% x \$600	68
90 patients x 5% x 50% x 6/12 x 10% x \$13.33 x 15	22
TOTAL	121,013
GRAND TOTAL	582,263
 PRIVATE COST	
<u>GP</u>	
90 patients x 95% x 60% x 9/12 x 10% x \$17 x 15	981
90 patients x 95% x 30% x 3/12 x 10% x \$17 x 15	164
90 patients x 5% x 50% x 6/12 x 10% x \$17 x 15	29
GRAND TOTAL	1,174

8.1.5 Loss of treatment benefit from Option 1 (see Section 9.11)

100 patients x 10% for 12 months (no treatment from beginning)

100 patients x 90% x 95% x 30% for six months (six months prior to going on methadone after the residential treatment)

100 patients x 90% x 95% x 10% for nine months (no methadone treatment following the residential treatment)

10% of patients given "count down" scripts.

8.2 Option 2: Specialist focused model (therapeutic community)

8.2.1 Philosophy of Option 2

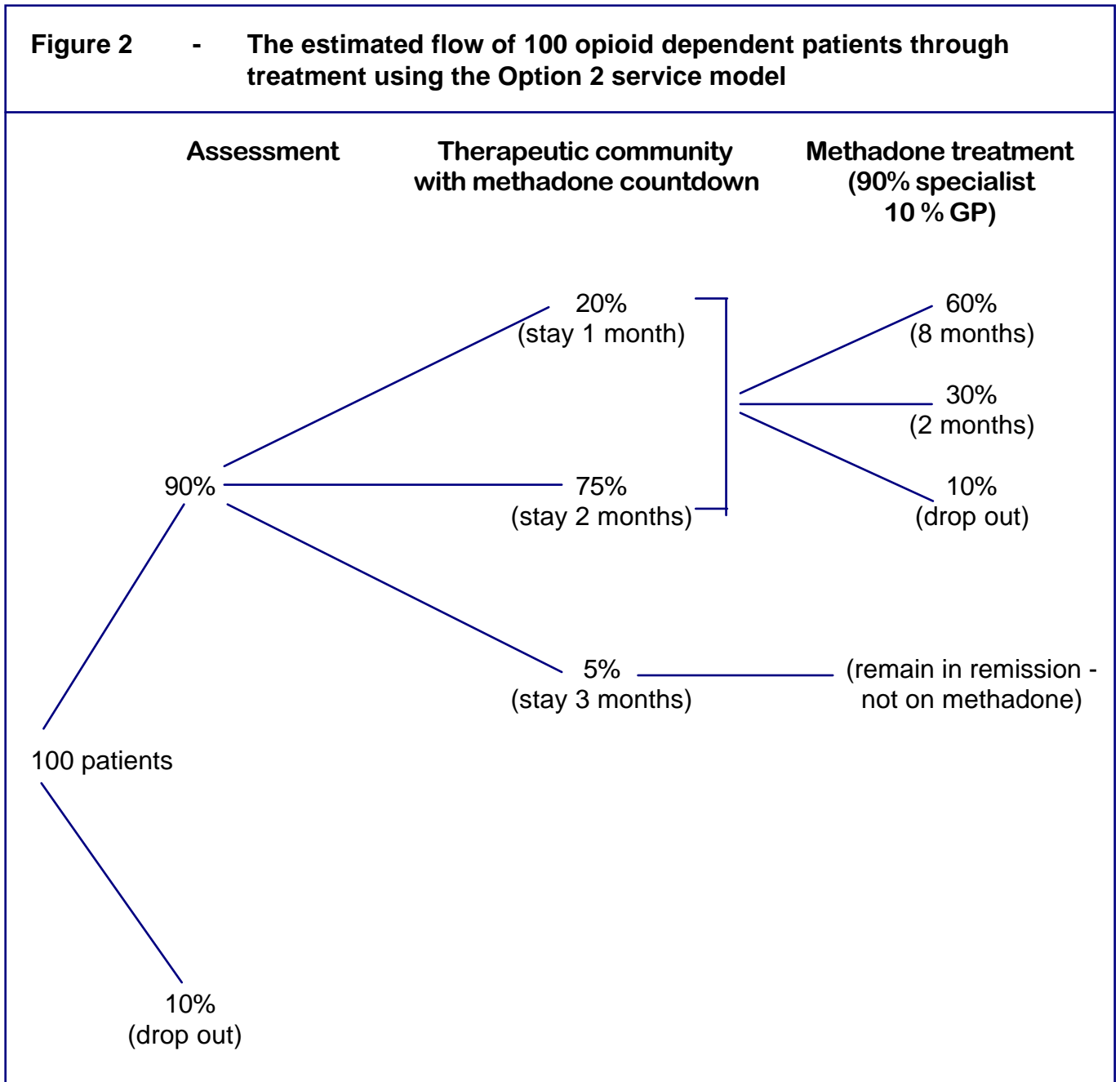
In this option, it is mandatory before gaining access to methadone treatment that a person makes a genuine attempt at treatment in a therapeutic community such as Odyssey House. A methadone count down programme would be available for the first three months of the therapeutic community.

Those who are unsuccessful with this initial treatment would then be eligible to be enrolled in a methadone programme. The specialist clinic, as in Option 1, would have a philosophy of high control which involves being not greatly tolerant of any IV use, other drug use or the occurrence of crime in its treatment population. Patients who do not stabilize within three months are given "count down scripts" on an outpatient basis. Stabilization means abolition of all intravenous drug use, significant reduction in all other drugs including alcohol and no crime. Any transgression of these aspects would be met with a formal warning and further transgression would result in a 30 day count down script.

As in Option 1, only the highly stabilized patients are transferred to GPs for ongoing treatment in this second option.

8.2.2 Treatment outcome from Option 2

Figure 2 shows the estimated overall flow of 100 patients through treatment using this service model.



In this model, it is mandatory for patients to firstly make a genuine effort at treatment in a therapeutic community programme. There are no data which indicate the proportion of patients who would make such an attempt.

For the purposes of this model a number of assumptions and estimates were made extrapolating from what data there are and gaining "ball park" figures from consultants and consumers. Treatment outcome for Option 2 using figures derived in this way, is as follows:

1. 90% of patients would at least attempt a therapeutic community (TC) treatment on the basis of the offer of a three month count down methadone script while resident there, with only 10% electing to return to opioid use in the community untreated;
2. Assumed that all patients would take up the methadone count down offer, which would be organized at 60mg for the first month followed by a 60 day 1mg/day count down;
3. 20% would leave in the first month, while only 5% would stay for the full three months, leaving 75% who would leave in months two and three.

These estimates were initially arbitrarily set at, 33% would leave the TC within the first week, another 33% would leave prematurely before the end of six weeks and 33% would complete the initial three month withdrawal. This initial estimate was based on an initial dose of 30-40mg. However, both consultants and consumers argued that 60mg of methadone is likely to be more effective in retaining people, at least for the first month. 33% completing the first three months was viewed as overly optimistic, so that even under the circumstances that 60mg of methadone would be available to patients for the first month, along with the other comfort benefits of residential treatment, as time goes on and methadone is withdrawn the dropout rate would be expected to rapidly increase. However, it is expected that although the same percentage of people (5%) would complete this first part of therapeutic community treatment, as would complete a short-term residential programme following ten days detoxification, but that the presence of the methadone countdown would retain these patients for three months in a therapeutic community versus six weeks in a short-term therapeutic programme;

4. In contrast to Option 1 it is assumed here that the 5% who remain three months at the therapeutic community would all stay in remission by either remaining in the therapeutic community for up to the remaining nine months or leave before the end of 12 months but remaining in remission (assume on average 50% remain for six months). Some would view this as overly optimistic while others may consider it pessimistic. This assumption was chosen to keep relativities between this Option 2 and Option 1 on the basis of evidence that three months of treatment in a therapeutic community is a minimum beyond which real treatment effects can be expected in this patient population;
5. Of the 95% of patients who do not complete the three months of a therapeutic community, assume that 60% would subsequently be enrolled in methadone treatment for eight months of the year, 30% for two months of the year and 10% would not be enrolled.

The thinking here was virtually the same as in Option 1 except that more retention in residential treatment would be obtained in this scenario, largely brought about by the residential methadone count down. This longer retention in residential treatment would decrease the total length of methadone treatment in 12 months. This is estimated at one month less for each of the methadone treatment alternatives, given that the three month therapeutic community countdown period is only a little over a month longer than the six week short-term residential treatment programme. So compared with Option 1 (60% enrolment for nine months) here is estimated 60% for eight months and compared with Option 1 (30% for three months) here is estimated 30% for two months;

6. 10% of methadone patients are treated on authority by GPs;

7. The number of visits per year to the GP is 18 (see Appendix E for rationale).

8.2.3 Advantages and disadvantages of Option 2

Advantages

The philosophy of Option 2 might appeal to a proportion of both the New Zealand public and alcohol and drug clinicians who view abstinence from opioids as the most important goal of treatment of opioid dependence, although this group may be somewhat sceptical about the use of a three month count down of methadone within a residential facility.

A specialist centred service such as Option 2, as in Option 1, provides better opportunities for research compared with more decentralized options from an organizational point of view.

A specialist centred service such as Option 2, again as in Option 1, allows for better monitoring of quality within the service, compared with more decentralized options.

Disadvantages

The majority of patients are likely to leave the therapeutic community within three months ie prematurely, given the longer time frames expected for this form of treatment. This is likely to therefore be considered a "treatment failure" to some extent as in Option 1. However, because there is estimated to be a reasonably large proportion who stay at least one month the impact of premature leaving is probably not going to be such a negative experience to either residents or staff as in Option 1.

As in Option 1, "count down" prescriptions for people who do not stabilize could be viewed as punitive for the same reasons and with the same consequences.

If the policy of a mandatory attempt at therapeutic community treatment was strictly enforced, there would be an even more acute problem with providing residential beds than in Option 1. A number of new therapeutic facilities would probably need to be built to cope with the anticipated volumes.

The number of methadone treatment places would equally be limited in this model by the size of a specialist clinic, which again, as in Option 1, would run the risk of providing ongoing congregation of numbers of opioid dependent patients.

8.2.4 Cost of Option 2

The following assumptions were made in relation to costs of providing treatment:

1. The cost of therapeutic community treatment is \$600/week.

This is an average cost of long term residential treatment in New Zealand at the current time in units offering treatment of three months or more (range a "a little over \$500" to "a little under \$700"). In contrast to short term residential treatment programmes, where adjustment is needed for the lack of uniform cost across the six weeks of treatment, the cost of running a therapeutic community with resident stays of upwards of two years and more is more evenly spread, particularly if differences within the first three months are being considered. Therefore, for the sake of this model, one month of treatment was \$2,400, two months of treatment was \$4,800 and three months of treatment \$7,200.

2. The cost of methadone treatment in this option would be \$1,500 per patient per year for the 95% of patients at the specialist clinic and \$600 per year for the 5% of patients on authority at GPs (see Appendix E for rationale of these costs);
3. The cost of methadone and methadone dispensing would be \$5 per average 80mg dose for 20 days per month (see Appendix F for rationale of these costs);
4. 10% of methadone patients would be given "count down" scripts each year.

This figure is accounted for in the estimate of loss of benefit from not treating patients (see Section 9.11)

Table 7 The cost of treating 100 new opioid dependent patients with the Option 2 service delivery model

PUBLIC COST	
<u>THERAPEUTIC COMMUNITY TREATMENT</u>	
<u>Methadone countdown</u>	
90 patients x 20% x 1 month x 20 doses x \$5	1,800
90 patients x 75% x 2 months x 20 doses x \$5	13,500
90 patients x 5% x 3 months x 20 doses x \$5	1,350
<u>Residential treatment</u>	
90 patients x 20% x \$2,400	43,200
90 patients x 75% x \$4,800	324,000
90 patients x 5% x \$7,200	32,400
90 patients x 5% x 50% x \$14,400	32,400
TOTAL	448,650
<u>METHADONE TREATMENT</u>	
<u>Methadone cost</u>	
90 patients x 95% x 60% x 8 months x 20 doses x \$5	41,040
90 patients x 95% x 30% x 2 months x 20 doses x \$5	5,130
<u>Specialist Clinic</u>	
90 patients x 95% x 60% x 8/12 x 90% x \$1,500	46,170
90 patients x 95% x 30% x 2/12 x 90% x \$1,500	5,771
<u>GP</u>	
90 patients x 95% x 60% x 8/12 x 10% x \$600	2,052
90 patients x 95% x 60% x 8/12 x 10% x \$13.33 x 15	684
90 patients x 95% x 30% x 2/12 x 10% x \$600	257
90 patients x 95% x 30% x 2/12 x 10% x \$13.33 x 15	85
TOTAL	101,189
GRAND TOTAL	549,839
PRIVATE COST	
<u>GP</u>	
90 patients x 95% x 60% x 8/12 x 10% x \$17 x 15	872
90 patients x 95% x 30% x 2/12 x 10% x \$17 x 15	109
GRAND TOTAL	981

8.2.5 Loss of treatment benefit from Option 2 (see Section 9.11)

100 patients x 10% for 12 months (no treatment from beginning)

100 patients x 90% x 95% x 30% for five months (six months prior to going on methadone after the residential treatment)

100 patients x 90% x 95% x 10% for eight months (no methadone treatment following the residential treatment)

10% of patients given "count down" scripts.

8.3 Option 3: Two-tiered model

8.3.1 Philosophy of Option 3

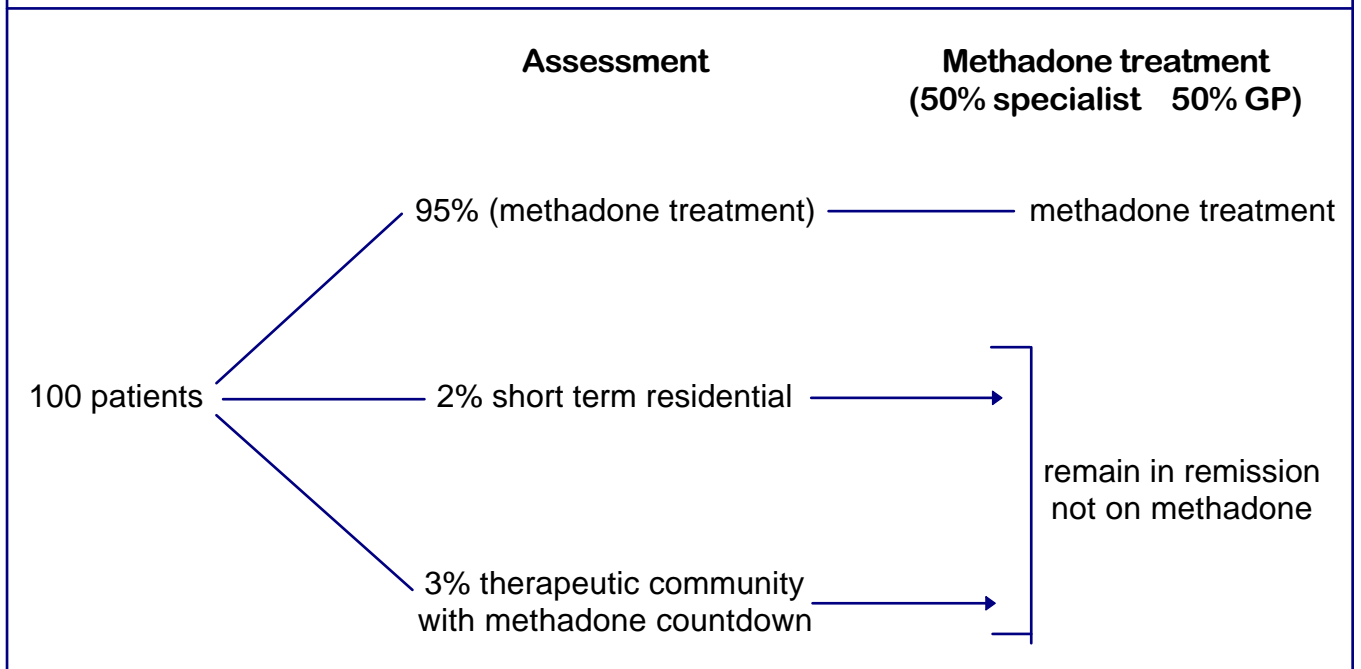
This model is based on that advocated by Edwards (1995). In this model, it is not mandatory for patients to either withdraw from opioids and try a short-term residential programme or attempt engagement in a therapeutic community prior to entry to methadone treatment. However, both of these options are available and encouragingly offered to patients before they begin methadone treatment. The therapeutic emphasis is not on abstinence, but retention on the programme.

There is significant utilization of GPs in this model, but clinical responsibility essentially remains with a central specialist clinic, with GP patients being prescribed methadone on authority from the specialist clinic. The specialist clinic acts as a centralized intake point for assessment and stabilization and once stabilized (across most measures - medical, psychological, dependency activities etc) patients would be transferred to selected GPs for ongoing management. In this model there would be a 50/50 split between GPs and a Specialist Clinic, with the specialist clinic dealing with transitional withdrawing or stabilizing patients (about 50%) and 50% of patients undergoing high intensity supervision because of instability or comorbidity. All patients in primary care would remain the overall clinical responsibility of the specialist clinic on three month renewable treatment authorities.

8.3.2 Treatment outcome from Option 3

Figure 3 shows the estimated overall flow of 100 patients through treatment using this service model.

Figure 3 - The estimated flow of 100 opioid dependent patients through treatment using the Option 3 service model



In this model, detoxification and post-detoxification residential treatment is put to each patient as a voluntary option rather than being a mandatory exercise prior to methadone treatment.

For the purposes of this model a number of assumptions and estimates were made extrapolating from what data there are and gaining "ball park" figures from consultants and consumers. Treatment outcome for Option 2 using figures derived in this way, is as follows:

1. 2% would choose medical detoxification and a six week residential treatment, 3% would choose a methadone count down engagement in a therapeutic community;
2. These 5% of patients would complete each of these options and remain in remission for the remainder of the 12 months, with those choosing treatment in a therapeutic community all remaining for the first three months and then on average 50% remaining for a further six months as in Option 2.

These first two optimistic estimates are made for simplicity and consistency with Options 1 and 2. There will be a small (probably very small) proportion of opioid dependants who, if given the real choice of methadone treatment on an outpatient basis or residential treatment, would choose the outpatient option. It is likely there would be a slight (if any) favouring of a therapeutic community option with methadone countdown in contrast to detoxification and a short-term residential treatment programme. This is the rationale behind 3% for therapeutic community and 2% for detoxification/residential programme.

3. 50% of patients treated with methadone in this model would be treated in the specialist clinic and 50% treated by GPs.
4. The number of visits to the GP per year would be 18 (see Appendix E for rationale);

8.3.3 *Advantages and disadvantages of Option 3*

Advantages

The main advantage of this Option from a service point of view would be to allow some expansion of the overall service to cope with a higher volume of patients. The need for stabilization in the specialist clinic to begin with will continue the risk (more evident in Options 1 and 2) of a bottleneck at the specialist clinic. This expansion would not require significant capital outlay as could be the case in Options 1 and 2 (particularly 2). With expansion of service there is likely to be some reduction in the length of waiting lists, at least in those regions not experiencing serious demand for service provision.

There would be only occasional "count down" scripts as part of this Option, a policy consistent with a more harm reduction approach and likely to facilitate the retention of patients in treatment.

Disadvantages

Although there would be significant numbers of patients being transferred to GP care, because of the overall increase in volumes of patients advocated in this paper, the actual numbers of patients being treated in specialist clinics may not drop at all and may in fact rise. Thus the problems associated with congregation of significant numbers of opioid dependent patients in central locations outlined above in Options 1 and 2 could also be the case in this option.

This option is unlikely to be able to cope with expansion in numbers of opioid dependent patients treated at more than a fairly slow pace. For this reason this option is likely to be viewed as not essentially any different from current service models, which have resulted in widespread waiting lists.

8.3.4 *Cost of Option 3*

The following assumptions were made in relation to costs of providing treatment:

1. Detoxification, short-term residential treatment and therapeutic community treatment costs are the same as in Options 1 and 2.
2. Methadone treatment at the specialist clinic being funded at \$1,850 per patient per year while the other 50% would be treated by GPs at \$750 per patient per year (see Appendix E for rationale);
3. Costs of methadone treatment as in previous options.
4. 1% of methadone patients would be given "count down" scripts each year.

This figure is accounted for in the estimate of loss of benefit from not treating patients (see Section 9.11)

Table 8 The cost of treating 100 new opioid dependent patients with the Option 3 service delivery model

PUBLIC COST		
<u>RESIDENTIAL TREATMENT</u>		
<u>Detoxification</u>		
100 patients x 2% x \$2,500		5,000
<u>Short-term residential treatment</u>		
100 patients x 2% x \$7,500		15,000
<u>Therapeutic community</u>		
100 patients x 3% x \$7,200		21,600
100 patients x 3% x 50% x \$14,400		21,600
<u>Methadone countdown</u>		
100 patients x 3% x 3 months x 20 doses x \$5		900
	TOTAL	64,100
<u>METHADONE TREATMENT</u>		
<u>Methadone cost</u>		
95 patients x 12 months x 20 doses x \$5		114,000
<u>Specialist Clinic</u>		
95 patients x 50% x \$1,850		87,875
<u>GP</u>		
95 patients x 50% x \$750		35,625
95 patients x 50% x \$13.33 x 18		11,397
	TOTAL	248,897
	GRAND TOTAL	312,997
PRIVATE COST		
<u>GP</u>		
95 patients x 50% x \$17 x 18		14,535
	GRAND TOTAL	14,535

8.3.5 Loss of treatment benefit from Option 3 (see Section 9.11)

1% of patients given "count down" scripts.

8.4 Option 4: Integrated Model

8.4.1 Philosophy of Option 4

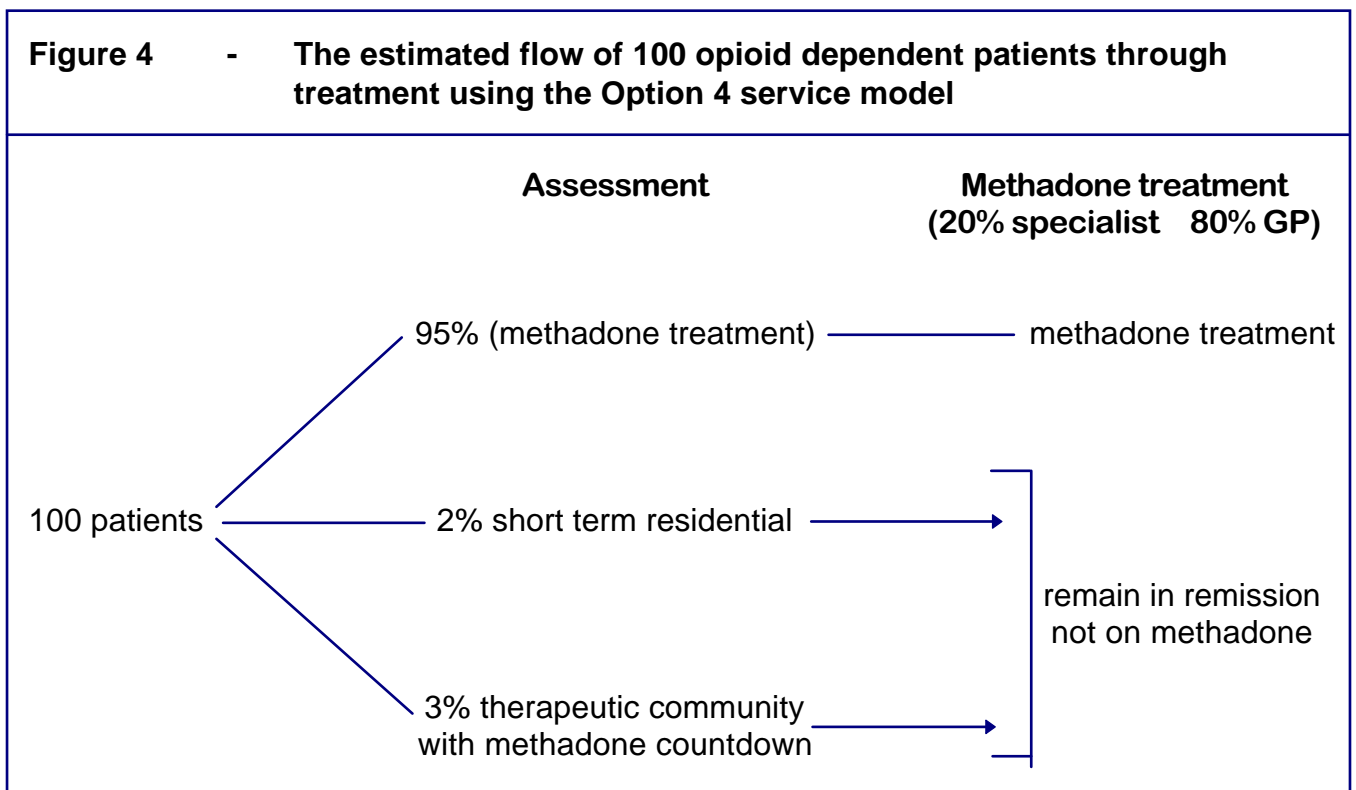
In this model, as in Option 3, it is not mandatory for patients to either withdraw from opioids and try a short-term residential programme or attempt engagement in a therapeutic community prior to entry to methadone treatment. However, both of these treatment strategies are available and encouragingly offered to patients before they begin methadone treatment. The therapeutic emphasis is not on abstinence but retention on the programme and rehabilitation while undergoing methadone maintenance treatment. Withdrawal from methadone is viewed as a final stage of treatment which in some cases may never occur.

There is even greater utilization of GPs in this model compared with the previous options.

In this model, the emphasis is on integration between primary care and specialist clinics. GPs would provide primary care for the majority of patients, with specialist clinics providing support and backup. Initial assessment would be completed by the specialist clinic then the majority of patients (90%) initially transferred to GP care. It is anticipated that about 10% would, on average, ultimately return to the specialist clinic when problems arise. This would mean that about 20% of patients would be at specialist clinics at any time and 80% with GPs. When transferred to GPs, patients become the clinical responsibility of the GP.

8.4.2 Treatment outcome from Option 4

Figure 4 shows the estimated overall flow of 100 patients through treatment using this service model.



For the purposes of this model a number of assumptions and estimates were made extrapolating from what data there are and gaining "ball park" figures from consultants and consumers.

Treatment outcome for Option 4 using figures derived in this way, is as follows:

1. 2% would choose medical detoxification and a six week residential treatment, 3% would choose a methadone count down engagement in a therapeutic community;
2. These 5% of patients would complete each of these options and remain in remission for the remainder of the 12 months, with those choose treatment in a therapeutic community all remaining for the first three months and then on average 50% remaining for a further six months as in Option 2.

These first two estimates are as in Option 3 with the same rationale as above.

3. 20% of patients on methadone treatment would be in a specialist clinic while the other 80% would be treated by GPs;
4. The number of visits to the GP per year is 21 (see Appendix E for rationale);

8.4.3 Advantages and disadvantages of Option 4

Advantages

As in Option 3, the main advantage of this option from a service point of view would be to allow expansion of the overall service to cope with a higher volume of patients. However, in contrast to Option 3, there is not likely to be the same risk of a bottleneck for stabilization in the specialist clinic. Thus, along with expansion, there is also the opportunity with this option to also bring about reduction in the length of waiting lists.

Further, in contrast to Options 1 and 2 (and possibly Option 3) where there may still be a large congregation of people with opioid dependence at the specialist clinic, in this option this problem is not so likely, given that the majority of patients will be treated in GP surgeries.

Also in this option is only the occasional "count down" script procedure, a policy consistent with a more harm reduction approach and likely to facilitate the retention of patients in treatment.

By requiring an initial assessment at a specialist clinic, there is the opportunity of better quality control through standardized registration and assessment procedures than in a despecialized structure.

The key advantage from a patient's point of view is likely to be the opportunity of having their opioid dependence normalized along with any other health concerns and having the opportunity of having them all addressed at the one primary care setting.

Disadvantages

One of the possible disadvantages of this option is the variation in treatment quality that may occur as a result of many more clinicians potentially being involved in treatment (following assessment). This potential disadvantage is avoided to some extent in Option 3 by requiring all patients to be stabilized in the specialist clinic first, but here, quality

assurance will depend on the effectiveness of initial training, liaison between GPs and specialist clinic and ongoing audit.

A more fundamental disadvantage of this model, which is also the case in Option 3 though not nearly as much as here, is the dependence on having a pool of GPs who are willing and able to treat people with opioid dependence. This point is taken up again in the final chapter.

8.4.4 Cost of Option 4

The following assumptions were made in relation to costs of providing treatment:

1. Detoxification, short-term residential treatment and therapeutic community treatment costs are the same as in Options 1 and 2;
2. Methadone treatment at the specialist clinic being funded at \$2,200 per patient per year while treatment by GPs is funded at \$900 per patient per year (see Appendix E for rationale);
3. Costs of methadone treatment as in the previous options ie \$5 per average dose, averaged at 20 doses per month;
4. 1% of methadone patients would be given "count down" scripts each year.

This figure is accounted for in the estimate of loss of benefit from not treating patients (see Section 9.11).

Table 9 The cost of treating 100 new opioid dependent patients with the Option 4 service delivery model

PUBLIC COST		
<u>RESIDENTIAL TREATMENT</u>		
<u>Detoxification</u>		
100 patients x 2% x \$2,500		5,000
<u>Short-term residential treatment</u>		
100 patients x 2% x \$7,500		15,000
<u>Therapeutic community</u>		
100 patients x 3% x \$7,200		21,600
100 patients x 3% x 50% x \$14,400		21,600
<u>Methadone countdown</u>		
100 patients x 3% x 3 months x 20 doses x \$5		900
	TOTAL	64,100
 <u>METHADONE TREATMENT</u>		
<u>Methadone cost</u>		
95 patients x 12 months x 20 doses x \$5		114,000
<u>Specialist Clinic</u>		
95 patients x 20% x \$2,200		41,800
<u>GP</u>		
95 patients x 80% x \$900		68,400
95 patients x 80% x \$13.33 x 21		21,275
	TOTAL	245,475
	GRAND TOTAL	309,575
 PRIVATE COST		
<u>GP</u>		
95 patients x 80% x \$17 x 21		27,132
	GRAND TOTAL	27,132

8.4.5 Loss of treatment benefit from Option 4 (see Section 9.11)
 1% of patients given "count down" scripts per year.

8.5 Option 5: Despecialist model

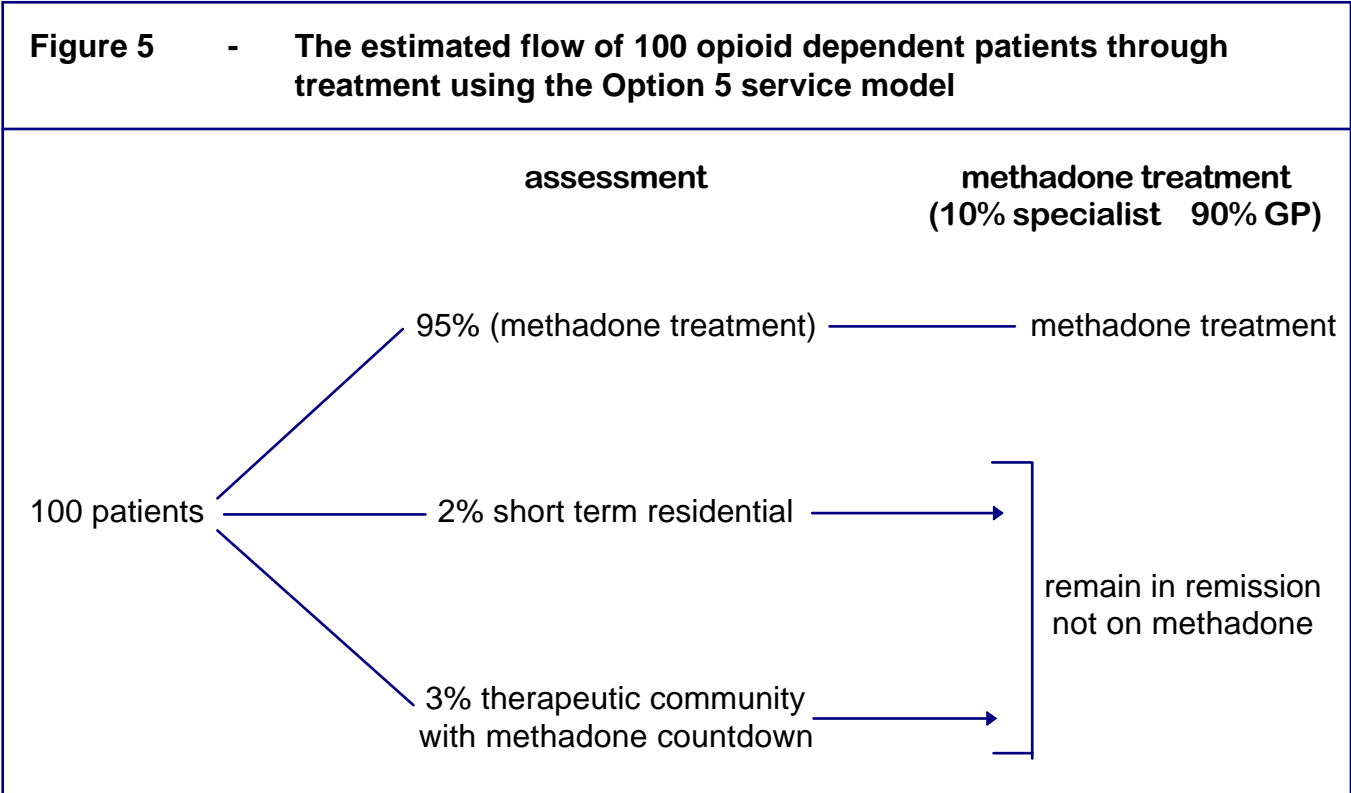
8.5.1 Philosophy of Option 5

In this model, GPs would gain authority to treat anybody they choose to with opioid substitution therapy, including methadone. There would be no central registration of patients, as in the previous four options and patients would not mandatorily need assessment at a specialist clinic before commencement on methadone treatment. There would be a specialist A&D clinic which would be expected to treat up to 10% of opioid dependent patients, but 90% would be anticipated to be treated by GPs.

Although this model may be viewed as a recipe for chaos, it was described by a number of both professionals and consumers consulted as not nearly as bad as the current situation is, with an uncontrollable epidemic occurring while an effective treatment is known but not available. Besides, as described in the previous Chapter, this is essentially the model currently in place in Victoria, Australia with perhaps surprisingly few negative outcomes reported.

8.5.2 Treatment outcome from Option 5

Figure 5 shows the estimated overall flow of 100 patients through treatment using this service model.



For the purposes of this model a number of assumptions and estimates were made extrapolating from what data there is and gaining "ball park" figures from consultants and consumers.

Treatment outcome for Option 5 using figures derived in this way, is as follows:

1. 2% would choose medical detoxification and a six week residential treatment, 3% would choose a methadone count down engagement in a therapeutic community;

It is quite possible that less than 5% of patients would choose these alternative strategies in this model, given that initiating these can require a considerable amount of organization - a challenge to specialist clinics (as in Option 3), let alone busy GP surgeries. For the sake of simplicity, however, this has not been factored into the model for cost analysis.

2. These 5% of patients would complete each of these options and remain in remission for the remainder of the 12 months. These first two estimates are as in Options 3 and 4 with the same rationale;
3. 90% of patients on methadone treatment would be treated by GPs, while only 10% in a specialist clinic;
4. The number of visits to the GP per year is 21 (see Appendix E for rationale).

8.5.3 Advantages and disadvantages of Option 5

Advantages

These are similar to Option 4 except that the advantages of having initial registration and assessment at a specialist clinic are not present. Firstly, as is also the case for Option 3, the main advantage of this option would be to allow expansion of the overall service to cope with a higher volume of patients. However, in contrast to Option 3, but like Option 4, there is not likely to be the same risk of a bottleneck for stabilization in the specialist clinic. Thus, along with expansion, there is also the opportunity with this option to bring about reduction in the length of waiting lists.

Further, in contrast to Options 1 and 2 (and possibly Option 3), where there may still be a large congregation of people with opioid dependence at the specialist clinic, in this option this is not so likely, given that the majority of patients will be treated in GP surgeries.

Also in this option is only the occasional "count down" script procedure, a policy consistent with a more harm reduction approach and likely to facilitate the retention of patients in treatment.

As in Option 4, a key advantage from a patient's point of view, is likely to be the opportunity of having their opioid dependence normalized along with any other health concerns and having the opportunity of having them all addressed at the one primary care setting.

Disadvantages

One of the possible disadvantages of this Option, which is even more of an issue than in Option 4, is the variation in treatment quality that is likely to occur as a result of many more clinicians potentially being involved in treatment. There is no initial registration of patients let alone assessment at a specialist clinic, and although there would still be a National Methadone Treatment Protocol, there is no mandatory need for patients to be seen by the specialist clinic at any time during treatment.

A more fundamental disadvantage of this model, as in Option 4, is the dependence on having a pool of GPs who are willing and able to treat people with opioid dependence. This point is taken up again in the final chapter.

8.5.4 Cost of Option 5

The following assumptions were made in relation to costs of providing treatment:

1. Detoxification, short-term residential treatment and therapeutic community treatment costs are the same as in Options 1 and 2;
2. Methadone treatment at the specialist clinic is funded at \$1,850 per patient per year while treatment by GPs is funded at \$750 per patient per year (see Appendix E for rationale);
3. The cost of methadone and methadone dispensing would be, as in all previous options, \$5 per average 80mg dose for 20 days per month (see Appendix F for rationale of these costs);
4. 5% of methadone patients would be given "count down" scripts each year.

This figure is accounted for in the estimate of loss of benefit from not treating patients (see Section 9.11)

Table 10 The cost of treating 100 new opioid dependent patients with the Option 5 service delivery model

PUBLIC COST		
<u>RESIDENTIAL TREATMENT</u>		
<u>Detoxification</u>		
100 patients x 2% x \$2,500		5,000
<u>Short-term residential treatment</u>		
100 patients x 2% x \$7,500		15,000
<u>Therapeutic community</u>		
100 patients x 3% x \$7,200		21,600
100 patients x 3% x 50% x \$14,400		21,600
<u>Methadone countdown</u>		
100 patients x 3% x 3 months x 20 doses x \$5		900
	TOTAL	64,100
 <u>METHADONE TREATMENT</u>		
<u>Methadone cost</u>		
95 patients x 12 months x 20 doses x \$5		114,000
<u>Specialist Clinic</u>		
95 patients x 10% x \$1,850		17,575
<u>GP</u>		
95 patients x 90% x \$750		64,125
95 patients x 90% x \$13.33 x 21		23,934
	TOTAL	219,634
	GRAND TOTAL	283,734
 PRIVATE COST		
<u>GP</u>		
95 patients x 90% x \$17 x 21		30,524
	GRAND TOTAL	30,524

8.5.5 *Loss of treatment benefit from Option 5 (see Section 9.11)*
5% of patients given "count down" scripts per year.

8.6 Sensitivity analyses

The cost analyses of the five options being considered are dependent on a number of parameter estimates based on assumptions with respect to both patient numbers and costings. In most options, percentages of individuals who choose one form of treatment or lack of treatment may have a significant bearing on final costings. Sensitivity analyses

can be utilised to add confidence to estimates where parameter values over which there is some doubt are varied within a reasonable range.

Sensitivity analyses on the costings of each of the five options have been carried out (see Appendix G). Specifically, the parameters which have been varied have been the percentages of patients choosing various high cost treatment options. The rationale for only choosing parameters affecting high cost options is that there is greater impact of variations in such parameters on the overall cost estimate of the particular option.

Sensitivity analyses on actual cost estimates themselves have not been carried out. Most cost estimates have been justified by reference to previous studies or from actual costing information and therefore there is greater confidence with respect to these estimates (at least within a relatively narrow range).

The following gives a brief summary of each of the sensitivity analyses carried out. It is noted that only one parameter is varied at a time so that the effect on overall costings can be isolated to changes in that single parameter, *ceteris parabus*. The section is then completed by a brief discussion on the range costings for each option, and the variation (if any) in option rankings by overall costs.

1. Option 1

Four sensitivity analyses were carried out on Option 1. In the first two sensitivity analyses the percentage of patients completing withdrawal without detoxification was varied from 20% to a high estimate of 40% and a low estimate of 10%.

In the third and fourth sensitivity analyses the percentage of patients remaining in the residential treatment programme was varied from the initial mix (80%, 15%, 5%) to a high estimate of 60%, 25%, 15% and a low estimate of 90%, 5%, 0%.

The full range of final costs associated with the sensitivity analyses described above was from a low cost of \$527,187 to a high cost of \$650,937.

2. Option 2

Two sensitivity analyses were carried out on Option 2. The percentage of patients who stay one, two and three months was varied from the initial mix (20%, 75%, 5%) to a high estimate of 10%, 80%, 0% and a low estimate of 40%, 60%, 0%.

The full range of final costs associated with the sensitivity analyses described above was from a low cost of \$464,420 to a high cost of \$615,620.

3. Option 3

Two sensitivity analyses were carried out on Option 3. The percentage of patients who choose medical detoxification and a six week residential treatment programme was varied from the original 2% to a high of 4% and a low of 0%. The original 3% choosing the methadone count down engagement in a therapeutic community was varied to a high of 6% and a low of 0%. As a result, the number of methadone patients changed from the original 95 to a high of 100 and a low of 90.

The full range of final costs associated with the sensitivity analyses described above was from a low cost of \$277,297 to a high cost of \$377,767.

4. Option 4

Two sensitivity analyses were carried out on Option 4 in the same manner as in Option 3. The percentage of patients who choose medical detoxification and a six week residential treatment programme was varied from the original 2% to a high of 4% and a low of 0%. The original 3% choosing the methadone count down engagement in a therapeutic community was varied to a high of 6% and a low of 0%. As a result, the number of methadone patients changed from the original 95 to a high of 100 and a low of 90.

The full range of final costs associated with these two sensitivity analyses was from a low cost of \$286,954 to a high cost of \$386,459.

5. Option 5

Two sensitivity analyses were carried out on Option 5 in the same manner as in Options 3 and 4. The percentage of patients who choose medical detoxification and a six week residential treatment programme was varied from the original 2% to a high of 4% and a low of 0%. The original 3% choosing the methadone count down engagement in a therapeutic community was varied to a high of 6% and a low of 0%. As a result, the number of methadone patients changed from the original 95 to a high of 100 and a low of 90.

The full range of final costs associated with the sensitivity analyses described above was from a low cost of \$263,324 to a high cost of \$365,191.

While each of the above sensitivity analyses do give a range of cost estimates (\$10,000-\$15,000 per 100 patients), it is interesting to note that the rankings of options by cost alone does not alter (ie under each scenario the order from lowest cost to highest cost options remains unchanged). Option 1 remains the most expensive under a high or low cost scenario and Option 5 remains the cheapest.

8.7 Summary of overall costs of the five options

Table 11 below summarizes the overall costs for each of the five options outlined above.

Table 11 Estimated costs of treating 100 opioid dependent patients for one year, for each of the five options for service delivery, including the private cost paid to GPs by patients.					
<u>Option</u>	<u>Residential</u>	<u>Methadone</u>	<u>Total Public</u>	<u>GP Charge</u>	<u>Total</u>
1	461,250	121,013	582,263	1,174	583,437
2	448,650	101,189	549,839	981	550,820
3	64,100	248,897	312,997	14,535	327,532
4	64,100	245,475	309,575	27,132	336,707
5	64,100	219,634	283,734	30,524	314,524

One of the assumptions here is that the GP charge would be fully paid by patients themselves and therefore not contribute to the public cost of treatment. However, for patients with a Community Service Card and those eligible for a disability allowance the GP charge could in large part become additional public cost.

8.8 Cost of the average current opioid service in New Zealand

The current situation in New Zealand has already been described above as quite variable, ranging within Options 1, 2, and 3. The "average" service is one somewhere between a combination of Option 1 and 2 and Option 3. The cost of this current "average" New Zealand service can be calculated from the estimates above as follows:

Cost = mean (mean (Option 1 + Option 2)+ Option 3))

The public cost of the average opioid service in New Zealand at the current time using this estimate is \$435,362 which rounds off at \$4,400 per patient per year.

It is important to note that the figures shown here are gross estimates and derived for the purpose of comparing the five options, rather than necessarily being absolute estimates of costs.

9. COST-BENEFIT ANALYSIS OF OPTIONS

9.1 Introduction

In any economic evaluation it is necessary to consider both costs and benefits of treatment choices under consideration. In particular it is relevant that a suggested change in current policy is supported by positive net benefits (ie benefits greater than costs of changing from the status quo). If a number of policy options are being appraised, then clearly that option which has the most positive outcome in net benefits will be the preferred option. However, it is noted here that sometimes the preferred option is not clear cut, but dependent on various parameters in the model. Where some of those parameters have been estimated by either utilising available data or by relying on overseas studies, it is critical to incorporate sensitivity analyses by varying such parameters over a range covering the degree of uncertainty. If the preferred option varies according to changes in parameter values, further study may be necessary to help tie down values more accurately and over a narrower range.

In studying the benefits of treatment options for opioid dependants there are a number of benefits both to the individuals receiving treatment (and their families) and to society as a whole. We will categorise the former as private benefits and the latter as social benefits. Generally, benefits are defined as net benefits, since reduced direct costs often incur some increased costs elsewhere (eg reduced mortality from drug addiction creates increased mortality via other causes). The following is a list of some of the possible benefits under each category. While this list is not exhaustive, it does indicate the range of benefits which are likely to be derived from opioid dependence treatment programmes.

9.1.1 *Private benefits*

1. Improved health status of individuals through reduced risk and incidence of accident and illness associated with intravenous opioid use (eg crime, prostitution, drug injecting, driving under the influence of drugs and alcohol etc). Reduced health related charges (eg GP, prescriptions etc).
2. Increased employment opportunity and/or productivity in unpaid economic activity (eg vocational training, housework, childcare, community work etc).
3. Increased freedom and cost savings attributed to reduced risk of involvement with judicial system (eg imprisonment or penalties and court costs etc).
4. Improved relationships and reduced risk of dysfunctional families (eg reduced private costs associated with domestic violence, poor role modelling, cyclic behaviour etc).
5. Increased life expectancy.
6. Reduced direct costs in obtaining illegal drugs.
7. Increased financial access to (and utility from) other goods and services.

9.1.2 *Social benefits*

1. Reduced direct social costs associated with victims of crime committed by opioid dependents (eg reduced violence, theft, anxiety, financial and personal loss through lost possessions, insurance premiums etc).
2. Reduced indirect social expenditure as a result of crime committed by opioid dependents (eg imprisonment, judiciary , police etc).
3. Reduced direct social welfare costs of opioid dependents (eg unemployment benefits, sickness benefits, DPB, family counselling, fostering etc).
4. Reduced direct costs to the health system (eg hospitals, GP and prescription subsidies, contagious diseases such as Hepatitis B and C and HIV/AIDS, overdoses, attempted suicides etc).
5. Reduced costs associated with accidents (eg motor vehicle damage, work related, domestic, ACC etc).
6. Increased direct net benefits to society through increased employment (eg taxation, productivity etc).
7. Increased direct net benefits to society through increased consumption and demand for other goods and services (eg GST, demand led growth etc).
8. Increased direct net benefits to society from reduced underground economy and "black markets" (eg GST, measurable GDP, taxation etc).
9. Increased direct net benefits to society from life-years saved (eg improved mortality and morbidity, increased labour resources etc).
10. Reduced indirect social costs to voluntary agencies, community organisations (eg donations, government grants and subsidies etc).

While the private and social benefits listed above are considerable, exact benefits vary from individual to individual. Ideally, (if we assume treatment costs are equal), those individuals who provide the greatest total benefits should be treated first. If it is assumed, for instance, that the cost of crime is the most significant factor, then clearly those individuals who are the most likely to offend without treatment should be treated first. It is plausible that it is precisely these individuals who are the most likely to not access treatment currently and if accessed are the most likely to drop out (or be dropped out) of treatment.

From a macroeconomic perspective, an optimum intervention rate occurs where the marginal social benefit just equates with the marginal social cost of treatment. This means that the additional benefit to society of treating one more person is just offset by the additional cost to society of treating that extra person. If we assume that benefits fall as we treat less serious cases, then even if marginal costs are constant, there may come a time when a particular individual is not worth treating, since the benefits with respect to that individual are low. This assumes that those who create the greatest aggregate benefit are in fact treated first. It is critical, therefore, that individual risk factors are carefully monitored, individuals screened, and the most at risk given priority for treatment. It may also be optimum to increase resources for high risk (high social costs if untreated)

individuals. This issue is addressed in the final chapter in relation to the potential economic importance of providing appropriate treatment for opioid dependent patients in the Justice system.

9.2 New Zealand cost/benefit data

There are no detailed New Zealand cost/benefit data for opioid dependence. Edwards (1995) estimated the average cost of service provision for a specialist opioid clinic and a less intensive general practice programme. She found that the average cost per client per year was between \$3,800 and \$4,100 for specialist clinic treatment and about \$3,400 for GP treatment, suggesting that for stable patients (as considered) there is a cost saving of at least \$400 per year per opioid dependent patient.

9.3 Cost of crime committed by people with opioid dependence

If one considers that the average cost of one prison bed for one year in New Zealand at the current time is about \$50,000 (including overheads, capital replacement etc) (personal communication), then it does not need huge numbers of opioid dependants imprisoned because of their disorder for costs to be considerable. A most recent study found that over 20% of inmates had a lifetime diagnosis of opioid dependence [Brinded et al 1995] (see Table 5, Section 6.5.4).

An estimate of the degree of crime among untreated opioid dependants in New Zealand can be made using some recent data on the yield from crime committed [Adamson 1996]. The average amount yielded by untreated opioid dependants on a methadone waiting list was \$1,079 per week and virtually all patients were involved in some criminal activity. The estimate of the number of opioid dependants in New Zealand involved in significant criminal activity is taken as the third of opioid dependants not currently in treatment (n=2,500), who would want and be suitable for treatment if it were available, described in Section (ie n=2,000 - 6,367). The yield from crime by untreated opioid dependants in New Zealand at the current time, using these estimates, is in the range of a little over \$2million to a little under \$7million per week.

What the actual cost to society might be in relation to the proceeds from crime as estimated is another, potentially complex issue. Adamson (1996) calculated the retail cost of crime committed and found this to be \$2,477 per week per patient; for example a \$600 TV may have been stolen in a house burglary only to be sold for \$300 by the opioid dependant. This yields \$300 cash for the criminal (the figure used in calculating \$1,079 per week) but the insurance company may have paid the burglary victim \$600+ for a replacement TV. This might suggest that there is more than a dollar for dollar cost to the taxpayer from crime committed by opioid dependants, ie that the cost could be as high as \$2,000+ per week per untreated opioid dependant for just the costs of crime. However, there are economic benefits to people gaining a \$600 TV for only \$300 and these benefits should be incorporated into estimates of the total net cost to society from crime by opioid dependants. Although precise numbers are not available at this time, \$1,000 per week per untreated opioid dependant would appear to be a not unreasonable estimate of cost to society from the crime resulting from opioid dependence.

9.4 Benefit of treatment from reduced criminal costs

If there is a \$1,000 per week cost for every untreated opioid dependent patient, for this to appear as a benefit from treatment, it would need to be demonstrated that treatment completely abolishes the cost of crime. This is known from clinical experience to be not strictly the case, although systematic studies of the percentage reduction in crime by patients adequately stabilized on methadone are lacking. Clinical experience is that there is wide variation amongst individuals, which is contributed to in large measure by the variation in the presence of comorbid antisocial personality disorder (ASPD), in which case antisocial and criminal behaviour generally precedes intravenous drug use and even with stabilization on methadone continues to occur albeit at a lower rate. Clinical samples of opioid dependants will generally have a rate of comorbid ASPD of at least 60%. Overall, the expected reduction in crime in an average methadone clinic from, clinical experience, is at minimum 60% (particularly those with ASPD) and for many is as high as 90% and more. A 71% decline in crime days within the first four months of methadone treatment has been previously reported [Ball & Ross 1991] and, as might be expected, those in treatment the longest had the lowest rates of crime. Another study [Simpson et al 1995] showed that in a sample of 557 patients on methadone for three months or longer, the average number of days involved in criminal activity in the previous month dropped from 10.8 before treatment to 1.4 while in treatment.

These data suggest that a 70% reduction in crime is not an unreasonable estimate to make for those in methadone treatment. This would translate into \$700 benefit from treatment per patient per week.

9.5 Cost of hepatitis C (HCV) infection

The costs incurred by the presence of Hepatitis C infection in opioid dependants is considerable. An Australian estimate [Crofts et al 1996] is of a life time health cost of A\$14.32 million for each cohort of 1,000 patients who have chronic HCV infection.

Identification of the Hepatitis C virus did not occur until 1988 and testing has only been available since 1989. Testing of blood supplies in New Zealand for Hepatitis C did not commence until July 1992. Although the rate of HCV infection in the general population is less than 1%, the rate amongst haemophiliacs is as high as 72%, probably as a result of contaminated blood products. The rate of HCV in opioid dependants has been found to be as high as 84% [Hannifin 1995].

Between 50% and 85% of those infected go on to a chronic stage, of those about 20% will progress to liver cirrhosis and a small proportion will develop hepatocellular carcinoma. The only treatment available for HCV infection is interferon. An average dose of three million units of interferon administered subcutaneously, three times a week for six months induces stable remission in about 20-30% of patients and higher doses over longer periods may be more effective especially if early administration of treatment is undertaken [Hannifin 1995].

Currently, the majority of patients accessing gastroenterology clinics for assessment and treatment of chronic HCV infection are intravenous drug users (generally opioids). Treatment tends to be withheld for intravenous drug users not in active treatment for their drug problem.

9.6 Cost of HIV infection

An Australian Governmental working group on the future directions for alcohol and other drug treatment in Australia [Ali et al 1992] concluded that "methadone maintenance programmes, needle/syringe supply and exchange programs, education programmes on safer sex and needle practices, and non-custodial sentencing and court diversion programmes for minor drug-related offences be continued and expanded as they have a significant role in containing the spread of communicable diseases, especially HIV."

These issues were similarly addressed by a New Zealand working group [NACCHDSS 1994] and one of the recommendations in terms of the methadone services were that "Regional Health Authorities provide additional funding to methadone programmes in order to reduce waiting lists, improve service quality and thereby ensure that blood-borne virus transmission is further reduced".

There is a higher base rate of HIV in Australia compared with New Zealand. However, even in Australia there is a relatively low rate of HIV infection amongst opioid dependants in treatment (such as methadone programmes) which have been shown to reduce HIV risk behaviours significantly [Darke et al 1990].

However, there is no room for complacency, given other countries' experience with the costs of HIV/AIDS. Hubbard et al (1989), in discussion of drug abuse in the United States, concluded that the relatively modest investment of \$5,000 (for a year of outpatient methadone treatment in the US) as well as \$15-20,000 a year for residents of therapeutic communities will produce benefits that far outweigh the costs of leaving these people untreated, given the \$80,000 in medical costs for each AIDS patient.

9.7 Estimated costs of drug problems in the United States

The Institute of Medicine's (IOM) report [Gerstein & Harwood 1990] in its estimate of the costs of drug problems, considers four main areas of cost: drug-related crime (including victim losses), crime control resources, employee productivity losses and health costs.

The amount of drug-related crime was estimated at nine million crimes in the United States in 1988, representing greater than 25% of all property crime and about 15% of violent crime. This is crime directly related to drugs and the report asserts that without the criminals' involvement with drugs, these crimes would not have been committed. Victim losses from these nine million drug-related crimes was estimated at \$1.7 billion, with the largest proportions coming from lost work time (\$1.5 billion), property damage (\$150 million) and medical care costs (\$50 million). \$2.5 billion was spent in the United States on Criminal Justice activities specifically directed against the drug trade and drug traffickers in 1988.

It has been estimated [Harwood et al 1988] that the criminal costs of 100 active heroin addicts in the United States is \$960,000. Further, an estimate of costs to "maintain" one opioid addict in a variety of settings has been made by the New York State Committee of Methadone Programme Administrators (1991). They estimated \$43,000 untreated "on the street", \$34,000 in prison, \$11,000 in residential drug free treatment and \$2,400 in methadone treatment.

One of the most significant factors economically is employee productivity loss. The IOM report states: "The largest economic impact of drug abusers derives from their

abandoning the legitimate economy for the underground one and their potentially impaired performance in legitimate jobs". An estimate of the loss of legitimate potential productivity in 1983 was \$33.3 billion.

From a macro-economic point of view, health costs constitute only a small proportion of the total economic impact of drug abuse on society and include both the cost of treatment for drug abuse, and the cost of health treatment for the complications of untreated drug abuse. Of greatest concern in this area are the potential future costs of HIV/AIDS. 25% of all AIDS cases in the United States have a history of intravenous drug use [Gerstein & Harwood 1990].

9.8 Cost-benefit ratio of treatment for opioid dependence

It is clear that the utilization of the criminal justice system, hospitals and other governmental health and welfare services are all used to a greater extent by illicit drug users not in treatment, compared with those in treatment [McGlothlin & Anglin 1981]. If treatment services such as methadone programmes were closed, a substantial increase in Criminal Justice costs such as incarceration and legal supervision, as well as other Government services would result [Anglin et al 1989].

In their review, Hubbard et al (1989) assert that a number of analyses demonstrate the substantial crime-related and other costs to society of drug abusers prior to entering treatment and the substantial reductions in these costs both during and following treatment. They point out that the investment is sizeable and continues for at least one year after leaving treatment and potentially longer. They conclude, "in that substantial benefits are to be gained during the treatment period in terms of reductions in criminal activity and associated costs to the nation, long-term drug abuse treatment appears to be an effective mechanism to limit the burden of drug abusers on the nation".

Scanlon (1976) has estimated cost-benefit ratios for a variety of treatment models in the treatment of opioid dependence. The average cost of treatment per patient per year was \$2,559, while the average amount of money saved per patient per treatment year was \$42,521. A number of assumptions were made in terms of the costs of drug use and measuring benefits of opioid-free days and legitimate employment. The overall cost-benefit ratio for all treatment models was 1:17.

In most comprehensive examination of the economic benefits and costs of drug treatment (not exclusively for opioid dependants), TOPS [Harwood et al 1988] conclude that there is a cost benefit ratio to law abiding citizens (taxpayers) of 1:4.

The range of cost-benefit ratios cited in the literature range from 1:4 to 1:17 and there are no New Zealand data in this area. The former is not specifically related to opioid dependants and yet is highly authoritative; the latter specifically estimated the cost-benefit ratio for treating opioid dependence. We have chosen a conservative cost-benefit ratio of 1:5 of treating opioid dependants for the sake of making an estimate of the loss of benefit if patients remain untreated or are lost from treatment, when comparing the five options previously described.

9.9 Cost-benefit analysis of the five proposed options

Direct costs for each of the five options have been estimated and summarised in Table 11. Many of the indirect costs have been ignored due to a lack of reliable data, especially with respect to private costs. Clearly there is scope for a far more indepth economic evaluation incorporating estimates of all relevant costs.

Sensitivity analyses on critical parameters on the cost-side of the analysis have been carried out, with summaries in Appendix G. None of the sensitivity analyses carried out changed the rankings for overall costs between options.

It has been very difficult to make accurate estimates on the benefit-side of the analysis given the dearth of available data in New Zealand. A crude attempt at this is made below (Sections 9.10 and 9.11) to give an indication on the relative benefit loss for each of the five options as well as the extent of benefits which might be available by increasing current resources on treatment programmes in general.

The complexity of benefit can be appreciated by examining the options further. Options 1 and 2 place a higher reliance on residential treatment as opposed to the other three options. An obvious increased benefit of greater use of residential care is the reduced cost of criminal activity while opioid dependants are in residence. Similarly, residential treatment is likely to provide an improved environment for maximising individual health status. On the negative side however, increased use of residential treatment may reduce benefits associated with employment and productivity, family relationships and access to other goods and services (eg leisure activities). On the benefit side it is relevant, as always, whether the individual utilizing the residential care is associated with high or low social costs to the community. If only individuals who are a low risk to society (in terms of crime etc) choose the residential option, then the increased expense may not be worthwhile. Options 3, 4 and 5 place a higher emphasis (and greater resource input) on methadone treatment. Increased availability of methadone treatment as a substitute to drug use implies increased benefits with respect to reduced crime, needed to finance drug addiction. Since crime is reduced, individuals will also have a greater capacity, in terms of available time, for productivity in either the paid or unpaid workforce. The use of methadone, as opposed to other drug use, will have benefits with respect to individual health status through reducing risks of accident and illness.

Comparing within the option subgroups, the major difference between Options 1 and 2 is the type of residential treatment used. In Option 1 the setting is more institutional (eg Queen Mary Centre) and incorporates inpatient detoxification. In Option 2 the setting is more community based (eg Odyssey House). Although the Option 1 setting is more expensive per bed day, the length of stay is shorter, on average. An important question is whether the benefits through reduced crime and improved health are as great in the community setting as in the institutional setting. If the benefits are equal then the longer period of stay per dollar in the community would suggest better value for money. It is noted that the community-based setting does include a number of other benefits to both the individual and society. These include greater access to families and employment.

The major difference between Options 3, 4 and 5 are in the proportions of the use of specialist clinics and GPs. Option 3 relies more heavily on the use of the clinic and less heavily on GPs. Which of these is preferable in terms of the benefit-side of the analysis is largely dependent on the quality of service from GPs involved. There is likely to be a greater variation of service where more GPs are involved, although training and support may help reduce such variation. It is likely that the relationship between the health professional and the patient will be critical in maximizing benefits from treatment. Further,

there may be additional costs and benefits associated with the interaction between opioid dependants in a specialist clinical setting and with the general public in GP waiting rooms. It is not absolutely clear where the greater net benefits lie, although normalization of methadone treatment through better integration in primary care is viewed as advantageous. If there are opportunity costs to treating individuals in GP settings these may have to be compensated for through higher prices, which provide an incentive to GPs to be involved in treatment.

In comparing various options through cost-benefit analyses it is often not necessary to measure all costs and benefits exactly. In particular, in appraising one option with another, it is only necessary to measure the costs and benefits of any differences between the two options. This is the approach taken below in making estimates of benefits which can then be used to compare each of the five options with the others. Measuring benefits is not an easy task and often open to variances in opinion and professional judgement. However, there are techniques available for estimating benefits and these could be applied in more thorough cost-benefit analyses in the future.

9.10 Estimated economic benefit from treatment of people with opioid dependence

To derive the economic benefit from treatment of people with opioid dependence in New Zealand would involve a complex analysis of factors as outlined in the previous section. However, we provide a simplified estimate here using two sources in order to attempt a relative benefit analysis between the five options below. Firstly, from the discussion above (9.4) related to the costs of crime by untreated opioid dependants, a figure of \$700 benefit per treated patient per week was arrived at. This does not take into account any of the other health, or social benefits (current or future) and therefore could be considered a bare minimum benefit which can be expected from treating patients with opioid dependence.

Secondly, if a cost-benefit ratio of 1:5 is accepted (see 9.8) and the cost of opioid dependence treatment is taken as around \$4,000 per patient per year [Edwards 1995], then the benefit from treatment in dollar terms is \$385 per patient per week.

Combining these two estimates yields a conservative treatment benefit to the New Zealand taxpayer of between \$385 and \$700 per opioid dependent patient per week.

9.11 Loss of benefit from the five treatment options

The loss of treatment benefit from the five service delivery options outlined in Chapter 8 came about from three sources. First is the drop-out rate from accessing treatment at the outset (10% in both Options 1 and 2). Second is the drop-out or delay in methadone treatment amongst patients who attempt to access residential treatment (as in Options 1 and 2). Third is the rate of "count down" scripts issued within the five options determined by the degree of tolerance of continuing drug use by patients on the programme. This has been arbitrarily put at 10% for Options 1 and 2, which were models constructed to be characterised by a less tolerant approach, and 1% for Options 3 and 4 which, while not tolerating all ongoing extra drug use, would be ten times less likely to discharge patients because of ongoing drug use. Additionally there is a backup specialist clinic for GPs who are encountering difficult patients. In Option 5, while there remains a more tolerant approach to unstable patients, there is not the same backup from a specialist clinic for GPs in these cases. It is thus estimated that more patients would be "dropped out" of

treatment because of difficulties arising. This has been put at 5% (again arbitrarily) for this present analysis.

The obvious limitation to these assumptions is the lack of supporting empirical data. The purpose of this analysis is not to gain an absolute measure of loss of benefit from treatment according to the five proposed options, but to gain a relative measure of loss of benefit from not treating patients and is introduced to the models at levels which have face validity at least. For example it is not unreasonable to consider a 10% drop out rate from a service model that does not tolerate continuing drug use by patients, such as in Options 1 and 2 and that this drop out would be much less ie 1% if a more pragmatic approach is taken, as in Options 3, 4 and 5.

The losses of benefit from no treatment in the five options are described below and the cost shown in Table 13, along with the public cost estimated for each options from Table 11 (Section 8.7).

Assumptions for estimating these costs (ie loss of benefit) are as follows:

1. It is assumed that the "count down" script rate is evenly distributed across the total methadone treatment time being considered in each option calculated at ten months for Option 1, nine months for Option 2 and 12 months for Options 3, 4 and 5, taking into account the length of residential treatment. A simplification is also made in terms of the number of methadone patients for whom "count down" scripts may be applicable as: 85 patients in Options 1 and 2 and 95 patients in Options 3, 4 and 5, and also for
2. The loss of treatment benefit is estimated as the mean of $(\$385 + \$700) = \$543$ per patient per week = \$2,353 per month (see Section 9.9) This estimate is obviously a simplification of the situation. It assumes that there is an equal loss of benefit from each of the options, which has been previously argued to not necessarily be the case, when the range of relevant factors are considered (as discussed in Section 9.9);
3. It is assumed that patients who do not access treatment at the outset, relapse during the course of accessing alternative treatment (ie methadone in preference to residential) or are given "count down" scripts, resume their previous levels of opioid dependence (and cost).

Table 12 The loss of treatment benefit from each of the five options for service delivery.

<u>Option 1</u>	
100 patients x 10% for 12 months x \$2,353	282,360
100 patients x 90% x 95% x 30% x 6 months x \$2,353	362,127
100 patients x 90% x 95% x 10% x 9 months x \$2,353	181,063
85 patients x 10% x 5 months x \$2,353	100,003
	Total = 925,553
<u>Option 2</u>	
100 patients x 10% for 12 months x \$2,353	282,360
100 patients x 90% x 95% x 30% x 5 months x \$2,353	301,773
100 patients x 90% x 95% x 10% x 8 months x \$2,353	160,945
85 patients x 10% x 4.5 months x \$2,353	90,002
	Total = 691,080
<u>Option 3</u>	
95 patients x 1% x 6 months x \$2,353	Total = 13,412
<u>Option 4</u>	
95 patients x 1% x 6 months x \$2,353	Total = 13,412
<u>Option 5</u>	
95 patients x 5% x 6 months x \$2,353	Total = 67,061

These figures are incorporated into the following Table (Table 13) showing the overall public cost of treating 100 opioid dependent patients for one year.

Table 13 Overall public cost of treating 100 opioid dependent patients for one year which takes into account the loss of benefit from no treatment and overall public cost of treatment for each of the five options for service delivery.

<u>Option</u>	<u>Loss of Treatment Benefit</u>	<u>Public Treatment Cost</u>	<u>Total Public Cost</u>
1	925,553	582,263	1,507,816
2	691,080	549,839	1,240,919
3	13,412	312,997	326,409
4	13,412	309,575	322,987
5	67,061	283,734	350,795

9.12 Choice of options based on cost-benefit considerations

When Table 11 (Section 8.7) is examined it can be easily seen that Options 1 and 2 are significantly more costly in terms of public treatment costs, although there is very little private cost involved. There are no great differences between Options 3, 4 and 5 in terms of public costs of treatment, although the private cost of GP payment in Options 4 and 5 is about double that of Option 3. When the potential loss of treatment benefit is considered, as shown in Table 13 above (Section 9.11), it can be seen that overall, Option 4 is marginally less costly in terms of public cost but if private GP charges are considered then Option 3 remains marginally less costly overall. The most startling figures in Table 13 however are the potential loss of treatment benefit from Options 1 and 2.

9.13 Choice of options based on all considerations

Edwards (1995) advocated a two-tiered model, partly on the basis of a cost estimate that demonstrated lower treatment costs for stable patients when treated by GPs compared with a specialist clinic. However, an even more important consideration was the potential to increase the total number of opioid dependent patients in treatment by the model, compared with current service delivery structures. Given that Options 3, 4 and 5 are very similar in terms of overall costs, other considerations such as capacity for expansion become important in selecting a favoured option. All three would provide the structure to allow the required expansion of treatment to opioid dependents in New Zealand, Option 5 being the most flexible in this regard and Option 4 mid-way between 3 and 5. There is doubt, however, that Option 3 with its 50/50 split between GP care and specialist care, provides enough flexibility to initially expand by 2,000 places and then maintain a growth of at least 15% per year for the next five years at least. Given that all patients would be required to be stabilized in a specialist clinic first in this option, there is likely to continue to be a bottle neck at the specialist clinic side of service provision, albeit not as acute as that which currently exists.

An important consideration in relation to a rapidly expanding service is the need to maintain quality of service provision. Option 5 runs the greatest risk of significant variability and loss of quality care, given that there is no necessary formal linkage between GP and specialist clinic care. Option 3 is clearly the least risky of Options 3, 4 and 5 in this regard because patients in this option are first stabilized and even when transferred to GP care, clinical responsibility remains with the specialist clinic. Option 4 appears to be a good compromise between Options 3 and 5 in that there is substantial flexibility to allow for expansion of service volumes, while there remains a formal relationship between GP and specialist clinic care, which is likely to facilitate ongoing quality of service provision.

In conclusion, on the basis of three main considerations: cost, flexibility for expansion and risk of losing quality of care, we recommend that Option 4 be the generic model for new service delivery of treatment for opioid dependence in New Zealand.

10. A NEW SERVICE STRUCTURE AND HOW TO MAKE IT WORK

10.1 Introduction

In the previous chapter, an integrated generic model of service delivery (Option 4) was argued as the best option out of the five considered in terms of cost-effectiveness, maintaining quality of care and allowing for significant expansion in the volume of treatment to opioid dependants. This chapter will address some of the key issues involved in making the model a practical reality for the provision of services to opioid dependants in New Zealand at the current time.

We will first outline the treatment philosophy and overall generic structure of a proposed new model based on Option 4. Next will be consideration of the important issues of special needs groups, especially adolescents, pregnant women, parents of young children, Maori, HIV infected and Justice clients, followed by consideration of training needs of the professionals involved. Finally will be a consideration of costs and strategies to bridge the gap between where services are now and where they might be hoped to be in five years time.

10.2 New treatment philosophy

The new treatment philosophy is to provide effective longterm treatment for people with opioid dependence, focusing primarily on retention of patients through methadone substitution, while also actively offering the choice of other strategies (including residential treatment) focused on withdrawal, both initially and during methadone substitution treatment.

The main principles underlying this service model are as follows:

1. To increase accessibility of effective treatment for people with opioid dependence;
2. To reduce the current waiting lists by expanding the capacity of the overall service;
3. To broaden the base of treatment for opioid dependence and foster re-integration of treatment into primary care;
4. To decrease stigmatization and promote normalization of treatment for opioid dependence.

The model chosen, based on Option 4 above, combines elements of the Amsterdam three levels model, the Victorian decentralized model and the Edinburgh shared care model. A key difference to the current treatment delivery model in New Zealand would be a shift of the treatment towards more and early involvement of primary care through General Medical Practitioner (GP) involvement. It is proposed that GPs become involved in the treatment process from the outset and that the role of specialist clinics shift in the direction of primarily backing up GPs primary care of people with opioid dependence, with management of difficult patients and provision of an easily accessible consultation service.

10.3 Structure of a proposed new model

The main elements of a new model for the delivery of treatment for opioid dependants in New Zealand are as follows:

1. Treatment of someone with opioid dependence begins with a GPs referral for a specialist assessment;
2. This comprehensive assessment is completed by a clinical member of a regional specialist opioid service, headed by a regional clinical director;
3. The outcome of the assessment is an individualized diagnostic formulation and problem list and an appropriate treatment plan negotiated between specialist clinician, patient and GP;
4. This outcome is reported back in writing to the referring GP;
5. Opioid dependent patients will always be given the choice of opioid withdrawal, including the options of post-detoxification placement in a half-way house, short-term treatment programme or therapeutic community;
6. Therapeutic communities will be encouraged to offer a methadone countdown for residents over the first three months of treatment at the very least, as well as consider offering methadone treatment to patients for the entire residential treatment period;
7. Post-detoxification naltrexone treatment could be offered to patients who choose detoxification if it was on the Drug Tariff;
8. Given the relatively low numbers of opioid dependants who choose detoxification, and of those who do, the low numbers who achieve ongoing stable abstinence following withdrawal, attempts at detoxification will not be mandatory prior to opioid substitution therapy;
9. Social detoxification services would be encouraged to take opioid dependent patients, including those who are being prescribed medications by their GPs, to assist in opioid withdrawal;
10. In the absence of significant psychiatric/medical comorbidity or major life chaos, opioid substitution treatment will be initiated by the GP and treatment continued in primary care;
11. The dose of methadone will generally be increased in steps over the first two weeks or so to at least 60mg per day and subsequently, depending on the cessation of intravenous opioid use, in further steps up to a maximum of 120mg methadone per day;
12. Methadone doses greater than 120mg of methadone per day will need authority from the specialist clinic;
13. All methadone doses would be dispensed at a community pharmacy of the patient's choice, where the patient will either consume the dose in front of the pharmacist (particularly in the early stages of treatment) or be given home "takeaways";

14. A takeaway dose policy would need to be carefully formulated in such a way that a balance is struck between adequate control and monitoring of less stable patients on the one hand and facilitating social productivity of more stable patients on the other. A starting point for discussion could be the following takeaway proposal:
 - (a) Monday to Saturday daily consumption at a community pharmacy with takeaways for Sundays as a starting point, for the first month, which can then be retrenched to no takeaways if clinicians are concerned about the level of general stability of a patient;
 - (b) Increase in takeaways up to a predetermined limit, beyond which authorization would be required from the specialist clinic.
15. GPs will initially have a maximum of ten patients being prescribed methadone or alternative (see Training below);
16. GPs will be expected to provide more than simply an adequate individualized dose of methadone to their patients. They will be expected to be active case managers;
17. Case management in this instance is focused around the development of a longterm, positive therapeutic relationship and provision of ongoing support, care and advice, particularly when the range of psychosocial crises that not infrequently occur with opioid dependents arise, especially at the outset of treatment;
18. The specialist clinic will be readily available for backup telephone consultation;
19. The specialist clinic will provide backup treatment for patients who for any reason are not able to be managed by a GP, such as more closely supervised stabilization, treatment of comorbidity, or to provide more intensive rehabilitation than available in primary care. Generally such patients will have significant psychiatric/medical comorbidity or major life chaos;
20. The prescribing of any medication known to have addictive potential, particularly benzodiazepines or opioid analgesia, to registered opioid dependent patients would require authority from the specialist clinic;
21. Specialist clinics will be comprised of a multidisciplinary team consisting of a medical director and a group of mental health clinicians normally with professional training in nursing, psychology, social work or medicine, who are highly knowledgeable and experienced in mental health and alcohol and drug work generally, particularly in treatment of people with opioid dependence;
22. When indicated, specialist clinics will advise GPs about the use of opioid alternatives to methadone such as LAAM, buprenorphine and dihydrocodeine as part of the specialist backup and individualizing opioid treatment to patients. This may involve stabilizing patients on these alternative medications prior to transfer to primary care;
23. Patients who need initial stabilization in the specialist clinic could be subsequently transferred to GP care;
24. All patients will be formally registered at the specialist clinic;

25. The specialist clinic is expected to play an active role in assisting GPs when patients are ready to withdraw from methadone or alternative opioid substitute. This would involve anything from telephone consultation through advising on social detoxification management to arranging an inpatient hospital withdrawal admission;
26. All registered opioid dependents who withdraw from opioid substitution therapy will remain an active patient of the service for six months, during which time the GP will be assisting patients in aftercare, with backup from the specialist clinic;
27. Aftercare could range from regular monitoring and support, through participation in Narcotics Anonymous or Rational Recovery self-help groups, to involvement in structured aftercare relapse prevention groups or residential treatment;
28. Active liaison between GPs, specialist clinic staff and community pharmacists is considered vital to the ongoing effectiveness of the service structure from beginning to end, and it would be the responsibility of the specialist clinic to ensure that this occurs.

10.4 Special needs groups

The five options considered above were deliberately considered as generic, not because this is how services should be (we would argue entirely the opposite) but because simplification was necessary in order to complete a cost comparison appraisal. In real life, however, the opioid dependent consumers of treatment services are a heterogeneous group of people. For instance, they are young and old, Maori and Pakeha, men and women, parents and singles, pregnant and nonpregnant, some of whom who are psychiatrically disabled and some who are not, many of whom have been criminal since childhood and some who are essentially prosocial, many of whom have links with the Justice service and some who have never had a conviction, a few who are HIV +ve and most who currently are not, and a majority of whom are already Hepatitis C +ve but some who currently are not.

A quality opioid service is one that is able to identify and respond to the individual needs of its constituent patients. The integrated option recommended in this paper provides a structure in which this individual needs approach can be facilitated. First, the initial assessment at the specialist clinic allows for a comprehensive assessment to be undertaken under centralized quality control. It is envisaged that a protocol for this comprehensive assessment would be developed which covers the range of special needs assessment, including those above. Second, allowing for the majority of patients to be stabilized on methadone by their own GPs allows for the normal individualized medical care that is the hallmark of quality general medical practice. Third, there needs to be available at, or through, the specialist clinic certain additional consultation and treatment strands for key special needs groups. There needs to be at least consultation available with youth psychiatric services in the cases of patients under the age of 18, which can assist with developmental issues of adolescent opioid dependants, antenatal services for pregnant opioid dependants, Maori and other ethnic group liaison services where appropriate, infectious disease and specialist medical services for patients with major medical problems especially HIV and Hepatitis C infection, general psychiatric services for psychiatrically unwell opioid dependent patients. For some of the more unstable and complex patients, joint management arrangements between specialist clinic and other services would be encouraged. When a specialist clinic is directly managing only 20% of

the overall patients, there is likely to be more time available for organizing appropriate care for individual patients in this way.

Three of these special needs groups are singled out for special comment by the Institute of Medicine's report [Gerstein & Harwood 1990]. First, parents of young children are considered critical for their potential to break intergenerational patterns of disorder and family dysfunction. The children of opioid dependants today are at risk of being the opioid dependent patients of tomorrow. Targeting treatment to opioid dependent parents of young children offers the opportunity of "killing two birds with one stone". This should not of course be to neglect parents of older children who although may be more affected by years of family deprivation and chaos related to untreated opioid dependence, nevertheless are a clear opportunity for potential treatment. By providing adequate treatment to their opioid dependent parents, childrens' lives are likely to spontaneously improve to some extent. Second are adolescent opioid dependants. There has been very little systematic study of adolescent opioid dependants addressing questions such as what is optimum treatment for this age group? can modified methadone treatment be an effective early intervention? etc. Opioid dependence in adolescence is thus identified as a key area for further research. Third are opioid dependants who are clients of the Justice system. These patients, who span various parts of social services, provide a great challenge to systems that run on clearly defined and separated departmental budgets. While "captured" in the Justice Services through probation, imprisonment or parole, a special therapeutic opportunity exists to initiate treatment, particularly for those opioid dependants who are in the Justice Service as a direct result of their condition. These are also the opioid dependants who may produce the greatest benefit to society as a whole through being provided with appropriate treatment. For these reasons, it is recommended that provision of treatment to people with opioid dependence who are clients of the Justice Service be actively pursued. There has been extensive, evaluated, New South Wales experience of methadone maintenance treatment in prisons [Hall et al 1993] which would be an excellent place to start.

An extension to the targeting of parents with young children involves pregnant patients with opioid dependence. Although it is suggested above that there be at least consultation with antenatal services for such patients, more ideal is a system of shared care between antenatal/obstetric services and specialist opioid services. Arrangements like this do exist in some regions now and should continue to be strongly supported and developed.

Further to the targeting of opioid dependent parents of young children, is a wider view of these people as incorporating not only the opioid dependants of tomorrow, but also a good number of the psychiatrically disordered and antisocials of tomorrow. Although New Zealand is relatively well resourced in terms of social services, the coordination between services for "transdepartmental" citizens such as opioid dependants is less than optimum. The concept of "wrap around" services for targeted families offers a significant opportunity for possible prevention of later problems for such children. In this regard the prioritizing of methadone treatment should be viewed as just one element of an overall social services package to these severely socially disadvantaged people with children.

It is envisaged that both GPs, but especially the specialist clinics, will foster ongoing linkages with Social Welfare, Income Support, the Justice Department and Education services so that patients can be efficiently guided in the right direction as appropriate to their individual needs.

10.5 Training needs

An experienced and knowledgeable professional workforce is vital to the running of any health service. The alcohol and drug treatment field is arguably one of the least resourced in this regard currently and yet is called upon to manage some of the most difficult patients in the health service. There has been a dearth of training opportunities in the alcohol and drug field, not only in the undergraduate programmes of the various health professions, including nursing, medicine, social work and psychology, but also at a postgraduate level [Hannifin & Gruys 1996].

A number of recent initiatives will begin to fill this gap. These initiatives include the Alcohol Advisory Council of New Zealand's seeding of alcohol and drug teaching coordinators in each of the four Schools of Medicine for the undergraduate medical course and the postgraduate alcohol and drug papers that have been developed for a multidisciplinary study at Auckland, Massey and Otago Universities. A proposed Postgraduate Certificate in Alcohol, Drugs and Addiction through the National Centre for Treatment Development (Alcohol, Drugs and Addiction) could also make a significant contribution.

Apart from these more comprehensive training opportunities, focused training will be necessary to implement the option outlined above with respect to a new structure for opioid dependence services.

The current pressure on services for opioid dependants is undoubtedly contributed to largely by the unmet demand from patients for services, resulting from service underresourcing. However, it is likely that in some instances part of the pressure is also the result of an inexperienced workforce struggling with difficult clinical situations.

It is vital if the option outlined above is going to work, that an adequately skilled workforce at both GP and specialist clinic levels is developed. It is equally important that the (hopefully broad) group of community pharmacists are similarly knowledgeable and skilled with this patient group. It cannot be expected that a skilled workforce such as envisaged is likely to happen immediately. A two to three year timeframe is probably a realistic one within which to work to achieve this throughout the country.

Details of initial training, ongoing training and audit would need to be established in close consultation with the College of General Practitioners and possibly the Pharmaceutical Society. Below are a number of tentative proposals which could serve as a useful starting point for discussion.

1. Before a GP can become involved in the opioid service he/she must first gain endorsement through the local Medicines Control Officer and the College.
2. They must then undergo training, through a recognized training course, in the treatment of opioid dependence.
3. This training would include an overview of alcohol and drug treatment, the rationale of methadone substitution treatment and the technicalities of treatment within the service model described.

4. Once a GP has successfully completed this initial training, there would be a 12 month provisional registration to be involved in opioid treatment, linked to the regional specialist clinic.
5. This provisional registration would enable a GP to treat up to ten opioid dependent patients at any given time.
6. Registration of a GP in this way appears to be covered by the current legislative requirements under Section 24 of the Misuse of Drugs Act 1975: "Medical practitioners may prescribe, administer or supply the controlled drug if they are specified by the Minister of Health to do so" [MOH 1996].
7. Provisional registration would become full registration for three years at the end of 12 months, on the further endorsement of the local Medicines Control Officer and College and recommendation of the regional medical director of the specialist clinic.
8. Full registration would allow GPs to treat up to 20 patients per individual clinician.
9. A condition of registration would be forwarding a six month report of service delivery, including details such as doses, takeaways, deaths and consultations with the specialist clinic.
10. It is also proposed that a six month review of each patient undergoing methadone treatment, using an instrument such as the Methadone Treatment Index [Deering 1996], would provide useful information for clinician and patient, as well as for the overall regional service.
11. GPs with full registrations would be encouraged to undergo further postgraduate study in the alcohol and drug area.
12. Although the proposal above is focused on an individual GP, it is anticipated that groups of GPs, including Independent Practice Associations may take a special interest in this work. Registration would be tagged to individual practitioners, although numbers of patients treated could potentially be spread across a group of practitioners.
13. It is expected that all members of the clinical team of the specialist opioid service would have, or be studying for, similar postgraduate qualifications in the alcohol and drug area.
14. Training needs for pharmacists also need to be considered. As is the case for GPs, the technicalities of the task are probably not as difficult as the person-management side, in terms of developing a long-term, positive, therapeutic relationship which is both professional as well as engaging. It may be that at least some overlap training experiences between that of GPs and that for pharmacists could occur. Not only would this avoid duplication of generic information and skills, but would facilitate the development of collegial relationships.
15. The details of a methadone treatment training programme would need to be further worked out with appropriate consultations. It is suggested that if a regional approach to training be undertaken that some form of national monitoring be added in order to maintain a consistent industry standard.

10.6 Costs of the new service structure

An estimate of the current public costs of methadone service provision and the public cost of the proposed new service is shown in Table 14.

	<u>Number of Patients</u>	<u>Cost per 100 patients (\$)</u>	<u>Cost (\$)</u>
Current Service	2,500	4,400	11,000,000
Proposed New Service	4,500	3,100	13,950,000

The current annual cost of providing methadone treatment services for the 2,500+ opioid dependent patients in New Zealand, taking the average cost per patient as \$4,400 (from the estimate above Section 8.8) is \$11 million. However, if services were to increase by 2,000 as recommended, ie an 80% rise in service provision using the new service structure outlined, the overall public cost would rise by less than \$3 million dollars, ie a rise in the overall public cost of a little less than 27%.

10.7 Transition strategies

Service delivery to opioid dependants in New Zealand is currently quite variable. It is therefore likely that, if this new service structure were to be adopted, each region will need to formulate strategies which suit the local exigencies.

Given that the proposed service delivery model is significantly different from the average opioid dependent service currently in place, it is suggested that a pilot project involving a specialist clinic and group of GPs be undertaken. This project could be funded by one of the Regional Health Authorities. It should run for at least six months and preferably one year and be evaluated from start to finish, including a formal report. The evaluation should follow a peer reviewed research protocol.

While this pilot project is being undertaken, it is suggested that the current system of care continue, but that all patients who have been treated in specialist clinics for at least two years be identified and where appropriate and possible, transferred on authority to GP care.

10.8 Private Methadone Treatment

The issue of individuals buying private methadone treatment is a particularly relevant one in regions which are currently burdened by long waiting lists. In the course of consultation for this paper, it was reported by consumers that a great many people with opioid dependence currently on waiting lists for methadone treatment may be prepared to pay for treatment, at least in the short term. The amount that would be tolerated was reported as up to \$1,000 for initial registration and stabilization and an ongoing cost of up to \$100/month. In the model proposed, it would cost an individual \$900 per year for the

GP methadone place plus about \$50 GP cost per month to pay for the full estimated cost of methadone treatment, if they were treated by their own GP. This is within the cost estimate reported by consumers.

Privatizing methadone treatment raises critical questions about a public health perspective on the problem of opioid dependence. Not only is it in the best interest of patients to get effective treatment for their opioid dependence, it is likely to be in the best interest of society at large for this to occur. If limited short term privatization became the "thin edge of the wedge" of more extensive privatization of individual health care which ran the risk of restricting access to methadone treatment in the long term, particularly to those for whom treatment would benefit the wider community the most, privatization should obviously not be promoted. However, given the clear concern and suffering by patients and families, and consternation from consumer groups and professionals about the rising waiting lists for methadone treatment, it is not likely that a degree of privatization could make the situation worse, at least in the short term, while a new service structure is evolved. A recommendation is therefore, that a pilot project be undertaken in a region where there is particular concern about the methadone treatment waiting list.

10.9 Availability of GPs

Clearly one of the greatest challenges and potential limits of implementing the proposed new structure for service delivery is the availability of a large pool of enthusiastic GPs. A clinical incentive inherent in the integrated option recommended is that GPs will be in a position to manage the care of their patients from the beginning (following registration and assessment at the specialist clinic). This is in contrast to the widespread present arrangement where GPs are called upon much later in the process of rehabilitation and where at times the motivation may appear to be to "help the Clinic out" rather than be involved in interesting and rewarding clinical work. Further, this new model will facilitate the normalization of opioid dependence with care provided in the community from the outset and GPs in a position to gain the satisfaction of seeing people significantly improve during the initial Stabilization process. By being part of this initial process and observing these significant improvements, GPs are in an ideal position to develop positive, enduring, therapeutic relationships with their individual patients as they do for other serious disorders which can be stabilized and treated on an outpatient basis.

For the new model to work it is critical that GPs do fulfil the role of active case manager, not just methadone prescribing. This is not only so that patients are appropriately treated and cared for, but so that GPs have positive therapeutic experiences, which in turn may provide job satisfaction at a level that sustains long term work with opioid dependants in the general practice arena.

In order to develop an adequate pool of GPs who remain in the service long term, it is vital that the initial training and ongoing monitoring firstly does not impose a considerable burden on GPs and secondly is viewed in positive professional terms with appropriate recognition, for instance from the College of General Practitioners, which it is hoped would be involved in (at least) consultation regarding appropriate training and monitoring structures.

A further incentive in the model is the provision of additional RHA money to GPs (\$450 per patient per annum) on top of GMS in recognition of the difficulties that opioid dependent patients can pose for general practice. By providing this incentive funding, GPs are more likely to be diligent in active case management of opioid dependent patients and take time

when appropriate to help deal with the variety of psychosocial crises that not infrequently arise with this patient group.

In those regions which are not able to immediately attract sufficient GPs for a viable service along the lines described (ie 80% with GPs and 20% with the specialist clinic), pilot projects may need to be established initially, in order to build up a GP pool at a viable rate.

For the new service structure to function, quality assurance is a must. This means that at times, certain GPs may not have their provisional registration confirmed or indeed may have their registration rescinded due to poor clinical performance. Appropriate mechanisms to ensure these processes work effectively will be necessary to formulate. It is also critical that the relationships between the specialist clinics, GPs and any external auditing and monitoring agent/agency be kept at a positive, practical level and not suppressed by suspicion and judgement. It must always be kept in mind just how difficult working with people who have opioid dependence can be.

Finally, it is arguably the credibility of the specialist clinic as a consultation and management backup service and the quality of collegial relationships between primary and secondary care clinical staff, that will determine how many GPs in a particular region become interested in treating people with opioid dependence. Recruitment and retention of genuinely specialist staff is vital for the new model to function.

10.10 Credibility of specialist clinics

The credibility of the regional specialist clinics is dependent on the clinical competence of the staff of the specialist clinics. This credibility is pivotal to the success of the new service model in addition to the availability of GPs. A key role is the regional clinical director of specialist clinics. Remuneration and working conditions need to be made suitably attractive in order to ensure the recruitment and longterm retention of suitable senior medical specialists and other clinical staff. The days of specialist clinics being both led and staffed by clinicians without postgraduate qualifications and appropriate experience are considered numbered, if real progress to be made in improving treatment services for people with opioid dependence.

10.11 Final comments

For the past 20 years or so, opioid services in New Zealand have largely been run on centralized specialist lines. This structure has now proved to be inadequate to cope with the increasing numbers of people with opioid dependence who demand services. A new service structure is therefore required.

This paper has advocated an integrated model of care between GPs and regional specialist clinics. This essentially means a shift towards greater involvement of GPs in general service delivery to people with opioid dependence. A spin-off of this shift will be greater demand for specialism in the staff of the specialist clinics, reflected in more active consultation and liaison with GPs, as well as the specialized care patients who present with complex clinical problems.

At the same time as New Zealand may develop a more prominent primary care arm to opioid services, it is interesting to note that in other countries (eg Australia and Denmark) the strengthening of centralized specialized clinics is taking place. It is important that the shift in service structure recommended here does not result in a lurch to the other side of a balanced approach which integrates primary and secondary care. It is also important that as far as possible, policy decisions are based on evidence from the international scientific literature and changes in service delivery evolved. Drug treatment is clearly one area of health services which is highly susceptible to various political forces that are ideologically motivated and therefore vulnerable to major radical change [Klingemann 1996].

It is important that the new service is evolved at a rate in each region which ensures the least disruption to ongoing service provision. Opioid treatment services are already significantly stressed and fragile in a number of regions in New Zealand. It is important that services continue to function as best as they can while a transition is undertaken and that particular attention is paid to retaining experienced staff during the process.

APPENDICES

APPENDIX A DSMIV criteria for opioid dependence

A maladaptive pattern of opioid use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

1. The substance is often taken in larger amounts or over a longer period than was intended;
2. There is a persistent desire or unsuccessful efforts to cut down or control opioid use;
3. A great deal of time is spent in activities necessary to obtain opioids, use opioids or recover from effects of opioid use;
4. Important social, occupational or recreational activities are given up or reduced because of opioid use;
5. Opioid use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by opioid use;
6. Tolerance, as defined by either of the following:
 - a. a need for markedly increased amounts of opioids to achieve intoxication or desired effect;
 - b. markedly diminished effect with continued use of the same amount of opioids;
7. Withdrawal, as manifested by either of the following:
 - a. the characteristic opioid withdrawal syndrome;
 - b. opioids (or closely related substances) are taken to relieve or avoid opioid withdrawal symptoms.

APPENDIX B A history of opioid use

Opium was legally sold at relatively low prices throughout the nineteenth century and there were five broad channels of distribution:

1. Physicians dispensed opiates directly to patients or wrote prescriptions for them;
2. Drugstores sold opiates over the counter to customers without a prescription;
3. Grocery and general stores, as well as pharmacies, stocked and sold opiates;
4. Opiates could be ordered by mail;
5. Numerous patent medicines were on the market which contained opium or morphine.

Most of the opium consumed in the US during the 19th century was legally imported and morphine was subsequently legally manufactured. Opium poppies were legally grown within the US until 1942.

This liberal situation was similar in Britain. For example Godfrey's Cordial - a mixture of opium, molasses and sassafras was reported to be very popular in Coventry in the mid-19th century. Ten gallons (12,000 doses) sold weekly and administered to 3,000 infants under the age of two. It is reported that even more was consumed in Nottingham where "not a labourer's house in which the bottle of opium was not to be seen, and not a child, but who got it in some form....."

While legal in the US and England, the nonmedical use of opiates was not considered respectable and was generally considered somewhat immoral, a vice similar to dancing, smoking, theatre going, gambling or sexual promiscuity. However, there was little support for a law banning opiates because they were not viewed as a menace to society.

One particularly eminent opiate addict was Dr William Stewart Halsted (1852-1922), considered one of the greatest of American surgeons. Born into a well known New York family, he developed a serious addiction to cocaine in his late teens which he subsequently "cured" himself of by transferring to morphine. However, he was never able to reduce his dose to less than three grains (180mg) daily. He married into a distinguished Southern family, a marriage described as "complete mutual devotion" which lasted 32 years until his death at age 70. At the age of 46 he was able to reduce his daily morphine dose to one and a half grains (90mg) which he continued to use up until his death.

Opiates taken daily in large doses by addicts were not a social menace under 19th century conditions until the end of the century when a tide of prohibition began to appear. In 1875, opium smoking in smoking houses was first prohibited in San Francisco. This tide of prohibition included laws prohibiting the sale of alcoholic beverages, laws against fornication, homosexual acts and other sexual acts between consenting individuals in private and laws against gambling.

One of the key turning points in the US was in 1914 when Congress passed the Harrison Narcotic Act. At the time it was not, on the face of it, a prohibitionist move but merely a law promoting the orderly marketing of opiates by way of small quantities over the counter and larger quantities by physician prescription. However, the Act read:

"Nothing contained in this section shall apply.....to the dispensing or distribution of any of the aforesaid drugs (opiates) to a patient by a physician, dentist or veterinary surgeon registered under this Act in the course of his professional practice only."

The words "in the course of his professional practice only" came to be interpreted by law enforcement officers to exclude addiction, on the basis that addiction was not considered a disease. Many physicians were in fact arrested under this interpretation, their careers ruined by the publicity and some were convicted and imprisoned.

Six months after the passing of the Act an editorial in the journal American Medicine read:

"Narcotic drug addiction is one of the gravest and most important questions confronting the medical profession today. Instead of improving conditions, the laws recently passed

have made the problem more complex. Honest medical men have found such handicaps and dangers to themselves and their reputations in these laws....that they have simply decided to have as little to do as possible with drug addicts or their needs...."

However, despite these words and subsequent numerous committees and reports, the law related to opiate use became increasingly sterner.

In 1957, Dr Karl M Bowman, considered one of the foremost US psychiatrists and authorities on narcotics at the time, wrote:

"For the past 40 years we have been trying the mainly punitive approach; we have increased penalties, we have hounded the drug addict, and we have brought out the idea that any person who takes drugs is a most dangerous criminal and menace to society. We have perpetuated the myth that addiction to opiates is the great cause of crimes of violence and of sex crimes. In spite of the statements of the most eminent medical authorities in this country and elsewhere, this type of propaganda still continues coming to a large extent from the enforcement bureaus of federal and state governments. Our whole dealing with the problem of drug addiction for the past 40 years has been a sorry mess."

APPENDIX C History of the development of treatment for people with opioid dependence in New Zealand

From about 1965, charges for drug offences began to rise in New Zealand from a previous level that was almost negligible. In the first half of 1969 there were 58 pharmacy burglaries, the year that Dr Roche, General Practitioner, first began prescribing opioids for intravenous drug users in Auckland and Dr Fraser McDonald, Psychiatrist and Medical Superintendent of Kingseat Psychiatric Hospital at the time, started the Cathedral Methadone Clinic in Auckland. Beginning in the 1970s organized crime entered the opioid supply market, including the famous Terence Clarke, "Mr Asia". Street heroin quickly became increasingly plentiful. Dr Derry Seddon, another general medical practitioner, began methadone maintenance treatment for patients in Tauranga.

During 1971, 23 intravenous drug users came under the care of the Department of Psychological Medicine of the North Canterbury Hospital Board under the leadership of Dr John Dobson. In 1972 a meeting of concerned General Practitioners in Christchurch took place to discuss the problem of "wandering young people demanding opioids". At this stage, 20,000 tablets of Palfium 5mg (dextroramide) had been dispensed locally and police claimed that some had been diverted and was being sold on the streets of Sydney. It was agreed that all opioid prescribing for intravenous drug users would be undertaken at the Department of Psychological Medicine, Princess Margaret Hospital, which offered prompt, inpatient withdrawal. Inpatient withdrawal from opioids using methadone, a simple technical procedure was abandoned later when it was found that 100% of patients relapsed within a week or so of discharge.

Following this experience and in concert with treatment developments internationally, outpatient methadone maintenance treatment was developed in Christchurch.

However, service development was not easy despite the growing demand. Firstly, there was difficulty convincing treatment funders of the importance of the treatment. For

instance, when applying for funding offered under a Community Projects Scheme, the Co-ordinating Committee for the Canterbury Health Projects placed the methadone service sixth after the Domiciliary Podiatrist. Secondly, there was hostility expressed about the service. A group of citizens objected successfully against the service using a residential zone and a formal recommendation that the service be closed was made. The service was moved elsewhere. Around this time began the beration of methadone prescribing in the media. Television current affairs programmes ran a series of biased attacks with inaccurate and misleading information. The widespread cry was "why don't you get them off drugs?".

The sparsity of properly conducted follow-up studies in the early days of methadone prescribing in New Zealand made rebuttal of criticism difficult, and it was not until publication of the Drug Abuse Research Project (DARP) Cohort Study in the early 1970s that scientific literature demonstrating effectiveness was available.

In 1975, the Misuse of Drugs Act consolidated previous legislation forbidding the prescribing of Controlled Drugs for the treatment of drug dependence without special authority.

By 1979, imported heroin had become increasingly scarce resulting in the growth of "home baking": the manufacture in home laboratories of morphine and heroin from codeine based analgesics, as well as opium poppies. Temgesic (buprenorphine), a mixed opioid agonist/antagonist became a sought after street opioid for intravenous use, at least in Christchurch.

In 1989, an inaugural meeting of methadone service providers in Palmerston North occurred, which subsequently continued annually under the auspices of the Drugs Advisory Committee of the Department of Health until its dispersion in 1996.

In 1992, a National Protocol for Methadone Prescribing Services was first developed, following extensive consultation under the guidance of John Hannifin, Chairman of the Drugs Advisory Committee. This was revised by the Ministry of Health and renamed "National Protocol for Methadone Treatment in New Zealand, in May 1996.

APPENDIX D Six caveats from a Consumers Union Report

Throughout the report, "Licit and Illicit Drugs" [Brecher et al 1972], a series of mistakes in drug laws, policies and attitudes are discussed and documented. Key points from one of the concluding chapters which are proposed to correct these mistakes are summarized below.

1. Stop emphasizing measures designed to keep drugs away from people.
Valuable resources and energies should no longer be wasted "chasing" prohibition. Goals which cannot be achieved by law enforcement should be assigned to other activities such as education and social reform.
2. Stop publicizing the horrors of the "drug menace".
The effort to frighten people away from drugs in many instances has simply publicized and popularized drugs. Sensationalist publicity is not only ineffective but counterproductive.

3. Stop increasing the damage done by drugs.
There is a choice between trying (ineffectively) to stamp out illicit drug use by making it as damaging as possible, or to seek to minimize the damage done by drugs, licit and illicit.
4. Stop misclassifying drugs.
Key examples are classifying alcohol and nicotine virtually as "non-drugs", while equating marijuana alongside heroin. Once a more accurate approach is adopted to the classification of drugs and modes of drug use, educators can begin to plan a programme of drug education which is more believable to young people and restore credibility to governmental, medical and educational drug pronouncements.
5. Stop viewing the drug problem as primarily a national problem, to be solved on a national scale.
The "drug problem" is a collection of local problems and effective solutions in one locale may not be appropriate to others. A national approach runs the risk of further publicization and popularization of drugs.
6. Stop pursuing the goal of stamping out illicit drug use.
It is suggested that if in 1937, efforts had been undertaken to reduce marijuana smoking over a period of time, rather than try to eradicate it immediately, such a programme might well have succeeded. Instead, one of the greatest drug explosions in history, the marijuana eruption of the 1960s in the USA, was triggered.

APPENDIX E Rationale for costs of specialist clinic and GP care

A survey of the Regional Health Authority prices for methadone treatment revealed a range for both patients treated in specialist clinics as well as patients on authority to GPs. Prices for patients treated in specialist clinics ranged from \$1,500 to \$2,200 per patient per year and for patients treated on authority to GPs there was a range of \$600 to \$900 per patient per year. In the case of patients on authority to GPs the money is paid to specialist clinics as part of an overall service contract.

It is a moot point whether these RHA prices for methadone treatment services are in fact appropriate to the real costs of treating patients in the two settings. The validity of these figures is outside the parameters of this paper but this is clearly a critical issue, not only for individual service contracting, but also for ensuring opioid services in New Zealand are appropriately resourced to provide adequate care to patients. We suggest a degree of scepticism towards the figures above, and consider them to probably be overly challenging to some current providers of methadone services, particularly where there are significant corporate overheads involved.

For the five costed options we used the range \$1,500 - \$2,200 for specialist clinic care and \$600 - \$900 for GP care, varying the cost according to the dynamics of each option as described below. Further, the proportion of the \$600 - \$900 GP care cost which would be paid to GPs would vary amongst the models, depending on the degree of clinical responsibility being taken by GPs in the cases and the degree of severity/complexity of the cases.

The costs for each option are shown in Table 15 below.

Table 15 Prices paid for each for the five options for service delivery and the percentage of cases in GP and specialist care for each option.

<u>OPTION</u>	<u>% cases in GP care</u>	<u>GP case price (\$)</u>	<u>(GP paid) (\$)</u>	<u>% cases in Specialist</u>	<u>Specialist case price (\$)</u>
1 and 2	10	600	(50)	90	1,500
3	50	750	(250)	50	1,850
4	80	900	(450)	20	2,200
5	90	750	(750)	10	1,850

In Options 1 and 2, the vast majority of patients (95%) remain with the specialist clinic and only the most stable of patients transferred for GP authority. Thus clinic patients will include a good proportion of reasonably stable patients as well as the unstable and complex cases. Therefore, in these circumstances, we propose that the lowest end of the range of prices for both specialist (\$1,500) and GP (\$600) be used in the calculations. Of the \$600 GP cost in these two models, we proposed that only \$50 would be paid to GPs in addition to GMS. The clinical responsibility essentially remains with the specialist clinic and only the very stable cases are put out on authority to selected GPs.

In contrast, Option 4 structures a small (20%) proportion of patients to specialist clinics, which will be the more severe and complex cases, while GP's with 80% will not only have the very stable, but will also have a proportion of somewhat unstable patients. For these reasons we propose that for this option the highest end of the range of prices be used in the calculations ie \$2,200 and \$900 respectively.

For Option 3, the situation is midway between Options 1/2 and 4, with a 50/50 split between the specialist clinic and GPs. We therefore propose that the middle of the range of prices (\$1,850 and \$750) be used.

The degree of clinical responsibility taken for patients in Options 3 and 4 is quite different. In Option 3, ultimate clinical responsibility remains with the specialist clinic, whereas in Option 4 there would be transfer of this responsibility to the GP. These differences would need to be reflected in the proportion of the price paid directly to GPs. We propose that in Option 3, \$250 of the \$750 would be paid directly to GPs, while the remaining \$500 paid to the specialist clinic to cover the executive backup of these GP cases on authority. On the other hand, in Option 4, while there is an initial registration of the patient and comprehensive assessment at the specialist clinic, the GP subsequently carries primary clinical responsibility for each of their cases, albeit with good backup from a specialist clinic where each patient is registered. Thus, we propose that in Option 4, of the \$900 paid for each GP case, \$450 of this would go directly to GPs and the remaining \$450 paid to the specialist clinic to cover registration, assessment and ongoing backup and support to GPs.

In Option 5, there is no necessary linkage between the specialist clinic and GP and thus there is less cost involved. There would be no initial registration and assessment of

patients by the specialist clinic and there would be no ongoing liaison necessary between GP and clinic over cases and there would be no involvement of the specialist clinic in initial or ongoing training as there would be in the other four options. This is reflected in the lesser cost for a GP case (\$1,850) and Specialist case (\$750) in this option compared with \$2,200 and \$900 respectively in Option 4. As GPs are working autonomously, they would be paid the full \$750 with no portion going to the specialist clinic.

Along with the varying prices paid to GPs according to the degree of clinical responsibility and degree of severity/complexity of cases managed, there will also be varying numbers of GP visits according to the five models. We allowed 15 sessions for Options 1 and 2, 18 for Option 3 and 21 sessions for Options 4 and 5. Fifteen sessions for Options 1 and 2 were estimated on the basis of one outpatient contact per month plus three extra sessions for these highly stabilized patients. Three extra sessions were allowed for Option 3 where more complex cases would be managed and therefore more crisis sessions may be required. For Options 4 and 5, where patients are stabilised on methadone in general practice, a further three sessions were factored in to allow for more sessions at initiation.

APPENDIX F Methadone Hydrochloride: Product and dispensing costs

Methadone was originally dispensed in the main, at the gazetted methadone clinics. The product costs were covered by the hospital pharmacies and dispensing costs by the clinic. The exceptions to this practice were in Dunedin and with some of the rural clinics which used community pharmacies. The move to dispensing through community pharmacies started in the late 1980s and continued on to the present, when the majority of the dispensing of methadone occurs through community pharmacies.

It was estimated in 1995 that the expenditure on methadone prescriptions was almost \$4 million (Health Benefits Ltd 1995 6A(i)008). This figure was calculated by combining product and dispensing costs which came to approximately \$7 per daily dispensing of methadone in 1995. The \$7 price included the \$5.33 dispensing fee that the pharmacist received under pricing for "extemporaneous preparations".

In 1996, Pharmac approved commercial preparations of methadone. The Drugs Advisory Committee had been critical of some of the extemporaneous preparations and advocated raising the quality of methadone preparations. For dispensing commercial preparations of methadone, pharmacists will now only receive the price of a Class 1 drug which \$2.72. The product price, including mark ups, would add approximately \$2.40 to the cost making a total of \$5.12 for an 80mg dispensing. This would have created a saving of approximately \$1.5 million if applied to the August 1994-August 1995 year.

Some pharmacies are threatening to stop dispensing methadone under the new pricing arrangement. Previously they were paid a \$5.33 dispensing fee under pricing for extemporaneous preparations; they are now to be paid \$2.72 for dispensing a Class 1 (count and pour) drug. This threat is of considerable concern for the ongoing viability of methadone treatment, particularly in the context of the new service structure proposed in this paper.

There are also technical issues involved in storing, dispensing (and drinking) the large volumes of methadone solution required with the presently available commercial preparation which is a 2mg/ml methadone solution.

It is likely that a new commercial methadone preparation will be approved in October 1996. This will be a 5mg/ml solution (and possibly 10mg/ml). This would reduce the price of 80mg methadone to approximately \$0.80. The total price including dispensing fee (\$2.72), methadone product, handling fee and GST would be \$3.69 (excluding GST) for 80mg of dispensed methadone.

There are a number of issues required to be worked out for the ongoing dispensing of methadone on a regular basis to an increasingly large number of people. Differential pricing agreements may need to be worked out for takeaway doses and for longterm stable patients in contrast to doses to new patients in the process of stabilisation and those complex cases that require closer monitoring.

For the sake of calculations in this paper an extra \$1.31 has been added to the proposed price paid to pharmacists (\$3.69) bringing an average dispensed 80mg dose of methadone up to \$5. The details of how this extra margin would be paid would need to be carefully worked out in order to maximise the attractiveness for the majority of pharmacists to be involved in this work with opioid dependents.

APPENDIX G Sensitivity analyses on the costings of each of the five options for new service delivery

Sensitivity Analysis 1 - Option 1

Public Cost

Detoxification/Residential Treatment

Detoxification

90 patients x 60% x \$2,500 135,000

Residential Treatment

90 patients x 80% x \$2,500 180,000

90 patients x 15% x \$5,000 67,500

90 patients x 5% x \$7,500 33,750

Total 416,250

Methadone

Methadone Cost

90 patients x 95% x 60% x 9 months x 20 doses x \$5 46,170

90 patients x 95% x 30% x 3 months x 20 doses x \$5 7,695

90 patients x 5% x 50% x 6 months x 20 doses x \$5 1,350

Specialist Clinic

90 patients x 95% x 60% x 0.75 x 90% x \$1,500 51,941

90 patients x 95% x 30% x 0.25 x 90% x \$1,500 8,657

90 patients x 5% x 50% x 0.50 x 90% x \$1,500 1,519

GP

90 patients x 95% x 60% x 0.75 x 10% x \$600 2,309

90 patients x 95% x 60% x 0.75 x 10% x \$13.33 x 15 769

90 patients x 95% x 30% x 0.25 x 10% x \$600 385

90 patients x 95% x 30% x 0.25 x 10% x \$13.33 x 15 128

90 patients x 5% x 50% x 0.50 x 10% x \$600 68

90 patients x 5% x 50% x 0.50 x 10% x \$13.33 x 15 22

Total 121,013

Grand Total 537,263

Private Cost

GP

90 patients x 95% x 60% x 0.75 x 10% x \$17 x 15 981

90 patients x 95% x 30% x 0.25 x 10% x \$17 x 15 164

90 patients x 5% x 50% x 0.50 x 10% x \$17 x 15 29

Grand Total 1,173

Sensitivity Analysis 2 - Option 1

Public Cost

Detoxification/Residential Treatment

Detoxification

90 patients x 90% x \$2,500 202,500

Residential Treatment

90 patients x 80% x \$2,500 180,000

90 patients x 15% x \$5,000 67,500

90 patients x 5% x \$7,500 33,750

Total 483,750

Methadone

Methadone Cost

90 patients x 95% x 60% x 9 months x 20 doses x \$5 46,170

90 patients x 95% x 30% x 3 months x 20 doses x \$5 7,695

90 patients x 5% x 50% x 6 months x 20 doses x \$5 1,350

Specialist Clinic

90 patients x 95% x 60% x 0.75 x 90% x \$1,500 51,941

90 patients x 95% x 30% x 0.25 x 90% x \$1,500 8,657

90 patients x 5% x 50% x 0.50 x 90% x \$1,500 1,519

GP

90 patients x 95% x 60% x 0.75 x 10% x \$600 2,309

90 patients x 95% x 60% x 0.75 x 10% x \$13.33 x 15 769

90 patients x 95% x 30% x 0.25 x 10% x \$600 385

90 patients x 95% x 30% x 0.25 x 10% x \$13.33 x 15 128

90 patients x 5% x 50% x 0.50 x 10% x \$600 68

90 patients x 5% x 50% x 0.50 x 10% x \$13.33 x 15 22

Total 121,013

Grand Total 604,763

Private Cost

GP

90 patients x 95% x 60% x 0.75 x 10% x \$17 x 15 981

90 patients x 95% x 30% x 0.25 x 10% x \$17 x 15 164

90 patients x 5% x 50% x 0.50 x 10% x \$17 x 15 29

Grand Total 1,173

Sensitivity Analysis 3 - Option 1

Public Cost

Detoxification/Residential Treatment

Detoxification

90 patients x 80% x \$2,500 180,000

Residential Treatment

90 patients x 90% x \$2,500 202,500

90 patients x 5% x \$5,000 22,500

90 patients x 0% x \$7,500 0

Total 405,000

Methodone

Methodone Cost

90 patients x 95% x 60% x 9 months x 20 doses x \$5 46,170

90 patients x 95% x 30% x 3 months x 20 doses x \$5 7,695

90 patients x 5% x 50% x 6 months x 20 doses x \$5 1,350

Specialist Clinic

90 patients x 95% x 60% x 0.75 x 90% x \$1,500 51,941

90 patients x 95% x 30% x 0.25 x 90% x \$1,500 8,657

90 patients x 5% x 50% x 0.50 x 90% x \$1,500 1,519

GP

90 patients x 95% x 60% x 0.75 x 10% x \$600 2,309

90 patients x 95% x 60% x 0.75 x 10% x \$13.33 x 15 769

90 patients x 95% x 30% x 0.25 x 10% x \$600 385

90 patients x 95% x 30% x 0.25 x 10% x \$13.33 x 15 128

90 patients x 5% x 50% x 0.50 x 10% x \$600 68

90 patients x 5% x 50% x 0.50 x 10% x \$13.33 x 15 22

Total 121,013

Grand Total 526,013

Private Cost

GP

90 patients x 95% x 60% x 0.75 x 10% x \$17 x 15 981

90 patients x 95% x 30% x 0.25 x 10% x \$17 x 15 164

90 patients x 5% x 50% x 0.50 x 10% x \$17 x 15 29

Grand Total 1,173

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Sensitivity Analysis 4 - Option 1

Public Cost

Detoxification/Residential Treatment

Detoxification

90 patients x 80% x \$2,500 180,000

Residential Treatment

90 patients x 60% x \$2,500 135,000

90 patients x 25% x \$5,000 112,500

90 patients x 15% x \$7,500 101,250

Total 528,750

Methadone

Methadone Cost

90 patients x 95% x 60% x 9 months x 20 doses x \$5 46,170

90 patients x 95% x 30% x 3 months x 20 doses x \$5 7,695

90 patients x 5% x 50% x 6 months x 20 doses x \$5 1,350

Specialist Clinic

90 patients x 95% x 60% x 0.75 x 90% x \$1,500 51,941

90 patients x 95% x 30% x 0.25 x 90% x \$1,500 8,657

90 patients x 5% x 50% x 0.50 x 90% x \$1,500 1,519

GP

90 patients x 95% x 60% x 0.75 x 10% x \$600 2,309

90 patients x 95% x 60% x 0.75 x 10% x \$13.33 x 15 769

90 patients x 95% x 30% x 0.25 x 10% x \$600 385

90 patients x 95% x 30% x 0.25 x 10% x \$13.33 x 15 128

90 patients x 5% x 50% x 0.50 x 10% x \$600 68

90 patients x 5% x 50% x 0.50 x 10% x \$13.33 x 15 22

Total 121,013

Grand Total 649,763

Private Cost

GP

90 patients x 95% x 60% x 0.75 x 10% x \$17 x 15 981

90 patients x 95% x 30% x 0.25 x 10% x \$17 x 15 164

90 patients x 5% x 50% x 0.50 x 10% x \$17 x 15 29

Grand Total 1,173

Sensitivity Analysis 1 - Option 2

Public Cost

Therapeutic Community Treatment

Methadone Countdown

90 patients x 20% x 1 month x 20 doses x \$5	1,800
90 patients x 75% x 2 months x 20 doses x \$5	13,500
90 patients x 5% x 3 months x 20 doses x \$5	1,350

Residential Treatment

90 patients x 40% x \$2,400	86,400
90 patients x 60% x \$4,800	259,200
90 patients x 0% x \$7,200	0
90 patients x 0% x \$14,400 x 50%	0
Total	362,250

Methadone Treatment

Methadone Cost

90 patients x 95% x 60% x 8 months x 20 doses x \$5	41,040
90 patients x 95% x 30% x 2 months x 20 doses x \$5	5,130

Specialist Clinic

90 patients x 95% x 60% x 0.67 x 90% x \$1,500	46,170
90 patients x 95% x 30% x 0.17 x 90% x \$1,500	5,771

GP

90 patients x 95% x 60% x 0.67 x 10% x \$600	2,052
90 patients x 95% x 60% x 0.67 x 10% x \$13.33 x 15	684
90 patients x 95% x 30% x 0.17 x 10% x \$600	257
90 patients x 95% x 30% x 0.17 x 10% x \$13.33 x 15	85
Total	101,189
Grand Total	463,439

Private Cost

GP

90 patients x 95% x 60% x 0.67 x 10% x \$17 x 15	872
90 patients x 95% x 30% x 0.17 x 10% x \$17 x 15	109
Grand Total	981

Sensitivity Analysis 2 - Option 2

Public Cost

Therapeutic Community Treatment

Methadone Countdown

90 patients x 20% x 1 month x 20 doses x \$5	1,800
90 patients x 75% x 2 months x 20 doses x \$5	13,500
90 patients x 5% x 3 months x 20 doses x \$5	1,350

Residential Treatment

90 patients x 10% x \$2,400	21,600
90 patients x 80% x \$4,800	345,600
90 patients x 10% x \$7,200	64,800
90 patients x 10% x \$14,400 x 50%	64,800

Total 513,450

Methadone Treatment

Methadone Cost

90 patients x 95% x 60% x 8 months x 20 doses x \$5	41,040
90 patients x 95% x 30% x 2 months x 20 doses x \$5	5,130

Specialist Clinic

90 patients x 95% x 60% x 0.67 x 90% x \$1,500	46,170
90 patients x 95% x 30% x 0.17 x 90% x \$1,500	5,771

GP

90 patients x 95% x 60% x 0.67 x 10% x \$600	2,052
90 patients x 95% x 60% x 0.67 x 10% x \$13.33 x 15	684
90 patients x 95% x 30% x 0.17 x 10% x \$600	257
90 patients x 95% x 30% x 0.17 x 10% x \$13.33 x 15	85

Total 101,189

Grand Total 614,639

Private Cost

GP

90 patients x 95% x 60% x 0.67 x 10% x \$17 x 15	872
90 patients x 95% x 30% x 0.17 x 10% x \$17 x 15	109

Grand Total 981

109

Sensitivity Analysis 1 - Option 3

Public Cost

Residential Treatment

Detoxification

100 patients x 0% x \$2,500 0

Short-term residential treatment

100 patients x 0% x \$7,500 0

Therapeutic Community

100 patients x 0% x \$7,200 0

100 patients x 0% x 50% x \$14,400 0

Methadone Countdown

100 patients x 0% x 3 months x 20 doses x \$5 0

Total 0

Methadone Treatment

Methadone Cost

100 patients x 12 months x 20 doses x \$5 120,000

Specialist Clinic

100 patients x 50% x \$1,850 92,500

GP

100 patients x 50% x \$750 37,500

100 patients x 50% x \$13.33 x 18 11,997

Total 261,997

Grand Total 261,997

Private Cost

GP

100 patients x 50% x \$17 x 18 15,300

Grand Total 15,300

Sensitivity Analysis 2 - Option 3

Public Cost

Residential Treatment

Detoxification

100 patients x 4% x \$2,500 10,000

Short-term residential treatment

100 patients x 4% x \$7,500 30,000

Therapeutic Community

100 patients x 6% x \$7,200 43,200

100 patients x 6% x 50% x \$14,400 43,200

Methadone Countdown

100 patients x 6% x 3 months x 20 doses x \$5 1,800

Total 128,200

Methadone Treatment

Methadone Cost

90 patients x 12 months x 20 doses x \$5 108,000

Specialist Clinic

90 patients x 50% x \$1,850 83,250

GP

90 patients x 50% x \$750 33,750

90 patients x 50% x \$13.33 x 18 10,797

Total 235,797

Grand Total 363,997

Private Cost

GP

90 patients x 50% x \$17 x 18 13,770

Grand Total 13,770

Sensitivity Analysis 1 - Option 4

Public Cost

Residential Treatment

Detoxification

100 patients x 0% x \$2,500 0

Short-term residential treatment

100 patients x 0% x \$7,500 0

Therapeutic Community

100 patients x 0% x \$7,200 0

100 patients x 0% x 50% x \$14,400 0

Methadone Countdown

100 patients x 0% x 3 months x 20 doses x \$5 0

Total 0

Methadone Treatment

Methadone Cost

100 patients x 12 months x 20 doses x \$5 120,000

Specialist Clinic

100 patients x 20% x \$2,200 44,000

GP

100 patients x 80% x \$900 72,000

100 patients x 80% x \$13.33 x 21 22,394

Total 258,394

Grand Total 258,394

Private Cost

GP

100 patients x 80% x \$17 x 21 28,560

Grand Total 28,560

Sensitivity Analysis 2 - Option 4

Public Cost

Residential Treatment

Detoxification

100 patients x 4% x \$2,500 10,000

Short-term residential treatment

100 patients x 4% x \$7,500 30,000

Therapeutic Community

100 patients x 6% x \$7,200 43,200

100 patients x 6% x 50% x \$14,400 43,200

Methadone Countdown

100 patients x 6% x 3 months x 20 doses x \$5 1,800

Total 128,200

Methadone Treatment

Methadone Cost

90 patients x 12 months x 20 doses x \$5 108,000

Specialist Clinic

90 patients x 20% x \$2,200 39,600

GP

90 patients x 80% x \$900 64,800

90 patients x 80% x \$13.33 x 21 20,155

Total 232,555

Grand Total 360,755

Private Cost

GP

90 patients x 80% x \$17 x 21 25,704

Grand Total 25,704

Sensitivity Analysis 1 - Option 5

Public Cost

Residential Treatment

Detoxification

100 patients x 0% x \$2,500 0

Short-term residential treatment

100 patients x 0% x \$7,500 0

Therapeutic Community

100 patients x 0% x \$7,200 0

100 patients x 0% x 50% x \$14,400 0

Methadone Countdown

100 patients x 0% x 3 months x 20 doses x \$5 0

Total 0

Methadone Treatment

Methadone Cost

100 patients x 12 months x 20 doses x \$5 120,000

Specialist Clinic

100 patients x 10% x \$1,850 18,500

GP

100 patients x 90% x \$750 67,500

100 patients x 90% x \$13.33 x 21 25,194

Total 231,194

Grand Total 231,194

Private Cost

GP

100 patients x 90% x \$17 x 21 32,130

Grand Total 32,130

Sensitivity Analysis 2 - Option 5

Public Cost

Residential Treatment

Detoxification

100 patients x 4% x \$2,500 10,000

Short-term residential treatment

100 patients x 4% x \$7,500 30,000

Therapeutic Community

100 patients x 6% x \$7,200 43,200

100 patients x 6% x 50% x \$14,400 43,200

Methadone Countdown

100 patients x 6% x 3 months x 20 doses x \$5 1,800

Total 128,200

Methadone Treatment

Methadone Cost

90 patients x 12 months x 20 doses x \$5 108,000

Specialist Clinic

90 patients x 10% x \$1,850 16,650

GP

90 patients x 90% x \$750 60,750

90 patients x 90% x \$13.33 x 21 22,674

Total 208,074

Grand Total 336,274

Private Cost

GP

90 patients x 90% x \$17 x 21 28,917

Grand Total 28,917

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