

## And what will we need to add to our current program?

As part of local drug strategies we have to expand street level health and support services for users, including primary health care services, treatment and referral, needle and syringe exchange, housing and employment support, as well as short-term accommodation.

We will need to complement the upcoming State drugs awareness campaign with a 10-year illicit drug communication strategy to ensure a long-term, consistent and coordinated approach.

Despite a level of concern from some quarters we will have to continue to consider the role of supervised injecting facilities and the role of expanding treatment opportunities, such as heroin substitution. Given the evidence of the effectiveness of the Swiss 'heroin trial' in greatly reducing harm to users and to the community (in terms of reduced crime and less public nuisance), it becomes unethical *not* to trial this approach in Australia.

We need to establish greater common ground to minimise the destructive effects of division and disagreement, as exemplified during the debate on a trial of supervised injecting rooms. We strongly agree on the need to decrease the numbers of young (and not so young) people who are injecting drugs or using other drugs harmfully. To do this we need to increase protective factors and minimise the risk factors mentioned earlier.

And if we can do this, then we will also be reducing the same risk factors and increasing the same protective factors of a whole range of issues such as alcohol abuse, smoking, depression, crime, early drop-out from school, suicide, road crashes, HIV infection, and so on. The more we can collectively focus all of our community's efforts on these risk and protective factors, the more successful we will be.

And for this we need an increasingly inclusive, tolerant and productive society—one in which we increasingly talk with each other, not at each other. Together we can do better.

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## LEADING ARTICLES

# New Pharmacotherapies: Improving Treatment Choices for Heroin Users in Victoria

Alison Ritter

### Abstract

*A three-year program of research examining new options for the treatment of heroin dependence focused on the practical application of research for Victoria. Australia has lagged behind other countries in establishing new pharmacotherapy treatments. LAAM, buprenorphine, naltrexone and slow-release oral mor-*

*phine provide possibilities for improving the treatment service system by increasing the choice available to clients. A comprehensive feasibility analysis determined the research questions and trial designs for 14 studies of these new treatments. A summary of the studies is provided here, along with a selection of the results. Importantly, the program of research has demonstrated the ability to conduct sci-*

*entific work while maintaining a focus on the practical implications and contributing to direct enhancement of the treatment service system. Buprenorphine is now registered in Australia and the results of the research program directly contributed to Victorian and national clinical guidelines and training programs for buprenorphine.*

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## Introduction

When a three-year program of research into new pharmacotherapy treatment options for heroin dependence commenced in Victoria in 1997 there was only one pharmacotherapy treatment for heroin dependence—methadone. Controlled randomised trials and large-scale observational studies indicate that methadone treatment is effective in reducing heroin use, improving psycho-social functioning and reducing the risk of blood-borne virus transmission.<sup>1,2,3</sup>

However, there are limitations to methadone treatment. These limitations apply to some individuals currently receiving treatment and deter others from entering treatment. They include the requirement for daily dosing, side-effects and the length of the withdrawal from methadone. More importantly, heroin users have only one drug choice if they wish to enter substitution treatment—that is methadone. Choice is a significant determinant of the outcome of treatment, so greater choice will improve success rates for treatments.

The program of research was concerned with four new drugs: LAAM, buprenorphine, naltrexone and slow-release oral morphine. LAAM, an opioid agonist with a duration of action of 48–72 hours, is used as a maintenance treatment option. The long duration of action allows dosing to be reduced to three times per week and, where take-away doses are prohibited or eliminated, reduces the risk of diversion. LAAM has been shown to reduce heroin use, reduce user involvement in criminal activities, and increase the emotional and physical wellbeing of those individuals participating in treatment.<sup>4,5,6</sup> LAAM is registered in the United States for the treatment of heroin dependence.

Buprenorphine is a partial opioid agonist used in maintenance treatment. Its duration of action is 24–48 hours. There is contradictory information about its pleasurable effects, but it is known to block the effects of other opioids. Withdrawal from

buprenorphine is thought to be mild and overdose risk is low when compared with that of opioid agonists such as methadone and heroin. As with LAAM and methadone, buprenorphine has been shown to be an effective treatment for heroin dependence, reducing illicit drug use and improving individuals psycho-social functioning.<sup>7,8,9,10</sup>

Buprenorphine is registered in France and the United Kingdom, and pending registration for the treatment of heroin dependence in other European countries and the United States.

Buprenorphine also shows considerable promise as an effective drug for use in withdrawal treatment. While a number of withdrawal treatments are available, buprenorphine has the potential benefit of a faster and more cost-effective intervention.

Slow-release oral morphine is an opioid agonist with a 12–24 hour duration of action. It is indicated for use as a maintenance treatment. The slow-release form overcomes many of the disadvantages of the short-acting nature of morphine, so theoretically it should have the same treatment effects as those of methadone, without some of methadone's disadvantages. There has been no research that demonstrates slow-release oral morphine's safety and efficacy in the treatment of heroin dependence. While available in Australia, slow-release oral morphine it is not registered for the treatment of heroin dependence.

Naltrexone is an opioid antagonist that blocks the effects of heroin and other opioids. It has been used in relapse prevention to maintain a drug-free state and also as a pharmacotherapy in drug withdrawal. Research evidence supports its use as a relapse prevention treatment. Naltrexone's use within the context of relapse prevention has been demonstrated to reduce relapse rates and improve psycho-social functioning in individuals who continue to take naltrexone.<sup>11</sup> Naltrexone is registered in over 30 countries for the treatment of heroin dependence,

including the United States and European countries.

The objective of the research program was to conduct trials that would lead to the further development of these new treatments and contribute to their registration in Australia.

## Method

A comprehensive feasibility analysis was conducted in Victoria before the research trials began.<sup>12</sup> Feasibility analysis was concerned with determining the most important research questions and trial design issues. The principles used to inform the final determination of trial designs included practical utility, partnerships and cooperation, contribution to the ultimate goal of registration, and consumer involvement.

Trials were designed to ensure the outcomes were directly related to practice. The LAAM and buprenorphine implementation trials, for example, included a considerable focus on the development of validated clinical guidelines and training programs. Likewise, the research question for naltrexone concerned the role of counselling in addition to naltrexone prescribing.

Trials were designed to use expertise from a range of different sources. Interstate as well as Victorian cooperative efforts occurred. Contribution to registration was a guiding principle, so a significant focus on cost-effectiveness occurred across the main trials. Cost-effectiveness data are crucial to the Commonwealth's decision to subsidise a drug. For our population to have real access to treatment choice, the treatments must be affordable.

Throughout the feasibility phase, consumers were consulted on the trials and trial designs. A specific project was established to pilot a consumer advocacy and complaints mechanism, which was available for trial participants as well as other clients of maintenance treatment. In total 14 different trials were conducted (see Table 1).

## Key Findings

The program of research concluded in June 2001, with final reporting in September 2001. Some studies have been completed, while others are close to finalisation.

The buprenorphine implementation trial produced validated clinical guidelines for maintenance treatment with buprenorphine. These guidelines have been adopted nationally

and are already in use in Victoria. The buprenorphine training package has been developed, evaluated and disseminated. Findings from the randomised trial of buprenorphine for heroin withdrawal revealed the superiority of buprenorphine over clonidine for managing heroin withdrawal, as measured by the user's retention in treatment, heroin use and psycho-social outcomes.<sup>13</sup>

A survey of current methadone

maintenance patients indicated that approximately 70 per cent of current methadone clients were either 'very' or 'extremely' interested in methadone withdrawal; however, only 18-30 per cent of clients are likely to be suitable for withdrawal, based on criteria such as ongoing heroin use and psychosocial functioning. Although a large number of clients want to withdraw from methadone, only a smaller percentage may be suitable according to clinical criteria.

Data analysis is yet to conclude on the naltrexone studies, the cost-effectiveness components of the LAAM and buprenorphine implementation trials, and the neuropsychological, driving and pharmacokinetic studies.

## Conclusions

The new pharmacotherapies project demonstrated the capacity to design and conduct trials of new drug treatment options that have practical application for Victorians. Since the commencement of the research, naltrexone and buprenorphine have been registered in Australia (March 1999 and November 2000 respectively). The research work also directly contributed to the national clinical guidelines and training programs for buprenorphine.

There are a significant number of further research questions and practical issues associated with the delivery of these new treatments. Ongoing research is required.

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Table 1: Summary of the New Pharmacotherapies Project Trials

Trial	Objectives
LAAM implementation trial	Examine community-based LAAM maintenance treatment; develop and evaluate training programs; validate clinical guidelines for LAAM; and conduct a cost-effectiveness analysis (randomised trial)
Buprenorphine implementation trial	Examine community-based buprenorphine maintenance treatment; develop and evaluate training programs; establish validated clinical guidelines for buprenorphine; and conduct a cost-effectiveness analysis (randomised trial)
Investigating heroin withdrawal using buprenorphine	Trial the efficacy of buprenorphine for heroin withdrawal (two pilot dosing studies, followed by randomised controlled trial comparing buprenorphine with clonidine)
Investigating methadone withdrawal using buprenorphine	Survey the need for and suitability of buprenorphine for methadone withdrawal (randomised pilot dosing study, comparing two different buprenorphine withdrawal regimes)
Pilot study of slow-release oral morphine	Examine dosing regimes and heroin use detection methods (multiple case study)
Naltrexone side effects study	Determine rates of depression and dysthymia in heroin-free naltrexone maintenance patients
Naltrexone treatment outcome study	Investigate the role of a structured 12-week counselling program in enhancing naltrexone treatment outcomes (randomised trial)
Examining the safety of driving on methadone, LAAM and buprenorphine	Examine the relative effects of the three maintenance drugs on driving performance (using a driving simulator)
National pregnancy register	Monitor pregnancy outcomes for maintenance patients
Neuropsychological effects study	Examine the differential subjective and objective cognitive effects of LAAM, methadone and buprenorphine
Buprenorphine with Vietnamese clients	Examine the acceptability and effectiveness of buprenorphine for Vietnamese clients (pilot study)
Koori project	Examine the acceptability and effectiveness of maintenance treatments for Koori clients (pilot study)
LAAM and morphine pharmacokinetic studies	Examine the pharmacokinetics and pharmacodynamics of morphine and LAAM
Consumer Advocacy and Complaints Project	Test a consumer advocacy and complaints mechanism for clients in maintenance treatments

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## High-Voltage Power Lines: Are Victorians at Risk?

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### Abstract

*The recent publication of a UK report on the risks of power frequency electromagnetic fields, particularly high-voltage power lines, led to significant media interest and some concern among the Victorian public. The report authors reviewed the results from cellular research, animal experiments and epidemiology to provide a comprehensive assessment of the current cancer risks associated with power frequency electromagnetic fields. This article reviews the report findings and those of other studies on high-voltage power lines, looking at the implications for the Victorian public. Current scientific evidence does not demonstrate a causal link between any health impact and typical exposures to electromagnetic fields. However, a precautionary approach suggests, while the high cost of reducing current exposure from overhead power lines*

*is not justifiable, that future unnecessary heavy exposures should be avoided if this is achievable without excessive costs or technical difficulties.*

### Introduction

The possibility that exposure to low-frequency electromagnetic fields, generated by electric currents, is associated with an increased risk of cancer has been debated since a link was first suggested in 1979.<sup>1</sup> However, this initial work, relying on distances from power lines and on wiring configurations, did not measure electromagnetic fields.

Since that initial report, confirmatory data (either experimental or epidemiological) have not been available and serious limitations have been identified in nearly all studies on power lines and cancer.<sup>2</sup> The lack of epi-

demiological support for the association even led a 1997 *New England Journal of Medicine* editorial to call for a cessation of studies on the topic because these were a 'waste of research resources'.<sup>3</sup>

Electromagnetic fields from power lines are of extremely low frequency. Physicists believe that low levels of environmental exposure are unable to produce biological effects, because the amount of energy in these fields is below that required to break molecular bonds such as those in DNA.<sup>3</sup>

Debate on the topic was rekindled in Victoria recently when the Advisory Group on Non-Ionising Radiation (AGNIR) to the UK National Radiological Protection Board (NRPB), chaired by Sir Richard Doll, published a report on power frequen-