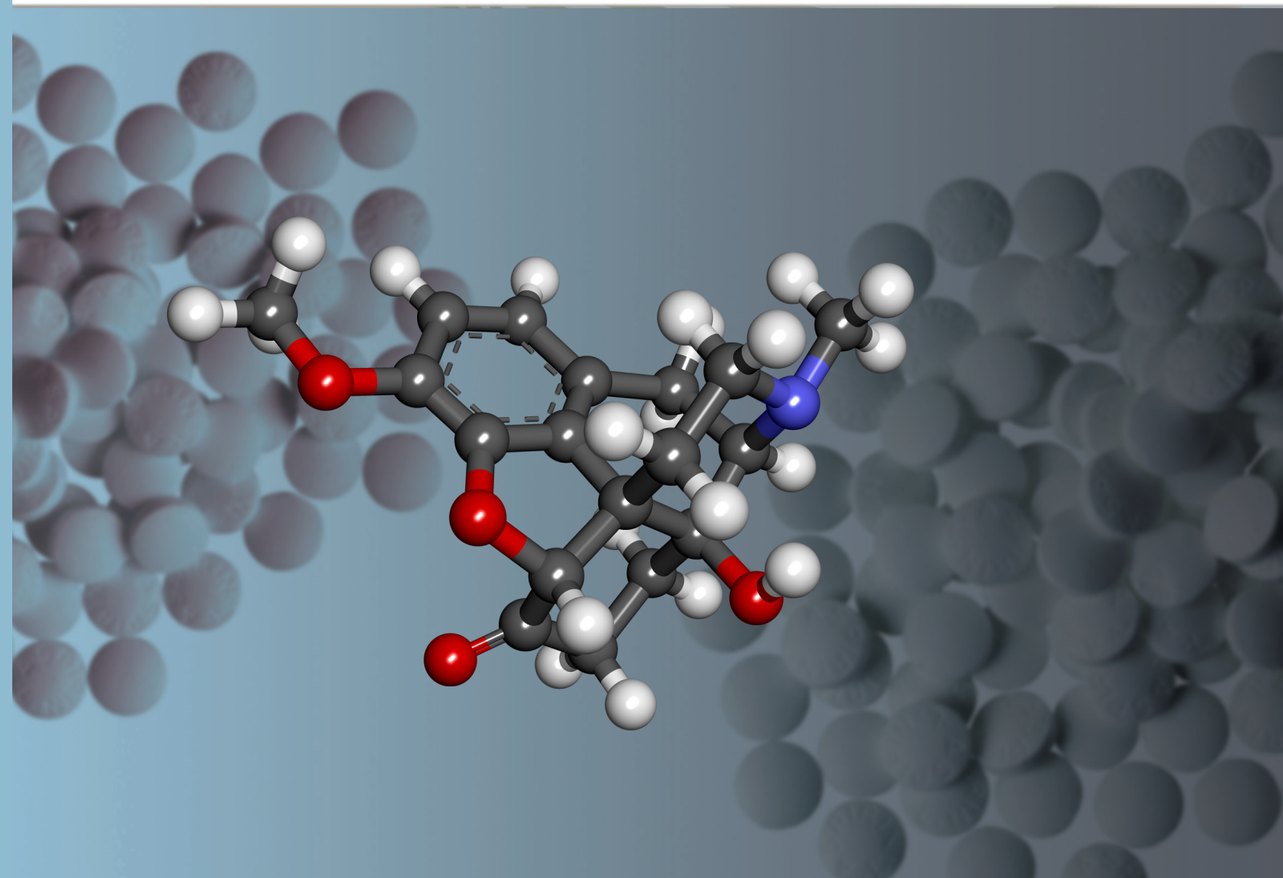
Report:
A Review of Opioid Prescribing in Tasmania
A Blueprint for the Future



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Tasmania

Department of Health and Human Services

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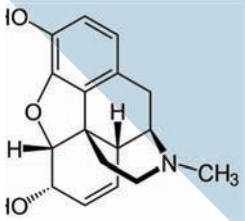

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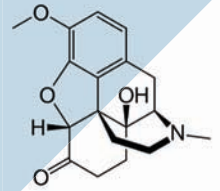

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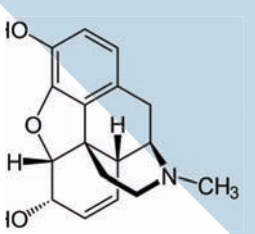

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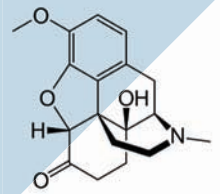

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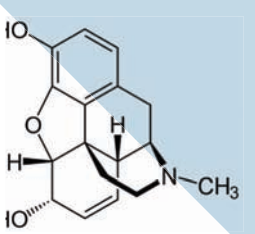


EXECUTIVE SUMMARY

The review of the evidence on opioid medications in Tasmania, and also nationally and internationally, has brought up a number of important observations on the changing landscape in Schedule 8 (S8) opioid medication availability, prescribing, and the changes in the regulation of these potent medications that have occurred in Australian jurisdictions and internationally.

In Section One, the review of the international and national literature identifies consistent and substantial increases in opioid analgesic prescribing across a range of developed nations since the early 1990s. These changes have occurred mainly in the developed and resource rich countries, in particular North America and Western Europe. The increase in prescribing has been in large part a consequence of the pharmaceutical industry developing new products that include slow-release formulations. Much of this increase is driven by prescribing for chronic non-malignant pain, a condition about which there is considerable debate regarding the role of opioids in management. Increases in prescribing have occurred in Tasmania since the late 1990s, with a six- to seven-fold increase in prescribing authorities for opioids over a 12-year period. The increase in authorities for opioid analgesics, which are required for prescribing beyond two months, suggests an increase in chronic opioid therapy (COT) for chronic non-cancer pain.

There is growing concern both internationally and locally about the harms associated with these drugs amongst chronic pain patients, and about extra medical use and diversion . These concerns are based on peer reviewed studies of opioid-related deaths and other harms amongst chronic pain patients and injecting drug users (IDU), primarily in the United States; are shared by a number of medical practitioners and other health professionals in Tasmania; and are borne out by the analysis of Tasmanian and Australian data in Section Two.

PRESCRIBING IN TASMANIA

Opioid analgesic prescribing in Tasmania has increased from around 19,300 scripts in 1999 to around 127,400 scripts in 2010. These increases are similar in proportion to those seen nationally, although time series analysis of prescribing by jurisdiction shows that overall opioid prescribing in Tasmania has grown at a slower rate than in the larger jurisdictions (Section Two). Nevertheless, a comparison with other jurisdictions found that Tasmania is also one of the higher prescribing jurisdictions for morphine and oxycodone per 100,000 persons, along with the Northern Territory and the Australian Capital Territory. The increase has been largely driven by oxycodone, with morphine prescribing falling over that period. Methadone tablet sales to pharmacy have increased from 736 tablets per 1000 persons in 1999 to 904 tablets per 1000 persons in 2009. Sales of methadone tablets in Tasmania are currently around 2.5 times the national rate per 1000 persons.

HARMS IN TASMANIA

Are these changes in prescribing reflected in the harms arising from opioid analgesics? An analysis of all opioid-related deaths in Tasmania from 2000 to 2009 shows a sharp increase in these deaths from 2000 to 2001, with a relatively unchanged pattern since then (Section Two). When benzodiazepine deaths are included, there is a sustained increase from 2004 onwards. Presentations for opioid overdose, intoxication, withdrawal or dependence to the Emergency Departments (ED) of the three major hospitals in Tasmania (Royal Hobart, North-West Region, and Launceston General) have increased from 30 per annum in 2004 to 90 per annum in 2010. Most of this increase occurred between 2004 and 2005, and ED presentations have been stable since 2005. Thus, it appears that there was a large increase in harms in the early part of the last decade (2000 to 2005). Since then, harms have plateaued despite increases in prescribing. This may be the result of a number of factors. Firstly, the Tasmanian Pharmaceutical Services Branch (PSB) has worked to contain these harms in the face of increasing prescribing, using methods of monitoring and regulation that have been consistently verified by international evidence as reducing the harms arising from opioid prescribing. Secondly, since the mid-2000s there have been concerted efforts in Tasmania to more closely supervise Opioid Substitution Treatment (OST) whilst increasing the number of treatment places available. The introduction of OST guidelines in the UK in 1996 requiring fewer take away doses and greater supervised dosing also led to a reduction in methadone deaths (Strang, Manning, Mayet, Ridge, Best, & Sheridan, 2007).

Despite the plateau in harms mentioned above, when prescription opioid-related deaths are compared across jurisdictions, Tasmania has a higher accidental death rate per million people than all Australian jurisdictions

except the Northern Territory. It also has a higher rate of all oxycodone-related deaths than all jurisdictions. Thus, although Tasmania has been effective in containing the harms arising from prescription opioids, there is more to do to reduce the harms amongst those with chronic pain, drug dependence, or both.

Harms amongst IDUs were examined via the Illicit Drug Reporting System (IDRS) data. Tasmania has much higher rates of prescription opioid use amongst IDU, and much less heroin use, trends evident since 2001. Even when using prescription opioids for pain, Tasmanian IDU were more likely to obtain the drug from a dealer than their mainland counterparts. Similarly, more Tasmanian IDRS participants reported that they had experienced a morphine or methadone overdose in the past 12 months in 2010 than nationally. They were far less likely to have experienced a heroin overdose.

Our estimates of the contribution of IDU to opioid prescribing suggest that a significant proportion of morphine and oxycodone is being diverted and/or misused in Tasmania relative to other jurisdictions. Again, this may in part be due to the very low availability of heroin in Tasmania. Nevertheless, it does indicate a need for more careful prescribing and greater assessment by prescribers of diversion and misuse by patients.

The Tasmanian coroner's office has raised methadone deaths as a significant concern in Tasmania. Their findings have provided some of the impetus for new OST guidelines which provide for closer supervision of OST dosing amongst 'at-risk' patients. The coroner's office has commented that the focus of its recent findings has been to encourage these new guidelines to be adopted.

CLINICAL PRACTICE

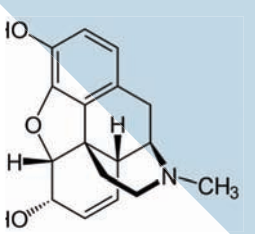
At the same time, there is recognition that general practitioners (GPs) find it difficult to manage extreme 'at-risk' patients who have legitimate ailments along with addiction and psychiatric disorders. Despite GPs' best efforts, many of these patients are resistant to other interventions and refuse referrals to specialists. Coroners also commented on the fact that many of the deaths occur amongst people who have had several attempts at rehabilitation and who have relapsed to polydrug use.

This alludes to the impoverished social and economic circumstances of many such patients: Chronic pain increases with age, female gender, lower levels of completed education; not having private health insurance; receiving a disability or unemployment benefits; being unemployed for health reasons; having poor self-rated health; and high levels of psychological distress (Blyth, March, Brnabic, Jorm, Williamson, & Cousins, 2001).

The biopsychosocial model of pain is based on the premise that chronic pain and the experience of pain is grounded in and influenced by biological, psychological, and social factors (Gatchel, Bo Peng, Peters, Fuchs, & Turk, 2007). Thus, assessment and management of chronic pain needs to address all three of these domains. The social factors can present a challenge for clinicians and for policy makers, if 'social' is interpreted to include employment status, income, personal and family support networks, marital status and so on. There is indeed evidence that lower socioeconomic status is associated with higher prevalence of pain, and with greater disability resulting from pain (Dorner, Muckenhuber, Stronegger, Rasky, Gustorff, & Freidl, 2011, Loyland, 2010), just as there is evidence that occupational stress, job loss, anxiety, depression, and marital status play a role in chronic back pain (Kikuchi, 2008).

Increasingly, it is acknowledged that amongst chronic pain patients there is a high prevalence of childhood trauma (Nicolson, Davis, Kruszewski, & Zautra, 2010; Sachs-Ericsson, Cromer, Hernandez, & Kendall-Tackett, 2009; Sachs-Ericsson, Kendall-Tackett, & Hernandez, 2007). In addition to an increased risk for physical and psychiatric disorders, research from both clinical and general population samples has identified links between childhood physical and sexual abuse and chronic pain, disability, a range of other health problems, and health service utilisation (Chartier, Walker, & Naimark, 2007) that is independent of comorbid depression (Sachs-Ericsson, Kendall-Tackett, et al., 2007).

Although clinicians can and should work with as many of these factors as is feasible, the current report focuses on issues related to prescription opioids, their use and misuse, and regulatory systems that are within the remit of the Tasmanian DHHS to influence such prescribing. Whilst acknowledging the important role



that these structural determinants have, reducing the unemployment rate, addressing income inequity, and reducing the rates of child abuse and neglect are beyond the scope of this report. It is, however, worth noting that recent increases in childhood abuse at the population level will have longer-term consequences for a wide range of adult health problems and the consequent burden upon the health system (Chartier, Walker, et al., 2007; Lamont, 2011).

None of these studies have identified that all chronic pain patients have a history of childhood trauma: some of the associations were quite modest. Nevertheless it is worth noting that these childhood experiences are risk factors for a range of other problems – personality disorder, depression, post-traumatic stress disorder (PTSD), and substance use disorders – that are likely to interfere with the treatment of chronic pain.

As part of the project, a number of prescribers (GPs and specialists) were interviewed using a semi-structured interview. Section Three presents the views of the participants, which are summarised below.

RELIANCE ON OPIOID ANALGESICS FOR CHRONIC PAIN MANAGEMENT

Several prescribers expressed concern about chronic pain management in general practice and about the reliance on opioid analgesics for chronic pain. There was widespread acknowledgement that COT was not very effective for many chronic pain patients, and that once they started taking them it was (a) hard to get them to stop, and (b) rare for the patient to do well on the medications. Nevertheless, there are some patients who benefit from COT, and one of the challenges is to identify, perhaps via a clearly communicated trial of the medication, those patients who do benefit. Given the difficulties reported in getting patients to stop taking these drugs, this approach requires an assertive, structured and well supported approach to trialling the drug.

Five principles can be distilled from the literature that might underpin the prescribing of opioids to patients with chronic non-cancer pain:

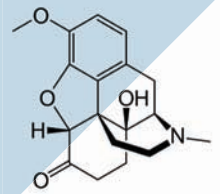
- The experience of chronic pain has biological, psychological and socio-environmental contributions, each of which needs to be assessed.
- Drug therapy – for symptom control – is an adjunct to a more comprehensive care plan that may include other health professionals.
- Opioid pharmacotherapy for patients with chronic pain is an ongoing trial, asking the question, '*Is this person's predicament opioid-responsive*?'
- A trial of opioid analgesics requires goal-setting, explicit agreements, skilled titration of dose and regular monitoring of the "5As" (analgesia, affect, activity, adverse effects, and aberrant behaviours).
- Difficulty in achieving or maintaining the goals of an opioid trial should trigger comprehensive reassessment, which may require referral.

INFLUENCES ON PRESCRIBING

This reliance on opioid analgesics to treat chronic non-malignant pain (CNMP) was commonly thought to be due to lack of education about effective chronic pain treatment, a shortage of specialists, a lack of knowledge about the extent of diversion and misuse, and the structure of general practice where short consultations are not conducive to treating complex chronic pain patients. Several very experienced medical practitioners emphasised this last point very strongly. Other influences included PBS listing of some medications for chronic pain but not others (e.g. pregabalin); a waiting list for OST in Tasmania which might lead doctors to prescribe opioids for maintenance treatment of opioid dependence; a waiting list for surgery (e.g. hip and knee replacements) which can lead to chronic pain; and limited access to, and the high cost of, some other treatments; the nature of the relationship between doctor and patient; and the difficulties inherent in treating patients with multiple physical and psychiatric comorbidities. These constraints may leave opioid analgesics as one of a small number of more accessible options for the patient.

Clinicians, backed by research evidence, emphasised the need for early analgesic interventions to reduce the incidence of chronic pain after surgery. The Acute Postoperative Pain (APOP) Project identified a number of key messages:

- Beginning postoperative pain management in the preoperative period;



- Measuring pain regularly; ensuring that all postoperative patients receive safe and effective analgesia;
- Monitoring for and managing adverse events; and
- Communicating the ongoing pain management plan to patients and primary healthcare providers at discharge

There was also significant concern about the influence of pharmaceutical companies on prescribing rates and patterns, whilst acknowledging that they currently fill a gap in the delivery of education. It was suggested that education about chronic pain management should be delivered by unbiased, authoritative providers, and that this education was best provided in the context of individuals prescribing feedback against normative data, in a case-based format, and, where the practice had liberal prescribing patterns, as a practice-wide intervention.

Some groups of doctors were thought to be more vulnerable to prescribing pressures than others. There is a view supported by anecdotal evidence that new doctors, particularly in certain regional areas, were targeted by drug seekers, some of whom use intimidation and manipulation to get their prescriptions. This alludes to a need to ensure that inductions for new doctors include strategies to deal with these issues and that the practice's prescribing boundaries also protect them from these tactics. An additional concern was doctors who 'buy into' their patients helplessness and suffering and who lack the assertiveness to refuse a prescription and direct their patients towards non-pharmacological treatment. Education in the doctor-patient relationship in Tasmania was thought to be stronger than in other jurisdictions, but lacking with respect to this particular issue.

MANAGING DIVERSION AND EXTRA MEDICAL USE

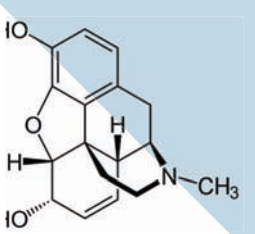
GPs were, in the main, reluctant to assess diversion and misuse of opioid analgesics amongst their patients. A number of reasons were put forward to explain this, including lack of awareness about the problem, discomfort in raising the topic with patients, the fear of damaging long-term relationships with patients, and a lack of knowledge/skill in assessing and managing these risks. It was suggested that a simple tool to assess the risk of diversion and extra medical use would be helpful, along with video clips demonstrating how to refuse a prescription to a patient who has requested it, perhaps made available on the Tasmanian PSB website.

OTHER SUGGESTIONS FOR IMPROVING PRESCRIBING PRACTICES

Some experienced prescribers commented that it is essential for GPs and their patients to understand that chronic pain cannot be 'fixed' and to reframe their role from 'curing patients' to managing chronic problems, with the GP co-ordinating care from psychologists, physiotherapists and the like. This approach was consistent with both a multimodal model of treatment and with the principles of chronic disease management (outlined in Section Four). Nevertheless, there was a widely held perception that in order to adopt this approach, GPs needed greater support from specialist services and easier referral pathways, including better access to psychologists, mental health services, pain clinics, and pain group programs, particularly in the North and North West of the State.

There was also a view that many doctors do not appreciate the bigger picture that the Tasmanian PSB faces in dealing with harms and diversion. In the main, education that is case-based, conducted in small groups, with feedback to doctors about their prescribing patterns was thought to be an effective delivery strategy. The feedback was viewed as a way of doctors recognising the need for peer support and educational activities. A structured peer support network, where cases could be discussed, was also mentioned as valuable in managing more complex patients. There was a suggestion that some of this support could be connected to the Tasmanian PSB. Others stated that there is an important role for the GP Divisions (now Medicare Locals) in holding education events. The education events that have been run by the Division were viewed as very helpful, but not sufficient, and that there needed to be a range of training options from short seminars to more intensive on-the-job training.

When considering changes to clinical practice, clinicians emphasised the need for procedures and guidelines to be integrated with existing systems. For



example, treatment plans and patient information could be set up in Medical Director™ or as part of the Tasmanian PSB's authority process. Others stressed the need for community education. As a starting point, it was suggested that patients who request or are prescribed opioids should negotiate a treatment agreement with their prescribing doctor about the duration of treatment, the need for ongoing review of opioid effectiveness, the importance of monitoring for unwanted adverse events and aberrant behaviours and the use of other pain management strategies.

MANAGING CHRONIC PAIN IN THE OPIOID DEPENDENT PATIENT

The co-occurrence of opioid dependence and severe chronic pain poses significant challenges for patients, families and carers, health practitioners and health systems. Many such patients experience poorly co-ordinated and inadequate treatment and stigma from family, friends, the community and health providers. These, in turn, can impair treatment outcomes and overall quality of life for the patient. OST patients reporting pain have been found to have more severe medical and psychological problems and greater health service utilisation than those without pain (Trafton, Oliva, Horst, Minkel, & Humphreys, 2004). Pain was associated with *increased* likelihood for misuse of analgesics, suggesting that ongoing pain contributes to more severe drug-seeking behaviour. This highlights the need for such patients to have their pain treated. Patients with pain did not differ from patients without pain in use of heroin, alcohol, cocaine or in injecting practices. There are a small number of published reviews or guidelines for managing co-occurring opioid dependence and chronic pain (Ballantyne & LaForge, 2007; Roberts, 2008; Savage, Kirsh, & Passik, 2008). Section Two of this report provides some key principles for managing chronic pain in opioid-dependent patients. A protocol for the management of acute pain in opioid-dependent patients who are treated with methadone or buprenorphine is currently under review at the Royal Hobart Hospital.

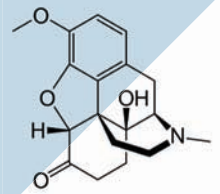
REVIEWING THE MONITORING AND REGULATION OF DRUGS OF DEPENDENCE

Most clinicians interviewed supported the role of the Tasmanian PSB in monitoring and regulating the prescribing of these drugs. Many were eagerly awaiting the roll out of real time reporting and remote access to the Tasmanian Drugs and Poisons Information System (DAPIS) (via the DAPIS Online Remote Access System) that will allow prescribers and pharmacists to view patients' schedule 8 prescribing history. There were, nevertheless, requests for greater transparency in the decision-making process and criteria, more feedback about why individual decisions were made, and an appeals process for patients for whom the PSB held forensic information and who were therefore subject to pick-up or supervision restrictions. It is important that prescribers are apprised of the decision-making process and criteria. A small minority felt that the regulatory process had made GPs unwilling to prescribe opioid analgesics.

All Australian jurisdictions and other developed nations have adopted some form of monitoring and regulation of drugs of dependence. In Australia, all states bar New South Wales, Victoria and Queensland, require a doctor to obtain an authority to prescribe any S8 opioid beyond two months. Where the patient is opioid or drug dependent, all jurisdictions require doctors to obtain an authority before prescribing any S8 opioid medications. Most jurisdictions have a database which allows them to examine a patient's S8 prescription history and to ensure that the appropriate authorities are in place.

Monitoring programs can adopt an inappropriately legalistic approach rather than focus on the quality use of medicines (QUM) and other important aspects of good clinical practice to ensure safe prescribing and better health outcomes. There is a need for the regulatory interface to take on more than a punitive approach, and to engender a shared sense of sound clinical governance from the industry partners, prescribers, pharmacists, and educators. Interestingly, the approach in Tasmania is not a punitive or policing approach; rather, it is aimed at providing a clinical-regulatory interface with QUM. And, although not conclusive, the evidence from Tasmania suggests that their approach to monitoring and regulation has at least contained the harms arising from rapidly increasing opioid analgesic prescribing.

There are two points upon which most of the clinicians consulted agreed. First, that the decision to prescribe S8 opioids is a clinical one. Second, that when there



is evidence that patient or the community is at risk, the regulators have a role to place conditions and restrictions on prescribing, and in extreme cases, to refuse an authority to prescribe. The recommendations below incorporate these findings.

MINIMISING THE MISUSE OF PHARMACEUTICAL OPIOIDS

The findings thus far have covered a range of clinical, education, and regulatory issues. A recent editorial in the Medical Journal of Australia identified a number of strategies available to government to reduce pharmaceutical opioid misuse (Hall & Farrell, 2011). These were:

1. Improving education for doctors and patients about the risks of dependence and overdose, particularly with higher doses. Patients need to be informed by their doctor and their pharmacist about these risks, particularly when used in combination with other central nervous system (CNS) depressants;

2. Providing clearer clinical guidelines for primary health practitioners on the place of opioids in the treatment of chronic non-malignant pain in order to ensure that opioids are not used as a first line treatment;

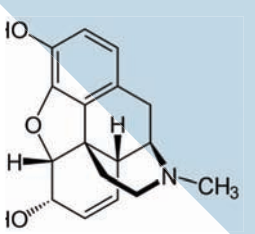
3. Giving clinical priority to reducing suicides amongst patients with chronic pain and who are prescribed opioids;

4. Prescribing smaller quantities of opioids to allow for more regular review of their effectiveness in relieving pain, and monitoring compliance with the medication regimen;

5. Enhancing prescription monitoring systems to reduce doctor-shopping and imprudent prescribing. These systems should be computerised and should operate in real-time;

6. Ensuring that the pharmaceutical industry markets to prescribers in responsible ways and that the clinical information provided for patients discusses the risks of using these drugs in combination with other CNS depressants; and

7. Increasing access to OST for people who use opioids illicitly.



THE BASIS OF THE RECOMMENDATIONS

The Aims, Scope and Outcomes for this Review were stated in the Terms of Reference. The overall Vision or Mission Statement of the Review might be stated as:

Review and contrast current and optimal clinical pain management practices, associated opioid prescribing and opioid risk management practices and opioid related harms and harm management practices in Tasmania.

Make strategic recommendations and stakeholder specific recommendations which will drive clinical practice towards the standards aspired to in pain management, opioid prescribing and opioid risk and harm management.

ORGANISATION OF THE RECOMMENDATIONS

Deriving recommendations for this Report has required careful consideration.

This Review found the greatest area of need identified for attention in Tasmania relates to chronic opioid therapy (COT) for chronic non malignant pain (CNMP).

Multiple recent publications have focused on COT in CNMP. These publications focus on medical practitioner pain management and opioid prescribing practices. However, medical prescribers are both a product of - and supported by - their environment.

Thus responsibility for supporting optimal pain management, opioid prescribing, risk and harm management practice, extends beyond medical prescribers to a much wider group of multidisciplinary, practitioner and administrator, private and public sector, State and National stakeholders.

This is of relevance to the selection, content and organisation of recommendations.

Listing all stakeholders and assigning recommendations and specific tasks to each would be an extensive project, which is beyond the remit of this Review. Listing only general strategies under general headings - such as education, liaison or regulation - results in specific concerns not being addressed. Therefore, a mixed approach has been adopted in organisation.

The Review did identify stakeholders for whom specific recommendations are appropriate at this time. These stakeholders include those within DHHS, and, stakeholders relatively less subject to detailed recommendations in the literature or clinical practice guidelines, such as patients and the pharmaceutical industry, Medicare, the Pharmaceutical Benefits Advisory Committee (PBAC) and the Therapeutic Goods Administration (TGA).

The recommendations are not prioritised given the importance of each in contributing to the overall Vision and Aims of the Review.

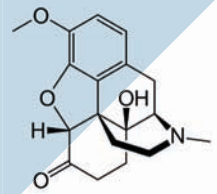
The key intention of the Report is to drive better practices. The Goals, Objectives and Recommendations are all focussed to that primary intention and the Terms of Reference.

The following Recommendations are made on the basis of information collected and reported herein on:

1. The available data (analysed and presented in Section Two) showing the increase in the prescription of opioid medications in Tasmania, and the associated harms, especially the diversion of opioids to the illicit market, and the higher than expected rates of death associated with prescribed opioid use;

2. The benefits of the appropriate use of opioid therapy for cancer pain and for non-cancer pain, in a QUM framework, as described in Section Four and elsewhere (Ballantyne & Shin, 2008);

3. The current regulatory and the legal frameworks for prescribing opioids in Tasmania (and the other similar regulatory frameworks which are used in all of the jurisdictions in Australia presented in Section Five, and indeed internationally in developed countries) which are in turn informed by international opinion and the recommendations from relevant international organisations (e.g., the WHO (WHO), the United Nations Office on Drugs and Crime (UNODC), and the International Narcotics Control Board (INCB));

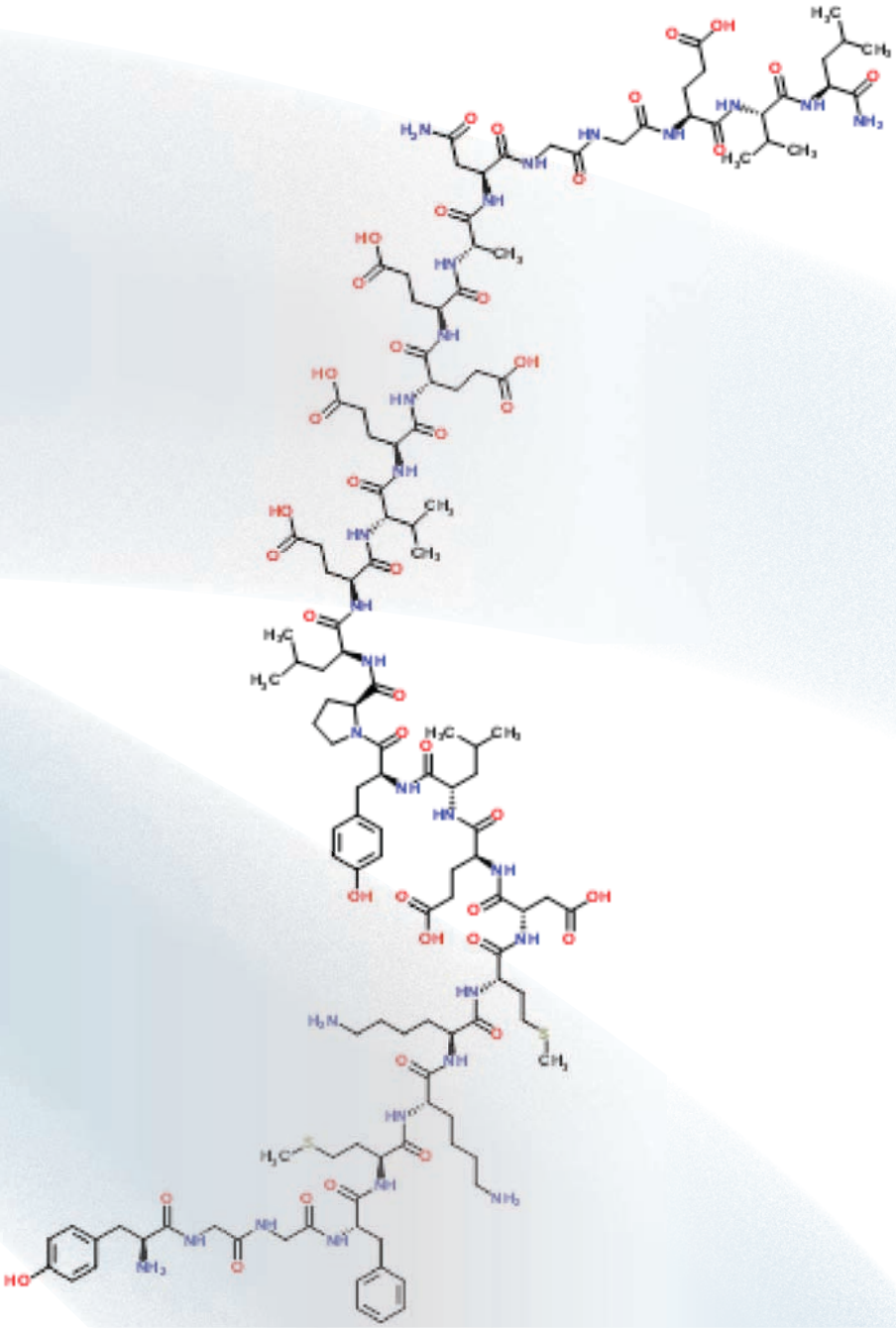


4. The views and the needs of prescribers who manage patients day-to-day (via the GP interviews in Section Three, and the stakeholder interviews across a broad spectrum of organisations and individuals);

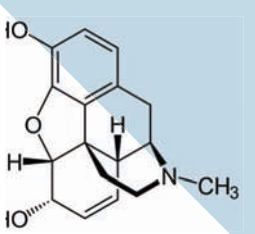
5. The recommendations in the Royal Australasian College of Physicians (RACP) Policy, National Prescribing Service guidelines, acute pain management guidelines, and views of the Pain Society; and

6. In recognition that the Tasmanian Department of Health and Human Services has been implementing changes that meet many of the recommendations contained in the RACP policy document since 2007, on a continuing basis.

A summary of the recommendations is presented below, with the full set of Recommendations following Section Five of the report (page 82).



SUMMARY OF RECOMMENDATIONS



GOAL 1

To provide for the sustainable development and support of health care practitioner education in pain and opioid management.

OBJECTIVE 1.1

Address broad medical practitioner education needs.

Recommendation 1.1.1

That medical practitioner pain management and opioid prescribing education needs are urgently developed and provided on appropriate platforms.

Recommendation 1.1.2

That education development and delivery is resourced in a sustainable manner.

OBJECTIVE 1.2

Address continuing medical education needs.

Recommendation 1.2.1

DHHS and community practice clinical patient information and management platforms should encourage best practice through educational resources and decision support.

Recommendation 1.2.2

Opioid prescribing feedback should be provided to opioid prescribers through any or all of medical practice, State (PSB), Federal (Medicare PBS) information systems.

Recommendation 1.2.3

Deliver education by the academic detailing of practices as well as medical practitioners.

Recommendation 1.2.4

Where unsafe or inappropriate prescribing behaviours are demonstrated, QUM training for opioid prescribing should be required.

Recommendation 1.2.5

New opioid prescribers, unfamiliar with Australian systems and practices, should engage in alcohol and drug and pain management, induction and orientation activities.

Recommendation 1.2.6

Educate opioid prescribers about doctor and patient expectations of opioid therapy and the different management tasks required of a medical practitioner in CNMP.

Recommendation 1.2.7

Determine and evaluate the efficacy of educational interventions on opioid prescribers and opioid prescribing in Tasmania.

OBJECTIVE 1.3

Address postgraduate - prevocational and vocational training – education needs.

Recommendation 1.3.1

Review and support medical practitioner post graduate year 1 and 2 education.

OBJECTIVE 1.4

Address undergraduate education needs.

Recommendation 1.4.1

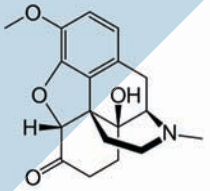
Develop undergraduate education programs that appropriately integrate pain and addiction medicine.

OBJECTIVE 1.5

Address the education needs of all multidisciplinary health care provider team members.

Recommendation 1.5.1

In order to provide the essential hospital and community infrastructure to support appropriate pain management, enhanced undergraduate and postgraduate education of all multidisciplinary members of the pain management team is required.



GOAL 2

To support appropriate regulatory policy and processes that provide for legislative requirements and drive better clinical practice.

OBJECTIVE 2.1

To support the implementation and evaluation of real time prescribing information systems.

Recommendation 2.1.1

That the implementation of real time opioid prescribing and dispensing systems be supported.

Recommendation 2.1.2

That the DORA system be evaluated against key outcomes of interest to the community.

OBJECTIVE 2.2

To support best practice PSB activities and processes that assist its mission.

Recommendation 2.2.1

That in the face of increasing demand, the DHHS PSB be adequately resourced, in order to provide for its legal and community obligations.

Recommendation 2.2.2

That PSB governance be reviewed in order to optimise service delivery, in the context of DHHS organisation design and integration.

Recommendation 2.2.3

That PSB ensure procedural fairness by stating a clearly defined role for each decision making tier, with a defined work flow and defined criteria for decision making, review of decision making and feedback to applicants.

Recommendation 2.2.4

That PSB support best practice procedural fairness through the appropriate communication to opioid prescribers of its decision making processes and decisions.

Recommendation 2.2.5

That PSB regularly engage with the Tasmanian Ombudsman to ensure ongoing procedural fairness in a conflict prone environment.

OBJECTIVE 2.3

To support the PSB in encouraging optimal clinical practice related to pain management, opioid prescribing and opioid risk and harm assessment and management.

Recommendation 2.3.1

That PSB expand the resources available to patients and opioid prescribers on its website to include those that cover optimal CNMP management and opioid prescribing.

Recommendation 2.3.2

That the Application to Prescribe Opioids and supporting information be revised to include clinical information relevant to an opioid prescriber's decision to prescribe, that assists in PSB decision making at any tier and encourages better pain and opioid prescribing practice.

Recommendation 2.3.4

That applications to prescribe to PSB be accompanied by a treatment agreement/opioid therapy contract signed by the patient and prescriber.

Recommendation 2.3.5

That prescribers who breach Tasmanian regulations be counselled regarding inappropriate prescriber behaviour.

Recommendation 2.3.6

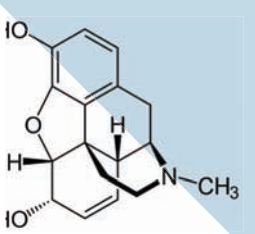
That doctors who wish to prescribe methadone tablets or hydromorphone undertake additional education regarding the safer prescribing of these drugs before being permitted to prescribe them.

OBJECTIVE 2.4

To advance national consistency in legislation and regulation surrounding opioid prescribing.

Recommendation 2.4.1

That national opioid prescribing regulations be harmonised to deliver consistency in the care and protection of patients across Australia.



GOAL 3

To support appropriate acute pain management and opioid risk management associated with acute care facilities.

OBJECTIVE 3.1

To appropriately manage pre-operative and post-operative patients suffering persistent pain or in transition from acute to CNMP.

Recommendation 3.1.1

That patients in pain, awaiting surgery, be reviewed as appropriate, to manage their pain, maximise function and minimise the risk of transition to chronic pain.

Recommendation 3.1.2

That patients booked for surgery undergo a pain and drug use directed assessment to facilitate appropriate in patient care.

Recommendation 3.1.3

That the establishment of an acute to chronic post operative or post acute care discharge 'transition' pain service be continued and promoted.

Recommendation 3.1.4

That regular Acute Pain Service (APS) staff in particular - and all acute care staff in general - receive additional training in the recognition, assessment and management of patients with aberrant, drug related behaviours or associated disorders.

Recommendation 3.1.5

That acute care facilities develop and implement effective discharge policies for pain management where associated with opioid and or benzodiazepine prescribing.

Recommendation 3.1.6

That revised guidelines for the pain management of opioid dependent patients be developed and implemented.

Recommendation 3.1.7

That acute care coding of drug misuse related admissions be standardised and uniformly applied.

GOAL 4

To enhance CNMP management in the community.

OBJECTIVE 4.1

To promote the effective management of CNMP and the appropriate prescribing of opioids.

Recommendation 4.1.1

That optimal clinical practice in opioid prescribing adheres to an approach titled "Triple-5".

Recommendation 4.1.2

Follow up of patients requires a systematic approach to assessment using the 5 + 2 'A's.

Recommendation 4.1.3

That a community medical practice demonstration project be instituted to demonstrate the "Triple-5" and 5 + 2 'A's approaches in practice.

Recommendation 4.1.4

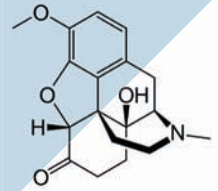
That all initial and continuing trials of opioid therapy be subject to a treatment agreement/management plan.

Recommendation 4.1.5

The prescribing of opioids, where patients are prescribed benzodiazepines and/or are ingesting alcohol in excess of national guidelines, is to be actively discouraged.

Recommendation 4.1.6

That treatment pathways be developed and promoted for the management of patients with CNMP.



GOAL 5

To support medical practitioners managing patients with pain and drug related disorders.

OBJECTIVE 5.1

To provide appropriately available access to liaison services and tertiary referral units.

Recommendation 5.1.1

Provide a needs based range of specialist liaison support services in pain and addiction medicine for opioid prescribers.

Recommendation 5.1.2

Further develop referral pathways for pain and addiction medicine review in Tasmania.

OBJECTIVE 5.2

Support the development of level one or community based multidisciplinary health care networks that support optimal CNMP management.

Recommendation 5.2.1

Support the key role of community physiotherapy, clinical psychology, psychiatry, social work and other potential members of the multidisciplinary pain management team, through the facilitation of education and training that assists them to deliver services.

Recommendation 5.2.2

Develop and maintain a multidisciplinary register of health care professionals with expertise in pain management.

Recommendation 5.2.3

That the development of local, community, multidisciplinary pain management care teams is actively promoted to opioid prescribers and actively facilitated by DHHS and health care representative organisations.

Recommendation 5.2.4

That DHHS continue to actively facilitate and support the engagement and integration of tertiary and community, multidisciplinary, pain management related services.

GOAL 6

To improve support for patients with co-morbid pain and opioid use disorders.

OBJECTIVE 6.1

To improve the identification and management of patients with co-morbid pain and opioid use disorders.

Recommendation 6.1.1

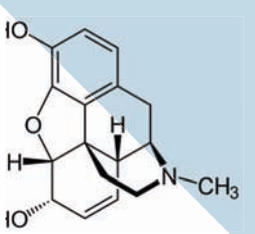
Determine specific methods to identify patients with co-morbid pain and opioid use disorders and appropriate management and referral pathway protocols.

Recommendation 6.1.2

Improve state-wide access to opioid substitution therapy (OST) programs.

Recommendation 6.1.3

That Gas Chromatography Mass Spectrometry (GC/MS) services be available to GPs, Pain and Addiction care services in Tasmania.



GOAL 7

Promote and support the role of non-opioid prescriber members of the multidisciplinary pain management team.

OBJECTIVE 7.1

To identify additional, potential members of a multidisciplinary pain management health care team who may contribute to the effective management of pain or opioids.

Recommendation 7.1.1

Engage and develop professional pharmacists as part of a community multidisciplinary pain management health care team.

OBJECTIVE 7.2

To enhance the role of existing public and private sector non-opioid prescribing health care providers that are already identified as key members of multidisciplinary pain management teams.

Recommendation 7.2.1

That the implementation team engage with public and private sector, non opioid prescribing, multidisciplinary pain management, health care provider professional groups and individuals in Tasmania, with the intent of seeking their active assistance in further developing and centralising their role in persistent non malignant pain management in particular.

GOAL 8

To engage the pharmaceutical industry in effective pain and opioid management and risk evaluation and mitigation strategies.

OBJECTIVE 8.1

That the pharmaceutical industry supports effective and appropriate CNMP management in all aspects of its interface with patients and health care providers.

Recommendation 8.1.1

That the pharmaceutical industry, in all opioid related interactions with patients and health care providers, is required to advise of the risks and benefits of its products.

Recommendation 8.1.2

That Medicines Australia initiate, develop and implement an industry wide Code of Conduct in relation to CNMP and opioids.

Recommendation 8.1.3

That Medicines Australia in conjunction with key stakeholders - such as the FPM ANZCA and the AChAM - develop a pharmaceutical industry risk evaluation and mitigation strategy related to the use of opioid medications.

OBJECTIVE 8.2

To promote the development and delivery of independent pain management and opioid related education for health care providers.

Recommendation 8.2.1

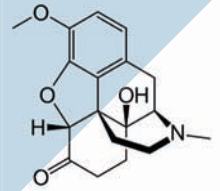
That State and National authorities in Australia invest in the sustainable development and delivery of pain and opioid prescribing health care provider education.

OBJECTIVE 8.3

That new products are thoroughly assessed for post marketing related patient and community risk, prior to marketing approval.

Recommendation 8.3.1

That new opioids and or their formulations be assessed for their abuse potential and associated risk.



GOAL 9

The removal of structural impediments to effective clinical pain management and opioid risk and harm management practices.

OBJECTIVE 9.1

That primary care health care providers as the foremost prescribers of opioids, especially in CNMP, are supported in their efforts to deliver effective, best practice.

Recommendation 9.1.1

That the Medicare CMBS recognise the patient centred and economic importance of effective CNMP management and that of opioid risk and harm management.

Recommendation 9.1.2

That the Medicare CMBS effectively support the role of addiction medicine in opioid associated risk and harm management in Australia.

GOAL 10

To promote more effective national opioid related regulation practice in Australia.

OBJECTIVE 10.1

That the Federal Government and Commonwealth of Australia Agencies formally acknowledge and actively engage in activities which promote effective pain management and opioid risk management.

Recommendation 10.1.1

That the FPM ANZCA submission to the PBAC be supported at Agency and Ministerial level.

Recommendation 10.1.2

That the granting of a PBS related financial subsidy for an opioid medication is subject to the granting of a PSB authority to prescribe.

GOAL 11

To promote and ensure public and patient awareness of the risks and benefits of - and the rights and responsibilities of – patients engaging in opioid therapy in pain management.

OBJECTIVE 11.1

To accurately educate the public and therefore patients about pain management and opioid related risks and benefits.

Recommendation 11.1.1

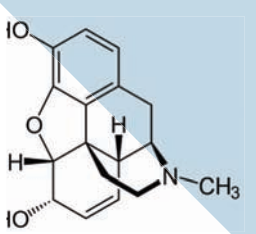
That all patients are properly informed about the risks and benefits of opioid therapy and their rights and responsibilities in opioid therapy and then properly consent.

Recommendation 11.1.2

That a public information campaign aimed at reducing opioid harms be developed and delivered, after considering the potential that an ill-designed campaign may produce no benefit and at worse may result in increased community awareness and drug-seeking behaviour.

Recommendation 11.1.3

Pain Management and Alcohol and Drug Services staff actively seek to engage with media services in order to ensure that accurate knowledge is available to journalists as well as readily available liaison contacts in pain and addiction medicine.



GOAL 12

To implement, monitor and evaluate the Recommendations.

OBJECTIVE 12.1

To describe the processes required for implementation, monitoring and evaluation of the Report Recommendations against the required outcomes.

Recommendation 12.1.1

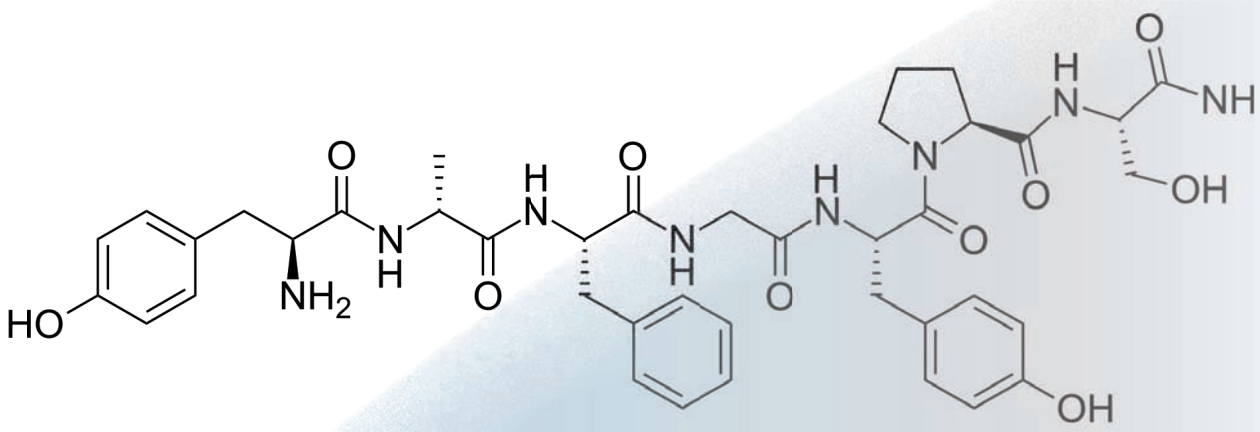
Form an implementation leadership group.

Recommendation 12.1.2

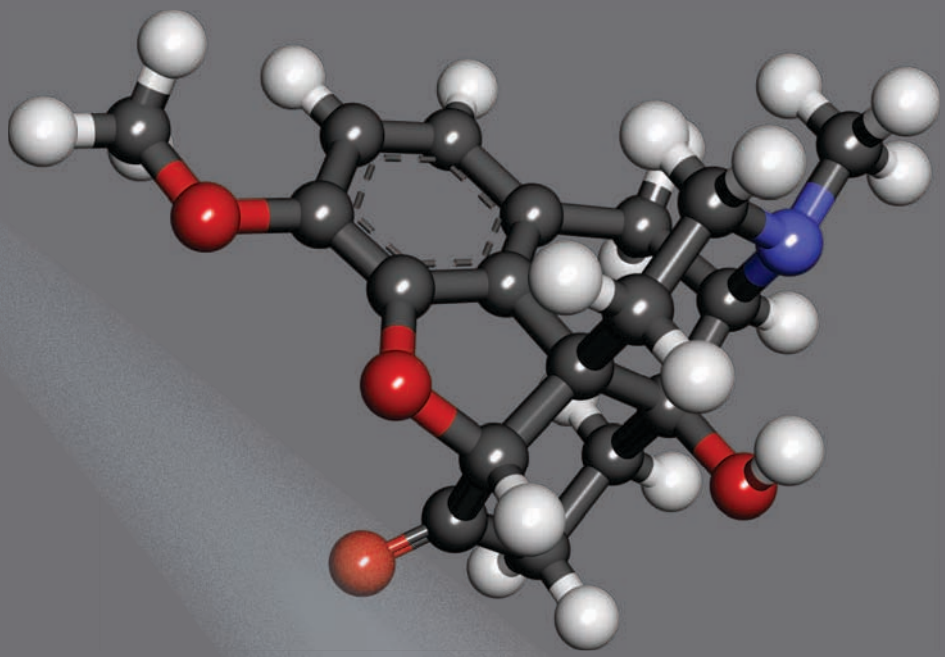
Undertake monitoring and evaluation of progress and outcomes.

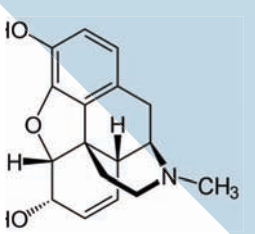
Recommendation 12.1.3

Formulate a strategic action plan.



SECTION ONE: PRESCRIBED OPIOID EPIDEMIOLOGY AND HARMS – A LITERATURE REVIEW





TASMANIAN BACKGROUND

Changes in prescribed opioid trends in Tasmania have mirrored the overseas trends. Specifically, since the early 1990s and the introduction of a range of longer-acting opioid analgesics, North America and parts of Europe have experienced large increases in the volume of opioid analgesic prescribing (Centers for Disease Control Prevention, 2008; Compton, Thomas, Conway, & Colliver, 2005; Dasgupta, Kramer, Zalman, Carino, Smith, Haddox, & Wright, 2006; Dhalla, Mamdani, Sivilotti, Kopp, Qureshi, & Juurlink, 2009; Dominick, Bosworth, Dudley, Waters, Campbell, & Keefe, 2004; Edlund, Martin, Devries, Fan, Braden, & Sullivan, 2010; Fredheim, Skurtveit, Breivik, & Borchgrevink, 2010; Hertz & Knight, 2006; Popova, Patra, Mohapatra, Fischer, & Rehm, 2009). Opioid analgesic prescribing has increased in all jurisdictions in Australia including Tasmania, albeit a few years after the increases were seen in North America.

It would appear that a large part of the increased prescribing is being driven by the use of opioids to treat chronic non-malignant pain (CNMP) in general practice. This is occurring in the midst of controversy and uncertainty about the appropriate role of opioids in managing CNMP (Royal Australasian College of Physicians, 2009). There is some evidence that chronic opioid therapy (COT) for pain is of limited benefit (Chou, 2009; Noble, Treadwell, Tregear, Coates, Wiffen, Akafomo, & Schoelles, 2010).

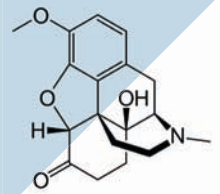
In Tasmania, health authorities have been working to reduce the harms they have seen arising from this increase in COT. Some of the concern about opioid (and benzodiazepine) prescribing in Tasmania is captured in a document entitled "*Prescribing issues in Tasmania: The escalating concerns in regard to the diversion and inappropriate use of prescribed opioids*", an item for discussion presented to the General Practice Advisory Council of Australia. Since then, The Tasmanian Department of Health and Human Services (DHHS) has been working towards opioid prescribing reforms, all of which are consistent with the recommendations from the Prescription Opioid Policy (Royal Australasian College of Physicians, 2009).

Nevertheless there has been a substantial increase in opioid prescribing in Tasmania in the past 12 years, as evidenced by a rise in the number of authorities to prescribe opioid analgesics. An authority must be issued to prescribe a schedule 8 (S8) opioid analgesic or benzodiazepine to a patient for two months or longer. Thus, examining the increase in authorities provides some indication of the increasing number of patients who are prescribed opioids for chronic pain. The number increased from 1,026 authorities issued in 1998/99 to 7,607 authorities in 2009/10. The number of authorities for opioid analgesics alone in 2009/10 is still likely to have been around 6,850. It is estimated that around 5% of authorities are for cancer pain, so this increase cannot be accounted for by prescribing for cancer patients.

An increase in authorities to prescribe does not necessarily indicate problematic prescribing. In the 2008/09 financial year, 9% of patients receiving opioid analgesics for more than two months in Tasmania had conditions placed on the authority to prescribe these drugs. These conditions, such as limiting supply or requiring supervision of dosing, are only placed on the authority to prescribe when there is some evidence that the patient is at risk of harm or is misusing or diverting the medication.

Because of the very low availability of illicit heroin in Tasmania, injecting drug users (IDUs) misuse prescription opioids at a higher rate than do IDUs in mainland Australia (Australian Institute of Health and Welfare, 2008; Fry & Smith, 2007). In Section Two of this report, the proportion of prescribed opioids being used by IDUs in each jurisdiction is estimated in order to provide a clearer picture of just how much of the increase in prescribing is due to diversion and misuse.

Oxycodone, the opioid analgesic most frequently prescribed in Tasmania, has caused more deaths per million population in Tasmania than in any other Australian jurisdiction (Section Two). Tasmania also has a much higher level of methadone tablet prescribing per 1,000 population than the Australian average, with wholesale data indicating 2.5 to 2.8 times greater use in Tasmania than the national average (Section Two). Methadone is a particularly difficult drug to prescribe safely, given its long half-life, the small difference between a therapeutic and toxic blood level, individual variability in the rate of metabolism, and its interaction with other prescription drugs (Paulozzi, Logan, Hall, McKinstry, Kaplan, & Crosby, 2009). In the United States



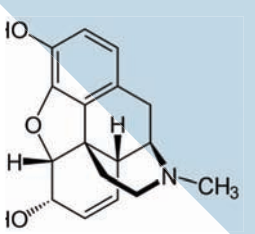
(US), methadone accounts for less than 5% of opioids prescribed but is implicated in 30% of opioid-related deaths (Webster, Cochella, Dasgupta, Fakata, Fine, Fishman, Grey, Johnson, Lee, Passik, Peppin, Porucznik, Ray, Schnoll, Stieg, & Wakeland, 2011). Although this increased overdose risk may be due in part to methadone's use in opioid substitution therapy (OST), an earlier analysis found that much of the increase in methadone prescribing in the US was for chronic pain (Paulozzi, Budnitz, & Xi, 2006). Thus, its far wider use in general practice in Tasmania is a cause for concern, and this has been noted by Tasmanian Coroners because of its role in many deaths this past decade (personal communication, August 2011).

In addition to the misuse of prescription opioids (and benzodiazepines) amongst IDUs, there are also harms, such as fatal overdose, amongst older chronic pain patients in Australia. A review of oxycodone deaths in New South Wales revealed that 27% were known IDUs, almost a third of decedents had not been prescribed the oxycodone, and that non-IDU deaths were more likely to be suicide than IDU deaths (Darke, 2011; Darke, Duflou, & Torok, 2011). The Prescribed Opioid Project, conducted in Tasmania in 2004, identified a total of 64 deaths over a 45-month period in which opioids played a role in the lifestyle, treatment and/or consequent death of the patient (McKeown, 2004). Just under half had a co-diagnosis of drug dependence and chronic pain and around one-quarter did not have a current prescription for drugs present in post-mortem toxicology. Chronic pain patients may also become dependent on their opioid analgesics, creating a range of other problems for the patient, as indicated by the following case vignette (with the personal details altered to de-identify the individual).

> Jenny first began taking morphine in middle age, following fractured vertebrae. About a year later, Jenny was still taking opioids and her dose was escalating. A specialist noted at this time that Jenny may no longer need this level of opioids for pain, but that dependence was now an issue. Jenny transferred to two other GPs, and her dose escalated to 120mg of MS Contin™ a day. A further specialist assessment concluded that Jenny should be transferred to the methadone maintenance program, as there was evidence of dependence and injecting drug use. Jenny was placed on daily pick up of her opioid medication. Nevertheless, her dose continued to escalate and there were further reports of her injecting the medication. An authority issued following these reports specified that the patient be referred to the Alcohol and Drug Service (ADS), and that she must continue to collect her medication daily.
>
> Jenny continued to change prescribers. By this time, she was selling her medication and her dose increased again. Another GP commenced prescribing but applied none of the conditions specified on the authority to prescribe. Jenny was also receiving other narcotic medication illicitly via the post. Jenny's most recent GP was advised to send her to ADS. Jenny missed two appointments with ADS. The authority to prescribe her opioids was issued only on condition that Jenny attend a third appointment. However, her GP did not read the authority fully, and dosing conditions were not applied during this period. Following enforcement of the conditions specified on the authority to prescribe, Jenny moved to another State.

This vignette illustrates the following points:

- One of the risks associated with chronic opioid therapy is dose escalation and dependence. The use of opioids for chronic pain is increasingly a pathway into opioid dependence.
- Dose escalation, seeing multiple prescribers and use of opioids via unauthorised routes (e.g. injection) are clear signs that the patient is in trouble and that the harms of opioid use are outweighing the benefits.
- There is clearly diversion and misuse occurring amongst patients who are prescribed opioids for chronic pain. Urine drug screening is one way to ascertain if a patient is using the drugs they are prescribed.
- Many patients who are on chronic opioid therapy and experiencing difficulties with it are resistant to engaging with structured treatment through the alcohol and drug service.



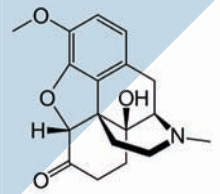
Many people who use drugs illicitly also experience chronic pain. Very little data is available in this area, and all of it is self-reported. Thus it is difficult to determine the extent to which some of the pain is associated with the dependence and withdrawal syndrome. Nevertheless, in Australia one-third of regular IDUs reported using prescription opioids for pain in the previous six months. Of this group, 47% reported that it was for CNMP. Forty-nine percent obtained these opioids from their regular doctor, 23% from a dealer, and 15% from a friend or acquaintance. The remainder obtained the medication from an unknown doctor (8%), pain specialist (3%), family member or partner (2%) (Phillips & Larance, 2010). Analysis of the Illicit Drug Reporting System (IDRS) data for Tasmania found that 29% of participants had used prescription opioids for pain in the previous six months, and of these, 35% reported CNMP. Thirty-one percent obtained these opioids from their regular doctor, 38% from a dealer, 10% from a friend, 14% an unknown doctor, and 7% from a pain specialist. Thus, a higher proportion of opioids for pain were obtained from a dealer versus a regular doctor in Tasmania. It can be difficult to treat CNMP with opioid analgesics where the patient has past or current opioid dependence:

> Stephanie requested Kapanol™ from a pain specialist to treat her back pain. The pain specialist recommended physical therapies and treatment for mood and anxiety disorders, but did not provide a prescription for Kapanol™. This decision was made because of concerns about the high risk for adverse events for the patient, with the pain specialist noting that any opioid treatment should be provided through ADS. Stephanie did not wish to pursue these other treatment options. She had a history of heroin and other drug use and had been on a methadone maintenance program for opioid dependence. She had also been prescribed alprazolam for anxiety, and used diazepam obtained through a dealer. Stephanie denied a history of injecting drug use, although a clinical examination revealed needle marks consistent with injecting drug use. Stephanie did not give permission for her treating health professionals to speak with each other in order to safely co-ordinate her medications and other treatment. The patient did not tell the pain specialist that she was on the methadone program.
>
> Subsequently, ADS has proposed that Stephanie re-commence OST using Suboxone™ providing that she is willing to communicate freely with all clinicians involved in her care, follow through on the pain specialist's recommendations, conform to the boundaries set around her prescription opioids, and to attend all appointments with her clinicians. One of her treating doctors summarised the case as follows: "*... a patient with complex physical, mental health and drug addiction problems who has a lengthy history of high risk behaviour, treatment non adherence, refusal to allow ... a full history to be obtained, and refusing intervention that would maximise treatment outcomes and reduce risks to herself and to the community.*"

This vignette illustrates the following points:

- Patients may have a variety of reasons for preferring a prescription drug to physical and psychological therapies for pain and other comorbid conditions. While patient preference is a consideration, it should not be a justification for prescribing an opioid outside of a broader pain management plan.
- There are times when the prescriber needs corroborating evidence to check patient reports of prescription drug misuse.
- Although patients may be concerned about confidentiality, communication between treating professionals is essential when prescribing drugs of dependence. This is particularly so when the patient is likely to be receiving a number of drug types.
- These principals are critical for high risk patients.

During interviews with Tasmanian prescribers several GPs expressed concern about opioid prescribing for chronic pain in Tasmania. They expressed the view that once patients with chronic pain start taking opioids, it is hard to get them to stop, and they almost never do well in terms of improved functioning and quality of life. This is a view that is shared by some experienced pain specialists internationally (Ballantyne & Shin, 2008; Katz, 2010). Pain specialists have for some time now advocated a multimodal approach to managing chronic pain where physical and psychological therapies are



emphasised and opioid analgesics are considered as a second or third line treatment. There is growing recognition that the patients most at risk of developing CNMP are those with a history of trauma and multiple physical and mental disorders, including past or current drug problems or dependence:

> In his 30s, Peter started using opioid analgesics prescribed by a regional psychiatric unit. He was then prescribed opioids by his GP. Peter left the State for a period of time, and then returned to Tasmania. Peter had been diagnosed with a serious mental disorder and was taking antipsychotic medications. His opioid dose had more than doubled in a 12 month period. His new GP applied for an authority to continue prescribing opioids. A specialist review committee recommended that an authority be approved for three months, with urgent referral to ADS. ADS assessment indicated that Peter had pain from a 10-year old injury, and that the dose escalation resulted from Peter's attempts to cope with the pain. This assessment recommended dose reduction once Peter's mental health and family situation had stabilised. Opioid prescribing was continued, with thrice weekly dispensing at a single pharmacy. Shortly thereafter, information was received that Peter was possibly selling his medication. Around this time, Peter started receiving opioids from a second GP. This was picked up once the Tasmanian PSB reviewed pharmacist records. This second GP agreed to cancel his authority to prescribe to Peter, and Peter was transferred to ADS, with daily supervised dosing. Due to Peter's disruptive behaviour in local pharmacies, the hospital pharmacy was asked to take over his dosing. Peter again left Tasmania, then returned some months later to a rural area which made supervised dosing difficult. The rural GP was advised that the only way a prescribing authority would be issued was if Peter received daily supervised dosing, until he could be assessed by ADS.

This vignette highlights the following points:

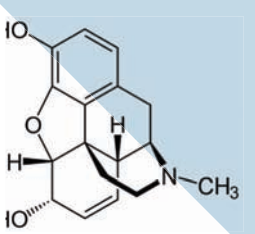
- Patients with chronic pain often have multiple physical and psychiatric comorbid conditions.
- These patients require a co-ordinated, multimodal management approach to managing their pain, their drug use, and their psychiatric disorders

Yet, prescribing opioid analgesics and other medications in the absence of other therapies probably occurs more often than is desirable in many complex chronic pain patients who are managed by busy, time-pressured GPs with a commitment to relieve their patients' suffering, limited access to specialist consultation or referral, and patients desperate for pain relief.

Prescribing patterns can also become established when a patient is discharged from hospital on opioids and/or benzodiazepines, particularly when there is no clear treatment plan on discharge. The use of opioids for moderate to severe acute pain is appropriate, but a plan for ceasing the medications after discharge is often not communicated to the patient's GP. Discharge summaries have been a long-term problem in Tasmania, and in their absence, some GPs have continued prescribing medications that were only intended for short-term patient use and in doses that are tapered to zero, usually over a period of days or up to one or two weeks.

There is a growing awareness of the need to have an agreed 'ceiling dose' which alerts prescribers to the need for a review of patient management. Higher doses have been found to result in a three- to four-fold increase in overdose risk (Bohnert, Valenstein, Bair, Ganoczy, McCarthy, Ilgen, & Blow, 2011; Gomes, Mamdani, Dhalla, Paterson, & Juurlink, 2011). A further concern is patients who are prescribed multiple medications: opioid analgesics, sedatives, anti-psychotics, and anti-depressants. The combination of these medications is particularly dangerous given that most or all of them are central nervous system (CNS) depressants. The majority of overdose deaths result from a combination of CNS depressants, some of which may be recently prescribed, others obtained from friends, relatives or illicit sources, and others left over from previous prescriptions. In 2007, regulatory changes to manage the co-prescribing of opioids and alprazolam were put in place by the Tasmanian PSB because of concerns about misuse, overuse (alprazolam was being prescribed at a rate more than double the national average), and overdose, particularly amongst IDUs (Hooper, Bruno, Sharpe, & Tahmindjis, 2009).

New doctors in rural and regional areas may be targeted by doctor shoppers, and can be subjected to threats. Thus, demanding and difficult patients may get the



prescriptions they want even though the doctor knows it is not medically sound practice. Some doctors have placed their patients back on their same drug, doses and dispensing arrangements after a serious adverse event, such as an overdose requiring active resuscitation in a hospital Emergency Department (ED) or after an ischemic limb or loss of a limb from injecting, despite advice to alter the treatment plan in a way that reduces the risks.

Patients who may be viewed as having more medically legitimate needs for opioids are also at risk of dose escalation and harm (Sproule, 2011). Dichotomising patients into 'legitimate' patients and 'abusers' creates a risk where the first group of patients may not be assessed for the risks associated with opioid analgesics, and the second misses out on treatment for pain. Media reports of pharmaceutical misuse and harms in Tasmania do not always present a particularly accurate or balanced picture of the problems experienced within the broader community, instead focusing on illicit opioid users (Killick, 2011; Pippos, 2011; Poskitt, 2011; Smith, 2011). Interestingly, there is evidence of a temporal association between news media reporting of opioid misuse and opioid-related mortality (Dasgupta, Mandl, & Brownstein, 2009). Media reporting may be inadvertently signalling the availability and qualities of the drug to at-risk sections of the population.

To reduce the risks of these harms occurring, and to ensure that opioid analgesics are prescribed appropriately, the Tasmanian DHHS has commissioned the National Drug and Alcohol Research Centre (NDARC) to review the benefits and risks, clinical and prescribing practices, assessment protocols, education systems and the regulatory framework surrounding the prescription of pharmaceutical opioids. As a separate strategy, the Tasmanian Pharmaceutical Services Branch (TPSB) is strengthening its prescription drug monitoring program through real time reporting from pharmacies to the TPSB and by providing remote access to patients' S8 prescribing history for medical professionals, including dispensing pharmacists. At the time that this report was being prepared, Tasmania was also finalising its new OST guidelines.

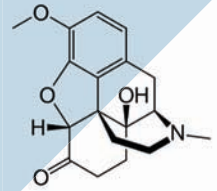
The rest of this Section describes the epidemiology of chronic pain and of prescription opioid use and misuse in Australia and internationally.

CHRONIC NON-MALIGNANT PAIN: A BRIEF OVERVIEW OF ITS PREVALENCE AND ETIOLOGY

Chronic pain is a common complaint. In one European general population survey, between 10% and 30% of participants in each country reported "chronic pain", one-third (35%) of whom said that they experienced pain every day, and 16% that some days the pain made them "want to die" (Beubler, Jaksch, Devulder, Le Poloin, Bo Honsen, Meynadier, Muller-Schwefe, Zenz, Mac Sullivan, O'Brien, Eisenberg, Mercodante, Ventafriddo, Varrossi, Vielvoye-Kerkmeer, Zylicz, Breivik, Krajnik, Lopez, Puig, Rhodin, Borgeat, Collett, Hanna, Hunt, & Simpson, 2006).

In Australia, chronic pain has been estimated at 17% for males and 20% for females. Chronic pain increases with age, female gender, lower levels of completed education; not having private health insurance; receiving a disability or unemployment benefits; being unemployed for health reasons; having poor self-rated health; and high levels of psychological distress (Blyth, March, et al., 2001). Interestingly, the role of vitamin D in the aetiology of arthritic pain has been recently raised, and may have a special (albeit minor) role in pain prevalence and severity in Tasmania (Ding, Cicuttini, Parameswaran, Burgess, Quinn, & Jones, 2009).

Chronic pain is caused by many factors, including trauma, that probably moderate the effectiveness of treatment (Savage, 1999). The biopsychosocial model of pain is based on the premise that chronic pain and the experience of pain is grounded in and influenced by biological, psychological, and social factors (Gatchel, Bo Peng, et al., 2007). Thus, assessment and management of chronic pain needs to address all three of these domains. The social factors can present a challenge for clinicians and for policy makers, if 'social' is interpreted to include employment status, income, personal and family support networks, marital status and so on. There is indeed evidence that lower socioeconomic status is associated with higher prevalence of pain, and with greater disability resulting from pain (Dorner, Muckenhuber, et al., 2011; Loyland, 2010), just as there is evidence that occupational stress, job loss, anxiety, depression, and marital status play a role in chronic back pain (Kikuchi, 2008).



Increasingly, it is acknowledged that amongst chronic pain patients there is a high prevalence of childhood trauma (Nicolson, Davis, et al., 2010; Sachs-Ericsson, Cromer, et al., 2009; Sachs-Ericsson, Kendall-Tackett, et al., 2007). In addition to an increased risk for physical and psychiatric disorders, research from both clinical and general population samples has identified links between childhood physical and sexual abuse and chronic pain, disability, a range of other health problems, and health service utilisation (Chartier, Walker, et al., 2007) that is independent of comorbid depression (Sachs-Ericsson, Kendall-Tackett, et al., 2007).

Although clinicians can and should work with as many of these drivers as is feasible, the current report focuses on issues related to prescription opioids, their use and misuse, and regulatory systems that are within the remit of the Tasmanian DHHS to influence such prescribing. Whilst acknowledging the important role that these structural determinants have, reducing the unemployment rate, addressing income inequity, and reducing the rates of child abuse and neglect are beyond the scope of this report. It is, however, worth noting that recent increases in childhood abuse at the population level will have longer-term consequences for a wide range of adult health problems and the consequent burden upon the health system (Chartier, Walker, et al., 2007; Lamont, 2011).

None of these studies have identified that all chronic pain patients have a history of childhood trauma: some of the associations were quite modest. Nevertheless it is worth noting that these childhood experiences are risk factors for a range of other problems – personality disorder, depression, post-traumatic stress disorder (PTSD), and substance use disorders – that are likely to interfere with the treatment of chronic pain.

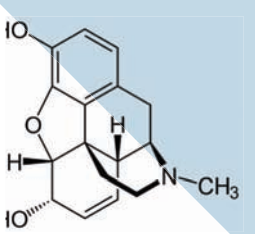
THE AUSTRALIAN CONTEXT

Australia has experienced increases in opioid prescribing, with an increase from 2.4 million to 7 million scripts for opioid analgesics over a 15-year period (1992-2007) (Leong, Murnion, & Haber, 2009). These figures were not adjusted for changes in population, which makes it difficult to compare with other countries. By way of international comparison, the US has the largest average consumption of opioids at 29,500 doses per million inhabitants per day, compared with 3,664 in the United Kingdom (UK); 3,856 in Finland; 12,840 in Canada; 10,802 in Germany; 4,218 in France; and 7,070 in Australia[1] (Degenhardt, Larance, Mathers, Azim, Kamarulzaman, Mattick, Panda, Toufik, Tyndall, Wiessing, & Wodak, 2009).

A more recent study of oxycodone and morphine prescribing in Australia examined prescriptions between 2002 and 2008 by 10 year age group, per 1,000 population (Roxburgh, Bruno, Larance, & Burns, 2011). Over this time period, morphine prescriptions declined from 38.3 to 30.7 prescriptions per 1,000 population, representing a decrease of approximately 20%. Prescriptions were most common amongst those aged 70 years and over. The 15-30mg formulation accounted for more than one-third of oral morphine prescriptions. However, the share of morphine scripts comprising stronger formulations increased between 2002-03 and 2007-08. Prescriptions of the 60mg and 100mg tablets were most common among the 40-49 year age group. Oxycodone prescribing in Australia has increased from 35.3 to 89.2 prescriptions per 1,000 population between 2002 and 2008, an increase of about 152%. The lower dose formulations (5mg, 10mg, and 20mg) accounted for 71% of all oral oxycodone prescriptions in 2007-08. Prescriptions for the 80mg tablets were highest amongst the 40-49 year age group and increased by about 25% in this age group over the period. Treatment episodes for problematic morphine use remained stable, whereas treatment episodes for problematic oxycodone use doubled between 2002 and 2008, but were still much lower than those for heroin. The study identified 465 oxycodone-related deaths in Australia between 2001 and 2009. These peaked in 2007 at 94 deaths, from a starting point of 31 deaths in 2002. Adjusted for the level of prescribing, oxycodone-related deaths fluctuated between 3.8 and 8 deaths per million DDDs between 2002 and 2008.

This growth in Australia is in part due to a larger range of drugs available via the Pharmaceutical Benefits Scheme (PBS), and in part due to an international trend towards greater use of opioid analgesics for the management of CNMP which is in part in response to many decades of under-treating chronic pain (Royal Australasian College of Physicians, 2009). The use,

1 Measured in Defined Daily Doses (DDD)



misuse and harms arising from opioids are outlined in more detail below.

THE INTERNATIONAL CONTEXT

CHANGES IN OPIOID PRESCRIBING

Since the early 1990s, North America and parts of Europe have experienced large increases in the volume of opioid analgesic prescribing (Centers for Disease Control Prevention, 2008; Compton, Thomas, Conway, & Colliver, 2005; Dasgupta, Kramer, Zalman, Carino, Smith, Haddox, & Wright, 2006; Dhalla, Mamdani, Sivilotti, Kopp, Qureshi, & Juurlink, 2009; Dominick, Bosworth, Dudley, Waters, Campbell, & Keefe, 2004; Edlund, Martin, Devries, Fan, Braden, & Sullivan, 2010; Fredheim, Skurtveit, Breivik, & Borchgrevink, 2010; Hertz & Knight, 2006; Popova, Patra, Mohapatra, Fischer, & Rehm, 2009). Over an eight-year period (1994-2002), opioid analgesics dispensed in the US increased from 72,940kg to 232,024kg, more than a three-fold increase (Dasgupta, Kramer, et al., 2006).

Internationally, the use of prescription opioids has grown rapidly in the past 15 to 20 years, far outstripping population growth (Centers for Disease Control Prevention, 2008; Dhalla, Mamdani, et al., 2009; Paulozzi & Ryan, 2006). Although opioid analgesics have a well-established place in the treatment of cancer-related pain, their role in the management of CNMP is less clear, with several reviews finding limited evidence for their long-term effectiveness (Furlan, Sandoval, Mailis-Gagnon, Tunks, Furlan, Sandoval, Mailis-Gagnon, & Tunks, 2006; Kalso, Edwards, Moore, & McQuay, 2004; Manchikanti, Ailinani, Koyyalagunta, Datta, Singh, Eriator, Sehgal, Shah, Benyamin, Vallejo, Fellows, & Christo, 2011; Noble, Treadwell, et al., 2010; Trescot, Helm, Hansen, Benyamin, Glaser, Adlaka, Patel, & Manchikanti, 2008). Further, the growth in prescribing has been associated with large increases in opioid-related deaths and hospital presentations (Centers for Disease Control Prevention, 2009; Coben, Davis, Furbee, Sikora, Tillotson, & Bossarte, 2010; Dhalla, Mamdani, et al., 2009).

CLINICAL USES OF PHARMACEUTICAL OPIOIDS

There are two broad clinical indications for use: 1) management of pain that is acute, or chronic and arising from diseases such as cancer or the human immuno-deficiency virus (HIV); and 2) OST for treatment of opioid dependence.

Opioids are effective in treating **acute pain** (Savage, 1999), and are central in the management of severe **cancer pain** (American Academy of Pain Medicine and American Pain Soceity, 1997; Beubler, Jaksch, et al., 2006; Pain and Policy Studies Group, 2002; Resnik, Rehm, & Minard, 2001). The WHO (WHO) stated morphine and codeine were "*absolutely necessary*" for the management of severe cancer pain (World Health Organization, 2000a). The WHO recommended a three-step 'Analgesic Ladder'[2] to treat cancer pain: this depends on the availability of drugs (Pain and Policy Studies Group, 2002; World Health Organization, 1986). There is also increasing recognition of the need for better palliative care for older people (World Health Organisation, 2004) and acquired immunodeficiency syndrome (AIDS) patients (World Health Organization, 2004).

In some countries, lack of palliative care and opioids for pain management is particularly serious because by the time most patients are diagnosed, they have late-stage cancer accompanied by pain (Pain and Policy Studies Group, 2002). As many as 50% of cancer patients worldwide may suffer from pain that goes unrelieved (Selva, 1997; World Health Organization, 1986). In many instances this may be due to a lack of knowledge and experience in delivering this form of treatment in these countries.

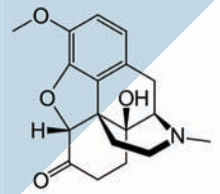
Controlled trials have evaluated pharmaceutical opioids in the treatment of a range of **chronic non-cancer pain** conditions and demonstrated modest attenuation of pain (Bloodworth, 2005), with evidence showing limited efficacy in long-term use for non-cancer pain (Ballantyne & Shin, 2008). There are nonetheless clear statements from pain organisations supporting a role for opioid medications in the treatment of chronic non-cancer pain (American Academy of Pain Medicine

2 The Analgesic Ladder involves three steps:

Step 1: Aspirin or paracetamol.

Step 2: Codeine or dihydrocodeine, with or without non-steroidal or anti-inflammatory drugs such as ibuprofen.

Step 3: Morphine, with or without co-analgesia, with or without steroid anti-inflammatory drugs. Other strong opioid analgesics include pethidine and fentanyl.



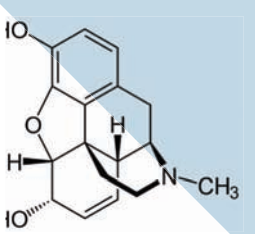
and American Pain Society, 1997; Beubler, Jaksch, et al., 2006; The Royal Australasian College of Physicians, 2009b). Although the optimal use of opioids in the management of CNMP is still debated (Baca & Grant, 2007; Ballantyne, 2006; Ballantyne, 2007; Eriksen, Sjogren, Bruera, Ekholm, & Rasmussen, 2006; Franklin, Mai, Wickizer, Turner, Fulton-Kehoe, & Grant, 2005; Lipman, 2007; Savage, 1999), it is clear that opioids are sometimes used excessively and at other times too parsimoniously. Consensus statements recommend prescription of opioids only after: a thorough assessment of the patient's pain problem and history, development of a treatment plan, consultation with a pain specialist if necessary, and in conjunction with regular reviews of patient progress (American Academy of Pain Medicine and American Pain Society, 1997; Beubler, Jaksch, et al., 2006).

Pharmaceutical opioids also have important applications in the treatment of **opioid dependence**. OST involves the medically supervised administration of an opioid. It is typically used to maintain a patient on a safe opioid dose to avoid more hazardous use of illicit opioid drugs (World Health Organisation/ United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004). There is strong evidence that OST is effective in reducing drug use, improving physical and mental health and social functioning, and reducing criminality (Amato, Davoli, Perucci, Ferri, Faggiano, & Mattick, 2005; Carrieri, Amass, Lucas, Vlahov, Wodak, & Woody, 2006; Elkader, 2005; Hall, 1996; Hall, Ward, & Mattick, 1998; Ling & Smith, 2002; Mattick, Breen, Kimber, & Davoli, 2003; Padaiga, Subata, & Vanagas, 2007; Ward, Mattick, & Hall, 1998a, 1998b; World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004). Higher doses and longer durations of methadone are generally associated with greater reductions in heroin use (Ward, Mattick, et al., 1998b; World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004), and injecting frequency and risk behaviours (Van Griensven, Keawkungwal, Tappero, Sangkum, Pitisuttithum, Vanichseni, Suntharasamai, Orelind, Gee, & Choopanya, 2004; Wong, Lee, Lim, & Low, 2003). Demand typically exceeds availability (Carrieri, Amass, et al., 2006).

OST is also a key HIV prevention measure for opioid injectors (Van Griensven, Keawkungwal, et al., 2004; Wong, Lee, et al., 2003). In countries where injecting drug use is an important vector for HIV transmission, the expansion of OST provision is believed to have underlain reductions in HIV incidence (Sullivan, Metzger, Fudala, & Fiellin, 2005). Longitudinal studies examining changes in HIV risk behaviour for patients currently in treatment have found that longer retention in drug treatment, as well as completion of treatment, are correlated with reduction in HIV risk behaviours related to drug taking or an increase in protective behaviours (World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004). OST will also allow those who are already HIV positive to stabilise their underlying condition (Ball, Rana, & Dehne, 1998; Kerr, Wodak, Elliott, Montaner, & Wood, 2004; Langendam, van Brussel, Coutinho, & van Ameijden, 2000; Sullivan & Fiellin, 2005; Sullivan, Metzger, et al., 2005).

USE OF PHARMACEUTICALS OUTSIDE OF PRESCRIBED BOUNDS – 'EXTRA-MEDICAL' USE

For some individuals, chronic pain is compounded by misuse of opioids, which in turn is associated with increased risk of opioid dependence, falls and accidents, mental health problems, and social and family problems. The precise extent of these problems is unknown in Australia but studies in the US suggest that around 3% of chronic pain patients using opioid analgesics for extended periods will develop opioid abuse or dependence problems, and around 12% will exhibit aberrant drug-related behaviours (Fishbain, Cole, Lewis, Rosomoff, & Rosomoff, 2008). A more recent study of a random sample of outpatients undergoing long-term opioid therapy for non-cancer pain identified DSM-IV opioid dependence in 35% of patients (Boscarino, Rukstalis, Hoffman, Han, Erlich, Ross, Gerhard, & Stewart, 2011). If these figures are correct, it points to a significant problem with these drugs, with around one in eight patients engaging in risky drug use behaviour and one in three exhibiting dependence on their prescribed opioids. A prospective cohort study found that 32% of opioid-treated patients with chronic pain misused their opioids, where misuse was defined as a negative urine screen for prescribed opioids, a positive urine screen for opioids or controlled substances not prescribed, evidence of procurement of



opioids from multiple providers, diversion of opioids, prescription forgery, or stimulants found in urine screens (Ives, Chelminski, Hammett-Stabler, Malone, Perhac, Potisek, Shilliday, DeWalt, & Pignone, 2006).

Extra-medical use of pharmaceutical opioids is poorly understood but appears to be influenced by diverse factors. Some extra-medical use involves non-injecting routes of administration while other extra-medical use is not complicated by health, social or legal problems. Some extra-medical use occurs amongst pain patients who are attempting to manage poorly controlled pain by taking extra opioid medication. There is a bias towards research being conducted among marginalised groups of IDUs (Topp, 2006).

Do all opioids carry the same risk of extra-medical use and diversion?

Opioids differ in the extent to which they are likely to be misused, mainly because of their varying potency and dependence potential. In the case of misuse/diversion, opioids also vary in their ease of injection (e.g. injectable, tablet or patch form), and degree to which adverse effects may occur following injection (e.g. precipitated withdrawal (Clark, Lintzeris, & Muhleisen, 2002).

Few studies have examined these factors. In a recent US study, the extent of extra-medical use and related problems for different pharmaceutical opioids was determined by their relative potency and availability. When illicit drug users in the US ranked the attractiveness of different opioids, brand recognition also contributed to the ranking (Butler, Fernandez, Chang, Benoit, Morey, Black, & Katz, 2009).

'Street value' of diverted medications seems to be an indicator of attractiveness. Compared with generic formulations, trade-name prescriptions may be worth twice as much because they are recognisable (Longo & Johnson, 2000; Quigley, 2001). Long-acting opioids have a lower price than shorter-acting ones (Brookoff, 1993), and injectables have a higher price than tablets (Fountain, Strang, Gossop, Farrell, & Griffiths, 2000).

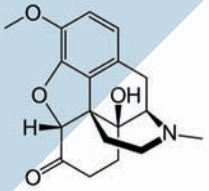
How does 'diversion' occur?

As with all psychoactive medications, opioid substitution and pain medications carry a risk of diversion(World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004). Diversion can occur anywhere along the wholesale-to-consumer chain (Inciardi, Surratt, Kurtz, & Burke, 2006). Few studies have estimated the relative contributions of different sources to the overall pool of diverted medication.

Supply control factors such as the extent to which diversion is policed, and the ease with which large-scale importation or diversion of medications is possible, will have an impact. Difficulty in controlling supply may be more contributory in countries with limited resources to regulate these markets, as has been noted in South Asia. Geography will also affect diversion risk to the extent that it is related to: the availability of other preferred opioids (particularly heroin); drug-using cultures; and the availability of OST for those who are already opioid dependent (Bruno, 2004; Day, Conroy, Lowe, Page, & Dolan, 2006; Fountain, Strang, et al., 2000).

There is disagreement about which sources of diversion are most important. The United States' Drug Enforcement Agency (DEA) announced that physicians' and pharmacists' 'diversions' accounted for the majority of diverted pharmaceutical opioids (Hurwitz, 2005); one research group voiced concerns about internet diversion (Compton & Volkow, 2006); another considered healthcare providers (most commonly nurses and medical assistants in hospitals) a key source (Inciardi, Surratt, et al., 2006); and finally, US police and regulatory agents perceived doctor-shopping and pharmacy theft were key (Inciardi, Surratt, Kurtz, & Cicero, 2007b). The importance of the internet may be overstated (Bruno, 2004; Inciardi, Surratt, et al., 2007b; O'Reilly, Leibrick, Huxtable, & Chenhall, 2004; Smith, Miller, O'Keefe, & Fry, 2004) – in the US, only 4% of the general population had ever used it to fill a prescription, and most sites require a prescription (Inciardi, Surratt, et al., 2007b).

Some IDUs who inject pharmaceutical opioids present to doctors for diffuse medical conditions consistent with those for which opioids might be appropriately prescribed (Bruno, 2004; Dangerous Drugs Board, 2005; Fountain, Strang, et al., 2000; Haydon, Rehm, Fischer, Monga, & Adlaf, 2005; Hurwitz, 2005; McCabe, Cranford, Boyd, & Teter, 2007; O'Reilly, Leibrick, et al., 2004; Smith, Miller, et al., 2004; Topp, 2006). In some cases, these conditions may be authentic, but some will present with



feigned symptoms (Bruno, 2004; Fountain, Griffiths, Farrell, Gossop, & Strang, 1998; Fountain, Strang, et al., 2000; O'Reilly, Leibrick, et al., 2004; Smith, Miller, et al., 2004). Users in high income countries typically report obtaining medications from family, friends, and peers who often 'swap' drugs or sell them on a small scale to fund other drug use (Bruno, 2004; Dangerous Drugs Board, 2005; Fountain, Strang, et al., 2000; Haydon, Rehm, et al., 2005; Hurwitz, 2005; McCabe, Cranford, et al., 2007; O'Reilly, Leibrick, et al., 2004; Smith, Miller, et al., 2004; Topp, 2006).

Risks for misuse and diversion among clinical populations

The short duration of treatment and the sharp and severe nature of the pain among acute pain patients make it less plausible that this group accounts for much diversion of opioids. The risks are much greater among those involved in administering medications, namely doctors, nurses, and other medical professionals, who may also misuse pharmaceutical opioids themselves (Incardi, 2006). There is also some evidence (e.g. from the US) that nurses and doctors may be involved in diversion to the illicit market (Hurwitz, 2005; Incardi, 2006), but there are no estimates of magnitude of their contribution to diversion. The highly regulated nature of opioid medications in hospital and other settings in high-income countries may reduce the amount that is diverted through this route, and/or increase the likelihood of detection when it occurs (Inciardi, Surratt, et al., 2006). Nonetheless, there are many opportunities: in the US alone, there are one million registered manufacturers, distributors, pharmacies, hospitals, nursing homes and physicians (Hurwitz, 2005).

Some chronic non-cancer pain patients and cancer pain patients will be at risk of misusing opioids. In a US routine pain care setting, 9% of clients misused opioid medication (4% from doctor-shopping, 5% diverting in 'trafficable' quantities)(Manchikanti, Cash, Damron, Manchukonda, Pampati, & McManus, 2006). Misuse was more likely among those who were younger, who had a pain condition as a result of a motor vehicle accident, had more extensive pain, and a history of illicit drug use (Manchikanti, Cash, et al., 2006). This highlights the comorbidity between chronic pain conditions and drug dependence (Daniulaityte, Carlson, & Kenne, 2006; Edlund, Steffick, Hudson, Harris, & Sullivan, 2007; Passik, Hays, Eisner, & Kirsh, 2006; Rosenblum, 2007; Seppala, 2006), which is a risk factor for developing a problem with opioid use (Edlund, Steffick, et al., 2007; Fischer, Cruz, & Rehm, 2006a; Ives, Chelminski, et al., 2006).

Persons in OST for treatment of illicit opioid dependence may also misuse or divert pharmaceutical opioids. Indeed, most research on misuse and diversion has been conducted with IDUs in treatment for drug use problems (Degenhardt, Larance, Mathers, Azim, Kamarulzaman, Mattick, Panda, Toufik, Tyndall, Wiessing, Wodak, & use, 2008). One French study estimated that 'doctor-shopping' (patients approaching multiple doctors to obtain greater a quantity of drugs) accounted for 19% of the entire 'delivered' quantity of buprenorphine for OST (Pradel, Thirion, Ronfle, Masut, Micallef, & Begaud, 2004): 87 out of the total 3,259 patients accounted for 45% of this amount (Pradel, Thirion, et al., 2004). An even greater problem with buprenorphine diversion has been noted in Finland (EMCDDA, 2006, 2007). The manner in which OST is provided probably affects the extent of misuse and diversion. Other factors might also play a role including cost of the drugs, the availability of other illicit drugs (particularly heroin) and varied cultural factors (e.g. whether injecting is an established route of administration among the population).

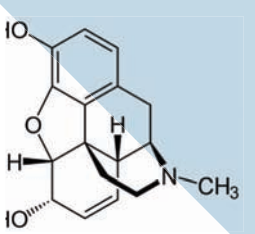
HARMS RELATED TO PHARMACEUTICAL OPIOID MISUSE AND INJECTION

This topic is a key topic of investigation in the current review and the harms arising from opioid prescribing in Tasmania are explored in more detail in Sections Two and Three.

Injecting risk behaviours

Research on persons injecting pharmaceutical opioids is largely confined to a few high income countries. In these contexts, injection of pharmaceutical opioids has mainly been studied among IDUs with extensive histories of heroin and other drug injecting. Conclusions drawn about associations of risks in these populations may not be directly comparable to low and middle income countries.

For example, injection of methadone syrup (prescribed as an OST) has been associated with higher levels of injection-risk behaviour (Darke, Ross, & Hall, 1996b;



Humeniuk, Ali, McGregor, & Darke, 2003). Among an Australian sample of heroin users, methadone injectors reported poorer general health, more injection-related problems and were also more likely to report having passed on used injecting equipment (Darke, Ross, & Hall, 1995; Darke, Ross, et al., 1996b). Other studies have examined the injection-related HIV risk behaviours associated with injection of OST, such as methadone and buprenorphine (Darke, Ross, et al., 1995, 1996b; Darke, Topp, & Ross, 2002; Hopwood, Southgate, Kippax, Bammer, Isaac-Toua, & MacDonald, 2003; Humeniuk, Ali, et al., 2003; Obadia, Perrin, Feroni, Vlahov, & Moatti, 2001a), with mixed findings.

In France, buprenorphine injectors have been found to display *fewer* injection-related HIV risk behaviours than other groups of illicit drug users (Obadia, Perrin, et al., 2001a; Toufik, 2007). One study surveyed IDUs and found that 34% were polydrug users who occasionally injected buprenorphine in addition to heroin and/or cocaine, while 24% had only injected buprenorphine in the previous six months. IDUs in this latter group were significantly younger, injected more frequently, and were more frequently on buprenorphine substitution therapy, but they were less likely to be HIV-infected and to report HIV-related risky injecting behaviours (Obadia, Perrin, et al., 2001a). Injection risk behaviours appeared more likely among those who were primarily using *diverted* buprenorphine (as opposed to injection of one's own medication); these users were also more likely to be unemployed and to be polydrug users (Blanchon, Boissonnas, Vareseon, & Vidal-Trecan, 2003; Obadia, Perrin, Feroni, Vlahov, & Moatti, 2001b).

One exception is research on IDUs in South Asia (Larance, Ambekar, Azim, Murthy, Panda, Degenhardt, & Mathers, 2010), which indicates that the epidemic of injecting occurring in that region typically involves diverted pain medication, with infrequent injection of other drugs (Panda, 2005; Panda & Sharma, 2006; United Nations Office on Drugs and Crime, 2007). Although behavioural surveillance data in some countries such as Bangladesh suggest that knowledge of injecting risk is quite good among persons who inject drugs, and that they are typically aged in their 20s and 30s, there are other populations of younger and less knowledgeable IDUs in South Asia who are likely to be taking risks without understanding the harms that may result.

HIV

In Australia, HIV is not highly prevalent among any groups of IDUs (with the exception of higher levels among men who have sex with men (MSM) IDUs).The literature on the magnitude of risk for HIV transmission among IDUs injecting pharmaceutical opioids is limited. There have been no specific studies examining the relative risk of HIV transmission among IDUs injecting pharmaceutical opioids, but it seems reasonable to assume that in countries where most IDU is occurring with pharmaceutical opioids, and where HIV transmission is occurring, that unsafe injection of these drugs is driving the epidemic.

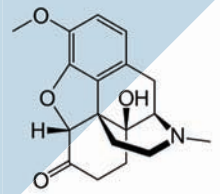
Viral hepatitis

Infection with the hepatitis C virus (HCV) results in chronic infection in 50-85% of cases; approximately 7-15% of chronically infected persons progress to liver cirrhosis within 20 years, and of these, a proportion will subsequently develop liver cancer (World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs, 2004).

Compared to active heroin injectors, the risks of HCV transmission among prescription opioid injectors may be lower if the frequency of injection is less (as might reasonably be expected for buprenorphine, which has a longer duration of action). Evidence on the extent of HCV infection risk is, however, limited. In countries where pharmaceutical opioids are the predominant drug injected (e.g. some countries in Asia) most of the incident HCV cases among this group will be related to pharmaceutical injection (Saha, Chakrabarti, & Panda, 2000; Sarkar, Bal, Mukherjee, Chakraborty, Niyogi, Saha, & Bhattacharya, 2006; Sarkar, Mitra, Bal, Chakraborty, & Bhattacharya, 2003; Shirin, Ahmed, Iqbal, Islam, & Islam, 2000; UNODCCP & UNAIDS, 1999).

Other injection-related problems

Methadone injecting has been independently associated with higher levels of injection-related heath problems (Darke, Topp, et al., 2002; Sunjic & Howard, 1996). The literature examining harms associated with pharmaceutical injecting focuses mainly on buprenorphine and methadone; much less is known about the behaviour and harms associated with injection of other pharmaceutical opioids (Darke, Ross,



et al., 1995, 1996b; Hopwood, Southgate, et al., 2003; Southgate, Kippax, Bammer, Isaac-Toua, MacDonald, Hopwood, & Aspin, 2001).

Injection-related problems can result from a number of different scenarios, such as non-sterile preparation of an injected substance, non-sterile injection sites, and repeated puncturing of major vessels. All of these situations can lead to a range of infective and non-infective complications (Yeo, Chan, & Chia, 2006), even where the pharmaceutical is a formulation specifically developed to be injected (e.g. some formulations of morphine). The injection of drug formulations that have been developed as oral, sublingual tablets or transdermal patches can lead to further complications. The availability of specific injecting equipment (e.g. availability of needles/syringes, winged vein infusion kits, pill filters, etc.) may also affect risks of these harms.

Consequences of injecting drugs formulated for oral use

Some opioid injectors produce solutions from formulations that are intended for oral or sublingual administration (e.g. methadone, buprenorphine, morphine tablets) (Quinn, Wodak, & Day, 1997; Reisinger, 2006). The viscous consistency of oral liquids such as methadone make it unsuitable for injection and increase the likelihood of vein damage (Southgate, Kippax, et al., 2001). In one study of methadone clinic attendees who injected methadone, it was found that 58% had difficulty accessing veins and 30% had experienced vein problems as a result of injecting methadone (Robinson, Kemp, Lee, & Cranston, 2000).

Adding non-sterile water to methadone syrup or sublingual buprenorphine tablets carries the additional risk of infection/contamination. The crushing and dissolution of tablets (such as morphine, oxycodone, etc.) intended for oral administration also carries further risks. For example, the additives and particulate matter in tablets developed for oral ingestion can cause vein damage. Further, tablets are not produced in sterile environments and are bulked out with insoluble particulates (MIMs Australia, 2005; Office of the British Pharmacopoeia Commission, 1993), which add to the risks of injection-related problems.

The most common injury associated with injection of oral or sublingual drug formulations is vascular and soft tissue damage, which can lead to a range of secondary complications (Feeney & Fairweather, 2003; Pierre-Alexandre, Francois, Abdellah, Karim, Christian, & Frederique, 2007; Yeo, Chan, et al., 2006). The injection of oral and sublingual formulations of pharmaceutical opioids (such as methadone, buprenorphine and oxycodone) has been associated with thrombosis (Seet, Oh, & Lim, 2007; Yeo, Chan, et al., 2006); limb ischaemia (in some cases leading to amputation) (Loo, 2005; Seet, Oh, et al., 2007; Yeo, Chan, et al., 2006); nerve damage (Loo, 2005); tissue necrosis (Feeney & Fairweather, 2003; Goldman, 1998); rhabdomyolysis (Seet, Oh, et al., 2007); pulmonary granuloma (Goldman, 1998); and ocular candidiasis (Cassoux, Bodaghi, Lehoang, & Edel, 2002).

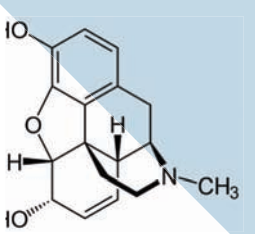
When buprenorphine is injected by an opioid-dependent individual, it can precipitate an uncomfortable withdrawal syndrome. This may last several hours or, if used in large quantities, may last as long as three to four days (Clark, Lintzeris, et al., 2002; Seet, Oh, et al., 2007). It may be exacerbated if buprenorphine-naloxone is injected (Alho, Sinclair, Vuori, & Holopainen, 2007; Chiang & Hawks, 2003; Comer & Collins, 2002).

Consequences of injecting transdermal patches

Transdermal patches were developed as a non-intrusive system for delivering a time-released dose of a medication through the skin. They are commonly used in nicotine replacement therapy ('nicotine patches'). Opioid transdermal patches (e.g. transdermal fentanyl patches) have been associated with harmful patterns of use and injection. When aspirated with a syringe, the content of fentanyl patches can be injected; this practice has been associated with fatalities (Hughes, Dart, & Bailey, 2005; Jost, Wolter, & Böhrer, 2004; Martin, Woodall, & McLellan, 2006), probably related to the very high potency of the drug.

Infective complications

Injection of a non-sterile preparation of a pharmaceutical (that is itself not produced in a sterile environment) increases the risk of contamination with bacteria, fungi and other microbes that can cause infection and disease. Contamination may occur



through contact with skin flora, re-use/sharing of injecting equipment, contact with non-sterile surfaces, removal of a supervised dose from the mouth (for injecting at a later time), and repeated puncturing of veins (leaving injecting sites vulnerable to infection).

The injection of methadone has been associated with abscesses and infections at injecting sites (Darke, Ross, et al., 1996b; Segal, Dowling, Ireton, Rhodes, Thomas, Kerr, & Spagnolo, 1998). The injection of buprenorphine has been associated with abscesses, cellulitis, endocarditis, myositis/pyomyositis, and multiple reports of candida endophthalmitis (Aboltins, Daffy, & Allen, 2005; Cassoux, Bodaghi, et al., 2002; Cazorla, Grenier de Cardenal, Schuhmacher, Thomas, Wack, May, & Rabaud, 2005; Etchepare, Coutaux, Edel, & Bourgeois, 2005; Loo, 2005; Sharma, Vasoo, & Ong, 2005; Yeo, Chan, et al., 2006). Candida endophthalamitis has been reported from injecting buprenorphine prepared with lemon juice containing fungus (C albicans) or contaminated with fungi from an oral infection (in the case of removal of a supervised dose)180. In India, one-third of street-based IDUs in Kolkata had had an abscess within the last six months, with 12% having had maggots growing in them, reflecting neglect of health among street recruited IDUs in this region (Panda, Chatterjee, & Bhattacharya, 1998).

Polydrug use and interactions

Alcohol, opioids and benzodiazepines all have sedative effects, and the interactions between these drugs increase the risk of toxicity and adverse effects. The combination of opioids with other sedative drugs places users at increased risks of polydrug dependence, overdose and perhaps more severe withdrawal. There is good evidence of high rates of comorbid benzodiazepine and opioid use in particular (Backmund, Meyer, Henkel, Soyka, Reimer, & Schatz, 2005; Bleich, Gelkopf, Weizman, & Adelson, 2002; Bramness & Kornor; Bruno, 2004; Burns, Martyres, Clode, & Boldero, 2004; Darke, Topp, et al., 2002; Fischer, Cruz, & Rehm, 2006b; Forsyth, Farquhar, Gemmell, Shewan, & Davies, 1993; Giacomuzzi, Ertl, Pavlic, Libiseller, Riemer, Kemmler, Rossler, Grubwieser, Rabl, & Hinterhuber, 2006; Monga, Rehm, Fischer, Brissette, Bruneau, El-Guebaly, Noel, Tyndall, Wild, Leri, Fallu, & Bahl, 2007; Nielsen, Dietze, Lee, Dunlop, & Taylor, 2007; O'Reilly, Leibrick, et al., 2004; Smith, Miller, et al., 2004).

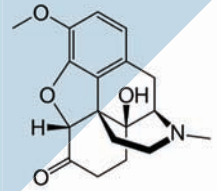
Opioid potentiation of the sedative response to benzodiazepines has been observed in the anaesthetic setting as well as among individuals who co-ingest these drugs (Bleich, Gelkopf, Schmidt, Hayward, Bodner, & Adelson, 1999; Longo & Johnson, 2000; Quinn, Wodak, et al., 1997). Among a cohort of methadone patients in Italy, those with comorbid benzodiazepine problems were more likely to have experienced significant social and drug use problems during follow-up (Bleich, Gelkopf, et al., 1999). A recent UK study also found that dependence upon benzodiazepines worsened the withdrawal syndrome for opioids (De Wet, Reed, Glasper, Moran, Bearn, & Gossop, 2004).

The clinical picture for IDUs with comorbid opioid and other drug dependence also tends to be much more complex. There is evidence that those with comorbid benzodiazepine use problems are more disadvantaged, engage in higher levels of risk behaviours (both injecting and other), and that they are likely to have comorbid mental health problems (Bleich, Gelkopf, et al., 1999; Darke, Hall, Ross, & Wodak, 1992; Darke, Topp, et al., 2002; Forsyth, Farquhar, et al., 1993; Gerra, Borella, Zaimovic, Moi, Bussandri, Bubici, & Bertacca, 2004; Ross, Darke, & Hall, 1996).

Non-fatal overdose

Non-fatal overdose causes considerable morbidity among IDUs (Darke, Ross, & Hall, 1996a). Among heroin users, non-fatal overdose is a significant risk, particularly for those injecting the drug (Darke, Ross, et al., 1996a).

The magnitude of risks for pharmaceutical opioid users and injectors is less well studied, but there are good reasons to expect that the magnitude of risk might be less than for heroin when taken orally because of the slower onset of effects, or the partial agonist effects (Gueye, Megarbane, Borron, Adnet, Galliot-Guilley, Ricordel, Tourneau, Goldgran-Toledano, & Baud, 2002; Kerr, Fairbairn, Tyndall, Marsh, Li, Montaner, & Wood, 2007). There are risks nonetheless. The injection of methadone carries risks due to its unique pharmacological characteristics: it builds slowly to peak blood levels and has a long half-life, leading to an accumulation in the body that can result in toxicity and increased likelihood of fatal overdose (Darke, Topp, et al., 2002; Drugs and Crime Prevention Committee, 2006; Lintzeris, Lenne, & Ritter, 1999; Quinn, Wodak, et al.,



1997). Buprenorphine carries little risk of non-fatal opioid overdose (respiratory depression, and CNS depression) if the drug is taken on its own without any other CNS depressants (Boyd, Randell, Luurila, & Kuisma, 2003; Cho, Calello, & Osterhoudt, 2006; Geib, Babu, Ewald, & Boyer, 2006). Risks are greater when polydrug use occurs: a number of studies have found that the toxicity of methadone and buprenorphine are increased when used in conjunction with other opiates, benzodiazepines and/or alcohol (Gueye, Megarbane, et al., 2002; Kerr, Fairbairn, et al., 2007; Nielsen, Dietze, et al., 2007).

A recent study found that among persons who had used both buprenorphine and methadone, symptoms of opioid toxicity were more likely for methadone and non-fatal overdose on methadone was 10 times more likely (Nielsen, Dietze, et al., 2007). Those reporting opioid toxicity from buprenorphine were four times more likely to have injected it at the time compared with those reporting opioid toxicity with methadone. Methadone toxicity was likely to have accompanied co-administration of heroin; the consumption of benzodiazepines was common with both methadone and buprenorphine toxicity (Nielsen, Dietze, et al., 2007).

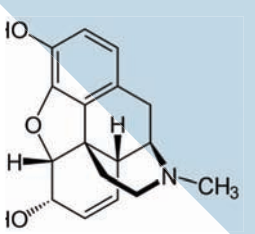
Mortality

Buprenorphine has a smaller risk of fatal overdose than heroin or other full-agonist opioids (Berson, Gervais, Cazals, Boyer, Durand, Bernuau, Marcellin, Degott, Valla, & Pessayre, 2001; Gibson & Degenhardt, 2007; Gueye, Megarbane, et al., 2002). Factors associated with fatalities include intravenous administration, high-dose buprenorphine and especially concomitant use of benzodiazepines, neuroleptics and/or alcohol (Kintz, 2001, 2002; Lai, Yao, & Lo, 2006; Pirnay, Borron, Giudicelli, Torneau, Baud, & Ricordel, 2004; Reynaud, Petit, Potard, & Courty, 1998; Schifano, Corkery, Gilvarry, Deluca, Oyefeso, & Ghodse, 2005). One study has noted that the introduction of high-dose buprenorphine in France coincided with a substantial *decrease* in opioid poisoning mortality (Gueye, Megarbane, et al., 2002). Similar reductions in overdose mortality have been noted in the UK following treatment expansion (Morgan, Griffiths, & Hickman, 2006).

A number of international studies have examined deaths associated with methadone (Fugelstad, Stenbacka, Leifman, Nylander, & Thiblin, 2007; Gueye, Megarbane, et al., 2002; Pirnay, Borron, et al., 2004; Seymour, Black, Jay, Cooper, Weir, & Oliver, 2003; Shah, Lathrop, & Landen, 2005; Sunjic & Zador, 1999; Zador & Sunjic, 2002). These studies have identified that a number of deaths have occurred in IDUs who had recently commenced methadone where high doses were involved (Zador & Sunjic, 2000; Zador & Sunjic, 2002); one Australian study concluded that in the first two weeks after treatment induction, the mortality risk was six times that of heroin users *not* in treatment (Caplehorn & Drummer, 1999); thereafter, mortality risk decreased markedly below that of non-treated heroin users (Caplehorn & Drummer, 1999; Maxwell, Pullum, & Tannert, 2005).

One factor that significantly increases mortality risk for all opioids (whether heroin or prescription) is the use of multiple depressant drugs. Concurrent use of pharmaceutical opioids and benzodiazepines, with and without alcohol (Koski, Ojanpera, & Vuori, 2002; Mueller, Shah, & Landen, 2006), are commonly associated with unintentional drug overdose deaths (Gueye, Megarbane, et al., 2002; Mueller, Shah, et al., 2006; Shah, Lathrop, et al., 2005). Deaths attributed to oxycodone are also usually associated with polydrug use in which oxycodone was combined with psychostimulants, other opioids, antidepressants, benzodiazepines or alcohol (Cone, Fant, Rohay, Caplan, Ballina, Reder, & Haddox, 2004; Cone, Fant, Rohay, Caplan, Ballina, Reder, Spyker, & Haddox, 2003; Davis, Varga, Dickerson, Walsh, LeGrand, & Lagman, 2003). The contribution of the CNS depressant drugs, benzodiazepines and alcohol, is particularly important.

Amongst IDUs, increasing levels of prescription drug-seeking in the form of doctor-shopping have been observed with a peak in prescribing the year before death (Martyres, Clode, & Burns, 2004). North American studies have also identified an increased overdose risk for patients receiving higher doses of opioid analgesics. Amongst those receiving opioid therapy for pain, the overall mortality rate (fatal overdose) in one study was 0.04%. The risk of overdose death was directly related to the maximum prescribed daily dose of opioid medication. Those chronic pain patients with a prescribed dose of 100mg/day of morphine or equivalent, or more, had a seven times higher likelihood of fatal overdose than those receiving 20mg/



day or less (Bohnert, Valenstein, et al., 2011). Dunn et al (2010) concluded that patients receiving 100mg/day or more of opioids had an 8.9-fold increase in overdose risk compared with those receiving one to 20mg/day, but that this risk may be due in part to the use of opioids in ways not intended by prescribing physicians (Dunn, Saunders, Rutter, Banta-Green, Merrill, Sullivan, Weisner, Silverberg, Campbell, Psaty, & Von Korff, 2010). Gomes et al (2011) noted a nearly three-fold increase in drug-related mortality for non-cancer pain patients where doses were above 200mg/day of morphine or equivalent, compared with 20mg/day or less. Intermediate doses were also associated with increased mortality (Gomes, Mamdani, et al., 2011).

Accidental poisonings and fatal overdoses in North American have risen as prescribing has increased (Centers for Disease Control Prevention, 2009; Dhalla, Mamdani, et al., 2009; Fischer & Rehm, 2009; Graham, Gold, & Goldberger, 2009; Hall, Logan, Toblin, Kaplan, Kraner, Bixler, Crosby, & Paulozzi, 2008; Layne, Pellegrino, & Lerfald, 2009; Manchikanti, Manchikanti, Damron, Pampati, & Fellows, 2008; McLellan & Turner, 2008; Merrick, 2009; Newman, 2009; Paulozzi, 2006; Paulozzi & Ryan, 2006). Hospitalisations for poisoning by opioids, sedatives and tranquilisers[3] in the US increased at twice the rate of poisoning by other drugs in the period from 1999-2006. The majority of those hospitalised were middle-aged women (includes accidental and intentional poisonings, with women more likely to be admitted for intentional poisoning). However, opioid-related deaths in the US are mainly amongst males aged in their 30s and 40s, not amongst older patients who tend to be under-treated for pain (Ballantyne & LaForge, 2007). Whilst there is an extensive literature on prescription opioid harms in North America (Becker, Sullivan, Tetrault, Desai, & Fiellin, 2008; Braden, Russo, Fan, Edlund, Martin, DeVries, & Sullivan, 2010; Brands, Blake, Sproule, Gourlay, & Busto, 2004; Buckeridge, Huang, Hanley, Kelome, Reidel, Verma, Winslade, & Tamblyn, 2010; Chou, Fanciullo, Fine, Miaskowski, Passik, & Portenoy, 2009; Coben, Davis, et al., 2010; Culberson & Ziska, 2008; Edlund, Sullivan, Steffick, Harris, & Wells, 2007; Fischer & Rehm, 2008; Fishbain, Cole, et al., 2008; Green, Grimes Serrano, Licari, Budman, & Butler, 2009; Hertz & Knight, 2006; Hojsted & Sjogren, 2007; Inciardi, Surratt, Cicero, & Beard, 2009; Inciardi, Surratt, Kurtz, & Cicero, 2007a; Ives, Chelminski, et al., 2006; Maxwell & McCance-Katz, 2010; McCabe, Boyd, & Teter, 2009; Mendelson, Flower, Pletcher, & Galloway, 2008; Nielsen, 2008; Popova, Patra, et al., 2009; Sale, Thielke, & Topolovec-Vranic, 2010; Smith, Kirsh, & Passik, 2009; Spiller, Bailey, Dart, & Spiller, 2010; Spiller, Lorenz, Bailey, & Dart, 2009; Steinmiller & Greenwald, 2007; Strassels, 2009; Thompson; Wasan, Butler, Budman, Benoit, Fernandez, & Jamison, 2007; Weaver, Schnoll, Weaver, & Schnoll, 2002; Wilford, Finch, Czechowicz, & Warren, 1994; Zacny & Lichtor, 2008), the evidence regarding harms in Australia is rarely reported in the peer-reviewed literature.

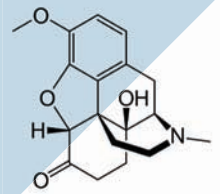
Accidents

A review of the research suggests a relationship between opioid and benzodiazepine use and crash risk (Leung, 2011). A very small number of experimental studies suggest that methadone-maintained patients show a number of driving deficits and impairments, whereas long-term treatment with other opioids is associated with limited impairment of driving skills. The evidence for a relationship between benzodiazepine use and driving skills is more mixed and may depend on the type of benzodiazepine and driver attributes (Leung, 2011). Currently in Australia, these medications are accompanied by warnings about the dangers of driving and using heavy machinery whilst using the medications, but there is no systematic enforcement of these precautions.

PHARMACEUTICAL OPIOID AVAILABILITY, EXTRA-MEDICAL USE AND INJECTION: GLOBAL OVERVIEW

The following section is a summary of a recently conducted global systematic review of existing epidemiological data on pharmaceutical opioid availability, use, extra-medical use and injection (Degenhardt, Larance, et al., 2008; Larance, Ambekar, et al., 2010). Full details of that review and all source references are available in (Degenhardt, Larance, et al., 2008). We summarise below, by selected regions,

3 As defined by the following ICD-9-CM codes: 965.02 (methadone); 965.09 (other narcotics including codeine, meperidine, morphine); 965.5 (pyrazole derivatives); 965.8 (pentazocine); 967.0 (barbiturates); 969.4 (benzodiazepine-based tranquilizers); 969.5 (other tranquilizers including hydroxyzine, meprobamate); 967.8 (other sedatives and hypnotics); and 967.9 (unspecified sedatives and hypnotics).



existing data on the availability (and in many cases, unavailability) of pharmaceutical opioids, and note whether there have been problems related to diversion, injection or extra-medical use.

Canada, United States and Western Europe

The **United States** appears to have the largest per capita problem of extra-medical use, injection and diversion of opioids, in the world. Even the International Narcotics Control Board (INCB) voiced significant concern about the extent of problems in the country. It accounted for half (49%) of the world's estimated morphine consumption in 2005, despite comprising only 4.7% of the world's population. Controlled-release oxycodone is widely misused, and the country accounts for 99% of the world's consumption of this opioid. It was estimated that prescription opioid misuse cost US$8.5 billion in 2009; given that problems seem to be increasing, the figure is likely to be much larger today. Dependence, and the number of both non-fatal and fatal overdoses related to pharmaceutical opioid misuse continue to increase across the country, particularly oxycodone misuse. Methadone is increasingly being used for pain management, and the number of dosage units of the tablets used for pain increased by 277% between 2000 and 2005, as compared to a 163% increase in diskettes used both for pain and opioid treatment, and a 99% increase in liquid used in opioid treatment. Between 1999 and 2004, the number of poisoning deaths mentioning methadone increased 390%, while the number of deaths mentioning other opiates such as oxycodone and hydrocodone increased 90%.

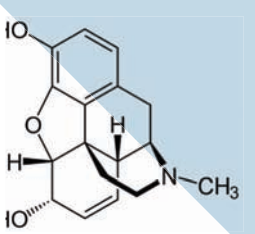
Multiple formulations of varied opioids are available, and many appear to be easily obtained from GPs for diffuse pain conditions. This seems to be a major explanation of the US experience with oxycodone, but other factors have played a part. The pharmaceutical company that manufactures the most popular of these products, OxyContinTM (Purdue Pharma), aggressively marketed the drug as a treatment for both cancer and chronic non-cancer pain to oncologists, palliative care physicians and pain specialists, claiming that it had a low dependence liability. In May 2007, the company agreed to pay $600 million in fines and other payments to resolve the criminal charge of 'misbranding' its product; further lawsuits are currently underway.

In **Canada**, there has been sustained research and community attention on the misuse and injection of pharmaceutical opioids among regular illicit opioid users. There is evidence of increasing use and injection of pharmaceutical opioids, probably related to inconsistent heroin supply in most areas of the country. Despite this, population level data on illicit opioid use (including heroin) are limited. Data suggest that OST coverage in the country is around 23%, representing a very substantial increase compared to a decade ago. There is no national monitoring system in place to track the diversion and extra-medical use of prescription drugs, although district-level systems are in place.

In Western Europe, there is less population-level consumption of these drugs than in Canada and the US, and it is not related to OST coverage; in many countries (e.g. France) OST coverage is superior than that in Canada and the US or the rest of Europe or both. Some countries had notably lower levels of pharmaceutical opioid consumption, such as **Albania**, **Andorra**, **Serbia**, and **Montenegro**, and no data could be located on the existence or extent of misuse or diversion in these countries. However, there is a need for better coverage of OST in some of these areas, given the prevalence of heroin dependence and HIV infection in these populations.

Misuse and diversion is occurring in Western Europe. Although very good monitoring occurs through the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), routine reporting does not appear to differentiate heroin and pharmaceutical opioids. As a result, it is not clear in some countries to what extent problems related to these pharmaceuticals are a concern. Future monitoring might separate heroin from other opioids.

In **Finland**, there have been high levels of diversion of buprenorphine from OST for some years. In 2005, buprenorphine was the most frequently injected drug among IDUs attending an needle and syringe program (NSP) (73%). It was reportedly commonly used to avoid withdrawal. Some evidence suggests that it might be a more common problem among younger drug users. Since the introduction of buprenorphine-naloxone, many IDUs said that they had injected the drug (68%) but 80% of these users reported a negative experience; the street price of this formulation was also reportedly



half that of buprenorphine. Overdose deaths are likely to involve buprenorphine but overdose rates are low.

In **France**, a similar misuse problem has been reported with buprenorphine. Much of the misuse appears to be among users enrolled in OST, which is widely available and dispensed through pharmacies. A 1997 study found some evidence of a younger cohort of IDUs who only injected buprenorphine (not heroin or cocaine). They injected drugs more frequently and were more likely to be enrolled in buprenorphine treatment than older injectors of other drugs. There is evidence of doctor-shopping and prescription fraud among OST clients – one study found two profiles for forged prescriptions: males under 45 years, presenting with stolen prescription forms and requesting opioids; and women aged over 45 years presenting with altered prescriptions for benzodiazepines or opioids.

Eastern Europe and Central Asia

In almost every country in the region, large populations of injecting heroin users have become firmly established, and HIV has become prevalent among these IDUs. OST is available in some but not all countries; in many places OST programs that are available are limited in size and entry to these programs is difficult. Access to opioids for the management of pain appears to be limited in a number of countries in the region thereby limiting opportunities for their extra-medical use. In some countries, there is evidence of injection of pharmaceutical opioids among populations of heroin-dependent IDUs; in some cases this extra-medical use is occurring despite less than adequate provision of opioids for medical purposes.

Oceania and The Pacific

Pharmaceutical opioid misuse was not noted as an issue in most countries in this region. This is almost certainly because of very minimal availability of these drugs for medical use. Most countries in this region have minimal levels of opioid consumption reported to the INCB. Two exceptions are **Australia** and **New Zealand** which have comparatively high opioid consumption, including comparatively good coverage for pain treatment.

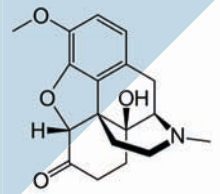
In **Australia,** OST for the treatment of illicit opioid dependence is long established and there is a high level of coverage of the opioid-dependent population. OST is highly regulated and there is highly regulated availability of other opioid medications. OST is considered a 'low threshold' treatment, in accordance with a policy designed to minimise harms associated with illicit opioid use. Markets for diverted opioids in Australia have been described as 'small scale' and 'disorganised' and diversion seems typically to occur sporadically among established heroin injectors, and is probably related to the non-availability of their preferred opioid (heroin). There are jurisdictional differences within Australia, with the Northern Territory and Tasmania having higher rates of pharmaceutical opioid use and lower rates of heroin use than IDUs in other jurisdictions (Stafford & Burns, 2010).

In **New Zealand**, misuse and injection of prescription opioids has been a more long-standing issue among established IDUs. This is related in part to the poor availability of heroin for many years as a result of the disruption of a major heroin trafficking ring in the 1970s. In 1990, 81% of opioid users presenting to for treatment of their opioid dependence reported injecting buprenorphine within the past month, and 68% had injected morphine. After the introduction of buprenorphine-naloxone in 1991, among clients presenting for treatment, 57% reported injecting buprenorphine-naloxone. Patients reportedly learnt to inject buprenorphine-naloxone at doses and frequencies that would allow them to avoid withdrawal.

CONCLUSIONS

There has been a substantial increase in total opioid prescribing in Tasmania in the past 12 years. The number of authorities to prescribe opioid analgesics for two months or longer has also risen during this period, suggesting that at least some of the increase is due to prescribing for CNMP. This increase has occurred amidst emerging evidence that opioid analgesics have limited effectiveness in treating CNMP.

In addition to the misuse of prescription opioids (and benzodiazepines) amongst injecting drug users, there are also harms, such as fatal overdose, occurring amongst chronic pain patients in Australia. This section reviews a much wider range of harms, including the development of dependence, injection-related harms,



diversion of the medication, and accidents related to opioid and benzodiazepine use.

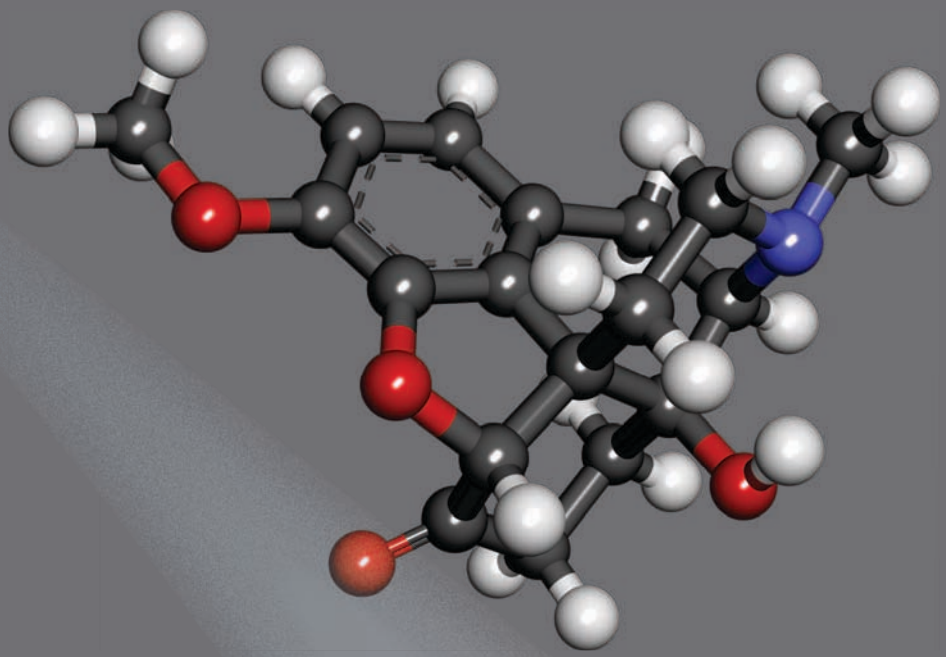
Media reports of pharmaceutical misuse and harms in Tasmania do not always present an accurate or balanced picture of the problems within the broader community; instead they focus on use by illicit opioid users (Killick, 2011; Pippos, 2011; Poskitt, 2011; Smith, 2011). They may be inadvertently advertising the availability of these drugs since there is evidence from the US of a temporal association between news media reporting of opioid misuse and opioid-related mortality (Dasgupta, Mandl, et al., 2009).

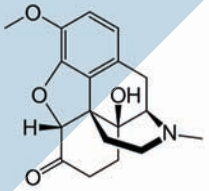
Prescribing opioid analgesics and other medications probably occurs more often than is desirable as busy, time-pressured GPs with a commitment to relieving their patients' suffering, treat complex chronic pain patients desperate for pain relief with limited access to specialist consultation or referral. Opioid prescribing can also become established when a patient is discharged from hospital on opioids and/or benzodiazepines. The use of opioids for moderate to severe acute pain is appropriate, but a plan for ceasing the medications is often not communicated to the patient's GP.

REPORT OVERVIEW

The preceding Section has described the epidemiology of and harms associated with pharmaceutical opioids in Tasmania, nationally, and internationally. Section Two of this report presents results of analysing data on prescribing, mortality and other harms. In Section Three, the results of interviews with prescribers are presented. Section Four provides an overview of the clinical management issues associated with prescription opioids and persistent non-cancer pain. In Section Five the regulation and monitoring of S8 drugs in Australia is described. The full recommendations follow on from Section Five.

SECTION TWO:
ANALYSIS OF PRESCRIBING AND HARMS





KEY POINTS

This Section provides information on trends in opioid prescribing over the past 10 years in Tasmania and nationally, including levels of use among people who inject drugs, and harms arising from the misuse of pharmaceutical opioids. Before describing the Tasmanian data, this section describes the national situation.

Overall, in Tasmania, there appears to be a pattern of high population-level pharmaceutical opioid consumption. This has shifted across opioid types over the past decade, with reductions in population level morphine consumption and increase use of oxycodone. Among IDUs no such decreases in morphine consumption have been observed, with all forms of pharmaceutical opioids remaining common and becoming more so, particularly the use of high dose formulations by regular IDUs. Indicators of harms related to these drugs have in contrast remained stable across time.

AIMS

There were three main aims for this Section:

1. To describe potential changes in the level and patterns of opioid and benzodiazepine prescribing in Tasmania, and to compare these changes to those occurring in other Australian jurisdictions;

2. To examine whether the levels of use have changed among regular IDUs across time, and according to jurisdiction; and

3. To examine potential jurisdictional differences in levels of harm related to pharmaceutical opioid and benzodiazepine use.

DATA EXAMINED

NATIONAL WHOLESALE DATA

National Data Set (NDS) data are collected by the Australian Government. They were provided by the Tasmanian Pharmaceutical Services Branch (TPSB) for Tasmania so that we could examine changes over time in gross sales of opioids and benzodiazepines in Tasmania and to compare these to national wholesale trends.

POPULATION-LEVEL PRESCRIBING

Drug Utilisation Sub-Committee data

The Drug Utilisation Sub-Committee (DUSC) is a sub-committee of the Pharmaceutical Benefits Advisory Committee. It maintains a database which monitors the community use of prescription medicines in Australia. This database combines information on prescriptions subsidised by the PBS and the Repatriation Pharmaceutical Benefits Scheme with an estimate from the Pharmacy Guild Survey of those prescriptions that are not subsidised and paid for privately by patients. We have examined Tasmanian prescribing from the past eight years for all S8 opioid analgesics and for alprazolam. Methadone and buprenorphine data are not presented, as prescribing of these drugs to treat opioid dependence is not captured in this dataset. A comparison of jurisdictional trends in prescribing is also presented.

Tasmanian Drugs and Poisons Information System

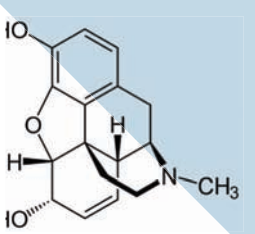
The Tasmanian Drugs and Poisons Information System (DAPIS) is a Tasmanian system, developed by the Tasmanian DHHS, which collects data on all community prescriptions (private and publicly funded) issued in Tasmania. It provides data which will identify changes in prescriptions and authorities for opioids and alprazolam over time. Data on many of these drug types dates back to 1996.

TASMANIAN OPIOID SUBSTITUTION THERAPY DATA

This dataset captures the number of patients being treated for opioid dependence with methadone, buprenorphine, and buprenorphine-naloxone each year, and the number of new patients who enter treatment per annum in Tasmania. These data are provided by ADS, part of the Tasmanian DHHS, and by DAPIS. They are used here to identify changes in opioid dependence treatment trends over time in Tasmania.

OPIOID AND BENZODIAZEPINE USE AMONG PEOPLE WHO INJECT DRUGS

The IDRS is an annual Australian national survey of regular (at least monthly) IDUs, who are recruited as sentinel samples of IDUs. It is managed by NDARC and funded by the Australian Government Department of Health and Ageing (AGDH&A). The sample is drawn



from the capital cities of each Australian jurisdiction. The analysis presented here focuses on patterns of heroin and prescription opioid use, and self-reported harms. The IDRS data for Tasmania are examined from 2000 to 2010, and Tasmanian trends compared with national trends.

HARMS RELATED TO PHARMACEUTICAL OPIOID AND BENZODIAZEPINE USE

Opioid and benzodiazepine involvement in motor vehicle accidents and drug-driving tests

We have received data from the Tasmanian Forensic Science Service on drug testing resulting from motor vehicle accidents and roadside drug-driving tests. A limitation of these data is that roadside drug testing is not random and thus the results cannot be used to estimate the prevalence of use of these drugs by all drivers in Tasmania.

Emergency department admissions related to opioids and benzodiazepines

These data can identify patterns of opioid and benzodiazepine prescribing from hospital pharmacies at the time of patient discharge. It also identifies changes in the prevalence of harms, such as opioid overdoses, presenting to the ED.

Deaths involving pharmaceutical opioids and benzodiazepines

The National Coronial Information System (NCIS) is a national internet based data storage and retrieval system for Australian coronial cases. It contains information about every death reported to an Australian coroner since July 2000 (January 2001 for Queensland). All deaths (2000-2009) where prescription opioids or benzodiazepines had a contributory role to the death were extracted. Only data on closed cases are presented, since the precise role of opioids in the death and the intention of the decedent (e.g. unintentional or intentional death) may remain unclear in open cases. Most 2010 cases remain open, hence only data on deaths up to and including 2009 are presented. These data were extracted and analysed by Amanda Roxburgh from NDARC as part of the National Illicit Drug Indicators Project (NIDIP).

RESULTS

WHOLESALE DATA ON OPIOIDS

The NDS data represents wholesale figures to pharmacies per annum for physeptone, oxycodone, morphine, and hydrocodone. Total sales of methadone (syrup and tablets) are higher in Tasmania when compared with the rest of Australia (Figure 1). When the sales are broken down into tablets vs. syrup and liquid it becomes apparent that this difference is driven by sales of methadone tablets (physeptone) in Tasmania, with physeptone sales to pharmacies almost 2.5 times the national rate (Figure 1). This is a smaller gap than in 2002 and 2006 when Tasmanian sales were 2.8 times higher than national sales. Methadone tablets are approved for treating pain but not for treating opioid dependence.

For morphine, the gap between Tasmanian and national sales has closed in recent years. Similarly, for oxycodone the national sales are 68 grams per 1,000 persons vs. 74 grams per 1,000 persons in Tasmania. Hydromorphone, which represents a small part of opioid prescribing, has lower sales in Tasmania than nationally (Figure 1).

PRESCRIBING OF OPIOIDS AND BENZODIAZEPINES

Drug Utilisation Sub-Committee (DUSC) Data, 2002-2010

DUSC data permit comparison between prescribing levels in Tasmania and the rest of Australia. The figures below represent analysis by 10 year age group for morphine, oxycodone, tramadol, and alprazolam per annum, adjusted for the population in each age group. The chance of receiving a morphine prescription increased with age (Figure 2) and morphine prescriptions for all age groups were either stable or decreasing. The chance of receiving a prescription for oxycodone also increased with age (Figure 2) and the number of oxycodone prescriptions per 1,000 population has increased most rapidly among those aged 50 years and over since 2002/03. There has been a smaller increase in prescriptions for 20-49-year-olds. Prescriptions for those aged 19 years and under have been stable.

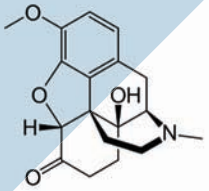
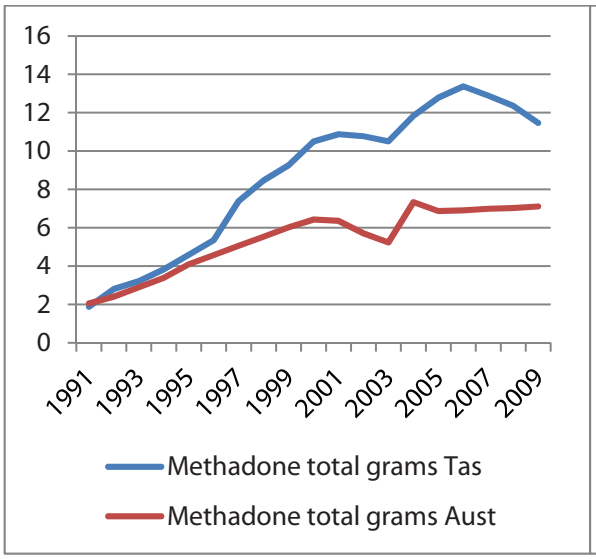
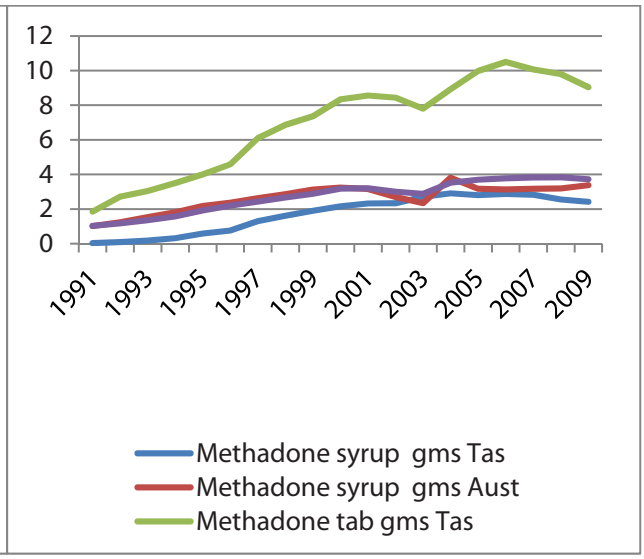


Figure 1: Sales of pharmaceutical opioids, per 1,000 persons, Tasmania and Australia

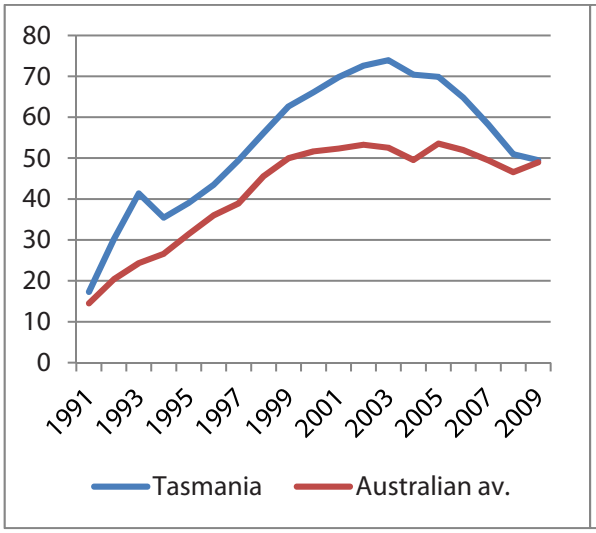
Methadone total (grams)



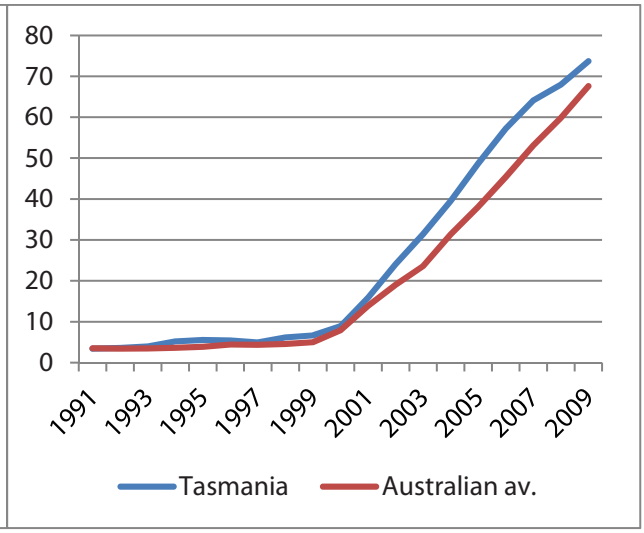
Methadone by formulation (grams)



Morphine (grams)



Oxycodone (grams)



Hydromorphone (grams)

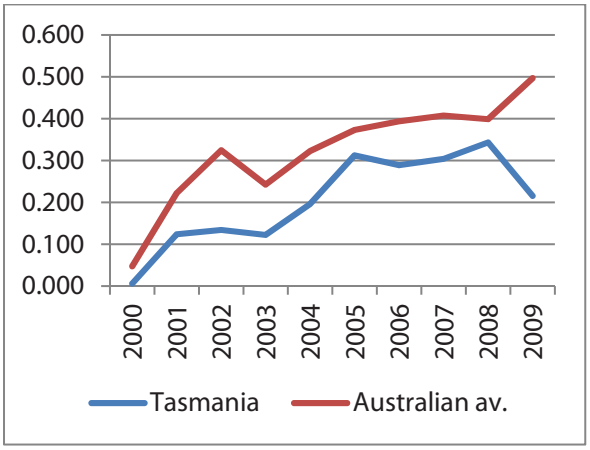
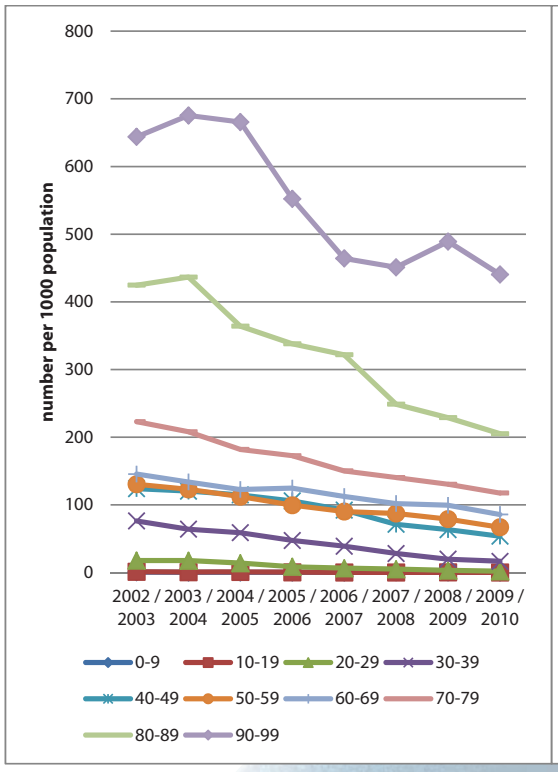
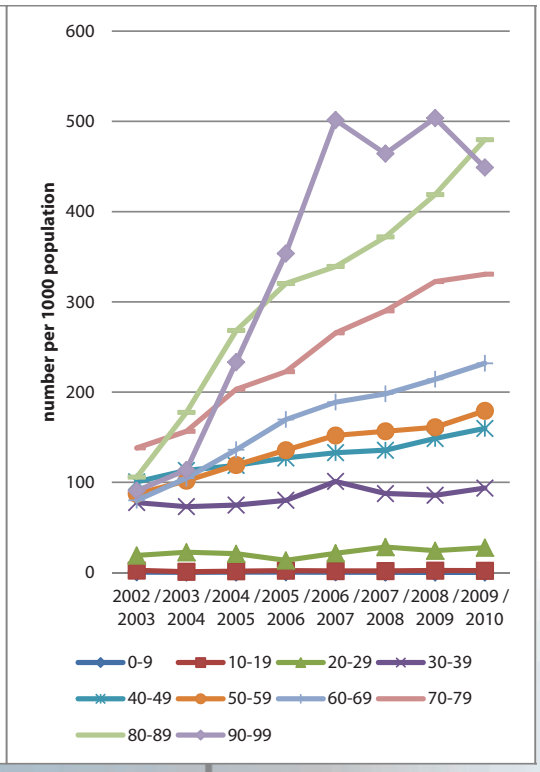


Figure 2: All PBS prescriptions[4] per thousand population per 10 year age group, dispensed on the Pharmaceutical Benefits Scheme in Tasmania 2002 to 2010

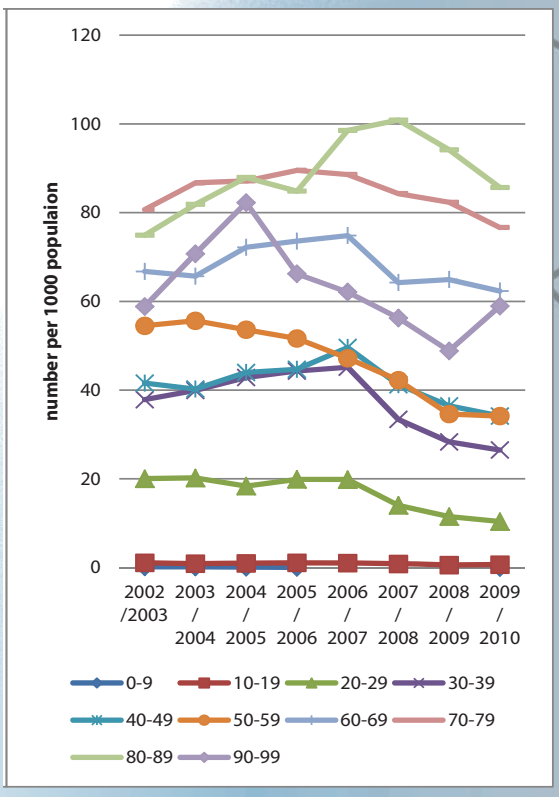
Morphine



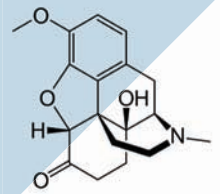
Oxycodone



Alprazolam



4. Includes original and repeat prescriptions



With alprazolam, it was generally the older age groups who received the most prescriptions per 1,000 people, with the exception of those aged 90-99 years who received fewer prescriptions than those aged 60-89 years (Figure 2). For all age groups except those 80-89 years, the number of prescriptions per 1,000 has decreased since the Tasmanian Health Department introduced regulatory changes in 2006.

The next series of analyses focus on changes in the strength of opioids being prescribed in each age group. The analysis for oxycodone shows that there have been small increases in the proportions of patients receiving higher doses for all age groups except 10-19 years (Appendix 1). For morphine, in all age groups bar 0-9 years the proportions receiving lower doses increased. The proportion receiving higher doses of morphine decreased for all age groups except those aged 60-69 years (Appendix 1).

TIME SERIES ANALYSIS OF OPIOID PRESCRIBING BY JURISDICTION

Key Findings

Between 2002 and 2010:

- Tasmania had amongst the highest level of overall opioid analgesic prescribing (oxycodone, morphine, physeptone, and hydromorphone) per 100,000 persons.
- Overall prescribing of these four drugs increased more slowly in Tasmania than it did in almost all other jurisdictions, except SA and NT.
- Oxycodone prescribing in Tasmania increased during this period more rapidly than it did in the larger jurisdictions. Only the ACT and NT experienced more rapid *increases* than Tasmania.
- Morphine prescribing in Tasmania decreased during this period more rapidly than it did in the larger jurisdictions. Only the NT experienced more rapid *decreases* than Tasmania.

This section summarises the analysis of total dispensing quantity across four S8 drugs (hydromorphone, oxycodone, morphine and methadone tablets) between 2002 and 2010. Dispensing quantity was standardised across the four drug types using a formula that divided total drug consumption (the product of mass and volume dispensed) by the DDD for the primary indication of the drug (WHO Collaborating Centre for Drug Statistics Methodology, 2011). The data were also standardised by age and sex, using the Australian population census data as the reference population.

Data were then analysed at jurisdictional level (see Appendix 2 for a detailed description). A generalised least squares regression model was used to compare trends over time between jurisdictions. The outcome of the model was expressed in percentage increase per month in rates of prescribing.

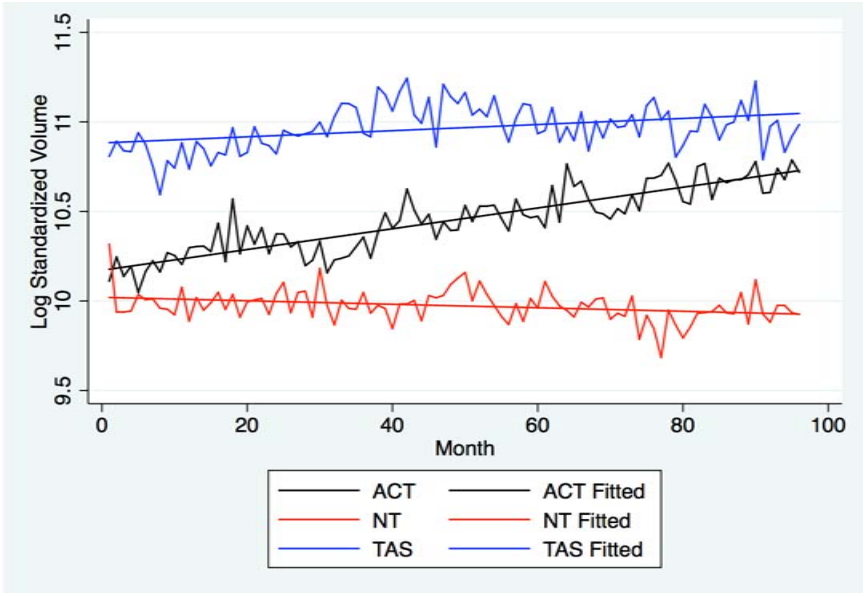
The results are summarised in Table 1 and in Figure 3. The opioid drugs with the lowest base levels of prescribing have the lowest rate of increase. To show this clearly, the average prescribing quantity is shown for each state in Table 1. Monthly changes are shown as percentage increases or decreases.

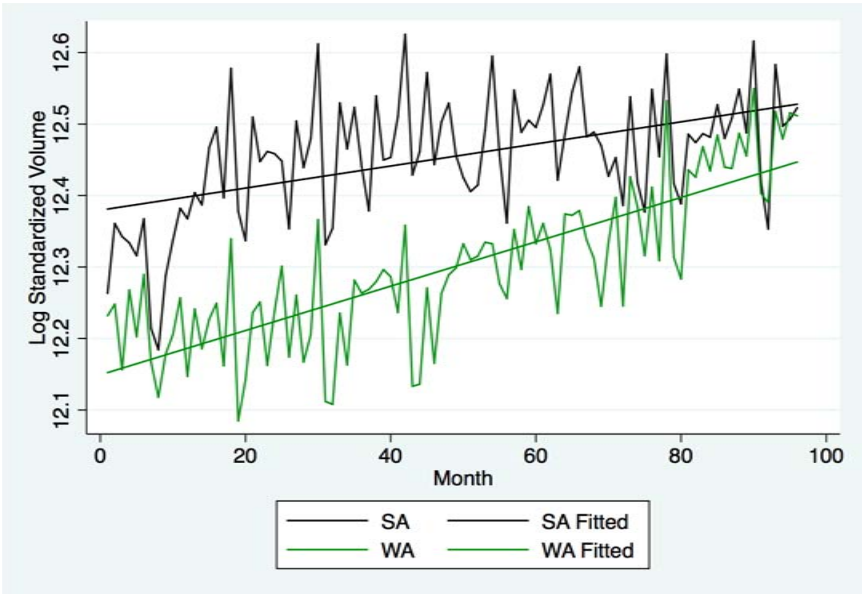
Table 1: Baseline Average Values (June 2002) and Monthly Percentage Change by State for four opioids (morphine, oxycodone, physeptone, and hydromorphone), 2002-2010

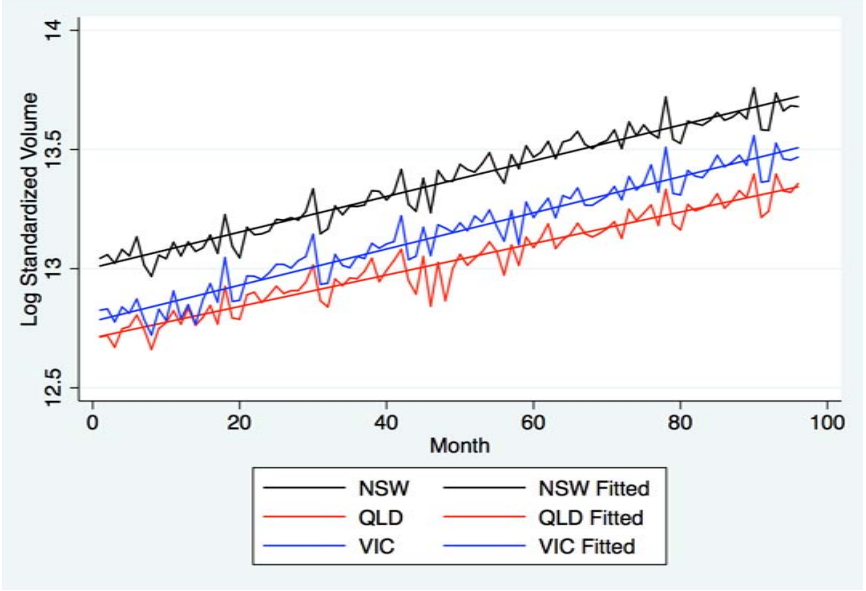
State	Baseline Average quantity prescribed per month (DDDs) June 2002	Monthly Percentage Change
NT	22,488	-0.1%
TAS	53,239	0.2%
SA	237,877	0.2%
WA	188,927	0.3%
ACT	26,149	0.6%
QLD	330,863	0.7%
VIC	354,711	0.8%
NSW	444,141	0.8%

The predicted and observed values from this model are shown in Figure 3. Prescribing quantities differ widely by jurisdiction, and are increasing in almost every jurisdiction, though the amount by which they are increasing differs. When the four opioids (morphine, oxycodone, methadone tablets and hydromorphone) are examined together, prescribing quantities are increasing fastest in the jurisdictions with the largest baseline prescribing levels

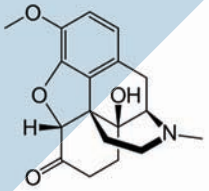
Figure 3: Prescribing quantity in defined daily doses for morphine, oxycodone, methadone tablets and hydromorphone by jurisdiction[5], 2002-2010







5 The fluctuating lines represent the actual data. The straight lines represent the line of best fit.



TIME SERIES ANALYSIS OF MORPHINE AND OXYCODONE PRESCRIBING

These analyses model morphine and oxycodone prescription data to enable simultaneous tests for: 1) Trends over time in the number morphine and oxycodone prescriptions on a State by State basis; 2) Differences in overall levels of morphine and oxycodone prescriptions between States.

Morphine

The number of morphine prescriptions per month was calculated as a directly standardised rate per 100,000 of population. For a more detailed description of the analytic approach employed, see Appendix 2. The regression results indicate that some groups of states showed similar patterns of behaviour (Figure 4). Specifically:

- New South Wales (NSW), Victoria (VIC), South Australia (SA), Western Australia (WA) and Queensland (QLD) had low initial rates of morphine prescribing, and showed little change over time;
- The Northern Territory (NT) had a very high rate of morphine prescribing initially, and showed rapid reductions over time; and
- The Australian Capital Territory (ACT) and Tasmania had medium levels of morphine prescribing initially, and reduced prescribing rates more rapidly than the larger states.

There was a statistically significant decline in standardised rates of prescribing of morphine over the period 2002 to 2010 and large differences in the rate of decline between States. The fact that rates declined faster in states with higher baseline levels of prescribing (Tasmania, NT and ACT) *could* be taken to suggest that State government initiatives aimed at reducing inappropriate morphine prescribing have resulted in population-level reductions in *total* morphine prescribing.

Oxycodone

Oxycodone prescriptions increased as morphine prescriptions declined (Figure 5). In some States there was a significant jump in oxycodone prescriptions near the end of the series. The step function/State interaction was non-significant, suggesting that all States experienced a small increase in prescribing rate in April 2009 [6] . Those with the highest levels of oxycodone prescribing did not show the effect of the step as clearly (although it had a uniform effect across all States – see Figure 5).

Table 2 shows the rates of change from baseline per 100,000 population. Oxycodone prescribing has increased over the eight years of the study, with final rates between 10 and 100% higher than baseline. States with lower baseline levels of prescribing (NSW, VIC, and QLD) showed smaller increases over the period, while those that started at high levels increased the most. Prescribing rates in the NT have increased from 58 per 100,000 at baseline to approximately 120 per 100,000 by the end of 2009.

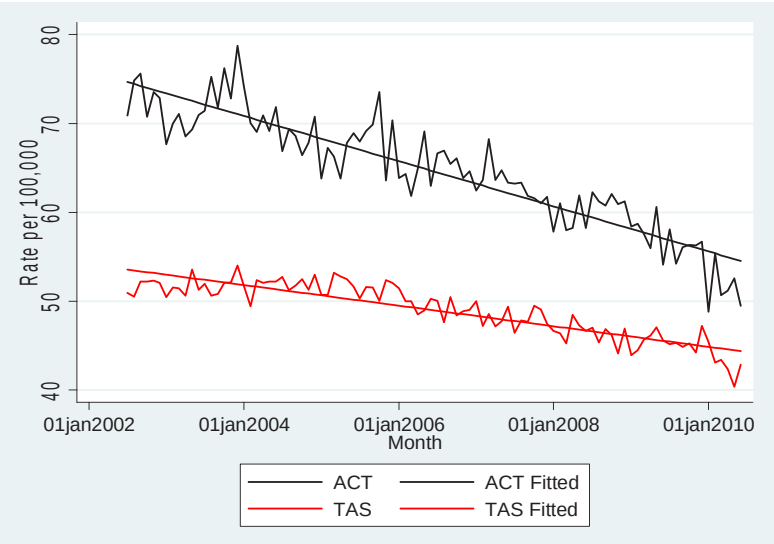
For the States with low to medium levels of prescribing, there was a step increase in prescribing in April 2009. This increase was uniform across these States, but was less noticeable in states with the highest rates of prescribing.

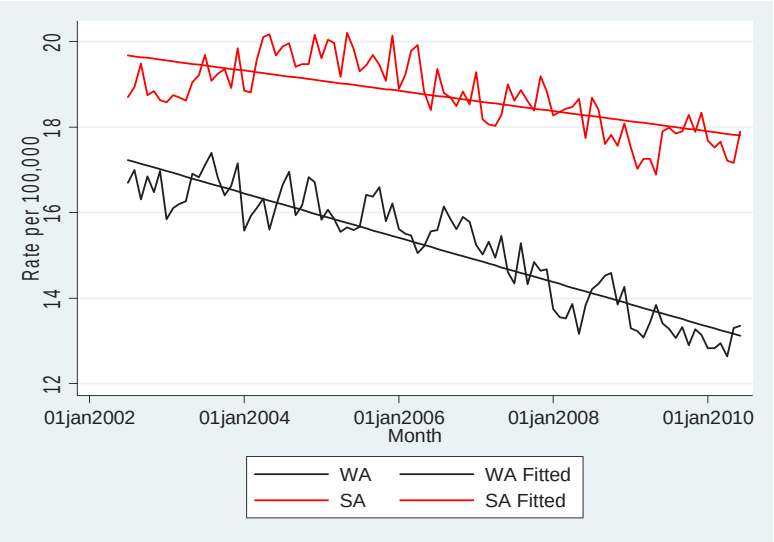
Table 2: Overall rates of change in number of oxycodone prescriptions after including interactions

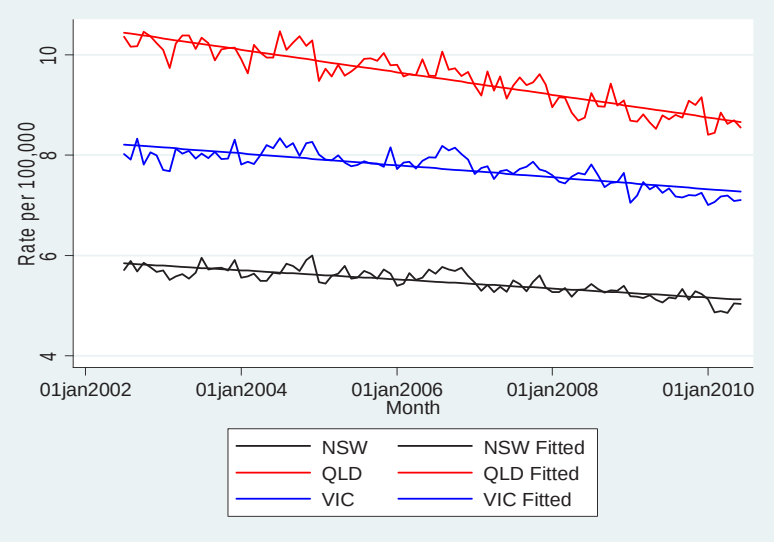
State	Baseline Rate of prescriptions (June 2002, per 100,000 Population)	Rate of Change (per 100,000 population, per month 2002-2010)
Low Baseline		
NSW	2.5	0.005
QLD	4.3	0.008
SA	8.8	0.025
VIC	3.1	0.013
WA	7.9	0.020
Medium Baseline		
ACT	40.3	0.17
Tasmania	24.4	0.08
High Baseline		
NT	58.0	0.72

6 This was the month when the 15mg and 30mg formulations of Oxycontin™ were released onto the Australian market; however, these two formulations do not account for the increase. The increase occurred in other formulations, suggesting that marketing of the 15mg and 30mg formulations may have had had an effect on prescribing of the other formulations.

Figure 4: Time series analysis of morphine prescriptions per 100,000 population, 2002-2010 [7]

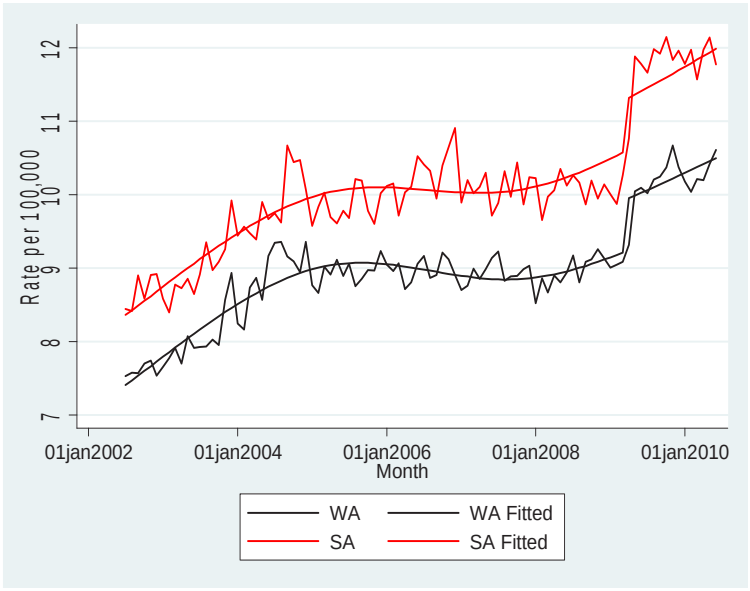


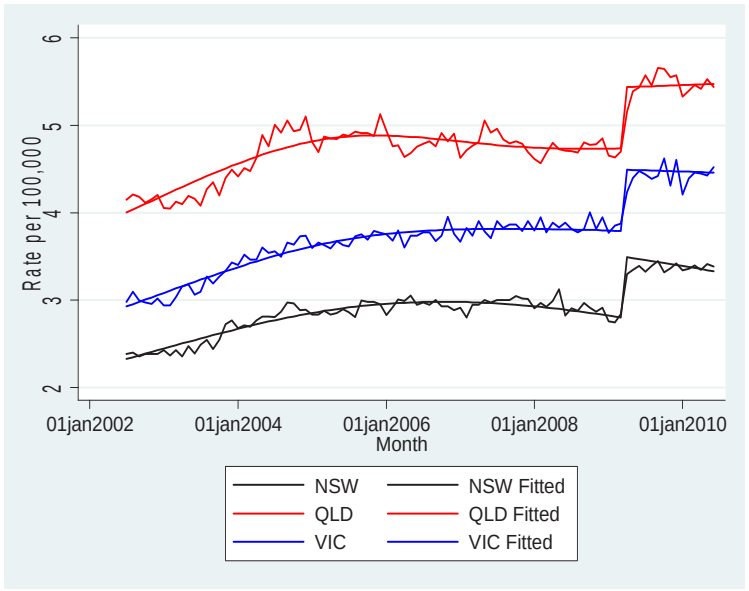


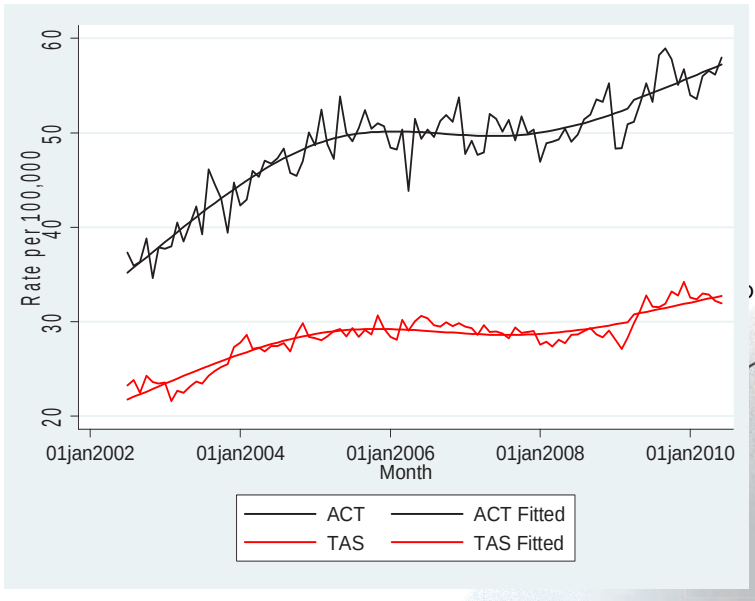


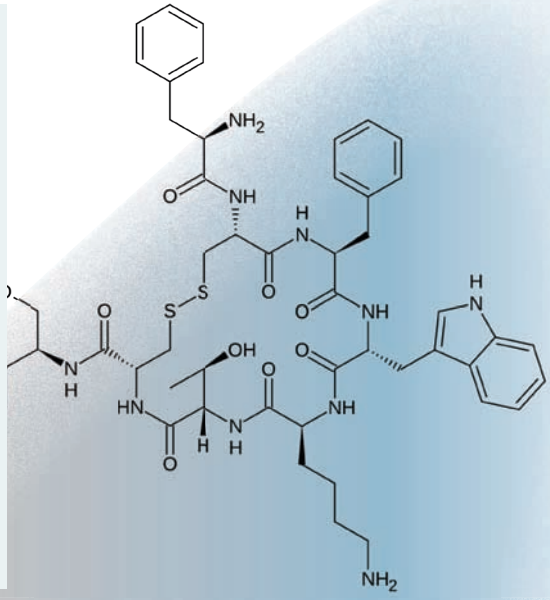
7 It is important to note the differences in the Y axes across th=e three graphs (rates per 100,000), with the ACT and Tasmanian graph having higher rates per 100,000 on the Y axis than the other two graphs.

Figure 5: Time series analysis of oxycodone prescriptions per 100,000 population, 2002-2010









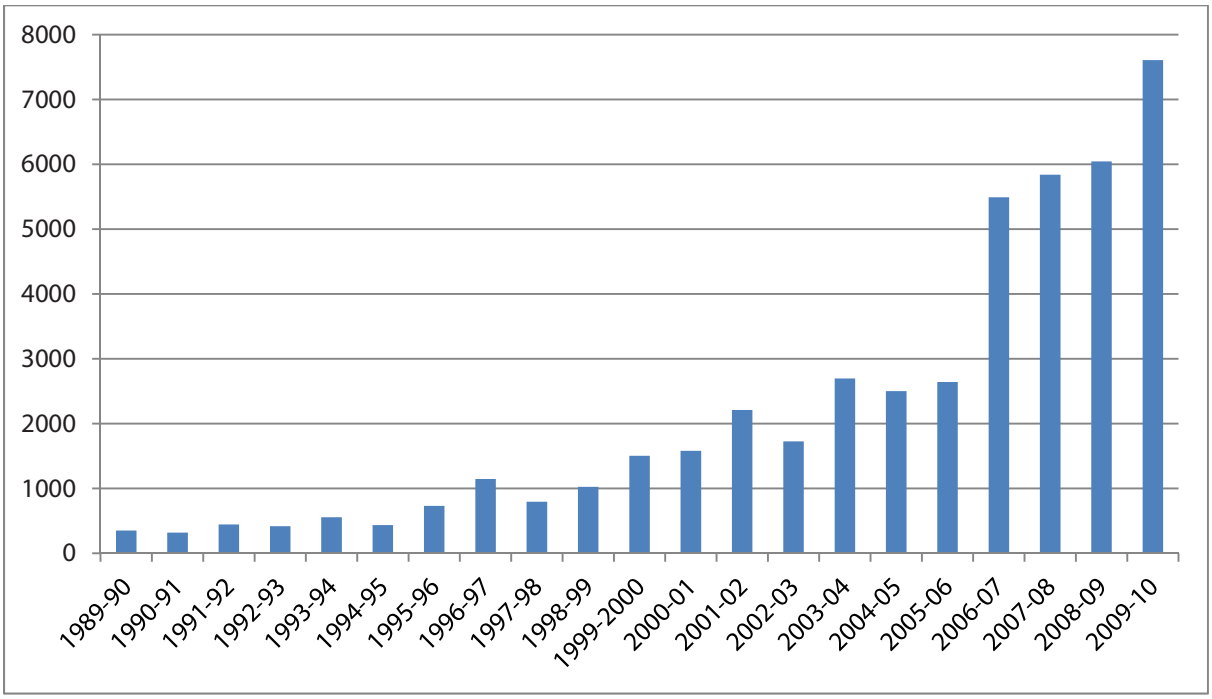
PRESCRIBING IN TASMANIA: DRUGS AND POISONS INFORMATION SYSTEM (DAPIS) 1996-2010

The reason for presenting these data in addition to the DUSC data presented above is that we are able to further explore longer-term prescribing patterns. The latter are potentially *prescribing for chronic pain* and perhaps more controversially, *de facto opioid substitution therapy*. Tasmanian policies dictate that a doctor who wishes to prescribe S8 drugs to a person for more than two months can only do so with an authority to prescribe. This allows us to gain some idea of the extent of acute vs. chronic pain patients being prescribed opioids in Tasmania. In this section, we examine trends in authorities, with and without restrictions, and according to age, sex, and geographic area. DAPIS data has been analysed for the number of prescriptions per annum as follows: morphine and oxycodone from 1996 to 2010; buprenorphine from 1999 to 2010; and alprazolam from 2007 to 2010.

The total number of authorities issued per annum has been increasing steadily since the mid 1990s, with a large increase from 2005/06 to 2006/07 (Figure 6). This increase was due in part to the requirement in 2007 to acquire an authority to prescribe alprazolam under certain circumstances. It is also likely that increased compliance monitoring (to ensure that authorities are being acquired when needed) has contributed to the increase over time. The proportion issued with restrictions has remained between 8% and 10% over the past four years. Restrictions are placed on authorities when there is a concern for the patient's safety or that the drug may be misused or diverted. An earlier analysis in 2005 showed that these patients with restrictions on their authorities are spread geographically: 24% in the north, 50% in the south, and 26% in the north-west region, mirroring the population distribution.

The trends are with the DUSC data: the number of morphine prescriptions peaked in 2002 and has been steadily declining since while prescriptions for oxycodone have increased between 1999 and 2010 (Figure 8). The increase in oxycodone prescriptions has more than compensated for the decrease in morphine prescribing, resulting in an overall 6.6-fold increase of opioid analgesic prescriptions between 1999 and 2010. Buprenorphine/buprenorphine-naloxone prescribing has increased since 2005, in keeping with a change in policy to using buprenorphine or buprenorphine-naloxone rather than methadone as first line treatments for opioid dependence (Figure 8). Prescribing for alprazolam, which has been monitored since 2007, has shown a steady decline since 2008 after an initial rise (Figure 8). Adjusting these data for changes in population had no effect on the pattern or trend so we have presented the raw number of prescriptions.

Figure 6: Total number of authorities per annum in Tasmania, DAPIS, 1989-2010



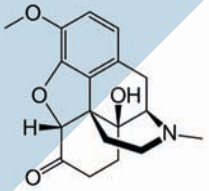
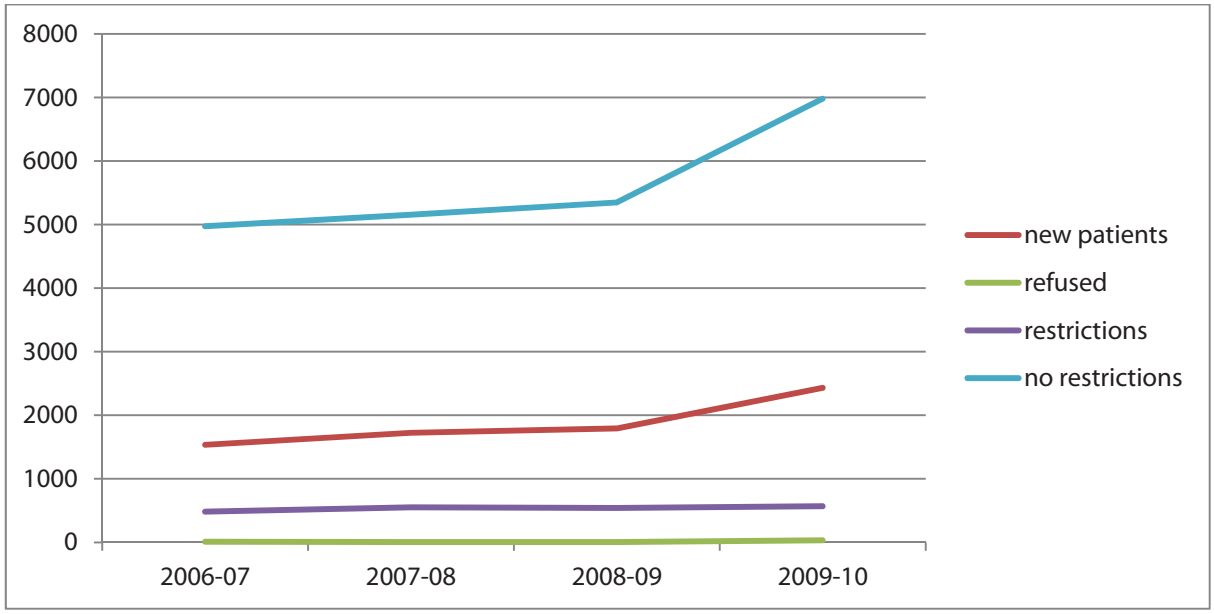


Figure 7: Number of authorities to prescribe issued without restrictions, refused and restricted in Tasmania, DAPIS, 2006-2010



DAPIS AUTHORITIES BY REGION AND AGE

There are two key findings from this analysis (see Appendix 3 for graphs). The first is that per 1,000 population, the north and north-west regions have higher levels of authority applications than the southern region of Tasmania.

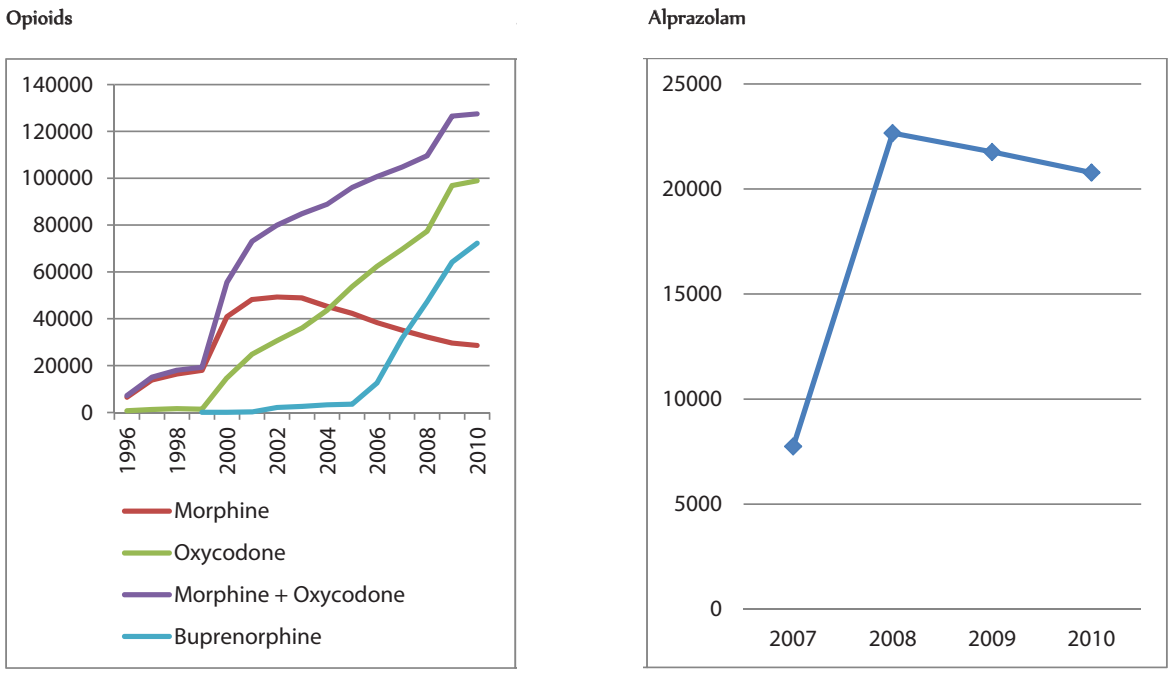
The second is that, for all regions, and the northern region in particular, the age group with the highest rate of authority applications is the 30-39 year age group. This contrasts with DUSC data where prescribing increased with age when non-authority prescriptions were included (see earlier). This suggests that there is a difference in patterns of prescribing for acute and chronic pain. The reasons for this are unclear. Higher rates of prescribing amongst the elderly, whilst not always desirable, can be explained by age-related disease. Higher rates of prescribing in the 30-39 year age group are not as easily explained, given that this is not the age group most likely to be experiencing chronic disease. One possibility is that this group is at risk of work-related accidents and injuries. It is possible that a higher proportion of this age group in the northern region are engaged in manual labour and hence more likely to experience work-related injuries. It is also possible that it is this age group which is engaging in higher levels of doctor-shopping, and this explanation is supported by anecdotal reports of significant doctor-shopping occurring in the regional parts of Tasmania.

Age is not recorded for all prescriptions but it is for PSB authorities to prescribe S8 medicines and alprazolam. We were therefore able to analyse the number of authorities applied for by region and drug type (morphine, oxycodone, and physeptone), and the number of authorities by region and 10 year age group, per thousand population to provide a more accurate indication of the proportions in each age group for whom an authority had been submitted.

Analysing the authorities by region and then adjusting for the population in that region is similar to using per capita figures but gives a clearer indication of the rates of authorities submitted in each region. The analysis by region included authority applications for morphine, oxycodone, and physeptone. The analysis by region and age group included the same applications.

The advantage of analysing authorities rather than prescriptions is that an authority is required only when prescribing beyond two months. This gives a better indication of what is being prescribed for chronic rather than acute pain.

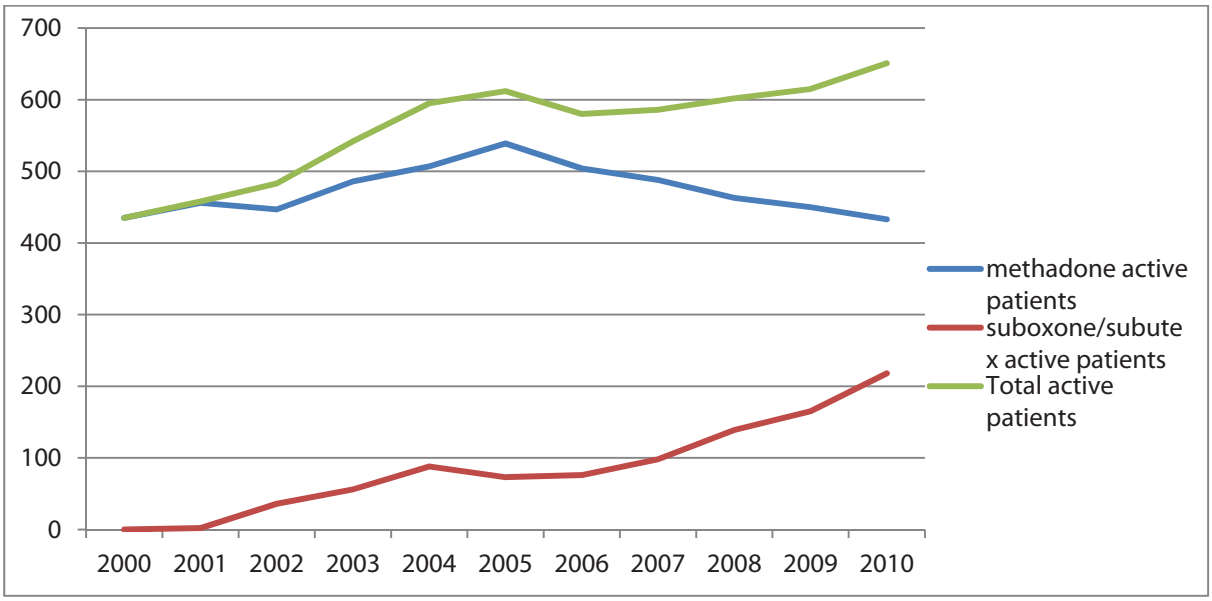
Figure 8: Total number of morphine, oxycodone and buprenorphine prescriptions per annum in Tasmania, DAPIS, 1996-2010

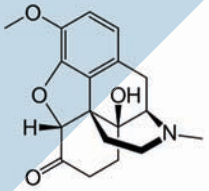


CLIENTS RECEIVING OPIOID SUBSTITUTION THERAPY (OST)

Tasmanian data show that the number of patients in OST has increased fairly steadily since 2000. The largest increase has been in patients prescribed buprenorphine and buprenorphine-naloxone, rather than methadone (Figure 9). The number of new patients in OST per annum has increased since 2007 from 90 to 119. This increase has been curtailed by a shortage of doctors willing to prescribe OST, the availability of other health professionals to support treatment, and pharmacists to dispense as well as a range of other structural impediments such as the weekly dispensing and travel costs, and geographic access to services.

Figure 9: Number of active OST patients per annum, Tasmania, 2000-2010



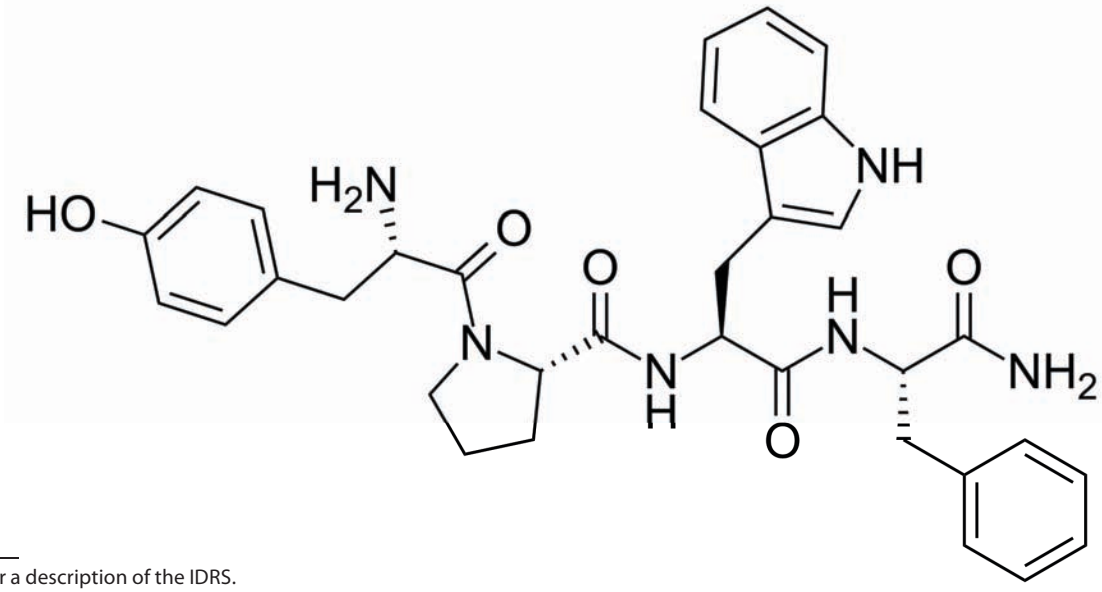


PATTERNS OF OPIOID USE AMONG REGULAR INJECTING DRUG USERS (IDUS)

OPIOID USE AMONG PEOPLE WHO INJECT DRUGS

IDRS[8] participants in Tasmania self-reported higher rates of illicit prescription opioids and benzodiazepines use in the past six months than participants in other jurisdictions (Figures 10 and 11). Use of heroin in the past six months was much lower in IDRS participants in Tasmania than nationally, largely due to very low availability of heroin in Tasmania (Figure 10). The same pattern was noted in nominated drug of choice, with Tasmanian IDRS participants less likely to nominate heroin than those in other jurisdictions (Figure 12).

It is of interest to compare the level of prescribing in Tasmania and. Australia with the levels of self-reported prescription opioid misuse amongst IDU. As indicated by the wholesale data (NDS data, presented earlier) Tasmania's overall consumption of prescription opioids is higher than the national average, and the level of self-reported illicit use amongst IDU is also higher than the national average.



8 See page XX for a description of the IDRS.

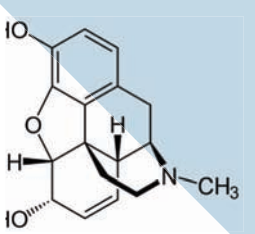
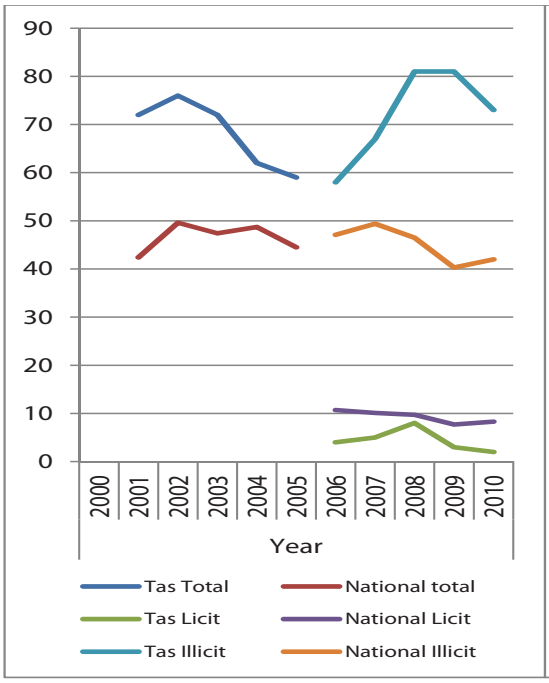
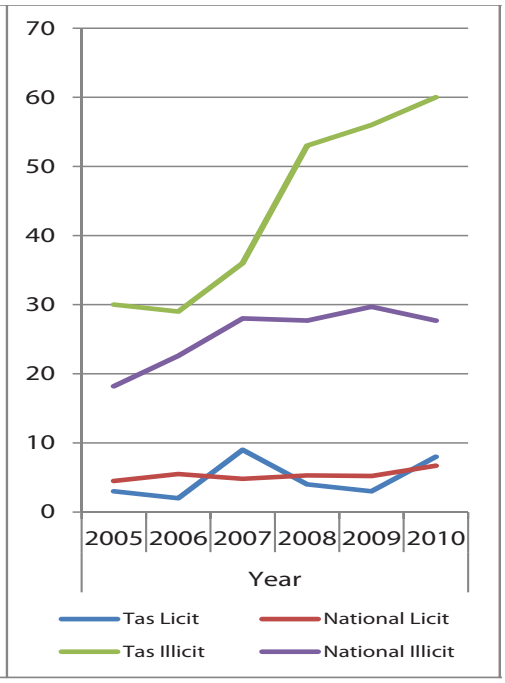


Figure 10: Recent (past 6 months) use of opioids by regular IDUs (%), Tasmania and National 2000-2010[9]

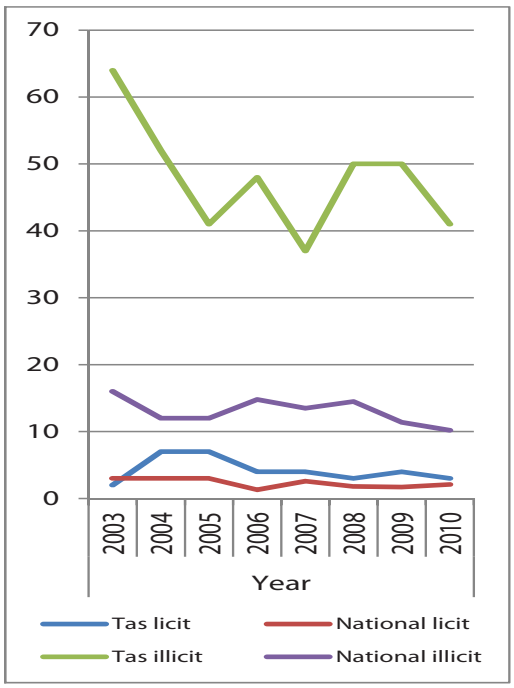
Morphine



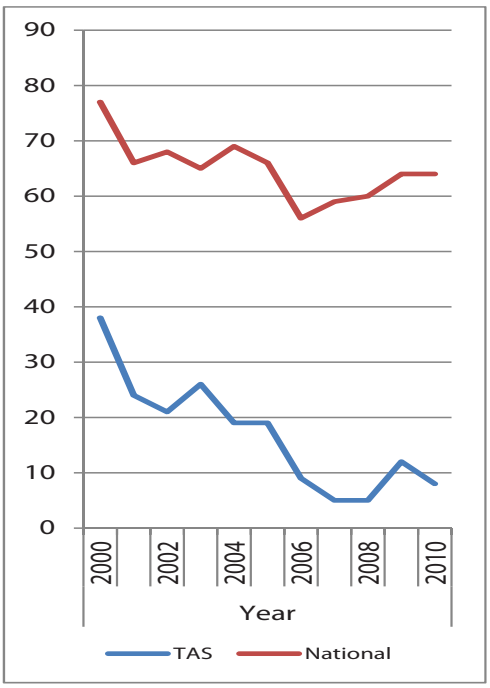
Oxycodone



Physeptone



Heroin



9 Reporting of 6 month use is different between 2000-2005 and 2006-2010 because of a change in the way the data were collected. From 2000-2005, participants were asked about any use. From 2006 onwards, participants were asked about the licit use and illicit use of each prescription drug type.

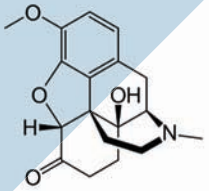


Figure 11: Recent (past 6 months) use of benzodiazepines by regular IDUs (%), Tasmania and National 2000-2010

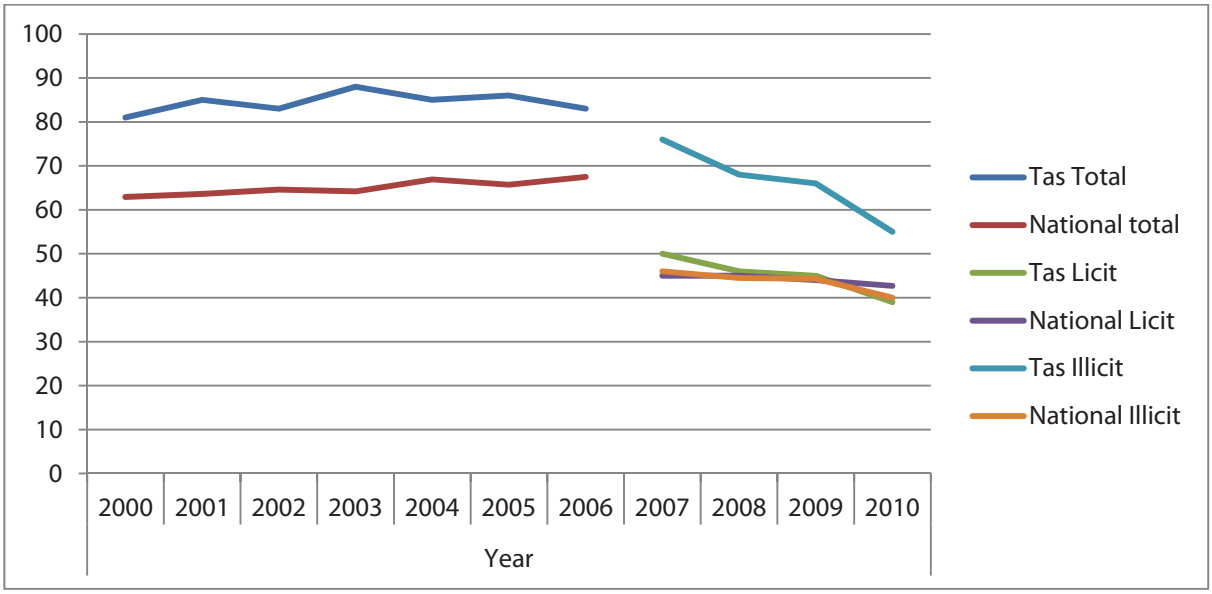
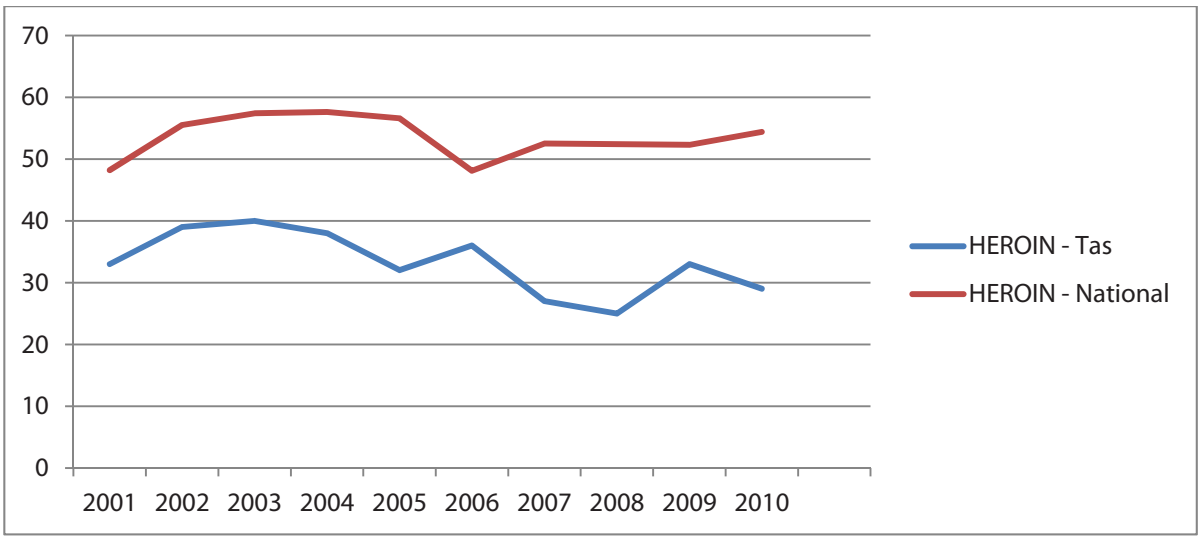


Figure 12: Heroin nominated as drug of choice among regular IDUs (%), Tasmania and National, 2001-2010

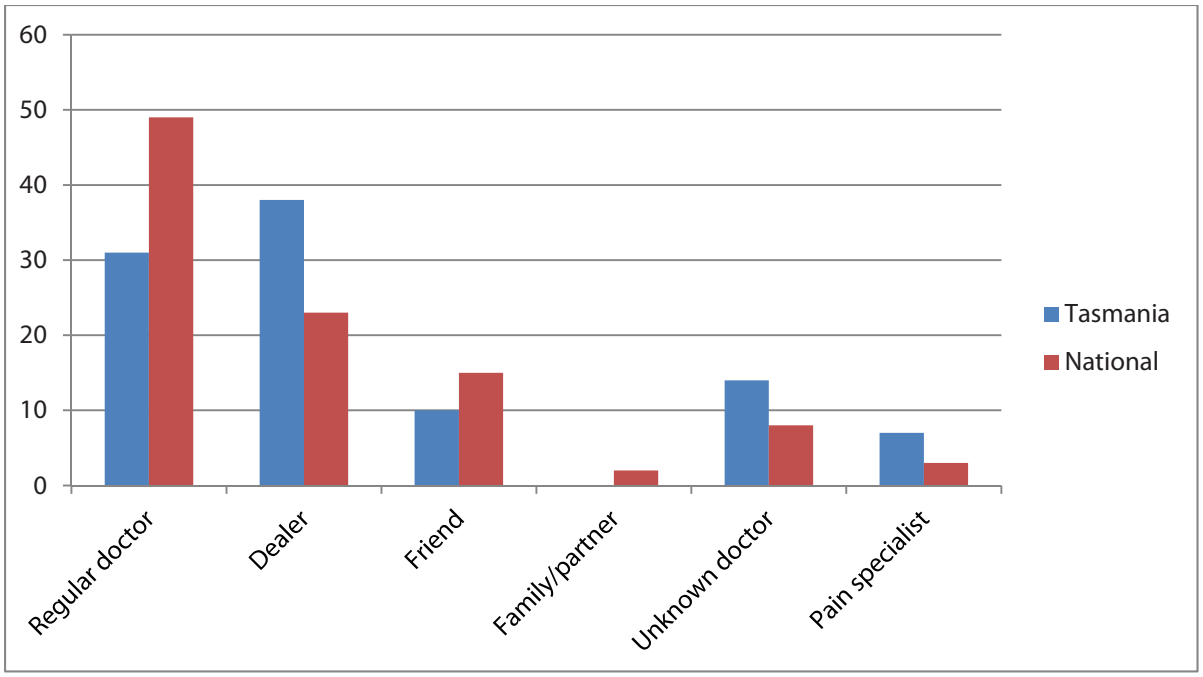


THE USE OF PHARMACEUTICAL OPIOIDS BY REGULAR IDUS IN AUSTRALIA FOR PAIN RELIEF

One-third of Australian IDRS participants reported using prescription opioids for pain relief in the previous six months and nearly half of this group (47%) reported that this was for CNMP. Half (49%) obtained these opioids from their regular doctor, 23% from a dealer, and 15% from a friend or acquaintance. The remainder obtained the medication from an unknown doctor (8%), pain specialist (3%), family member or partner (2%) (Phillips & Larance, 2010).

In Tasmania, 29% of participants reported using prescription opioids for pain relief in the previous six months, a third of these (35%) for CNMP. Thirty-one percent obtained these opioids from their regular doctor, 38% from a dealer, 10% from a friend, 14% an unknown doctor, and 7% from a pain specialist (Figure 13). Thus, a significantly higher proportion of opioids for pain were obtained from a dealer in Tasmania than nationally.

Figure 13: Source of prescription opioids used for pain by regular IDUs in Tasmania and nationally (2010 data)



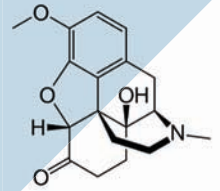


Table 3: Median days of opioid use among regular IDUs, IDRS, 2004-2010[1]

	NSW	VIC	Tasmania	QLD
Morphine				
2004	5	6	12	7
2006	8	5	21	12
2008	12	5	48	12
2010	5	6	46	19
Oxycodone				
2006	7	5	7	5
2008	12	5	10	9
2010	6	6	20	8
Diverted physeptone				
2004	2	6	6	4
2006	2	10	6	2
2008	4	2	6	8
2010	7	3	6	1
Illicit heroin				
2004	120	90	4	26
2006	72	56	6	52
2008	72	81	2	48
2010	96	74	3	90

1 Median days of use among those using each form of opioid in the past six months

As is also apparent in Table 3, IDUs from Tasmania reported the highest frequency of morphine use and those in NSW and VIC the least frequent use. The reverse was true for heroin. The median amount reportedly used per day of use was uniformly high in all jurisdictions and for all forms of opioids. For morphine, the median dose used by IDUs was 100mg per day in NSW, VIC, QLD and 70mg in Tasmania; for physeptone, it was 85mg in NSW, 60mg in VIC, 48mg in TAS and 70mg in QLD. In all jurisdictions the median daily dose of oxycodone was 80mg.

ESTIMATED CONTRIBUTION OF IDUS TO PHARMACEUTICAL OPIOID CONSUMPTION

This analysis was undertaken to estimate the contribution that IDU use of pharmaceutical opioids made to opioid consumption from 2004 to 2010, in Tasmania, NSW, VIC and QLD. The DUSC data were used to estimate total milligrams prescribed in each jurisdiction for morphine, oxycodone and physeptone.

The estimate of the quantity of pharmaceutical opioids used by IDUs in each jurisdiction was calculated as follows. We multiplied the estimated number of IDUs in each jurisdiction by (i) the percentage of these IDUs who reported using that drug in the past six months (IDRS data); (ii) the median number days they reportedly used in the past six months (IDRS data); and (iii) the median amount they reportedly used in that time period (IDRS data). This estimate was doubled to produce an annual estimate.

Annual IDU use = *no of IDU* x *% with 6m use* x *median days used* x *median amount used* x *2*

Proportion of drug use attributable to IDU p.a. = Annual IDU use (grams)/Population use (grams)

Figure 14 shows the estimated proportion of total pharmaceutical opioid use accounted for by IDUs. The estimated contribution to morphine consumption in Tasmania was very high. It increased over time to approximately 27% of estimated population

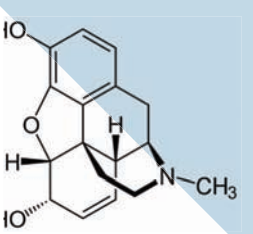
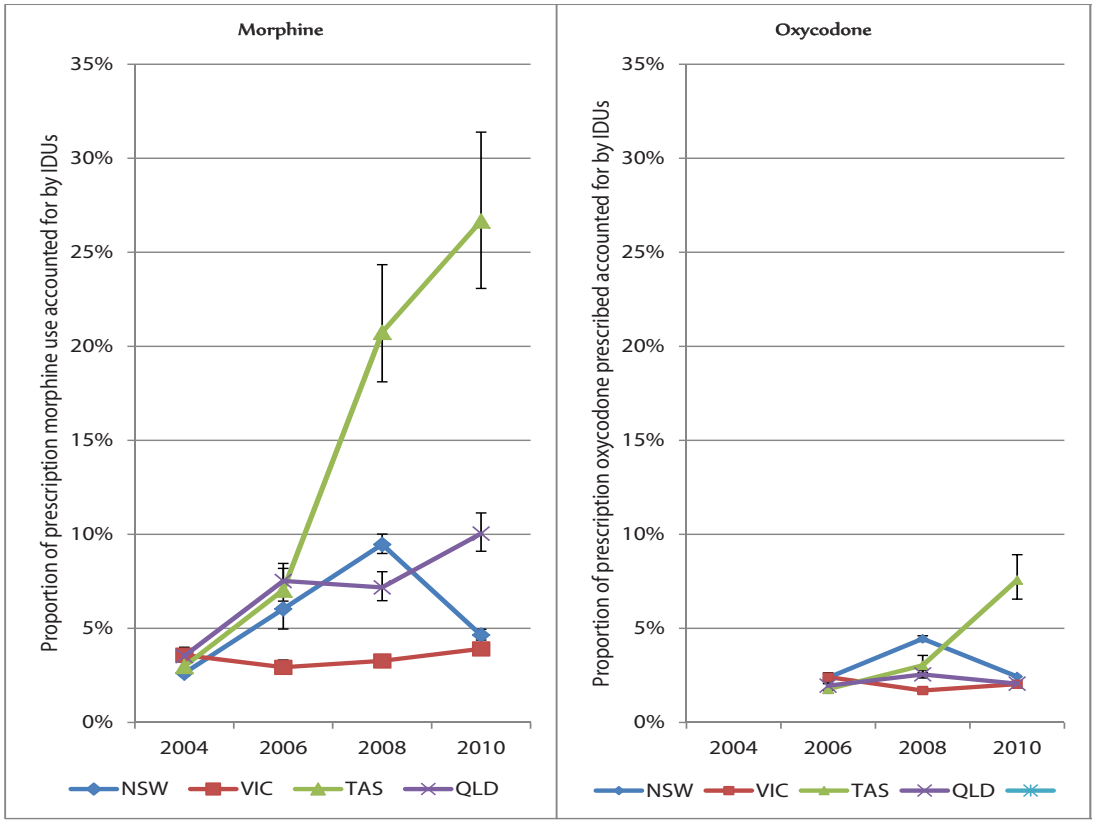
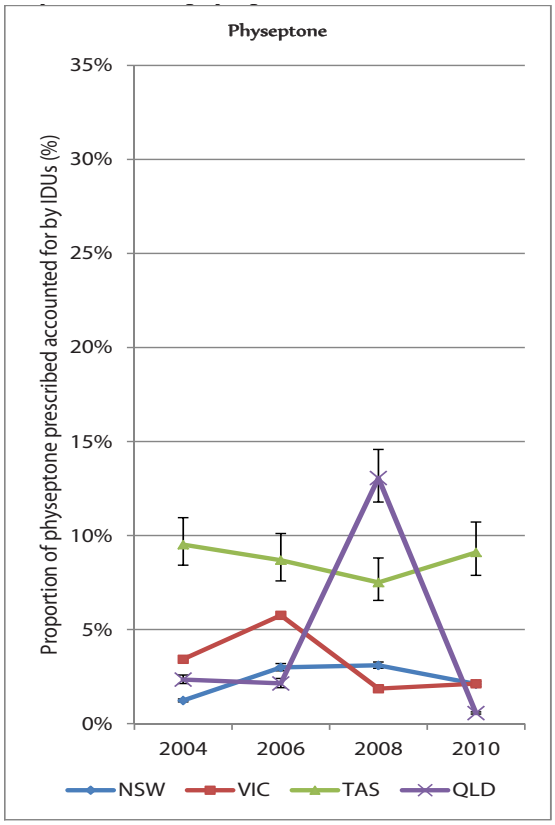
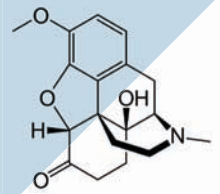


Figure 14: Estimated contribution of regular IDUs to total milligrams of consumption of morphine, oxycodone and physeptone, 2004-2010







consumption in 2010 (range 23-31%). The increase was explained by a combination of a population-level decline in morphine prescriptions and increased use of morphine among regular IDUs over the study period.

There was a similar but much less marked pattern for physeptone: IDUs in Tasmania were estimated to consume around 9% of the prescribed physeptone in that jurisdiction in 2010 (range 7-11%).

Across all jurisdictions, IDUs were estimated to consume less than 5% of prescribed oxycodone, with the exception of a potential increase suggested in 2010 for Tasmania. This suggests that most of the observed increase in oxycodone prescribing seen at the population level (see earlier sections) has been accounted for by other patient groups, most probably CNMP patients; this is consistent with the observed age distribution of oxycodone prescribing.

As with any estimate where a number of parameters are used to calculate the estimate, caution should be exercised in their interpretation. There is uncertainty (or variance) in each of the parameters used because they are estimates based on a sample rather than a measure based on the whole population being studied: error bars are included in the graph to represent this. It is important to take into account the uncertainty surrounding each of the estimates presented in the Figure below. It is important to distinguish between the percentage of mgs consumed by IDUs and the percentage of prescriptions received by IDUs. Given that IDUs are more likely to seek out high dose opioids, the percentage of prescriptions accounted for by IDUs is likely to be quite a lot lower than the percentage of mgs that they consume.

Finally, it may seem counter-intuitive that whilst morphine prescribing has been decreasing overall, the *proportion* of morphine consumed by IDU is increasing. It is important to note that it is the proportion of morphine consumed that has been increasing, rather than the *total* amount. Although we have estimated that the *total* milligrams consumed by IDUs has increased slightly, this represents a larger proportion of prescribing because the total amount of prescribed morphine has decreased over time. Similarly, although the proportion of oxycodone estimated to have been consumed by IDUs is smaller than that for morphine, the estimated *total* milligrams of oxycodone consumed by IDUs is still around 75% of the estimated *total* milligrams of morphine consumed by IDUs.

HARMS RELATED TO PHARMACEUTICAL OPIOID USE

BLOOD TEST RESULTS AFTER ROADSIDE DRUG TEST, 2005-2010, TASMANIA

These data were kindly provided by Forensic Science Service Tasmania. An important qualification with this data is the non-random sampling involved in collecting these results so the results cannot be generalised to the whole Tasmanian driving population. Nevertheless, amongst the individuals tested there was a high rate of driving after using opioids, despite warnings about the dangers of such behaviour. Of the blood tests taken (N=125), 12.4% tested positive for at least one opioid (5.9% methadone, 6.1% morphine or 2.4% oxycodone, with some testing positive for more than one opioid). The paucity of data related to driving under the influence of one or more medications with a potential to impair driving skills in Tasmania is noted. Little is known about its contribution to road trauma and related harm in Tasmania but in the context of the findings of this review, this could be an issue of some considerable public health and safety importance.

HARMS RELATED TO PHARMACEUTICAL OPIOID USE REPORTED BY REGULAR IDUS

In line with the higher rate and frequency of self-reported use of prescription opioids among Tasmanian IDUs, far more Tasmanian than national IDUs reported a **prescription opioid overdose** in the past 12 months in 2010 (significantly different for morphine and methadone overdoses; $p<0.05$). This is consistent with the previous analysis which found that IDUs accounted for a greater proportion of total morphine and then physeptone prescribing than they did oxycodone prescribing. The harms and costs associated with non-fatal overdoses are significant for the individual and for the health system. For the individual, overdose has the potential to result in cognitive impairment (Darke, Sims, McDonald, & Wickes, 2000). We were unable to locate any studies of non-fatal overdoses amongst chronic pain patients. Nevertheless, given the

Figure 15: Proportion of regular IDUs reporting a non-fatal overdose by drug type in the past 12 months, IDRS 2010

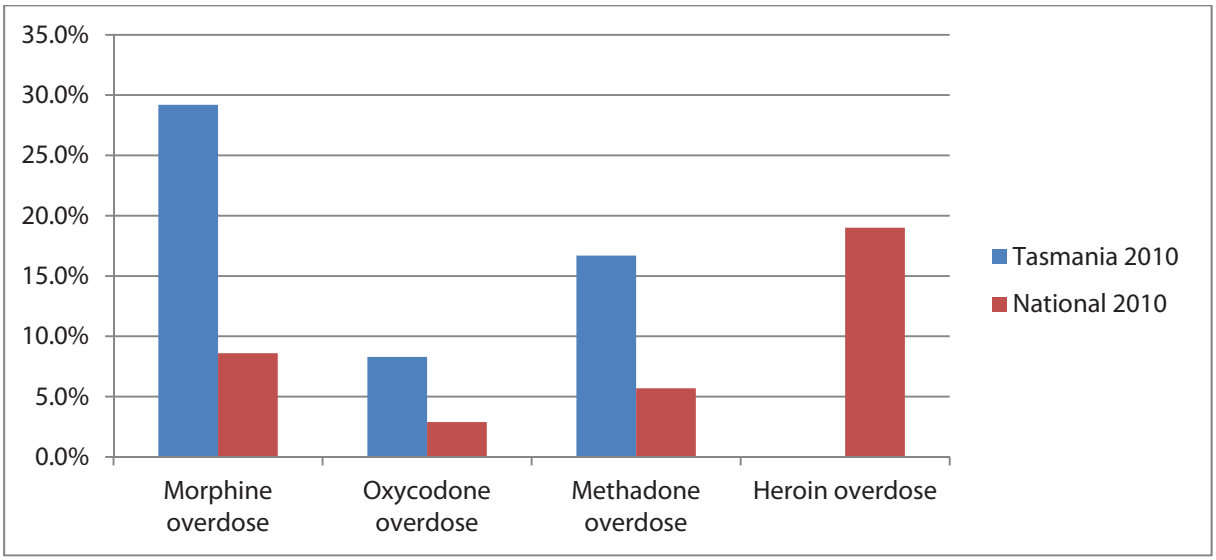
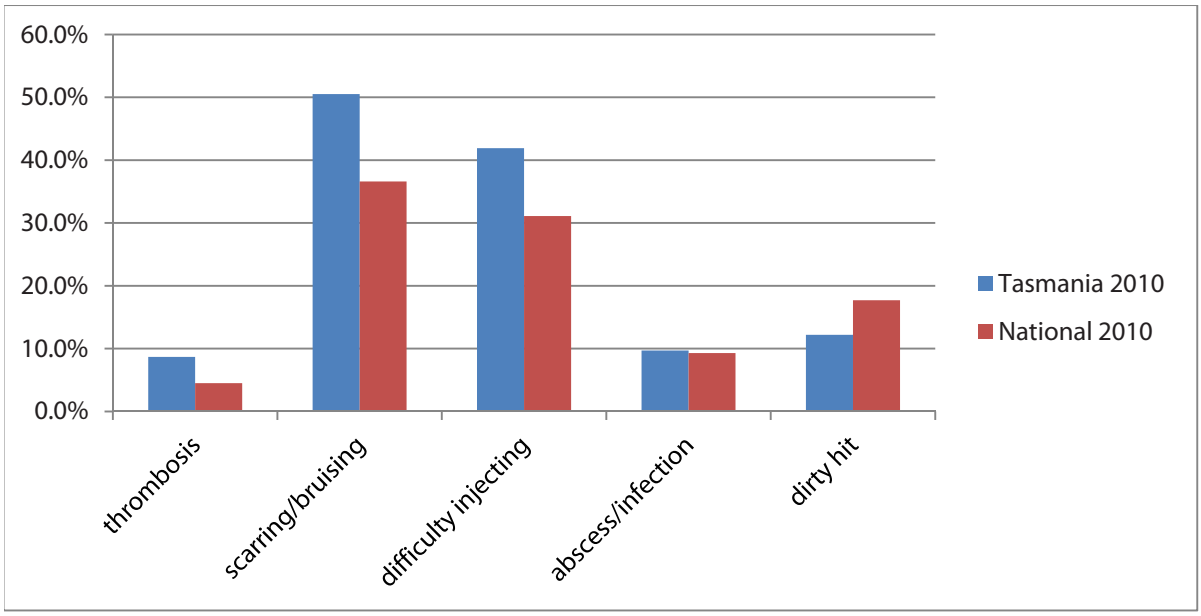
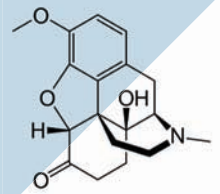


Figure 16: Proportion of regular IDUs reporting injection-related harms, previous 12 months, IDRS 2010



reported frequency of co-prescribing of opioids and benzodiazepines and high rates of alcohol use amongst this population, we consider that non-fatal overdoses are also likely to be occurring amongst this population.

The pattern of heroin overdoses was reversed: no Tasmanian IDRS participant reported a heroin overdose in the past 12 months compared with 19% nationally (Figure 15). Injection-related problems – **scarring, thrombosis, and difficulty injecting** – were reported by a larger proportion of Tasmanian than national IDRS participants ($p<0.05$) (Figure 16).



EMERGENCY DEPARTMENT PRESENTATIONS FOR OPIOID-RELATED PROBLEMS IN TASMANIA

Across the past five years, there have been 80 to 100 presentations per annum to EDs for adverse consequences of opioid use (overdose, withdrawal, intoxication or dependence) across three large hospitals in Tasmania.

HOSPITAL SEPARATIONS FOR INJECTION-RELATED HARMS IN TASMANIA

Because of coding problems, we are not confident that we could extract data on all presentations to hospital for ischaemic limbs, gangrene and abscesses from injecting drug use. Nevertheless, since July 2006, 58 cases were identified: 2006=2 cases; 2007=12 cases; 2008=22 cases; 2009=11 cases; and 2010=11 cases. The medical interventions required included amputation, excisional debridement of soft tissue and allied health intervention. Although very few hospital separations are *recorded* for severe injection-related problems (e.g. gangrene, abscesses) because they are not recorded well, they do occur and were noted by several medical practitioners who participated in the project. The impact on the individual is severe, and it has considerable consequences for the health care system.

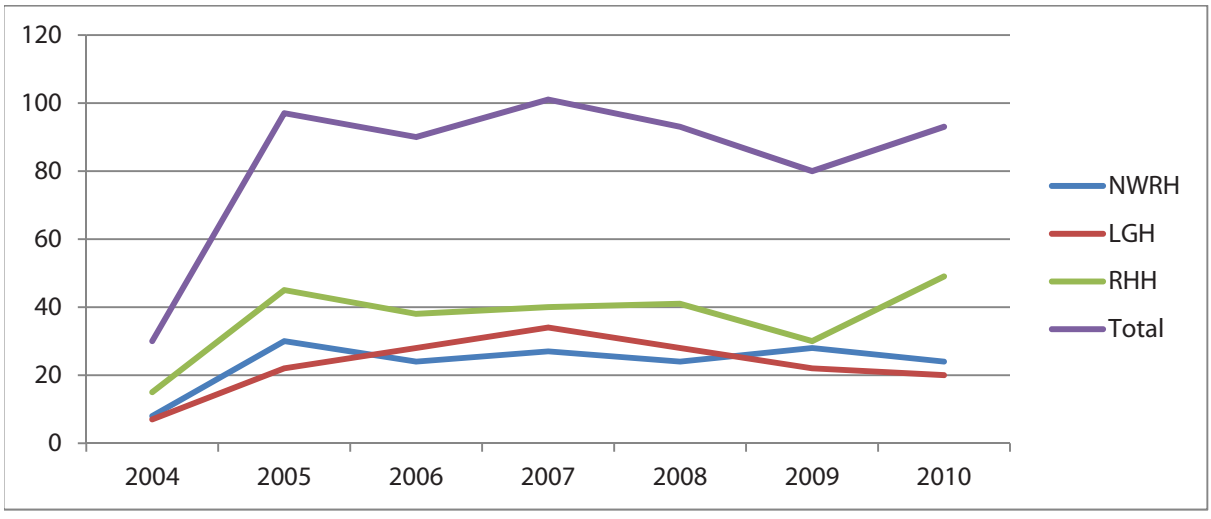
DEATHS RELATED TO PHARMACEUTICAL OPIOID USE IN TASMANIA

The search of the NCIS for methadone, morphine, fentanyl, pethidine, buprenorphine, buprenorphine-naloxone, oxycodone, tramadol and benzodiazepine-related deaths (only for Tasmania) identified 302 deaths in Tasmania between 2000 and 2009 (Figure 18). This compared with 493 road deaths over the same period (Road Safety Advisory Council Tasmania; http://www.transport.tas.gov.au/safety/crash_statistics).

The numbers of deaths per annum where any prescribed opioid and/or benzodiazepine was a contributing factor are shown in Figure 18; the number of deaths due to prescription opioids has remained fairly stable across the period, typically between 10 and 20 per annum. When benzodiazepine deaths are included, a steady increase over time can be noted from below 30 in the first half of the previous decade to between 30 and 49 in the last half of the decade.

If heroin-related deaths are included, Tasmania has had among the lower rates of total opioid-related deaths. Nevertheless, the rates of prescribed oxycodone-related deaths are higher in Tasmania (figure 19). It is unclear if

Figure 17: The number of emergency department presentations for opioid overdose, withdrawal, intoxication or dependence, Tasmania 2004-2010



Note: Abbreviations in graph: Royal Hobart Hospital, Launceston General Hospital, and North Western Regional Hospital

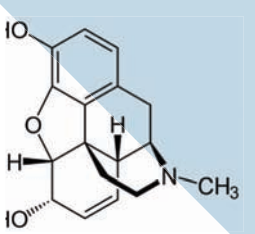


Figure 18: Number of prescription opioid and benzodiazepine-related deaths in Tasmania per annum, 2000-2009, NCIS data

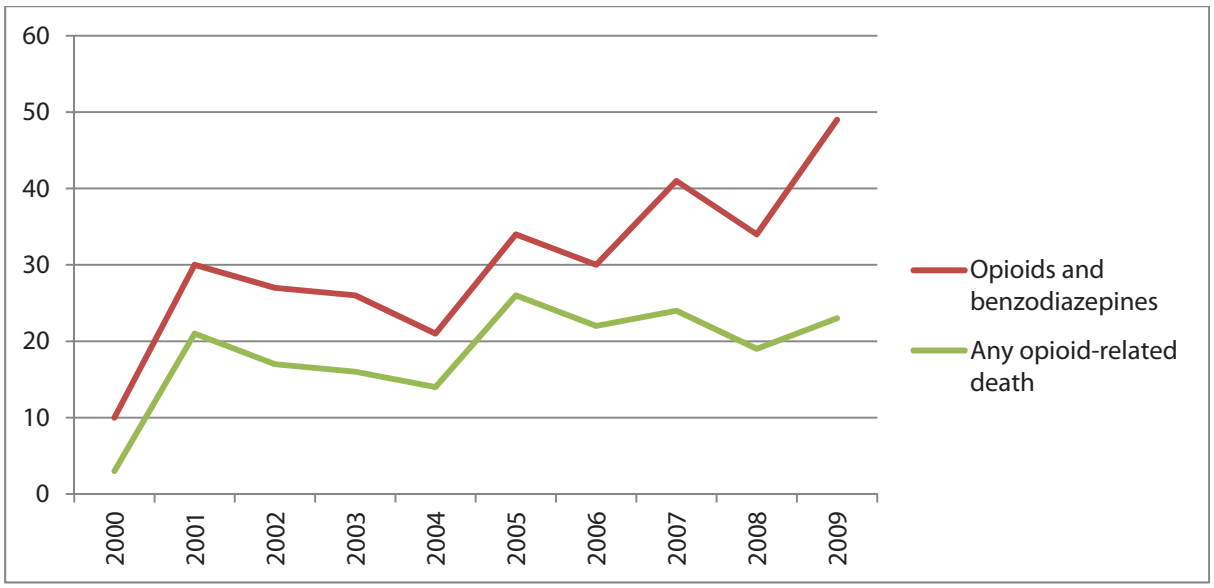
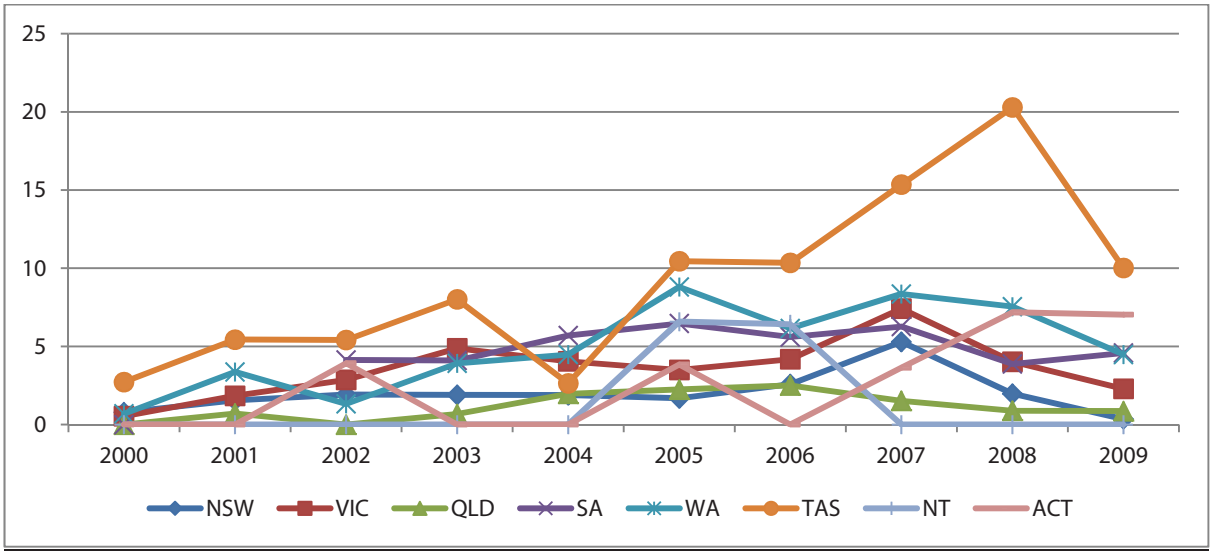
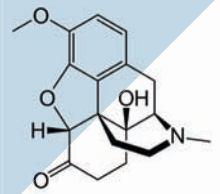


Figure 19: Oxycodone-related deaths per million persons 15-86 years by jurisdiction, 2000-2009



this pattern would be the same for other prescription opioids (e.g. morphine) or benzodiazepines as the national data for these drugs has not, to our knowledge, been analysed. Nevertheless, our previous analyses of other datasets found that IDUs accounted for a substantial amount of total morphine and physeptone prescribing in Tasmania, and that Tasmanian IDUs experience higher rates of non-fatal morphine and physeptone overdoses than their mainland counterparts.

In 91% of the deaths, two or more drugs were noted as contributing to the death. This is the same as for national oxycodone deaths (Roxburgh, Bruno, et al., 2011). Deaths were only included where opioids and/or benzodiazepines had a major contributory role, for example where the death was caused by an overdose or in an accident where drug intoxication was seen as a contributing factor.



Characteristics of opioid- and benzodiazepine-related deaths in Tasmania

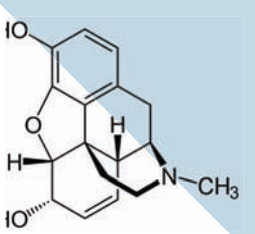
The majority of decedents were male and only one-fifth were engaged in paid employment (Table 4). Over the nine-year period examined, the mean age at death was 43.1 years. Data were missing for the IDU and chronic pain variables in around 25% of deaths. The percentages shown are only where there was evidence of illicit drug use or chronic pain. For deaths where opioids were involved, the proportion identified as IDUs (46%) is higher than for national oxycodone related deaths (27%) (Roxburgh, Bruno, et al., 2011). When benzodiazepine-related deaths are included, the proportion identified as IDUs dropped to 30%.

Where chronic pain was identified, 27% of the deaths were considered intentional, compared with 10% of the deaths in which there was evidence of past injecting drug use. This is consistent with a study of NSW opioid-related deaths where chronic pain sufferers were more likely to commit suicide than IDUs (Darke, Duflou, et al., 2011).

A previous examination of deaths in Tasmania where opioids played a role in the lifestyle, treatment and/or death of the decedent noted that the mean number of medical practitioners consulted was 10, over a period ranging from months to more than 10 years. The highest number of doctors consulted was 48. Further, there was a pattern of deteriorating employment and relationship status over the course of treatment with opioids until the time of death (McKeown, 2004).

Table 4: Characteristics of opioid and/or benzodiazepine deaths and decedents, Tasmania, 2001-2009

Variable	Any opioid	Opioids and/or benzodiazepines
	%	%
Gender (male)	63	58
Employed	20	21
Unemployed	35	33
Retired/pension/home duties	42	42
Unintentional death	59	48
Intentional death	16	25
Unknown intent	21	23
IDU	46	30
Chronic pain	37	31
Multiple drug toxicity	89	91



CONCLUSIONS

This chapter has described a range of epidemiological indicators of pharmaceutical opioid sales, prescriptions, use among an at-risk group (regular IDUs), and indicators of harm. Several points seem salient:

1. Tasmania has among the highest population rates of prescribing of opioids (any form) and has historically had much higher levels of morphine prescribing than other States across Australia (with the exception of NT). Although starting from a higher baseline in 2002, overall prescribing of four main opioids (morphine, oxycodone, hydromorphone and methadone) has increased more slowly over the past decade compared with the larger Australian jurisdictions. The types of opioids prescribed have changed, with morphine declining and oxycodone increasing. Tasmania still has among the highest rates of both morphine and oxycodone prescribing across jurisdictions.

2. Tasmania has a small but consistently growing number of authorities to prescribe, indicating a growing number of people, likely to be aged in their 30s, who are receiving opioids for longer than two months. This is suggestive of a growing number of people receiving prescription opioids for chronic pain, for the purposes of diversion or for de facto maintenance of opioid dependence, which is less well supervised and therefore potentially riskier than OST. The number of people receiving authority prescriptions in Tasmania in 2010 (around 7,500) was larger than the number receiving OST (around 650).

3. Levels of pharmaceutical opioid use among regular IDUs interviewed in Hobart each year are consistently and substantially higher than for other jurisdictions. Morphine use has not shown the declines seen at the population prescribing level: indeed, use appears to be increasing among this group. Heroin use has always been less frequent and seems to be decreasing amongst Tasmanian IDUs in recent years, as pharmaceutical opioid use has increased. IDUs using these drugs also use them much more frequently than in other jurisdictions, and the frequency is increasing over time. IDUs use very high doses of all forms of pharmaceutical opioids.

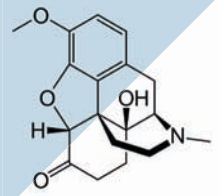
4. Estimates, although uncertain, suggest that IDUs in Tasmania may be consuming an increasing large proportion of the total amount of morphine prescribed per annum (perhaps as much as 30% in 2010). The proportion of oxycodone consumption is lower, at perhaps 8% of total consumption.

5. Data on injection-related harms suggest that Tasmanian IDUs experience these harms more often than IDUs in other jurisdictions. Tasmanian IDUs are more likely to report morphine overdose; none reported a heroin overdose in the past year in 2010. Very few hospital separations are *recorded* for severe injection-related problems (e.g. gangrene, abscesses) because they are not recorded well, but they do occur and were noted by several medical practitioners who participated in the project. The impact on the individual is severe, and it has considerable consequences for the health care system.

6. A consistent but small number of emergency department admissions are recorded across Tasmanian hospitals (perhaps 80-100 per annum) for opioid overdose, withdrawal or dependence.

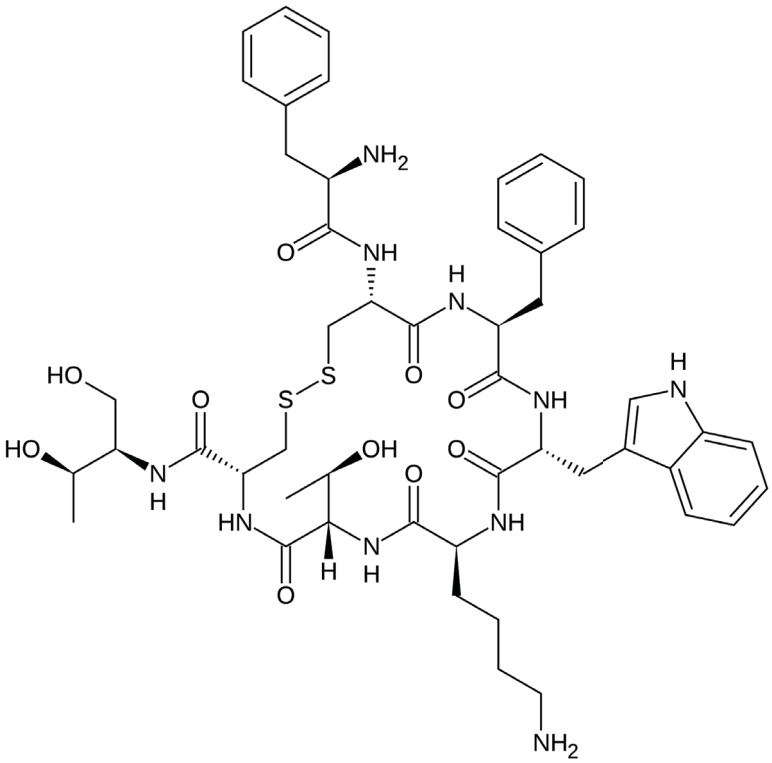
7. Deaths in Tasmania where pharmaceutical opioids are involved have remained relatively consistent across time. When benzodiazepine deaths are included with pharmaceutical opioid deaths, the number of deaths has been increasing since 2000 and in 2009, reached 49 deaths. The rate of oxycodone deaths has increased over recent time. The rate of oxycodone-related deaths in Tasmania has been higher than in other Australian jurisdictions since 2004. It seems that prescription opioids are causing more deaths in Tasmania than elsewhere in Australia.

8. Deaths associated with benzodiazepine use have continued to increase over the past decade. This is a significant concern, particularly since almost all of the deaths resulted from multiple drug toxicity. Whilst not all drugs will have been prescribed to the decedent, it indicates that benzodiazepines continue to be used along with other CNS depressants

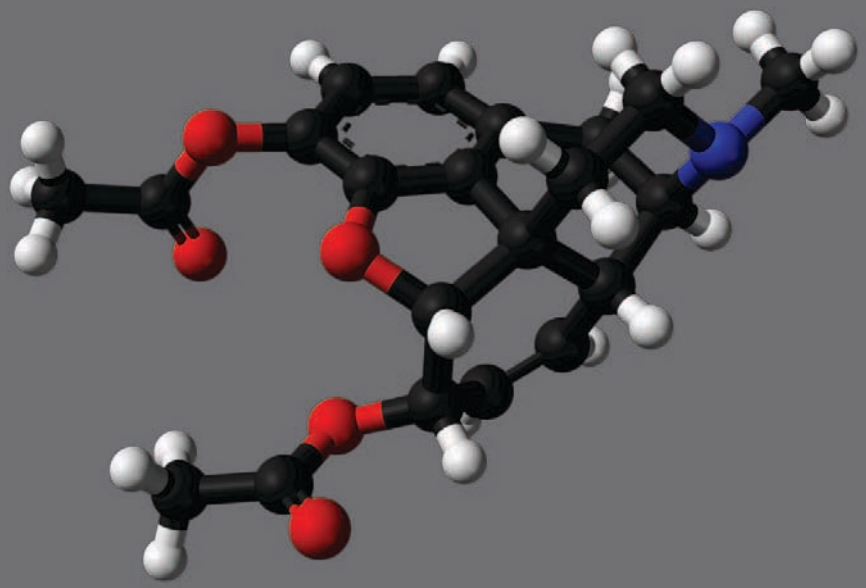


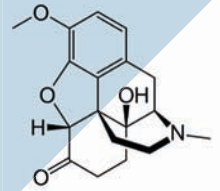
9. Around one-third of opioid and benzodiazepine-related deaths in Tasmania were identified as IDUs. A similar proportion of decedents were identified as having a history of chronic pain. Those with a history of chronic pain were more likely to have been suicide than those with a history of injecting drug use.

Overall, there appears to be a pattern of high population-level pharmaceutical opioid consumption in Tasmania. This has shifted across opioid types over the past decade, with reductions in population level morphine consumption and increased use of oxycodone. Among IDUs no such decreases in morphine consumption have been observed. All forms of pharmaceutical opioids remain common and are becoming more frequently used, particularly high dose formulations among regular IDUs. Indicators of harms related to these drugs have in contrast remained stable across time, but are nevertheless significant and in some cases, more substantial than those experienced in mainland Australia.



SECTION THREE: PRESCRIBER INTERVIEWS/ CONSULTATIONS





In Section Two, a number of datasets were analysed to identify prescribing patterns and harms in Tasmania. The current section aims to 'round out' this picture by capturing the views of those involved in prescribing opioids and managing their harms in Australia, and particularly in Tasmania.

As part of the project, a range of key experts were consulted. Within Tasmania, a reference group was established to guide the consultants and to provide local expertise. This group comprised a wide range of professionals from general practice, emergency medicine, pain medicine, addiction medicine, psychology, medical education, the University of Tasmania, the Police, and consumer advocacy. A national clinical expert group was also consulted. This group included a pain specialist, an addiction medicine specialist, a pharmacist, a general practitioner, and an epidemiologist. A regulatory group, consisting of the chief pharmacist from each Australian jurisdiction provided expertise on the regulation and monitoring of S8 drugs in Australia. Separate meetings were also held with Tasmanian Police, the Ombudsman's office, the Tasmanian Coroner, Advocacy Tasmania, staff from the Faculty of Medicine and the School of Pharmacy at the University of Tasmania, and the Divisions of General Practice. In addition, semi-structured interviews were conducted with 32 prescribers (mostly GPs) from across Tasmania. The results of the prescriber interviews are presented below. The information from the other consultations is integrated into the recommendations as appropriate.

KEY POINTS

The overarching message from the interviews and consultations was that prescribers faced a major challenge in managing extremely complex chronic pain patients in a general practice setting with very limited access to: advice and referral pathways; education about chronic pain management and the role of opioid analgesics; skills and support for dealing with difficult, aggressive or coercive patients; and appropriate reimbursement for longer consultations. There was a view that newer practitioners needed greater support for responsible, quality prescribing, primarily within their practices or other setting (e.g. hospitals).

Views on the regulation of opioid prescribing were more varied. Many participants stated that they rely on the Tasmanian PSB for information about patients at risk, and welcome the additional information that will be provided by the DAPIS Online Remote Access (DORA) system, including an increase in transparency regarding the PSB's decision-making. A small number of practitioners felt that the Tasmanian PSB had too much of a role in regulating S8 prescribing and that this had led to doctors inappropriately refusing to prescribe opioid analgesics because they were concerned about adverse consequences from the PSB.

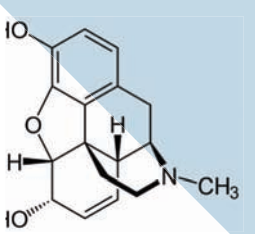
PRESCRIBER INTERVIEWS: RESULTS

Most participants interviewed were working in general practice. The interview questions are listed in Appendix 3. The information below is organised into themes that broadly align with the questions asked.

INFLUENCES ON PRESCRIBING

Many participants commented that they and their colleagues were influenced by the relationship they have with the patient. If it was a long-term patient who expected pain relief and other treatments had failed, practitioners were more likely to prescribe opioids. Many commented on the difficulty of persuading a patient to stop taking opioids once they had started. They reported that they rarely saw these patients do well on COT. A small number commented that opioids can be used in the short-term as a "*bridge to getting better*" but that this limited role needed to be very clearly explained to the patient. Most stated that they would be far more cautious with a new patient and would take a very detailed history before considering opioids. There was also a view that "*Doctors have a medical obligation to relieve pain. There is a community expectation that we should be relieving the symptoms of disease*".

There was a widely held view that prescribing protocols or clinical guidelines had less influence than the pharmaceutical companies' detailing. Concern was also expressed that advertising for non-prescription analgesics was the only information about pain management that many consumers received.



One participant observed that the PBS has a significant role in influencing prescribing practices, stating that what gets subsidised gets prescribed: if the non-opioid medications (e.g. pregabalin) were listed for pain they would be more frequently prescribed. The TPSB was also cited as an influence through its authorisation process. Other structural issues included a perception that there was a long waiting list for OST in Tasmania, which led some doctors to prescribe opioids to maintain opioid-dependent patients; and limited access to and the high cost of some other treatments that left opioid analgesics one of a small number of options for the patient. Patients who are funded by compensation schemes can be referred to private specialists, but other patients generally viewed this as too expensive. Further, experienced doctors were concerned that if the pain is not treated in a timely fashion, it becomes established.

Amongst non-metropolitan prescribers, there was a perception that new doctors were targeted by doctor shoppers: "*All new doctors get targeted by 'junkies' in Tasmania. I've been assaulted by patients twice.*"

One participant stated that there was poor knowledge of pain management generally among GPs, with most doctors struggling. Another experienced doctor who reviews many chronic pain patients commented that because none of these patients have seen a psychologist or been engaging in an exercise regimen, the fear-avoidance cycle and deconditioning was well established. This participant also commented that a small number of GPs were unwilling to refer patients to a psychologist under the Medicare Better Access Scheme. In the cases he/she reviewed, the patient had not been properly examined, adjunctive agents were not well used, and the cornerstones of pain management were not well done. There was also a view held by some doctors that a lot of doctors were willing to prescribe anything. A small number who had worked in other jurisdictions were very concerned about opioid prescribing practices in Tasmania.

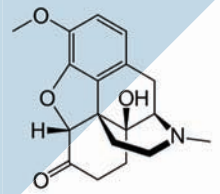
There was also a concern that doctors are at times making prescribing decisions based primarily on what the patient tells them without looking for confirmatory evidence, and responding to patient requests for opioids rather than practicing evidence-based medicine.

A further concern was lack of knowledge about the drugs being prescribed, for example switching between Norspan and Fentanyl patches without being aware of the differences in potency, interpreting equipotent opioid dose tables literally when switching opioids and placing patients back onto a drug after they had experienced a significant harm from it, such as an overdose or injection injury. The rationales for doing so included:

- 'He will be unable to inject now because he has only one arm, so its OK'
- 'He threatened suicide if I didn't allow him to continue with take home medications'
- 'She was in my consulting room for 45 minutes and wouldn't leave until I gave her what they wanted…I know I shouldn't have'

Amongst those doctors with experience in treating chronic pain and addiction, there was a view that the structure of general practice was not conducive to treating chronic pain patients because brief consultations could not address the complexity of their presentation and background. This meant that GPs were more likely to write a prescription rather than engage in a potentially lengthy conversation:

> "The biggest pressure in general practice is time pressure. You can't survive in general practice without 6 minute consults. Pain patients are the most complex patients. It takes at least an hour to get to the bottom of their pain and other problems – psychological, anger, and other physical health problems. Pain is often associated with injury so it's a long process just to investigate the physical side. There is no allowance in the Medicare system to spend this time with patients so we don't get compensated for it. So the quickest way to get the patient out in six minutes is to give them what they want, and that's opiates. You can't treat these people properly and run a practice. Almost everyone with chronic pain has something underlying it, whether it is childhood sexual abuse or some other sort of trauma. The patient comes in angry, desperate, scared, all of which is just under the surface. If you scratch that surface, you will expose a massive sore. You then need to spend



at least an hour with them dealing with it. At the end of that hour you may have convinced them to try something other than opiates ... and that's just the genuine pain person."

"Once we get to addiction we have a whole new problem. The presentation won't be accurate. What they tell you is not necessarily what is going on; it's what they think they need to tell you in order to get what they want. They go to huge lengths to deceive because they are desperate to get what they want. Around 40% of back pain patients have addiction. And opioids are also used to help emotional pain. These patients all present in exactly the same way. Once you get down to it, it's a real can of worms. You then need 1.5 to 2 hours just to get them out the door safely. They're angry, the GP feels threatened, it's one on one, there's a lot of pressure to just prescribe. To not prescribe you need someone else to tell you not to do it in order to be safe."

"There are really good GPs out there who are capable of doing this, but if we were given the time it would make it do-able. We could then start to reduce the rates of prescribing, but not every GP is interested or capable. But since we now have specialist groups supported by college of GPs – sub specialties, this could be a way that Medicare could fund it since it's already set up. They'd need to have 3 areas of skills/qualifications – psychological medicine, addiction medicine, and pain medicine. If they have this, they should get appropriate remuneration so they can spend the time to deal with these issues."

There was, however, a view among some doctors that they could use the Chronic Disease Management item to provide longer consultations for many of their patients.

Finally, there was a view expressed by a small number of prescribers that many GPs are now afraid to prescribe opioid analgesics because of pressure to reduce opioid prescribing and fears of the regulation and monitoring associated with it. There was also concern about the risk of under-treating pain because of these fears.

INFLUENCES ON MEDICATION, DOSE, FORM AND DURATION

Ongoing pain was frequently considered the strongest influence on long-term prescribing. Long waiting lists for surgery and for the pain clinic were seen by some as influencing the duration of prescribing. Others commented that they would continue to prescribe opioids when surgery was not an option, the patient had a stable psychological and social profile, and the opioids were of some benefit. Some patients might also present with something short-term which might benefit from opioids, but then some other condition arose and it was difficult to cease prescribing. With other patients, doctors felt that it was difficult to stick to guidelines when the patient is seeing multiple doctors. Several participants commented that doctors will typically prescribe what they are familiar with, and this was influenced by pharmaceutical detailing.

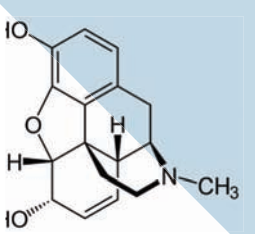
Specialist recommendations were mentioned as an influence on the type and form of medication prescribed. Guidelines were not considered to play much of a role because of their generalised nature vs. the individual patient. Others mentioned that medication that had been previously prescribed was likely to be continued in the same type and form.

Most expressed a hope that doctors would start low then 'work up'. A common statement emerged about using the 'the analgesic ladder' or a typical pathway of paracetamol, Panedeine Forte™, and stronger opioids. One participant stated that he prefers Schedule 4 drugs for other reasons:

"I push [compound preparations containing] codeine very hard, and Tramadol. They're schedule 4 drugs so I won't get a rap over the knuckles from the PSB."

PRESCRIBING OPIOIDS IN COMBINATION WITH BENZODIAZEPINES AND OTHER PSYCHOACTIVE MEDICATIONS

This was seen as a fairly common practice. This arose in part because of the complex psychiatric presentation of many chronic pain patients, and because once patients become dependent on each of these medications it is difficult to get them to stop. One prescriber commented that benzodiazepines have an immediate effect that



patients perceive, even if they are not effective in the longer-term. The other behaviour of concern noted here was prescribing of multiple long and short acting opioids to the same patient without understanding the risk of harm.

PERCEIVED EFFECTIVENESS OF OPIOIDS FOR PERSISTENT NON-CANCER PAIN

The majority of participants believed that most doctors have inadequate knowledge about the (lack of) effectiveness of opioids for persistent pain, primarily because it is not systematically taught during undergraduate and post-graduate education. Some commented that palliative care specialists were better educated about these issues, despite there being good access to guidelines and educational materials on the topic. A small number thought that doctors' knowledge in this area was adequate.

KNOWLEDGE AND USE OF OTHER INTERVENTIONS (PHYSICAL, PSYCHOLOGICAL, AND NON-OPIOID MEDICINES)

Most participants believed that doctors are well aware of other non-opioid medications, but commented that there were barriers to using some of these and that physical and psychological treatments are too infrequently used. For instance, gabapentin use was thought to be limited because it is not funded by the PBS for pain. Misuse of gabapentin as a street drug was cited by one participant as a concern. Some thought that gabapentin was more appropriately used by pain clinics and hospitals. Other barriers cited were:

> "Some of the alternative analgesics are much more harmful to the elderly than opioids – they can cause cardiac arrhythmias and other problems. NSAIDS are used too much in older people, they're very dangerous."

Some thought that younger doctors more aware of other medications e.g. amitriptyline and tramadol.

Others commented that simple analgesics and acupuncture are fairly widely used, but there is limited referral to physiotherapists. There is a view that psychology is more widely used than physiotherapy and that psychology and mental health plans have an important role to play in pain management.

SAFETY AND RISK ASSESSMENT

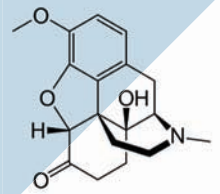
The majority of participants thought that most doctors would be aware of ceiling doses, and mentioned 100mg morphine equivalent as a point for concern. Others believed that these guidelines needed to be communicated very simply to GPs: patients shouldn't go past a particular dose without input from a specialist.

The following problems were mentioned as the issues of concern when doctors were prescribed opioid analgesics: dependence, respiratory problems (overdose), side effects, falls, drowsiness, tachyphylaxis, legal problems, diversion, and being seen as a 'prescriber' by patients and by authorities.

There is a widely held view that most doctors don't assess the risk of diversion and misuse well, in part because they lack awareness of these problems. Even doctors who have extensive experience with chronic pain patients commented that they struggle with this area because they don't have the 'forensic or drug and alcohol (D&A)' skills, and the D&A services were overworked. Doctors were unaware of any tools for conducting a careful assessment of misuse and diversion. There was also a view that most doctors found this a difficult area to address because "*it's an uncomfortable conversation to have with your patient*."

One prescriber commented that many doctors are surprised when they find that a urine drug screen is negative for a patient prescribed opioids, or when there is other evidence of diversion or extra-medical use.

Nevertheless, strategies mentioned to assess and address diversion and misuse included: trying to know the patient and their family, clear communication with patients regarding how to store and look after their medications, explaining the laws surrounding medications, taking a careful drug use history, daily pickups, urine screens, contacting the Tasmanian PSB, seeking authorisation to prescribe from the PSB, regular monitoring of compliance, home visits for bed-ridden patients, and looking for warning flags such as lost scripts, requests for early repeats, deterioration of functioning, and not complying with the medication. Others mentioned using a contract with new patients and getting them to sign it. A small number of doctors queried whether this was a doctor's responsibility:



> "Some would say that (diversion and misuse) is not their concern – just assess the patient, trial the opiate and that's it. It's a criminal issue, not a medical issue. The bikie gangs assault people in order to get their prescriptions. The police know about that. That information can come back to the medical service, but GPs need to be educated and supported."

Views about doctors' confidence in refusing patient request for an opioid prescription were mixed, but many doctors referred to the problem of intimidation and threats from patients who may be making a living from selling opioids. A desire to maintain the relationship with long-term patients was also raised, particularly where the patient was afraid of losing their pain medication and going into withdrawal: "Doctors don't like to say 'no' to their long-term patients. Sometimes there is collusion between doctor and patient. It can depend on the doctor's personality traits, like a sense of wanting to please ... or boundary issues."

> "Training in the doctor-patient relationship is quite variable ... a lot don't know the words to say 'no' or to offer alternatives. There's a lot of unmet (training) need in this area."

BARRIERS TO BETTER PRESCRIBING

One participant commented on the need for GPs to reframe their role from 'curing patients' to managing chronic problems, with the GP co-ordinating care from psychologists, physiotherapists and the like. Nevertheless, there was a widely held perception that GPs needed more support from specialist services and easier referral pathways, including better access to psychologists, mental health services, and pain clinics. The requirement for input from a pain specialist for some patients was mentioned as a concern because pain specialists don't have the time to see their patients. One suggestion was to train up some senior GPs and nurse practitioners to undertake this review.

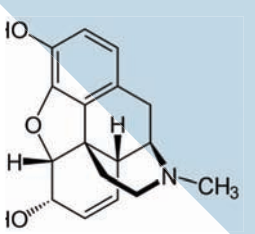
Some experienced prescribers believed that many doctors don't understand the bigger picture that the Tasmanian PSB might have with regards to harms and diversion. They thought that there would be benefit from greater transparency in the PSB's decision-making process and providing a clearer rationale for decisions to authorise or refuse permission to prescribe beyond two months. Participants commented that "*There is a bit of a disconnect between the PSB, the ADS and prescribers, and between the education and the approval process. We get the approval but the rationale is not at all clear.*" Even so, most were clearly in favour of the role that the Tasmanian PSB has in monitoring, regulating and regularly reviewing opioid prescribing.

There was concern about the matching of vulnerable patients matched with vulnerable doctors and the limited support available to these doctors. It was also mentioned that "some GPs are very isolated, especially when there's not a good collaborative approach in the practice. There needs to be practice wide intervention. Some doctors who have done poorly in one practice have thrived in another that has better boundaries and limits, so this environment is very important." Another participant commented that "*I like to give people the benefit of the doubt, but sometimes I get taken for a ride.*"

POTENTIAL IMPROVEMENTS, TRAINING, RESOURCES AND SUPPORTS

Doctors had a number of suggestions to improve prescribing practices. Many of the suggestions were to do with education, and specifically case-based, one on one or small group education with feedback to doctors about their prescribing patterns. The feedback was viewed as a way of doctors recognising the need for peer support and educational activities. A structured peer support network, where cases could be discussed, was also mentioned as valuable in managing more complex patients. There was a suggestion that some of this support could be connected to the Tasmanian PSB. Some believed that there was an important role for the divisions in holding education events. The education events that have been run by the Division were viewed as very helpful, but not sufficient. There was a view that education needed to run over several sessions. Others thought that there needed to be a range of training options from short seminars to more intensive on-the-job training, for example, palliative care training for GPs.

Participants advised that although there are pain groups that are run in Hobart, there are none in the north or north-west of the State. One participant suggested that it be based on 'Manage Your Pain – Practical and Positive Ways to Adapt to Chronic Pain'

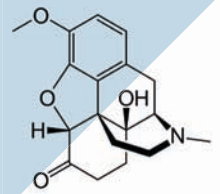


– from the ADAPT Program at the University of Sydney Pain Management and Research Centre at the Royal North Shore Hospital (Nicholas, 2011).

Others commented that the support and training provided by impartial and authoritative people, and not from sources perceived as biased, e.g. pharmaceutical companies.

The following is a summary of the suggestions from prescribers:

- Use the Medicare Chronic Disease Management item in order to provide longer consultations for patients where appropriate;
- Educate doctors about the limited effectiveness of COT. This education should not be provided by pharmaceutical companies;
- Educate doctors about the prevalence and risks of diversion and misuse;
- Provide a simple tool that GPs can use to assess these risks;
- Provide a list of strategies that GPs can use to minimise these risks;
- Communicate ceiling dose guidelines very clearly to GPs: patients shouldn't go past a particular dose without input from a specialist;
- Provide training in doctor-patient relationship including refusal skills;
- Assist GPs to reframe their role from 'curing patients' to managing chronic problems, with the GP as the co-ordinator of care from others such as psychologists, physiotherapists and the like;
- Provide case-based, one-on-one or small group education with feedback to doctors about their prescribing patterns;
- Provide a range of training options from short seminars to more intensive on-the-job training, for example, palliative care training for GPs;
- Document and disseminate the existing range of referral and consultation services, via the Tasmanian PSB;
- Use specialist nurses and senior GPs to carry out PSB-mandated reviews;
- Create greater transparency in and rationale for PSB decision-making "*If the patient has a forensic history (on PSB records) they have a right to know. They can get upset about how the PSB got that information and why it's still on the record.*" "*It's enormously frustrating for the patient. There's no comeback*";
- Provide regular reports from ADS to GPs on their patients, for example, notification when they begin or cease OST;
- Check if some practices as a whole have a higher level of prescribing, and work with these practices to reform their prescribing practices and to establish tighter boundaries around opioids;
- Apply the multidisciplinary chronic disease management model to managing chronic pain;
- Put money into getting guidelines on every doctor's desk and invest in pain clinics;
- Put video vignettes onto the PSB website showing what doctors can say in difficult situations;
- Sign off addiction medicine doctors as specialists. The Medicare item for addiction medicine is less than that for vocationally registered GP;
- Review the criteria for drug dependence in the regulations. There is a view that if a patient experiences withdrawal from opioids, they are classified as drug dependent;
- Increase the regulatory profile of codeine at the federal level to decrease its misuse;
- Provide for greater follow up than the current Commonwealth PBS requirement for one 12-month review by another practitioner;
- Improve treatment of acute severe pain to reduce the risk of transition to chronic pain;

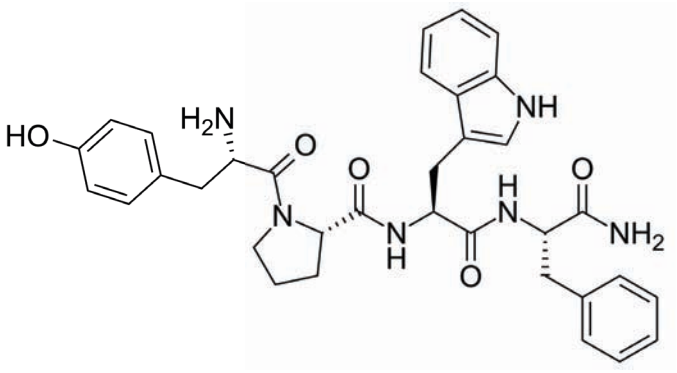


- Set up group-based treatment programs for chronic pain patients in the north of the State; and
- Provide better access (including telephone access for doctors) to pain specialists and a reduction in the time and paperwork involved in a referral:

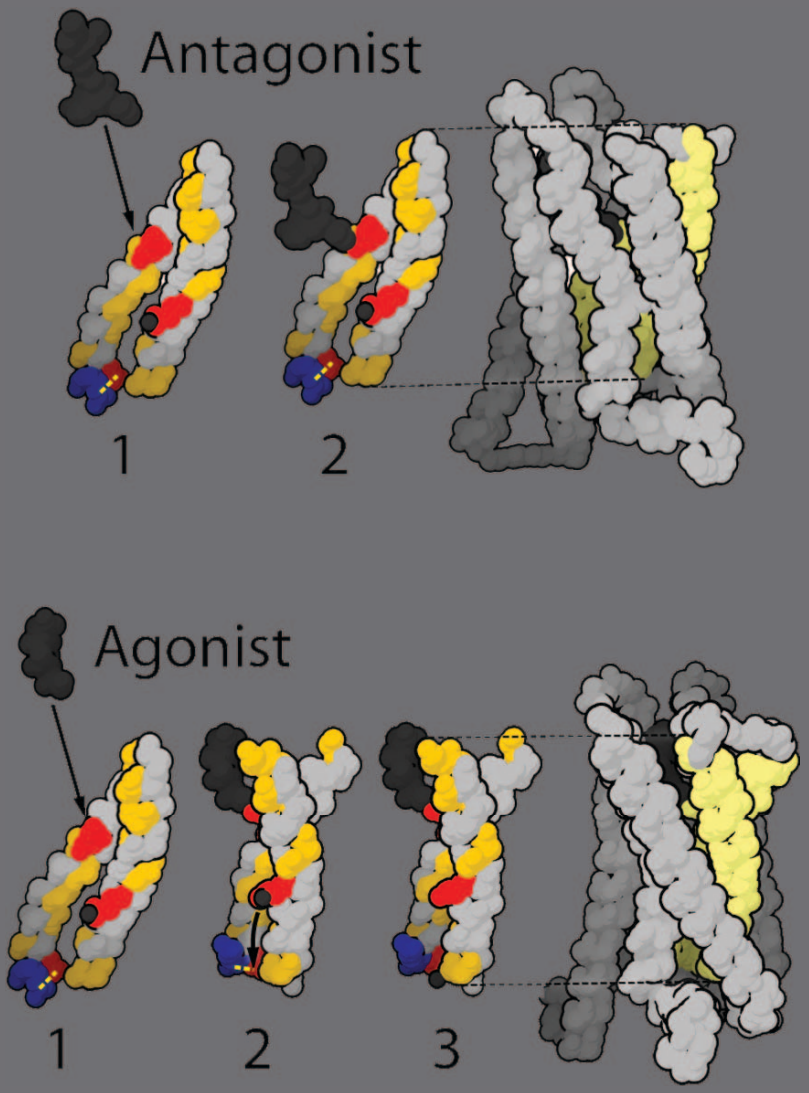
> "At the moment there is a 15 page document to fill in (to get patients into the pain clinic). You send it back then the patient gets put on a waiting list for 3 to 6 months. Then they could be seen by anyone, and they have very diverse opinions. Some are very high prescribers, some are very low prescribers. It's improved but it still takes too long. They need some sort of triage system where they see them (the patient) for 15 minutes within a month of getting the referral, then do a fuller assessment later if they need it."

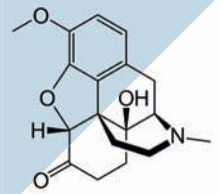
CONCLUSIONS

There is widespread concern amongst Tasmanian medical practitioners about the infrequent use of a multimodal approach to chronic pain management in general practice, and an over-reliance on opioid analgesics for chronic pain. The barriers identified included: a lack of education about effective chronic pain treatment, a shortage of specialists and access to advice and referral pathways, a lack of knowledge about the extent of diversion and misuse, and the structure of general practice where short consultations are the norm but are not conducive to treating complex chronic pain patients. In addition, many medical practitioners felt that they were ill-equipped to assess and manage the diversion and misuse of opioid analgesics. A number of reasons were put forward to explain this, including lack of awareness about the problem, discomfort associated with raising the topic with patients, and a lack of knowledge and skill in assessing and managing these risks.



SECTION FOUR:
CLINICAL APPROACHES TO MANAGING PAIN – A REVIEW OF EVIDENCE AND GUIDELINES





In the previous section, it was noted that some medical practitioners identified a need for improved opioid analgesic prescribing and pain management practices. There was also variation in prescribers' awareness of the effectiveness of COT. This section reviews the guidelines and the evidence regarding different approaches to managing chronic pain.

KEY POINTS

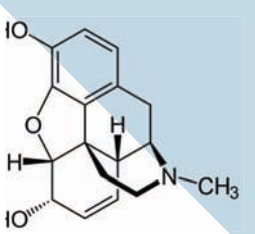
- Current guidelines overwhelmingly emphasise a multimodal approach to managing chronic pain, with opioids to be used only where other approaches have failed.
- A biopsychosocial approach to assessing and managing chronic pain is required.
- The guidelines also emphasise the need to treat opioid analgesics as a trial where their effectiveness, side effects, and adherence are closely monitored.
- Meta-analytic reviews have identified weak evidence that opioid analgesics can produce clinically significant pain reductions for some patients. There is very little evidence that they have a positive effect on quality of life or day-to-day functioning.
- There is a need for more evidence-based approaches to assessing and managing patient diversion and misuse of opioid analgesics.
- With careful assessment and monitoring, management of pain in patients with current or past opioid dependence may include the use of opioid analgesics within a broader pain management plan, provided the patient is able to comply with monitoring and review procedures; can be reviewed by pain and/or addiction medicine specialists; and other psychoactive medications can be rationalised.
- Although chronic pain is often managed in community settings, there is also a role for hospitals in managing acute pain carefully in order to reduce the risk of patients developing chronic pain.
- Pharmacists are well placed to assist patients to manage their opioid and other medications safely. There is scope for their role to be enhanced.
- At a systems level, the chronic disease management model may be a useful way of emphasising the chronic nature of the condition, encouraging patient self-management, and integrating multiple treatment modalities.

GUIDELINES FOR MANAGING PERSISTENT NON-CANCER PAIN AND OPIOID PRESCRIBING

There are several guidelines freely available for managing CNMP and many for prescribing opioid analgesics (American Society of Anesthesiologists Task Force on Chronic Pain Management & American Society of Regional Anesthesia and Pain Medicine; Brennan & Stanos, 2010; Chandok & Watt; Chou, 2009; Cohen & Wodak, 2010; Dworkin, O'Connor, Audette, Baron, Gourlay, Haanpaa, Kent, Krane, Lebel, Levy, Mackey, Mayer, Miaskowski, Raja, Rice, Schmader, Stacey, Stanos, Treede, Turk, Walco, & Wells, 2010; Kalso, Edwards, et al., 2004; Katz, 2010; Katz, Adams, Benneyan, Birnbaum, Budman, Buzzeo, Carr, Cicero, Gourlay, Inciardi, Joranson, Kesslick, & Lande, 2007; Noble, Treadwell, et al., 2010; Richebe & Beaulieu, 2009; Trescot, Helm, et al., 2008; Wodak, Cohen, Dobbin, Hallinan, & Osborn, 2009). There are guidelines for the management of CNMP and the use of opioids in older patients (Pergolizzi, Boger, Budd, Dahan, Erdine, Hans, Kress, Langford, Likar, Raffa, & Sacerdote, 2008; Schmader, Baron, Haanpaa, Mayer, O'Connor, Rice, & Stacey, 2010), as well as position statements or statements of principles (Faculty of Pain Medicine, 2010; The Royal Australasian College of Physicians, 2009a). Overwhelmingly, these guidelines and position statements emphasise the need for a multimodal approach to managing CNMP, a view that is supported by this project's reference group and clinical expert panel. These views are based on studies showing that opioid analgesics have limited efficacy in the treatment of CNMP, and that longer-term benefits can be gained from multimodal interventions that include a psychological therapy, as outlined below.

EVIDENCE OF TREATMENT EFFECTIVENESS

A number of Cochrane meta-analytic reviews have examined the efficacy of treatments for CNMP. One, examining the use of opioid analgesics for CNMP, identified a lack of long-term studies (Noble, Treadwell,



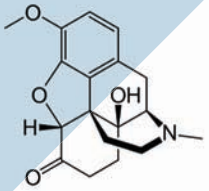
et al., 2010). Nevertheless the authors concluded that "*Many patients discontinue long-term opioid therapy (especially oral opioids) due to adverse events or insufficient pain relief; however, weak evidence suggests that patients who are able to continue opioids long-term experience clinically significant pain relief. Whether quality of life or functioning improves is inconclusive.*" Other reviews have noted that although the initial response to opioids is usually quite good, this response is not always sustained over the longer term (months or years). During this time, although patients are experiencing poor analgesia, they are likely to become dependent on opioids, thus making it difficult to cease an ineffective treatment (Ballantyne & Shin, 2008).

Of interest here is a study which identified that quality of life amongst chronic pain patients is strongly associated with psychological factors (pain catastrophising) rather than pain intensity (Lame, Peters, Vlaeyen, Kleef, & Patijn, 2005). This finding supports a role for cognitive behavioural therapy (CBT), which targets unhelpful thinking styles. CBT for lower back pain has been shown to lead to improvements in pain ratings, disability, self-efficacy, fear avoidance, and the SF-12 physical subscale (Lamb, Hansen, Lall, Castelnuovo, Withers, Nichols, Potter, & Underwood, 2010). A Cochrane review of psychological therapies for chronic pain found that CBT has some small positive effects for pain, disability and mood, but that there was an absence of evidence for behaviour therapy alone (Eccleston, Williams, & Morley, 2009). An earlier meta-analysis also found that CBT and self-regulatory treatments had positive short-term effects on pain-related interference, health-related quality of life, depression, and positive long-term effects on return to work. Any psychological or multidisciplinary intervention was superior to control on pain intensity, pain-related interference, and health-related quality of life (Hoffman, Papas, Chatkoff, & Kerns, 2007).

A newer psychological therapy called acceptance and commitment therapy (ACT) is showing some promise in treating CNMP. A small randomised controlled trial found that compared to a treatment as usual group, the treatment group showed improvements in pain disability, life satisfaction, fear of movements, depression, and psychological inflexibility. No change for any of the groups was seen in pain intensity. Improvements in the treatment group were maintained at seven-month follow-up (Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008). A three-year follow-up of chronic pain patients who participated in an ACT program found evidence of good maintenance of treatment gains (Vowles, McCracken, & O'Brien, in press).

A Cochrane meta-analytic review of opioids for neuropathic pain were found to be somewhat effective in the intermediate term (median 28 days), yielding an average reduction in pain of 13 points on a 100 point scale. However, up to a third of patients reported significant side effects (Eisenberg, McNicol, & Carr, 2006). Hydromorphone for chronic pain was found to similar effectiveness to other opioids such as morphine (Quigley, 2009). In a review of five randomised controlled trials, tramadol was found to be an effective treatment for neuropathic pain; however, these trials were of limited duration (Duehmke, Hollingshead & Cornblath, 2009). One review has examined opioid switching to improve pain relief and drug tolerability, but did not find any randomised controlled trials to assess the effectiveness of the strategy (Quigley, 2010). There is, nevertheless, substantial clinical experience with this practice in pain medicine and it is viewed as a useful strategy to reset tolerance to a lower dose equivalent, presumably reducing the risks of side effects and opioid induced hyperalgesia (Walker, Palla, Pei, Kaur, Zhang, Hanohano, Munsell, Bruera, Walker, Palla, Pei, Kaur, Zhang, Hanohano, Munsell, & Bruera, 2008).

Cochrane reviews have also been used to examine the efficacy of other pharmacological treatments for chronic pain. A meta-analytic review of pregabalin for acute and chronic pain in adults found that doses of 300mg to 600mg for patients with neuropathic pain resulted in pain change ratings in the range of 35% (postherpetic neuralgia) to 50% (painful diabetic neuropathy). There was no evidence that it was effective in chronic conditions in which nerve damage is not the prime source of pain (Moore, Straube, Wiffen, Derry, & McQuay, 2009). Other Cochrane meta-analytic reviews have been carried out with gabapentin for chronic neuropathic pain and fibromyalgia (Moore, et al., 2011); lamotrigine for acute and chronic pain (Wiffen, Derry & Moore, 2011); carbamazepine for acute and chronic pain (Wiffen, et al., 2011); antidepressants for neuropathic pain (Saarto & Wiffen, 2010); antipsychotics for acute and chronic pain



(Seidel, et al., 2010); and topical capsaicin for chronic neuropathic pain (Derry, Lloyd, Moore, & McQuay, 2009). As for opioids, none of the drug therapies resulted in large reductions in pain over time.

An earlier meta-analysis of opioids for chronic non-cancer pain found that opioids were more efficacious than placebo for pain and functional outcomes in patients with nociceptive or neuropathic pain; were more effective than NSAIDS and tricyclic antidepressants for pain relief; and that the other analgesics produced better functional outcomes than weak but not strong opioids (Furlan, Sandoval, Mailis-Gagnon, & Tunks, 2006). These authors also identified significant side effects for opioids – constipation, nausea, dizziness or vertigo, somnolence or drowsiness, and dry skin, itching or pruritus – with constipation and nausea being more common with opioid use than for other drugs. A more recent systematic review of long-term opioid management of chronic non-cancer pain identified that there is still a lack of studies which follow patients up beyond 12 weeks, and poor evidence for all opioids except tramadol, for which there was fair evidence of a clinically significant reduction in pain amongst osteoarthritis patients but not for other conditions (Manchikanti, Ailinani, et al., 2011).

Thus, **none of the therapies had large effects on pain or quality of life**. This leads to two salient conclusions. The first is that chronic pain is not a condition which can be cured. Rather, it needs careful management by both the patient and the treating health professionals. These expectations of self-management and the reduction but not the elimination of pain needs to be clearly communicated to the patient. The second is that no single intervention is likely to be very effective on its own; therefore a multimodal approach is essential in order to address the diverse aspects of the chronic pain: the pain itself, quality of life, and functionality. The biopsychosocial model presented later in this section addresses this issue.

GUIDANCE FOR MANAGING DIVERSION AND EXTRA-MEDICAL USE

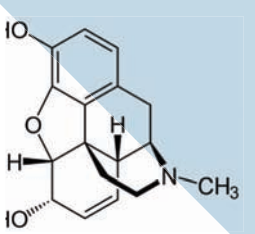
There is limited literature to guide prescribers in assessing and managing the risk of diversion and other aberrant behaviours (Chou, Fanciullo, et al., 2009; Fishbain, Cole, et al., 2008). A review of methods used to predict aberrant drug-related behaviours concluded that there is no reliable evidence on accuracy of drug urine screening, pill counts, or prescription monitoring programs, nor for clinical outcomes associated with different assessment and monitoring strategies (Chou, et al., 2009). One systematic review found relatively weak evidence for the effectiveness of opioid treatment agreements and urine drug screening in reducing opioid misuse by patients with chronic pain (Starrels, Becker, Alford, Kapoor, Williams, & Turner, 2010). The review was limited by the variation in defining opioid misuse and by the relatively poor quality of the studies, and thus may represent a lack of good quality evidence as opposed to a lack of effectiveness. Nevertheless, there is a need for other evidence-based risk-reduction strategies.

UNIVERSAL PRECAUTIONS

There has been a strong and repeated call for 'universal precautions' (UPs, Table 5) to be used by doctors when prescribing opioids. The term UP became popular in the context of HIV as a method to be adopted to minimise sero-conversion risk (Morbidity and Mortality Weekly Report, 1988). Its application to the area of pain has been popularised over recent years, and the specifics of the approach are reviewed elsewhere. Regulation could require that doctors adopt the UPs for opioid prescribing.

The point of using UPSs is that it can be difficult to predict which patients will have problems with opioids (e.g. dose escalation, side effects, dependence). According to the approach set out by Gourlay (Gourlay, Heit, & Almahrezi, 2005), physicians should take a careful baseline history of substance use on patients where opioids are being considered, asking about current and past use of opioids, alcohol, benzodiazepines, and illicit drugs, as well as about history of previous treatment for substance use problems and about family history. Physicians should routinely use treatment agreements, titrate opioid doses cautiously, and watch for signs of misuse.

However, the cost and effectiveness of this approach has been questioned elsewhere in the context of hepatitis (Hardie, 1992), and remains unknown in the area of opioid prescribing. Nevertheless, some relatively weak evidence does support the effectiveness



of opioid treatment agreements and urine testing to reduce opioid misuse by patients with CNMP (Starrels, Becker, et al., 2010), and while the effects are not marked, they do appear to be consistent.

Table 5. The 10 principles of Universal Precautions

1. Diagnosis with appropriate differential
2. Psychological assessment including risk of addictive disorders
3. Informed consent (verbal or written/signed)
4. Treatment agreement (verbal or written/signed)
5. Pre-/post-intervention assessment of pain level and function
6. Appropriate trial of opioid therapy º±º adjunctive medication
7. Reassessment of pain score and level of function
8. Regularly assess the '4As' of pain medicine: Analgesia, Activity, Adverse Reactions, and Aberrant Behaviour
9. Periodically review pain and comorbidity diagnoses, including addictive disorders
10. Documentation

Adapted from Gourlay et °al (Gourlay, Heit, et al., 2005). [1].

Some have observed however, that it is not realistic for most doctors to implement UPs, because of marked pressure to improve patient throughput and improve time management (Holliday, 2011). Holliday cites a range of opinions setting out the pressures on GPs especially to ensure a 'quick throughput' of patients, and notes the financial rewards from such quick patient processing. He suggests that the federal government foster the use of UPs through the use of the various payment options to general practice. The issue of fees for extended consultations in Australia are addressed in the Recommendations. Tasmania has limited testing facilities to conduct urine drug screens, which is also addressed in the Recommendations.

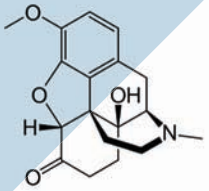
The principles and guidelines outlined below take into account: (a) the evidence regarding the effectiveness of opioid analgesics; and (b) the need to manage the risk of diversion and extra-medical use.

OTHER PRESCRIBING ISSUES

Methadone is a particularly difficult drug to prescribe safely, given its long half-life and rapid accumulation, the small difference between a therapeutic and toxic blood level, individual variability in the rate of metabolism, and its interaction with other prescription drugs (Paulozzi, Logan, et al., 2009). Given this, medical practitioners may require extra education prior to prescribing methadone for chronic pain and only those who are familiar with its pharmacokinetics and pharmacodynamics should prescribe it. All Australian jurisdictions currently have education and registration requirements for medical practitioners who prescribe methadone as OST.

Morphine is recommended by some organisations as the first opioid to be trialled when treating CNMP (BPAC, 2011; Department of Veterans Affairs, 2003). Oxycontin™ is thought to have a higher abuse liability and as such some medical practitioners are reluctant to prescribe it. The 'abuse quotient' (AQ) of an opioid is determined by C_{max}/T_{max} where C_{max} is the maximum plasma concentration T_{max} and is the time to maximum plasma concentration. Any formulation with a large Cmax and a short T_{max}, as is the case with sustained release Oxycontin™, will presumably be more attractive to those seeking a high(Webster, 2009).

A final and often debated issue is whether or not to prescribe opioids for breakthrough pain. The National Prescribing Service states that *"As a general rule, and in contrast to the recommendations for cancer pain, short-acting opioids should not be used 'as-needed' for breakthrough pain."*(National Prescribing Service, 2010b). Chou et al (2009) concluded that there is insufficient evidence to guide recommendations regarding optimal treatment strategies for breakthrough pain, and that clinicians should also consider non-opioid alternatives to manage breakthrough pain.



KEY PRINCIPLES FOR OPIOID PRESCRIBING

From the literature can be distilled five principles that might underpin the prescribing of opioids to patients with chronic non-cancer pain:

- The experience of chronic pain has biological, psychological and socio-environmental contributions, each of which needs to be assessed.
- Drug therapy – for symptom control – is an adjunct to a more comprehensive care plan that may include other health professionals.
- Opioid analgesia for patients with chronic pain is an ongoing trial, asking the question '*Is this person's predicament opioid-responsive, and are the benefits outweighing the risks?*'
- A trial of opioid analgesics requires goal-setting, explicit agreements, skilled titration of dose and regular monitoring of the '5+2As': analgesia, affect, adverse effects, aberrant behaviours, and activities of daily living[10].
- Difficulty in achieving or maintaining the goals of an opioid trial should trigger comprehensive reassessment, which may require referral.

These are elaborated upon in more detail in Professional Document PM1 from the Faculty of Pain Medicine of the Australian and New Zealand College of Anaesthetists. The issue is coloured by the paucity of good quality studies: the best review remains (Ballantyne & Shin, 2008).

TRANSLATION FROM RESEARCH TO CLINICAL PRACTICE

The challenge is to translate these into a practice guideline. We present here a novel approach ('Triple-5'), comprising five principles, five tools and five parameters. The five principles, tools and parameters are explained below.

The five principles of opioid analgesic prescribing

1. A comprehensive assessment must be conducted.
2. Opioids should be used only where there has been an adequate trial and poor response to other therapies, where they are not contraindicated, and where there is adherence to the treatment plan.
3. There must be a therapeutic alliance between the doctor and patient that is based on agreement between themregarding an opioid trial
4. An opioid trial must be conducted against the five parameters described below.
5. Trouble-shooting treatment problems or failures.

The five + two parameters against which an opioid trial is to be assessed

1. **A**nalgesia: is there a reduction in pain?
2. **A**ctivities of daily living: has this improved?
3. **A**dverse effects of the drugs.
4. **A**ffect: is there a change in the patient's mood?
5. **A**berrant behaviours.

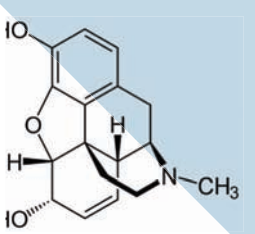
PLUS

1. **A**dherence
2. **A**ccurate notes

The five tools for prescribing opioid analgesics

1. Brief Pain Inventory.
2. Opioid Risk Tool (or other instrument, as being developed by the Opioid Aberrant Behaviour Scale Project).
3. Opioid Contract (written or verbal).
4. Rules for prescribing in different jurisdictions (including PBS restrictions and State-based surveillance mechanisms).
5. Chart of opioid 'equi-analgesic' doses (while noting need for caution in relation to methadone which is much more potent than many charts suggest).

10 Some clinicians in Tasmania have started managing against an additional two As: accurate medication records and adherence to the medication regimen.



These are presented below in a narrative form for clinical practice.

1. COMPREHENSIVE (BIOPSYCHOSOCIAL) ASSESSMENT

'Bio' (what's happening to the body)

A biological assessment is aimed at identifying any underlying treatable condition, if suspected on the basis of clinical 'red-flag' features (inflammation, infection, neural pathology, neoplasm). However, much chronic pain reflects a problem of *function* rather than of *structure*. [Diagnostic language is difficult here: for example, 'lumbar spondylosis' is a statement of age-related anatomical fact and does not imply either symptoms or mechanism.]

'Psycho' (what's happening to the person)

Psychological assessment requires eliciting the patient's beliefs regarding diagnosis and prognosis. It is also necessary to assess the impact of pain on daily activities (work and recreation), including sleep. Be alert to changes in mood, especially depression and anxiety

Useful tools include the Brief Pain Inventory and the Opioid Risk Tool (or better).

'Social' (what happening in the person's world)

It is important to assess the effects of pain on relationships: family, friends, and work, and to recognise the influence of other life events, ranging from changes within families to environmental disasters.

Risk assessment for problematic opioid use

Such an assessment needs to consider if there is a personal or family history of past or current substance abuse; an active psychiatric disorder; or evidence of problematic drug-taking behaviours.

2. ADEQUATE TRIAL OF OTHER REASONABLE THERAPIES

Non-drug options must be considered, including accurate explanation, advice regarding sleep hygiene, nutrition, and exercise. Referral should be provided to appropriate health care personnel if available (e.g. physiotherapist, psychologist, exercise physiologist, occupational therapist). It is also important to consider non-*opioid* drug options, as symptom control is important. Finally, opioids should be considered *before* invasive options unless specifically advised by a specialist in pain medicine

3-5. CONDUCT OF AN OPIOID TRIAL AND TROUBLE SHOOTING

If opioids are to be prescribed, use long-acting oral or transdermal opioid preparations. Dose should be adjusted according to age, and be aware of 'equianalgesic' conversions. As part of the opioid trial, regular reassessment and documentation against the **5As** is required:

- **A**nalgesia
- **A**ctivity
- **A**dverse effects
- **A**ffect
- **A**berrant behaviour

Two additional As are now considered important as a basis for treatment implementation and monitoring:

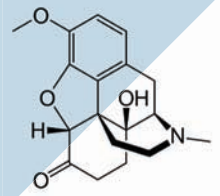
- **A**dherence
- **A**ccurate notes

Reviews should be conducted weekly initially, and then according to achievement of goals. The trial duration needs to be six to eight weeks. During the trial, the dose should be titrated to stability, provided the 5+2A assessment is satisfactory. Any repeat prescriptions must be contingent on monthly reports and a satisfactory 5+2A assessment. It is also advisable to involve another colleague in the decision to continue treatment. An annual specialist review is recommended, where possible.

RESPONSE TO DIFFICULTY IN ACHIEVING OR MAINTAINING GOALS IN AN OPIOID TRIAL, INCLUDING DEMAND FOR INCREASE IN DOSE

If this occurs, revisit the biopsychosocial assessment, especially 'psycho' and 'social'. Factors to consider are any change in the underlying disease state, changes in any of the 5 + 2A factors, or in the patient's social situation or other (life) stressors. In response, consider opioid rotation, OR taper opioid to withdrawal. It may be necessary to refer to a pain specialist.

Tool: Equi-analgesic conversion chart



WHAT ABOUT THE 'INHERITED' PATIENT?

The same principles apply to such patients. That is, conduct biopsychosocial assessments (over time); establish a new 'contract' with set goals, using explanations, negotiation, and regular reviews against the 5+2As. Refer for specialist treatment if in doubt.

WHAT ABOUT THE LONG-STANDING PATIENT ON OPIOID ANALGESICS AND/OR BENZODIAZEPINES?

There is little doubt that thinking regarding these medications is changing. Benzodiazepines are now considered short-term medications (2-4 weeks, as part of a broader treatment plan) with concern regarding the harms that arise from longer-term use, particularly amongst elderly patients (The Royal Australian College of General Practitioners; the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists; and the Pharmaceutical Society of Australia, 2011). Nevertheless, many patients have been using these medicines for long periods of time, and GPs may be reluctant to upset their long-term patients by changing their medication. These medications can be reviewed as part of a new treatment agreement that provides a framework for evaluating and discussing the benefits and risks of these medications with the patient.

WHAT ABOUT CHRONIC PAIN MANAGEMENT IN THE OPIOID-DEPENDENT PATIENT?

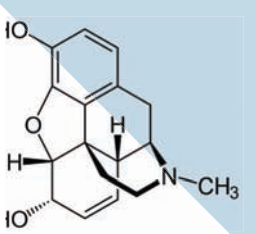
The co-occurrence of opioid dependence and severe chronic pain poses significant challenges for patients, families and carers, health practitioners and health systems. Many such patients experience poorly co-ordinated and inadequate treatment and stigma from family, friends, the community and health providers, and these in turn can further impair treatment outcomes and overall quality of life for the patient. OST patients reporting pain have been found to have more severe medical and psychological problems and greater health service utilisation than those without pain (Trafton, Oliva, et al., 2004). Pain was associated with increased likelihood for misuse of analgesics, suggesting that ongoing pain contributes to more severe drug-seeking behaviour. This highlights the need for such patients to have their pain treated. Patients with pain did not differ from patients without pain in use of heroin, alcohol, cocaine or in injecting practices. There are a small number of published reviews or guidelines for managing co-occurring opioid dependence and chronic pain (Ballantyne & LaForge, 2007; Roberts, 2008; Savage, Kirsh, et al., 2008). There appear to be widely divergent responses by medical practitioners to the problem of chronic pain amongst patients with a history of substance dependence (Berg, Arnsten, Sacajiu, & Karasz, 2009). The two predominant approaches – one focussed on the dangers and harms of drug abuse and the other focussed on the negative consequences of untreated pain – led to wide variation in prescribing practices. At the heart of these divergent approaches is a lack of evidence regarding when prescribing opioids for chronic pain increases the risk of misuse, versus when withholding opioids increases the risk of self-medication of pain. Some Australian jurisdictions attempt to address this dilemma by increasing the level of dosing supervision for at risk patients.

Below is an overview of the key principles in the management of opioid-dependent patients.

ASSESSMENT AND DIAGNOSIS

A full assessment would include:

- The pain condition (etiology, severity, site, precipitating and relieving factors);
- Opioid use (history of opioid use, current patterns of use, amount, frequency, route, withdrawal profile, tolerance, attempts at opioid cessation or reduction, psychosocial criteria of dependence; side effects and other adverse events with opioids);
- Other substance use (past and current history of other substance use);
- Aberrant drug behaviours, including source of medications (number of doctors attended, over the counter (OTC) opioid use, friends and relatives, street/black market supplies); routes of drug use, including history of injecting complications, frequency, extent and factors related to dose escalations;



- Chemical coping (opioid use for reasons other than severe pain such as sleep, anxiety); and
- Other strategies for responding to pain: use and effectiveness of approaches, including physical therapies (e.g. exercise, physiotherapy, acupuncture, TENS etc), and psychological approaches (CBT, relaxation approaches).

IDENTIFY THERAPEUTIC GOALS AND CONDITIONS FOR OPIOID USE

Negotiate with the patient and document realistic goals regarding management of chronic pain and of opioid treatment within a broader pain management plan (including the 5As: analgesia, activities, affect, adverse events and aberrant behaviours). Identify how these will be assessed and monitored, and include:

- self-monitoring (e.g. diaries);
- assessment scales (e.g. BPI, K-10);
- aberrant behaviours (pill counts, urine drug screens, prescription monitoring systems, examination of injecting sites); and
- Collateral reports (communication with other doctors, pharmacists, relatives).

Include the family and/or carers in the identification of treatment goals and treatment plans. Document the patient 'contract', identifying conditions of opioid treatment, how treatment will be monitored, and repercussions of persistent aberrant behaviours.

RATIONALISE OPIOID MEDICATION WITHIN A BROADER PAIN MANAGEMENT PLAN

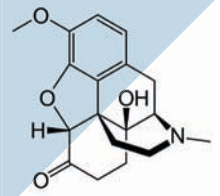
Identify and co-ordinate the service providers involved in care, and who has responsibility for prescribing, dispensing and monitoring opioid, other psychoactive and non-opioid adjuvant pain medications. It is also necessary to rationalise and structure opioid treatment – identify which opioid(s), dose and frequency of use, and the frequency of dispensing. Use long-acting or sustained released opioid medications and abuse deterrent medications where available: avoid short-acting opioids and injected preparations where possible. Use structured regimens and minimise 'PRN' use of opioid medication.

Patients with a history of multiple dose escalations, overdoses, diversion or injection of medications should have supervised dosing and/or frequent interval dispensing (e.g. daily, three times a week or weekly). Patients requiring high opioid doses (greater than 120mg oral morphine equivalent per day) should be reviewed by a pain and/or addiction specialist.

If there is no recent history of significant aberrant drug behaviours (e.g. injecting, diversion, overdoses), consider a trial of conventional opioid analgesics (morphine, oxycodone, oral methadone tablets) with frequent review and monitoring. If the patient has a recent history of significant aberrant behaviours (diversion, injecting, overdoses) or the patient is unable to adhere to the treatment plan with conventional opioid analgesics, select between methadone oral liquid and high dose sublingual buprenorphine or buprenorphine-naloxone abuse deterrent preparation (see Figure 22). Both oral methadone and high dose sublingual buprenorphine are effective opioid analgesics, and have the added benefits of enabling closer supervision, monitoring and structure to opioid treatment. Consult with pain and/or addiction medicine specialists regarding selecting between medications and conversions between opioid medications. Patients who do not benefit from, or are unable to adhere to the opioid treatment plan, may warrant an attempt of opioid withdrawal.

There is limited controlled evidence for the role of opioid rotation; however, there is considerable clinical experience suggesting it may have a role for some patients using high doses (and who have developed tolerance or opioid induced hyperalgesia) arising from treatment with a particular opioid, and who may benefit from a rotation to another opioid. The role of opioid rotation should be discussed with a pain specialist for a particular patient.

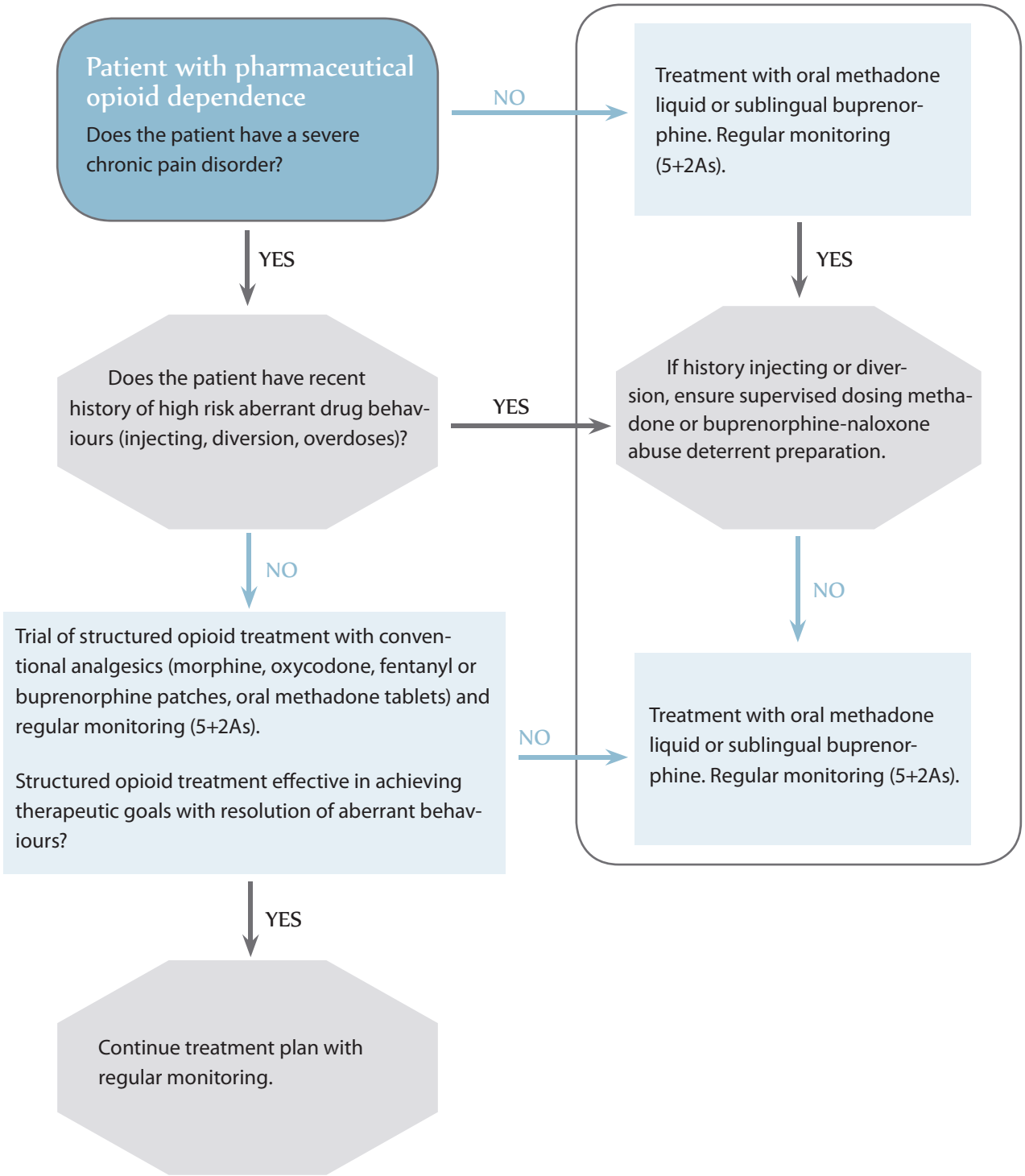
It will be necessary to rationalise other psychoactive medications, particularly use of benzodiazepines or other sedatives that can lower the safety threshold of opioids, and medications with drug-drug interactions with opioid medications (e.g. CYP inducers/inhibitors and impact upon methadone metabolism; QTc prolonging medications).

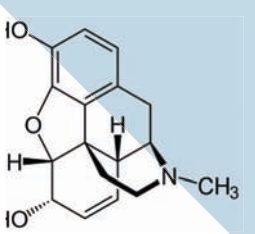


Ensure compliance with the relevant jurisdictional regulatory requirements regarding S8 medications, including notification/permits for opioid medications. Ensure that accurate documentation is maintained.

It is essential to identify a broader pain management plan that addresses pain (physical therapies, psychological approaches, adjuvant medications) and any other co-morbidities (e.g. addressing mental health, other substance use, medical and social co-morbidities). Have strategies for dealing with 'break through' or acute exacerbations of pain.

Figure 22: Choice of opioid preparations in managing pharmaceutical opioid dependent patient





HOSPITALS: THE TRANSITION FROM ACUTE PAIN TO PERSISTENT PAIN

Chronic pain following surgery is common. Studies from the past decade have explored the link between management of post-operative pain and the development of chronic pain problems. A review of these studies can be found in McIntyre et al (2010). In summary, there is evidence that "*specific early analgesic interventions may reduce the incidence of chronic pain after surgery*" (McIntyre, Scott, Schug, Visser, Walker, & APM:SE Working Group of the Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine, 2010, p. 10). The report also reviews the preoperative, intraoperative, and postoperative risk factors for the development of chronic post-surgical pain. In addition to the severity of acute pain and physiological factors, psychological risk factors are increasingly recognised as important in the development of chronic pain. Members of the Tasmanian reference group have highlighted the need to view chronic pain within the context of other risk factors for the individual patient.

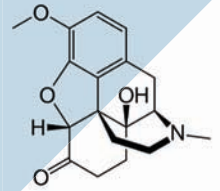
The Acute Postoperative Pain (APOP) Project, an Australian study which was aimed at improving the quality of acute postoperative pain management, identified a number of key messages. This including beginning postoperative pain management in the preoperative period; measuring pain regularly; ensuring that all postoperative patients receive safe and effective analgesia; monitoring for and managing adverse events; and communicating the ongoing pain management plan to patients and primary healthcare providers at discharge (National Prescribing Service, 2010a).

THE ROLE OF COMMUNITY PHARMACISTS IN AUSTRALIA AND TASMANIA

Many pharmacists in Australia already play an important role in reducing harms to illicit opioid users through dispensing opioid substitution and injecting equipment (Sproule, 2011). They also have a key role to play in educating patients about their medications. A universal precautions approach, which assumes that all patients need to be assessed for risk, needs to be adopted: there is some evidence that community pharmacists may use a patient's general appearance or frequency of purchase to assess the risk of drug misuse (Nielsen, Cameron, & Pahoki, 2010). This means that those who present as well dressed or more affluent may miss out on critical information and intervention. Moreover, those who are suspected of misusing prescription opioids may not receive adequate care for genuine pain. Sproule (2011) comments on the importance of not dichotomising patients into 'legitimate patients' and 'abusers', but instead recognising that most people fall between the two extremes.

With S8 medications, pharmacists in Tasmania will soon have the benefit of seeing a patient's prescribing history. This raises the issue of what steps a pharmacist might take if they are concerned about filling a prescription, based on the patient's S8 history. It is likely that, in many cases, having this information will make the pharmacist more confident about providing the medication since he or she will know what other S8s the patient is receiving. Where a concern arises, however, barriers to addressing this concern need to be considered. Many pharmacies do not have private space in which to discuss such concerns. Further, current reimbursement structures do not encourage spending significant amounts of time with an individual patient. Pharmacists may also be providing these medications after hours when the prescriber is not contactable. If there is a problem with the prescription or a concern for the patient in such circumstances, pharmacists need to have another option besides providing the full prescription, such as providing a limited supply to the patient. This option is already available to pharmacists in Tasmania. Finally, but perhaps most importantly, the skill and comfort in dealing with patients with substance use problems is likely to be highly variable, as this has not been a strong focus in pharmacy undergraduate training programs.

Although some patients will have been given information about the medication by their doctor, it is reasonable to assume that many will benefit from hearing the information more than once. Information could include the role of opioids within a pain management plan (including realistic expectations for pain reduction); the risks, potential side effects, reiterating the dosing regimen, and potential interactions with other drugs. With regular patients, pharmacists might enquire whether the pain condition



is still present, whether the prescribed dose is still providing pain relief, whether the medication is helping with day to day activities of living, and about any side effects. Pharmacists also need to consider what steps to take if they notice that a patient's dose is escalating, if they are also purchasing OTC medications, or using more than one prescriber (Nielsen, Lintzeris, Mackie, & Newton, 2010).

Undergraduate and ongoing training for pharmacists needs to address a range of issues:

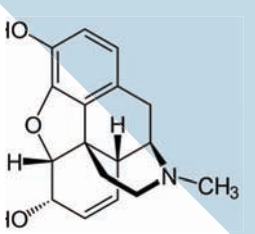
- The principles and implementation of universal precautions as it applies to medicines;
- Strategies for dealing with concerns about a patient's medication (e.g. contacting the prescriber or the PSB, or dispensing a limited supply, scripts for refusing to dispense when the patient's safety is at risk);
- Reinforcing the need to provide information to patients about medications, particularly S8s and benzodiazepines;
- Education about chronic pain that can be passed onto patients; and
- Reinforcing the need for intervention where the patient is receiving combinations of prescription and/or OTC medicines that may be dangerous.

In addition, the Pharmaceutical Society of Australia, the Society of Hospital Pharmacist of Australia, and the Pharmacy Guild of Australia (PGA) should be engaged in discussions on these issues, and on issues regarding structural reforms that might assist pharmacists to further develop their role in the quality use of medicines.

AN ALTERNATIVE WAY FORWARD: CHRONIC DISEASE MANAGEMENT MODELS

While there is debate about whether persistent pain should be classified as a disease, it does meet many of the criteria used by the WHO to define a chronic disease, which include it being permanent, leaving residual disability, being caused by non-reversible pathological alteration, requiring special training of the patient for rehabilitation, or possibly requiring a long period of supervision, observation, or care (Cousins, 2007; National Pain Summit Initiative, 2011).

Key informants interviewed for the project identified a need for GPs to move towards managing pain from a chronic disease perspective, and away from trying to cure the patient's pain. Chronic disease management has been described as "*an intervention designed to manage or prevent a chronic condition using a systematic approach to care and potentially employing multiple treatment modalities*" (Weingarten, Henning, Badamgarav, Knight, Hasselblad, Gano, & Ofman, 2002). This description is similar to the multimodal approach to managing persistent non-cancer pain described in guidelines and research literature (American Society of Anesthesiologists Task Force on Chronic Pain Management & American Society of Regional Anesthesia and Pain Medicine; Chou, 2009; National Pain Summit Initiative, 2011; Royal Australasian College of Physicians, 2009). Weingarten's meta-analysis of interventions used in chronic disease management found that *provider* education, feedback, and reminders were associated with significant improvements in provider adherence to guidelines and with significant improvements in patient disease control. *Patient* education, reminders, and financial incentives were all associated with improvements in patient disease control. A systematic review of chronic disease management models by the Australian Primary Health Care Research Institute found that all aspects of the Chronic Care Model (CCM (Bodenheimer, Wagner, & Grumbach, 2002; Wagner, Austin, & Von Korff, 1996), described below) were effective on a number of outcome measures related to chronic disease management, from professional adherence to guidelines to patient health status and quality of life (Zwar, Harris, Griffiths, Roland, Dennis, Powell, & Hasan, 2006). It is important to note that the review by Zwar and colleagues included only studies of management of asthma, heart disease, heart failure, hypertension, type 2 diabetes, lipid disorders, chronic obstructive pulmonary disease (COPD), arthritis (osteoarthritis or rheumatoid arthritis) and osteoporosis, and thus did not examine evidence for the model with regard to persistent non-cancer pain. The review also concludes that whilst the CCM is a very helpful framework, it "*may*



not provide sufficient practical guidance at the level of the health service to assist policy and decision makers to plan and guide organisation and delivery of services. This implies a need for the development of capacity in health services to translate the Chronic Care Model into fully developed proposals and programs for health service reform" (Zwar, Harris, et al., 2006, p. 61).

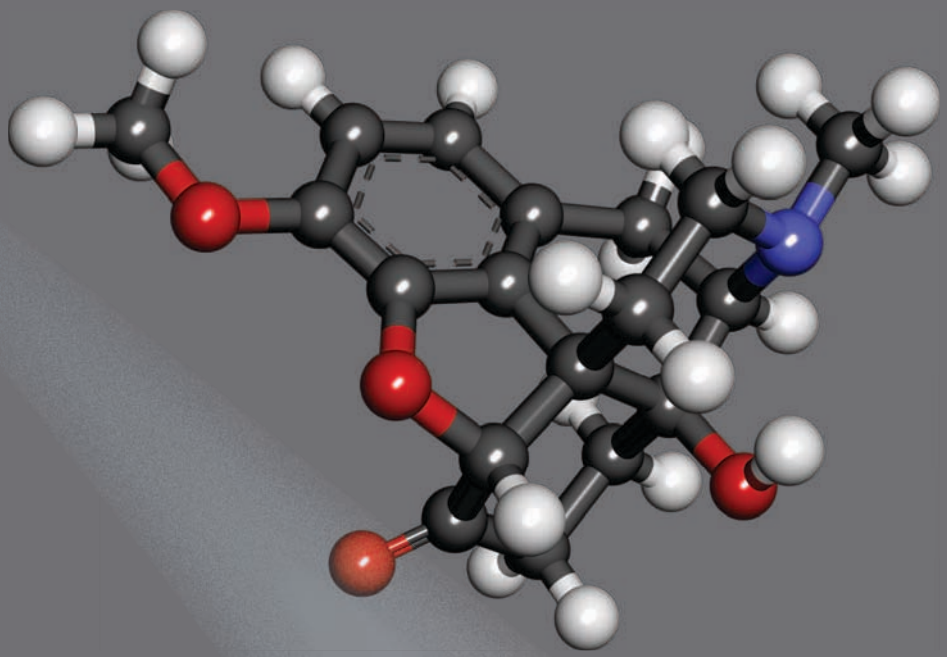
The six elements of the CCM are:

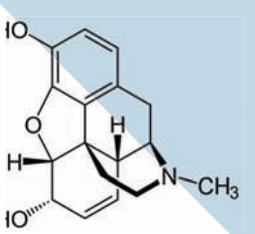
- **Delivery System Design (DSD)** The structure of the medical practice to create teams with a clear division of labour and separating the acute from the planned care. Planned visits and follow up are important features.
- **Self Management Support (SMS)** Collaboratively helping patients and their families to acquire the skills and confidence to manage their condition. Provide self management tools, referrals to community resources, routinely assessing progress.
- **Decision Support (DS)** Integration of evidence based clinical guidelines into practice and reminder systems. Guidelines reinforced by clinical 'champions' providing education to other health professionals.
- **Clinical Information Systems (CIS)** Three important roles of computer information systems: Reminder system to improve compliance with guidelines, feedback on performance measures and registries for planning the care for CD.
- **Community Resources (CR)** Linkages with hospitals providing patient education classes or home care agencies to provide case managers. Linkages with community based resources – exercise programs, self help groups, and senior centres
- **Health Care Organisation (HCO)** The structure, goals and values of the provider organisation. Its relationship with purchaser, insurers and other providers underpins the model.

CONCLUSIONS

CNMP is often managed in community settings by GPs. The patients often have complex comorbidities that require careful assessment and co-ordinated management by a range of health professionals. This section has synthesised the guidelines and evidence that can assist in this process. The following section examines evidence and models for monitoring and regulating S8 drugs in Australia.

SECTION FIVE:
REGULATION OF S8 OPIOIDS – REVIEW OF EVIDENCE AND PRACTICE





In the previous section, the clinical use of opioids was reviewed. Each Australian jurisdiction has a set of laws and regulations which allow for the monitoring and regulation of these medications. This section reviews the evidence and the models for regulating S8 drugs in Australia.

KEY POINTS

- Although Australia has experienced an increase in prescribing, it has not seen the harms increase to the extent as those seen in the US (Roxburgh, Bruno, et al., 2011).
- This has occurred against a background of regulation and monitoring of these drugs in Australia, with different models of regulation applied within each jurisdiction.
- The overall aim of these models is to ensure that S8 drugs are available for clinically appropriate use, whilst minimising the harms arising for individuals and the community.
- Almost all of the evidence regarding the effectiveness of prescription monitoring comes from the US, which takes more of a law enforcement approach to that taken in Australia where the regulatory approach is aimed at quality use of medicines.
- This US-based research has shown that prescription monitoring reduces prescribing overall, but it is not clear that it also reduces harms independently of prescribing levels.

SETTING THE SCENE

The UK company, Pharmaceutical Market Research (2010), in their promotion of their recent Datamonitor publication "Commercial Insight: Opioids in Australia", noted that in Australia the "*opioid market grew from $63m in 2005 to $137m in 2009. Its growth will slow considerably and the market will be worth $182m in 2019. As many new drugs to come on the market will be reformulations, Datamonitor assumes that these will be priced at a similar level as currently available brands in order to receive reimbursement. This means that the value of the market will stabilize*".

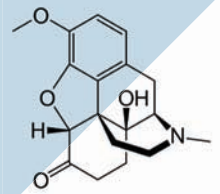
The report goes on to note that the "*controlled-release class [of opioid medications] was the highest-selling class in 2009 with sales of $115m. The fast growth of this class in recent years, particularly between 2006 and 2008, can be almost completely attributed to the uptake of two transdermal patches and the oral drug OxyContin (oxycodone; Mundipharma). As both OxyContin (oxycodone; Mundipharma) and Durogesic (fentanyl; Janssen-Cilag) will have to battle with the entry of generics and competing products in the oral controlled-release market, Norspan (buprenorphine; Mundipharma) will become the highest-selling drug in the Australian opioid market by 2019 with sales of $34m. While peak sales of Actiq (fentanyl; Sigma Pharmaceuticals) were over $600m in the US, 2009 sales in Australia only reached $1m. Actiq's limited listing on the Palliative Care Schedule does not only greatly limit its patient population, it also makes it more cumbersome for physicians to apply for authorizations and repeat prescriptions*".

Clearly, the pharmaceutical industry sees Australia as an important growth market for prescription opioids. The further growth of the market value by a third within the next decade suggests that there will be ongoing applications to the Therapeutic Goods Association (TGA) and promotion of opioid pharmaceutical products to the health-care industry. Much of this promotion will be appropriate, but it may need to be balanced with an appropriate set of measures to check the accuracy and completeness of the information provided to doctors (and consumers of these products) to reach informed clinical decisions about the effectiveness and risks associated with the medications.

REGULATION IN DEVELOPED NATIONS

The approach taken in developed countries to the provision of controlled opioid medications for analgesic effects or for the treatment of opioid dependence is to rely only on the provision of a medical prescription with regulatory oversight from government authorities for prolonged prescribing or prescribing to those who are known to be opioid dependent. As defined elsewhere 'regulation' of opioid medications refers to the set of rules with binding legal force at the jurisdictional level, as enacted by an administrative body to which the authority to issue such rules has been delegated by the jurisdictional legislative body (World Health Organization, 2011).

Such an approach to medication provision is designed to maximise appropriate use of the medications, while



minimising harms to the patient or others. However, the balances between regulation either encouraging/suppressing appropriate prescribing and quality use of these medications, and the problem of over-prescribing and misuse of these medications are difficult balances to initially strike, and such balances are also difficult to maintain over time in the face of changes in medication availability/formulation, as well as changes in clinical concerns, patient behaviours, and other factors (such as demand for diverted medications).

As is argued elsewhere in this report, additionally, there is a need to maximise the appropriate use of evidence-based interventions for persistent non-malignant pain rather than just the appropriate use of medications. The desire to reduce reliance on medications in the clinical management of persistent non-malignant pain, and the availability of good non-proprietary methods needs to be recognised and is addressed elsewhere in this report.

This problem of striking the balance in regulation to allow practitioner judgement and rational use of opioids has become much more relevant in health care policy due to a number of changes that have occurred in the past two decades. One important force driving this increased focus on opioids is the advocacy for improved management of pain. While there is no doubt of the need for these medications to manage cancerous pain and some severe acute pain, their role in the area of chronic non-cancerous pain (CNCP) is less well accepted. The overall impression for the vast literature on the use of these medications in the management of CNCP is that the evidence on efficacy and safety suggested a quite limited role. Nonetheless, opioid prescribing for CNMP has become a feature of the use of these medications, and is a problem that is quite likely to continue in developed countries. The issue of quality use of these medications is addressed elsewhere in this review, but the approaches to regulation used in developed countries are driven by a number of factors, reviewed below.

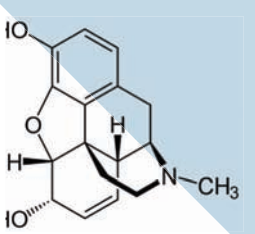
Before considering this evidence, it is notable that one local observer (Holliday, in press) has asserted that currently "*in Australia, [prescription opioid analgesic] policies are a patchwork of archaic, unco-ordinated and non-evidence-based regulations differing across each National and State Department of Health*" (p.2). Of course, having evidence-based policies presumes that there is a body of evidence available to inform the approaches to regulation. While there is an increasing body of evidence on regulation, unfortunately, this evidence base is still not substantial. Nonetheless, there is a body of evidence that does broadly inform on the role of regulation.

FACTORS THAT INFLUENCE THE MISUSE AND REGULATION OF OPIOID MEDICATIONS

Before considering the methods of regulation, it is important to note that the risk of misuse of any medication is generally affected by a number of factors, including:

- the formulation of the medication and its pharmacology;
- the availability/cost and the distribution of the medication;
- the social acceptability of misuse;
- the methods of marketing to prescribers, and subsequent prescriber behaviour (including the knowledge, understanding and skills of doctors in assessing and managing persistent non-malignant pain on the basis of contemporary best practice, particularly in the context of evidence of poor functional responses, adverse events, aberrant behaviours and addiction, as well as the doctor's confidence in making clinical decisions that adequately take all of these matters into consideration);
- the role of government monitoring and regulation, and the resources allocated to this process;
- patient expectations regarding being pain-free as compared with managing pain, and their understanding of the effects of the medications; and
- access to safe treatment for opioid dependence, particularly OST.

Some other important influences on the misuse of opioids are the nature of the potential misusers, and the market for such drugs to be diverted and used extra-medically. The extent of actual misuse and the health



consequences of such misuse are the outcomes that will concern those who take a public health perspective. The minimisation of misuse of prescription opioids relies on manifold methods. It will involve groups that have quite specific and at times differing perspectives and responsibilities concerning prescription opioid use. The pharmaceutical industry, the prescribers, patients, pharmacists, and regulatory bodies at the state and national level, can all contribute to an approach that minimises harm and improves clinical outcomes. Regulation, of course, can be designed to be underpinned by a QUM approach, and QUM by prescribers will ideally be underpinned by good regulation. A symbiotic process can occur, especially if prescriber judgement is not sufficient or if it is not well-informed. Good clinical decision-making may take into account clinical context, and evidence of clinical benefit versus risk and harm.

However, a central approach to minimising adverse health consequences while balancing legitimate patient need has traditionally been through the regulatory control of medication availability to the population. This regulation is a primary tool for mediating and influencing the link between the risks of misuse associated with the medication's pharmacology and the extent of actual misuse. There is some evidence for the impact of various regulatory models on levels of prescribing and harms.

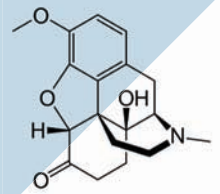
As noted above, there have been significant increases in prescribing of some opioids in Australia (and overseas). There are concerns about the associated increase in acute and chronic harms such as fatal and non-fatal overdose, becoming medication-focussed (at the expense of other multi-modal, non-pharmacological interventions and approaches that promise more), reduced activity and life functioning, accidents and falls, the development of hyperalgesia, opioid dependence, and other physical and psychological problems (as set out elsewhere in this report). Historically, prescribing opioid analgesics was the province of specialist doctors. Since the 1990s, these drugs have increasingly been prescribed by GPs who are called upon to treat often complex patients with longstanding pain and comorbid health problems. This change is one of several which present greater challenges for regulators.

The government bodies charged with regulating these drugs are required to make policy choices that allow access to useful medications for patients with acute and persistent pain, whilst minimising the harms that might occur to those patients and others. These choices, along with the ways that the policies are implemented and resourced, have a significant impact on clinical practice.

Before reviewing the evidence, the important role of regulators is highlighted by some individual cases of aberrant prescriber behaviours. Such examples comes from prescribing behaviours in the UK, where some prescribers issued extraordinarily large amounts of opioids to dependent users (Hall & Degenhardt, 2007). Perhaps the most famous of these is the Brewer case in the UK, but Hall and colleagues also cite the case of one prescriber who in one year prescribed 600,000 heroin tablets, with much of the dispensed medication going to heroin-dependent users in London. These cases highlight the potentially dangerous consequences of a deregulated approach to prescription opioids. Conversely, the regulation of methadone and buprenorphine has been shown to lead to a decrease in harms. Both of these drugs, when used to treat opioid dependence, are administered in ways intended to reduce the risk of diversion and misuse (i.e. supervised dosing and assessment of suitability for take-away doses). In the UK, where some doctors initially considered this approach overly restrictive, there is evidence that these changes in practice have increased treatment rates for opioid dependence via OST (Strang, Manning, et al., 2007). Over the same period, overdose deaths related to these drugs decreased (Hall & Degenhardt, 2007). Hall and Degenhardt (2007) called for a new focus on research into the regulation of opioid prescribing. Happily, there is now a small but emerging literature which examines the monitoring of prescription drugs and its impact on prescribing, aberrant drug-related behaviours, and drug-related harms.

INTERNATIONAL VIEWS OF THE REGULATION OF THE PROVISION OF OPIOID MEDICATIONS

The WHO, and other international bodies, have recognised the problems associated with regulation of opioid medications for more than a decade (World Health Organization, 2000b). WHO and the United Nations International Narcotics Control Board, both



have guidelines on the provision (availability and accessibility) of controlled substances such as opioid medications (World Health Organization, 2007). The WHO (2011) recently released an updated set of guidelines that addressed several areas (and clearly take an international perspective), as set out below (World Health Organization, 2011).

1) Legislation and policy should ensure that:
    a. opioid medications are recognised as absolutely necessary;
    b. governments ensure adequate availability and accessibility;
2) Authorised bodies have a role in the system, so that:
    a. the authorised body ensures adequate availability and access;
    b. the authorised body meets with other relevant groups to promote accessibility and prevent abuse, dependence, and diversion;
    c. the government ensures that drug control authorities and public health authorities meet and co-operate to achieve 2a and 2b; and
    d. other government authorities (e.g., police) do not impede health policies;
3) Policy planning for access and availability occurs, so that:
    a. accessibility for all relevant uses be recognised in national pharmaceutical policies;
    b. access is available to all population groups; and
    c. governments examine their legislation and policies to optimise health outcomes and ensure that prescribing decisions that are medical in nature should be taken by health professionals.

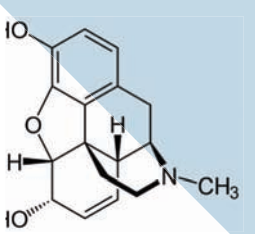
The WHO lists other essential aspects of provision of these medications, and notably recent research shows that many European countries fail to meet the basic requirements (Cherny, Baselga, de Conno, & Radbruch, 2010). Over-regulation has been seen as a major impediment to the provision of essential medicines.

IMPACTS OF REGULATORY CHANGE

Recent work from Tasmania is instructive with regard to the power of regulatory changes. An intervention in Tasmania (regulatory change and GP education) to reduce prescribing of alprazolam with opioids was effective in achieving a reduction in alprazolam prescribing, whereas prescribing in the rest of Australia continued to increase. Further, the number of individuals receiving alprazolam with opioids decreased following the interventions. The following restrictions were placed on prescribing alprazolam: pharmacies are required to provide monthly reporting of all alprazolam prescriptions dispensed and this is reportedly seamlessly achieved through the existing electronic reporting mechanisms for controlled drugs; an application for authority to prescribe is required where alprazolam is prescribed in excess of four weeks when patients are also prescribed opioid medication; patients enrolled in methadone or buprenorphine maintenance programs require explicit approval from the Clinical Director of the Tasmanian ADS to receive prescriptions of alprazolam; and, only one prescriber of benzodiazepines and/or opioids is permitted (Hooper, Bruno, et al., 2009). Although it is not possible to separate the impact of the individual components of the intervention, it is clear that the intervention was effective in achieving a reduction in prescribing, without any evidence of a compensatory increase in prescribing of other benzodiazepines.

EVIDENCE ON REGULATORY AND MEDICATION PRESCRIBING-MONITORING MODELS

International experience from the US is instructive in the role and impacts of regulation on the prescribing of opioids. The first prescription drug monitoring program (PMP) developed in California in 1940, and by 1992 there were 10 in the US, and 15 by 2002 (General Accounting Office, 2002). Fishman and colleagues concluded that prescribing controlled medications via PMPs held promise for improving public health and safety (Fishman, Papazian, Gonzalez, Riches, & Gilson, 2004). Thereafter, in the US, there has been financial support for such monitoring from 2005 with the legislation at the federal level of a *National All Schedules Prescription Electronic Reporting Act* (2005) (NASPER) (Manchikanti, Whitfield, & Pallone, 2005). Drawing on this legislation,



in the US, most states have developed PMPs in response to the recognition of the emerging epidemic of prescription medication misuse (termed 'abuse' in the US). Typically, these programs collect prescription data both from pharmacies and from physicians. The data are then made available to relevant regulatory agencies and also to the health care providers. Because of the relative recency of the formation of these agencies, there have been very few studies that actually evaluate the effectiveness of these programs. As of 2006, it was estimated that there were 38 PMPs in the US, while recently 43 states with PMP legislation were identified with 34 having operational PMPs, with several more to become operational in 2011.

Early concerns were expressed about inhibiting appropriate prescribing (Cope, 2003). Subsequently, Twillman argued that states with PMPs show a decrease in prescribing, but that did not demonstrate a decrease of the abuse of prescription opioids compared to states without PMPs (Twillman, 2006). However, Twillman relied on treatment registers of dependent users, and national household surveys, neither of which would necessarily be sensitive to changes in prescription rates.

AN EARLY US NATIONAL STUDY

A detailed study compared outcomes for 20 states with PMPs versus those without PMPs in the US (Simeone & Holland, 2006). The report examined evidence for direct and indirect influences of PMPs on prescription medication abuse. The indirect influence assumes that reducing the overall supply of prescription drugs will reduce the probability of abuse. The direct route assumes that if supply is held constant, a PMP may still reduce the probability of abuse, presumably by targeting high-risk prescribers and patients. They found that monitoring prescription drugs has an indirect effect on the rates of abuse by reducing the overall supply of drugs. There was little evidence that PMPs had a direct effect on the risk of prescription medication abuse (although again there is a lack of detail about the specific methods utilised in the PMPs plus marked variation within them (General Accounting Office, 2002)). The evidence also suggests that states which are proactive (i.e. those which use a system to identify and investigate cases) in their approach to regulation may be more effective in reducing the per capita supply of prescription drugs than states which are reactive in their approach to regulation.

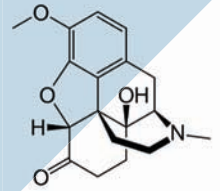
Moreover, according to the recent analysis by US researchers (Wang & Christo, 2009), PMPs have demonstrated a reduction in the supply of certain scheduled drugs. Wang and Christo argued that "*the implementation of NASPER, more specific practice guidelines, better educational programs, and enhanced co-operation between regulatory agencies and providers can create these programs into an efficient and effective tool for combating prescription medication abuse without the unwanted by-product of under-treating pain*" (p.512).

MASSACHUSETTS

Data from a PDMP in Massachusetts was examined for patients with three or more prescribers and using three or more pharmacies, in order to identify 'questionable activity' which was defined as early prescription refills, multiple simultaneous opioids, preference for brand opioids (with a higher street value), and dose escalation (Katz, Panas, Kim, Audet, Bilansky, Eadie, Kreiner, Paillard, Thomas, & Carrow, 2009). Of the population receiving opioid prescriptions in 2006, 92% used only one or two prescribers. Over 93% of individuals had no early refills during that year. However, those individuals using three or more prescribers and pharmacies (1.6% of patients) represented 7.7% of prescriptions and 8.5% of dosage units. Individuals who used four or more prescribers and pharmacies (0.5% of patients) represented 3.1% of prescriptions and dosage units. The medication most associated with this questionable activity was oxycodone. Thus, using prescription monitoring programs to identify individuals using multiple prescribers and pharmacists can assist in identifying patients at risk of diverting and misusing prescription opioids.

NEW YORK STATE AND PENNSYLVANIA

In a further recent study from the US, per capita use of major prescription opioids and drug overdose deaths were compared for New York State and Pennsylvania (Paulozzi & Stier, 2010). Both states have a PDMP, but New York state's PMP was better funded and used serialised, tamperproof prescription forms with electronic reporting by the pharmacy to the PMP. Both PMPs were originally designed to provide data to law enforcement and regulatory agencies. (Unfortunately, the details of the intersection between law enforcement, public health and clinical personnel is not articulated, and it varies across PMPs (General



Accounting Office, 2002)). New York's PMP was located within the Bureau of Narcotics Enforcement, which is part of the Department of Health. Pennsylvania located its PMP within the Attorney General's Office. New York monitors Schedules II (e.g. 'strong' or potent opioids, methamphetamine) through V (e.g. codeine preparations) controlled substances, whereas Pennsylvania monitors only Schedule II drugs.

New York also monitored prescription records for signs of illegal activity and investigated irregularities, a task for which around 20 investigators are employed. Pennsylvania did not monitor its data until shortly before the study was undertaken. A further difference is in legal penalties for prescription medication offences, with New York having more severe penalties than Pennsylvania.

Current use of opioid analgesics and other scheduled drugs is much greater than it was when the PMPs were established in both states. However, consumption since then has increased by about 50% more in Pennsylvania than in New York. There are also large differences in non-suicide overdose death rates between the two states, with the rate of opioid analgesic-related deaths in Philadelphia (the capital city in Pennsylvania) at 10.2 per 100,000 compared with 3.5 per 100,000 in New York City.

There were at least three possible reasons for the lower death rates observed in New York City:

1. The difference in drug related deaths may be a reflection of lower consumption rates in New York compared with Pennsylvania (an indirect effect);

2. A better resourced and more comprehensive monitoring system may lead to safer prescribing even if supply is held constant (a direct effect); and

3. Factors such as better medical care, better drug treatment programs, and more widespread community harm-reduction programs may have also contributed to this difference in death rates.

OHIO. There is evidence that when prescribers in Ohio were able to view a state-wide 'narcotic registry' on patients, information therein altered their prescribing behaviour for management of emergency department patients with non-traumatic pain (Baehren, Marco, Droz, Sinha, Callan, & Akpunonu, 2010). Specifically, the research showed that review of the Ohio Automated Rx Reporting System information on specific patients led to reduced or no prescribed opioids, or in some cases to increased opioid medication, suggesting that the clinical information was used to ensure appropriate prescribing by the doctors.

US NATIONAL RESEARCH

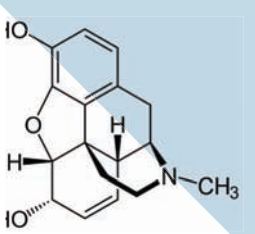
More recently, a national study showed that PMPs were not associated with lower rates of drug overdose or opioid overdose deaths (Paulozzi, Kilbourne, & Desai, 2011). Similarly, a recent review of the impacts of PMPs noted that while PMPs can reduce 'targeted' medication use, there is sparse evidence to support the view that they reduce controlled medication use broadly, or that they "*exert [positive] downstream consequences on patient outcomes, including access to care, quality of care, morbidity, mortality, and resource spending*" (Fornilli & Simoni-Wastila, 2011).

FRANCE

Yet, research from other quarters is consistent with the broad thrust of the US studies. In France, researchers have examined the impact of a prescription monitoring program on doctor-shopping for high dosage buprenorphine (Pradel, Frauger, Thiron, Ronfle, Lapierre, Masut, Coudert, Blin, & Micallef, 2009). Following a sustained period of increases in doctor-shopping for buprenorphine, the beginning of the prescription monitoring program was concomitant with a marked decrease in doctor-shopping indicators. The monitoring was followed-up by requiring high-dose patients to enter into a contract of care which included using a single prescriber and a single pharmacy.

CRITICISMS OF TOO MUCH REGULATION

There are a number of reasonable concerns that can be raised in the context of regulation of medications (World Health Organization, 2011). Chiefly, the concern is of poor treatment in response to clinical need. Amongst patients, there is fear about the possible loss of confidentiality and stigmatisation, as well as increased difficulty in obtaining medications because some doctors are reluctant to prescribe



highly regulated drugs. Patients also worry about the increased cost of extra medical appointments needed to obtain prescriptions that are limited in duration (Berner, 1991; Farnsworth, 1991; Uzych, 1991). There is also concern about medication substitution, where a newly monitored medication shows a decrease in prescribing but other less therapeutically appropriate drugs show an increase in prescribing. Such an effect is alleged to have occurred when benzodiazepines were added to drugs that required triplicate prescription in New York in 1989. Prescriptions for meprobamate, methyprylon, butabarbital, and chloral hydrate increased in New York state whilst decreasing nationally, suggesting that these drugs were being substituted for benzodiazepines. Overdoses related to these alternative medications also increased dramatically, leaving the total number of overdoses unchanged (Hoffman, Wipfler, Maddaloni, & Weisman, 1991).

From other researchers consistent messages do arise about untoward effects of some regulatory approaches. There is evidence of unwanted decreases in prescribing that makes the use of PMPs not without negative consequences that should be considered in the design and the execution of these forms of monitoring. Specifically, the New York state-monitored triplicate prescription program reduced benzodiazepine use among chronically ill patients by more than 45% (Simoni-Wastila, Ross-Dengan, Mah, Gao, Brown, Cosler, Fanning, Gallagher, Salzman, & Soumerai, 2004). A slight rise in substitute drugs was observed, but did not offset the reductions in benzodiazepine use. Nonetheless, subsequent analysis by this same research group made it clear that while the program did reduce the rate of possible abuse, it did also have the potential to limit non-problematic benzodiazepine use (Ross-Degnan, Simoni-Wastila, Brown, Gao, Mah, Cosler, Fanning, Gallagher, Salzman, Shader, Inui, & Soumerai, 2004).

EVIDENCE ON ELECTRONIC MEDICATION DISPENSING RECORDING SYSTEMS (REAL-TIME REPORTING)

There is little research on the impacts of real-time reporting systems, unsurprisingly given the recency of the uptake of these approaches. However, in a related area, one Australian study has reported on the examination of the effect of the linked electronic medication recording system established in Queensland to prevent the diversion of pseudoephedrine (Berbatis, Sunderland, & Dhaliwal, 2009). It was conducted in the context that each jurisdiction in Australia has regulated the supply of pseudoephedrine slightly differently. The researchers examined changes in the number of illegal amphetamine laboratories detected in Queensland following the introduction of this recording system, and found a reduction in seizures. The total number of illegal laboratories detected annually in Australia over the same time period remained relatively stable, and the results suggested a decrease in clandestine laboratory activity as a consequence of the real-time reporting system in Queensland. The authors note, however, that there are other plausible explanations for the reduction in seizures noted in Queensland.

FEATURES OF EXISTING REGULATORY MODELS

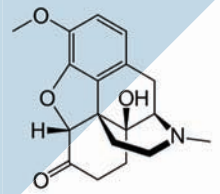
A number of models are currently used to regulate prescription opioids in Australia and overseas (see Table 6 for an overview). Broadly speaking, these models might be characterised along a continuum from highly regulated to low-level regulation. Analysing these systems at the individual level is too complex, and a better approach is to address the major features of such regulatory systems. These are features addressed in turn below.

REACTIVE VS PROACTIVE SYSTEMS

A proactive system generates cases that require attention because there is a risk that the patient will experience an adverse outcome or may be diverting their medication. Reactive systems are those where an investigation is triggered after a problem has already occurred.

DRUGS MONITORED

Systems vary internationally in terms of the medications which are monitored, and the level of monitoring/surveillance that is imposed. For example, some regulators monitor drugs other than S8, and there may be S8 drugs that are more closely monitored than others. The choice is informed to some extent by problematic use in patient or community samples, and this approach can be responsive to changes in the profile of medication misuse over time.



GRACE PERIOD BEFORE AN AUTHORITY IS REQUIRED

A 'grace' period of 60 days, two months, or eight weeks, typically following satisfactory review of appropriate medication and dose for patient's condition, is frequently utilised. Conditions may be applied to the authority, e.g. limited dispensing, or a written opiate contract between patient and prescriber. GPS may request consultant support to ensure the patient's treatment is appropriate.

There may be exemptions to this for notified palliative care patients, patients aged 70 and over, or a person admitted to hospital as an inpatient.

OTHER CIRCUMSTANCES WHERE AN AUTHORITY TO PRESCRIBE IS REQUIRED

An authority process is a central part of the important responsibility of State/Territory government PSB/DDUs to manage for doctors wishing to prescribe S8s and some other medications of concern. The process is assisted by the provision of some critical clinical and behavioural information. Examples of the types of concern that may raise the requirement for an authority to be issued include:

- where the initial daily dose exceeds defined limits;
- where any daily dose exceeds defined limits;
- where a combination of drugs reaches these defined limits this is not clear – take it out?;
- any dose increase of 30% or greater over the previous dose;
- two consecutive dose increases within a two week period;
- where the patient claims that the last prescribed/ dispensed medication was lost or stolen or consumed earlier than intended; and
- where the patient is already being prescribed S8 medications by another practitioner.

INFORMATION CONSIDERED BEFORE AUTHORISING PRESCRIBING

Specific information is relevant to the issuing of an authority to prescribe. These include at least the following factors:

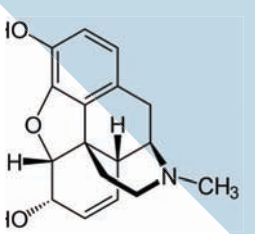
- the patient's age (e.g. 35 years or older);
- any history of substance misuse, prescription shopping;
- a clear diagnosis is provided (and is not migraine, fibromyalgia, or other conditions);
- the drug, formulation and dose is appropriate;
- duration is specified and is appropriate;
- previous treatments and reasons for failure; and
- existence of a pain management plan with treatment goals.

SPECIAL AUTHORISATION REQUIREMENTS FOR PATIENTS WITH DRUG DEPENDENCE

A special authorisation requirement applies in all jurisdictions for cases where the prescription is for a person who has a known history of dependence. In some jurisdictions, the levels of authorisation required are specified, e.g. in SA, level 1 can be considered by DDU staff and specifies a range of conditions which must be met, through to level 4 which is referred to the opioid medical committee for advice and involves, for example, high dose opioids, conflicting specialist medical practitioner opinion, or daily use of injectable opioids not administered via an intrathecal pump.

TYPE AND EXTENT OF MONITORING

A number of regulatory approaches in Australia provide a prescription history of all patients prescribed S8s. Reports are often provided by pharmacies on a monthly basis. Data are matched to the authorisations issued for S8 opiates for greater than 60 days and for the prescription medicines of a registered 'addict'. S8 medicines dispensed can then be matched to authorisations and patients' compliance with the authorisation can be assessed, as can prescriber compliance with legislative requirements.



CONSEQUENCES FOR PRESCRIBING BREACHES

Half a decade ago, Hall and Degenhardt (2007) argued for prescriber regulation, suggesting that identifying liberal/frequent prescribers of S8 medications would be an appropriate starting point to review practice. They asserted that this approach would most likely be more effective and much less costly than a focus on patients, as prescriptions provide a trail that is easier to follow than actual patients. As is conducted in most developed countries, the relevant regulations may allow the withdrawal of a practitioner's rights to prescribe S8 medicines or the imposition of some restrictions on prescribing. Repeated violations may result in having prescribing rights withdrawn for a longer period, or greater restrictions being imposed. For example, in the US, the Drug Enforcement Agency has the legal capacity to remove prescribers' rights to prescribe Schedule II medications. Obviously, this is an approach that would be left to a last resort, but it may be drawn upon under extreme circumstances.

Hall and Degenhardt (2007) assert that it is likely that this approach to professional regulation resulting in the potential loss of entitlement to prescribe these medications is likely to be more effective than some broader judicial process of review of liberal prescribers, but the relative impact of this form of legal sanction is not well-researched or fully understood. Additionally, the extent to which such sanctions may inhibit at least some doctors from engaging in appropriate prescribing is not understood.

RESOURCES: LEVELS AND SKILLS

The issue of resources is an obvious area of concern for regulation. The issue of whether the monitoring agency has the resources to respond to and investigate alerts generated by a proactive system is raised. In smaller jurisdictions such monitoring will be less resource intense than in more populous jurisdictions.

Additionally, monitoring requires a system that is able to draw on additional medical and other expertise to assist in making decisions about authorisations. The resource requirements for providing such a level of relevant expertise needs careful consideration.

REVIEW AND APPEAL SYSTEMS

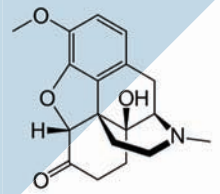
The need for balance in regulation was foreshadowed earlier in this section. Of course, balance is hard to define, and it may prove more helpful to clearly define the goals of policy and of specific interventions and then measure outcomes against those goals. It is the case that doctors and patients may require and benefit from a system whereby prescribers or patients can appeal the decision of the regulatory body. In this case, there is a need for a framework for reviewing the regulator's decisions and practices, and this process is already followed in some jurisdictions.

REAL-TIME REPORTING

It has been argued for a number of years by observers in this field that there is a need for more timely methods of monitoring prescriptions, and as necessary, timely methods of intervening to reduce inappropriate opioid prescribing with the prescribing doctor (Hall & Degenhardt, 2007), and inappropriate dispensing in pharmacies. The systems in place currently generally differ in how prescribing information is delivered to the regulatory body, and how frequently it is inspected. In most instances in Australia, reporting is completed monthly rather than in real time, with the recent exception of Tasmania.

Recently, the Royal Australasian College of Physicians prescription opioid policy (2009) argued for improved information systems and for the consideration of one national, web-based, real-time, confidential system. The policy document also advocated for standardised information systems across States and Territories including all prescriptions (both private and PBS) and provision of that information for intending prescribers and pharmacists in real-time (http://www.racp.edu.au/page/policy-and-advocacy/public-health-and-social-policy).

Real-time access to prescription-dispensing information on opioid and benzodiazepine dispensing would improve the accessibility and the quality of the information available to prescribers and pharmacists concerned about the possibility that a patient is acquiring opioid and benzodiazepine medications from multiple doctors. The use of these systems is feasible, as evidenced by the recent adoption in Tasmania. Real-time reporting of the dispensing of opioid and other



S8 medications using linked electronic medication recording systems have obvious potential to improve knowledge of medication use patterns at the specific patient level, and to monitor medication use at the population level. To date, searches failed to reveal studies in the peer-reviewed literature examining the impact of real-time reporting on S8 prescribing behaviour, dispensing, or associated harms.

PRESCRIPTION DESIGN, DURATION AND RESTRICTIONS

It is also the case that S8 scripts can have reduced time-limits, may require specific information such as precise directions for use or date of birth, or may have other restrictions placed on them such as the interval between dispensing repeats. Some also suggest labelling the prescription foils so that in the case of evident diversion, it would not be difficult to identify the patient for whom the medication was initially prescribed.

ADVERTISING

In Australia, direct advertising to consumers about pharmaceutical treatments is not allowed (Donovan, 1999). However, the role of the pharmaceutical industry and its communications with prescribers needs to be considered and possibly monitored in any system that attempts to regulate the use of these potent medications (as is true for other medications).

US experience has shown that some pharmaceutical industry promotion is less than fulsome in the details of the negative effects of new opioid formulations (Zee, 2009). Zee argues cogently, and provides evidence that industry sponsored conferences, communications, and direct drug-detailing systematically minimise the negative or adverse effects of opioid medications, in an attempt to maximise appeal to prescribers.

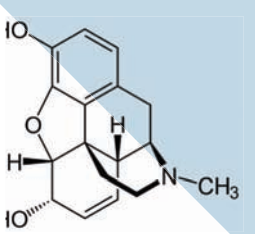
AUSTRALIAN APPROACHES TO REGULATION OF PRESCRIBING

The eight jurisdictions in Australia all use the above-mentioned approaches to regulating prescribed opioids. They all, bar three (NSW, VIC and QLD), require a doctor to obtain an authority to prescribe any S8 opioid beyond two months of initial prescribing; where the patient is opioid or drug dependent, all jurisdictions require doctors to obtain an authority before prescribing any S8 opioid medications. Most jurisdictions have a database which allows them to examine a patient's S8 prescription history and to ensure that the appropriate authorities are in place. Pharmacies provide data on at least a monthly basis, and this is matched against authorities. Tasmania is in the process of introducing real-time reporting from pharmacies, with other jurisdictions likely to follow suit in the near future: QLD has obtained business specifications and has a development quote in hand. Many have statutory and other committees to review the more complex authority applications, whereas more straightforward applications can be approved by a pharmacist within the pharmaceutical services branch or its equivalent. In considering an authority, several factors (described on p. 13) are taken into account.

QLD and VIC require notification from doctors intending to prescribe opioid analgesics for longer than two months. In addition, QLD has extensive monitoring of all prescriptions supplied. All S8 prescribing information from pharmacies is fed into a database electronically or via USB. They then run a series of alerts across the system to identify doctor-shopping, high-risk known patients, and OST patients. This monitoring is conducted once a fortnight or once a month. In NSW, authorities to prescribe are required for S8 drugs for drug-dependent patients. Their pharmaceutical services branch regularly takes action based on reports from pharmacies and others about supply without a prescription and inappropriate prescribing by doctors.

All jurisdictions can place restrictions on dispensing of S8 drugs, such as supervised dosing, or limited doses per script. In addition, they can refuse an authority to prescribe where they believe that the patient's safety is at risk. Where there are minor prescribing breaches, regulatory authorities will contact the prescriber either by telephone and letter and bring this to their attention. Most jurisdictions have the right to limit or withdraw prescribing rights but this is very much a last resort where discussion and education have failed.

In Tasmania, the *Poisons Act* provides the PSB with its authority and framework for regulating the supply of S8 medicines. It defines drug-seeking behaviour as follows:



For the purposes of this Act, a person is taken to exhibit drug-seeking behaviour in respect of a drug of dependence if there is reason to believe that° –

a. He or she is seeking to obtain a drug of dependence for the purpose of selling or supplying it to another person; or

b. He or she is seeking to obtain a drug of dependence for a non-medical purpose; or

c. As a result of the administration to him or her of the drug, he or she exhibits° –

   i. Impaired ability to manage properly the use of any such drug; or

   ii. Behaviour which suggests such impaired ability; or

d. Failure to obtain drugs of dependence for a non-medical purpose is likely to cause the person to exhibit signs of mental or physical distress or disorder.

See **Appendix 1** for a more detailed description of each system.

OTHER STRATEGIES?

ROLE OF ANTI-MISUSE COMPOUNDS AND DELIVERY METHODS

The potential utility of anti-misuse formulations and delivery methods needs attention at the national level. Recently, a combination preparation of slow-release oxycodone and slow-release naloxone (TarginTM) was registered in Europe and also in Australia (for anti-constipation purposes), with a view to discouraging injection. There is, however, evidence that IDUs, have continued to inject opioids formulated with naloxone.

UNIVERSAL PRECAUTIONS

There has been a strong and repeated call for 'universal precautions' (UPs, Table 6) to be used by doctors when prescribing opioids. The term UP became popular in the context of HIV as a method to be adopted to minimise sero-conversion risk (Morbidity and Mortality Weekly Report, 1988). Its application to the area of pain has been popularised over recent years, and the specifics of the approach are reviewed elsewhere. Regulation could require that doctors adopt the UPs for opioid prescribing.

The point of using UPs is that it can be difficult to predict which patients will have problems with opioids (e.g. dose escalation, side effects, dependence). According to the approach set out by Gourlay (Gourlay, Heit, et al., 2005), physicians should take a careful baseline history of substance use on patients where opioids are being considered, asking about current and past use of opioids, alcohol, benzodiazepines, and illicit drugs, as well as about history of previous treatment for substance use problems and about family history. Physicians should routinely use treatment agreements, titrate opioid doses cautiously, and watch for signs of misuse.

However, the cost and effectiveness of this approach has been questioned elsewhere in the context of hepatitis (Hardie, 1992), and remains unknown in the area of opioid prescribing. Nevertheless, some relatively weak evidence does support the effectiveness of opioid treatment agreements and urine testing to reduce opioid misuse by patients with CNMP (Starrels, Becker, et al., 2010), and while the effects are not marked, they do appear to be consistent.

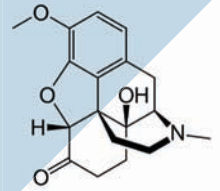


Table 6. The 10 principles of Universal Precautions

1. Diagnosis with appropriate differential
2. Psychological assessment including risk of addictive disorders
3. Informed consent (verbal or written/signed)
4. Treatment agreement (verbal or written/signed)
5. Pre-/post-intervention assessment of pain level and function
6. Appropriate trial of opioid therapy ± adjunctive medication
7. Reassessment of pain score and level of function
8. Regularly assess the '4As' of pain medicine: Analgesia, Activity, Adverse Reactions, and Aberrant Behaviour
9. Periodically review pain and comorbidity diagnoses, including addictive disorders
10. Documentation

Adapted from Gourlay et °al (Gourlay, Heit, et al., 2005). [1].

Some have observed however, that it is not realistic for most doctors to implement UPs, because of marked pressure to improve patient throughput and improve time management (Holliday, 2011). Holliday cites a range of opinions setting out the pressures on GPs especially to ensure a 'quick throughput' of patients, and notes the financial rewards from such quick patient processing. He suggests that the federal government foster the use of UPs through the use of the various payment options to general practice.

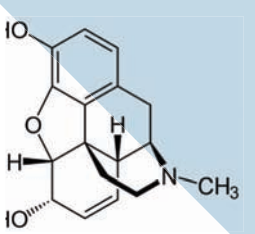
ROLE OF PHARMACISTS

There is a need to draw pharmacists into the role of detecting and reporting unsafe and inappropriate practice in the context of opioid prescribing. Operating in an environment where overall governance is not the role of a single profession, group or agency, pharmacists need to become a part of the review process that alerts monitoring and regulatory agencies to the occurrence of inappropriate prescribing.

A ROLE FOR THE AUSTRALIAN PHARMACEUTICAL BENEFITS SCHEME (PBS)?

There are roles that could be taken on by the central PBS. The PBS subsidy of most of the prescribed opioid medications means it has the potential to implement strategies to regulate prescribers. Recently, Holliday (2011) has suggested that the PBS could: (a) require patients to attend only one prescriber and one pharmacy; (b) require prescribers to sight full identification on the commencement of opioid therapy to deter fraud; (c) require prescribers to periodically assess for aberrant drug-related behaviours and use other UPs, rather than rely on the current once-only second medical authorisation of opioid prescribing after one year of chronic use; and (d) provide subsidies for medications that can replace opioids such as duloxetine (for diabetic peripheral neuropathy and fibromyalgia where there is evidence of efficacy according to the systematic review by the Cochrane Neuromuscular Disease Group) (Lunn, Hughes, & Wiffen, 2009) or pregabalin (for neuropathic pain conditions and fibromyalgia where there is evidence of efficacy according to the systematic review by the Cochrane Pain, Palliative and supportive care group review) (Moore, Straube, et al., 2009).

Unfortunately, the PBS is not a regulatory scheme that can impose QUM approach but it is a scheme that authorises the payment of the cost of a prescription. It is recommended that a change be made in the terminology to have PBS seen as a payment approval instead of authority as distinct from a clinical authorisation. The PBS does not list duloxetine for pain. There are obvious cost implications and need for careful consideration of the feasibility of these suggested approaches, but the role of the PBS needs to be considered in a complete approach to regulation. Of course, the Commonwealth PBS is about payment and restrictions on the PBS does not often allow for prescribing for conditions that have not been listed for payment. The PBS process is costed by the



Pharmaceutical Benefits Advisory Committee (PBAC) for particular indications only and the benefits are often restricted by the PBS and cannot be prescribed as widely as clinically indicated or appropriate. This limitation may impede some of the above mentioned ideas from being achievable.

Finally, consistent with the call by Hall and Degenhardt (2007), the Australian Department of Health could target for review long term and higher dose episodes of opioid prescribing.

CAN THERE BE A SINGLE NATIONAL APPROACH?

The question has been raised by others whether there can be a single effective approach to opioid prescription monitoring and regulation. It seems unlikely that complete harmony can be achieved, except through the co-operation by chief pharmacists and departments of health in an attempt to develop and maintain a standardised national policy on prescription opioids; if achievable this approach would encourage better and more consistent practice. In the face of the national registration of health professionals in 2010, the need for consistency has been noted (Brown, 2010) to remove the inconsistencies among State/Territory laws that regulate the prescription of S8 medications.

OVERALL GOVERNANCE IS A SHARED ACTIVITY

This review started with the observation that the regulation of opioid use is an activity that relates to all parts of the supply chain, from the manufacturers and distributors in the pharmaceutical industry, to professional groups, professionals (prescribers, pharmacists, practice nurses), and agencies that are involved. In an aspirational approach, an overall responsibility for governance needs to be developed and implemented.

CONCLUSIONS

The research on the effects of regulation of prescribed opioids and some other medications is relatively sparse but consistent. Monitoring programs can reduce prescribing overall, and they may reduce inappropriate prescribing of medications, but there is no evidence that they reduce death from drug or opioid overdose. The extent to which they reduce prescriber willingness to prescribe in the context of legitimate use of these medications is unclear, and will likely remain unclear for a decade or more until suitable research has assessed these impacts in the US and elsewhere internationally.

Of course, monitoring programs can focus inappropriately on a legalistic approach rather than on the QUM and other important aspects of good clinical practice to ensure safe prescribing and better health outcomes. The need for the regulatory interface to take on more than a punitive approach, and to engender a sense of overall governance from the industry partners, prescribers, pharmacists, and educators, needs to be facilitated. The approach in Tasmania is not intended to be a punitive or policing approach; rather, it is aimed at providing a clinical-regulatory interface with QUM.

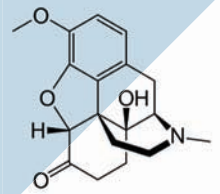


Table 7: Details of regulatory systems in Australia for S8 opioid analgesics for persistent non-cancer pain

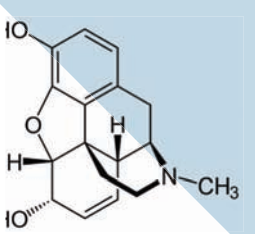
Features	Tasmania	NSW	VIC
System that generates alerts	Yes	No	No
Drug dependent patients (DDP)	Immediate authority required	Immediate authority required	Immediate authority required
Authority needed for other patients	Yes	Yes [a]	Yes
Grace period	2 months for opioids and 4 weeks for alprazolam with an opioid	2 months	8 weeks
Drugs applied to[c]	S8s and Alprazolam with an opioid	hydromorphone, injectables [d]	S8s
Information considered	Clinical indication, risk (e.g. other drugs supplied), dose, route of administration and form, Rx contract in place, may require specialist review, escalating dose	Diagnosis, drug name, strength and form, currently drug dependent	Clinical indication; treatment plan formulated; evidence of specialist review when dose is greatly above recommended guidelines; patient permit and notification (drug dependency, doctor-shopping, forged prescription) history
Legislative power to deal with prescribing breaches [f]	Can remove/restrict S8 prescribing rights	Can remove/restrict S8 prescribing rights	Prosecution policy in place, refer to AHPRA
Skills employed	Pharmacists	Pharmacists	Pharmacists
External expertise	Addiction medicine, pain specialists, GP with interest in addiction and pain	n/a	Public health physician, addiction medicine
Appeals	Can reapply, Informal (CHO, Minister) or health ombudsman		Informal and magistrate's court (S37)
Restrictions on prescriptions	Duration, drug and dose specific. Can specify supervised dosing, restrict to single pharmacy, require specialist review	Valid for maximum 6 months	None but permits specify drug, formulation, maximum dose, permit expiry date. Advice may be included on permit for prescriber to: implement regular pick-up of medicines at 1 pharmacy, refer patient for specialist review
Other details	RTR and DORA used to monitor and provide information to clinicians	Pharmacy and prescriber reports used to monitor prescribing	Wholesale (NDS) data and pharmacy reports used to monitor prescribing

[a] authorities only required for hydromorphone, psychostimulants, flunitrazipam, injectables, but not for morphine or oxycodone.

[b] only notification is required for non-restricted S8s, authority required for restricted S8s. Refer to Note D.

[c] in addition to authority processes for opioids, all jurisdictions have an authority process for psychostimulants.

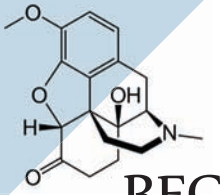
[d] NSW requires an authority for prescribing flunitrazepam for more than two months.



QLD	WA	SA	NT	ACT
Yes	Yes	Yes	Yes	No
Immediate authority required	Immediate authority required	Immediate authority required	Immediate authority required	Immediate authority required
Notification	Yes	Yes	Notification [b]	Yes
n/a	60 days	2 months	60 days	2 months
n/a	S8s	S8s	S8s [e]	S8s
For DPP: history of dependence, genuine medical condition, signs of injecting/ doctor-shopping, urine drug screen	Diagnosis, S8 medicine, dose and form appropriate to patient's condition, age and status (drug dependent, palliative, specialist assessment)	Treatment consistent with accepted principles of treatment of chronic pain. 4 levels of delegation defined. Relevant specialist information. Dependence history. Independent medical advice (provided direct to DDU)	Clinical indication, medicine details, history of dependence, specialist assessment, palliative care status	Patient's age, clear diagnosis for which opioids are indicated, the dose and formulation, evidence of doctor-shopping, stability of dose
	Can remove/restrict S8 prescribing rights	Can serve prohibition order or prosecute	Can remove/restrict S8 prescribing rights	Can refuse authority, refer to medical board, or prosecute
Addiction med, pain, nursing, psychology, all with clinical experience in AOD	Pharmacists, public health doctors	Pharmacists	Pharmacists	Pharmacists
Psychiatry, addiction, pain, pharmacy, general practice	Consultant support	Medical officer, pain, addiction, GP, psychiatrist (paid a sitting fee)	Addiction med, pain, GP, AOD nurse manager, palliative care, indigenous health, rural health, rehab	Statutory advisory committee – 1 psychiatrist, AMA rep + 1 other (usually a GP)
Informal (CHO, Minister) or health ombudsman	Informal and State Arbitration Tribunal	Health and community services complaints commissioner, ombudsman	Nothing formal in the Act, but can write to CHO or minister. New Act will have appeals mechanism	Apply for a review to Medicines Advisory Committee within 7 days
Limit supply (e.g. daily pickup), supervised dosing, random urine screens, review of injecting sites, reducing regimen agreed on with doctor.	Authorities issued and can be conditional on an opioid contract, limited dispensing to single pharmacy, and/or how often medication is picked up	Can specify supervised dosing, restrict to single pharmacy, require specialist review	Limit 1 month supply at a time, not allowing interstate scripts, no other restrictions on unrestricted S8s	Must specify frequency of repeats
Formal enquiry facility for prescribers 24/7 – advice, patient history, referral options			Limit on number of patients to whom doctor can prescribe opioids	Voluntary Undertaking Scheme: links 1 doctor and pharmacy to patient

[e] S8s are divided into restricted (buprenorphine, buprenorphine/ naloxone, methadone and amphetamines) and non-restricted (other S8s, e.g. morphine). S4s may also be declared restricted.

[f] it is important to note that most jurisdictions use these powers as a last resort, with prior steps including telephone calls, letters and interviews with the prescriber. It was also noted that where prescribers are having difficulties with patients using prescription opioids, they often surrender their prescribing rights voluntarily.



RECOMMENDATIONS

Goal 1

To provide for the sustainable development and support of health care practitioner education in pain and opioid management.

OBJECTIVE 1.1

Address broad medical practitioner education needs.

Recommendation 1.1.1

That medical practitioner pain management and opioid prescribing education needs are urgently developed and provided on appropriate platforms.

Recommendation that CME, and under- and postgraduate education includes training in appropriate opioid prescribing. There is an urgent need to develop and implement enhanced continuing medical education in Tasmania, as well as postgraduate and undergraduate training via the hospitals and the University of Tasmania. These should use evidence-based educational strategies and technology to increase appropriate prescribing of S8 opioid medications, alter patient and prescriber expectations about the management of pain, and develop alternative methods for practitioners for assessing, monitoring, and managing pain and associated conditions.

The review identified a dearth of exposure to training of medical practitioners in the appropriate use of opioid medications within a QUM framework via continuing medical education. It also found a lack of training at the undergraduate level, and at the intern and residency stages of training. The training to date relies on the goodwill and time of a small number of individual doctors, but this effort lacks co-ordination, consistency of content, and permanence. Otherwise, most training that qualified medical practitioners receive comes from the pharmaceutical industry via detailing/product information/advertising, which may not cover all of the clinical issues. Therefore, there is a need for a consistent, planned implementation of appropriate training of medical practitioners to ensure better confidence and decision-making. Below, specific recommendations relating to continuing medical education (CME), postgraduate and undergraduate education are set out.

Recommendation 1.1.2

That education development and delivery is resourced in a sustainable manner.

Recommendation to provide proper resourcing for clinicians to deliver this education. Much of the education that is delivered currently is in addition to the clinician's clinical, management and administrative workload. This is unsustainable in the longer term.

Pain medicine and addiction medicine specialists should continue to be engaged in the planning and delivery of all levels of GP education about pain management and opioid prescribing in Tasmania. At the time of writing, pain and addiction medicine specialists were involved in developing online education modules and face to face education sessions for GPs.

OBJECTIVE 1.2

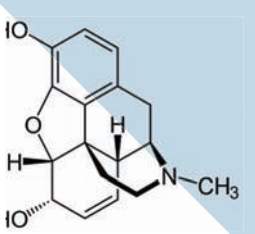
Address continuing medical education needs.

Recommendation 1.2.1

DHHS and community practice clinical patient information and management platforms should encourage best practice through educational resources and decision support.

Recommendation that educational and clinical resources be incorporated into information platforms. It is opportune in Tasmania to incorporate educational materials and resources about S8 opioid analgesics and acute and chronic pain management into information software used for prescribing and managing patients in routine clinical practice. Such information software includes the home page of the Tasmanian DAPIS Online Remote Access (DORA) system and proprietary software used by medical practitioners (e.g. Medical Director™).

Chronic pain is usually incompletely assessed and managed and this incomplete assessment can result in numerous failed treatments (Faculty of Pain Medicine, 2010). During the project's consultation process, key informants identified a number of factors contributing to this incomplete assessment, including:



- significant gaps in prescriber knowledge, especially a lack of a biopsychosocial framework for understanding the problems of patients complaining of problems associated with pain (especially in the case of non-cancer pain);
- a strong desire to cure/relieve pain on the part of the prescriber;
- a lack of consultation services and referral pathways to deal with patients complaining of pain in whom the clinical picture is complex; and
- federal funding structures (e.g., Medicare item fees) that provide disincentives for prolonged patient assessments or reviews.

The Recommendation addresses the first of these four points above, the gap in prescriber knowledge. Specifically, there is a need to make greater use of other treatment strategies to treat patients with chronic pain, with or without opioid analgesics. The use of opioid analgesics as a stand-alone treatment for chronic pain needs to be actively discouraged. Such a change in attitude and practice will require: (a) educating prescribers in clinical reasoning; (b) removing barriers to the use of some non-drug therapies (such as financial cost); and (c) accessibility to alternative methods and treatments to deal with pain. Importantly, some forms of non-proprietary/non-drug therapy, such as activity plans, pacing, and heat therapy, and simple cognitive restructuring are relatively straightforward for GPs to use and for patients to access.

The DORA system will provide valuable information for medical practitioners making decisions about opioid prescribing. The system could be enhanced to provide education to prescribers through the authority application process, e.g. by ensuring that the application process forms part of the doctor's assessment of the patient's suitability for an opioid prescription. The application for authorisation process needs to include key clinical information and an assessment of aberrant behaviours. Strategies to prevent ongoing aberrant behaviours as part of the treatment plan can also specify the frequency of dispensing. Where a dose reduction is required, this can then be described in the treatment plan. The treatment plan should also include the mobilisation strategies, psychological treatment, and management of comorbid conditions (even with patients who are reluctant to engage in these alternatives) mentioned above.

Software templates should be incorporated to assist with assessment, and to create pain agreements or contracts, and specify dose reduction strategies. Doctors can print-out treatment plans and information leaflets (which should include information on the limited effectiveness of opioids in long-term pain reduction, and their potential harms and side-effects). They can get the patient to agree to regular reviews of any medications, and record details of other referrals and treatment strategies. Patients should be told that opioid pharmacotherapy for chronic pain is an ongoing trial; that there is an implied contract in continued treatment with opioids that agreed goals of therapy will be maintained; and that there will be an ongoing review of benefit, risk and harm.

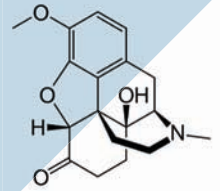
Educational materials such as protocols, guidelines, and treatment agreements for an opioid trial can be integrated into the Tasmanian PSB authority application process via the DORA system. Links should be provided to web-based video vignettes demonstrating scripts for handling difficult patient interactions.

Recommendation 1.2.2

Opioid prescribing feedback should be provided to opioid prescribers through any or all of medical practice, State (PSB), Federal (Medicare PBS) information systems.

Recommendation to provide feedback to prescribers about their rates of prescribing. The provision of ongoing case-based education to medical practitioners with feedback on their own prescribing practices against normative data is required to alter undesirable prescribing practices.

There is evidence that a case-based approach combined with personal prescribing feedback is more effective in changing prescribing than either approach alone. Nevertheless, using only feedback or using only case-based education was still more effective than no education (Herbert et al., 2004). Certification of doctors to prescribe opioids generally should not be mandated. However, recognising the unique risks and the complexity associated with some medications and



formulations, it may not be appropriate for all GPs to prescribe all opioids.

This latter suggestion is especially pertinent to some medications, especially methadone tablets (Physeptone™) which have high risk of overdose, and the more potent and potentially addictive opioid medications such as hydromorphone (Jurnista™ or Dilaudid™), fentanyl (Actiq™ or Durogesic™), and dextromoramide (Palfium™). The same may be the case for new combination pharmacotherapies that may become available (e.g., MoxDuo IR™, which is a combination of morphine and oxycodone).

Prescribers should receive timely information about their prescribing patterns compared to their peers (either via Medicare feedback or Tasmanian DHHS PSB feedback). Such feedback has been shown to motivate further information seeking and change behaviour. Further, prescribers should receive regular (possibly yearly) evidence-based information about the extent of diversion and misuse of opioid analgesics in Tasmania and the harms caused thereby.

Recommendation 1.2.3

Deliver education by the academic detailing of practices as well as medical practitioners.

Recommendation that practice-wide education be available. Where appropriate, the provision of practice-wide education can address prescribing which exceeds the norm within the State.

It may be necessary to work with whole practices that have higher levels of prescribing to improve their prescribing practices within a QUM framework. There is information that some practices may have a lower threshold for the prescribing of opioid medications and that this is not consistent with a QUM approach. Of course, some practices may be prescribing to patients in aged care where a higher level of opioid prescribing may be appropriate, especially for severe cancerous pain.

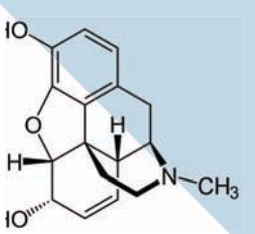
Detailing of doctors should include a full disclosure of evidence of level of benefit associated with opioid treatment, the proportion of patients with chronic non-malignant pain who benefit, as well as the risks associated with the specific medication and formulation when it is used as recommended and when product cautions are not heeded, for example, if the formulation is crushed and injected. Where available, information on numbers needed to treat (NNT) and numbers needed to harm (NNH), should be provided. Detailing of doctors should also provide information on evidence on opioid dose ceilings; opioid induced hyperalgesia; the need for a trial of opioid therapy when other appropriate non-opioid interventions have been trialled and found wanting and only then as one component of a comprehensive biopsychosocial treatment plan; the use of universal precautions including the 5As+2As framework for assessing benefit, risk and harm.

Recommendation 1.2.4

Where unsafe or inappropriate prescribing behaviours are demonstrated, QUM training for opioid prescribing should be required.

Recommendation that QUM training be required for unsafe or inappropriate prescribing. Practitioners who are repeatedly found to be prescribing in an unsafe or inappropriate manner (as defined by the PSB by virtue of breaches of regulations) should receive QUM training. This should also be provided to doctors new to practice in Tasmania as a preventive intervention, because these doctors may be targeted by drug-seeking-patients or they may join practices where the existing prescribing is too liberal or unsafe. To ensure viability of the training, its resourcing needs to be beyond the current informal ad-hoc basis.

A recent US-based study found that many medical practitioners hold misconceptions about the effectiveness of prescribing opioids (Wolfert, Gilson, Dahl, & Cleary, 2010). Although no such studies of Australian medical practitioners were located, there is concern prescribing continues to increase in Australian jurisdictions (just as has occurred in the US), despite evidence of limited effectiveness of COT. This increase in prescribing has occurred in the context of a shortage of pain and addiction medicine specialists. Currently, GPs are managing more complex patients, typically in the absence of easy access to specialist referral and consultation services. It may be that some of the increase in prescribing reflects short-term use in patients who have access to pain medicines that are effective and that control their pain. This latter



possibility is more likely to be the case for moderate to severe acute pain where there is good evidence that opioid analgesics are effective.

A QUM approach includes the following steps (National Strategy for Quality Use of Medicines, 2002, Commonwealth of Australia):

Selecting management options wisely by:

- considering the place of medicines in treating illness and maintaining health; and
- recognising that there may be better ways than medicine to manage many disorders.

Choosing suitable medicines if a medicine is considered necessary so that the best available option is selected by taking into account:

- the individual;
- the clinical condition;
- risks and benefits;
- dosage and length of treatment;
- any co-existing conditions;
- other therapies;
- monitoring considerations; and
- costs for the individual, the community and the health system as a whole.

Using medicines safely and effectively to get the best possible results by:

- monitoring outcomes;
- minimising misuse, over-use and under-use; and
- improving people's ability to solve problems related to medication, such as negative effects or managing multiple medications, noting that course, many patients who are marginalised and who have multiple life problems have a poor capacity for problem solving may use opioids to deal with their life difficulties. Nonetheless, a QUM process is important for all patients.

Consideration also needs to be given to supporting prescribers who feel pressured to provide prescriptions that they know may be misused or are not clinically indicated. This support could include collegiate support and skill development.

Recommendation 1.2.5

New opioid prescribers and particularly those from overseas countries, unfamiliar with Australian systems and practices, should engage in alcohol and drug and pain management, induction and orientation activities.

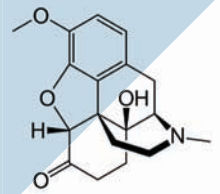
Recommendation to continue alcohol and drug inductions and support for new prescribers. The continued use of alcohol and other drug inductions for doctors who commence practice in Tasmania (when they are recent graduates or from overseas) is necessary to ensure that these inductions are sustainable and available as a resource in the long-term. A QUM framework should be used for these inductions. There is also a need for an increased expert support for these doctors, particularly those who work in rural and regional areas. This support may be best achieved through a mentoring system so that new doctors have the support required to deal with prescribing pressures.

During interviews with key informants, it became apparent that doctors who are new to a practice may be targeted by drug-seeking patients. This was particularly the case in those practicing in rural or regional practices or in a single GP practice. Some key informants reported threats and occasional assaults by patients. It is critical that these doctors are made aware of the pressures to which they might be subjected, and provided with adequate strategies and support to deal with them. Currently, the inductions and support are managed by one or two dedicated individuals in Tasmania. There is a risk that if one or both of these individuals left practice, this support will cease.

Recommendation 1.2.6

Educate opioid prescribers about doctor and patient expectations of opioid therapy and the different management tasks required of a medical practitioner in CNMP.

Recommendation to provide education for opioid prescribers in managing both their own and patient expectations about the extent of pain relief that can be achieved from opioid therapy. Many doctors and patients have not accepted the fact that chronic pain cannot be cured, and that opioid therapy will only provide partial relief and then only in a subgroup of patients. A paradigm



shift in clinical expectation is required at the clinical level along with an understanding of – and an ability to deliver - the management tasks associated with chronic non malignant pain.

New models of chronic disease management indicate a change in the role of the general practitioner from curing disease and illness to assisting patients in managing long-term problems (Zwar, Harris, et al., 2006) (see Section Four). The necessary change in prescriber and patient expectations is unlikely to occur without supporting education and systems changes outlined above. These changes also require information systems that allow for follow-up of patients, and provide better communication between general practice and allied health. There is also a need for the physical infrastructure, space and equipment for other health professionals to assist within the general practice, and to increase patient self-management. There needs to be better integration of pain guidelines into the structure of practice information systems, and better systems for auditing clinical care.

Recommendation 1.2.7

Determine and evaluate the efficacy of educational interventions on opioid prescribers and opioid prescribing in Tasmania.

Recommendation to evaluate the adequacy of the educational approaches. It is necessary (at least initially) to evaluate these education programs and approaches to determine if they have a positive impact on prescribing and pain management practices.

The need for monitoring of change has been addressed above; it is essential to ensure that adequate alteration in practice activity occurs and that this is in a desirable direction. It will be necessary to assess if the changes increase prescriber familiarity with the alternative methods of managing pain and succeed in lowering prescriber expectations about reducing pain.

Objective 1.3

Address postgraduate - prevocational and vocational training – education needs

Recommendation 1.3.1

Review and support medical practitioner PGY 1 and 2 education.

Recommendation to review intern and residency QUM education. Tasmanian hospitals should ensure that they have sound guidelines for pain management and prescribing within a QUM framework, and that they conduct formal education in these guidelines during the internship year and the first year of residency (i.e. postgraduate Year 1 and postgraduate Year 2). This recommendation recognises the critical need for support of good prescribing practices in the early stages of a doctor's postgraduate career.

It was noted repeatedly during the consultations that the intern and residency years are where good or poor approaches to the use of opioid medications may develop. In many cases, the prescription of final post-discharge medications is left to the junior medical staff. Ensuring that junior staff are aware of the approaches and guidelines for S8 opioid prescribing and of risks of inappropriate prescribing is an opportunity that cannot be foregone, especially when opioid prescribing is increasing.

OBJECTIVE 1.4

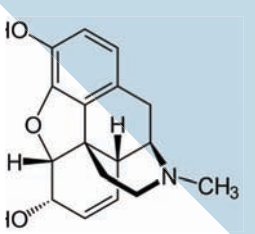
Address undergraduate education needs.

Recommendation 1.4.1

Develop undergraduate education programs that appropriately integrate pain and addiction medicine.

Recommendation to integrate addiction and pain management into undergraduate training. Integrated pain management and addiction medicine modules need to be more fully developed in consultation with pain and addiction medicine specialists, against behavioural learning objectives (Duchastel & Merrill, 1973; Humair & Cornuz, 2003).

The area of pain management in the medical undergraduate education curriculum has been under review in Tasmania. The educational documents of the Australian and New Zealand College of Anaesthetists



(ANZCA) (http://www.anzca.edu.au/fpm/resources/educational-documents) Faculty of Pain Medicine provide a useful template to develop appropriate undergraduate and postgraduate course content.

Undergraduate learning needs to be supported once graduates enter the workforce. As such, recommendations for postgraduate and continuing education need to recognise the role of experienced medical practitioners in training, supervising and mentoring graduates. Again the educational documents of ANZCA Faculty of Pain Medicine provide a useful template to develop appropriate postgraduate course content (http://www.anzca.edu.au/fpm/resources/educational-documents).

OBJECTIVE 1.5

Address the education needs of all multidisciplinary health care provider team members.

Recommendation 1.5.1

In order to provide the essential hospital and community infrastructure to support appropriate pain management, enhanced undergraduate and postgraduate education of all multidisciplinary members of the pain management team is required.

Recommendation to educate all members of the multidisciplinary health care provider team. The development of pain and addiction education modules for psychologists, physiotherapists, occupational therapists, pharmacists, and for registered nurses is required. Integrated postgraduate education with medical practitioners and undergraduate education.

The consultations recognised the role of allied health professionals and the need to increase training in pain management and in addiction issues. This increased penetration into allied health professional education will require liaison with the undergraduate and continuing education institutions to affect the content of the curricula. It was also noted that nursing staff and allied health professionals sometimes influence doctors to prescribe or provide quantities to take home because the patient is disadvantaged in some way, when this is not the safest and most appropriate treatment.

Goal 2

To support appropriate regulatory policy and processes that provide for legislative requirements and drive better clinical practice.

OBJECTIVE 2.1

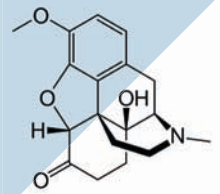
To support the implementation and evaluation of real time prescribing information systems.

Recommendation 2.1.1

That the implementation of real time opioid prescribing and dispensing systems be supported.

Recommendation to recognise the strength of real-time opioid prescribing and dispensing recording and continue its implementation. It is important for stakeholders to recognise and support the strong position attained in Tasmania for the regulation of S8 opioid prescribing and dispensing within a QUM framework. The Tasmanian regulatory approach has been implemented with guidelines developed in consultation with medical groups, resulting in development of the DORA system. This real-time system is superior in timeliness and accuracy to nationally and internationally used paper-based approaches.

The development of the DORA system is a significant achievement, and observers in other jurisdictions see it as an important advance. The ability of the Tasmanian DHHS to achieve a real-time prescribing and dispensing database needs to be fully recognised. As noted in Section Five of this report, all western countries and all Australian jurisdictions have a special regulatory process (usually placed within a health department) for authorising the prescribing/dispensing of S8 medications to oversee appropriate prescribing. These systems recognise the special problems associated with the availability of these medications noted by the Advisory Committee of Medicine Scheduling and the Advisory Committee on Chemical Scheduling in the TGA. This regulatory process can refuse an authority to prescribe, or modify conditions of prescribing.



The special position of these medications and the special need for higher regulation is also recognised in the United Nations (UN) Single Convention on Narcotic Drugs. The Convention in one of its preamble statements notes that "narcotic drugs constitute a serious evil for the individual . . . fraught with social and economic danger". The UN statement signals the concerns that are held internationally about the risks of these medications, a concern also recognised by other international groups (World Health Organization, 2011). This concern is reflected in the increased by monitoring of the huge growth in the prescription of opioid in other developed countries (e.g. the US) over the past decade. Regulation is an important way to ensure the availability of these medications within a QUM framework.

Recommendation 2.1.2

That the DORA system be evaluated against key outcomes of interest to the community.

Recommendation to assess DHHS PSB DORA system impacts. To understand the utility of the DORA system it needs to be evaluated using existing datasets (e.g. examine IDRS price and availability of prescription drugs; hospital admissions and emergency department presentations for opioid overdose and intoxication; changes in the supply of OTC opioids and Schedule 4 analgesics; changes in opioid-related deaths). Prescribers need to be surveyed about its value and whether it has decreased inappropriate prescribing of S8 medicines.

The DORA system will provide valuable information for prescribers and community pharmacists. There is a need to ensure the DORA system is not onerous for prescribers and for pharmacists.

OBJECTIVE 2.2

To support best practice PSB activities and processes that assist its mission.

Recommendation 2.2.1

That in the face of increasing demand, the DHHS PSB be adequately resourced, in order to provide for its legal and community obligations.

Recommendation to review resourcing of the Tasmanian DHHS PSB. There is a need for a review of the resourcing of the Tasmanian PSB because of the ongoing increase in rates of prescribing of opioid medications. This resourcing should also address the need for additional medical advice and support (a common need that also applies to the other PSB units across the country).

The increased prescribing in Tasmania of S8 opioids over the past decade (see Sections One and Three) has put additional demands on the DHHS PSB to authorise prescriptions. Appropriate resourcing is needed to ensure adequate clinical decision-making and appropriate care.

Recommendation 2.2.2

That PSB governance is reviewed in order to optimise service delivery, in the context of DHHS organisation design and integration.

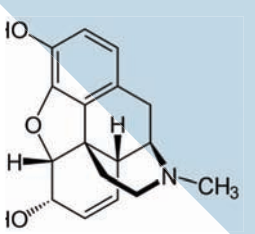
Recommendation to review the governance and relations of the DHHS PSB. Consideration should be given as to where regulatory units such as PSB are located and how they report. In addition, their broad governance needs to be addressed in order that functions can be cohesively combined with areas such as alcohol and drug services. This will allow dove-tailing into other functions that regulatory units undertake such as regulating the manufacturing, distribution, prescribing, possession, and administration of drugs and poisons.

The need for PSB regulation to intersect with addiction medicine was emphasised in the consultations. Whether PSB should relate formally to alcohol and drug services should be considered to ensure efficient and appropriate clinical decision-making.

Recommendation 2.2.3

That PSB ensure procedural fairness by stating a clearly defined role for each decision making tier, with a defined work flow and defined criteria for decision making, review of decision making and feedback to applicants.

Recommendation for a dual-layer process of prescription authorisation within Tasmanian PSB. Clarification is required of the role of the Expert Advisory Panel (EAP) and how it provides advice to the Delegate. It is recommended that the EAP support the function of the authority process within PSB but with a separate role outside the initial regulatory decision (i.e. as an independent body providing



a second level of advice to the Delegate in complex cases, or where an appeal is made about a prior decision). There is a need to maintain an appeals mechanism for initial PSB prescribing authority decisions. This process could be conducted by the EAP separately from the initial decision. This appeals process may be as simple as a structured resubmission with the applying prescriber including further supporting documentation for the request for authorisation.

The Tasmanian PSB staff, other DHHS officers, specialists, and consultants currently spend a large amount of time reviewing the more complex authority applications. The decisions made by either Delegate, following advice from consultants or decisions made by the treating practitioners themselves have, at times, resulted in patient complaints to the Ombudsman. These complaints centre on patients not receiving the medication they believe they require or about structured dosing arrangements. The response to complaints made is often very time-consuming. An alternative appeals mechanism needs to be designed in such a way that it does not add to the existing workload.

Such an appeals mechanism must also consider the need to protect the Tasmanian PSB staff from patients seeking medication contrary to best clinical practice and safety. There is a need to protect the anonymity of PSB staff, given that their decisions affect some who make a living from selling prescribed opioids to IDUs. During the consultation process there were reports of doctors and patients being subjected to standover tactics, threats and (occasionally) assault. At times, doctors who faced with threatening patients tell these patients that the PSB will no longer allow them to prescribe opioids for them. This protects the doctor but can redirect the patient's anger at PSB staff.

It is important to acknowledge the difficulty of the PSB's role. On the one hand, inadequate consideration of the risks associated with any particular case could have adverse consequences for the patient, the prescriber and public health. On the other hand, patients and prescribers who are frustrated at prescribing restrictions intended to protect patients and the community may lodge a complaint with the Health Ombudsman, the Health Care Complaints Commissioner, or with Advocacy Tasmania. Prescribers should have the option to apply to have the Delegate's decision independently reviewed by the EAP to either affirm or to review and alter the initial decision.

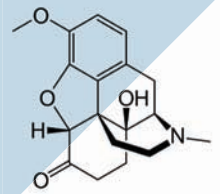
During the consultation process, the concern was expressed that patients lack an opportunity to have their concerns be heard by someone other than their GP. When their relationship with a GP breaks down, the patient may feel that there are no avenues of appeal available to them. However, it is still the case that the decision to prescribe a S8 medication is a clinical one made by the medical practitioner. This is why these medications are placed in these national schedules.

Recommendation 2.2.4

That PSB support best practice procedural fairness through the appropriate communication to opioid prescribers of its decision making processes and decisions.

Recommendation that the criteria used for DHHS PSB authorisation be made available to prescribers. Information needs to be provided to prescribers (and thereafter to patients) about the PSB's decision-making processes and the criteria used in making decisions to authorise, modify or refuse prescribing. This information provision could be achieved through general resources (such a specific patient sheets) and via specific feedback about individual decisions by prescribing authority. Prescribers should also be encouraged to ensure that patients are aware of the clinical prescribing guidelines and why prescribing with these medications need additional regulatory and safety requirements.

Concern was expressed by a number of parties about a perceived lack of transparency in the PSB's decision-making process. The PSB has issued documents which describe the criteria it uses to make decisions regarding authorities. Nevertheless, there were requests for clearer explanations about the processes/criteria and to provide reasons for decisions about prescribing authorities. It may be that access to this information is not easy for GPs. The use of the DORA system by prescribers may provide more ready access to documents, policies and guidelines. Funding for educational features to be provided on the DORA system site could help to address some of these concerns.



Recommendation 2.2.5

That PSB regularly engage with the Tasmanian Ombudsman to ensure ongoing procedural fairness in a conflict prone environment.

Recommendation for an ongoing information exchange between the Tasmanian PSB and the Ombudsman's Office. A local consultation process should be implemented over an 18- to 36-month period (comprising three to five informal meetings) to share information between the PSB and the Ombudsman's Office. This meeting process should continue thereafter as needed.

Currently, the relationship between PSB and the Ombudsman's Office in Tasmania is sometimes difficult, with both parties believing that the other does not understand their requirements and processes. The DHHS PSB has established good relations with a range of other external groups over time, and the Ombudsman's Office is keen to resolve issues. It is in the interests of both organisations to meet regularly to discuss decisions and deal with concerns as they are raised.

OBJECTIVE 2.3

To support the PSB in encouraging optimal clinical practice related to pain management, opioid prescribing and opioid risk and harm assessment and management.

Recommendation 2.3.1

That PSB expand the resources available to patients and opioid prescribers on its website to include those that cover optimal CNMP management and opioid prescribing.

Recommendation for the PSB to include optimal CNMP management Guidelines in electronic, downloadable format on its website. The derivation of such Guidelines to supplement the existing Protocol on the website may be provided for either by the development of an original publication, or, by negotiation with similar authorities interstate for permission to place their publication on the DHHS website, or, to provide a link to that resource. Such Guidelines in conjunction with the Protocol then form a baseline for the Clinical Practice that might reasonably be expected of opioid prescribers applying for an authority to prescribe opioids.

Recommendation 2.3.2

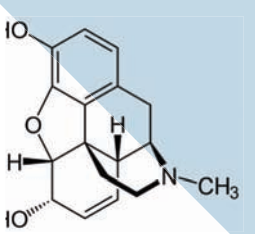
That the Application to Prescribe Opioids and supporting information be revised to include clinical information relevant to an opioid prescriber's decision to prescribe, that assists in PSB decision making at any tier and encourages better pain and opioid prescribing practice.

Recommendation that the Application to Prescribe Opioids and supporting documentation be revised to assist PSB decision making at any tier, but specifically at the EAP, and that it encourages better clinical practice in relation to pain management and opioid prescribing.

The current PSB Application to Prescribe Opioids form both requires very limited information and frequently has very limited information provided by medical practitioners. This affects the ability of decision makers to make informed, optimal decisions. On the other hand, medical practitioners in community practice are very time poor and in a practical sense, looking to minimise their administrative activity and maximise their direct patient clinical activity. Further, despite the best efforts of the PSB, many if not most opioid prescribers and indeed community pharmacists, are not aware of the Poisons Act 1971 definitions of 'drug dependent' and 'drug seeking behaviour' that they are required to attest to on the form.

A form that encourages an appropriate approach to pain management and opioid prescribing has the potential to be a very potent driver of safe and effective practice; however, it must be in a format and mechanism that facilitates efficient completion and delivery.

Therefore, it is suggested that PSB utilise its Medical Advisors to engage with community medical practitioner representatives to devise such a form. This form may include the condition if known, whether the pain is acute or chronic, cancer or non cancer, nociceptive, somatic referred, neuropathic or whether central sensitisation is suspected. A brief statement of function is required. The important elements of diagnosable mental health disorders and key psychological factors, active or passive coping strategies and readiness to change will assist along with key social factors that predict CNMP or challenges in management.



Clearly, a key aim is the assessment and stratification of aberrant opioid use risk utilising key actual or predictive information from the history and the management measures that ensue.

In order to ensure efficiency, it would be optimal for such a form to be stored as a template on the electronic clinical information and management system in the practice. Such a form can be readily populated in seconds from existing information if available. Thereafter, the use of a short questionnaire utilising tick boxes may assist. These questions educate and drive better practice by incorporating wording that very briefly explains why that question is being asked. It is envisaged that information support is provided to the practitioner. For example, if the practitioner is uncertain of what somatic referred pain is or what the definition of drug dependent is, then a click brings up that information front of screen. Finally, secure electronic transmission of such an application to the PSB should be explored.

A formal education and phase in program is envisaged.

Recommendation 2.3.4

That applications to prescribe to PSB be accompanied by a treatment agreement / opioid therapy contract signed by the patient and prescriber.

Recommendation that applications to prescribe opioids are accompanied by an opioid therapy treatment agreement / opioid contract signed by the patient and prescriber. The content of such agreements or contracts should include the goals of treatment, that opioids are being utilised as a trial as part of a comprehensive (biopsychosocial) plan, the short and long term risks and benefits of opioids and the behavioural expectations and boundaries expected of the patient regarding engaging in therapies other than opioids as well as opioids. The reasons for ceasing opioids should be clearly stated.

In recent years the multiple, major, Guidelines and Reviews related to COT in CNMP, have almost without exception, advocated the need for opioid therapy treatment agreements / opioid contracts. While the uptake of such agreements / contracts in clinical practice has been low to date, they are potentially highly effective for providing for informed consent to a therapy, for ensuring that a clear therapeutic agreement or alliance exists and that the goal based and behavioural reasons for the continuation or cessation of therapy are understood.

Recommendation 2.3.5

That prescribers who breach Tasmanian regulations be counselled regarding inappropriate prescriber behaviour.

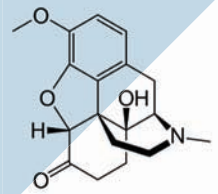
Recommendation that prescribers who continue to breach regulations following counselling from the Tasmanian PSB should be visited by a senior colleague to reinforce the need for prescribing within the constraints of the Poisons Act.

Recommendation 2.3.6

That doctors who wish to prescribe methadone tablets or hydromorphone undertake additional education regarding the safer prescribing of these drugs before being permitted to prescribe them.

This recommendation is made on the grounds that methadone has unique pharmacological properties which make it a particularly difficult drug to prescribe safely: its long half-life, the small difference between a therapeutic and toxic blood level, individual variability in the rate of metabolism, and its interaction with other prescription drugs (Paulozzi, Logan, et al., 2009). Evidence includes a report from the US Government Accounting Office outlining concerns about methadone-related deaths (United States Government Accountability Office, 2009) and other evidence of harms associated with uninformed prescribing (Paulozzi, Budnitz, et al., 2006; Paulozzi, Logan, et al., 2009). Hydromorphone use, although low, has increased rapidly in recent times, and laboratory research suggests reasons for concern regarding its potential for injection and misuse.

Quite reasonably, concerns are likely to be expressed that mandating training as a requirement for opioid prescribing would seriously restrict the number of prescribers who would be prepared or able to prescribe opioids. This needs to be balanced against the risks associated with prescribing in the absence of adequate knowledge and skill. To illustrate this point, although methadone represented less than



5% of opioid prescriptions dispensed in the United States, one third of opioid-related deaths nationwide implicated methadone (Webster, Cochella, et al., 2011). The authors of this paper suggest possible reasons for this include commencing with a methadone dose that is too high, increasing the dose too quickly leading to rapid accumulation and opioid toxicity and relying overly on published equianalgesic dose tables when converting patients from another opioid to methadone. Key informants described cases in which methadone is prescribed on an 'as required' basis for break through pain or in widely varying daily doses, which presents reason for concern since these clinical practices are likely to place the patient at risk of opioid overdose and death. These observations lend support to the comments of Webster et al (2011) who suggest that it is essential that doctors are fully conversant with the pharmacokinetics and pharmacodynamics of methadone before prescribing this opioid medication. The authors also explain why doctors should consider patient factors that may add to the risks. Patients may not always take all of their opioid medications and when converting to methadone, doctors may overestimate the level of opioid tolerance and appropriate starting dose. Methadone has an elimination half-life that is far longer than its analgesic effects. Hence, patients who find their pain re-emerging well before the next dose of methadone is due may self-medicate with additional non-prescribed doses and thus place themselves at risk of opioid overdose. Patients with co-occurring mental health problems may also be tempted to self-medicate with opioid and other depressant drug medication.

OBJECTIVE 2.4

To advance national consistency in legislation and regulation surrounding opioid prescribing.

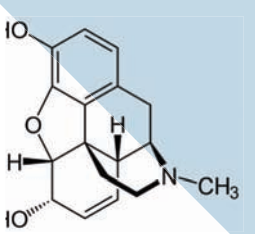
Recommendation 2.4.1

That national opioid prescribing regulations be harmonised to deliver consistency in the care and protection of patients across Australia.

Recommendation that the harmonisation of regulation requirements be undertaken nationally. At the national level, there is a need for a concerted effort from the State/Territory departments of health to harmonise the regulation of S8 drugs across jurisdictions. This process would be best undertaken through the National Co-ordinating Committee on Therapeutic Goods (NCCTG).

There are many features common to the current models of regulation in across the eight States and Territories in Australia. To a large extent in Australia, and certainly in Tasmania, regulation is focussed on health outcomes, QUM and patient safety, not on law enforcement or punishment of patients and prescribers, as is true in some systems in the US which are administered by law enforcement agencies.

One difference between jurisdictions is the degree to which prescribing is monitored beyond the initial two months of prescribing and the type of technology used for this function. One of the reasons for the differences is that monitoring in more populous States requires a significantly larger investment. Working towards greater national consistency will reduce the risks of inconsistencies in practices that may arise from cross-border prescribing. Additionally, the concept of an opioid analgesic ceiling dose for pain remains open. Nevertheless there is utility in defining a dose that should trigger a clinical and safety review. Other triggers for a review might be: prescribing duration, unsanctioned multiple prescribers, and other aberrant behaviours (e.g. injecting, diversion). In jurisdictions where there is no real-time reporting or remote access to the data for prescribers, a "one prescriber and one pharmacy" (with one deputy prescriber) policy would assist where there is aberrant behaviour.



Goal 3

To support appropriate acute pain management and opioid risk management associated with acute care facilities.

OBJECTIVE 3.1

To appropriately manage pre-operative and post-operative patients suffering persistent pain or in transition from acute to CNMP.

Recommendation 3.1.1

That patients in pain, awaiting surgery, be reviewed as appropriate, to manage their pain, maximise function and minimise the risk of transition to chronic pain.

Recommendation that patients in pain awaiting surgery be reviewed as appropriate. This is based on evidence that indicates extended, moderate to severe, pre-operative pain is associated with an increased risk of transition to CNMP.

Patients are frequently prescribed opioids in this group and pain 'is expected'. These patients are currently excluded from the tertiary pain management service. However, patients may suffer refractory pain and or be vulnerable to aberrant opioid use behaviours in this patient subgroup as in any other. Therefore, a system or mechanism is required, that addresses the needs of these patients, within the resourcing constraints of DHHS. Such a system would provide pain management and alcohol and drug management support to those patients in particular need and their medical practitioners in this sub-group.

Recommendation 3.1.2

That patients booked for surgery undergo a pain and drug use directed assessment to facilitate appropriate in patient care.

Recommendation to conduct pre-surgery pain review of patients in preparation for post-operative pain management. Medical staff should conduct a patient pain review prior to surgery and examine the patient's history of pain, mental health, medications, and substance use/misuse. In light of this review, a post-operative pain management plan should be developed, with input from ADS for patients with a history of substance use problems.

Chronic pain can develop after surgery. A review of studies over the past decade of the link between management of post-operative pain and the development of chronic pain problems (Macintyre et al (2010) concluded that "specific early analgesic interventions may reduce the incidence of chronic pain after surgery" (McIntyre, Scott, et al., 2010, p. 10). In addition to the severity of acute pain and physiological factors, psychological risk factors are increasingly recognised as important in the development of chronic pain. Members of the Tasmanian reference group have highlighted the need to view pain within the context of other risk factors for the individual patient.

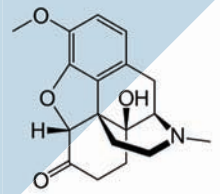
The Acute Postoperative Pain (APOP) Project is an Australian study that aimed to improve the quality of acute postoperative pain management. It identified the need to: begin postoperative pain management in the preoperative period; measure pain regularly; ensure that all postoperative patients receive safe and effective analgesia; monitor for and manage adverse events; and communicate the ongoing pain management plan to patients and primary healthcare providers at discharge (National Prescribing Service, 2010a).

Recommendation 3.1.3

That the establishment of an acute to chronic post operative or post acute care discharge 'transition' pain service be continued and promoted.

Recommendation that the acute to chronic, post operative or post discharge 'transition' pain service be continued and promoted. The Royal Hobart Hospital has initiated a specialist service directed at the management of patients where refractory or difficult to manage pain exists or the patient's clinical pathway demonstrates an aberrant clinical course in acute pain. The intention is to further expand the clinical service to manage patients in the post operative / post discharge phase and this is to be encouraged.

High levels of pre and post operative pain and psychological factors are among key factors that the literature indicates predict a transition from acute pain to post operative CNMP with frequent opioid use. Therefore, early intervention is indicated to reduce



transition rates and or to more effectively facilitate the patient and medical practitioner from an acute care paradigm to a chronic care management paradigm. Early referral to a persistent pain service may be warranted where it is believed the interventions offered have a role in management.

Recommendation 3.1.4

That regular Acute Pain Service (APS) staff in particular - and all acute care staff in general - receive additional training in the recognition, assessment and management of patients with aberrant, drug related behaviours or associated disorders.

Recommendation that key acute care facility clinical staff in particular and acute care clinical staff in general receive enhanced training in the appropriate recognition and management of patients with aberrant use or disorders associated with opioids and other drugs.

Where it exists, the APS medical and nursing staff, or, in other sites anaesthetists with an interest in pain management, provide clinical leadership on acute pain matters. However, these staff will see the minority of patients with acute pain in the hospital setting. Therefore, it is of key importance that all front line clinical staff are trained to recognise and appropriately assess and manage patients about whom they have opioid related use concerns, particularly as patients with pain and thus potentially using opioids are generally associated with over-represention in health care service utilisation.

Recommendation 3.1.5

That acute care facilities develop and implement effective discharge policies for pain management where associated with opioid and/or benzodiazepine prescribing.

Recommendation for better hospital discharge planning where S8 opioids and benzodiazepines are involved. A treatment plan for post-discharge care should be included in patient discharge summaries prepared by the hospital generally and specifically when patients are discharged with S8 opioid medications and benzodiazepines. This treatment plan should specifically state a required date for the review of each medication prescribed in hospital with a clearly detailed plan for the tapering and cessation of this medication. Discharge summaries should be sent to all of the patient's health care providers and a copy provided to the patient.

Longstanding problems with discharge planning and reporting in Tasmania were noted by a number of community and hospital doctors. It is hoped that in the near future, that the development of electronic medical records will assist with this process. However, the continuation of repeat prescriptions of S8 opioids is thought to represent a significant source of inappropriate prescribing in which clinical efficacy may be limited or non-existent. The strength of expert clinical opinion on this issue was marked and consistent, and better discharge planning (and training of prescribers in the community about the utility of ongoing S8 opioid prescribing) is needed.

Recommendation 3.1.6

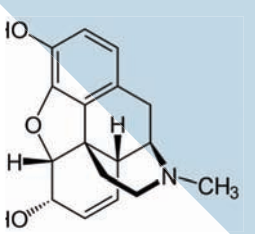
That revised guidelines for the pain management of opioid dependent patients be developed and implemented.

Recommendation to implement pain management guidelines for opioid dependent patients. Implementation of the Royal Hobart Hospital revised protocol for managing severe acute pain in opioid dependence patients is required.

Recommendation 3.1.7

That acute care coding of drug misuse related admissions be standardised and uniformly applied.

Recommendation to improve coding of sequelae from drug misuse. Coding of data in hospitals needs to be improved so that the data recorded on admissions and treatment are better structured, with uniformity in use, and new codes developed for serious sequelae from opioid and other psychoactive drug misuse. Specifically, diseases causing admission or death should be recorded so that accurate and complete data can be extracted. By way of example, the coding of ischemic limb needs to be better identified and coded.



Goal 4

To enhance CNMP management in the community.

OBJECTIVE 4.1

To promote the effective management of CNMP and the appropriate prescribing of opioids.

Recommendation 4.1.1

That optimal clinical practice in opioid prescribing adheres to an approach titled "Triple-5".

Recommendation to specifically promote the use of the 5 Principles, the 5 Parameters and the 5 Tools, enunciated in Section Four as a novel approach to improving clinical practice in pain management and opioid prescribing.

Universal precautions in opioid prescribing have been referred to elsewhere. While these principles have been reinforced in multiple Guidelines associated with opiod therapy in CNMP, there has been relatively little published regarding the translation of these principles to clinical practice. The novel "Triple-5" approach enunciated in this Report is aimed at bridging this gap and providing practitioners with some certainty in an approach to opioid prescribing.

Recommendation 4.1.2

Follow up of patients requires a systematic approach to assessment using the 5 + 2 'A's.

Recommendation to require prescribers to use the 5 + 2 'A's. The additional 2 'A's in follow up consultations reflects the need to assess for Adherence to the treatment program and boundaries which is a marker of the therapeutic alliance. Clearly if there is deliberate non-adherence to a treatment agreement then an effective therapeutic alliance does not exist, which has consequences for the continuation of opioid therapy. The additional need is for accurate, contemporaneous notes. It is recommended that continued prescription of opioid analgesics should only be considered by prescribers after using the 5 + 2 'A's (analgesia, activity, adverse effects, affect, aberrant behaviours, adherence and accurate notes).

Recommendation 4.1.3

That a community medical practice demonstration project be instituted to demonstrate the "Triple-5" and 5 + 2 'A's approaches in practice.

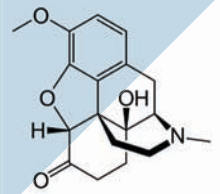
Recommendation to set-up a demonstration project in Tasmania to establish that such patient-based clinical trials can be done by prescribers, and to show how they can be conducted, what 'tools' are available/required, and what impact clinical trials of the efficacy of prescribed opioids have on patient outcomes. The outcomes of such demonstration projects need to be provided to prescribers. This needs to link into the opioid prescribing guidelines and the recommendation of the EAP to the Delegate for the approval of S59E authorities. It is also advocated that the PSB require a series of clinical reviews by the prescriber of the effectiveness of S8 opioid medications against the 5 + 2 'A's, with support through examples of how to assess the 5 + 2 'A's.

Although much has been written about the need to ensure that opioids are used on a trial basis and then reviewed, many prescribers believe that it is difficult to stop a patient's opioid medication once it has been established. This may be due, in part, to not having made clear to the patient that the prescription was a trial, the effectiveness of which was to be reviewed against clearly specified goals: the 5As (analgesia, activity, adverse effects, affect, and aberrant behaviours). The effectiveness of such a management strategy has not been evaluated. We propose a demonstration trial which will achieve two aims: first, to establish whether such a practice has any impact on prescribing practices and patient outcomes, and second, if it is effective, to identify ways in which other prescribers can put the strategy into practice. This same principle of an opioid trial should apply to trialling opioids in chronic conditions when patients are on a surgery waiting list: a trial of opioid analgesics should only be considered once other medications have been excluded (either because of contraindications or inadequate pain relief) and as part of a multimodal treatment plan.

Recommendation 4.1.4

That all initial and continuing trials of opioid therapy be subject to a treatment agreement/ management plan.

Recommendation to make prescribing of opioid analgesics for CNMP contingent on a treatment agreement negotiated between the patient and the prescribing doctor. This agreement needs to specify the duration and conditions of



an opioid trial, describe the role of opioids in the treatment of pain, and clarify the risk of overdose, dose escalation, tolerance, and dependence. An agreement can become a mechanism to trigger the discussion about these risks. This agreement is critical where a patient is putting pressure on the prescriber to prescribe opioid analgesics. This recommendation was strongly supported by clinicians involved in the project, and should be applied to new and pre-existing patients. Before prescribing S8 opioids patients need to be provided with education about the efficacy and the side-effects/risks of these potent pharmaceuticals and receive credible, unbiased and flexibly delivered information about alternative ways of managing chronic pain.

Recommendation 4.1.5

The prescribing of opioids, where patients are prescribed benzodiazepines and or are ingesting alcohol in excess of national guidelines, is to be actively discouraged.

Recommendation to discourage co-prescribing of opioids and benzodiazepines and to discourage prescribing of opioids where there is current alcohol abuse.

There appear to be few benefits if any to long-term benzodiazepine prescribing for chronic pain or for any of its common comorbid conditions. The combination of these two drugs is a significant contributor to overdose deaths amongst IDUs and chronic pain patients. If the prescribing of both of these drugs is indicated, the patient must be made aware of the serious risk of adverse events; the importance of complying with the medication regimen; and advised not to use any other CNS depressants (especially alcohol).

Recommendation 4.1.6

That treatment pathways be developed and promoted for the management of patients with CNMP.

Recommendation to establish treatment pathways for chronic pain patients. Establish multimodal treatment pathways for chronic pain and integrate these as part of existing information and referral systems. Within these best practice pathways, identify strategies for managing patients for whom non-opioid analgesics (e.g. NSAIDS) are contraindicated.

There is a need to make greater use of other treatment strategies in patients with chronic pain, with or without opioid analgesics. The use of opioid analgesics as a stand-alone treatment for chronic pain should be actively discouraged. Such a change in attitude and practice will require removal of barriers to using non-drug therapies, primarily cost and accessibility. Nonetheless, some forms of non-drug therapy, such as activity plans, pacing, and heat therapy, are relatively straightforward for prescribers to manage and for patients to access.

Goal 5

To support medical practitioners managing patients with pain and drug related disorders.

OBJECTIVE 5.1

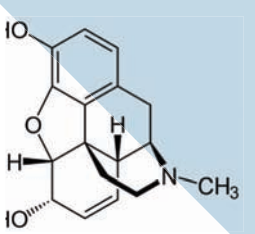
To provide appropriately available access to liaison services and tertiary referral units.

Recommendation 5.1.1

Provide a needs based range of specialist liaison support services in pain and addiction medicine for opioid prescribers.

Recommendation to provide access to specialist advice for prescribers. It is required to provide a full range of support and consultation services along a continuum that includes written materials (guidelines and protocols), general telephone information services such as the ADS, and case-based consultation with pain and addiction medicine specialists at regular weekly times. Additionally, there is a need to educate GPs about the availability and use of these services.

Currently, case-based consultations are provided by specialists who do this work in addition to their regular workload. If this is to be sustained over the longer term, such services need to be separately funded. It is necessary to identify and disseminate information about a range of local pain and addiction services for primary health care professionals working with chronic pain patients. A model for such a system is available from Queensland. Additionally, there is a need to identify opportunities to expand the alcohol and drug specialist advice telephone consultation line to include pain management with opioids.



Recommendation 5.1.2

Further develop referral pathways for pain and addiction medicine review in Tasmania.

Recommendation to develop referral pathways for pain and addiction management. The establishment and dissemination of clearer and more extensive referral pathways for chronic pain management and addiction management is needed. This referral pathways development could involve exploring opportunities to incorporate such information into medical management software systems such as Medical DirectorTM and other software programs.

It was noted by some participants in the consultation process that there is benefit in expanding group-based programs conducted by the Royal Hobart Hospital Pain Service to reduce demand for specialist pain services (cite study of STEPS, Davies, 2011). It is important to reduce obstacles to accessing effective pain management services. Easier access to group programs or other pain services is likely to result in better outcomes. As such, the lengthy referral document for the specialist pain clinic in Hobart could be reviewed and made briefer. This could allow patients to be triaged to interventions of varying intensity (e.g. group program, more extensive assessment, a physical activity program).

OBJECTIVE 5.2

Support the development of level one or community based multidisciplinary health care networks that support optimal CNMP management.

Recommendation 5.2.1

Support the key role of community physiotherapy, clinical psychology, psychiatry, social work and other potential members of the multidisciplinary pain management team, through the facilitation of education and training that assists them to deliver services.

Recommendation to facilitate ongoing education and training of all current and potential members of the multidisciplinary health care team. This may be through attachment to key services, and or, the utilisation of regular, multidisciplinary education sessions open to community multidisciplinary patient care service providers.

Recommendation 5.2.2

Develop and maintain a multidisciplinary register of health care professionals with expertise in pain management.

Recommendation to develop a register of health professionals skilled in pain management. It is recommended to establish a register of psychologists, physiotherapists and other health professionals with skills in managing chronic pain and to incorporate the register into either software systems or a database held by professional bodies or a central agency.

Recommendation 5.2.3

That the development of local, community, multidisciplinary pain management care teams is actively promoted to opioid prescribers and actively facilitated by DHHS and health care representative organisations.

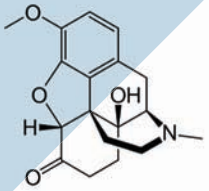
Recommendation that the facilitation and development of local, community, multidisciplinary pain management teams is essential to promote the best practice in the clinical pain management care.

The facilitation of multidisciplinary care for chronic disease is promoted through Medicare Chronic Disease Management item numbers and Case Conferencing item numbers. However, the experience of Clinicians in Pain Management is that Statewide, many practices / practitioners have not organised themselves into local multidisciplinary care units for the active management of CNMP. It is suggested that a role exists for a Medicare Local to actively facilitate and organise such groups and to support their activities as appropriate. Initial leadership by DHHS may be required to initiate and support this activity as a key Project and or to support applications for funding from the DHAC.

Recommendation 5.2.4

That DHHS continue to actively facilitate and support the engagement and integration of tertiary and community, multidisciplinary, pain management related services.

Recommendation that the individuals and services actively engaged in facilitating the integration of community and tertiary multidisciplinary services be supported by DHHS to the fullest extent possible, in order to promote seamless and effective, pain management, patient care.



Goal 6

To improve support for patients with co-morbid pain and opioid use disorders.

OBJECTIVE 6.1

To improve the identification and management of patients with co-morbid pain and opioid use disorders.

Recommendation 6.1.1

Determine specific methods to identify patients with co-morbid pain and opioid use disorders and appropriate management and referral pathway protocols.

Recommendation to develop methods to identify opioid dependent pain patients. It is recommended to develop and adopt protocols for the identification and management of pharmaceutical opioid dependence amongst chronic pain patients.

There is a need to have prescribers able to access various tools for the identification and the assessment of S8 opioid dependence and aberrant drug-seeking behaviours in pain patients. There are numerous instruments available from the US and there is a national effort to develop specific Australian measures that are brief and useful in medical practice. There are a range of instruments that could be adopted and used in Tasmania.

Recommendation 6.1.2

Improve statewide access to opioid substitution therapy (OST) programs.

Recommendation to increase access to OST for those with opioid dependence. At a State level, this will require an increase in OST treatment places and the availability of prescribers and dosing points in rural and regional areas. Alternative delivery pathways should be considered for those who develop opioid dependence through the use of opioid analgesics for chronic pain. At a national level, it is important to greatly reduce or to eliminate dispensing fees for OST and include payment to pharmacies for supervised dosing of other opioids in the Commonwealth supervised dosing payment scheme.

Entry into OST is limited by a number of factors, including treatment system capacity and shortage of prescribers and dispensing sites. These limitations need attention in Tasmania (and elsewhere in Australia). Additionally, there is a perverse financial incentive for opioid dependent patients to use opioid analgesics rather than engage in OST. Specifically, the cost of 'OST' via prescribed opioids for 'pain' is less than the cost of dispensing of methadone syrup or buprenorphine (Subutex™ or Suboxone™). It seems likely that the much higher rate of opioid prescribing in Tasmania compared to other Australian jurisdictions indicates that there is a de facto opioid maintenance program using physeptone tablets and other opioids in Tasmania. Given patients receiving medications on the PBS are at a greater financial advantage compared to those receiving OST. Clinical decisions should be based on good clinical grounds not on financial disincentives; equity of access to treatment should be paramount. It is important that the Australian Government PBAC recognise these perverse financial incentives (that encourage patients who should be in OST to be 'maintained' on opioid pain medications in order to escape the additional financial costs of OST. The Tasmanian DHHS should inform the AGDH&A Minister of this problem and request a solution.

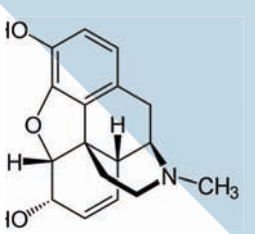
This problem is also likely to be exacerbated by the lack of prescribers and dosing points in the north and north-west of Tasmania. Prescribing on authority is higher in these two regions than in the south of the State. This may be due in part to poorer access to OST in those regions.

Recommendation 6.1.3

Recommendation that Gas Chromatography Mass Spectrometry (GC/MS) services be available to GP Pain and Addiction care services in Tasmania.

Recommendation that GC/MS services be made available for patient care by pain and addiction medicine services in Tasmania.

The screening of urine for drugs of abuse is advocated for patients prescribed opioids or where it is considered. This assists in the detection of undisclosed drugs and diversion and assists in documenting adherence to an agreed treatment plan.



Urine is preferred as a biologic sample for testing given the window of detection is longer than serum for most drugs, and, collection is less invasive. While urine immunoassay testing is available, it has serious shortcomings.

First, opiate immunoassays designed to detect morphine and codeine do not reliably detect semi-synthetic (oxycodone, hydromorphone, buprenorphine) or synthetic (pethidine, propoxyphene, fentanyl series, methadone) opioids – even at high concentrations. Second, there is a significant risk of false positive results due to cross reactivity.

Given the medical, legal and potentially economic ramifications that may ensue from testing, it is critical that more reliable, effective testing be undertaken. An alternative, reliable, cost effective, standard test is gas chromatography/mass spectrometry (GC/MS). While this technology is available for forensic testing purposes in Tasmania, it is not available for clinical testing purposes and samples must be sent to Melbourne, which causes unhelpful delays and increased costs.

Therefore, ready and local access by all doctors who prescribe opioids, including GPs, Pain and Addiction Specialists, to such a service in a State reference laboratory, represents an urgent need as both an element of good patient care and a form of institutional risk management against legal claims that may arise from reliance on screens with known, significant, false positive and false negative rates.

Goal 7

Promote and support the role of non-opioid prescriber members of the multidisciplinary pain management team.

OBJECTIVE 7.1

To identify additional, potential members of a multidisciplinary pain management health care team who may contribute to the effective management of pain or opioids.

OBJECTIVE 7.2

To enhance the role of existing public and private sector, non opioid prescribing, health care provider, groups, and individuals that are already identified as key members of the multidisciplinary pain management team, in health care institutional settings and the community.

Recommendation 7.2.1

That the implementation team engage with public and private sector, non opioid prescribing, multidisciplinary pain management, health care provider professional groups and individuals in Tasmania, with the intent of seeking their active assistance in further developing and centralising their role in persistent non malignant pain management in particular.

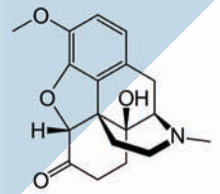
Rationale:
The original intent of this Opioid Review has been to focus on opioid prescribing related data and health care providers in pain management who are opioid prescribers. Nonetheless, the role of non opioid prescribing, pain management related, health care providers, such as for example physiotherapists and psychologists is widely recognised in the scientific literature and in practice as being central to effective chronic non cancer pain management and this is highlighted in this Report.

Therefore, in the context of this Review and the Report, it is recommended that this centrality be developed further. Specifically, that such Tasmanian groups and individuals are recognised and engaged as key stakeholders, who are asked to develop and make recommendations on how such providers may more effectively engage with - and contribute to – efficient and effective, chronic non cancer pain management, across the State.

Recommendation 7.2.2

Engage and develop professional pharmacists as part of a community multidisciplinary pain management health care team.

Recommendation to engage pharmacists via the Pharmaceutical Society of Australia, the Society of Hospital Pharmacist of Australia, and the Pharmacy



Guild of Australia (PGA). It is important to engage the PGA and the Tasmanian Pharmacy Society in identifying ways to increase the role of pharmacists in S8 medication management because pharmacists have an important role in education about medications, monitoring medication use and ensuring patient safety. As a part of this effort it will be important to provide pharmacists with education about triggers for concern in patients receiving repeat opioid prescriptions (dose, dispensing frequency, multiple suppliers, use with benzodiazepines, intoxication, aberrant behaviours) and options for response to such concerns (e.g. provide a limited supply, a medication review within a QUM framework, call the PSB, call the GP, referral). Such activities may be funded by Medicare through the use of the Domiciliary Medication Management Review item numbers.

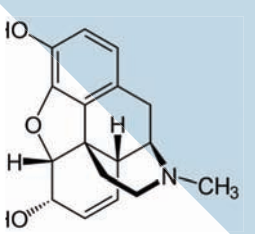
The Tasmanian PSB DORA system provides a unique opportunity to improve the treatment system involving S8 opioids in Tasmania. Pharmacists have a key role to play. The Tasmanian DHHS should ensure that pharmacy reviews include discussions between pharmacist, prescriber and other medical staff. A pharmacy review of medications should be part of best practice pathway. It is recognised that this requirement would require Commonwealth funding.

Many pharmacists in Australia already play an important role in reducing harms to illicit opioid users by dispensing OST and injecting equipment (Sproule, 2011). They also play a key role in educating patients about their medications. A universal precautions approach, which assumes that all patients need to be assessed for risk, should be adopted. There is some evidence that pharmacists may use a patient's general appearance or frequency of purchase to assess their risk of drug misuse (Nielsen, Cameron, et al., 2010). This may mean that those who are well dressed or more affluent may miss out on critical information and interventions. Moreover, those who are suspected of misusing prescription opioids may not receive adequate pain treatment. Sproule (2011) comments on the importance of not classifying patients into either 'legitimate patients' or 'abusers', but recognises that most people fall somewhere between the two extremes.

Pharmacists in Tasmania will be able to view a patient's S8 opioid prescribing history, once the DORA system is online. This raises the question as to what steps a pharmacist might take if they are concerned about filling a prescription because of the patient's S8 history. It is likely that in many cases DORA will make the pharmacist more confident about providing the medication because he or she knows what other S8 medications the patient is receiving. When a concern arises, a number of barriers to addressing the concern will need to be addressed. Many pharmacies do not have private space in which to discuss these concerns with the patient. Current reimbursement structures do not encourage pharmacists to spend significant amounts of time with individual patients. Pharmacists may also provide these medications after hours when the prescriber is not able to be contacted.

If there is a concern with issuing a prescription, pharmacists need to have other options besides providing the full prescription, such as providing a limited supply of the drug, an option that is available to pharmacists in Tasmania. Finally, and most importantly, pharmacists' skills and comfort in dealing with patients with substance use problems is likely to be highly variable because this has not been a strong focus in pharmacy undergraduate training programs.

Although some patients will be given information about the medication by their doctor, many patients would benefit from hearing this information more than once. This could include information on the role of opioids in pain management; the risks of dependence and overdose; side effects; dosing regimen; and the potential interactions with other drugs including alcohol and other CNS depressants. With their regular patients, pharmacists might ask whether the pain condition is still present, whether the prescribed dose is still providing pain relief, whether the medication is helping with day-to-day activities of living, and about any side effects. Pharmacists also need to consider what steps to take if they notice that a patient's dose is escalating, if they are also purchasing OTC medications or needles and syringes, or they use more than one prescriber (Nielsen, Lintzeris, et al., 2010).



Goal 8

To engage the pharmaceutical industry in effective pain and opioid management and risk evaluation and mitigation strategies.

OBJECTIVE 8.1

That the pharmaceutical industry supports effective and appropriate CNMP management in all aspects of its interface with patients and health care providers.

Recommendation 8.1.1

That the pharmaceutical industry, in all opioid related interactions with patients and health care providers, is required to advise of the risks and benefits of its products.

Recommendation that the pharmaceutical industry is required to advise of the risks, such as short and long term adverse effects which would include addiction. Benefits would need to be quantified, including the evidence of benefit for chronic opioid therapy in CNMP. The industry would be required to advise of the biopsychosocial nature of pain and the variance of pain and disability associated with psychosocial factors and the need for a comprehensive, multidisciplinary approach for the management of pain, for which opioids may or may not be one component.

The pharmaceutical industry engages with patients and health care providers through Medical Advisory Contact lines, via electronic means such as websites and hardcopy means such as product promotional and doctor and patient education materials. It is actively involved in opioid prescriber detailing as a key component of marketing strategies. Further, the industry supports health care provider education events. If accurate and appropriate information is consistently presented across the industry in relation to CNMP and its appropriate management, it is believed that would significantly drive optimal CNMP management practices by health care providers and assist patients in clearly understanding the relative benefits of CNMP therapies.

This strategy should require pharmaceutical industry representatives to give consistent information at any education event group or individual where opioid analgesics are mentioned. Such standardised information should include issues such as opioid treatment drop-out rates, side-effects, and the typical likely percentage pain reduction achieved for those patients who remain on COT when compared to placebo as well as information on the numbers needed to treat, as identified by longer-term clinical trials or meta-analytic studies (see Section Four for an overview of the literature).

Recommendation 8.1.2

That Medicines Australia initiate, develop and implement an industry wide Code of Conduct in relation to CNMP and opioids.

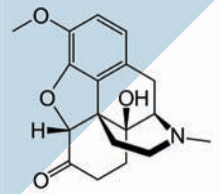
Recommendation that Medicines Australia initiate, develop and implement an industry wide Code of Conduct that supports appropriate pre-marketing, marketing and post marketing practices. This includes: the development of new drugs and formulations which are more effective and less likely to facilitate aberrant use and in the presence of such abuse, not have potential to cause serious harm; marketing practices that ensure all relevant information relating to risks, benefits and optimal clinical practice related to the product is advised to all contacts, including patients and health care providers, and, that the industry actively engages in managing the post marketing negative externalities of opioid related products.

It is envisaged that such a Code of Conduct would be developed by appropriately qualified representatives of the Faculty of Pain Medicine (ANZCA) and the Chapter of Addiction Medicine (RACP), in conjunction with industry representatives.

Recommendation 8.1.3

That Medicines Australia in conjunction with key stakeholders - such as the FPM ANZCA and the AChAM - develop a pharmaceutical industry risk evaluation and mitigation strategy related to the use of opioid medications.

Recommendation to lobby Medicines Australia to develop a pharmaceutical industry-wide risk evaluation and mitigation strategy, particularly in relation to controlled release medications.



The US Food and Drug Administration (FDA) Amendments Act of 2007 allowed the FDA to require a Risk Evaluation and Mitigation Strategy from pharmaceutical manufacturers. A REMS is aimed at ensuring the benefits of a pharmaceutical are understood and that the patient, doctor and community risks associated with such products are reduced. Significant concerns have been expressed at all levels of Government in the US regarding the relative risks and benefits of opioid therapy, especially related to Controlled Release medications for CNMP. The FDA web site contains much information on REMS as a tool for patient and community safety. In November 2011 an agreed draft Blueprint for CR Opioid Prescriber Continuing Education Program was released for comment.

OBJECTIVE 8.2

To promote the development and delivery of independent pain management and opioid related education for health care providers.

Recommendation 8.2.1

That State and National authorities in Australia invest in the sustainable development and delivery of pain and opioid prescribing health care provider education.

Recommendation to balance the information from the pharmaceutical industry. Consideration should be given to reviewing and regulating the framework for pharmaceutical industry detailing of doctors and ensuring that balanced information about the poor efficacy of opioid prescribing in the longer term is provided to prescribers and to patients. Additionally, as set out earlier, Tasmanian State and other national authorities should invest in opioid prescribing and pain management education to ensure that this training is delivered by unbiased, disinterested sources. Currently, pharmaceutical companies are a major source of education on these topics.

There has been public criticism of health professionals for relying on pharmaceutical companies to undertake educational roles that would better be done by independent bodies. During the consultation process, doctors expressed a desire for training to be delivered by credible, authoritative, and unbiased educators. The National Prescribing Service (NPS) does provide such education, as do the Divisions of General Practice. The NPS produces a large amount of educational material. While it is difficult for government to compete with the marketing resources of the pharmaceutical industry, there is a need to ensure that independent education is readily available, flexible and accessible.

OBJECTIVE 8.3

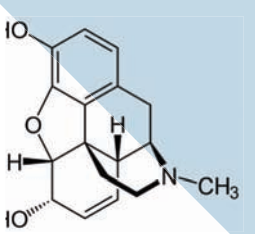
That new products are thoroughly assessed for post marketing related patient and community risk, prior to marketing approval.

Recommendation 8.3.1

That new opioids and or their formulations be assessed for their abuse potential and associated risk.

Recommendation to require assessment of the abuse potential of new opioids. While only possible at a national or international level, there is a need that new and existing opioid medications have an abuse/risk liability assessment undertaken (preferably prior to marketing approval to be introduced onto the market). This assessment is particularly important for potent opioids, and for innovative formulations and combination products. Post-market surveillance should also be done to ensure that their use and prescribing is not outside the approved indications.

The introduction of new slow release and combination opioid pharmacotherapies, and the promotion of older potent opioid medications with short half-lives and high potency, increase the potential for dependence compared to other formulations (e.g. codeine). Doctors should have access to information on the relative abuse potential and addictive potential of all of these medications. The task should be assigned to relevant research institutions in Australia.



Goal 9

The removal of structural impediments to effective clinical pain management and opioid risk and harm management practices.

OBJECTIVE 9.1

That primary care health care providers as the foremost prescribers of opioids, especially in CNMP, are supported in their efforts to deliver effective, best practice.

Recommendation 9.1.1

That the Medicare CMBS recognise the patient centred and economic importance of effective CNMP management and that of opioid risk and harm management.

Recommendation to recognise and address the Commonwealth Medical Benefits Schedule (CMBS) structures that discourage effective management of chronic pain. There is a need for the Australian Government to recognise and address the fact that the current Medicare CMBS items do not effectively support treatment for chronic disorders, specifically funding for adequate assessment and treatment in chronic conditions (especially complex conditions such as chronic pain). Therefore, there is a related specific need to review current funding structures for assessment and treatment of chronic pain in general practice and lobby for an increase in the Medicare rebate for long consultations.

The structure of Medicare rebates is not conducive to the longer consultations required to manage chronic pain patients in whom repeat consultations can cost a lot more in the long term. Chronic pain could be better managed in Tasmania and throughout Australia, so it makes economic and public health sense to deal more effectively with the chronic pain problem before it becomes clinically entrenched and financially and personally more costly for governments and patients.

There is a Medicare fee for longer consultations but better remuneration is needed for these consultations to encourage their use for more complex patients. Furthermore, pain patients may be referred to a psychologist under the Better Access to Mental Health Care scheme for comorbid mood or anxiety disorders but they cannot be referred for chronic pain. Given evidence that maladaptive thinking styles and fear-avoidance behaviours play a key role in chronic pain, it is recommended that chronic pain be included as a condition for which patients can be referred under the Medicare Better Access to Mental Health Care scheme.

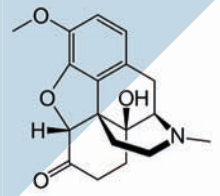
Recommendation 9.1.2

That the Medicare CMBS effectively support the role of addiction medicine in opioid associated risk and harm management in Australia.

Recommendation to formally and monetarily recognise addiction specialists. The Australian Government should work with the Royal Australasian College of Physicians (RACP) to review the funding structures for addiction medicine specialists in recognition of the importance of their role.

The review team heard that the Medicare item numbers that have been proposed by the Commonwealth government for the specialist practice of Addiction Medicine are substantially less than a vocationally registered GP would be paid for similar clinical interventions, rendering a career as a specialist in Addiction Medicine unattractive and unviable for the purposes of operating a private medical practice.

In addition, at present there is no financial support for this role in private practice. This is one contributory cause of the lack of OST providers in parts of Tasmania.



Goal 10

To promote more effective national opioid related regulation practice in Australia.

OBJECTIVE 10.1

That the Federal Government and Commonwealth of Australia Agencies formally acknowledge and actively engage in activities which promote effective pain management and opioid risk management.

Recommendation 10.1.1

That the FPM ANZCA submission to the PBAC be supported at Agency and Ministerial level.

Recommendation for the Tasmanian DHHS to provide support for the submission to the PBAC by the Faculty of Pain Medicine.

This submission makes recommendations regarding a requirement for more regular patient reviews in order to continue receiving subsidised prescriptions, and for reviews triggered by ceiling doses. The submission also recommends that subsidies should be provided on the condition that the prescriber has conducted a thorough assessment, that there has been an adequate trial of other therapies, that there is a treatment agreement or contract in place, and that there is real-time monitoring.

Recommendation 10.1.2

That the granting of a PBS related financial subsidy for an opioid medication is subject to the granting of a PSB authority to prescribe.

Recommendation to increase co-ordination between the Tasmanian DHHS PSB and the Australian Government PBS and to consider that any PBS payment should depend on jurisdictional authority to prescribe. This incorporates a recommendation to increase awareness at the Commonwealth level and in the jurisdictions (including Tasmania) that funding of a prescription through the Australian Government PBS is not an authority to prescribe under jurisdictional regulations. The PBS "authority" is an authorisation for financial subsidy.

The PBS provides an authority to subsidise the financial cost of medicines rather than an authority to prescribe a medication. The role of the PBS is to ensure that the appropriate benefits are paid for services rendered. Although all submissions to the PBS for new listings must include a section on QUM, the PBS currently has limited policy levers to monitor compliance with QUM or to act to change poor practice.

Goal 11

To promote and ensure public and patient awareness of the risks and benefits of - and the rights and responsibilities of – patients engaging in opioid therapy in pain management.

OBJECTIVE 11.1

To accurately educate the public and therefore patients about pain management and opioid related risks and benefits.

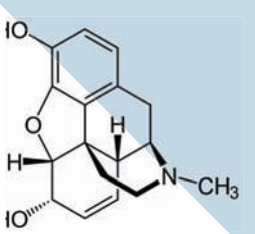
Recommendation 11.1.1

That all patients are properly informed about the risks and benefits of opioid therapy and their rights and responsibilities in opioid therapy and then properly consent.

All patients must read, or have read to them or their guardian, an opioid contract containing the consent information as above and the baseline behavioural responsibilities expected of a patient on opioid therapy.

That opioid contract should be read and signed by the patient and witnessed by the prescriber, on each occasion that the opioid prescriber makes application for continued opioid prescribing under the Poisons Act of Tasmania, 1971 section 59.

The individual patient has a human right to effective pain management, which may or may not include opioid therapy, depending on an individual's circumstances.



The individual patient has a legal right that requires informed consent. Such consent requires knowledge of risks, benefits and any alternatives. Quantification or probability of the risks and benefits is a component required.

Along with patient rights also comes responsibility. The patient has a responsibility to engage in a therapeutic alliance, including adherence to boundaries and therapy. Once the treatment goals have been identified and a comprehensive treatment plan agreed upon by both the patient and the treating doctor, treatment adherence is a foundation stone for a true therapeutic alliance.

Recommendation 11.1.2

That a public information campaign aimed at reducing opioid harms be developed and delivered, after considering the potential that an ill-designed campaign may produce no benefit and at worse may result in increased community awareness and drug-seeking behaviour.

Recommendation to carefully evaluate the likely costs and benefits before embarking on a public information campaign aimed at reducing the harms associated with prescription opioids. A campaign with the wrong focus may not only be ineffective, but may actually increase harms, given evidence of an association between news media reporting of opioid misuse and opioid-related mortality in the US (Dasgupta, Mandl, et al., 2009). Thus, if such a campaign is considered, a more appropriate focus may be to encourage individuals who are experiencing chronic pain to use other forms of pain management. Further, such a campaign is likely to be expensive and thus would need to be evaluated to ensure it represents a good investment. It would need to have clearly stated objectives with integrated strategies aimed at achieving those objectives.

Recommendation 11.1.3

Pain Management and Alcohol and Drug Services staff actively seek to engage with media services in order to ensure that accurate knowledge is available to journalists as well as readily available liaison contacts in pain and addiction medicine.

The print and electronic media has significant influence on attitudes and beliefs in the population. It is therefore very important that accurate messages related to pain management and opioid therapy are facilitated and encouraged.

Goal 12

To implement, monitor and evaluate the Recommendations.

OBJECTIVE 12.1

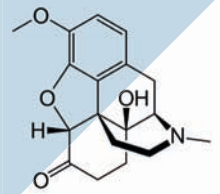
To describe the processes required for implementation, monitoring and evaluation of the Report Recommendations against the required outcomes.

Recommendation 12.1.1

Form an implementation leadership group with a clearly defined governance structure and processes.

Recommendation that a leadership group be formed that will meet regularly for a three-to five-year period to oversee the implementation of the recommendations set-out below. Leadership and monitoring will be necessary to ensure a 'fit' between the Recommendations and the local situation, and to adjust implementation to any changes that may occur in local circumstances over the implementation period. The leadership group should comprise members from the Project Steering Committee and the Project Reference Group, as well as drawing on partner/stakeholders relevant to the particular area of activity.

Most Recommendations are intended for local implementation but some are more relevant nationally (for example, recommendations about the Pharmaceutical Benefits Scheme and Medicare). Additionally, the Recommendations are designed to allow the implementers to accommodate the needs of various stakeholders, and to take into account the financial and the human resources constraints. Some Recommendations will be immediately implementable, while others will require significant planning and co-



ordinated effort over a lengthy period of time to ensure their satisfactory implementation.

Recommendation 12.1.2

Undertake monitoring and evaluation of progress and outcomes.

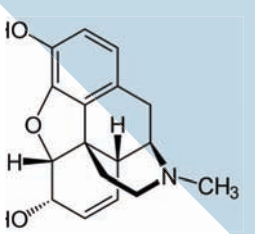
Recommendation that monitoring and evaluation of outcomes will be necessary in all situations. It is essential that the monitoring of the implementation process be carried out diligently and for a significant period in order to check on changes in both systems and in prescriber activity. Monitoring should include:

- routine collection and annual analysis of quantitative data regarding rates of opioid prescribing compared with rates elsewhere in Australia;
- annual assessment of the rates of misuse/diversion of opioids and benzodiazepines;
- annual documentation of death rates and other harms associated with prescribed opioids;
- surveys of medical practitioners about their use of prescribed opioids in the management of patients, and about the use and acceptance of guidelines in the management of pain, within a quality use of medicines framework.

Recommendation 12.1.3

Formulate a strategic action plan.

Recommendation that a stakeholder specific action plan be devised with timelines for implementation, monitoring and evaluation. The action plan should be focussed on achieving such outcomes as are determined by the Leadership Group.



REFERENCES

Aboltins, C. A., Daffy, J. R., & Allen, P. (2005). Fungal endophthalmitis in intravenous drug users injecting buprenorphine contaminated with oral *Candida* species. *MJA, 182*(8), 427.

Alho, H., Sinclair, D., Vuori, E., & Holopainen, A. (2007). Abuse liability of buprenorphine-naloxone tablets in untreated IV drug users. *Drug and Alcohol Dependence, 88*(1), 75-78.

Amato, L., Davoli, M., Perucci, C. A., Ferri, M., Faggiano, F., & Mattick, R. P. (2005). An overview of systematic reviews of the effectiveness of opiate maintenance therapies: available evidence to inform clinical practice and research. *Journal of Substance Abuse Treatment, 28*, 321-329.

American Academy of Pain Medicine and American Pain Soceity (1997). The use of opioids for the treatment of chronic pain: a consensus statement from the American Academy of Pain Medicine and the American Pain Society. Retrieved from http://www.painmed.org/productpub/statements/pdfs/opioids.pdf

American Academy of Pain Medicine and American Pain Society (1997). The use of opioids for the treatment of chronic pain: a consensus statement from the American Academy of Pain Medicine and the American Pain Society. Retrieved from http://www.painmed.org/productpub/statements/pdfs/opioids.pdf

American Society of Anesthesiologists Task Force on Chronic Pain Management, & American Society of Regional Anesthesia and Pain Medicine Practice guidelines for chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology, 112*(4), 810-833.

Australian Institute of Health and Welfare (2008). *2007 National Drug Strategy Household Survey. State and territory supplement.* Canberra: Australian Institute of Health and Welfare.

Baca, C., & Grant, K. (2007). Mortality from opioid analgesics must not be ignored.[comment]. *Pain, 128*(3), 288; author reply 288-289.

Backmund, M., Meyer, K., Henkel, C., Soyka, M., Reimer, J., & Schatz, C. (2005). Co-consumption of benzodiazepines in heroin users, methadone-substituted and codeine substituted patients. *Journal of Addictive Diseases, 24*(4), 17-29.

Baehren, D. F., Marco, C. A., Droz, D. E., Sinha, S., Callan, M., & Akpunonu, B. S. (2010). A statewide prescription monitoring program affects emergency department prescribing behaviors. *Annals of Emergency Medicine, 56*(1), 19-23.

Ball, A. L., Rana, S., & Dehne, K. L. (1998). HIV prevention among injecting drug users: Responses in developing and transitional countries. *Public Health Reports, 113*(1), 170-181.

Ballantyne, J. C. (2006). Opioids for chronic pain: taking stock. *Pain, 125*, 3-4.

Ballantyne, J. C. (2007). Regulation of opioid prescribing. *British Medical Journal, 334*(7598), 811-812.

Ballantyne, J. C., & LaForge, K. S. (2007). Opioid dependence and addiction during opioid treatment of chronic pain. *Pain, 129*(3), 235-255.

Ballantyne, J. C., & Shin, N. S. (2008). Efficacy of opioids for chronic pain: A review of the evidence. *Clinical Journal of Pain, 24*(6), 460-478.

Becker, W. C., Sullivan, L. E., Tetrault, J. M., Desai, R. A., & Fiellin, D. A. (2008). Non-medical use, abuse and dependence on prescription opioids among U.S. adults: psychiatric, medical and substance use correlates. *Drug & Alcohol Dependence, 94*(1-3), 38-47.

Berbatis, C. G., Sunderland, V. B., & Dhaliwal, S. S. (2009). Linked electronic medication systems in community pharmacies for preventing pseudoephedrine diversion: A review of international practice and analysis of results in Australia. *Drug & Alcohol Review, 28*(6), 586-591.

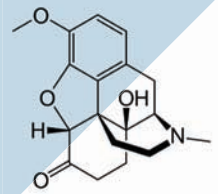
Berg, K. M., Arnsten, J. H., Sacajiu, G., & Karasz, A. (2009). Providers' experiences treating chronic pain among opioid-dependent drug users. *Journal of General Internal Medicine, 24*(4), 482-488.

Berner, R. (1991). The patient's perspective. *New York State Journal of Medicine, 91*(11, suppl), 37s-39s.

Berson, A., Gervais, A., Cazals, D., Boyer, N., Durand, F., Bernuau, J., Marcellin, P., Degott, C., Valla, D., & Pessayre, D. (2001). Hepatitis after intravenous buprenorphine misuse in heroin addicts. *Journal of Hepatology, 34*(2), 346-350.

Beubler, E., Jaksch, W., Devulder, J., Le Poloin, B., Bo Honsen, O., Meynadier, J., Muller-Schwefe, G., Zenz, M., Mac Sullivan, R., O'Brien, T., Eisenberg, E., Mercodante, S., Ventafriddo, V., Varrossi, G., Vielvoye-Kerkmeer, A., Zylicz, B., Breivik, H., Krajnik, M., Lopez, J. C., Puig, M., Rhodin, A., Borgeat, A., Collett, B., Hanna, M., Hunt, T., & Simpson, K. (2006). The white paper on opioids and pain: A pan-European challenge: The European white paper on the use of opioids in chronic pain management. *Journal of Pain & Palliative Care Pharmacotherapy, 20*(3), 79-87.

Blanchon, T., Boissonnas, A., Vareseon, I., & Vidal-Trecan, G. (2003). Homelessness and high-dosage buprenorphine misuse. *Substance Use & Misuse, 38429-442*.



Bleich, A., Gelkopf, M., Schmidt, V., Hayward, R., Bodner, G., & Adelson, M. (1999). Correlates of benzodiazepine abuse in methadone maintenance treatment. A 1 year prospective study in an Israeli clinic. *Addiction, 94*(10), 1533-1540.

Bleich, A., Gelkopf, M., Weizman, T., & Adelson, M. (2002). Benzodiazepine abuse in a methadone maintenance treatment clinic in Israel: characteristics and a pharmacotherapeutic approach. *Israel Journal of Psychiatry & Related Sciences, 39*(2), 104-112.

Bloodworth, D. (2005). Issues in opioid management. *American Journal of Physical Medicine & Rehabilitation, 84*(3 Suppl), S42-55.

Blyth, F. M., March, L. M., Brnabic, A. J., Jorm, L. R., Williamson, M., & Cousins, M. J. (2001). Chronic pain in Australia: a prevalence study. *Pain, 89*(2-3), 127-134.

Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *JAMA, 288*(14), 1775-1779.

Bohnert, A. S. B., Valenstein, M., Bair, M. J., Ganoczy, D., McCarthy, J. F., Ilgen, M. A., & Blow, F. C. (2011). Association between opioid prescribing patterns and opioid overdose-related deaths. *Journal of the American Medical Association, 305*, 1315-1321.

Boscarino, J. A., Rukstalis, M. R., Hoffman, S. N., Han, J. J., Erlich, P. M., Ross, S., Gerhard, G. S., & Stewart, W. F. (2011). Prevalence of Prescription Opioid-Use Disorder Among Chronic Pain Patients: Comparison of the DSM-5 vs. DSM-4 Diagnostic Criteria. *Journal of Addictive Diseases, 30*, 185-194.

Boyd, J., Randell, T., Luurila, H., & Kuisma, M. (2003). Serious overdoses involving buprenorphine in Helsinki. *Acta Anaesthesiologica Scandinavica, 47*(8), 1031-1033.

BPAC (2011). Oxycodone use still increasing. *Best Practice Journal NZ*, from http://www.bpac.org.nz/magazine/2011/june/oxycodone.asp

Braden, J. B., Russo, J., Fan, M. Y., Edlund, M. J., Martin, B. C., DeVries, A., & Sullivan, M. D. (2010). Emergency department visits among recipients of chronic opioid therapy. *Archives of Internal Medicine, 170*(16), 1425-1432.

Bramness, J. G., & Kornor, H. Benzodiazepine prescription for patients in opioid maintenance treatment in Norway. *Drug and Alcohol Dependence, In Press, Corrected Proof*.

Brands, B., Blake, J., Sproule, B., Gourlay, D., & Busto, U. (2004). Prescription opioid abuse in patients presenting for methadone maintenance treatment. *Drug & Alcohol Dependence, 73*(2), 199-207.

Brennan, M. J., & Stanos, S. (2010). Strategies to optimize pain management with opioids while minimizing risk of abuse. *Pm & R, 2*(6), 544-558.

Brookoff, D. (1993). Abuse potential of various opioid medications. *J Gen Int Med, 8*, 688-690.

Brown, C. M. (2010). National registration of health professionals: Could it presage national regulation of Schedule 8 medicines. *Medical Journal of Australia, 193*(1), 59.

Bruno, R. (2004). *Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime: An examination of illicit prescription drug markets in Tasmania. NDLERF Monograph No. 19*. Tasmania: National Drug Law Enforcement Research Fund.

Buckeridge, D., Huang, A., Hanley, J., Kelome, A., Reidel, K., Verma, A., Winslade, N., & Tamblyn, R. (2010). Risk of injury associated with opioid use in older adults. *Journal of the American Geriatrics Society, 58*(9), 1664-1670.

Burns, J. M., Martyres, R. F., Clode, D., & Boldero, J. M. (2004). Overdose in young people using heroin: associations with mental health, prescription drug use and personal circumstances. *Medical Journal of Australia, 181*(7 Suppl), S25-28.

Butler, S. F., Fernandez, K. C., Chang, A., Benoit, C., Morey, L. C., Black, R., & Katz, N. (2009). Measuring attractiveness for abuse of prescription opioids. *Pain Medicine, 11*(1), 67-80.

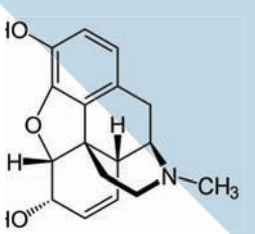
Caplehorn, J. R., & Drummer, O. H. (1999). Mortality associated with New South Wales methadone programs in 1994: lives lost and saved.[see comment]. *Medical Journal of Australia, 170*(3), 104-109.

Carrieri, M. P., Amass, L., Lucas, G. M., Vlahov, D., Wodak, A., & Woody, G. E. (2006). Buprenorphine use: the international experience. *Clinical Infectious Diseases, 43*(4), S197-S215.

Cassoux, N., Bodaghi, B., Lehoang, P., & Edel, Y. (2002). Presumed ocular candidiasis in drug misusers after intravenous use of oral high dose buprenorphine (Subutex) (Vol. 86, pp. 940-941).

Cazorla, C., Grenier de Cardenal, D., Schuhmacher, H., Thomas, L., Wack, A., May, T., & Rabaud, C. (2005). [Infectious complications and misuse of high-dose buprenorphine]. *Presse Medicale, 34*(10), 719-724.

Centers for Disease Control Prevention (2008). Adult use of prescription opioid pain medications - Utah, 2008. *MMWR - Morbidity & Mortality Weekly Report, 59*(6), 153-157.



Centers for Disease Control Prevention (2009). Overdose deaths involving prescription opioids among Medicaid enrollees - Washington, 2004-2007. *MMWR - Morbidity & Mortality Weekly Report, 58*(42), 1171-1175.

Chandok, N., & Watt, K. D. Pain management in the cirrhotic patient: the clinical challenge. *Mayo Clinic Proceedings, 85*(5), 451-458.

Chartier, M. J., Walker, J. R., & Naimark, B. (2007). Childhood abuse, adult health, and health care utilization: results from a representative community sample. *American Journal of Epidemiology, 165*, 1031-1038.

Cherny, N. I., Baselga, J., de Conno, F., & Radbruch, L. (2010). Formulary availability and regulatory barriers to accessibility of opioids for cancer pain in Europe: a report from the ESMO/EAPC Opioid Policy Initiative. *Annals of Oncology, 21*(3), 615-626.

Chiang, C. N., & Hawks, R. L. (2003). Pharmacokinetics of the combination tablet of buprenorphine and naloxone. *Drug and Alcohol Dependence, 70*(2, Supplement 1), S39-S47.

Cho, C. S., Calello, D. P., & Osterhoudt, K. C. (2006). Exploratory Buprenorphine Ingestion in an Infant. *Annals of Emergency Medicine, 48*(1), 109-109.

Chou, R. (2009). 2009 Clinical Guidelines from the American Pain Society and the American Academy of Pain Medicine on the use of chronic opioid therapy in chronic noncancer pain: what are the key messages for clinical practice? *Polskie Archiwum Medycyny Wewnetrznej, 119*(7-8), 469-477.

Chou, R., Fanciullo, G. J., Fine, P. G., Miaskowski, C., Passik, S. D., & Portenoy, R. K. (2009). Opioids for chronic noncancer pain: prediction and identification of aberrant drug-related behaviors: a review of the evidence for an American Pain Society and American Academy of Pain Medicine clinical practice guideline. *Journal of Pain, 10*(2), 131-146.

Clark, N. C., Lintzeris, N., & Muhleisen, P. (2002). Severe opiate withdrawal in a heroin user precipitated by a massive buprenorphine dose. *Medical Journal of Australia, 176*, 167-168.

Coben, J. H., Davis, S. M., Furbee, P. M., Sikora, R. D., Tillotson, R. D., & Bossarte, R. M. (2010). Hospitalizations for poisoning by prescription opioids, sedatives, and tranquilizers. *American Journal of Preventive Medicine, 38*(5), 517-524.

Cohen, M. L., & Wodak, A. D. (2010). The judicious use of opioids in managing chronic noncancer pain. *Medicine Today, 11*, 10-18.

Comer, S. D., & Collins, E. D. (2002). Self-Administration of intravenous buprenorphine and the buprenorphine/naloxone combination by recently detoxified heroin abusers. *J Pharmacol Exp Ther, 303*(2), 695-703.

Compton, W. M., Thomas, Y. F., Conway, K. P., & Colliver, J. D. (2005). Developments in the epidemiology of drug use and drug use disorders. *American Journal of Psychiatry, 162*(8), 1494-1502.

Compton, W. M., & Volkow, N. D. (2006). Major increases in opioid analgesic abuse in the United States: Concerns and strategies. *Drug and Alcohol Dependence, 81*(2), 103-107.

Cone, E. J., Fant, R. V., Rohay, J. M., Caplan, Y. H., Ballina, M., Reder, R. F., & Haddox, J. D. (2004). Oxycodone Involvement in Drug Abuse Deaths. II. Evidence for Toxic Multiple Drug-Drug Interactions. *Journal of Analytical Toxicology, 28*(4), 217-225.

Cone, E. J., Fant, R. V., Rohay, J. M., Caplan, Y. H., Ballina, M., Reder, R. F., Spyker, D., & Haddox, J. D. (2003). Oxycodone Involvement in Drug Abuse Deaths: A DAWN-Based Classification Scheme Applied to an Oxycodone Postmortem Database Containing Over 1000 Cases. *Journal of Analytical Toxicology, 27*(2), 57-67(11).

Cope, D. (2003). States cautioned when developing prescription monitoring programs. *Clinical Journal of Oncology Nursing, 7*, 19.

Cousins, M. J. (2007). Persistent pain: A disease entity. *Journal of Pain and Symptom Management, 33*, S4-S10.

Culberson, J. W., & Ziska, M. (2008). Prescription drug misuse/abuse in the elderly. *Geriatrics, 63*(9), 22-31.

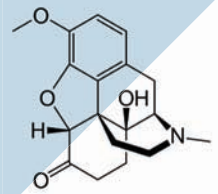
Dangerous Drugs Board (2005). *A pilot study on nalbuphine hydroschloride abuse in Cebu and metro Manila.* Manila: Dangerous Drugs Board of the Phillippines.

Daniulaityte, R., Carlson, R. G., & Kenne, D. R. (2006). Initiation to pharmaceutical opioids and patterns of misuse: Preliminary qualitative findings obtained by the Ohio Substance Abuse Monitoring Network. *Journal of Drug Issues, 36*(4), 787-808.

Darke, S. (2011). Oxycodone poisoning: not just the 'usual suspects'. *Addiction, 106*(6), 1035-1036.

Darke, S., Duflou, J., & Torok, M. (2011). Toxicology and characteristics of fatal oxycodone cases in New South Wales, Australia 1999-2008. *Journal of Forensic Science, 56*, 690-693.

Darke, S., Hall, W., Ross, M., & Wodak, A. (1992). Benzodiazepine use and HIV risk-taking behaviour among injecting drug users. *Drug and Alcohol Dependence, 31*(1), 31-36.



Darke, S., Ross, J., & Hall, W. (1995). *The injection of methadone syrup in Sydney, Australia.* No. Technical Report No. 23, Sydney: National Drug and Alcohol Research Centre, University of New South Wales.

Darke, S., Ross, J., & Hall, W. (1996a). Overdose among heroin users in Sydney, Australia: I. Prevalence and correlates of non-fatal overdose. *Addiction, 91*(3), 405-411.

Darke, S., Ross, J., & Hall, W. (1996b). Prevalence and correlates of the injection of methadone syrup in Sydney, Australia. *Drug and Alcohol Dependence, 43*, 191-198.

Darke, S., Sims, J., McDonald, S., & Wickes, W. (2000). Cognitive impairment among methadone maintenance patients. *Addiction, 95*(5), 687-695.

Darke, S., Topp, L., & Ross, J. (2002). The injection of methadone and benzodiazepines among Sydney injecting drug users 1996-2000: 5-year monitoring of trends from the Illicit Drug Reporting System. *Drug and Alcohol Review, 21*(1), 27 - 32.

Dasgupta, N., Kramer, E. D., Zalman, M. A., Carino, S., Jr., Smith, M. Y., Haddox, J. D., & Wright, C. (2006). Association between non-medical and prescriptive usage of opioids. *Drug & Alcohol Dependence, 82*(2), 135-142.

Dasgupta, N., Mandl, K. D., & Brownstein, J. S. (2009). Breaking the news or fueling the epidemic? Temporal association between news media report volume and opioid-related mortality. *PLoS Medicine / Public Library of Science, 4*(11), doi:10.1371/journal.pone.0007758.

Davis, M., Varga, J., Dickerson, D., Walsh, D., LeGrand, S., & Lagman, R. (2003). Normal-release and controlled-release oxycodone: pharmacokinetics, pharmacodynamics, and controversy. *Supportive Care in Cancer, 11*(2), 84-92.

Day, C., Conroy, E., Lowe, J., Page, J., & Dolan, K. (2006). Patterns of drug use and associated harms among rural injecting drug users: comparisons with metropolitan injecting drug users. *Australian Journal of Rural Health, 14*(3), 120-125.

De Wet, C., Reed, L., Glasper, A., Moran, P., Bearn, J., & Gossop, M. (2004). Benzodiazepine co-dependence exacerbates the opiate withdrawal syndrome. *Drug & Alcohol Dependence, 76*(1), 31-35.

Degenhardt, L., Larance, B., Mathers, B., Azim, T., Kamarulzaman, A., Mattick, R. P., Panda, S., Toufik, A., Tyndall, M., Wiessing, L., Wodak, A., & use, o. b. o. t. R. G. t. t. U. N. o. H. a. i. d. (2008). *Benefits and risks of pharmaceutical opioids: Essential treatment and diverted medication. A global review of availability, extra-medical use, injection and the association with HIV.* Sydney: University of New South Wales.

Degenhardt, L., Larance, B., Mathers, B., Azim, T., Kamarulzaman, A., Mattick, R. P., Panda, S., Toufik, A., Tyndall, M., Wiessing, L., & Wodak, A. D. (2009). *Benefits and risks of pharmaceutical opioids: Essential treatment and diverted medication. A global review of availability, extra-medical use, injection and the association with HIV.* Sydney: National Drug and Alcohol Research Centre.

Department of Veterans Affairs (2003). *Clinical practice guideline for the management of opioid therapy for chronic pain.* Rockville.

Dhalla, I. A., Mamdani, M. M., Sivilotti, M. L., Kopp, A., Qureshi, O., & Juurlink, D. N. (2009). Prescribing of opioid analgesics and related mortality before and after the introduction of long-acting oxycodone. *CMAJ Canadian Medical Association Journal, 181*(12), 891-896.

Ding, C., Cicuttini, F., Parameswaran, V., Burgess, J., Quinn, S., & Jones, G. (2009). Serum levels of vitamin D, sunlight exposure, and knee cartilage loss in older adults: The Tasmanian older adult cohort study. *Arthritis & Rheumatism, 60*, 1381-1389.

Dominick, K. L., Bosworth, H. B., Dudley, T. K., Waters, S. J., Campbell, L. C., & Keefe, F. J. (2004). Patterns of opioid analgesic prescription among patients with osteoarthritis. *Journal of Pain & Palliative Care Pharmacotherapy, 18*(1), 31-46.

Donovan, J. (1999). Advertising pharmaceuticals to Australians. *Australian Prescriber, 22*, 74-75.

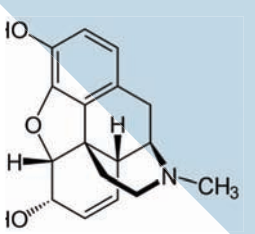
Dorner, T. E., Muckenhuber, J., Stronegger, W. J., Rasky, E., Gustorff, B., & Freidl, W. (2011). The impact of socioeconomic status on pain and the perception of disability due to pain. *European Journal of Pain, 15*, 103-109.

Drugs and Crime Prevention Committee (2006). *Inquiry into the misuse/abuse of benzodiazepines and other forms of pharmaceutical drugs in Victoria. Interim Report.* Melbourne: DCPC, Parliament of Victoria.

Duchastel, P. C., & Merrill, P. F. (1973). The effects of behavioral objectives on learning: A review of empirical studies. *Review of Educational Research, 43*(1), 53-69.

Dunn, K. M., Saunders, K. W., Rutter, C. M., Banta-Green, C. J., Merrill, J. O., Sullivan, M. D., Weisner, C. M., Silverberg, M. J., Campbell, C. I., Psaty, B. M., & Von Korff, M. (2010). Opioid prescriptions for chronic pain and overdose: a cohort study. *Annals of Internal Medicine, 152*(2), 85-92.

Dworkin, R. H., O'Connor, A. B., Audette, J., Baron, R., Gourlay, G. K., Haanpaa, M. L., Kent, J. L., Krane, E. J., Lebel, A. A., Levy, R. M., Mackey, S. C., Mayer, J., Miaskowski, C., Raja, S. N., Rice, A. S., Schmader, K. E., Stacey, B., Stanos, S., Treede, R. D., Turk, D. C., Walco, G. A., & Wells, C. D. (2010). Recommendations for the pharmacological management of neuropathic pain: an overview and literature update. *Mayo Clinic Proceedings, 85*(3 Suppl), S3-14.



Eccleston, C., Williams, A. C., & Morley, S. (2009). Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database of Systematic Reviews*(2), CD007407.

Edlund, M. J., Martin, B. C., Devries, A., Fan, M. Y., Braden, J. B., & Sullivan, M. D. (2010). Trends in use of opioids for chronic noncancer pain among individuals with mental health and substance use disorders: the TROUP study. *Clinical Journal of Pain, 26*(1), 1-8.

Edlund, M. J., Steffick, D., Hudson, T., Harris, K. M., & Sullivan, M. (2007). Risk factors for clinically recognized opioid abuse and dependence among veterans using opioids for chronic non-cancer pain. *Pain, 129*(3), 355-362.

Edlund, M. J., Sullivan, M., Steffick, D., Harris, K. M., & Wells, K. B. (2007). Do users of regularly prescribed opioids have higher rates of substance use problems than nonusers? *Pain Medicine, 8*(8), 647-656.

Eisenberg, E., McNicol, E., & Carr, D. B. (2006). Opioids for neuropathic pain. *Cochrane Database of Systematic Reviews, 3*, CD006146.

Elkader, A. S., B. (2005). Buprenorphine: clinical pharmacokinetics in the treatment of opioid dependence. *Clinical Pharmacokinetics, 44*(7), 661-680.

EMCDDA (2006). *2006 REITOX National Report on the Drug Situation in Finland.* Lisbon: EMCDDA.

EMCDDA (2007). *Annual report 2007: selected issues.* Luxembourg: European Monitoring Centre for Drugs and Drug Addiction.

Eriksen, J., Sjogren, P., Bruera, E., Ekholm, O., & Rasmussen, N. K. (2006). Critical issues on opioids in chronic non-cancer pain: an epidemiological study.[see comment]. *Pain, 125*(1-2), 172-179.

Etchepare, F., Coutaux, A., Edel, Y., & Bourgeois, P. (2005). [Enterobacter cloacae spondylodiscitis through misuse of high-dose intravenous buprenorphine] [French]. *Presse Medicale, 34*(10), 725-727.

Faculty of Pain Medicine (2010). Principles regarding the use of opioid analgesics in patients with chronic non-cancer pain. Retrieved from http://www.anzca.edu.au/fpm/resources/professional-documents/PM1%202010.pdf

Farnsworth, P. B. (1991). Triplicate prescription: Issues and answers. *new York State Journal of Medicine, 91*(11, suppl), 1s-4s.

Feeney, & Fairweather (2003). Groin tissue necrosis requiring skin graft following parenteral abuse of buprenorphine tablets. *Drug and Alcohol Review, 22*(3), 359-361.

Fischer, B., Cruz, M. F., & Rehm, J. (2006a). Illicit opioid use and its key characteristics: A select overview and evidence from a Canadian multisite cohort of illicit opioid users (OPICAN). *Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, 51*(10), 624-634.

Fischer, B., Cruz, M. F., & Rehm, J. (2006b). Illicit opioid use and its key characteristics: a select overview and evidence from a Canadian multisite cohort of illicit opioid users (OPICAN).[see comment]. *Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, 51*(10), 624-634.

Fischer, B., & Rehm, J. (2008). Nonmedical use of prescription opioids: furthering a meaningful research agenda. *Journal of Pain, 9*(6), 490-493; discussion 494-496.

Fischer, B., & Rehm, J. (2009). Deaths related to the use of prescription opioids. *CMAJ Canadian Medical Association Journal, 181*(12), 881-882.

Fishbain, D. A., Cole, B., Lewis, J., Rosomoff, H. L., & Rosomoff, R. S. (2008). What percentage of chronic nonmalignant pain patients exposed to chronic opioid analgesic therapy develop abuse/addiction and/or aberrant drug-related behaviors? A structured evidence-based review. *Pain Medicine, 9*(4), 444-459.

Fishman, S. M., Papazian, J. S., Gonzalez, S., Riches, P. S., & Gilson, A. (2004). Regulating opioid prescribing through prescription monitoring programs: Balancing drug diversion and treatment of pain. *Pain Medicine, 5*(3), 309-324.

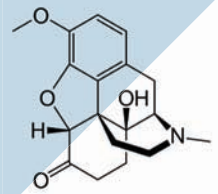
Fornilli, K., & Simoni-Wastila, L. (2011). Prescription monitoring programs: Striking the balance between medical use and diversion. *Journal of Addictions Nursing, 22*, 77-82.

Forsyth, A. J., Farquhar, D., Gemmell, M., Shewan, D., & Davies, J. B. (1993). The dual use of opioids and temazepam by drug injectors in Glasgow (Scotland). *Drug & Alcohol Dependence, 32*(3), 277-280.

Fountain, J., Griffiths, P., Farrell, M., Gossop, M., & Strang, J. (1998). Diversion tactics: how a sample of drug misusers in treatment obtained surplus drugs to sell on the illicit market. *International Journal of Drug Policy, 9*(3), 159-167.

Fountain, J., Strang, J., Gossop, M., Farrell, M., & Griffiths, P. (2000). Diversion of prescribed drugs by drug users in treatment: analysis of the UK market and new data from London. *Addiction, 95*(3), 393-406.

Franklin, G. M., Mai, J., Wickizer, T., Turner, J. A., Fulton-Kehoe, D., & Grant, L. (2005). Opioid dosing trends and mortality in Washington State Workers' Compensation, 1996-2002. *American Journal of Industrial Medicine, 48*(2), 91-99.



Fredheim, O. M., Skurtveit, S., Breivik, H., & Borchgrevink, P. C. (2010). Increasing use of opioids from 2004 to 2007 - pharmacoepidemiological data from a complete national prescription database in Norway. *European Journal of Pain: Ejp, 14*(3), 289-294.

Fry, C., & Smith, B. (2007). *Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime: An examination of illicit prescription drug markets in Melbourne, Hobart and Darwin.* Hobart: National Drug Law Enforcement Research Fund (NDLERF).

Fugelstad, A., Stenbacka, M., Leifman, A., Nylander, M., & Thiblin, I. (2007). Methadone maintenance treatment: the balance between life-saving treatment and fatal poisonings. *Addiction, 102*(3), 406-412.

Furlan, A. D., Sandoval, J. A., Mailis-Gagnon, A., & Tunks, E. (2006). Opioids for chronic noncancer pain: a meta-analysis of effectiveness and side effects. *Canadian Medical Association Journal, 174*, 1589-1594.

Furlan, A. D., Sandoval, J. A., Mailis-Gagnon, A., Tunks, E., Furlan, A. D., Sandoval, J. A., Mailis-Gagnon, A., & Tunks, E. (2006). Opioids for chronic noncancer pain: a meta-analysis of effectiveness and side effects. *CMAJ Canadian Medical Association Journal, 174*(11), 1589-1594.

Gatchel, R. J., Bo Peng, Y., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychological Bulletin, 113*, 581-624.

Geib, A.-J., Babu, K., Ewald, M. B., & Boyer, E. W. (2006). Buprenorphine/naloxone. CNS depression and respiratory insufficiency after inadvertant administration in infants: 5 case reports. *Pediatrics, 118*(4), 1746-1751.

General Accounting Office (2002). *Prescription Drugs: State monitoring programs provide useful tool to reduce diversion.* Washington, DC: United States General Accounting Office.

Gerra, G., Borella, F., Zaimovic, A., Moi, G., Bussandri, M., Bubici, C., & Bertacca, S. (2004). Buprenorphine versus methadone for opioid dependence: Predictor variables for treatment outcome. *Drug & Alcohol Dependence, 75*(1), 37-45.

Giacomuzzi, S. M., Ertl, M., Pavlic, M., Libiseller, K., Riemer, Y., Kemmler, G., Rossler, H., Grubwieser, P., Rabl, W., & Hinterhuber, H. (2006). Maintenance treatment of opioid dependence and patterns of non-prescribed drug use: Results of a 4-year trial. *Letters in Drug Design & Discovery, 3*(10), 731-740.

Gibson, A., & Degenhardt, L. (2007). Mortality related to pharmacotherapies for opioid dependence: A comparative analysis of coronial records. *Drug and Alcohol Review, 26*, 405-410.

Goldman, B. (1998). The news on the street: prescription drugs on the black market. *CMAJ Canadian Medical Association Journal, 159*, 149-150.

Gomes, T., Mamdani, M. M., Dhalla, I. A., Paterson, J. M., & Juurlink, D. N. (2011). Opioid dose and drug-related mortality in patients with nonmalignant pain. *Arch Intern Med, 171*, 686-691.

Gourlay, D. L., Heit, H. A., & Almahrezi, A. (2005). Universal precautions in pain medicine: A rational approach to the management of chronic pain. *Pain Medicine, 6*(2), 107-112.

Graham, N. A., Gold, M. S., & Goldberger, B. A. (2009). Prescription opioids and overdose deaths. *JAMA, 301*(17), 1766; author reply 1767-1768.

Green, T. C., Grimes Serrano, J. M., Licari, A., Budman, S. H., & Butler, S. F. (2009). Women who abuse prescription opioids: findings from the Addiction Severity Index-Multimedia Version Connect prescription opioid database. *Drug & Alcohol Dependence, 103*(1-2), 65-73.

Gueye, P. N., Megarbane, B., Borron, S. W., Adnet, F., Galliot-Guilley, M., Ricordel, I., Tourneau, J., Goldgran-Toledano, D., & Baud, F. J. (2002). Trends in opiate and opioid poisonings in addicts in north-east Paris and suburbs, 1995-99. *Addiction, 97*, 1295-1304.

Hall, A. J., Logan, J. E., Toblin, R. L., Kaplan, J. A., Kraner, J. C., Bixler, D., Crosby, A. E., & Paulozzi, L. J. (2008). Patterns of abuse among unintentional pharmaceutical overdose fatalities. *JAMA, 300*(22), 2613-2620.

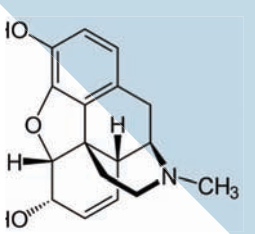
Hall, W. (1996). *Methadone maintenance treatment as a crime control measure*. Sydney: NSW Bureau of Crime Statistics and Research.

Hall, W., & Degenhardt, L. (2007). Regulating opioid prescribing to provide access to effective treatment while minimizing diversion: an overdue topic for research. *Addiction, 102*(11), 1685-1688.

Hall, W., & Farrell, M. P. (2011). Minimising the misuse of oxycodone and other pharmaceutical opioids in Australi. *Medical Journal of Australia, 195*, 248-249.

Hall, W., Ward, J., & Mattick, R. P. (1998). The effectiveness of methadone maintenance treatment 1: Heroin use and crime. In J. Ward, R. P. Mattick & W. Hall (Eds.), *Methadone Maintenance Treatment and Other Opioid Replacement Therapies*. Amsterdam: Harwood Academic Publishers.

Hardie, J. (1992). Universal precautions not justified. *Canadian Medical Association Journal, 147*(8), 1116.



Haydon, E., Rehm, J., Fischer, B., Monga, N., & Adlaf, E. (2005). Prescription drug abuse in Canada and the diversion of prescription drugs into the illicit drug market. *Canadian Journal of Public Health. Revue Canadienne de Sante Publique, 96*(6), 459-461.

Hertz, J. A., & Knight, J. R. (2006). Prescription drug misuse: a growing national problem. *Adolescent Medicine Clinics, 17*(3), 751-769; abstract xiii.

Hoffman, B. M., Papas, R. K., Chatkoff, D. K., & Kerns, R. D. (2007). Meta-analysis of psychological interventions for chronic low back pain. *Health Psychology, 26*(1), 1-9.

Hoffman, R. S., Wipfler, M. G., Maddaloni, M. A., & Weisman, R. S. (1991). Has the New York State triplicate benzodiazepine prescription regulation influenced sedative-hypnotic overdoses? . *New York State Journal of Medicine, 91*, 436-439.

Hojsted, J., & Sjogren, P. (2007). Addiction to opioids in chronic pain patients: a literature review. *European Journal of Pain: Ejp, 11*(5), 490-518.

Holliday, S. M. (2011). Managing the continuum between pain and dependency in general practice. *Drug and Alcohol Review, in press*.

Hooper, S., Bruno, R., Sharpe, M., & Tahmindjis, A. (2009). Alprazolam prescribing in Tasmania: A two-fold intervention designed to reduce inappropriate prescribing and concomitant opiate prescription. *Australasian Psychiatry, 17*(4), 300-305.

Hopwood, M., Southgate, E., Kippax, S., Bammer, G., Isaac-Toua, G., & MacDonald, M. (2003). The injection of methadone syrup in New South Wales: patterns of use and increased harm after partial banning of injecting equipment. *Australian and New Zealand Journal of Public Health, 27*(5), 551-555.

Hughes, A. A., Dart, R. C., & Bailey, J. E. (2005). Lick or stick: The common routes of the misuse and abuse of fentanyl *Clinical Toxicology, 43*(6), 668-669.

Humair, J.-P., & Cornuz, J. (2003). A New Curriculum Using Active Learning Methods and Standardized Patients to Train Residents in Smoking Cessation. *Journal of General Internal Medicine, 18*(12), 1023-1027.

Humeniuk, R., Ali, R., McGregor, C., & Darke, S. (2003). Prevalence and correlates of intravenous methadone syrup administration in Adelaide, Australia. *Addiction, 98*(4), 413-418.

Hurwitz, W. (2005). The Challenge of Prescription Drug Misuse: A Review and Commentary. *Pain Medicine, 6*(2), 152-161.

Incardi, J. A., et al., (2006). The Diversion of Prescription Drugs by Health Care Workers in Cincinnati, Ohio. *Substance Use & Misuse, 41*, 255-264.

Inciardi, J. A., Surratt, H., Kurtz, S. P., & Burke, J. J. (2006). The diversion of prescription drugs by health care workers in Cinncinati, Ohio. *Substance Use & Misuse, 41*, 255-264.

Inciardi, J. A., Surratt, H. L., Cicero, T. J., & Beard, R. A. (2009). Prescription opioid abuse and diversion in an urban community: the results of an ultrarapid assessment. *Pain Medicine, 10*(3), 537-548.

Inciardi, J. A., Surratt, H. L., Kurtz, S. P., & Cicero, T. J. (2007a). Mechanisms of prescription drug diversion among drug-involved club- and street-based populations. *Pain Medicine, 8*(2), 171-183.

Inciardi, J. A., Surratt, H. L., Kurtz, S. P., & Cicero, T. J. (2007b). Mechanisms of Prescription Drug Diversion Among Drug-Involved Club- and Street-Based Populations. *Pain Medicine, 8*(2), 171-183.

Ives, T. J., Chelminski, P. R., Hammett-Stabler, C. A., Malone, R. M., Perhac, J. S., Potisek, N. M., Shilliday, B. B., DeWalt, D. A., & Pignone, M. P. (2006). Predictors of opioid misuse in patients with chronic pain: a prospective cohort study. *BMC Health Services Research, 6*, 46.

Jost, U., Wolter, E., & Böhrer, H. (2004). Repeated improper intravenous injection of fentanyl from a transdermal system. *Dtsch Med Wochenschr, 129*(7), 313-314.

Kalso, E., Edwards, J. E., Moore, R. A., & McQuay, H. J. (2004). Opioids in chronic non-cancer pain: systematic review of efficacy and safety. *Pain, 112*(3), 372-380.

Katz, M. H. (2010). Long-term Opioid Treatment of Nonmalignant Pain: A Believer Loses His Faith. *Arch Intern Med, 170*(16), 1422-1424.

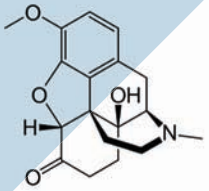
Katz, N., Panas, L., Kim, M., Audet, A. D., Bilansky, A., Eadie, J., Kreiner, P., Paillard, F. C., Thomas, C., & Carrow, G. (2009). Usefulness of prescription monitoring programs for surveillance-analysis of Schedule II opioid prescription data in Massachusetts, 1996-2006. *Pharmacoepidemiology & Drug Safety, 19*(2), 115-123.

Katz, N. P., Adams, E. H., Benneyan, J. C., Birnbaum, H. G., Budman, S. H., Buzzeo, R. W., Carr, D. B., Cicero, T. J., Gourlay, D., Inciardi, J. A., Joranson, D. E., Kesslick, J., & Lande, S. D. (2007). Foundations of opioid risk management. *Clinical Journal of Pain, 23*(2), 103-118.

Kerr, T., Fairbairn, N., Tyndall, M., Marsh, D., Li, K., Montaner, J., & Wood, E. (2007). Predictors of non-fatal overdose among a cohort of polysubstance-using injection drug users. *Drug and Alcohol Dependence, 87*(1), 39-45.

Kerr, T., Wodak, A., Elliott, R., Montaner, J. S., & Wood, E. (2004). Opioid substitution and HIV/AIDS treatment and prevention. *The Lancet, 364*(9449), 1918-1919.

Killick, D. (2011). Scripts sold to buy pot. *The Mercury,* Hobart.



Kintz, P. (2001). Deaths involving buprenorphine: a compendium of French cases. *Forensic Science International, 121*, 65-69.

Kintz, P. (2002). A new series of 13 buprenorphine-related deaths. *Clinical Biochemistry, 35*, 513-516.

Koski, A., Ojanpera, I., & Vuori, E. (2002). Alcohol and Benzodiazepines in Fatal Poisonings. Pharmacology and Cell Metabolism. *Alcoholism: Clinical & Experimental Research, 26*(7), 956-959.

Lai, S. H., Yao, Y. J., & Lo, D. S. T. (2006). A survey of buprenorphine related deaths in Singapore. *Forensic Science International, 162*(1-3), 80-86.

Lamb, S. E., Hansen, Z., Lall, R., Castelnuovo, E., Withers, E. J., Nichols, V., Potter, R., & Underwood, M. R. (2010). Group cognitive behavioural treatment for low-back pain in primary care: a randomised controlled trial and cost-effectiveness analysis. *The Lancet, 375*(9718), 916-923.

Lame, I. E., Peters, M. L., Vlaeyen, J. W. S., Kleef, M. V., & Patijn, J. (2005). Quality of life in chronic pain is more associated with beliefs about pain, than with pain intensity. *european Journal of Pain, 9*, 15-24.

Lamont, A. (2011). *Child abuse and neglect statistics.* Melbourne: National Child Protection Clearinghouse, Australian Institute of Family Studies.

Langendam, M. W., van Brussel, G. H. A., Coutinho, R. A., & van Ameijden, E. J. C. (2000). Methadone maintenance and cessation of injecting drug user: results from the Amsterdam Cohort Study. *Addiction, 95*(4), 591-600.

Larance, B., Ambekar, A., Azim, T., Murthy, P., Panda, S., Degenhardt, L., & Mathers, B. (2010). The availability, diversion and injection of pharmaceutical opioids in South Asia. *Drug and Alcohol Review, 30*, 246-254.

Layne, R. D., Pellegrino, R. J., & Lerfald, N. M. (2009). Prescription opioids and overdose deaths. *JAMA, 301*(17), 1766-1767; author reply 1767-1769.

Leong, M., Murnion, B., & Haber, P. S. (2009). Examination of opioid prescribing in Australia from 1992 to 2007. *Internal Medicine Journal, 39*(10), 676-681.

Leung, S. Y. (2011). Benzodiazepines, opioids and driving: An overview of the experimental research. *Drug and Alcohol Review, 30*, 281-286.

Ling, W., & Smith, D. (2002). Buprenorphine: blending practice with research. *Journal of Substance Abuse Treatment, 23*, 87-92.

Lintzeris, N., Lenne, M., & Ritter, A. (1999). Methadone injecting in Australia: a tale of two cities. *Addiction, 94*(8), 1175-1178.

Lipman, A. G. (2007). Treatment options for chronic pain management: opioids revisited. *Managed Care, 16*(2 Suppl 3), 5-9.

Longo, L. P., & Johnson, B. (2000). Addiction: Part I. Benzodiazepines - side effects, abuse risk and alternatives. *American Family Physician, 61*(7), 2121-2128.

Loo, H. W., Yam, A.K.T., Tan, T.C., Peng, Y.P. & Teoh, L.C. (2005). Severe upper limb complications from parenteral abuse of Subutex. *Annals Academy of Medicine, 34*(9), 576-578.

Lunn, M. P. T., Hughes, R. A. C., & Wiffen, P. J. (2009). Duloxetine for treating painful neuropathy or chronic pain. *Cochrane Database of Systematic Reviews, 4. Art. No.: CD007115. DOI: 10.1002/14651858.CD007115.pub2*(4),

Manchikanti, K. N., Manchikanti, L., Damron, K. S., Pampati, V., & Fellows, B. (2008). Increasing deaths from opioid analgesics in the United States: an evaluation in an interventional pain management practice. *Journal of Opioid Management, 4*(5), 271-283.

Manchikanti, L., Ailinani, H., Koyyalagunta, D., Datta, S., Singh, J. A., Eriator, I., Sehgal, N., Shah, R., Benyamin, R., Vallejo, R., Fellows, B., & Christo, P. J. (2011). A systematic review of randomized trials of long-term opioid management for chronic non-cancer pain. *Pain Physician, 14*, 19-21.

Manchikanti, L., Cash, K. A., Damron, K. S., Manchukonda, R., Pampati, V., & McManus, C. D. (2006). Controlled substance abuse and illicit drug use in chronic pain patients: An evaluation of multiple variables. *Pain Physician, 9*(3), 215-226.

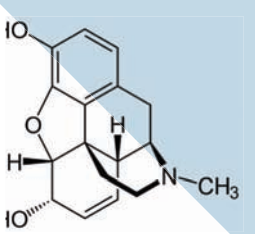
Manchikanti, L., Whitfield, E., & Pallone, F. (2005). Evolution of the National All Schedules Prescription Electronic Reporting Act (NASPER): A public law for balancing treatment of pain and drug abuse and diversion. *Pain Physician, 8*, 335-347.

Martin, T. L., Woodall, K. L., & McLellan, B. A. (2006). Fentanyl-Related Deaths in Ontario, Canada: Toxicological Findings and Circumstances of Death in 112 Cases (2002-2004) *Journal of Analytical Toxicology, 30*(8), 603-610(608).

Martyres, R. F., Clode, D., & Burns, J. M. (2004). Seeking drugs or seeking help? Escalating "doctor shopping" by young heroin users before fatal overdose. *Medical Journal of Australia, 180*, 211-214.

Mattick, R. P., Breen, C., Kimber, J., & Davoli, M. (2003). Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database Syst Rev, 2*, CD002209.

Maxwell, J. C., & McCance-Katz, E. F. (2010). Indicators of buprenorphine and methadone use and abuse: what do we know? *American Journal on Addictions, 19*(1), 73-88.



Maxwell, J. C., Pullum, T. W., & Tannert, K. (2005). Deaths of clients in methadone treatment in Texas: 1994-2002. *Drug & Alcohol Dependence, 78*(1), 73-81.

McCabe, S. E., Boyd, C. J., & Teter, C. J. (2009). Subtypes of nonmedical prescription drug misuse. *Drug & Alcohol Dependence, 102*(1-3), 63-70.

McCabe, S. E., Cranford, J. A., Boyd, C. J., & Teter, C. J. (2007). Motives, diversion and routes of administration associated with nonmedical use of prescription opioids. *Addictive Behaviors, 32*(3), 562-575.

McIntyre, P. E., Scott, D. A., Schug, S. A., Visser, E. J., Walker, S. M., & APM:SE Working Group of the Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine (2010). Acute Pain Management: Scientific Evidence

McKeown, C. (2004). *The Prescribed Opioid Project Summary Report.* Hobart: Tasmanian Department of Health and Human Services.

McLellan, A. T., & Turner, B. (2008). Prescription opioids, overdose deaths, and physician responsibility. *JAMA, 300*(22), 2672-2673.

Mendelson, J., Flower, K., Pletcher, M. J., & Galloway, G. P. (2008). Addiction to prescription opioids: characteristics of the emerging epidemic and treatment with buprenorphine. *Experimental & Clinical Psychopharmacology, 16*(5), 435-441.

Merrick, M. (2009). Prescription opioids and overdose deaths. *JAMA, 301*(17), 1767; author reply 1768-1769.

MIMs Australia (2005). *MIMs Annual* (29th Edition ed.). Hong Kong: MIMs.

Monga, N., Rehm, J., Fischer, B., Brissette, S., Bruneau, J., El-Guebaly, N., Noel, L., Tyndall, M., Wild, C., Leri, F., Fallu, J.-S., & Bahl, S. (2007). Using latent class analysis (LCA) to analyze patterns of drug use in a population of illegal opioid users. *Drug & Alcohol Dependence, 88*(1), 1-8.

Moore, R. A., Straube, S., Wiffen, P. J., Derry, S., & McQuay, H. J. (2009). Pregabalin for acute and chronic pain in adults. *Cochrane Database of Systematic Reviews, 3. Art. No.: CD007076. DOI: 10.1002/14651858.CD007076.pub2*,

Morbidity and Mortality Weekly Report (1988). *Perspectives in Disease Prevention and Health Promotion Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and other Bloodborne Pathogens in Health-Care Settings*

Rockville: Centers for Disease Control and Prevention.

Morgan, O., Griffiths, C., & Hickman, M. (2006). Association between availability of heroin and methadone and fatal poisoning in England and Wales 1993-2004. *International Journal of Epidemiology, 35*(6), 1579-1585.

Mueller, M. R., Shah, N. G., & Landen, M. G. (2006). Unintentional Prescription Drug Overdose Deaths in New Mexico, 1994-2003. *American Journal of Preventive Medicine, 30*(5), 423-429.

National Pain Summit Initiative (2011). National Pain Strategy: Pain Management for all Australians. Retrieved from http://www.painsummit.org.au/images/painaustralia/National_Pain_Strategy_2011.pdf

National Prescribing Service (2010a). 2006-2007 Acute postoperative pain (APOP) project overview Retrieved 10 May 2011, 2011, from http://www.nps.org.au/health_professionals/drug_use_evaluation_due_programs/due_kit_for_hospitals/project_overview

National Prescribing Service (2010b). NPS News 69: A planned approach to prescribing opioids, from http://www.nps.org.au/__data/assets/pdf_file/0012/89886/PPR_51_FINA.pdf

Newman, R. (2009). Prescription opioids and overdose deaths. *JAMA, 301*(17), 1767; author reply 1767-1769.

Nicholas, M. (2011). *Manage your pain: practical and positive ways to adapt to chronic pain*: ABC Books.

Nicolson, N. A., Davis, M. C., Kruszewski, D., & Zautra, A. J. (2010). Childhood maltreatment and diurnal cortisol patterns in women with chronic pain. *Psychosomatic Medicine, 72*, 471-480.

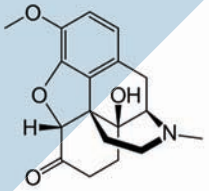
Nielsen, S. (2008). Prevention of pharmaceutical drug misuse. *Prevention Research Quarterly, 7*, 1-13.

Nielsen, S., Cameron, J., & Pahoki, S. (2010). *Over the counter codeine dependence.* Melbourne: Turning Point Alcohol and Drug Centre.

Nielsen, S., Dietze, P., Lee, N., Dunlop, A., & Taylor, D. (2007). Concurrent buprenorphine and benzodiazepines use and self-reported opioid toxicity in opioid substitution treatment. *Addiction, 102*(4), 616-622.

Nielsen, S., Lintzeris, N., Mackie, K., & Newton, I. (2010). Preventing pharmaceutical opioid misuse: pharmacists have a role to play. *Australian Pharmacists, 29*, 107-111.

Noble, M., Treadwell, J. R., Tregear, S. J., Coates, V. H., Wiffen, P. J., Akafomo, C., & Schoelles, K. M. (2010). Long-term opioid management for chronic noncancer pain. *Cochrane Database of Systematic Reviews*(1).



O'Reilly, B., Leibrick, F., Huxtable, D., & Chenhall, R. (2004). *Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime: An examination of illicit prescription drug markets in the Northern Territory. NDLERF Monograph No. 20.* Tasmania: National Drug Law Enforcement Research Fund.

Obadia, Y., Perrin, V., Feroni, I., Vlahov, D., & Moatti, J.-P. (2001a). Injecting misuse of buprenorphine among French drug users. *Addiction, 96*(2), 267-272.

Office of the British Pharmacopoeia Commission (1993). *British Pharmacopoeia.* Cambridge: Office of the British Pharmacopoeia Commission.

Padaiga, Z., Subata, E., & Vanagas, G. (2007). Outpatient methadone maintenance treatment program. Quality of life and health of opioid-dependent persons in Lithuania. *Medicina (Kaunas, Lithuania), 43*(3), 235-241.

Pain and Policy Studies Group (2002). *Availability of Opioid Analgesics in Eastern Europe.* Madison, Wisconsin, USA: University of Wisconsin Pain & Policy Studies Group/WHO Collaborating Center for Policy and Communications in Cancer Care.

Panda, S., Chatterjee, A., & Bhattacharya, S. K. (1998). HIV, hepatitis B and sexual practices in the street-recruited injecting drug users of Calcutta: risk perception versus observed risks. *International Journal of STD & AIDS, 9*(4), 214-218.

Panda, S., Kumar, MS., Lokabiraman, S et al., (2005). Risk Factors for HIV Infection in Injection Drug Users and Evidence for Onward Transmission of HIV to Their Sexual Partners in Chennai, India. *Journal of Acquired Immune Deficiency Syndrome., 39*(1), 9.

Panda, S., & Sharma, M. (2006). Needle Syringe Acquisition and HIV Prevention Among Injecting Drug Users: A Treatise on the "Good" and "Not So Good" Public Health Practices in South Asia. *Substance Use & Misuse, 39*, 9.

Passik, S. D., Hays, L., Eisner, N., & Kirsh, K. L. (2006). Psychiatric and pain characteristics of prescription drug abusers entering drug rehabilitation. *Journal of Pain & Palliative Care Pharmacotherapy, 20*(2), 5-13.

Paulozzi, L. J. (2006). Opioid analgesic involvement in drug abuse deaths in American metropolitan areas. *American Journal of Public Health, 96*(10), 1755-1757.

Paulozzi, L. J., Budnitz, D. S., & Xi, Y. (2006). Increasing deaths from opioid analgesics in the United States. *Pharmacoepidemiology & Drug Safety, 15*(9), 618-627.

Paulozzi, L. J., Kilbourne, E. M., & Desai, H. A. (2011). Prescription drug monitoring programs and death rates from drug overdose. *Pain Medicine, 12*(5), 747-754.

Paulozzi, L. J., Logan, J. E., Hall, A. J., McKinstry, E., Kaplan, J. A., & Crosby, A. E. (2009). A comparison of drug overdose deaths involving methadone and other opioid analgesics in West Virginia. *Addiction, 104*(9), 1541-1548.

Paulozzi, L. J., & Ryan, G. W. (2006). Opioid analgesics and rates of fatal drug poisoning in the United States. *American Journal of Preventive Medicine, 31*(6), 506-511.

Paulozzi, L. J., & Stier, D. D. (2010). Prescription drug laws, drug overdoses, and drug sales in New York and Pennsylvania. *Journal of Public Health Policy, 31*, 422-432.

Pergolizzi, J., Boger, R. H., Budd, K., Dahan, A., Erdine, S., Hans, G., Kress, H. G., Langford, R., Likar, R., Raffa, R. B., & Sacerdote, P. (2008). Opioids and the management of chronic severe pain in the elderly: consensus statement of an International Expert Panel with focus on the six clinically most often used World Health Organization Step III opioids (buprenorphine, fentanyl, hydromorphone, methadone, morphine, oxycodone). *Pain Practice, 8*(4), 287-313.

Phillips, B., & Larance, B. (2010). *The prevalence and correlates of pain among a sample of people who inject drugs regularly*. Paper presented at the Australasian Professional Society on Alcohol and other Drugs (APSAD).

Pierre-Alexandre, J., Francois, P., Abdellah, S., Karim, T., Christian, G., & Frederique, C. (2007). An unusual case of livedoid and necrotic lesions in a drug addict. *American Journal of Dermatopathology, 29*(1), 72-74.

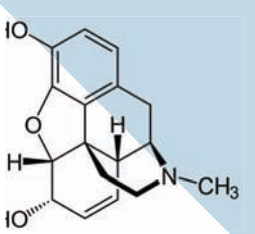
Pippos, C. (2011). Overdoses a concern. *Burnie Advocate,* Burnie.

Pirnay, S., Borron, S. W., Giudicelli, C. P., Torneau, J., Baud, F. J., & Ricordel, I. (2004). A critical review of the causes of death among post-mortem toxicological investigations: analysis of 34 buprenorphine-associated and 25 methadone-associated deaths. *Addiction, 99*, 978-988.

Popova, S., Patra, J., Mohapatra, S., Fischer, B., & Rehm, J. (2009). How many people in Canada use prescription opioids non-medically in general and street drug using populations? *Canadian Journal of Public Health Revue Canadienne de Sante Publique, 100*(2), 104-108.

Poskitt, L. (2011). Drug overdose claims. *The Examiner,* Northern Tasmania.

Pradel, V., Frauger, E., Thiron, X., Ronfle, E., Lapierre, V., Masut, A., Coudert, C., Blin, O., & Micallef, J. (2009). Impact of a prescription monitoring program on doctor-shopping for high dosage buprenorphine. *Pharmacoepidemiology and Drug Safety, 18*, 36-43.



Pradel, V., Thirion, X., Ronfle, E., Masut, A., Micallef, J., & Begaud, B. (2004). Assessment of doctor-shopping for high dosage buprenorphine maintenance treatment in a French region: development of a new method for prescription database. *Pharmacoepidemiology & Drug Safety, 13*, 473-481.

Quigley, P. A. (2001). Public health dimensions of benzodiazepine regulation. *Critical Public Health, 11*(4).

Quinn, D. I., Wodak, A., & Day, R. O. (1997). Pharmacokinetic and pharmacodynamic principles of illit drug use and treatment of illicit drug users. *Clin Pharmacokinet, 33*(5), 344-400.

Reisinger, M. (2006). Injecting buprenorphine tablets: A manageable risk. *Heroin Addiction & Related Clinical Problems, 8*(4), 29-39.

Resnik, D. B., Rehm, M., & Minard, R. B. (2001). The undertreatment of pain: scientific, clinical, cultural, and philosophical factors. *Med Health Care Philos, 4*, 277-288.

Reynaud, M., Petit, G., Potard, D., & Courty, P. (1998). Six deaths linked to concomitant use of buprenorphine and benzodiazepines. *Addiction, 93*(9), 1385-1392.

Richebe, P., & Beaulieu, P. (2009). Perioperative pain management in the patient treated with opioids: continuing professional development. *Canadian Journal of Anaesthesia, 56*(12), 969-981.

Roberts, J. (2008). Managing acute pain in patietns with an opioid abuse or dependence disorder. *Australian Prescriber, 31*, 133-135.

Robinson, G. M., Kemp, R., Lee, C., & Cranston, D. (2000). Patients in methadone maintenance treatment who inject methadone syrup: a preliminary study. *Drug and Alcohol Review, 19*(4), 447-450.

Rosenblum, A., et al., (2007). Prescription opioid abuse among enrollees into methadone maintenance treatment. *Drug and Alcohol Dependence, 90*, 64-71.

Ross-Degnan, D., Simoni-Wastila, L., Brown, J. S., Gao, X., Mah, C., Cosler, L. E., Fanning, T., Gallagher, P., Salzman, C., Shader, R. I., Inui, T. S., & Soumerai, S. B. (2004). A controlled study of the effects of state surveillance on indicators of problematic and non-problematic benzodiazepine use in a Medicaid population. *International Journal of Psychiatry and Medicine, 34*(2), 103-123.

Ross, J., Darke, S., & Hall, W. (1996). Benzodiazepine use among heroin users in Sydney: Patterns of use, availability and procurement. *Drug and Alcohol Review, 15*(3), 237 - 243.

Roxburgh, A., Bruno, R., Larance, B., & Burns, L. (2011). Prescription of opioid analgesics and related harms in Australia. *Medical Journal of Australia, 195*, 280-284.

Royal Australasian College of Physicians (2009). *Prescription Opioid Policy: Improving management of chronic non-malignant pain and prevention of problems associated with prescription opioid use.* Sydney: Royal Australasian College of Physicians.

Sachs-Ericsson, N., Cromer, K., Hernandez, A., & Kendall-Tackett, K. (2009). A review of childhood abuse, heatlh, and pain-related problems: the role of psychiatric disorders and current life stress. *Journal of Trauma and Dissociation, 10*, 170-188.

Sachs-Ericsson, N., Kendall-Tackett, K., & Hernandez, A. (2007). Childhood abuse, chronic pain, and depression in the National Comorbidity Survey. *Child Abuse & Neglect, 31*, 531-547.

Saha, M. K., Chakrabarti, S., & Panda, S. (2000). Prevalence of HCV and HBV infection amongst HIV seropositive intravenous drug users and their non-injecting wives in Manipur, India. *Indian Journal of Medical Research, 1111*, 37-39.

Sale, J. E., Thielke, S., & Topolovec-Vranic, J. (2010). Who is addicted to, and dying from, prescription opioids? *Journal of the American Geriatrics Society, 58*(7), 1401-1402.

Sarkar, K., Bal, B., Mukherjee, R., Chakraborty, S., Niyogi, S. K., Saha, M. K., & Bhattacharya, S. K. (2006). Epidemic of HIV coupled with hepatitis C virus among injecting drug users of Himalayan West Bengal, Eastern India, Bordering Nepal, Bhutan, and Bangladesh. *Substance Use & Misuse, 41*(3), 341-352.

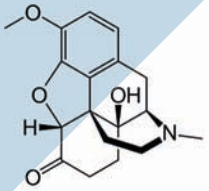
Sarkar, K., Mitra, S., Bal, B., Chakraborty, S., & Bhattacharya, S. K. (2003). Rapid spread of hepatitis C and needle exchange programme in Kolkata, India. *The Lancet, 361*, 1301-1302.

Savage, S. R. (1999). Opioid therapy of chronic pain: Assessment of consequences. *Acta Anaesthesiologica Scandinavica, 43*(9), 909-917.

Savage, S. R., Kirsh, K. L., & Passik, S. D. (2008). Challenges in using opioids to treat pain in persons with substance use disorders. *Addiction Science & Clinical Practice, 4*(2), 4-25.

Schifano, F., Corkery, J., Gilvarry, E., Deluca, P., Oyefeso, A., & Ghodse, A. H. (2005). Buprenorphine mortality, seizures and prescription data in the UK, 1980-2002. *Human Psychopharmacology: Clinical and Experimental, 20*(5), 343-348.

Schmader, K. E., Baron, R., Haanpaa, M. L., Mayer, J., O'Connor, A. B., Rice, A. S., & Stacey, B. (2010). Treatment considerations for elderly and frail patients with neuropathic pain. *Mayo Clinic Proceedings, 85*(3 Suppl), S26-32.



Seet, R. C. S., Oh, V. M. S., & Lim, E. C. H. (2007). Complications arising from intravenous buprenorphine abuse. *Qjm, 100*(5), 312-313.

Segal, A., Dowling, J., Ireton, H., Rhodes, H., Thomas, G., Kerr, P., & Spagnolo, D. (1998). Granulomatous glomerulonephritis in intravenous drug users: a report of three cases in oxycodone addicts. *Human Pathology, 29*(11), 1246-1249.

Selva, C. (1997). International control of opioids for medical use. *European Journal of Palliative Care, 4*(6), 194-198.

Seppala, M. (2006). Patients with pain and addiction: what's a doctor to do? *Minnesota Medicine, 89*(9), 41-43.

Seymour, A., Black, M., Jay, J., Cooper, G., Weir, C., & Oliver, J. (2003). The role of methadone in drug-related deaths in the west of Scotland. *Addiction, 98*, 995--1002.

Shah, N., Lathrop, S. L., & Landen, M. G. (2005). Unintentional methadone-related overdose death in New Mexico (USA) and implications for surveillance, 1998-2002. *Addiction, 100*, 176-188.

Sharma, V., Vasoo, S., & Ong, B. (2005). Myofasciitis and polyneuritis related to buprenorphine abuse. *Neurol Clin Neurophysiol*, 2.

Shirin, T., Ahmed, T., Iqbal, A., Islam, M., & Islam, M. N. (2000). Prevalence and risk factors of hepatitis B virus, hepatitis C virus, and human immunodeficiency virus infections among drug addicts in Banlgadesh. *Journal of Health Population and Nutrition Research, 18*, 145-150.

Simeone, R., & Holland, L. (2006). *An evaluation of prescription drug monitoring programs.* New York: Simeone & Associates.

Simoni-Wastila, L., Ross-Dengan, D., Mah, C., Gao, X., Brown, J., Cosler, L. E., Fanning, T., Gallagher, P., Salzman, C., & Soumerai, S. B. (2004). A retropspective data analysis of the New York triplicate prescription program on benzodiazepine use in Medicaid patients with chronic psychiatric and neurologic disorders. *Clinical Therapeutics, 26*(2), 322-336.

Smith, B., Miller, P., O'Keefe, B., & Fry, C. (2004). *Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime: An examination of illicit prescription drug markets in Melbourne. NDLERF Monograph No. 18.* Tasmania: National Drug Law Enforcement Research Fund.

Smith, H. S., Kirsh, K. L., & Passik, S. D. (2009). Chronic opioid therapy issues associated with opioid abuse potential. *Journal of Opioid Management, 5*(5), 287-300.

Smith, M. (2011). Drugs top ambo call-outs. *The Mercury,* Hobart.

Southgate, E., Kippax, S., Bammer, G., Isaac-Toua, G., MacDonald, M., Hopwood, M., & Aspin, C. (2001). *Methadone injection in New South Wales.* No. Monograph 6/2001, Sydney: University of New South Wales.

Spiller, H., Bailey, J. E., Dart, R. C., & Spiller, S. S. (2010). Investigation of temporal changes of abuse and misuse of prescription opioids. *Journal of Addictive Diseases, 29*(1), 78-83.

Spiller, H., Lorenz, D. J., Bailey, E. J., & Dart, R. C. (2009). Epidemiological trends in abuse and misuse of prescription opioids. *Journal of Addictive Diseases, 28*(2), 130-136.

Sproule, B. A. (2011). Decreasing the harms of prescription opioids: A case for pharmacists. *Drug and Alcohol Review, 30*(3), 327-329.

Stafford, J., & Burns, L. (2010). *Australian Drug Trends 2010: Findings from the Illicit Drug Reporting System (IDRS).* Sydney: National Drug and Alcohol Research Centre.

Starrels, J. L., Becker, W. C., Alford, D. P., Kapoor, A., Williams, A. R., & Turner, B. J. (2010). Systematic review: Treatment agreements and urine drug testing to reduce opioid misuse in patients with chronic pain. *Annals of Internal Medicine, 152*, 712-720.

Steinmiller, C. L., & Greenwald, M. (2007). Factors associated with nonmedical use of prescription opioids among heroin-abusing research volunteers. *Experimental & Clinical Psychopharmacology, 15*(5), 492-500.

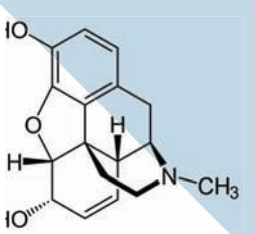
Strang, J., Manning, V., Mayet, S., Ridge, G., Best, D., & Sheridan, J. (2007). Does prescribing for opiate addiction change after national guidelines? Methadone and buprenorphine prescribing to opiate addicts by general practitioners and hospital doctors in England, 1995-2005. *Addiction, 102*(5), 761-770.

Strassels, S. A. (2009). Economic burden of prescription opioid misuse and abuse. *Journal of Managed Care Pharmacy, 15*(7), 556-562.

Sullivan, L. E., & Fiellin, D. A. (2005). Buprenorphine: Its Role in Preventing HIV Transmission and Improving the Care of HIV-Infected Patients with Opioid Dependence. *Clinical Infectious Diseases, 41*, 891-896.

Sullivan, L. E., Metzger, D. S., Fudala, P. J., & Fiellin, D. A. (2005). Decreasing international HIV transmission: the role of expanding access to opioid agonist therapies for injection drug users. . *Addiction, 100*(2), 150-158.

Sunjic, S., & Howard, J. (1996). "Non injectables": Methadone syrup and benzodiazepine injection by methadone-maintained clients. *Drug and Alcohol Review, 15*(3), 245-250.



Sunjic, S., & Zador, D. (1999). Methadone syrup-related deaths in New South Wales, Australia, 1990-95. *Drug and Alcohol Review, 18*(4), 409-415.

The Royal Australasian College of Physicians (2009a). *Prescription Opioid Policy: Improving management of chronic non-malignant pain and prevention of problems associated with prescription opioid use.* Sydney: RACP.

The Royal Australasian College of Physicians (2009b). *Prescription Opioid Policy: Improving management of chronic non-malignant pain and prevention of problems associated with prescription opioids.* Sydney: Policy and Advocacy, RACP,.

The Royal Australian College of General Practitioners; the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists; and the Pharmaceutical Society of Australia (2011). Australian Medicines Handbook Available from http://amh.hcn.net.au/view.php?page=index.html

Thompson, C. A. Prescription drug misuse highlighted as national problem. *American Journal of Health-System Pharmacy, 58*(11), 956.

Topp, L. (2006). Pharmaceutical diversion: accidental harm reduction? *Of Substance, 4*(2), 6-9.

Toufik, A. (2007). Preliminary results of the first national Low Threshold and harm reduction agencies survey. In L. Degenhardt (Ed.).

Trafton, J. A., Oliva, E. M., Horst, D. A., Minkel, J. D., & Humphreys, K. (2004). Treatment needs associated with pain in substance use disorder patients: implications for concurrent treatment. *Drug & Alcohol Dependence, 73*(1), 23-31.

Trescot, A. M., Helm, S., Hansen, H., Benyamin, R., Glaser, S. E., Adlaka, R., Patel, S., & Manchikanti, L. (2008). Opioids in the management of chronic non-cancer pain: an update of American Society of the Interventional Pain Physicians' (ASIPP) Guidelines. *Pain Physician, 11*(2 Suppl), S5-S62.

Twillman, R. (2006). Impact of prescription monitoring programs on prescription patterns and indicators of opioid abuse. *The journal of Pain : Official journal of the American Pain Society, 7*(4), S6.

United Nations Office on Drugs and Crime (2007). *South Asia 2005-2007: Strategic Programme Framework.* Vlenna: United Nations Office on Drugs and Crime.

United States Government Accountability Office (2009). *Methadone-associated overdose deaths: Factors contributing to increased deaths and efforts to prevent them*

UNODCCP, & UNAIDS (1999). *Baseline study of the relationship between injecting drug use, HIV and hepatitis C among male injecting drug users in Lahore.* Lahore: UNODCCP/UNAIDS.

Uzych, L. (1991). Benzodiazepines and triplicate prescriptions: New York's experience. *Texas Medicine, 87*, 6.

Van Griensven, F., Keawkungwal, J., Tappero, J. W., Sangkum, U., Pitisuttithum, P., Vanichseni, S., Suntharasamai, P., Orelind, K., Gee, C., & Choopanya, K. (2004). Lack of increased HIV risk behavior among injection drug users participating in the AIDSVAXB/E HIV vaccine trial in Bangkok, Thailand. *Aids, 18*(2), 295-301.

Vowles, K. E., McCracken, L. M., & O'Brien, J. Z. (in press). Acceptance and values-based action in chronic pain: a three-year follow-up analysis of treatment effectiveness and process. *Behaviour Research and Therapy*.

Wagner, E. H., Austin, B. T., & Von Korff, M. (1996). Organizing care for patients with chronic illness. *Milbank Quarterly, 74*(4), 511-544.

Walker, P. W., Palla, S., Pei, B. L., Kaur, G., Zhang, K., Hanohano, J., Munsell, M., Bruera, E., Walker, P. W., Palla, S., Pei, B.-L., Kaur, G., Zhang, K., Hanohano, J., Munsell, M., & Bruera, E. (2008). Switching from methadone to a different opioid: what is the equianalgesic dose ratio? *Journal of Palliative Medicine, 11*(8), 1103-1108.

Wang, J., & Christo, P. J. (2009). The influence of prescription monitoring programs on chronic pain management. *Pain Physician, 12*, 507-515.

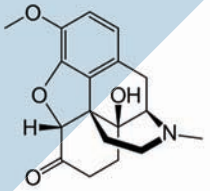
Ward, J., Mattick, R. P., & Hall, W. (1998a). The effectiveness of methadone maintenance treatment 2: HIV and infectious hepatitis. In J. Ward, R. P. Mattick & W. Hall (Eds.), *Methadone maintenance treatment and other opioid replacement therapies*. Australia: Harwood Academic Publishers.

Ward, J., Mattick, R. P., & Hall, W. (Eds.). (1998b). *Methadone Maintenance Treatment and Other Opioid Replacement Therapies*. Amsterdam: Harwood Academic Publishers.

Wasan, A. D., Butler, S. F., Budman, S. H., Benoit, C., Fernandez, K., & Jamison, R. N. (2007). Psychiatric history and psychologic adjustment as risk factors for aberrant drug-related behavior among patients with chronic pain. *Clinical Journal of Pain, 23*(4), 307-315.

Weaver, M., Schnoll, S., Weaver, M., & Schnoll, S. (2002). Abuse liability in opioid therapy for pain treatment in patients with an addiction history. *Clinical Journal of Pain, 18*(4 Suppl), S61-69.

Webster, L. R. (2009). The question of opioid euphoria *Drug Discovery and Development,* (1 August 2009). Retrieved from http://www.dddmag.com/Article-The-Question-of-Opioid-Euphoria-073009.aspx



Webster, L. R., Cochella, S., Dasgupta, N., Fakata, K. L., Fine, P. G., Fishman, S. M., Grey, T., Johnson, E. M., Lee, L. K., Passik, S. D., Peppin, J., Porucznik, C. A., Ray, A., Schnoll, S. H., Stieg, R. L., & Wakeland, W. (2011). An analysis of the root causes for opioid-related overdose deaths in the United States. *Pain Medicine, 12*, S26-S35.

Weingarten, S. R., Henning, J. M., Badamgarav, E., Knight, K., Hasselblad, V., Gano, A., Jr., & Ofman, J. J. (2002). Interventions used in disease management programmes for patients with chronic illness-which ones work? Meta-analysis of published reports. *BMJ, 325*(7370), 925.

WHO Collaborating Centre for Drug Statistics Methodology (2011). ATC/DDD Index 2011, from http://www.whocc.no/atc_ddd_index/

Wicksell, R. K., Ahlqvist, J., Bring, A., Melin, L., & Olsson, G. L. (2008). Can exposure and acceptance strategies improve functioning and life satisfaction in people with chronic pain and whiplash-associated disorders (WAD)? A randomized controlled trial. *Cognitive Behaviour Therapy, 37*(3), 169-182.

Wilford, B. B., Finch, J., Czechowicz, D. J., & Warren, D. (1994). An overview of prescription drug misuse and abuse: defining the problem and seeking solutions. *Journal of Law, Medicine & Ethics, 22*(3), 197-203.

Wodak, A. D., Cohen, M. L., Dobbin, M. D., Hallinan, R. A., & Osborn, M. (2009). Improving the management of chronic non-malignant pain and reducing problems associated with prescription opioids. *Medical Journal of Australia, 191*(6), 302-303.

Wolfert, M. Z., Gilson, A. M., Dahl, J. L., & Cleary, J. F. (2010). Opioid analgesics for pain control: Wisconsin physicians' knowledge, beliefs, attitudes, and prescribing practices. *Pain Medicine, 11*(3), 425-434.

Wong, K.-h., Lee, S.-s., Lim, W.-l., & Low, H.-k. (2003). Adherence to methadone is associated with a lower level of HIV-related risk behaviors in drug users. *Journal of Substance Abuse Treatment, 24*(3), 233-239.

World Health Organisation, E. (2004). *Better palliative care for older people.* Copenhagen: WHO European Regional Office.

World Health Organisation/United Nations Office of Drugs and Crime/ Joint United Nations Programme on HIV/AIDs (2004). *WHO/UNODC/UNAIDS position paper: Substitution maintenance therapy in the management of opioid dependence and HIV/AIDs prevention.* Geneva: World Health Organisation.

World Health Organization (1986). *Cancer pain relief.* Geneva: World Health Organization.

World Health Organization (2000a). *Achieving balance in national opioid drugs control policy: A guideline for assessment.* Geneva: World Health Organization.

World Health Organization (2000b). *Achieving balance in national opioids control policy: Guidelines for assessment*. Geneva: WHO.

World Health Organization (2004). *A Community Health Approach to Palliative Care for HIV/AIDS and Cancer Patients.* Geneva: World Health Organization.

World Health Organization (2007). *Access to Controlled Medications Programme*. Geneva: WHO.

World Health Organization (2011). *Ensuring balance in national policies on controlled substances: Guidance for availability and accessibility of controlled medicines*. Geneva: WHO.

Yeo, A. K. S., Chan, C.-Y., & Chia, K.-H. (2006). Complications relating to intravenous buprenorphine abuse: a single institution case series. *Annals of Academy of Medicine, 35*(7), 487-491.

Zacny, J. P., & Lichtor, S. A. (2008). Nonmedical use of prescription opioids: motive and ubiquity issues. *Journal of Pain, 9*(6), 473-486.

Zador, D., & Sunjic, S. (2000). Deaths in methadone maintenance treatment in New South Wales, Australia 1990-1995. *Addiction, 95*(1), 77-84.

Zador, D. A., & Sunjic, S. D. (2002). Methadone-related deaths and mortality rate during induction into methadone maintenance, New South Wales, 1996. *Drug and Alcohol Review, 21*, 131-136.

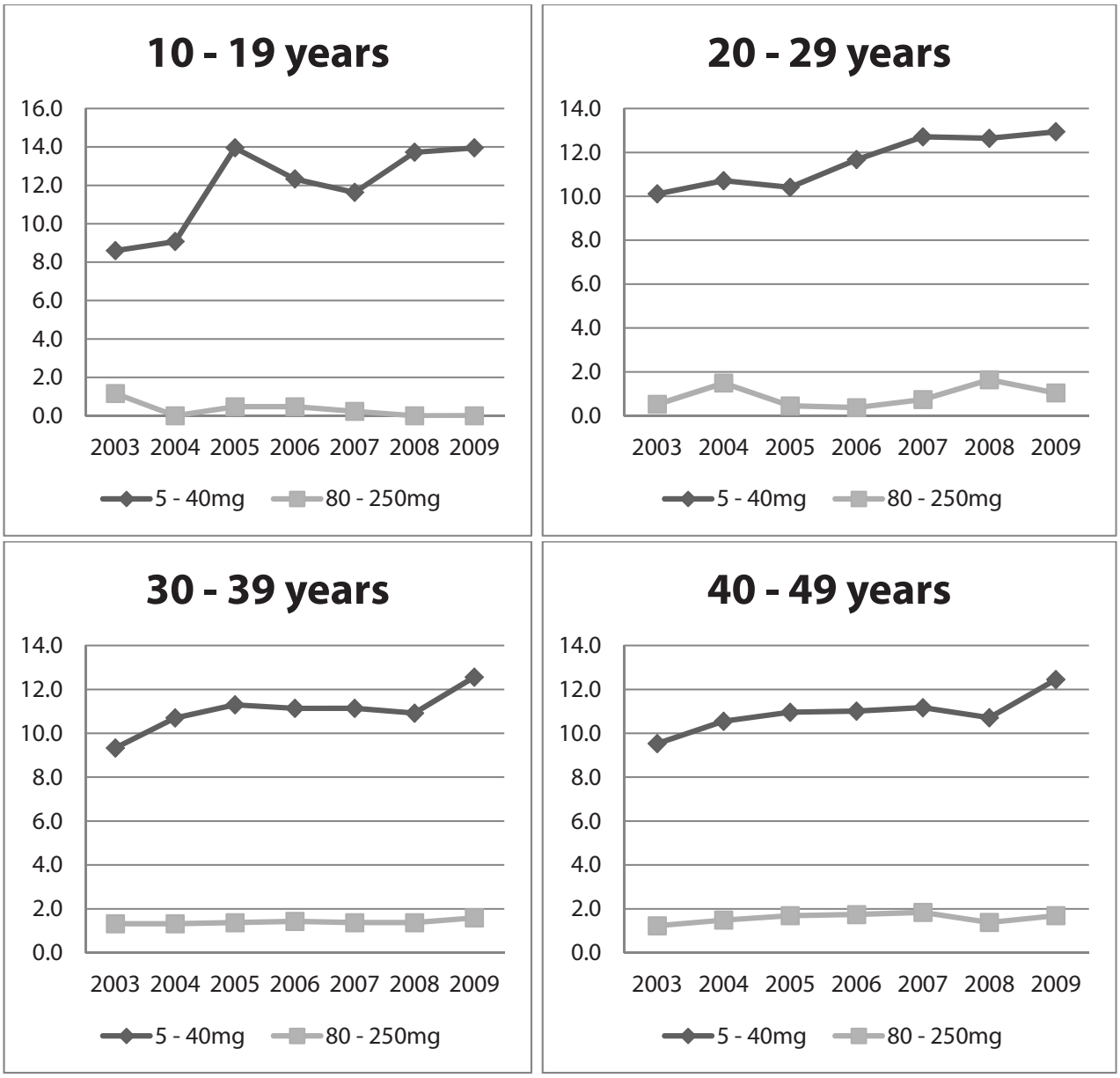
Zee, A. V. (2009). The promotion and marketing of oxycontin: Commercial triumph, public health tragedy. *American Journal of Public Health, 99*(2), 221-227.

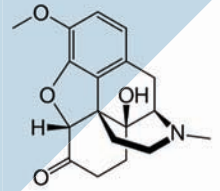
Zwar, N., Harris, M., Griffiths, R., Roland, M., Dennis, S., Powell, D. G., & Hasan, I. (2006). *A systematic review of chronic disease management.* Sydney: Research Centre for Primary Health Care and Equity, School of Public Health and Community Medicine, UNSW.

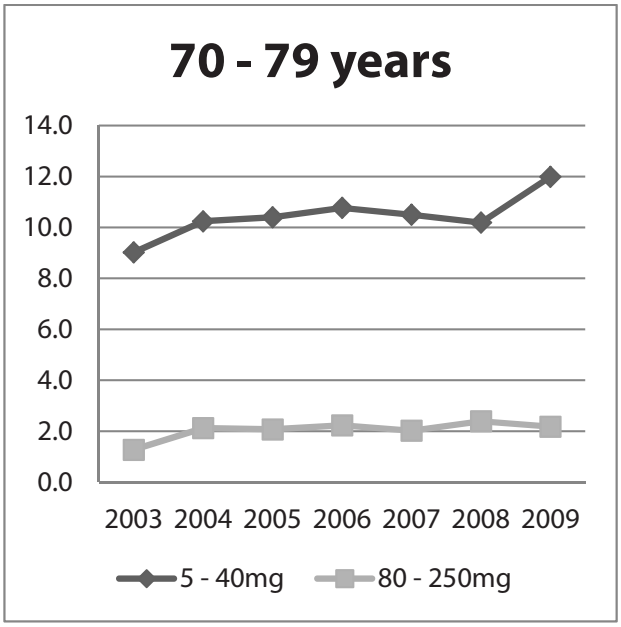
APPENDIX 1:

PRESCRIPTIONS OF MORPHINE AND OXYCODONE BY AGE GROUP AND DOSE

ANALYSIS OF PRESCRIPTIONS BY 10 YEAR AGE GROUP AND DOSE FOR OXYCODONE, PER ANNUM (TASMANIA)






70 - 79 years
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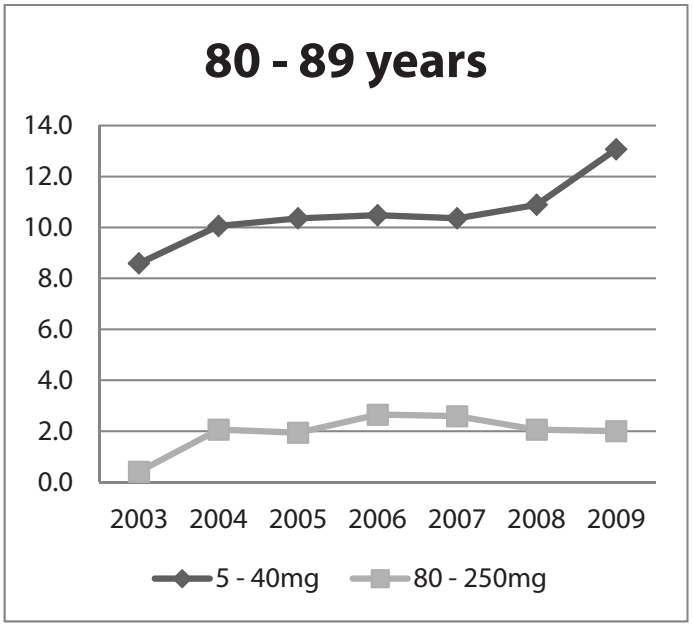
2003 2004 2005 2006 2007 2008 2009
5 - 40mg
80 - 250mg


80 - 89 years
14.0
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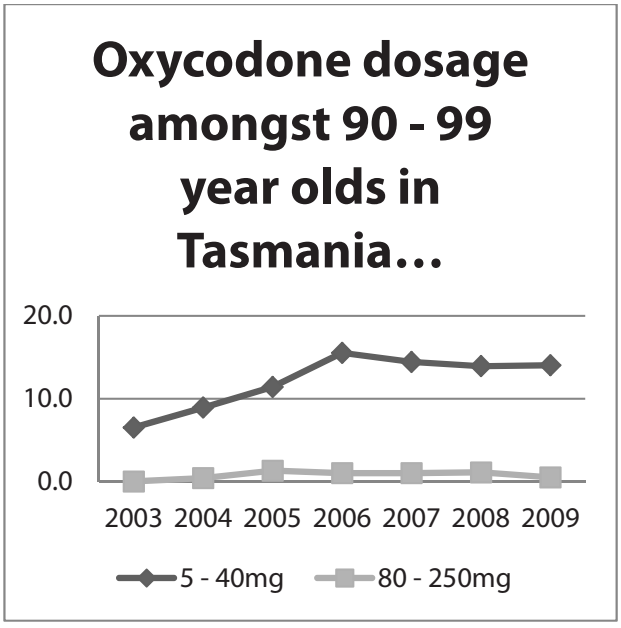
Oxycodone dosage amongst 90 - 99 year olds in Tasmania…
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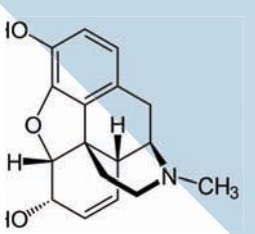
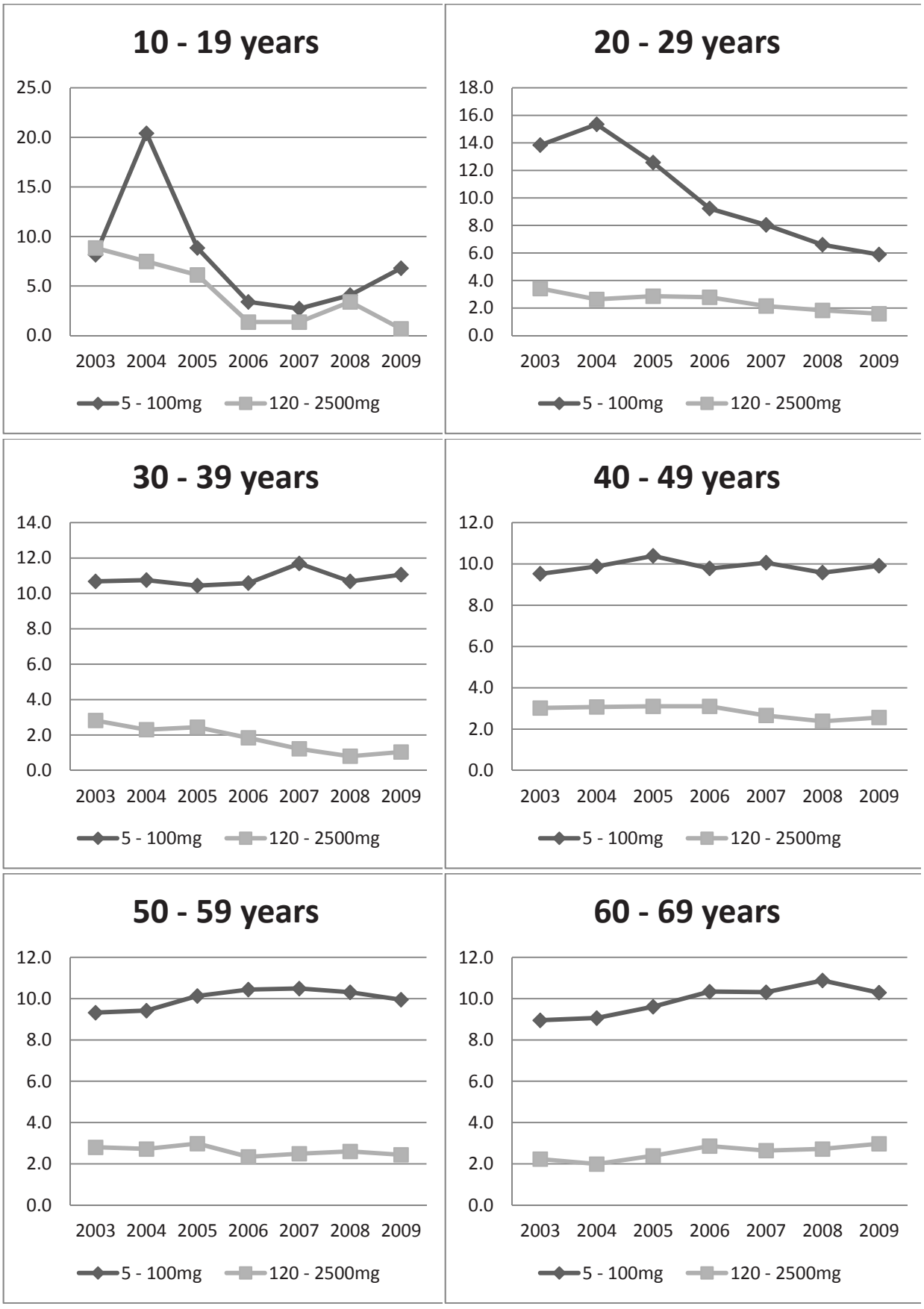
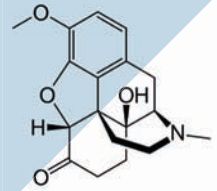
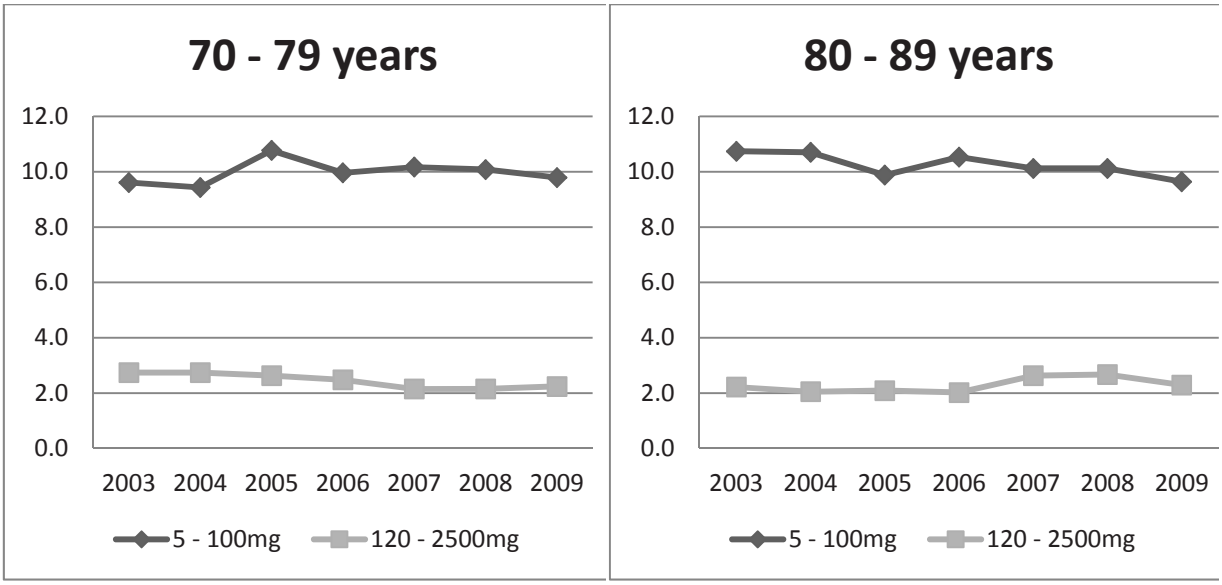
Morphine
Sulfate Inj., USP



ANALYSIS OF PRESCRIPTIONS BY 10 YEAR AGE GROUP AND DOSE FOR MORPHINE, PER ANNUM (TASMANIA)






70 - 79 years
12.0
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5 - 100mg
120 - 2500mg

80 - 89 years
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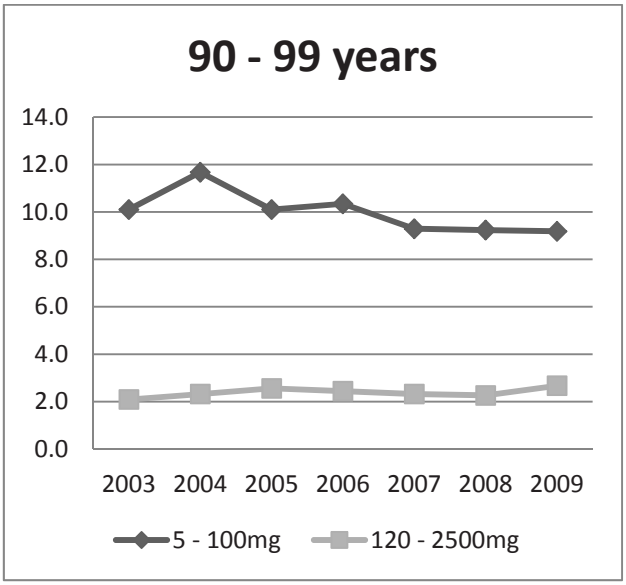
90 - 99 years
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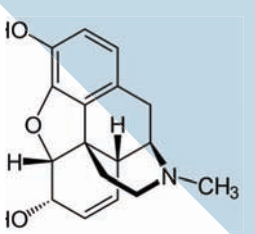
2003 2004 2005 2006 2007 2008 2009
5 - 100mg
120 - 2500mg

Morphine
Sulfate Inj., USP



APPENDIX 2:

TIME SERIES ANALYSIS OF DUSC DATA FOR PRESCRIPTION OPIOIDS

ANALYSIS OF OVERALL SCHEDULE 8 DRUG DISPENSING QUANTITY

This section summarises the analysis of total dispensing quantity for four S8 drugs (hydromorphone, oxycodone, morphine and methadone tablets) between 2002 and 2010. Dispensing quantity was standardised across the four drug types using a formula that divided the product of mass and volume dispensed by a standardisation quantity: the defined daily dose (DDD). The data were further standardised by age and sex, using the Australian population as the reference population. Data were then analysed at State level using a similar method to the other S8 drugs. A generalised least squares regression model was used. This model included a main effect for State, a term for time, and an interaction between State and time. The outcome of the model is expressed in percentage increase per month.

The interaction between State and time combines to give the overall effect of time in each State. These are summarised in Table 1. When the four opioid drugs are included, those with the lowest base levels of prescribing have the lowest rate of increase. To show this clearly, the average prescribing level is shown for each State in Table 1, and the States are ordered from smallest to highest quantity. Monthly changes are shown as percentage increases or decreases.

Table 1: Baseline Average Values and Monthly Percentage Change by State

State	Baseline Average	Monthly Percentage Change
NT	22,488	-0.1%
TAS	53,239	0.2%
SA	237,877	0.2%
WA	188,927	0.3%
ACT	26,149	0.6%
QLD	330,863	0.7%
VIC	354,711	0.8%
NSW	444,141	0.8%

The predicted and observed values from this model are shown in Figure 1 (NT, ACT, Tasmania), Figure 2 (WA and SA), and Figure 3 (NSW, QLD, VIC). Prescribing quantities differ widely by jurisdiction, and are increasing in almost every jurisdiction, though the amount by which they are increasing differs. When the four opioids (morphine, oxycodone, methadone tablets and hydromorphone) are included, prescribing quantities are increasing fastest in the jurisdictions with the largest baseline prescribing levels.

Figure 1: Observed and Predicted Prescribing Quantities for NT, ACT and Tasmania

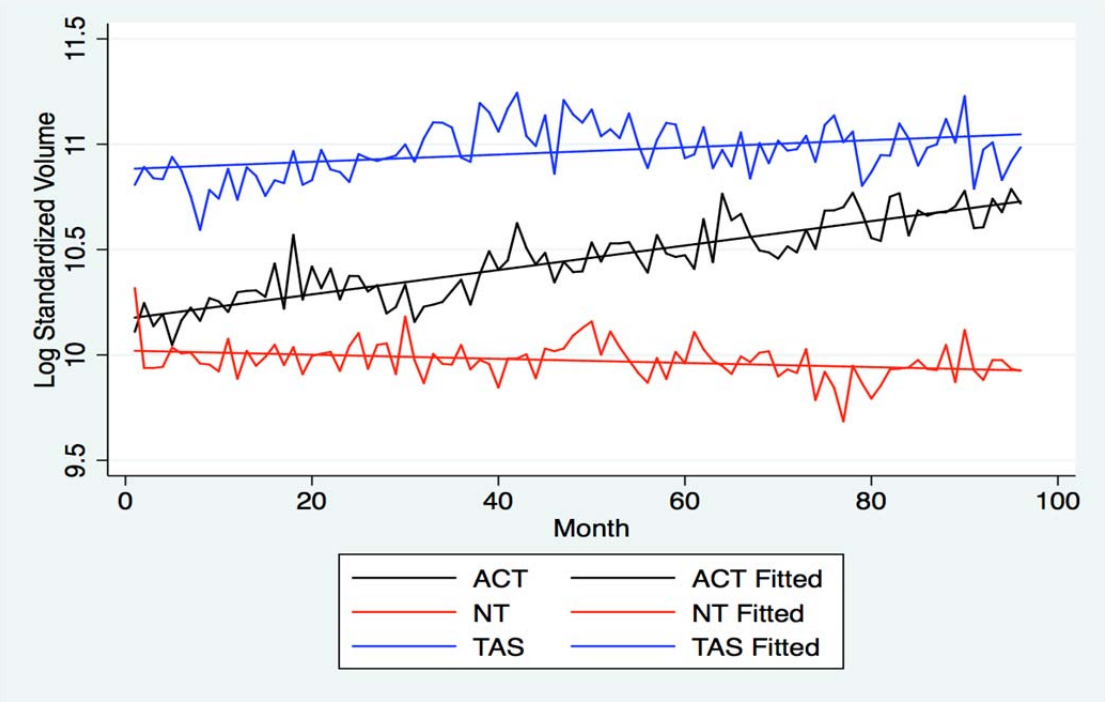


Figure 2: Observed and Predicted Prescribing Quantities for SA and WA

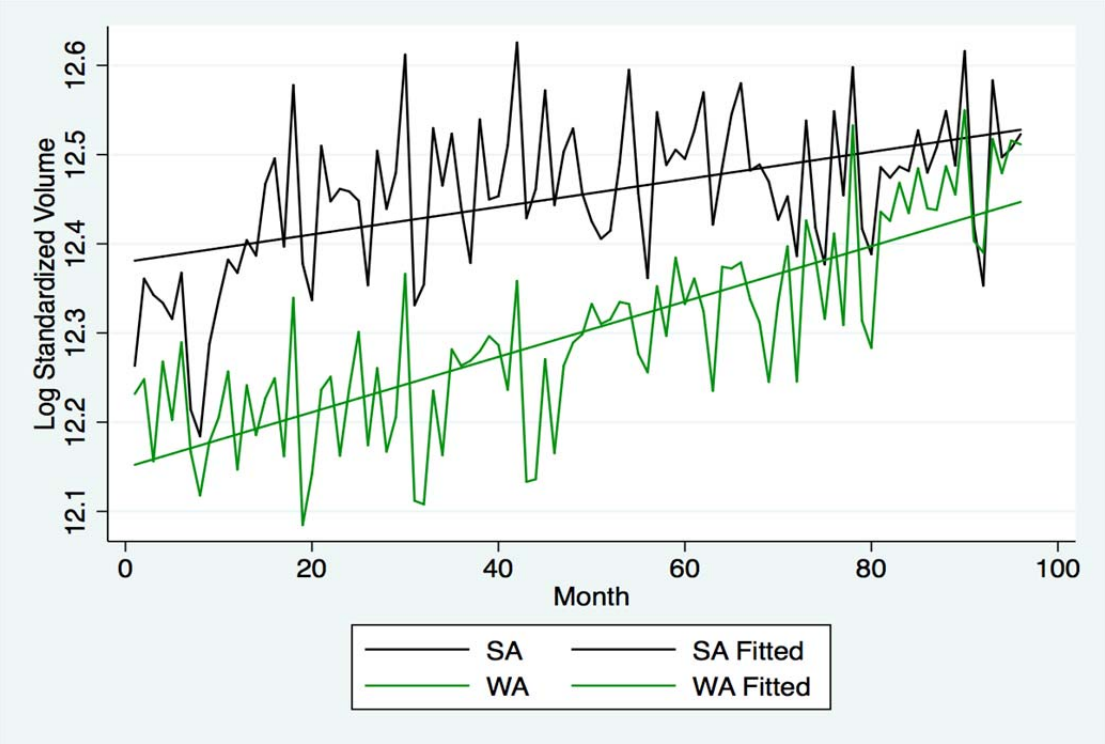
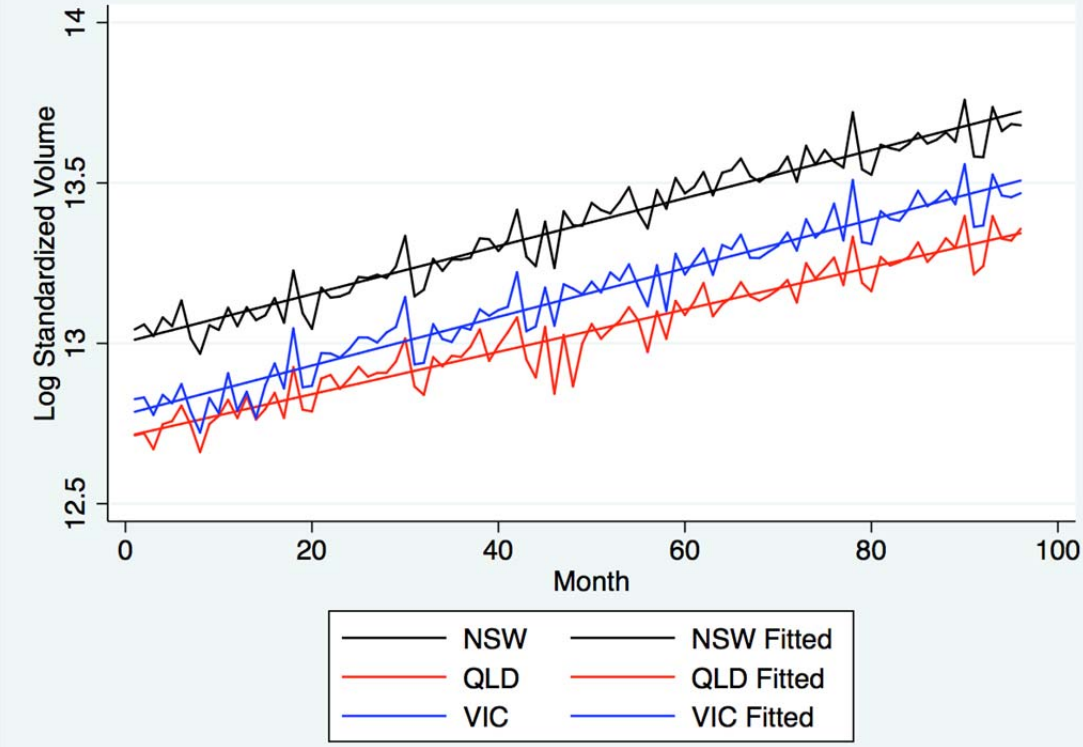
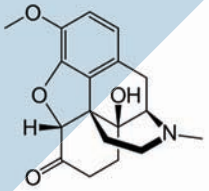


Figure 3: Observed and Predicted Prescribing Quantities for NSW, QLD and VIC





MULTIPLE REGRESSION ANALYSIS OF MORPHINE PRESCRIPTION DATA

INTRODUCTION

This report describes a generalised least squares model of morphine prescription data that simultaneously tests for:

- Temporal trends in numbers of people receiving morphine prescriptions on a State by State basis; and
- Differences in overall levels of morphine prescription between States.

This multiple regression model is equivalent to fitting a set of eight different time series models, one for each State, with separate serial dependence estimates in each State, but uses a slightly more efficient and statistically valid method for assessing these effects.

METHODS

The number of individuals receiving morphine prescriptions per month was calculated as a directly standardised rate per 100,000 population. The reference population for direct standardisation was the Australian population, divided into sex and 10 year age groups and varied annually to ensure maximum representativeness.

The resulting rates were regressed against time with State as a fixed effect, and a separate slope fitted for each State. Based on estimates of autocorrelation and partial autocorrelation functions, an autoregression of order 1 (AR(1)) serial dependence term was fitted separately to each State/time trend, and heteroscedasticity was assumed between States. Standard backwards stepwise model-building was used to simplify the model.

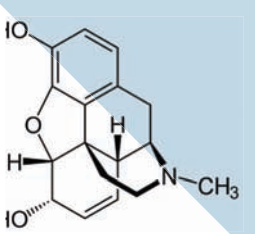
The resulting models were also used to estimate predicted values of the curves for all States.

RESULTS

Results of the regression model are shown in Table 1. The model fitted to the data well, and there was no evidence of either a) homogeneity in average rates of prescription between States; or b) similar time trends between States.

Table 1: Regression Results

Variable	Estimate	Standard Error	T statistic	P value
Intercept	74.34	0.57	129.63	<0.0001
Time	-0.19	0.01	-18.83	<0.0001
State				
ACT	Ref			
NSW	-68.53	0.57	-119.22	<0.0001
NT	45.46	2.55	17.8	<0.0001
QLD	-63.97	0.58	-110.88	<0.0001
SA	-54.73	0.61	-89.71	<0.0001
TAS	-20.89	0.70	-29.86	<0.0001
VIC	-66.18	0.58	-114.93	<0.0001
WA	-57.22	0.60	-95.95	<0.0001
Interaction				
ACT	Ref			
NSW	0.19	0.01	18.18	<0.0001
NT	-0.28	0.05	-6.15	<0.0001
QLD	0.18	0.01	17.23	<0.0001
SA	0.18	0.01	16.23	<0.0001
TAS	0.10	0.01	8.33	<0.0001
VIC	0.19	0.01	18.02	<0.0001
WA	0.16	0.01	14.58	<0.0001



These regression results indicate that some groups of States showed similar patterns of behaviour. Specifically:

- NSW, VIC, SA, WA and QLD had low initial rates of prescribing, and showed little change over time.
- The NT had a very high rate of prescribing initially, and showed rapid changes over time
- The ACT and Tasmania had medium levels of prescribing initially, and reduced prescribing rates more rapidly than the larger States.

The interaction terms combine to give estimates of the slope of the line for each state; these slopes are summarised in Table 2, grouped according to the three types of State.

Table 2: Overall Rates of Change After Including Interactions

State	Baseline Rate (June 2002, per 100,000 Population)	Rate of Change (per 100,000 population, per month)
Low Baseline		
NSW	5.81	-0.006
QLD	10.37	-0.015
SA	19.60	-0.016
VIC	8.16	-0.008
WA	17.12	-0.038
Medium Baseline		
ACT	74.34	-0.193
Tasmania	53.45	-0.089
High Baseline		
NT	119.79	-0.474

There is a consistent relationship between the baseline rate of prescribing and the rapidity with which prescribing rates declined, with higher baseline rates being associated with faster declines in prescribing rate.

The predicted and observed values for each State are shown with in Figures 1 to 3.

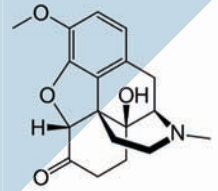


Figure 1

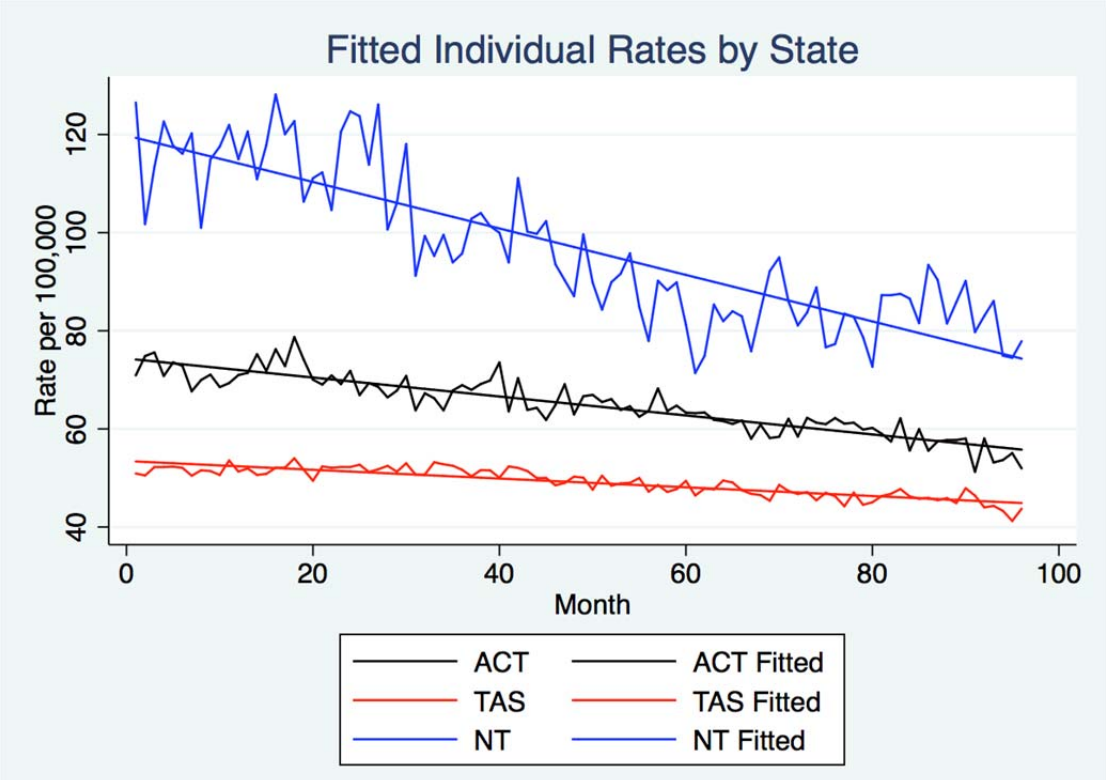


Figure 2

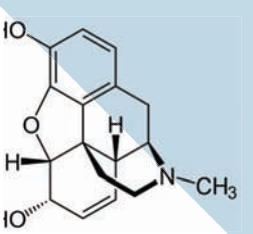
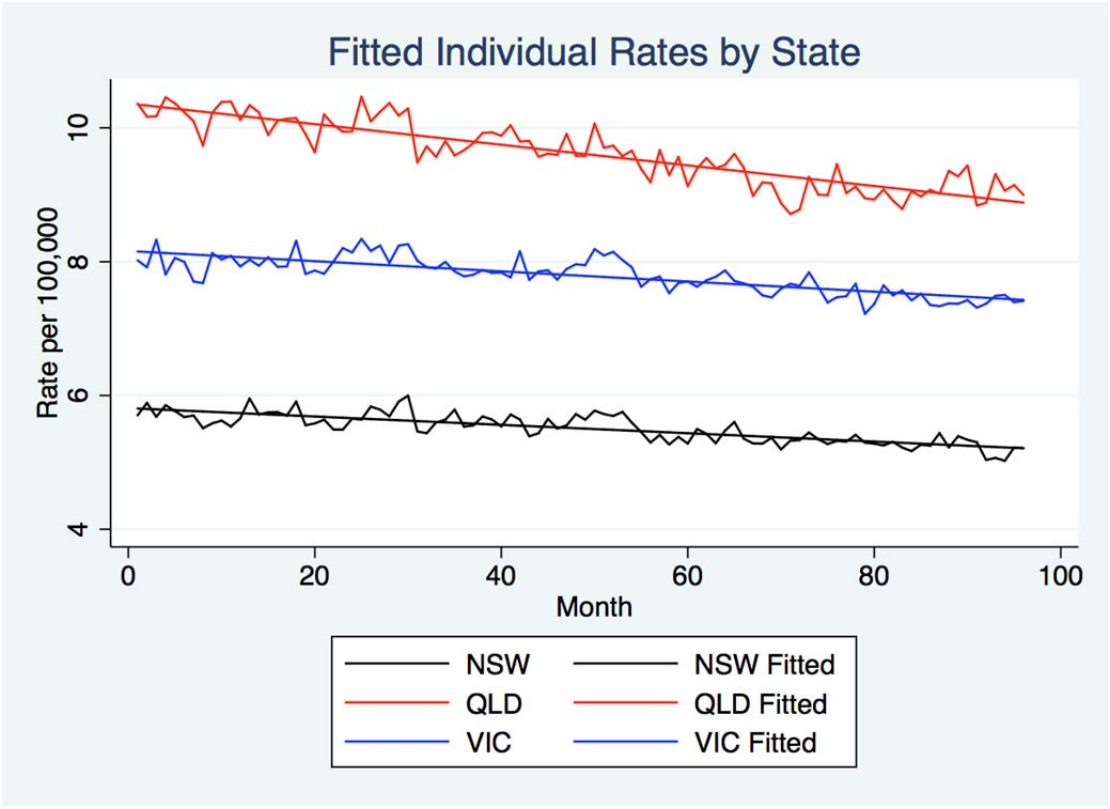


Figure 3

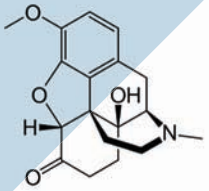


CONCLUSION

There is strong evidence of a statistically significant decline in standardised rates of prescribing of morphine over the period 2002 to 2010, and obvious large differences in prescribing rates between States. Faster declines in those States with higher baseline levels of prescribing suggest State government responses to inappropriate morphine prescribing may have been effective.

Some of the data series here may require more advanced individual fitting techniques. Specifically, although the linear model seems to work well for some States, a set of piecewise lines or splines might be more suitable for WA, SA and the NT. These may provide information on whether, for example, regulation proceeded in a smooth or a stepwise fashion in these States.

Analysis of volume and number of scripts prescribed is also necessary, to identify whether reductions in individuals receiving scripts were associated with increased numbers of scripts being dispensed to those who continued to receive prescriptions.



MULTIPLE REGRESSION ANALYSIS OF OXYCODONE PRESCRIPTION DATA

INTRODUCTION

This report describes a generalised least squares model of oxycodone prescriptions similar to that used for the morphine data. While morphine prescriptions declined over the time period, oxycodone increased, and in some states there was a significant jump in prescriptions near the end of the series. This jump has been incorporated into the statistical model to enable a single regression model to be calculated, but it appears likely that this model does not give the best possible fit to the data.

In the conclusion this report considers some alternative modelling strategies for the oxycodone data.

METHODS

Directly standardised rates of oxycodone prescriptions were calculated, and are presented here as a directly standardised rate per 100,000 population. The reference population was the same as for the morphine data, i.e. the corresponding Australian population.

There was strong evidence of a step function in the last 20 months of the data; so, before regression models were constructed, the relationship between a step function and one of the larger data series in the sample was tested. Autocorrelation and partial autocorrelation functions were tested, as were cross-correlation functions between the step function and the NSW data. These tests identified a step function starting at the 82nd month (April 2009), and no strong evidence of autoregressive terms in the data. For this reason a simple autoregression of order 1 was fitted separately for each series, and a step function was included in the model. To test for the possibility of a separate effect near the end of the series for each State, an interaction term between State and step function was also tested.

Standard stepwise backwards model-building was use to simplify the model.

RESULTS

The step function/State interaction was non-significant, suggesting that all States experienced a small increase in prescribing rate in April 2009. This is a little unrealistic, as the State trends were on quite different levels. The model without the step/State interaction is summarised in Table 1.

Table 1: Regression Results

Variable	Estimate	Standard Error	T statistic	P value
Intercept	40.35	1.14	35.3	<0.001
Time	0.17	0.02	8.2	<0.001
Step	0.48	0.12	3.9	<0.001
State				
ACT	Ref			
NSW	-37.83	1.32	-28.6	<0.001
NT	17.63	5.31	3.3	<0.001
QLD	-36.04	1.27	-28.4	<0.001
SA	-31.54	1.17	-27.0	<0.001
TAS	-15.96	1.48	-10.8	<0.001
VIC	-37.23	1.27	-29.2	<0.001
WA	-32.45	1.20	-27.1	<0.001
Interaction				
ACT	Ref			
NSW	-0.16			
NT	0.55	0.02	-7.1	<0.001
QLD	-0.16	0.09	5.8	<0.001
SA	-0.14	0.02	-7.2	<0.001
TAS	-0.09	0.02	-6.9	<0.001
VIC	-0.16	0.03	-3.4	<0.001
WA	-0.15	0.02	-7.0	<0.001

The States followed similar patterns of behaviour to those for the morphine data, except that those with the highest levels of oxycodone prescribing did not show the effect of the step clearly (though it had a uniform effect across all States – see the figures below).

Table 2 summarises the effects of the interaction term for State and time on the intercepts and slopes of the model.

Table 2: Overall Rates of Change after Including Interactions

State	Baseline Rate (June 2002, per 100,000 Population)	Rate of Change (per 100,000 population, per month)
Low Baseline		
NSW	2.5	0.005
QLD	4.3	0.008
SA	8.8	0.025
VIC	3.1	0.013
WA	7.9	0.020
Medium Baseline		
ACT	40.3	0.17
Tasmania	24.4	0.08
High Baseline		
NT	58.0	0.72

Figures 1 to 3 show the predicted and observed values of the curves.

Figure 1: High and Medium-rate Oxycodone Prescribing States

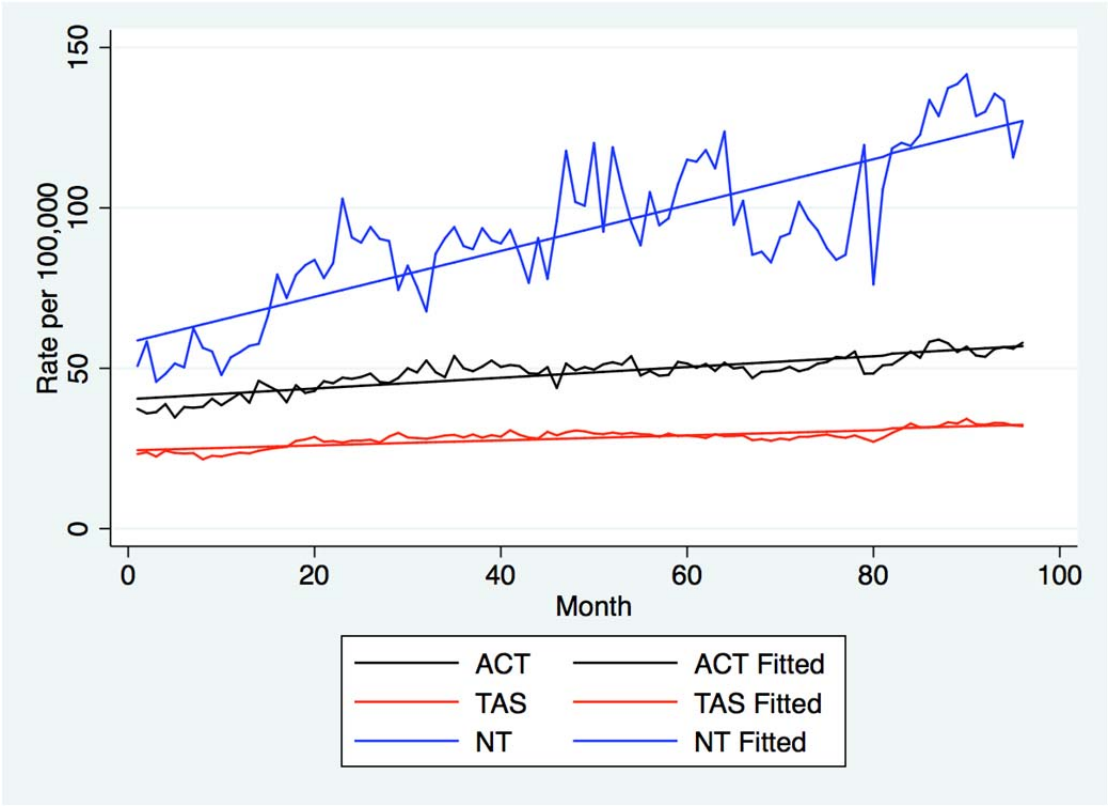
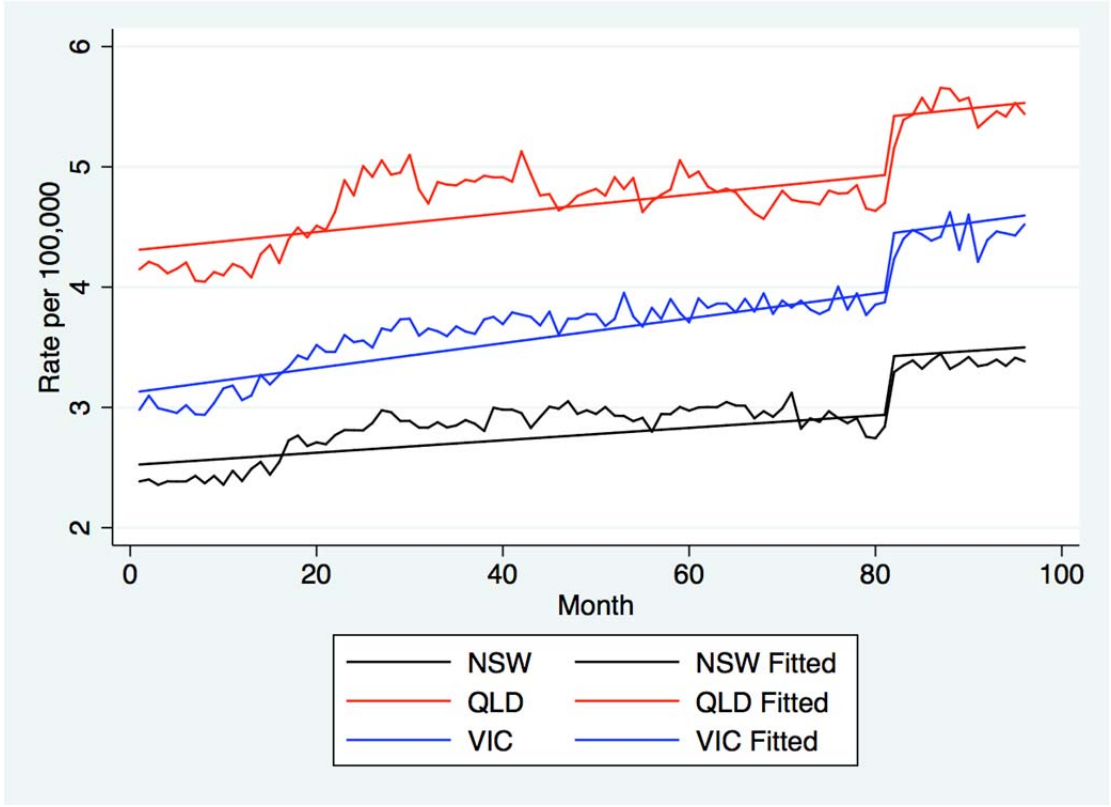
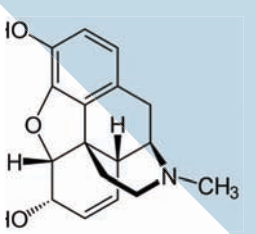


Figure 2: Medium-rate Oxycodone Prescribing States

Figure 3: Low-rate Oxycodone Prescribing States





In Figure 1, the effect of the step function is essentially submerged in the larger scale of the data series, but the step function works very well for the three series that start at baseline values of around 4 or higher. However, the step function seems to over estimate the April 2009 increase in the smallest two series. This is because it is not possible to fit the step function as a fixed effect size across all eight series when they occur on such different scales. Some solutions to this problem are described below.

DISCUSSION

Oxycodone prescribing has increased over the eight years of the study, with final rates being between 10% and 100% higher than at baseline. States with lower baseline levels of prescribing saw smaller increases over the period of the data, while those that started at high levels increased the most. Prescribing rates in the NT have increased from 58 per 100,000 at baseline to approximately 120 per 100,000 at the end of 2009.

For the States with low- to medium- levels of prescribing, there is strong evidence of a step increase in prescribing in April 2009. This increase was uniform across these States, but appears not to have been noticeable in the States with the highest rates of prescribing.

The data are not well-fitted, for two main reasons:

- The effect of the step function appears to differ between clusters of States, but with no prior reason for defining low- compared to high-level prescribing States, it is difficult to justify fitting such a model for the step function.

- The straight line model does not appear to fit the data well in the middle of the range. There are long runs of observations above the fitted curves, which resemble a random walk, but the data was not fitted under this assumption.

There are three possible solutions to these problems:

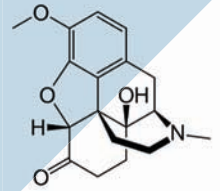
- Post-hoc specific analysis of some curves for more detailed and better fitting models.

- Division of the states into two groups (high prescribers vs. the remainder) and analysis of a step function effect within each of the groups – however, this is not guaranteed to solve the problem of, for example, the step overshooting the curve in the case of NSW and VIC.

- Analysis of the curves using a cubic spline fit, rather than a straight line. This will make the curves fit better to the data, and may enable a separate step function to be fitted to each State, but it has several drawbacks. It will use more data points and require a lot more tests, and the results of a cubic spline fit cannot be interpreted in terms of a simple trend over time that is easily reported.

Decisions on how best to fit the oxycodone data may lead to marginal improvements in the overall suitability of the model, and particularly to better estimates of p-values for the various terms. The statistically most appropriate approach is probably to test a spline fit, but this is extremely difficult to present in a way that ordinary readers can appreciate, so has not been conducted here. The spline fit will better fit the rapid increase and plateau effect visible in all graphs, and make the step function a more effective fit to the data.

Even if the analysis presented here is used as the final analysis of oxycodone prescribing, it should be clear that the statistical results are broadly correct.



MULTIPLE REGRESSION ANALYSIS OF HYDROMORPHONE PRESCRIPTION DATA

INTRODUCTION

This report describes a generalised least squares model of hydromorphone prescriptions similar to that used for the oxycodone data. Hydromorphone data also shows a sudden increase after April 2009, but in this case the increase was not a simple change in level, but appeared to be a change in trend. Furthermore, the data showed quite strong long-term patterns which require analysis using natural splines of slightly greater complexity than those used for the oxycodone data.

METHODS

Directly standardised rates of numbers of individuals receiving hydromorphone prescriptions were calculated, and are presented here as a directly standardised rate per 100,000 population. The reference population was the same as for the morphine data, i.e. the corresponding Australian population.

There was strong evidence of a step function in the last 20 months of the data, but it was difficult to test this step function using cross-correlation functions because it represented a change in trend, rather than level. The step function was thus tested directly in the model with no lag effect assumed. Autocorrelation and partial autocorrelation functions for the prescription data were tested, and showed no strong evidence of autoregressive terms in the data. For this reason a simple autoregression of order 1 was fitted, separately for each series, and a step function was included in the model along with a step/time interaction.

Because prescription data showed a non-linear relationship with time, the model was fitted using a natural spline function. These functions are able to flexibly adapt to the curve of the data and fit non-linear trends smoothly. For this model, a spline with five knots was chosen, and a separate spline was fitted for each curve. In summarising the results of the model, the specific parameters of the spline function are not shown. Only the intercept and step functions are shown here. Note that the change in trend term for this data represents an interaction between the spline function and the step function; this is essentially impossible to interpret in terms of model coefficients. The results of this model are thus presented graphically, as predicted values plotted against observed values.

Standard stepwise backwards model-building was use to simplify the model. The smaller States (ACT, NT, Tasmania) had to be excluded due to small numbers, but followed similar trends to the larger States (not shown).

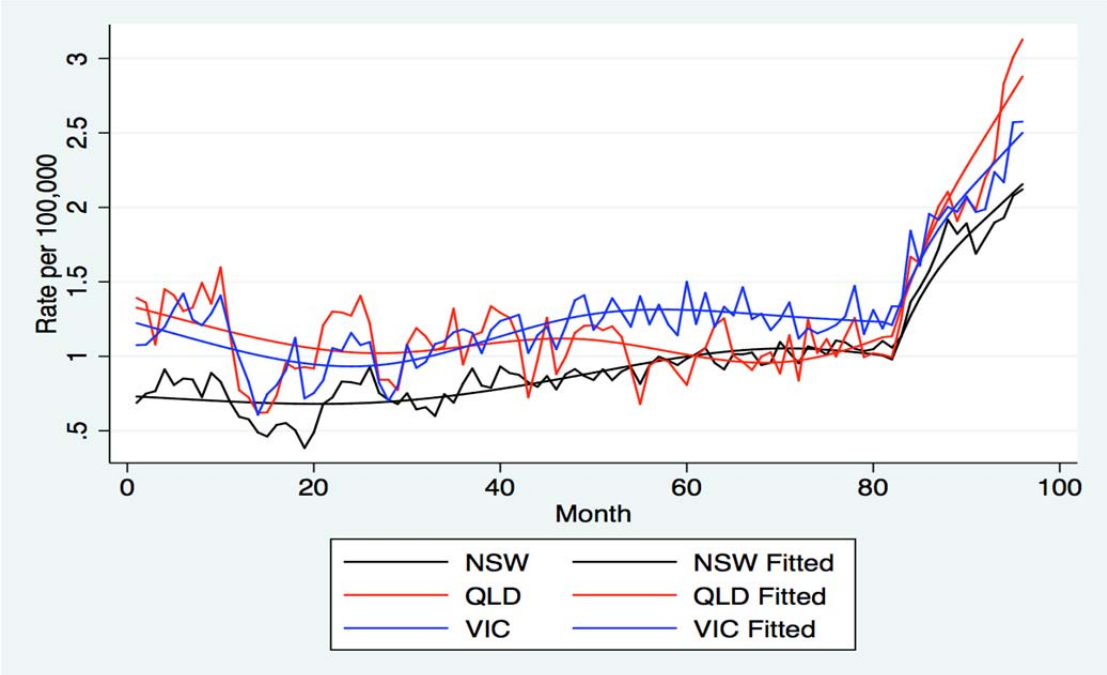
In order to produce a simpler and more readily interpretable test of effect, the data were analysed in a differenced regression model. In this model, the difference in rates between adjacent months was calculated to give a differenced series, and this series was modelled without splines, using only a term to estimate differences between States. In this model a step function represents a change in the long-term trend of the model, and the intercept term represents the amount by which hydromorphone prescribing increased per month before April 2009. This model was also tested only on the larger States.

RESULTS

The interaction between the step function and the natural spline smoother was statistically significant (chi-squared statistic 37.75, $p<0.0001$) indicating a strong change in trend from April 2009. Though not easily interpreted, it appears to represent a sudden increase in prescribing. The effect is best seen in plots of the predicted against the observed rates, which are shown in Figure 1 and Figure 2.

Figure 1: Observed and Predicted Prescribing Rates, SA and WA

Figure 2: Observed and Predicted Prescribing Rates, NSW, QLD, VIC



Data were checked for errors in the calculation of standardised values, but the same patterns are evident in the raw data as well.

Table 1 shows the results of a model of the differenced series in which the step function represents a change in the monthly increment of prescribing rate. State was not significant in this model but there was a significant difference in the effect of the step by State. The non-significant terms for State and the non-significant constant indicate that the trend was flat in all States before April 2009.

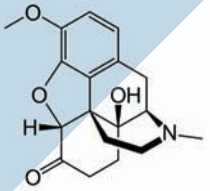


Table 1: Coefficients of Model of Differenced Series

Variable	Coefficient	Standard Error	Z Statistic	P value
Intercept	0.0048	0.0081	0.6	0.6
State				
NSW	Ref			
QLD	-0.0098	0.0187	-0.52	0.6
SA	-0.0197	0.0219	-0.9	0.4
VIC	-0.0030	0.0141	-0.21	0.8
WA	-0.0099	0.0352	-0.28	0.8
Step	0.0647	0.0204	3.17	0.002
State/step				
NSW	Ref			
QLD	0.0831	0.0475	1.75	0.08
SA	0.2122	0.0557	3.81	<0.0001
VIC	0.0252	0.0360	0.7	0.5
WA	0.1350	0.0892	1.51	0.1

Table 2 shows the monthly increment in each state before and after April 2009. All pre-2009 values are non-significant.

Table 2: Pre- and post-2009 Monthly Increments

State	Pre-April 2009	Post-April 2009
NSW	0.0048	0.0695
QLD	-0.0050	0.1428
SA	-0.0149	0.2620
VIC	0.0019	0.0918
WA	-0.0051	0.1946

After April 2009, prescribing rates were increasing by between 0.07 and 0.26 per 100,000 people per month; before April 2009 they were not changing over the long term. These increases were statistically significant for all the states.

DISCUSSION

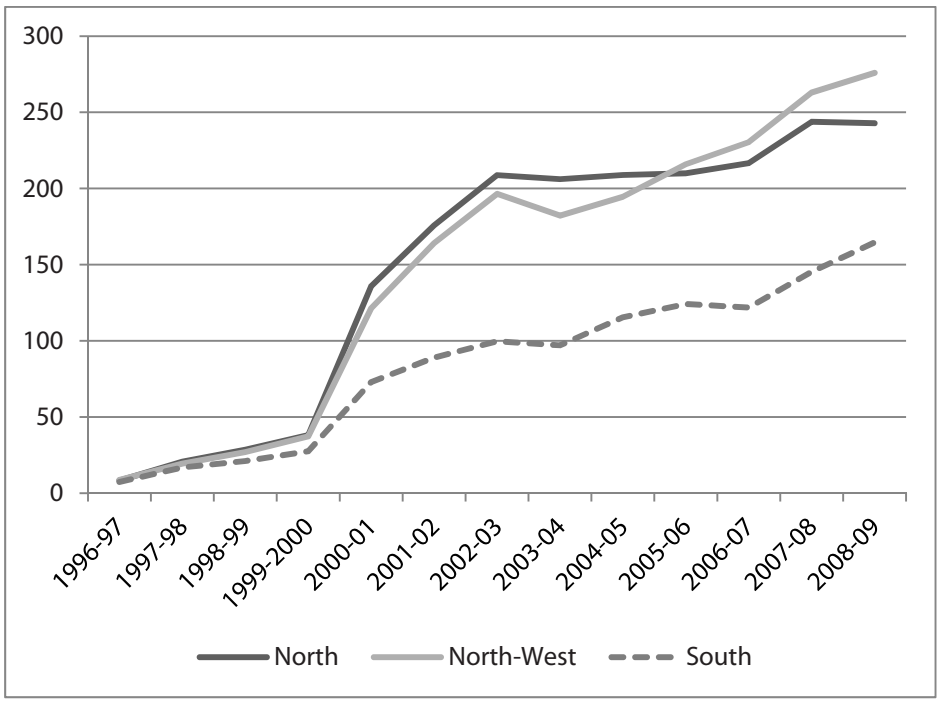
Hydromorphone prescription rates have increased extremely rapidly from a low base in April 2009. Though absolute rates are still low compared to some other drugs, the rapid increase is clear and requires explanation. This increase is evident in two modelling processes: either through fitting natural splines to the untransformed data, or in a simpler model that tests just the monthly change in a differenced time series.

Further discussion is necessary to identify whether this rapid change is a data collection artefact or represents a real effect, and if so what are its causes.

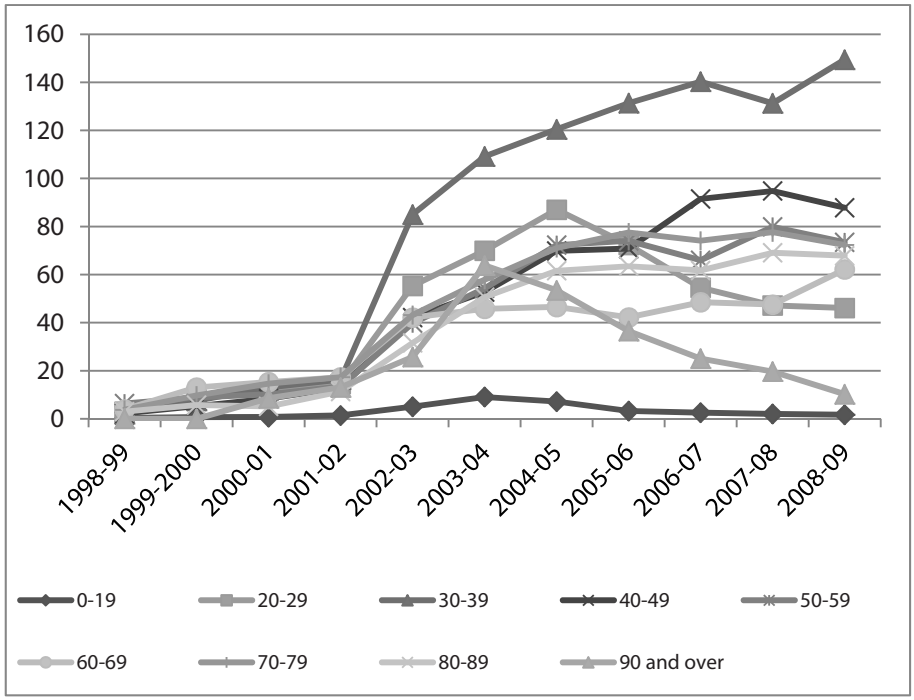
APPENDIX 3:

AUTHORITIES BY REGION (METHADONE TABLETS, OXYCODONE, MORPHINE +ALPRAZOLAM), 1996-2009

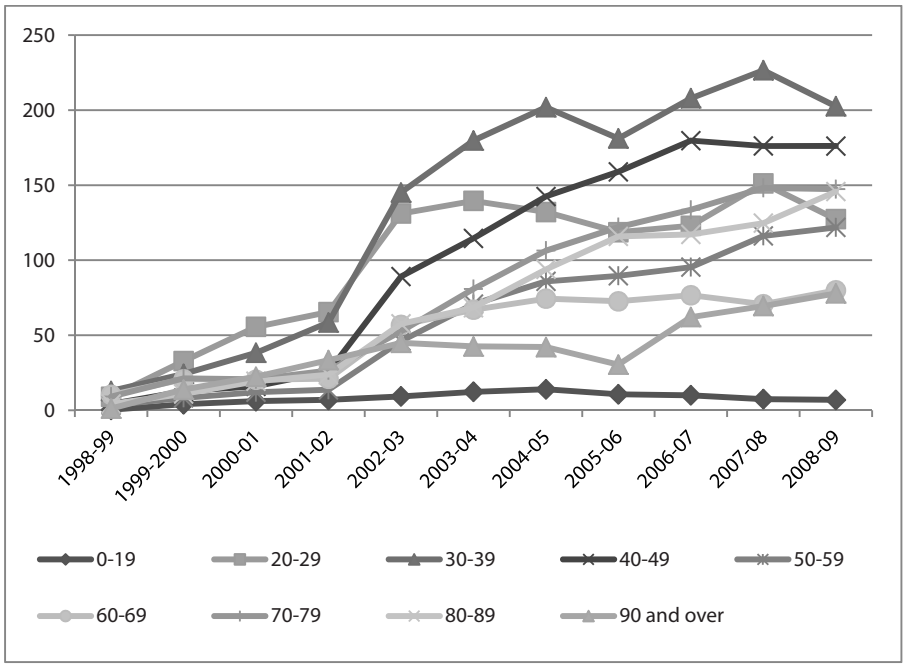
Authorities by region (methadone tablets, oxycodone, morphine +alprazolam), 1996-2009



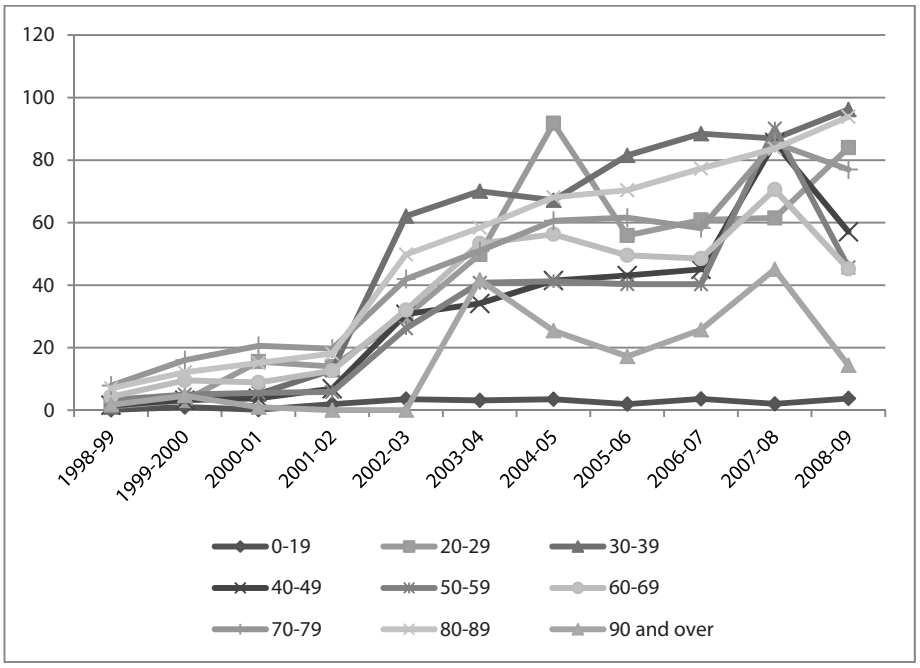
Authorities for the Northern region by 10 year age group (per 1000 population) 1998-2009

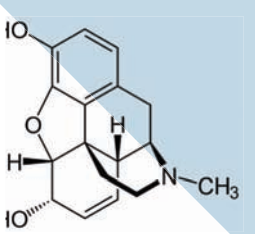


Authorities for the Southern region by 10 year age group (per 1000 population) 1998-2009



Authorities for the North-west region by 10 year age group (per 1000 population) 1998-2009





APPENDIX 4:

REVIEW OF TASMANIAN OPIOID PRESCRIBING PROJECT KEY INFORMANT INTERVIEW QUESTIONS

INTRODUCTORY COMMENTS

My name is _____ and I'm from the University of New South Wales. We are conducting a review of opioid prescribing in Tasmania for the Tasmanian Department of Health and Human Services. You have been nominated by the College of GPs as someone who may be interested in participating in an interview about opioid prescribing for persistent non-malignant pain. Your answers will provide important information to the review team. We expect the interview to last for approximately 30 minutes.

Your answers are confidential. For example, in reporting the results of the interviews, we will report that "there were three main factors viewed as important influences on doctors' prescribing of opioid analgesics". No identifying information, such as names, practices or locations will be reported to the Department of Health and Human Services. If you would like a copy of the results to be provided to the Department, we are happy to send you a copy. Would you like to participate in the survey?

Yes ❑ No ❑

If 'Yes': Thank you. I understand that you have other demands on your time so I will try to get through the questions as efficiently as possible. If 'No': Thank you for your time.

QUESTIONS

In what setting are you currently practicing?

Prescribing Practices

1. Have you prescribed opioid analgesics in the past 12 months?

2. What types have you prescribed? (e.g. codeine, oxycodone, morphine, physeptone, buprenorphine)

Making decisions about prescribing: Patient factors

3. What factors do you believe influence doctors to prescribe opioid analgesics?

PROMPT:

a. Severity of pain Y/N

b. The diagnosis Y/N

c. Referral or documentation from a specialist Y/N

d. Patient request or demand Y/N

e. Maintenance of dependence Y/N

f. To treat severe opioid withdrawal Y/N

g. If the patient is well known to the doctor or the practice Y/N

h. If the patient is demonstrating coercive, intimidating or threatening behaviour Y/N

i. For affect/mood control Y/N

j. If alternatives to opioid therapy are not accessible or not acceptable to patient Y/N

4. What factors influence doctors' decisions about:

   a. The choice of opioid medication?

   b. The dose and form of opioid medications

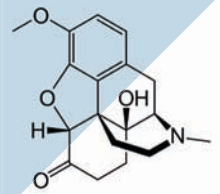
   c. The duration of treatment?

5. What influences doctors to keep prescribing for patients in the long term?

Efficacy

6. In your experience, what knowledge do doctors have about the effectiveness of opioids for persistent pain? E.g. what percentage reduction in pain would they expect in the long term?

7. To your knowledge, what other interventions do doctors use when treating persistent pain?



8. How aware do you think doctors are of other medications for pain, e.g.

Not at all	a little	somewhat	very

   a. Gabapentin

   b. Duloxetine

   c. Amitriptyline

   d. Tramadol

9. What strategies do you think doctors are using to respond to the key comorbidities associated with persistent pain, e.g. mental health problems, insomnia, physical health problems?

Safety/risk assessment

10. Are there doses at which doctors get concerned about the patient?

11. What sub-groups of persistent pain patients would doctors NOT prescribe opioids to? How do they then manage these patients?

12. What do you think doctors see as the risks in prescribing opioid analgesics?

13. Are you aware of doctors prescribing benzodiazepines or other psychoactive medications in combination with opioids for persistent pain?

   a. If so what do you think they would see as the benefits and risks?

14. What strategies are you aware of that doctors use to assess the risk of:

   a. Diversion of the medication to other people

   b. Misuse by the patient, e.g. unauthorised dose escalation, use by unauthorised routes?

15. What strategies are you aware of that doctors use to manage the risk of diversion and misuse?

Accessibility of treatments

16. To whom do you refer more complex chronic pain patients, i.e. patients with comorbidity (e.g. people with substance use or mental health problems)?

17. How confident do you think doctors are in refusing to prescribe opioids to a patient who has requested them? (very, moderately, not at all)

18. What other resources do you believe doctors need to manage these patients?

19. Do you believe that doctors experience any difficulties getting access to opioid analgesics for patients? What problems/issues does this cause?

Strategies for Addressing the Gaps in Skills and Confidence

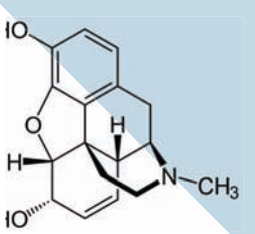
20. What do you think is the most appropriate way to provide training and support for prescribers in the area of managing persistent pain?

21. Can you think of ways in which Pain Management services and Addiction Medicine services can better meet doctors' needs in assessing and managing patients with persistent pain and evidence of emerging opioid addiction?

22. What support do you think doctors would find helpful in learning how to better manage persistent pain patients?

Structural Reforms

23. Can you think of ways in which the health system can better support the clinical assessment and management of patients presenting with persistent pain and addiction? (e.g. Medicare, the Commonwealth's Pharmaceutical Benefits Scheme, State Poisons Legislation)



APPENDIX 5:

REVIEW OF OPIOID PRESCRIBING IN TASMANIA

Tasmania
Department of Health and Human Services

TERMS OF REFERENCE

AIM

To conduct a staged review which will develop prioritised recommendations and a staged implementation plan in relation to 'evidence informed' prescribing of opioid medication for:

1. Pain management generally and pain management specifically in the context of drug addiction or risk of addiction.
2. Safe prescribing of Schedule 8 opioids and other drugs of dependence, in a manner that takes into account patient and community safety and the requirements of best practice chronic pain medicine and addiction medicine.

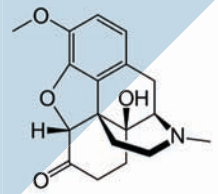
SCOPE

Stage 1

- Investigate the current prescribing of opioids (including other drugs prescribed in association with opioids) in Tasmania. This is to include the clinical contexts in which decisions to prescribe are made and the patterns and levels of prescribing in the face of evidence of clinical and public risk, diversion and harm.
- A review of pain management (inclusive of specialist management) and the contributions each area of the health system makes to this management.
- Investigate and analyse all available evidence of risk, diversion, morbidity and mortality arising from the prescribing of opioid medications and other drugs of dependence including qualitative/quantitative data and information from areas including but not limited to:
    1. Police, Coroners Office and Forensic Science Service Tasmania
    2. Hospitals including acute and chronic pain services and pain medicine clinicians
    3. Divisions of General Practice and GP key informants
    4. Research data e.g. IDRS/EDRS
    5. Pharmaceutical Services Branch and Alcohol and Drug Services data
- Examine the clinical education and training requirements and associated resources and structural supports to promote 'good clinical practice' in the management of chronic non malignant pain in the presence of looming or established drug dependence or drug related aberrant behaviour
- Examine the legal and regulatory framework. This is to be done in the context of identified prescribing patterns, levels of prescribing and any associated problems and the appropriateness and effectiveness of the current regulatory frameworks across Australia.

Stage 2

- Compare and contrast prescribing levels, patterns and contexts with those in other jurisdictions as well as internationally, taking into account evidence of effectiveness, risk and harm arising from such prescribing and any other relevant issues.
- Compare and contrast:
    1. Medical and other health professional training and clinical support



2. The regulatory framework and resources across Australian jurisdictions and

3. Any other international models that appear relevant including the adherence, monitoring and effectiveness of the regulatory requirements and formal mechanisms for their implementation.

- This comparison will include consideration of the components of contemporary workforce development including supportive policy, clinical advice and supervision and mentoring by specialised professionals and services.

Stage 3

- To advise on any required structural reforms (policy, legislative and regulatory reform, training, workforce development, governance, guidelines development and defined scope of competency for clinical practice) and the place of patient choice versus evidence for what works best and clinical risk minimisation.

- Develop prioritised recommendations. These recommendations are to be in line with the aim of the project and relevant to the Tasmanian context and need to include management strategies for any unintended change consequences resulting from the recommendations.

- Make recommendations to provide clear guidance on best practice and the clinical, training and regulatory requirements to support this.

- Identify the resources required in addressing any gaps and deficits that are identified in this review.

ROLE AND FUNCTION

1. Consultant to recruit a team to undertake the review with members of the team to have nationally recognised expertise and experience in one or more of the following areas:

    - Addiction medicine (e.g., Assoc Prof Nick Linterzis)

    - Epidemiology (e.g., Prof Louisa Degenhardt/ Prof Wayne Hall)

    - General Practice (e.g., A/ Prof Andera Mant)

    - Pain Medicine (e.g., Dr Milton Cohen)

    - Regulatory matters (e.g., Prof Wayne Hall)

    - Public Health Expertise (e.g., Profs Richard Mattick/Wayne Hall)

    - Research (e.g., Profs Richard Mattick/Louisa Degnehardt/Wayne Hall)

2. The team will report to a steering committee comprised of high level and appropriately credentialed DHHS representatives at monthly intervals with the final report to be delivered within the determined timeframe. Stages 1,2 & 3 are to be completed within 12months of signing of the contract.

3. Consult with key stakeholders including but not limited to:

    - Key clinicians in the health sectors identified above – approximately 20

    - Patients – Review of case vignettes

    - Pharmacy (Tasmanian branch of the Pharmaceutical Society, Tasmanian branch of the Pharmacy Guild)

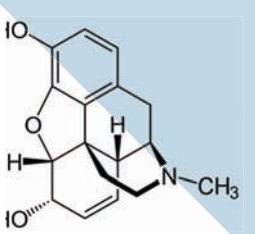
    - Police – data, drug squad and policing issues

    - Section 59E Expert Advisory Panel

    - Tasmanian Ombudsman and Health Complaints Commissioner

    - Australian Health Practitioner Regulation Agency (AHPRA) Tasmanian Branch

4. It is anticipated that scientific publications will emanate from this study.



DELIVERABLES

Stage 1

DHHS will provide assistance in the collection of data through the project officer and senior departmental officers.

The following will need to be established and completed within a 3 month time frame;

- Ethics approvals at administering institution and at DHHS
- Data collected from key informants providing the following information:
    - Details in relation to harms arising from the use of opioids in Tasmania
    - Prescribing data in relation to opioids in Tasmania
    - Details of reported morbidity or mortality associated with opioids and other drugs of dependence in Tasmania
    - Pain management protocols in relation to the use of opioids, with special attention to the clinical management of patients demonstrating clinical evidence of opioid or other drug dependence and/ or drug-related aberrant behaviour in Tasmania
    - Current education and training requirements in the prescribing and use of opioids
- Establishment of a reference group and review team and formally report back to the steering committee on membership.
- Start preliminary analysis of data.

Stage 2

The analysis and review of data will be completed within a 6 month time frame.

The findings from this stage of the review will be presented to the steering committee via formal reporting mechanisms and a visual presentation of the data;

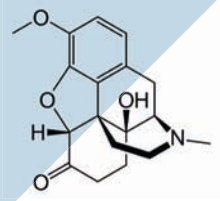
- Analyse, review and compare data received from key informants and key stakeholders.
- Provide concrete data in a format which provides evidence of:
    - Current prescribing patterns
    - Specialist intervention and the impact of this on pain management
    - Effectiveness, risk and harm from current prescribing patterns
    - Risk, diversion, morbidity and mortality arising from prescribing practices
    - Education and training requirements, resources and structural supports in place or missing
    - Appropriateness and effectiveness of current regulatory frameworks
- Documented case vignettes which illustrate key issues

Stage 3

The development of recommendations within a formal report will be completed within a 3 month time frame

This to include the running of an expert workshop for development of

- Structural reforms- policy, legislative and regulatory
- 'Good clinical practice' and the education and training requirements to support this
- Workforce development and the relevant supports required to ensure adequate policy, advice, supervision and mentoring
- Clinical guidance for the prescribing of opioids to patients who display evidence of opioid or other drug dependence and/ or drug-related aberrant behaviour
- Strategic directions provided to progress the implementation of review findings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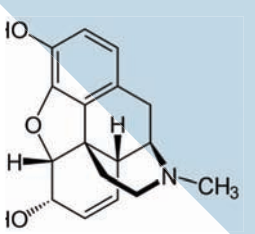
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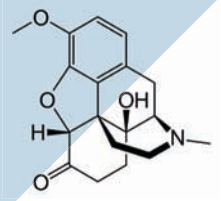
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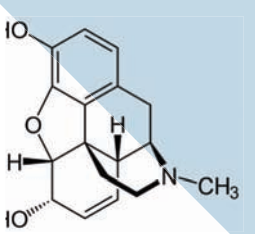
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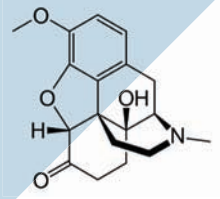
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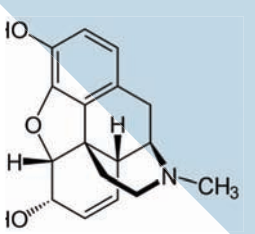
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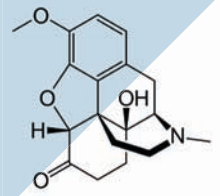

REFERENCE GROUP

CHAIR:

Dr Adrian Reynolds

MEMBERSHIP:

Dr George Cecherz, Dr Max Sarma, Dr Geoff Chapman, Sarah Male, Dr Raimondo Bruno, Dr Tony Bell, Dr Frank Reynolds, Dr Emil Djakic, Associate Professor Janet Vial, Dr Frank Meumann, Dr Paul Pielage, Dr Dean Powell, Professor Michael Ashby, Dr Guy Bannick, Mr Tony Stevens, Dr Andrew Jackson, Dr Sally Hildred, Ms Kaye Veal, Mr Alan Purcell

PROXY CHAIR:

Mary Sharpe / Jim Galloway