**C. Breen, L. Degenhardt, A. Roxburgh,
R. Bruno, C. Fry, A. Duquemin, J. Fischer,
B. Gray & R. Jenkinson**

The impact of changes in the availability of publicly subsidised 10mg temazepam gel caps in Australia

NDARC Technical Report No. 158

The impact of changes in the availability of publicly subsidised 10mg temazepam gel capsules in Australia

Courtney Breen, Louisa Degenhardt, Amanda Roxburgh, Raimondo Bruno, Craig Fry, Anthea Duquemin, Jane Fischer, Barbara Gray, & Rebecca Jenkinson

NDARC Technical Report No. 158

ISBN 1 877027 464

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

The study was funded by the Commonwealth Department of Health and Ageing (CDHA).

The following researchers and research institutions contributed to the information presented in this report, including;

- Ms Courtney Breen, Dr Louisa Degenhardt, and Ms Amanda Roxburgh, National Drug and Alcohol Research Centre, University of New South Wales;

- Ms Anthea Duquemin, Ms Barbara Gray, Ms Linda Hipper & Ms Susan Vesperman, Department of Health and Community Services, Northern Territory;

- Ms Jane Fischer, Mr Stuart Kinner and Professor Jake Najman, Queensland Alcohol and Drug Research and Education Centre, University of Queensland;

- Mr Raimondo Bruno, School of Psychology and School of Pharmacy, and Associate Professor Stuart McLean, School of Pharmacy, University of Tasmania; and

- Mr Craig Fry, Ms Rebecca Jenkinson & Mr Peter Miller, Turning Point Alcohol and Drug Centre, Inc., Victoria

The authors of the report would like to thank Mr Paul McElwee of Turning Point Drug and Alcohol Centre Inc. who put in a great deal of time and energy to create a database which was a great assistance to the project.

The following individuals & organisations generously provided information and/or secondary data for this report:

- David Pearson, National Medicines Policy Section, CDHA for background information.
- Kevin McGeechan and Andrew Kemp (Medilinx), for GPRN data.
- Maxine Robinson, John Dudley, Peter Marlton, Julie Lindner and David Theodore for both non-PBS and PBS prescription data (Drug Utilisation Sub Committee's (DUSC) Drug Utilisation Database, Pharmaceutical Benefits Branch, Health Access and Financing Division, CDHA.
- Ingrid van Beek (MSIC) and Jo Kimber (NDARC) for providing Sydney Medically Supervised Injecting Centre data

The authors are grateful to them.

In addition to those that provided indicator data, we would also like to thank all the agencies and individuals that assisted with recruitment and interviewing of IDU.

We thank the key informants who were willing to be interviewed and receive no compensation for their time and effort.

Finally we would like to thank the IDU interviewed for the study. We could not provide the information in this report without their assistance and willingness to share their experience.

EXECUTIVE SUMMARY

The Commonwealth Department of Health and Ageing (CDHA) commissioned the National Drug and Alcohol Research Centre (NDARC) to coordinate research investigating benzodiazepine use among injecting drug users (IDU) and assess the impact of the prescription restriction of 10mg temazepam capsules, introduced on May 1st 2002.

Data was collected in five jurisdictions – New South Wales (NSW), the Northern Territory (NT), Queensland (QLD), Tasmania (TAS) and Victoria (VIC) as findings from 2001 indicated concerning levels of benzodiazepine injection in those jurisdictions (Topp et al 2002). The study was conducted as part of the annual Illicit Drug Reporting System (IDRS) using the existing IDRS methodology. Data on benzodiazepine use was collected by; a quantitative survey conducted with IDU in June 2002 and December 2002, a semi structured survey with pharmacists and doctors that have contact with benzodiazepine users, and the examination of benzodiazepine prescription data, both PBS and non PBS data.

This final report contains data from a sample of IDU interviewed in June 2002 that had used benzodiazepines between January and April 2002 prior to the restriction of 10mg temazepam capsules and from a sample of IDU interviewed in December 2002 that had used benzodiazepines in the month prior to interview, six months after the change in policy.

As expected, the prescription data indicates that there has been an increase in the number of temazepam tablet prescriptions and a corresponding decrease in the number of 10mg temazepam capsule prescriptions.

Although the data available is limited, general practitioners and pharmacists that provided feedback regarding the impact of the policy restriction reported that the change in subsidisation of temazepam capsules did not have negative clinical implications and little administrative impact. Other key informants interviewed between June and August reported it was too early to tell the full impact of the policy change. Generally there was support for the policy restriction although there were comments that it was overdue and would not solve the problem of benzodiazepine misuse. There were suggestions that there should be further restrictions on benzodiazepines generally and temazepam capsules specifically. As supported by the prescription data in some states, some key informants thought the change in prescribing practices had been initiated before the May 1st 2002 policy restriction.

The IDU samples interviewed in June and December had similar demographic characteristics and patterns of drug use. They were all regular injectors. They are not representative of all IDU that use benzodiazepines. Information on IDU that may have ceased benzodiazepine use as a result of the restriction was not collected for this study and therefore the data presented from IDU surveyed in December may represent patterns of use by more dedicated benzodiazepine users. Further research is needed here.

The majority of the IDU surveyed in June and December reported oral use of benzodiazepines. Substantial proportions of benzodiazepine users reported oral and injecting use and injecting only was not as common. Examination of temazepam users

specifically suggest that a greater proportion of them 'inject only' compared to benzodiazepine users overall, suggesting that capsule preparations are more amenable to injection, and have desirable effects over and above oral routes of administration.

Despite a suggested decrease in the reporting of injecting in the June survey in the month after the policy change, the data from the December survey suggest that among injecting drug users who continue to use benzodiazepines, there is continued injection of benzodiazepines and temazepam gel capsules specifically. Similar proportions continue to inject capsules and tablet preparations. The frequency of the injection of capsules remained similar after May 2002, with a slight increase in the frequency of injection of tablets.

The majority of IDU surveyed reported obtaining their benzodiazepines from doctors, presenting with genuine symptoms. Although the majority reported only visiting one or two doctors to obtain their benzodiazepines, small numbers had visited numerous doctors. There appears to be a substantial black market for benzodiazepines with about half of IDU reporting purchasing benzodiazepines on the street. IDU were able to continue to obtain capsules on the street after the policy restriction.

The negative health effects of the misuse, and particularly the injection of benzodiazepines remains a concern. Although limiting the supply of the temazepam capsules may have reduced the injection of temazepam capsules for some IDU, others continue to inject them and therefore additional strategies are needed to further reduce the misuse of benzodiazepines. Further monitoring is desirable, specifically addressing the health impacts of the use and injection of benzodiazepines, the sourcing of benzodiazepines and levels of criminal activity among benzodiazepine users.

INTRODUCTION

The misuse of benzodiazepines among injecting drug users (IDU) has been well documented in many countries including Australia, the UK, the US, and the Middle East (Darke 1994, Ross & Darke 2000, Strang et al 1994, Dupont 1998, Iguchi 1993, Gelkopf et al 1999). The use of benzodiazepines by IDU has been associated with serious negative physical and psychological consequences such as benzodiazepine dependence, increased risk of heroin overdose, increased injection related risk behaviour, extensive poly drug use and poor psychosocial functioning (Klee et al 1990, Darke 1994, Darke, Ross et al 1996, Ross & Darke 2000, Gutierrez-Cebollada et al 1994). In addition, the injection of benzodiazepines is associated with high levels of injection related health problems, including significant scarring, bruising of injection sites and difficulty injecting (indicative of vascular damage). Continued benzodiazepine injection can also lead to more serious health issues including gangrene and sometimes amputation (Eddey & Westcott, 2000).

In recent years, there has been growing concern among Australian health professionals regarding the rising incidence of harm associated with the injection of benzodiazepines, particularly temazepam gel capsules. The Illicit Drug Reporting System (IDRS) has consistently shown that benzodiazepines are commonly used among sentinel populations of IDU (Topp et al 2002). Results of recent surveys suggest either stable or possible increases in the rates of benzodiazepine use and injection in some jurisdictions. In particular, the 2000 IDU survey from the IDRS in Hobart and Melbourne reported higher rates of oral and intravenous benzodiazepine use compared to other jurisdictions (Fry et al 2001, Bruno et al 2001, Topp et al 2001). An examination of trends in benzodiazepine use in Victoria and Tasmania suggest that among sentinel populations of IDU, in addition to the higher rates of benzodiazepine use compared to other jurisdictions, there may be an increase over time in the prevalence of injecting (Fry & Bruno 2002). An examination of trends in the injection of pharmaceuticals in Sydney found the proportion of IDU recently injecting benzodiazepines has remained around 10-16% from 1996-2000 (Darke et al 2002).

Research has also found that capsule preparations are popular for injection, due to the relative ease with which they can be prepared and injected (Strang et al 1994). Ironically, temazepam gel filled capsules, thought to be less amenable to injection, were initially promoted in the UK as a harm reduction measure to reduce the injection of benzodiazepines generally, and the fluid from temazepam capsules specifically (Fountain et al 1999). However, as IDU heated the gel and continued to inject the capsules with negative health consequences, temazepam capsules were restricted in the UK in 1995 in an attempt to reduce the harm associated with the injection of these preparations (Fountain et al 1999).

In Australia, due to increasing concern over adverse health effects associated with the injection of temazepam capsules, the Australian Pharmaceutical Advisory Council (APAC) recommended that the availability of capsules be restricted under the Pharmaceutical Benefits Scheme (PBS). The Pharmaceutical Benefits Advisory Committee (PBAC) accepted the recommendation and on May 1st 2002 the new policy change regarding the prescription of 10mg temazepam capsules was implemented.

1.1 Subsidisation of benzodiazepines in Australia

From May 1st 2002, temazepam 10mg capsules (Euhypnos, Nocturne, Normison, & Temaze) require an Authority prescription (i.e. prior approval from the Health Insurance Commission) to allow subsidy on the PBS. Temazepam 10mg tablets remain a PBS benefit and no authority is required. Both the 10mg temazepam tablets and the 10mg temazepam capsules continue to be available on private prescription as a non-PBS item (i.e. they can still be prescribed by any doctor and purchased without subsidy). Temazepam 20mg capsules remain available without authority as a non-PBS item. Table 1 displays the availability of temazepam.

Table 1: Subsidisation of temazepam in Australia

	Prior to May 2002	May 2002 onwards
Temazepam 10mg capsule Euhypnos Nocturne Normison Temaze	PBS or private prescription	Authority to prescribe required for PBS subsidy or private prescription
Temazepam 10mg tablet	PBS or private prescription	PBS or private prescription
Temazepam 20mg capsule	Non-PBS (Private prescription)	Non-PBS (Private prescription)

To further investigate benzodiazepine use among IDU, and assess the impact of this restriction, the Commonwealth Department of Health and Ageing (CDHA) commissioned NDARC to coordinate research in five jurisdictions: New South Wales (NSW), the Northern Territory (NT), Queensland (QLD), Tasmania (TAS) and Victoria (VIC), using the existing IDRS methodology. These jurisdictions were chosen as they had reported the highest levels of benzodiazepine injection in the 2001 IDRS (Topp et al 2002). Data was collected at two time points: a month after the policy change to ascertain patterns of use pre and post May 1st 2002; and again in December 2002, to provide an indication of the impact of the policy change six months after implementation.

1.2 Aims

The present study aimed to provide information on the patterns of benzodiazepine use among IDU, and assess the impact of the restriction in 10mg temazepam capsules on this population. The study was interested in the injection of 10mg temazepam capsules and the impact the change in policy had on IDU obtaining and injecting 10mg temazepam capsules specifically, and benzodiazepines more generally.

The study comprised a number of components, each of which was intended to provide information on different aspects of the changes:

1. An analysis of population trends in benzodiazepine prescribing;
2. An examination of longer term trends in benzodiazepine use among IDU in Victoria and Tasmania, jurisdictions in which higher rates of benzodiazepine injection had previously been documented;
3. An examination of patterns of benzodiazepine use among a sentinel group of IDU in NSW, NT, QLD, TAS and VIC, before and after the restriction of 10mg temazepam capsules;
4. An examination of potential changes in the source of benzodiazepines among IDU.

2 METHOD

2.1 Data on population trends in benzodiazepine prescription

Data examining population trends in benzodiazepine prescription and use was obtained from the following sources:

- data on subsidised and non subsidised benzodiazepine prescriptions
- data from the General Practice Research Network (GPRN)
- information on doctor shopping trends

Data on prescriptions from the PBS were analysed to examine overall change in prescriptions by benzodiazepine type. Data on PBS subsidised medicines (supplied by the Health Insurance Commission) and estimates of non-subsidised medicines (under co-payment and private prescriptions) have been examined. The data is calculated from continuous data on all prescriptions dispensed from a validated sample of community-based pharmacies. In-patient hospital prescribing is not included. The PBS data are based on the date of supply or dispensing of prescriptions. The data were supplied by the Drug Utilisation Sub Committee's (DUSC) Drug Utilisation Database, Pharmaceutical Benefits Branch, Health Access and Financing Division, Commonwealth Department of Health and Ageing.

To obtain additional and more detailed information on prescribing behaviour of general practitioners (GPs), data from General Practice Research Network (GPRN) was also examined. This database contains de-identified information on GPs and patients, including demographic characteristics of each group, and the prescriptions that are supplied. Data derived from the electronic general practice records is of sufficient quality to be used to provide national prescribing estimates (Sayer et al 2003, in press). A cohort of patients was identified that had been prescribed temazepam 10mg gel capsules at least monthly between January and April 2002, and information on their prescriptions after the policy change were examined. From this database, more specific information from NSW, QLD and VIC is presented, however, there were not sufficient numbers in the NT or TAS to provide analysis on these states.

Data on 'doctor shoppers' was also reviewed for the period 1995/96 to 2000/01 (2001/02 data was not available at the time of press). Although doctor shoppers are not necessarily injecting drug users, they are by definition misusing the medications they are obtaining since they are exceeding what is thought to be clinically necessary levels of medication.

2.2 Feedback from general practitioners and pharmacists

The CDHA developed materials providing background information regarding the temazepam prescription change and scripted responses for doctors for requests of

capsules. The materials were specifically designed for doctors, pharmacists and patients and distributed prior to the policy change. In an attempt to monitor the clinical and administrative impacts of the policy change, a card was developed seeking feedback from doctors, pharmacists and aged care facilities.

The feedback was collated and presented in a report to the CDHA (Roughead and Barratt, 2003).

2.3 Key Informant reports

Doctors, pharmacists and other health professionals in each jurisdiction acted as key informants for the study. To be eligible to participate as a key informant the individual had to have regular contact with injecting drug users in the past six months, including contact with people who were injecting benzodiazepines. The key informants completed a semi structured telephone interview that included questions on the type of people using benzodiazepines, patterns of drug use, and changes in prescription and dispensing since the May 1st policy change. The key informant interviews occurred in June and July 2002. Key informant surveys were not conducted in the second survey in December 2002.

2.4 Data on use of benzodiazepines by injecting drug users

Data on the use of benzodiazepines by injecting drug users was obtained from the following sources:

- data on a sentinel group of IDU from the Sydney Medically Supervised Injecting Centre (MSIC);
- data from IDU samples in Victoria and Tasmania, IDRS 2001;
- data from IDU sample in June and December 2002

2.4.1 Indicator data from sentinel IDU populations

Data from the Medically Supervised Injecting Centre (MSIC) in Sydney on the number of injections in which benzodiazepines were injected and the number of benzodiazepine injectors using the MSIC per month, was also examined. The MSIC data provides some information on a sentinel group of IDU that inject benzodiazepines in Sydney. It should be noted that they are not necessarily the same people surveyed for the main IDRS, although the clients registered at the MSIC are a similar demographic to the IDRS sample (MSIC Evaluation, 2002). This data is only available for NSW as there are no such injecting centres in other jurisdictions.

2.4.2 Data from IDU samples in Victoria and Tasmania, IDRS 2001

The 2000 IDU survey from the Illicit Drug Reporting System (IDRS) in Tasmania and Victoria reported higher rates of oral and intravenous benzodiazepine use compared to other jurisdictions (Fry & Bruno 2001, Topp et al 2001). In an attempt to provide further information about patterns of use, the associated harms and sources of benzodiazepine

supply, researchers in Tasmania and Victoria developed questions on benzodiazepines and added these to the 2001 IDRS IDU survey in their states. The data from these studies contributes to this report. The benzodiazepine questions developed by Raimondo Bruno and Craig Fry were adapted for use in the 2002 IDRS benzodiazepine module and the second survey conducted in December 2002.

2.4.3 Data collected from IDU during 2002

The examination of benzodiazepine use and the impact of the PBS restriction on 10mg temazepam capsules was conducted as part of the 2002 IDRS.[1]

2.4.3.1 Injecting drug user (IDU) surveys – June 2002 and December 2002

Surveys with IDU were conducted in NSW, NT, QLD, TAS and VIC at two points in time: in June 2002, a month after the policy had been implemented; and again in December 2002, six months after the policy change. The June 2002 survey examined patterns of benzodiazepine use prior to the policy change (specifically January to April 2002), and use in the month after the restriction in capsules was implemented (May 2002). As it was recognised that any impact due to the policy change may not be immediate, the December survey was conducted to examine possible impacts of the policy change six months after implementation. The samples were recruited using the same methodology and similar eligibility criteria.

The IDU surveys provided information on benzodiazepine use patterns of a specific sample of the general population for which the restriction in the prescription of capsules was designed to have an impact. The IDU may not be representative of *all* IDU who use benzodiazepines, but they provide some information on the use patterns of a group of sentinel IDU who report recent benzodiazepine use.

Interviews took approximately 45-60 minutes to complete, and participants were reimbursed for their time and expenses. The respective ethics committees of the contributing research institutions granted ethics approval in each state.

<u>June 2002</u>

The June 2002 IDU were recruited as part of the main IDU sample for the IDRS. Each jurisdiction recruited the main IDU sample (at least 100 participants in TAS, NT, QLD and 150 participants in VIC and NSW). The IDU survey consists of face-to-face interviews with IDU recruited from Needle and Syringe Programs (NSP), treatment

[1] The IDRS uses three sources to examine trends in illicit drug markets: i) a quantitative survey of injecting drug users (IDU); ii) a semi structured survey of key informants, or professionals working in the illicit drug field who have regular contact with and/or specialised knowledge of illicit drug users, dealers or manufacture; and iii) a collation of existing indicator data on drug-related issues.
IDU have been identified as an appropriate sentinel group for detecting illicit drug trends, as they have exposure to many types of illicit drugs and knowledge of the price, purity and availability of the main illicit drug classes. The key informant interviews provide contextual information about patterns of drug use and health-related issues. Indicator data provides a precise and reliable measure of drug trends detected by the IDU and key informant surveys. Data from these three sources are triangulated to ensure convergent validity of trends detected.

agencies and street based drug markets. Potential participants were screened for eligibility. Criteria for entry to the study were: (i) at least monthly drug injection in the six months preceding the interview; and (ii) residence in the capital city for the preceding 12 months, with no significant periods out of the illicit market during that time, such as incarceration or drug rehabilitation.

For inclusion in the June sample of this study, participants were required to have used benzodiazepines in the four months prior to the change in subsidisation (i.e. between January and April 2002). A minimum of 50 individuals was required in each jurisdiction, including 30 that had injected benzodiazepines.

The main IDU interview schedule included sections on demographics; drug use history; the price, purity and availability of illicit drugs; criminal activity; injection risk-taking behaviour; health; and general drug trends. An additional module was developed to examine patterns of benzodiazepine use before and after the May 1st prescription change and was administered at the end of the main IDU survey. The additional benzodiazepine module examined methods and patterns of use, associated health problems and sources of benzodiazepine supply. A chart with pictures of different types of benzodiazepines was used to prompt the participant's memory (see Appendix A).

Three hundred and fifty IDU completed the benzodiazepine module of the 2002 IDRS survey in June-July 2002. The sample comprised of 102 participants from VIC, 75 from TAS, 66 from NSW, 55 from QLD and 52 from the NT. The NT and QLD had to target extra benzodiazepine users (NT, n=18; QLD, n=8) to obtain a sample that included 30 participants that had injected benzodiazepines in the six months preceding interview. The remaining jurisdictions obtained their samples solely from the main IDRS IDU sample.

December 2002

In December 2002 IDU were recruited using the same recruitment strategies as the June sample. However, the eligibility criteria differed in that IDU had to have used benzodiazepines in the month preceding interview (compared to the June sample that had to have used benzodiazepines between January–April). Fifty IDU were recruited from each state and they were administered a similar questionnaire to the June 2002 sample with additional questions added and the timeframes changed to investigate benzodiazepine use patterns after May 2002.

All jurisdictions recruited at least 50 IDU who had used benzodiazepines in the month preceding interview. Two hundred and fifty five IDU completed the survey in December 2002. The national sample comprised of 50 IDU in NSW, TAS and the NT; 52 IDU in VIC and 53 IDU in QLD. Twenty four percent of the national December sample reported that they had participated in the June 2002 survey, ranging from 10% of participants in VIC to 54% in the NT.

It should be noted that the December data collection required that IDU had used benzodiazepines in the month prior to interview. Therefore anyone that had ceased benzodiazepine use due to the restriction in temazepam capsules would not be included in the survey. Given that the December survey recruited more recent users than the June survey, it may be that the December sample consisted of a more dedicated group of

benzodiazepine users. However, when the frequency of benzodiazepine use of the December sample was compared with those who had used in the previous month in the June survey, the groups appeared similar. Generally the demographic and drug use patterns were similar; it appeared that the previous month injectors in the December sample may have been less likely than previous month injectors in the June sample to be in treatment, and to have had a prison history, however this could not be tested using formal significance tests of difference due to differences in sampling frames between the two samples.

2.5 Data analysis

Descriptive analyses of the quantitative data derived from the IDU survey were conducted using SPSS for Windows, Release 11.0. Where relevant, significance testing was conducted using t-tests for continuous variables, and categorical variables were analysed using χ^2.

3 RESULTS

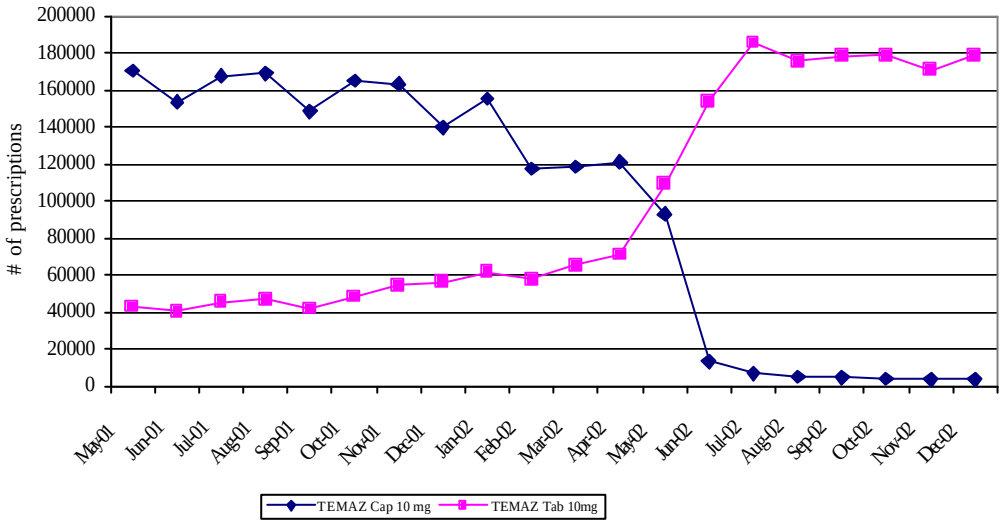
3.1 Population trends in benzodiazepine prescriptions

A range of data is presented below on trends in prescription of different formulations of benzodiazepines.

3.1.1 Pharmaceutical Benefits Scheme (PBS) Data

Data on the number of 10mg temazepam tablet and capsule prescriptions through the Pharmaceutical Benefits Scheme (PBS) across Australia is presented in Figure 1. Figure 2 presents prescription data for the other benzodiazpines on the PBS. Prescription data for the individual states reflect the trends observed in the national data and are presented in Appendix B.

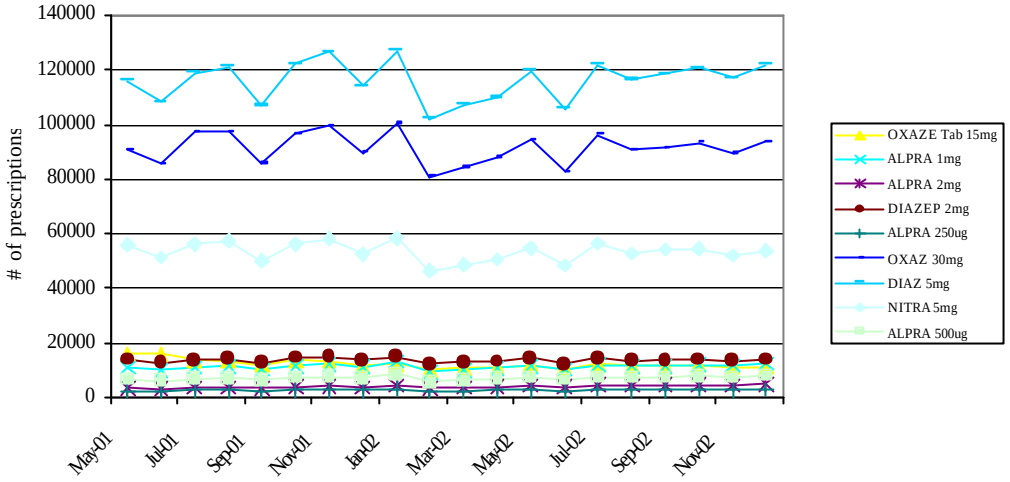
Figure 1: Number of PBS prescriptions for temazepam capsules and tablets in Australia, May 2001- Dec 2002



Source: DUSC, CDHA

As can be seen from Figure 1, there was a gradual decrease in the number of prescriptions for 10mg temazepam capsules from January 2002, with a substantial decrease commencing in April 2002; there was a corresponding increase in 10mg tablet prescriptions. Overall, the number of prescriptions for 10mg temazepam (either tablet or capsule) may have slightly decreased, by around 20,000 per month. Figure 2 shows that the prescriptions for other tablet preparations remained relatively stable throughout this time.

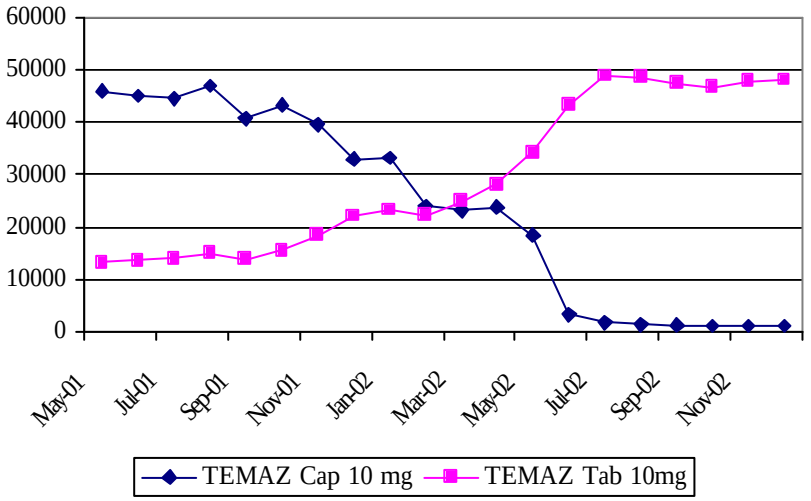
Figure 2: Number of PBS prescriptions for benzodiazepine tablets in Australia, May 2001- Dec 2002



Source: DUSC, CDHA

The PBS prescription data for VIC is presented in Figure 3. As can be seen from this figure, there is a gradual decrease in the number of prescriptions for 10mg temazepam capsules from October 2001, with a marked decrease after the May 2002 policy change. In Victoria, an initiative conducted by the Department of Human Services, the Temazepam Injection Prevention Initiative (TIPI) was introduced in October 2001. It targeted doctors, health workers, pharmacists and IDU regarding the harms associated with injecting benzodiazepines and this may have contributed to an earlier decline in the number of capsules prescribed. The prescription of temazepam tablets also increased earlier than May 2002, and around the same time that capsule prescriptions dropped, suggesting again that prescription of tablets may have occurred in place of capsule prescriptions.

Figure 3: Number of PBS prescriptions for 10mg temazepam capsules and tablets in Victoria, May 2001- Dec 2002

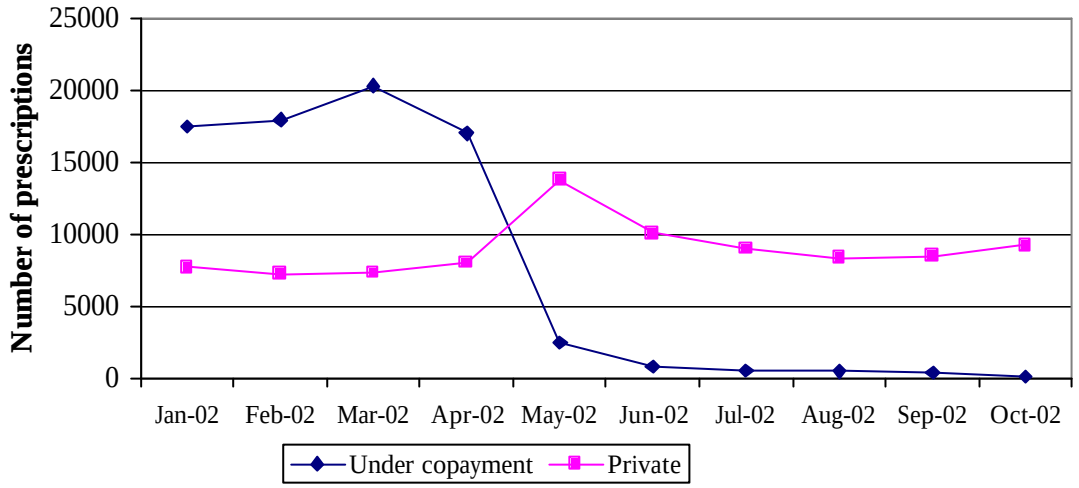


Source: DUSC, CDHA

3.1.2 Non-PBS data

Data for prescriptions of 10mg temazepam capsules that are not on the Pharmaceutical Benefits Scheme are presented in Figure 4. Private prescriptions increased in May 2002 and stabilised in subsequent months. Prescriptions under copayment decreased from March to April 2002, with a sharp decline in May 2002 reflecting the move away from the prescription of capsules.

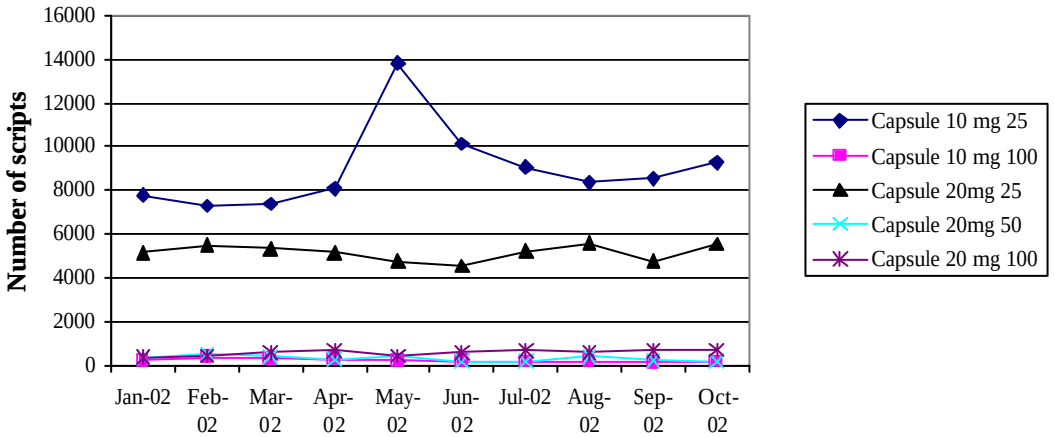
Figure 4: Non-PBS Temazepam 10mg Capsules (25 Script) prescriptions



Source: DUSC, CDHA

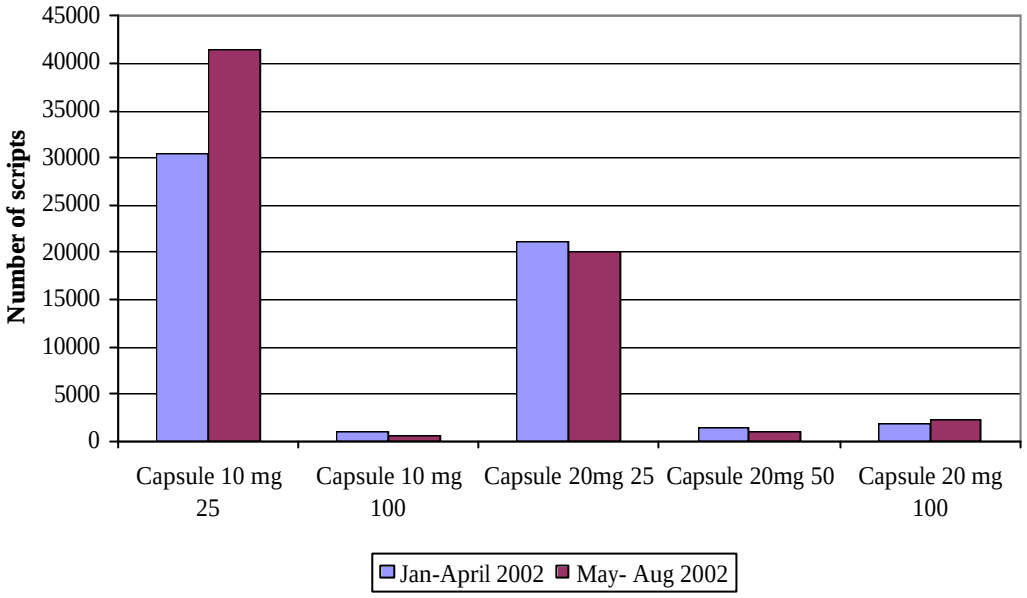
A closer examination of private prescriptions for temazepam (Figure 5), shows a sharp increase for the 10mg capsule in May 2002 followed by a decrease in the subsequent months. It may be that some patients or doctors were initially resistant or not prepared to change to tablets and patients were prepared to pay for a private prescription. This was not sustained over time. The private prescriptions for 20mg capsules have remained relatively stable since January 2002.

Figure 5: Private (non PBS) temazepam prescriptions, January 2002 – October 2002



Source: DUSC, CDHA

Figure 6: Private (non PBS) temazepam prescriptions, Jan-Apr 2002 and May-Aug 2002



Source: DUSC, CDHA

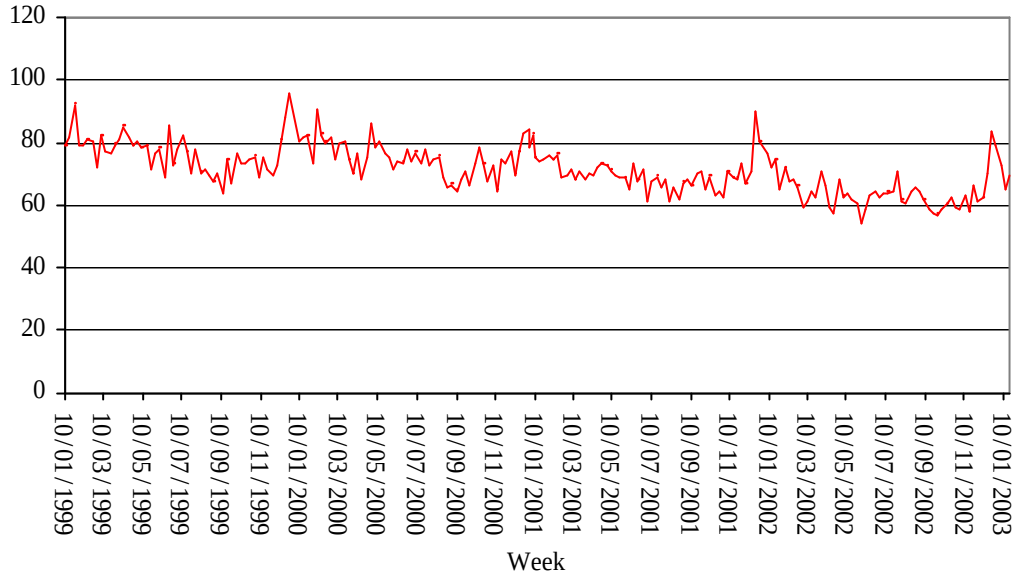
As can be seen from Figure 6 there has been an increase in the number of 10mg private temazepam prescriptions (25 pack) when you compare the first four months of the year (January to April 2002) to the four months after the policy implementation (May to August 2002). However the increase in private prescriptions (36%) for temazpam capsules is substantially less than the decrease in PBS prescriptions (80%). Private prescriptions for 20mg temazepam capsules remained similar pre and post the policy change.

3.1.3 Changes in prescribing patterns of general practitioners

Data from the GPRN was examined to investigate prescribing patterns of a random sample of general practitioners (GPs) sampled around Australia. Using data generated from uploading the case files of the same GPs over time, it was possible to examine changes in prescribing practices before and after the change in subsidisation. Data from NSW, QLD and VIC were examined. There were not adequate numbers of participating doctors and patients to include data from the NT and TAS. The graphs presented reflect information from data collected from a sample of 155 GPs and 124 065 patients in January to April 2002. One hundred and thirty five GPs provided data from May to August and 105 from September to December. The data reflect information from a sample of 107 764 patients in May to August 2002 and 73 674 patients in September to December 2002.

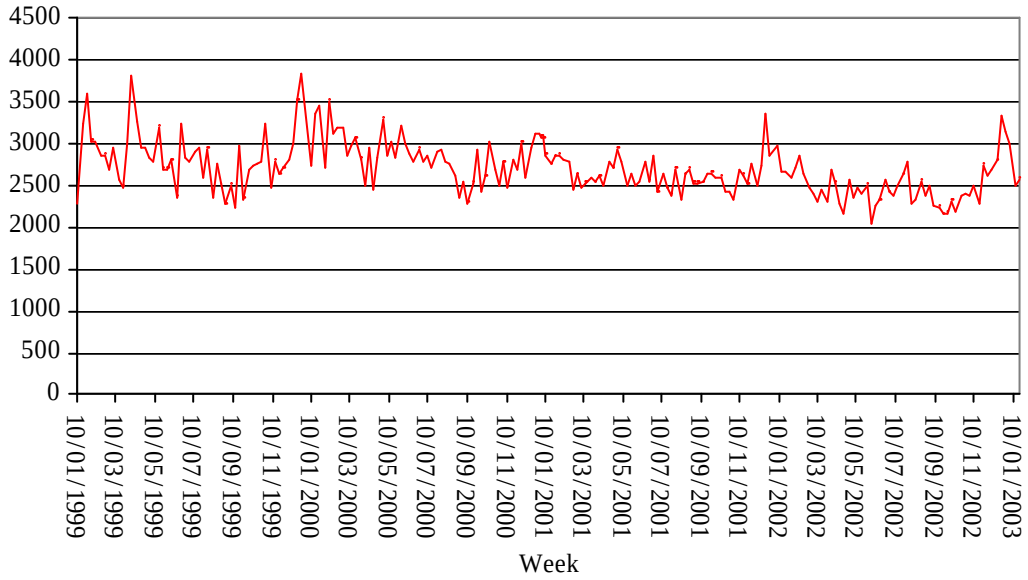
As was evident from the PBS data presented, the overall rate of prescribing of benzodiazepines in Australia does not appear to have changed after May 2002. This is also the case for the individual states NSW, VIC and QLD (see Appendix B).

Figure 7: Rate of benzodiazepine prescriptions written per 1000 patient visits per week, Australia January 1999 - January 2003



Source: GPRN database

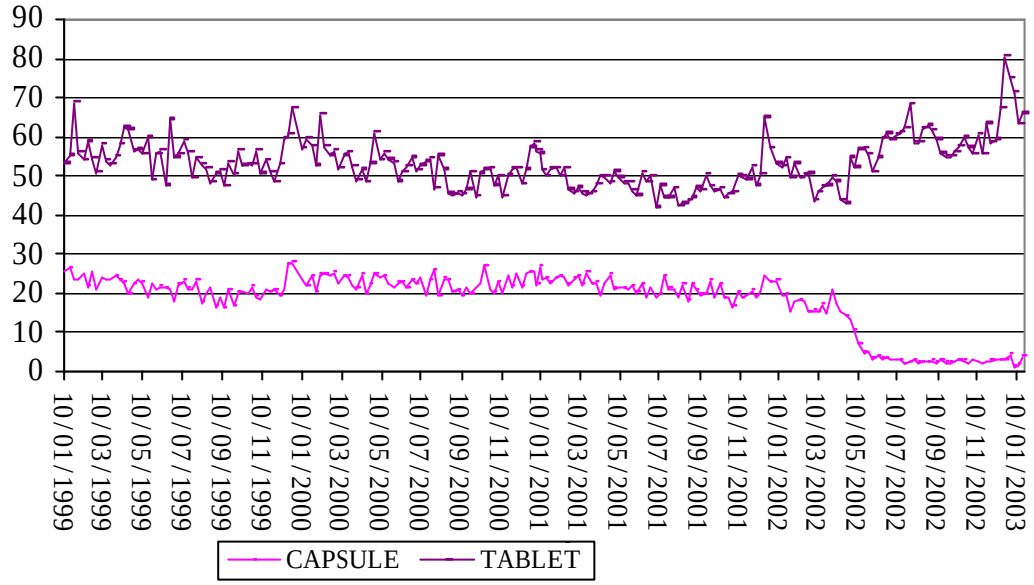
Figure 8: Rate of benzodiazepine prescriptions written per 1000 patient visits per week (weighted by number of tablets / capsules), Australia January 1999 - January 2003



Source: GPRN database

Again, as was seen with the PBS data, around May 2002 there is a change in the rate of prescribing of different formulations of benzodiazepines, with an increase in the rate of tablets prescribed and a decrease in the rate of capsules prescribed. This change occurs in the weeks prior to May 2002, suggesting that GPs switched patients over to tablets with the knowledge that capsules would be restricted. The pattern seen in the national data is reflected in NSW, QLD and VIC (Appendix B).

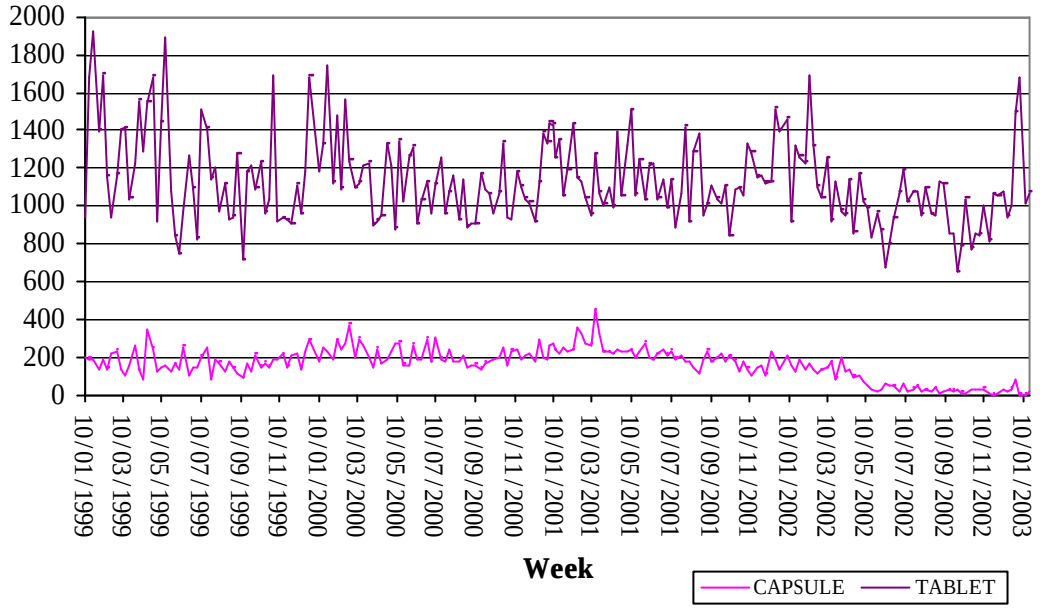
Figure 9: Rate of benzodiazepine prescriptions (by formulation) per 1000 patient visits per week, Australia January 1999 - January 2003



Source: GPRN database

As this study is primarily interested in the impact of the restriction of capsules on injecting drug users an attempt was made to investigate prescriptions of a sample that would more closely reflect the demographic of IDU. When the analysis is restricted to patients under 45 years of age, a fall in the rate of prescribing of capsules is observed but there is no corresponding increase in the prescribing of tablets. While it is possible that the cohort specified did not allow a sensitive enough indicator of change in tablet prescriptions, the fact that a decrease was observed in capsule prescriptions makes this less likely. The lack of observed change may be an indication that some of these patients under forty-five are not using capsules for 'legitimate uses'; it could also be due to GPs reviewing their prescription practices regarding the prescription of a potentially dependence forming drug as a result of the change in subsidisation.

Figure 10: Rate of benzodiazepine prescriptions by formulation (patients under 45 years) per 1000 patient visits per week (weighted by number of tablets / capsules) Australia January 1999 - January 2003



Source: GPRN database

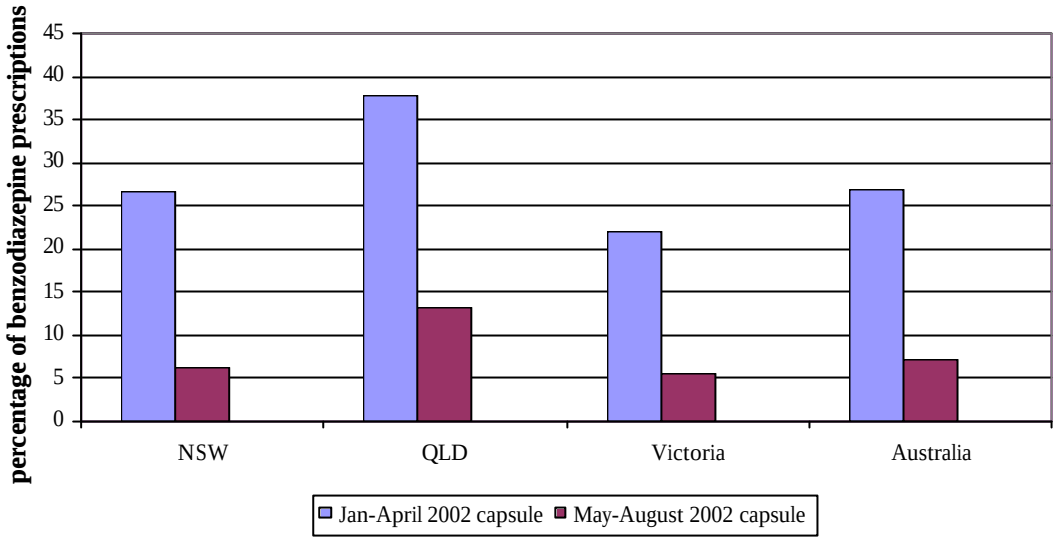
The type of benzodiazepine formulation prescribed in January to April 2002 was compared to that in May to August 2002. Overall 27% of patients were prescribed a capsule in January to April 2002, compared to 7% in May to Aug 2002. The reduction in prescriptions of capsules is similar for NSW, QLD and VIC.

Among people prescribed a benzodiazepine in both January to April and May to August, 70% of those prescribed a capsule in the first period were prescribed a tablet in the second. As would be expected with a restriction in prescribing, less than 1% of patients prescribed a tablet in the first period were prescribed a capsule in the second period.

When the analysis is restricted to patients under 45 years of age, the switch from capsules to tablets was not as great. Half (52%) of patients prescribed a capsule at any time between January and April were prescribed a tablet between May and August 2002. This is not consistent with the decrease in the rate of prescribing of capsules generally. However, if a patient had been prescribed a capsule at any time during January to April, the patient was classed as 'capsule'. The decrease in the rate of prescribing overall suggests that it is harder to obtain capsules, however patients under 45 may still be able to have obtained one prescription during May to August 2002. It may be that they previously obtained more than one prescription during January to April 2002.

Figure 10 shows the proportion of all benzodiazepine prescriptions written that were for capsule preparations, during the period before the change in subsidisation and the period following. As can clearly be seen in this figure, the proportion of all prescriptions which were for capsules decreased significantly in all jurisdictions following the change in subsidisation.

Figure 11: Benzodiazepine prescription practices, January-April 2002 and May-August 2002



Source: GPRN database

3.1.4 Summary of population data on benzodiazepine prescriptions

The indicator data on the prescription of benzodiazepines provide clear evidence that there has been a decrease in the prescribing of temazepam capsules and a subsequent increase in the prescription of the tablet temazepam preparation. The data from the PBS and the GPRN show that there has been no change in the overall number of benzodiazepine prescriptions, but that there has been a dramatic decrease in the number of prescriptions for 10mg temazepam capsules and a corresponding increase in the number of 10mg temazepam tablets. There was an increase in the number of private 10mg temazepam capsule prescriptions, however the increase in private prescriptions for 10mg capsules was less than the decrease in PBS prescriptions for 10mg temazepam capsules.

3.1.5 Trends in the number of 'doctor shoppers' in Australia

Data on 'doctor shoppers' was also reviewed in each jurisdiction that took part in these studies for the period 1995/96 to 2000/01 (2001/02 data was not available at the time of press). Although doctor shoppers are not necessarily injecting drug users, they are by definition misusing the medications they are obtaining since they are exceeding what is thought to be clinically necessary levels of medication. The Health Insurance Commission (HIC) identifies people as 'doctor shoppers' if, in one year, a person:

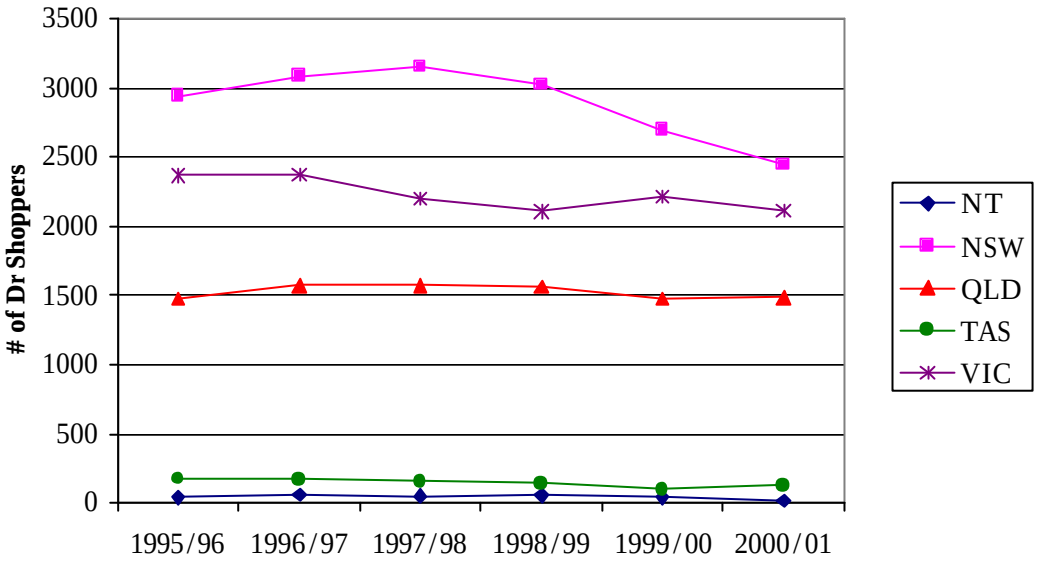
- sees 15 or more different general practitioners;
- has 30 or more Medicare consultations;
- obtains more PBS prescriptions than appears to be clinically necessary.

HIC 1999/2000 data[2] showed that:

- the drugs that are most often accessed by doctor shoppers are benzodiazepines (36%);
- three quarters (77%) of doctor shoppers are in capital cities, 8% in other major cities, and the remainder in other rural or remote areas;
- the majority (57%) of doctor shoppers are aged between 30 and 49 years, with the 15 to 29 year group being the next largest (20%);
- over half (58%) of doctor shoppers are female.

Figure 12 shows the number of benzodiazepine doctor shoppers identified by the HIC doctor shopper program, from 1995/96 to 2000/01. The number of benzodiazepine doctor shoppers has remained relatively stable during this period in all jurisdictions except NSW, where there has been a decrease over time, from 2,942 in 1995/96 to 2,442 in 2000/01 (a 17% decrease). VIC also shows a slight decline in the number of doctor shoppers accessing benzodiazepines from 2,368 in 1995/96 to 2,109 in 2000/01.

Figure 12: Number of benzodiazepine doctor shoppers by jurisdiction, 1995/6 to 2000/1



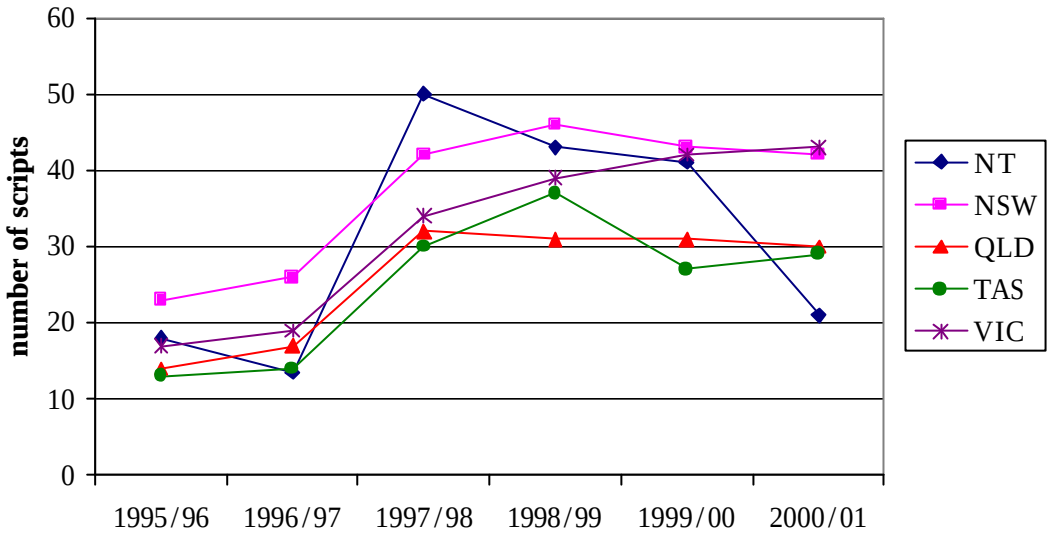
Source: Health Insurance Commission

Figure 13 shows the trends in the median number of benzodiazepine scripts per doctor shopper. This figure shows that despite a decrease in the number of benzodiazepine doctor shoppers in NSW (Figure 12), the median number of benzodiazepine scripts accessed by this group has almost doubled since the beginning of the program in 1995/96 to over 40 scripts per doctor shopper per year in 2000/01. A similar pattern is seen in VIC, with figures more than doubling since 1995/96 (17) to 43 median scripts in 2000/01.

[2] **http://www.hic.gov.au/providers/publications_guidelines/program_review_fact_sheets/doctor_shopping.htm**

Figures in TAS are also of interest: although the number of benzodiazepine doctor shoppers is comparatively small (Figure 12), the median number of scripts accessed by this group more than doubled from 13 in 1995/96 to 29 in 2000/01. QLD also recorded an increase in the number of median scripts per benzodiazepine doctor shopper from 14 in 1995/96 to 30 in 2000/01, while the number of doctor shoppers remained relatively stable during this period (Figure 13). The numbers for the NT have tended to vary, no doubt affected by smaller population numbers.

Figure 13: Median number of benzodiazepine scripts obtained per doctor shoppers by jurisdiction, 1995/6 to 2000/1



Source: Health Insurance Commission

3.1.5.1 Summary

The increase over time in the median number of scripts accessed by benzodiazepine doctor shoppers suggests that either remaining doctor shoppers are a more committed group of benzodiazepine users, or that those doctor shoppers who remain are diverting some of the benzodiazepines they obtain to illicit markets.

3.2 Feedback from doctors and pharmacists regarding the change

The CDHA developed materials for doctors, pharmacists and patients that were distributed prior to the policy change. The materials provided background regarding the change and scripted responses for doctors for requests of capsules. In an attempt to monitor the clinical and administrative impacts of the policy change, a card was developed seeking feedback from doctors, pharmacists and aged care facilities. Although a small proportion of doctors/pharmacists that received the forms responded (7%), 2923 feedback cards were returned.

The overall responses from doctors and pharmacists regarding the restriction of temazepam capsules were positive (Roughead & Barratt, 2003). About half of doctors and pharmacists indicated that the policy change had had little impact on their patients, although some indicated some reluctance by the patients to change. The majority indicated that there was very little administrative impact. There were comments that the change was difficult for some elderly patients with the small size of the tablets being an issue.

Reflecting the trends in prescribing as seen by the PBS data, the majority of doctors/pharmacists reported that they had transferred their patients to tablets (Roughead & Barratt 2003).

There were mixed comments regarding the appropriateness of placing temazepam capsules on authority, with some indicating *all* benzodiazepines should be on authority and another suggesting that temazepam capsules should be Schedule 8, as the private script for capsules is cheaper than an authority script for the general patient (Roughead & Barratt 2003).

3.3 Key Informant reports regarding the change

Key informant interviews were conducted between June and August 2002. Thirty-seven key informants completed the semi-structured interview, including twenty pharmacists, fourteen doctors and three other health professionals who had contact with benzodiazepine injectors. Two other pharmacists gave some information but did not complete the full interview.

The key informants' description of the benzodiazepine users they had contact with corresponded with the demographic of the IDU sample surveyed. The majority reported that most benzodiazepine users were Caucasian males in their late 20's to early 30's, with limited education and employment levels. The benzodiazepine users were described as most often opiate dependent. In NSW, QLD and VIC they were considered to be either current or former heroin users, with many involved in opiate replacement therapy (methadone or buprenorphine). In NT and TAS morphine was considered the main illicit drug used by the sample, with many in TAS also reported as methadone users.

Most key informants felt they could not reliably comment on any potential criminal activity of the client group. Similarly, most felt they could not reliably comment on the level of illicit benzodiazepine use, although there were comments about substantial doctor shopping and a black market in benzodiazepines.

Most key informants did not know about price or availability of benzodiazepines on the street. Those who did comment thought tablets were easy to obtain on the street and that it was more difficult to get capsules.

Many key informants said it was 'too soon' to judge the effects of the restriction in the prescription of 10mg capsules. There were some comments that changes in benzodiazepine prescriptions, particularly among doctors that had drug and alcohol experience, had occurred *prior* to the May 1st authority to prescribe policy change. The doctors reported no change in their prescribing practices after May 1st, although they were not prescribing capsules pre May 1st. In Victoria, both doctors and pharmacists had noted there had been local campaigns prior to the legislation change that had already produced a substantial effect upon prescribing practices. Some of the doctors commented that their patients would not request capsules, as they knew the doctor would not prescribe them. Pharmacists reported that individuals would not frequent the same pharmacy to get multiple prescriptions filled.

The majority of pharmacist key informants noted that more temazepam tablets have been dispensed since May 1st and that scripts in 20mg temazepam capsules have also increased. In Tasmania there were two reports of increases in private scripts, although the increase was less than the decrease in scripts for 10mg capsules. A pharmacist in NSW and one in QLD also noted an increase in 20mg scripts for capsules, although again this was perceived to be a small increase relative to the decrease in 10mg capsules.

Key informants were asked if they noticed any changes in the use of over the counter preparations. Pharmacists in Victoria reported that there had been a substantial increase and two pharmacists reported that they had made changes in the way they dispensed these preparations. They were aware of the use of these over the counter preparations as substitutes, had stopped selling Unisom ® all together and strictly controlled the sale of Sudafed ®. Three of the four pharmacists in the NT noticed an increase in the use of decongestants, with Demazin being popular and an increase in cold and flu preparations. Two pharmacists in NSW reported no change in over the counter capsule preparations, although one reported they had expected a change. Another noted an increase but did not think those purchasing these preparations were abusing benzodiazepines.

Key informants reported it was too early to assess the full impact of the policy change. Although comments were generally supportive of restriction in prescription of capsules, key informants reported that the policy shift was overdue and that the restriction alone would not solve the problem of benzodiazepine misuse.

There were suggestions that there should be further restrictions on benzodiazepines generally and temazepam capsules specifically. There were suggestions that benzodiazepines should be restricted further (as an S8 drug, listed as a drug of dependence) or that temazepam capsules should be taken off the market completely as there are alternatives. One key informant in NSW commented that the restriction should be on 20mg temazepam capsules as well, as the price will not make a difference to users who may make a profit from selling 20mg capsules on the street. One key informant in TAS suggested that doctors would be pressured to provide private scripts or 20mg scripts. There were some comments by doctors in NSW of the benefits of supervised daily dosing for those dependent on benzodiazepines.

3.4 Trends in benzodiazepine use among IDU

3.4.1 Trends in indicator data from sentinel IDU populations, May 2001 - January 2003

Data on the number of visits that involved clients injecting benzodiazepines at the Sydney Medically Supervised Injecting Centre (MSIC) from May 2001 to January 2003 is presented in Figure 11. It should be noted that the clients of the MSIC are not the same individuals that participated in the IDU survey, although they have similar demographic characteristics to the IDU that were surveyed (MSIC Evaluation, 2002).

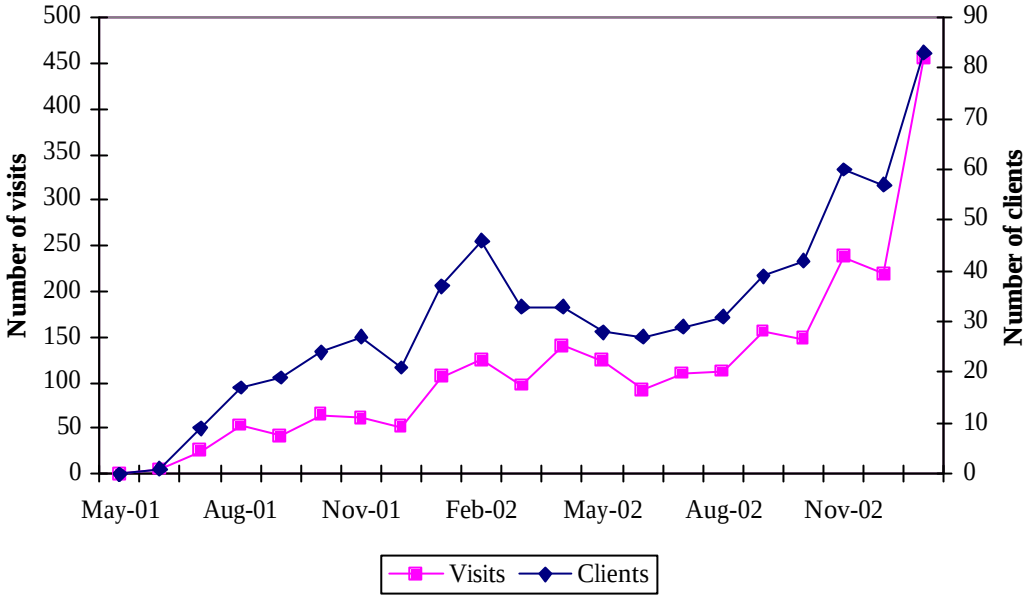
The number of clients injecting benzodiazepines is small (under 50 persons). Nevertheless, over the time in which the MSIC has been operating, there has been an increasing number of visits in which benzodiazepines have been injected. In January 2003, around 450 visits to the MSIC involved benzodiazepine injection – around 10% of all visits to the MSIC.

There appears to be an increase in the number of visits in which clients have injected benzodiazepines since the opening of the MSIC, which continued following the change in subsidisation in May 2002. Over time there has been some increase in the number of clients who are injecting benzodiazepines; some of the clients visiting the MSIC since May 2002 were new clients to the service (Kimber, personal communication).

There has been a marked increase in the number of clients that have injected benzodiazepines and the number of visits in which benzodiazepines have been injected from November 2002. An examination of the 182 individuals who injected benzodiazepines at the MSIC from November 2002 to January 2003 shows that 24% of these clients had not previously injected benzodiazepines at MSIC (Kimber, personal communication). Therefore, although the majority of those that had injected benzodiazepines in this time had injected benzodiazepines previously at the MSIC, there were a substantial proportion that had not.

Clinical observation suggests that all of the benzodiazepines injected in the MSIC are temazepam capsules (van Beek, personal communication). The data from the MSIC suggests that temazepam capsules are still being obtained and injected by some IDU in Sydney; furthermore, this service has seen an *increase* in the injection of temazepam capsules since the change in the authority to prescribe. It is not clear, however, whether the temazepam capsules being injected are 10mg or 20mg.

Figure 14: Number of clients, and number of visits to the MSIC per month where benzodiazepines were injected, May 2001 – January 2003



Source: MSIC 2002

3.4.2 Benzodiazepine use among IDU in Tasmania, 2001

A detailed report of benzodiazepine use in Tasmania in 2001 is presented in Appendix C. A summary of the findings is presented below.

Benzodiazepine use is common among IDU in Tasmania with 89% of the 2001 IDRS sample reporting swallowing a benzodiazepine, and 38% reporting injecting the drug, in the preceding six months. Seventy-eight participants completed the benzodiazepine module in 2001.

The most common benzodiazepines used orally were diazepam, 84%, temazepam, 45%, oxazepam, 36%, nitrazepam, 34% and flunitrazepam, 24%. Temazepam was the predominant benzodiazepine reported to be injected, with 82% of those that had recently injected reporting intravenous use of Normison, 24% reporting Temaze and 8% Euhypnos. Temazepam was also the benzodiazepine of choice for intravenous use, nominated by 91% of benzodiazepine injectors, and 82% reported capsules as their preferred benzodiazepine formulation for injection. However, despite the popularity of temazepam capsules for injection, a substantial proportion of respondents reported using this formulation by both oral and intravenous means in the six months preceding interview. Injection of tablet preparations was less common with 11% indicating that they had injected Xanax and 8% injecting Valium during this time.

When asked about their main source for obtaining benzodiazepines in the six months preceding interview, licit access via a medical practitioner was most common, with 45% accessing benzodiazepines for genuine symptoms and 9% through faking symptoms. Respondents were mixed in their views on how easy it was to access benzodiazepines from a medical practitioner, with half reporting access as easy, and half reporting access as difficult. Fifty three percent of users accessing their benzodiazepines through a doctor reported that the level of availability had remained stable in the six months prior to interview, while 26% reported a decrease. Forty-six percent of the sample reported their main source of obtaining benzodiazepines was via illicit means, predominantly through purchasing or as gifts from friends (42%). Among those purchasing the drug illicitly, median prices reported were $1 per 5mg diazepam (Valium) tablet, $5 per 2mg flunitrazepam (Rohypnol) tablet, $2 per 10mg temazepam capsules, and $4 per 20mg temazepam capsules. These prices were considered by the majority (91%) as either remaining stable or increasing in the six months prior to interview. Illicit benzodiazepines were generally considered easy or very easy to access, with this level of availability considered as remaining stable over the first half of 2001.

While a substantial proportion (29%) of benzodiazepine injectors reported experiencing no problems associated with the intravenous use of the drug, the most commonly reported problems in the preceding six month period were difficulty finding veins to inject into (45%), prominent scarring or bruising at injection sites (32%), swelling of the arm (26%) or thrombosis (24%).

3.4.3 Benzodiazepine use among IDU in Victoria, 2001

A detailed report of benzodiazepine use in Tasmania in 2001 is presented in Appendix D. A summary of the findings is presented below.

The 108 participants that reported that they had used benzodiazepines during the month preceding the IDRS interview comprised the sample for the Melbourne benzodiazepine module. There were no significant differences in any demographic characteristics between those that had used benzodiazepines in the past month intravenously or solely via swallowing.

Forty percent reported injecting benzodiazepines and 71% reported oral use. The types of benzodiazepines most commonly used in the preceding six months were temazepam (45%), diazepam (38%), and oxazepam (9%). The types of benzodiazepines most commonly injected included temazepam (41%), diazepam (22%) and oxazepam (9%).

When asked to nominate the preparations of benzodiazepines injected in the month prior to interview, temazepam was the predominant preparation reported, with 73% of those that had injected reporting intravenous use of Normison, 53% reporting Temaze and 16% Euhypnos. Injection of tablet preparations was less common overall, with only 4% indicating that they had injected Valium during this time. The dose preparations most commonly injected in the past month were 10mg gel capsules (71%) followed by 20mg gel capsules (10%).

It was common for benzodiazepines to be accessed via illicit sources, including: from friends (43%), purchased or traded with a dealer (17% and 19% respectively) or accessed through family members (4%). However, over half of the sample reported accessing benzodiazepines from a medical practitioner in the preceding month, with 67% (n=73) receiving benzodiazepines for genuine clinical symptoms, and 34% receiving the drug for feigned problems.

When asked about their main source for obtaining benzodiazepines in the month preceding interview, illicit access via a medical practitioner or pharmacist (without prescription) was most common (n=54, 50%). Twenty-one percent of participants reported that their main source of benzodiazepines was via a medical practitioner for genuine symptoms, 17% reported obtaining them through friends, and a few individuals accessed them through dealers or family.

Forty-three participants provided reports on types of benzodiazepines available on the street. The most common types reported were Normison (n=18, 42%), Temaze (n=17, 39%) and Valium (n=10, 23%). These participants also reported the current street value of particular preparations and doses of benzodiazepines. The majority of street value reports were for temazepam capsules. The modal price reported (n=29) for temazepam gel capsules was $50 for a script of 25 (range $15-$80). Per capsule price estimates (n=14) ranged between $1-$10 with higher prices quoted for 20mg doses.

Among respondents that had purchased diverted benzodiazepines, prices were considered to have remained stable (37%, n=16) or had increased (49%, n=21) in the

month prior to interview. Views on availability of benzodiazepines were mixed, with many reporting availability as easy (37%, n=16) or very easy (28%, n=12). A substantial proportion also reported finding benzodiazepines as difficult (49%, n=21) or very difficult (16%, n=7) to access.

The most commonly reported problems experienced in the past month were difficulty finding veins to inject into (44%), prominent scarring or bruising at injection sites (33%), swelling of arm (25%) thrombosis (18%), and dependence (16%). Thirty-six percent of respondents reported that they had experienced no recent harms that they would attribute to intravenous benzodiazepine use.

3.5 IDU surveys pre and post the policy change, 2002

3.5.1 Sample characteristics

The demographic characteristics of the national samples recruited in June 2002 and December 2002 are presented in Table 2. As can be seen, the samples recruited were remarkably similar regarding demographic characteristics.

Table 2: Demographic characteristics of the national benzodiazepines sample in June 2002 and December 2002

Characteristic	JUNE 2002 (n=350)	DECEMBER 2002 (n=255)
Mean age (years)	31 *(range 15-56)*	31.7(*range 16-54)*
Sex (% male)	65	66
Ethnicity (%): NESB	4	3
Aboriginal or Torres Strait Islander	13	13
% not employed	78	77
School education (mean years)	10.3 *(range 0-13)*	10.0 *(range 2-13)*
% No tertiary education	53	55
Prison History (%)	47	46
% Not currently in treatment	59	64

3.5.1.1 June 2002

In the June survey, there were no significant differences between those who only swallowed benzodiazepines and those who injected benzodiazepines with regards to age, ethnicity, employment, mean years of school education, tertiary education, prison history or current treatment status. However, those that were injecting benzodiazepines were significantly more likely to be male (71%) than those that only used benzodiazepines orally (58%) (χ^2 = 5.76, df =1, p=<0.05).

3.5.1.2 December 2002

In the December survey, there were no significant differences between those who only swallowed benzodiazepines and those who injected benzodiazepines in the month prior to interview with regards to age, ethnicity, mean years of school education, tertiary education, or current treatment status. However, those that were injecting benzodiazepines were significantly more likely to be unemployed (90%) than those that only used benzodiazepines orally (71%) (χ^2 = 10.95, df =1, p=<0.05) and were significantly more likely to have a prison history (60%) than those that did not inject benzodiazepines(40%) (χ^2 = 8.84, df =1, p=<0.05).

A comparison of the demographic characteristics of the sample of participants that reported injecting benzodiazepines in the June and December surveys is presented in Table 3. As can be seen in Table 3, the participants that reported injecting benzodiazepines in the past month in the June and December surveys are similar, although a larger proportion in December may have had a prison history and not currently be in treatment; formal tests of these possible differences could not be conducted, however, due to different sampling frames.

Table 3: Demographic characteristics of participants that reported injecting benzodiazepines the national benzodiazepines sample in June 2002 and December 2002

Characteristic	Injected Jan- Apr JUNE 2002 (n=170)	Injected last month JUNE 2002 (n=79)	DECEMBER 2002 (n=83)
Mean age (years)	30.4 *(range 16-56)*	31.6 *(range 19-56)*	32.7 (*range 18-54)*
Sex (% male)	70	75	70
Ethnicity (%): NESB	2	4	1
Aboriginal or Torres Strait Islander	9	5	13
Employment (%): Not employed	82	82	90
School education (mean years)	10.2 *(range 0-13)*	10.4 *(range 7-13)*	9.9 *(range 7-13)*
Tertiary education (%): None	55	56	55
Prison History (%)	45	47	60
Current Treatment (%): Not currently in treatment	56	52	65

Table 4 shows the sample characteristics from the June survey of users reporting intravenous use of benzodiazepines between January and April in each state. Two-way chi-square analyses were carried out to detect any demographic differences between

states. When compared with the other jurisdictions, those that injected benzodiazepines in TAS were more likely to be employed (χ^2 = 9.02, df = 1, p< 0.05), less likely to have been in prison (χ^2=11.02, df=1, p<0.05), and more likely to be in some form of drug treatment (χ^2=4.51, df=1, p<0.05). Intravenous users in NSW were more likely to have completed some form of tertiary education (predominantly Technical and Further Education (TAFE) courses) (χ^2=4.67, df=1, p<0.05). No other significant demographic differences were found between the jurisdictions.

Table 4: Demographic characteristics of the June IDU sample that reported injecting benzodiazepines between January and April 2002, by state

Characteristic	Intravenous use % NSW) (n=33)	Intravenous use % (NT) (n=29)	Intravenous use %(QLD) (n=31)	Intravenous use % (TAS) (n=36)	Intravenous use % (VIC) (n=41)
Mean age (years)	34 *(range18-47)*	33 *(range23-56)*	29 *(range16-45)*	27 *(range17-45)*	29 *(range18-46)*
Sex (% male)	78	72	71	75	61
Ethnicity (%):					
NESB	6	0	3	0	2
ATSI	18	17	7	6	2
Employment (%): Not employed	82	86	87	64*	91
School education (mean years)	10.5 *(range 7-13)*	9.8 *(range 7-12)*	9.6 *(range 0-12)*	10.5 *(range 7-12)*	10.4 *(range 6-13)*
Tertiary education (%):					
None	36*	41	58	75	58
Trade / technical	58	52	39	14	37
University	6	7	3	11	5
Prison History (%)	60	41	58	19*	49
Current Treatment (%): Not currently in treatment	52	62	58	39*	68

Table 5 shows the demographic characteristics of the December sample for those that injected benzodiazepines in the month prior to interview. Note that the sample sizes of those that injected benzodiazepines in the month prior to interview are small, precluding statistical analysis of demographic differences.

Table 5: Demographic characteristics of the December 2002 IDU sample that reported injecting benzodiazepines in the month prior to interview, by state

Characteristic	Intravenous use % (NSW) (n=13)	Intravenous use % (NT) (n=28)	Intravenous use %(QLD) (n=14)	Intravenous use % (TAS) (n=13)	Intravenous use % (VIC) (n=15)
Mean age (years)	34 *(range18-54)*	37 *(range 18-52)*	29 *(range16-46)*	29 *(range17-44)*	30 *(range18-46)*
Sex (% male)	60	76	66	60	70
Ethnicity (%):					
NESB	2	0	7	0	6
ATSI	20	10	9	20	6
Employment (%):					
Not employed	76	90	62	80	79
School education (mean years)	10 *(range 2-13)*	10 *(range 7-12)*	10 *(range 6-12)*	10 *(range 6-12)*	10 *(range 4-12)*
Tertiary education (%):					
None	57	40	52	70	56
Trade / technical	37	50	42	28	37
University	6	10	6	2	8
Prison History (%)	76	48	42	24	42
Current Treatment (%):					
Not currently in treatment	47	84	76	54	56

3.5.1.3 Summary of sample characteristics

- The sample characteristics of the IDU surveyed in June and December were similar.
- The majority of the IDU surveyed in June and December were male, had a mean age in the early 30's and were unemployed. About half of participants had a prison history and the majority were not in treatment at the time of interview.
- In the June survey, those that were injecting benzodiazepines were significantly more likely to be male than those that only swallowed benzodiazepines.
- In the December survey, those that were injecting benzodiazepines were significantly more likely to be unemployed and have a prison history than those that only used benzodiazepines orally.
- When compared with the June sample, it appeared that a larger proportion of the December participants that reported injecting in the past month had a prison history and were currently not in drug treatment. This is indicative of a less 'functional' group that may be more dedicated benzodiazepine users. However, it is also possible that those who continued to use and inject benzodiazepines after the change in subsidisation may have been a group of more dedicated users, and the December sample characteristics reflected this smaller pool of more dedicated users.

3.5.2 Drug use patterns

Participants in the June and December samples were recruited as IDU that were considered active participants in the illicit drug market.

Poly drug use has consistently been shown to be the norm among IDU across Australia. Information on the patterns of drug use among the June and December survey samples are presented in Table 6.

Table 6: Patterns of drug use among the June and December samples

	JUNE 2002 N=350	DECEMBER 2002 N=255
Age first injection (years)	18.5 (10-47)	18.3 (9-36)
First drug injected (%)		
Heroin	38	40
Amphetamine	48	50
Morphine	6	6
Cocaine	1.4	2
Methadone*	1.4	1
Drug of choice (%)		
Heroin	57	57
Methamphetamine	13	20
Morphine	8	8
Cannabis	7	5
Benzodiazepines	1	3
Methadone*	4	2
Cocaine	7	2
Drug injected most often in last month (%)		
Heroin	39	37
Methamphetamine	19	24
Morphine	22	24
Methadone*	11	9
Benzodiazepine	2	2
Cocaine	5	2
Most recent drug injected (%)		
Heroin	37	34
Methamphetamine	21	24
Morphine	20	22
Methadone*	12	11
Benzodiazepine	3	9
Frequency of injecting in last month (%)		
Less than daily	44	52
Once a day	15	15
2-3 times a day	30	24
>3 times a day	10	9
Polydrug use (mean)		
Number of drug classes ever tried	12.18	12.03
Number of drug classes used past 6 months	8.22	7.89
Number of drug classes ever injected	6.72	6.39
Number of drug classes injected past 6 months	3.79	3.57

*includes methadone received for methadone maintenance treatment and those accessing methadone syrup or tablets illicitly

As can be seen in Table 6, the June and December samples look very similar in terms of the patterns of drug use.

To ensure the June and December samples can be legitimately compared the frequency of other drug use was examined. Table 7 presents the frequency of drug use of those participants that reported using that drug in the last six months for the national June and December samples.

Table 7: Frequency of drug use in the six months preceding interview among IDU in the national June and December samples[1]

	JUNE 2002 Median days used	**DECEMBER 2002 Median days used**
Heroin	72	72
Methadone	90	137
Morphine	24	36
Cocaine	14	5.5
Speed	12	12
Base	12	7
Ice	6	5
Benzodiazepines	30	72
	JUNE 2002 %	**DECEMBER 2002 %**
Benzodiazepines		
% daily users	24	29
Ever injected	69	64
Injected last 6 months	43	39
Ever smoked	7	8
Smoked last six months	3	2
Ever snorted	3	2
Snorted last 6 months	1	<1
Ever swallowed	98	97
Swallowed last six months	97	94

1. Median days of use among those who reported such use in the past 6 months

The June sample appears similar to the December sample regarding frequency of drug use generally. However, the frequency of benzodiazepine use is higher in the December 2002 sample, (median days 72 in December compared to 30 days in June). However, if only *past month* benzodiazepine users are included from the June sample, the median number of days that they used benzodiazepines in the six months preceding interview is closer to that reported in December 2002 (60 days, with 29% of them using benzodiazepines on a daily basis).

As the criteria for the June survey was benzodiazepine use between January to April 2002, a period of four months, as opposed to benzodiazepine use in the month prior to interview for the December survey, the June survey included participants who used benzodiazepines less frequently than monthly. Nevertheless, given the comparability of the two samples on demographic variables and other drug use, and the fact that 24% of the sample in December 2002 reported participating in the June survey, it seems

reasonable to compare the two groups, noting that differences in benzodiazepine use patterns may be explained by characteristics of the samples.

3.5.2.1 Summary of patterns of drug use

- The IDU surveyed had initiated injecting in their late teens and were poly drug users.
- Heroin was the drug of choice for the largest proportion of participants in both samples and the drug they had injected the most in the month prior to interview.
- The largest proportion of IDU in both samples reported injecting less than daily in the month preceding interview.
- The frequency of benzodiazepine use was higher in the December sample, reflecting the fact that the eligibility criteria for the December survey required more recent use as well as suggesting that this group may be more committed benzodiazepine users.

3.5.3 Patterns of benzodiazepine use

3.5.3.1 June 2002

Participants were asked about their benzodiazepine use during two time periods; use between January and April 2002 (they were prompted to focus on the time between New Years Day and Easter time), and use in the month prior to interview. They were asked questions about which benzodiazepines they took, what form they took (tablet or capsule), the route of administration, and on how many days they had used them.

Ninety-six percent of the national sample had taken benzodiazepines orally between January and April 2002. The oral route of administration was the most common, with 51% reporting only swallowing their benzodiazepines, and 44% injecting and swallowing. Injecting *only* was the least common route of administration, with 15 individuals (4%) solely injecting benzodiazepines.

Two hundred and seventy two participants (78%) had taken benzodiazepines orally in the month prior to interview. For the majority of these (58%), this was the only method of administration during this period. Seventy-nine individuals (23%) had injected benzodiazepines in the month prior to interview, including 13 participants (4%) for whom injection was the sole route of administration.

3.5.3.2 December 2002

In the December 2002 survey, participants were asked about their benzodiazepine use in the month prior to interview. As in the June survey, they were asked questions about which benzodiazepines they took, what form they took (tablet or capsule), the route of administration, and on how many days they had used them.

As in the June survey, the vast majority (98%) of the national sample had taken benzodiazepines orally in the month preceding interview. The oral route of administration was the most common, with 67% reporting only swallowing their

benzodiazepines, and 31% injecting and swallowing. Injecting *only* was the least common route of administration, with five individuals (2%) solely injecting benzodiazepines.

Table 8: Route of administration of benzodiazepine in the last month for the national and state June sample

	JUNE 2002						
	Jan – Apr 2002			Last month			
	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %	% NOT USED	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %
National (n=350)	**51**	**4**	**44**	**19**	**58**	**4**	**19**
NSW (n=66)	50	2	48	17	54	6	23
NT (n=52)	44	6	50	15	52	10	23
QLD (n=55)	44	9	47	38	45	5	12
TAS (n=75)	52	4	44	9	65	0	25
VIC (n=102)	59	3	38	18	67	1	14

*Percentages are rounded to whole numbers.

Table 9 shows the breakdown in the route of administration with participants that had used benzodiazepines in the last month from the June survey (those that had *not* used in the last month were excluded). Two hundred and eighty five (81% of the national June sample) had continued to use benzodiazepines in the month prior to interview.

Table 9: Route of administration of benzodiazepine in the last month *of those that used benzodiazepines in the last month* for June and December surveys

	JUNE 2002				DECEMBER 2002		
	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %		ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %
National (n=285)	**72**	**5**	**23**	**National (n=255)**	**67**	**2**	**31**
NSW (n=55)	66	7^	27	**NSW (n=50)**	74	2^	24
NT (n=44)	61	11^	27	**NT (n=50)**	44	6^	50
QLD (n=34)	74	9^	18	**QLD (n=53)**	74	0	26
TAS (n=68)	72	0	28	**TAS (n=50)**	74	0	34
VIC (n=84)	82	1^	17	**VIC (n=52)**	71	2^	35

3.5.3.3 Summary of patterns of benzodiazepine use

- Oral benzodiazepine use was the most common route of administration among the IDU interviewed in both the June and December surveys.
- Half (58%) of the June sample and two thirds (67%) of the December sample reported *only* using benzodiazepines orally in the month preceding interview.
- Substantial proportions in both samples (23% in June and 31% in December) reported swallowing and injecting benzodiazepines.
- Only minorities of IDU sampled (5% in June and 2% in December) reported that they *only* injected benzodiazepines.
- There was an increase in the December sample (31%) in the proportion of IDU that reported swallowing and injecting benzodiazepines in the last month compared to past month users in the June sample (23%), which again, may reflect that the December sample was a more dedicated group of benzodiazepine users.

3.5.4 Benzodiazepine injection

3.5.4.1 June 2002

Sixty nine percent of the national June sample reported ever having injected benzodiazepines. During January and April 2002 half (49%) of the sample injected benzodiazepines; 37% reported injecting capsules and 14% reported injecting tablets. The percentage of participants injecting capsules decreased from 37% between January and April to 18% in the month prior to interview. The proportion reporting injection of tablets also decreased[3] after the change in subsidisation on May 1st (from 14% to 7%).

In the June 2002 survey, there was a decrease[3] in the number of participants that reported injecting any form of benzodiazepine, users injecting temazepam capsules, and participants injecting tablets across all states, in the last month compared to those reporting injecting between January and April 2002 (Table 10).

There were some differences in injecting patterns across jurisdictions (Table 11). NSW had the highest proportion of users (47%) injecting temazepam capsules between January and April, followed by NT and VIC (38%) and TAS (37%). QLD had significantly fewer participants injecting temazepam capsules between January and April (24%)[3] compared to the national sample (χ^2=4.63, df=1, p<0.05). The NSW sample had a significantly higher proportion (29%) injecting temazepam capsules in the month prior to interview (χ^2=5.93, df=1, p<0.05). Twenty one percent of the NT sample were injecting in the month prior to interview, while TAS had 19% and VIC 14%. QLD had significantly fewer participants injecting temazepam capsules in the month prior to interview (7%) compared to the national sample (χ^2=4.07, df=1, p<0.05).

[3] The decrease in patterns of benzodiazepine use and changes in means of obtaining benzodiazepines should be interpreted with caution throughout this report. It may be a reflection of the relatively shorter time period used to measure these behaviours post 1 May 2002 rather than changes in the behaviour per se.

The NT had significantly more participants (31%) injecting tablets[4] between January and April compared to the other states (χ^2=12.02, df=1, p<0.05). Twenty four percent of participants in QLD, 19% in TAS and 6% in NSW reported injecting tablets between January and April. VIC had significantly fewer tablet injectors (3%) compared to the national sample (χ^2=13.85, df=1, p<0.05) during this period. The NT also had significantly more participants injecting tablets in the month prior to interview (21%) (χ^2=17.00, df=1, p<0.05). Nine percent of the QLD sample, 8% of the TAS sample and 2% of the VIC sample reported injecting tablets in the month prior to interview. There were no reports of injecting tablets in NSW in this period.

Table 10: Intravenous benzodiazepine use among national samples in June and December 2002

	JUNE 2002 N=350		**DECEMBER 2002 N=255**
	Injected between Jan –Apr 2002 %	**Injected in last month %**	**Injected in last month %**
Benzodiazepines	49	23	33
Temazepam Capsules	37	18	32
Tablets	14	7	9

3.5.4.2 December 2002

Sixty four percent of the December 2002 national sample reported they had injected benzodiazepines in their lifetime. Thirty nine percent had injected benzodiazepines in the six months preceding interview and 33% had injected benzodiazepines in the month prior to interview.

In the month preceding interview, 32% of the national sample reported injecting capsules. This represented an increase from the proportion that reported injecting capsules in the last month in the June 2002 sample. There are several ways to interpret this finding:

- the increase in the proportions injecting benzodiazepines may be indicative of the different sampling strategies used (as previously discussed);
- the December sample could be a more dedicated group of benzodiazepine users (IDU that ceased benzodiazepine use due to the policy restriction were not included in the December sample);
- the data may represent a real increase in recent injection of temazepam capsules among regular IDU. Data from another sentinel population of IDU from the Sydney MSIC indicates an increase in the injection of temazepam capsules since May 2002. This suggests that continued monitoring of these types of data sources may provide further clarification on benzodiazepine injection trends. The patterns suggest that IDU who wished to inject temazepam capsules have continued to do so following the policy change.

[4] It should be noted that methods of recruitment for the NT and QLD were slightly different for part of the sample (see Methods Section). They had to specifically target benzodiazepine injectors, which may account for higher numbers of users injecting tablets.

In December 2002, 9% of the national sample reported they had injected tablets in the month prior to interview a figure similar to the proportion injecting tablets in the month prior to interview in the June sample (7%).

The NT had significantly more participants injecting temazepam capsules (χ^2=10.62, df=1, p<0.05) and tablets (χ^2=27.99, df=1, p<0.05) compared to the other states in the month preceding interview (Table 11). There were no other significant differences reported between the jurisdictions.

Table 11: Intravenous use of tablet benzodiazepines in June and December samples, by jurisdiction

	JUNE 2002		DECEMBER 2002	
	Injected Tablets between Jan – Apr %	**Injected Tablets Last month** %		**Injected Tablets Last month** %
NSW (n=66)	6	0	**NSW (n=50)**	2^
NT (n=52)	31*	21	**NT (n=50)**	30*
QLD (n=55)	24	9	**QLD (n=53)**	6^
TAS (n=75)	19	8	**TAS (n=50)**	8^
VIC (n=102)	3*	2	**VIC (n=52)**	2^

* significant p<0.05, significance testing was conducted comparing the state with the highest/lowest proportion with all other states combined.
^ small numbers n=1 in NSW and VIC, n=3 in QLD, n=4 in TAS

Table 12: Intravenous use of capsule benzodiazepines in June and December samples, by jurisdiction

	JUNE 2002		DECEMBER 2002	
	Injected Capsules between Jan – Apr %	**Injected Capsules Last month %**		**Injected Capsules Last month %**
NSW (n=66)	47	29*	**NSW (n=50)**	26
NT (n=52)	38	21	**NT (n=50)**	52*
QLD (n=55)	24*	7	**QLD (n=53)**	25
TAS (n=75)	37	19	**TAS (n=50)**	26
VIC (n=102)	38	14	**VIC (n=52)**	29

* significant p<0.05, significance testing was conducted comparing the state with the highest/lowest proportion with all other states combined.

Tablets that were most commonly injected in both the June and December surveys were Hypnodorm, Valium and Xanax. Similar proportions of benzodiazepine users reported injecting these types of tablets in both samples.

3.5.4.3 Summary of benzodiazepine injection patterns

- Similar proportions of the IDU in the June and December surveys reported that they had ever injected benzodiazepines.
- Data from the June survey suggests an apparent decrease in the month preceding interview (post May 1st 2002) in the proportion of IDU that injected any benzodiazepine, injected capsules and injected tablets compared to the period between January and April.
- There was an increase in the proportion of IDU that injected any benzodiazepine and injected capsules in last month in the December sample compared with June. This may indicate a real increase in the injection of benzodiazepines (specifically temazepam capsules), or it could be indicative of the samples interviewed.
- Similar proportions of IDU in the June and December sample reported that they had injected tablets in the month prior to interview. This suggests that, among IDU that continue to inject benzodiazepines, there has *not* been a substantial increase in the injection of tablets after temazepam capsules were restricted.

3.5.5 Use of temazepam capsules

3.5.5.1 June 2002

Half (54%) of the national sample reported using temazepam capsules between January and April 2002. The majority (70%) of those using temazepam capsules reported injecting them between January and April, including 38% for whom injecting was the only route of administration (Table 10). A third of those using temazepam capsules were only using them orally.

In the month prior to interview, ninety-one participants (26%) in the national benzodiazepine sample reported using temazepam capsules. The majority (68%) of those using them in the month prior to interview reported injecting them during this time, including 52% for whom injection was the sole route of administration. A third of those using temazepam capsules in the month prior to interview reported oral use only.

Among the participants that were injecting temazepam capsules between January and April 2002 (n=131), sixty-eight participants (52%) were no longer using them in the month prior to interview, (46 (35%) had used other benzodiazepines and 22 (17%) reported not using any benzodiazepine). Five participants had only taken them orally, and the remainder continued to inject them during this period.

Of those injecting temazepam capsules between January and April 2002, 15% had also reported injecting benzodiazepine tablets. In the month prior to interview, 10% reported injecting tablets.

Table 13: Route of administration of temazepam capsules between January –April 2002 and in the month preceding interview of those using temazepam capsules

	JUNE 2002						
	Jan – Apr 2002			Last month			
	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %	% NOT USED	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %
National (n=188)	30	38	32	**52**	15	25	8
NSW (n=44)	29	41	30	**45**	11	34	10
NT (n=26)	23	31	46	**46**	12	27	15
QLD (n=22)	41	18	41	**55**	27	14	4
TAS (n=46)	39	37	24	**48**	24	22	6
VIC (n=50)	22	48	30	**64**	8	22	6

3.5.5.2 December 2002

Almost half (46%) of the national sample reported using temazepam capsules in the month preceding interview. As in the June sample, the majority (69%) of those using temazepam capsules reported injecting them, including 43% for whom injecting was the only route of administration. Again as in the June survey, a third (31%) of those using temazepam capsules in the month prior to interview were using them orally, and a quarter reported both oral and injecting of temazepam capsules (Table 13).

Of the eighty-one participants in the national December sample that reported injecting temazepam capsules, 26% also reported injecting benzodiazepine tablets in the month preceding interview.

Table 14 presents the route of administration of the proportion of those that had used temazepam in the month preceding interview in June and December. Ninety one participants (26% of the national June sample) reported use of temazepam capsules in the month preceding interview in the June survey and 118 (34% of the national December sample) reported temazepam capsule use in the month preceding interview.

Table 14: Route of administration of temazepam capsules *of those that used temazepam capsules* in the last month

	JUNE 2002			DECEMBER 2002			
	ORAL USE ONLY %	IV USE ONLY %	ORAL & IV USE %		ORAL USE ONLY %	IV USE ONLY%	ORAL & IV USE %
National (n=91)	**32**	**52**	**17**	**National (n=118)**	**31**	**43**	**25**
NSW (n=24)	21^	63	17^	**NSW (n=23)**	43	39	17^
NT (n=14)	21^	50	29^	**NT (n=38)**	32	32	37
QLD (n=10)	60	30^	10^	**QLD (n=19)**	26^	47	26^
TAS (n=25)	44	44	12^	**TAS (n=20)**	35	40	20^
VIC (n=18)	22^	61	17^	**VIC (n=18)**	17^	67	17^

*Percentages rounded to nearest integer ^ small numbers n≤5

The majority of those that used any benzodiazepine (Tables 8 and 9) reported oral use or a combination of oral and injecting use. Only small proportions report exclusively injecting. In contrast, an examination of the reported route of administration of those that used temazepam capsules showed that larger proportions (38% and 52% in the national sample in June and 43% in December) reported exclusively injecting (Tables 12 and 13). That a greater proportion of temazepam capsule users 'inject only' suggests that the capsules are more amenable to injection, and have desirable effects over and above oral routes of administration.

3.5.5.3 Summary use of temazepam capsules

- There was a decrease in the proportion of IDU in the June 2002 survey that reported using temazepam capsules between January and April (54%) and in the last month (26%) (post May 1st 2002).
- However, a similar proportion of IDU in the December survey (46%) reported using temazepam capsules, indicating IDU were still able to obtain them after the policy restriction.
- A third of the IDU in both surveys reported *only* oral use of temazepam capsules.
- A greater proportion of temazepam capsule users 'inject only' compared to benzodiazepine users overall, suggesting that capsule preparations are more amenable to injection.
- A third of the IDU in the December survey reported injecting temazepam capsules (after the policy restriction).

3.5.6 Frequency of benzodiazepine injection

3.5.6.1 June 2002

Participants reported the number of days they had used each type of benzodiazepine. To obtain the number of days per month participants had injected benzodiazepines is complicated. There were twenty-two different types of benzodiazepines that participants could have used and they may have injected numerous different types on the same day or different types on different days. The estimated average number of days per month participants had injected benzodiazepines was calculated by extracting the highest number of days they reported injecting any one particular benzodiazepine and dividing it by the number of months in the time period (i.e. January to April). This is a conservative approach and may be an underestimation of the total number of days injected as participants may have used different types of benzodiazepines on more days than the highest number extracted to calculate days per month.

Among the one hundred and thirty one participants (37% of the national sample) that reported injecting temazepam capsules between January and April 2002, the frequency of injecting ranged from daily to once in the four-month period. Two thirds (67%) reported injecting capsules on four days or less. The median number of days used was 3 days per month.

Eighteen percent of the national June sample injected temazepam capsules in the month prior to interview, and the frequency of injecting ranged from daily to once in the month. Almost two thirds of them (63%) reported injecting on four days or less and the largest number of participants (23%) reported injecting on four days in the month.

Fourteen percent of the national sample reported injecting tablets between January and April, and frequency of use for this group ranged from once in the four months to daily injecting. Sixty four percent reported injecting tablets less than twice a month.

Seven percent of the national sample had injected tablets in the month prior to interview, with frequency ranging from once to daily use. Half of those that had injected tablets in the month prior to interview had injected on three days or less. A third (35%) injected tablets on one day in the month prior to interview.

3.5.6.2 December 2002

In the December survey participants were asked how many days they had injected any benzodiazepine, swallowed any benzodiazepine, and the total number of days they had used a benzodiazepine in the month preceding interview.

Due to missing data (n=71) some estimation of the number of days was required. As in the June survey, the highest number of days that participants reported swallowing or injecting benzodiazepines was taken to determine the average number of days used. Again this is a conservative approach and may be an underestimation as the total number of days may be larger due to participants using, injecting and/or swallowing multiple types of benzodiazepines on different days.

The median days used any benzodiazepine in the month preceding interview was 15 days (range 1-30 days). The median number of days used any benzodiazepine ranged from 10 days in the NT and QLD, and 25 in NSW, to daily use in VIC and TAS.

Of those that reported injecting any benzodiazepine in the month preceding interview (33%), the median number of days injected was 5 (range 1-30 days). A third (34%) had only injected on one or two days and 11% reported injecting benzodiazepines daily in the last month. There was some jurisdictional difference regarding frequency of injection ranging from a median of six days in QLD, seven in VIC and the NT, to eight in TAS and 14 days in NSW.

Of those that reported oral use of any benzodiazepine in the month preceding interview (n=248), the median number of days swallowed was 15 (range 1-30 days). Over a third (38%) reported daily benzodiazepine use in the month preceding interview and an additional 14% reporting using every second day or more. The median days used varied by state with a median of 10 days reported in QLD and the NT, 16 in NSW and daily use in VIC and TAS.

A third (32%) of the national December sample reported injecting temazepam capsules and the frequency of injecting ranged from daily to once in the month. As in the June sample, 50% injected temazepam capsules on four days or less. The largest proportion of participants (24%) reported injecting capsules on one day in the month and 7% were injecting daily.

Nine percent of the national December sample had injected tablets in the month prior to interview, with frequency ranging from once to daily use. Half of those that had injected tablets in the month prior to interview had injected on four days or less. Seventeen percent injected tablets on one day in the month prior to interview.

Table 15: Median days injected benzodiazepines in the last month

	JUNE 2002	**DECEMBER 2002**
	Median days	**Median days**
Benzodiazepines	4	5
Temazepam Capsules	4	4
Tablets	2.5	4

There was little change in the proportion of benzodiazepine users injecting specific types of tablets in the June and December samples. Tablets that were injected most were Hypnodorm (2% of the sample had injected Hypnodorm in the month prior to interview in June, and 3% in December), Valium (3% in June and 2% in December) and Xanax (2% in June and 2% in December).[5]

[5] Small numbers (n<10) reported injecting specific types of tablets and therefore the results should be interpreted with caution. However, there was a slight increase in the frequency of injection of Hypnodorm in the month prior to interview with median number of days increasing from 3.5 in June (n=6) to 5 days in December (n=8). There was also an increase in the median number of days Valium was injected in the month prior to interview, from 2.5 in June (n=10) to 12 in December (n=4), while the median number of days Xanax was injected dropped from 7 in June (n=5) to 3 days in December (n=6).

3.5.6.3 Summary of frequency of injection

- The frequency of injection of any benzodiazepine, capsules and tablets in the last month, was similar in the June and December surveys.
- There is wide variation in the frequency of benzodiazepine injection among IDU ranging from once a month to daily injection.
- Based upon the findings of the June *and* December samples, it appears that IDU continued to inject tablet and capsule benzodiazepines after May 2002. However the frequency of injection among the IDU interviewed does not appear to have increased substantially.
- Given the small numbers reporting the injection of specific tablets, it appears that even among regular IDU who use benzodiazepines, the injection of tablet preparations is uncommon.

3.5.7 Source of benzodiazepines

Participants were asked for all sources from which they had obtained benzodiazepines. Multiple sources were reported. They were also asked to specify the source that they had mainly obtained their benzodiazepines from (Table16).

3.5.7.1 June 2002

There was a reduction in the number of users sourcing their benzodiazepines from doctors presenting with genuine symptoms (61% to 47%) and fake symptoms (19% to 8%) in the month following the implementation of the policy. There was also a decrease in the percentage of users getting their benzodiazepines from friends (49% to 33%), buying them on the street (23% to 16%) and swapping drugs (7% to 3%)[6].

When asked about their main source of benzodiazepines between January and April 2002, users most often reported going to the doctor with genuine symptoms (53%) (Table 16). Doctor was also the most common source for the month prior to interview (42%). The next most common source was friends (25% in January to April 2002, and 23% in the last month). Fake symptoms to doctors were reported by 9% between January and April 2002 to 5% in the last month. Ten percent were buying their benzodiazepines on the street between January and April and 9% in the month prior to interview.

The most common 'fake symptom' cited was insomnia (6% between January and April and 2% in the month prior to interview). Other symptoms reported were varied and included anxiety, depression and withdrawal (all less than 1%).

3.5.7.2 December 2002

As in the June survey, the most common source for benzodiazepines among the national sample was the doctor with genuine symptom (65%), followed by obtaining them from

[6] These reductions should be interpreted with caution as they may be an artefact of the shorter measurement period.

friends (33%), buying them on the street (28%), purchasing from friends (14%) and swapping drugs on the street (11%).

As in the June survey participants in the December survey most often reported going to the doctor with genuine symptoms as the main source of obtaining benzodiazepines. Fifteen percent usually bought benzodiazepines off the street and 20% reported obtaining benzodiazepines most often from friends, 15% reported as a gift and 5% purchased from friends. Fifteen percent reported buying benzodiazepines on the street.

Table 16: Main source of benzodiazepines reported by participants in June and December surveys

	JUNE 2002		DECEMBER 2002
Source	**Main source of obtaining benzos between Jan- April 2002 %**	**Main source of obtaining benzos in last month %**	**Main source of obtaining benzos in last month %**
Doctors (genuine symptoms)	53	42	55
Doctors (fake symptoms)	9	5	3
Forged prescriptions	<1	-	-
Altered existing prescriptions	-	-	-
Friends	25	23	15 gift 5 purchased
Family	1	<1	2
Street (paid money)	10	9	15
Street (swapped drugs)	<1	<1	3

3.5.8 Ease of access to benzodiazepines

3.5.8.1 June 2002

Of those respondents who cited doctor (either genuine or fake symptoms) as a source of benzodiazepines between January and April, and specifically requested temazepam capsules (n=123), 32% stated temazepam capsules were 'very easy' to obtain. Ten percent of respondents who sourced their temazepam capsules from the doctor in the month prior to interview thought they were 'very easy' to obtain, while 58% stated they were 'very difficult'.

Table 17: Ease of getting temazepam capsules from the doctor between January and April 2002 and in the last month

	JUNE 2002		DECEMBER
Level of Ease	**Ease of access January and April 2002 * % (n=123)**	**Ease of access in the last month* % (n=59)**	**Ease of access in the last month* % (n=80)**
Very Easy	32	10	11
Easy	28	14	20
Difficult	25	19	13
Very Difficult	15	58	34

* of those who requested temazepam capsules benzodiazepines from a doctor (genuine or fake symptoms)

3.5.8.2 December 2002

Sixty two percent of the national sample (n=157) reported obtaining benzodiazepines from a doctor in the month preceding interview, presenting with either genuine or fake symptoms. Participants were asked how often they obtained benzodiazepines from the doctor in the last month. Half of the participants (53%) obtained benzodiazepines from their doctor every time, 28% reported they obtained them 'most times', 6% reported 'half the time' and 13% reported 'sometimes' obtaining benzodiazepines from the doctor.

Of those that reported going to the doctor for benzodiazepines in the last month (whether they were successful in obtaining benzodiazepines or not), 73% reported only going to one doctor and 15% reported going to two. Although the vast majority appear to be requesting benzodiazepines from a few doctors, there was some doctor shopping among the national sample. Eleven participants reported going to five or more doctors in the month preceding interview, including two participants who went to 10 doctors, one to 12 doctors and one to 20 doctors.

The majority (86%) of participants that went to the doctor for benzodiazepines in the last month reported that they were successful every time they went to the doctor, 8% reported they were successful most of the time, 4% half of the time and 3% reported being successful in obtaining benzodiazepines sometimes.

Participants in the December survey were asked how easy or difficult it was to obtain capsules from the doctor at the moment. In the national sample, of those that requested capsules (n=80), 34% reported that it was very difficult to obtain gel capsules from the doctor, 13% reported it was difficult, 20% easy and 11% very easy (23% did not know).

The majority of participants (71%) (n=69) that answered the questions regarding changes in ability to get capsules responded that it had become more difficult to obtain gel capsules from the doctor. A quarter (26%) had not noticed any difference in how easy or difficult it was to get gel capsules and 3% reported that it had become easier.

Participants were asked when they had noticed the change in the ability to obtain capsules from the doctor as an indicator of the effect of the policy. A third (36%) reported that the change occurred pre May, 24% May 2002, 16% June 2002 and the remainder reported that the change occurred between July and November 2002.

A third (36%) responded that ability to obtain capsules had changed as the doctor can no longer prescribe capsules to anyone, 10% reported that it was because the doctor could no longer prescribe capsules to them specifically, 6% did not know why the ability to get capsules had changed and 2% reported they had gone to a new doctor that would not prescribe to them. It appears that some of the participants were aware of the policy change. Thirty eight percent commented that it had become more difficult because people were injecting and abusing them and made comments on the damage and health consequences of this misuse. Three participants noted that their had been a government/ AMA or health department 'crackdown' on the prescription of capsules. Two participants responded that the doctor needed approval or certification to prescribe capsules, indicating knowledge of the change in policy.

Participants in the December survey were asked how easy or difficult it was to obtain other forms of benzodiazepines (tablets) from the doctor at the moment. In the national sample, of those that requested other forms (n=141), 46% reported that it was easy and 36% reported that it was very easy, 11% difficult, 3% very difficult and 4% did not know.

The majority of participants (60%) that answered the questions regarding changes in ability to get other forms (n=133) responded that they had not noticed any change in the ability to get tablets from the doctor. However a substantial proportion (34%) reported that it had become more difficult, 5% reported it had become easier and 2% reported that the ability to obtain tablets fluctuates.

Of those that noticed a change, half (47%) reported that the change occurred prior to May 2002, 9% reported the change occurred in May 2002, 19% in June 2002 and the remainder, between July and November 2002.

The reasons reported for the change in the ability to obtain benzodiazepines tablets were similar to those reported for capsule formulations. The majority made comments to suggest that doctors were 'cutting down' or 'tightening up' prescriptions of benzodiazepines as they were aware of people abusing benzodiazepines, and concerned about the misuse and dependence. A few (n=4) responded there had been a health department 'crackdown'.

A greater proportion of participants in the June survey (71%) reported that it had recently become more difficult to obtain capsules from the doctor than in the December survey (34%). This could, however, reflect the recency of the policy change at the time the June data was collected: in December, the change had been in place for some seven months. There were very few respondents reporting that it had become *easier* to obtain capsules from doctors in either the June or December survey. Nevertheless, one third of IDU in the December survey said that it was easy (20%) or very easy (11%) in the December survey, suggesting that these IDU continued to access capsules through doctors after the policy change.

3.5.8.3 Summary of source and access

- IDU obtain benzodiazepines from a variety of sources.
- The majority of IDU in both survey samples reported obtaining benzodiazepines from doctors, presenting with genuine symptoms.

- The vast majority of IDU reported obtaining benzodiazepines from one or two doctors, with a minority (11%) in the December sample going to five or more doctors in the month preceding interview.
- In December 2002, half of the IDU reported that it was difficult or very difficult to get *temazepam capsules* from the doctor; nevertheless, 31% reported it was easy or very easy to do so.
- A third of the December sample thought that the change in ability to get capsules from the doctor occurred pre May 2002, and substantial proportions knew that the change was due to a policy restriction.
- The majority reported it was easy or very easy to obtain *tablet* benzodiazepines from doctors.

3.5.9 Benzodiazepines on the street – availability and price

Participants who had bought benzodiazepines on the street in the month prior to interview were asked what type they had bought, how much they had paid and if the street price had changed in the last month.

3.5.9.1 June 2002

Half of the June sample reported buying capsules or tablets on the street between January and April 2002. One hundred and forty nine participants (43% of the national sample) had bought benzodiazepines on the street in the month prior to interview. There were 225 reports of purchases of different benzodiazepines. Most transactions (83%, n=186) were for individual tablets or capsules, and there were 28 reports of scripts being bought and nine reports of purchasing multiple capsules/tablets.

Most purchases were made with cash (94%), with 5% trading drugs (including benzodiazepines, cannabis, methadone and heroin). Four participants reported trading other goods including beer, cigarettes and sex.

Table 18: Type of benzodiazepines participants reported buying on the street

	JUNE 2002 N=350		DECEMBER 2002 N=255
	Bought between January and April 2002 %	Bought in the last month %	Bought in the last month %
Any benzodiazepine	50	43	55
Temazepam capsules	30	17	32
10mg capsules	17	6	14
20mg capsules	21	12	26
Tablets	41	31	47

One hundred and five participants (30%) had bought temazepam capsules on the street in the first four months of 2002. In the month prior to interview only 17% bought temazepam capsules on the street. Seventy-three participants (21%) had bought 20mg

capsules and sixty (17%) had bought 10mg capsules in the first four months of the year. After May 1st 2002, 12% reported they had bought 20mg capsules and 6% had bought 10mg capsules on the street in the month prior to interview.

Fifteen people commented on the individual price of a 10mg capsule, and prices ranged from $1 to $12.50 per 10mg capsule, with half of this group paying $3.50 or less.

Thirty-seven people commented on the price of 20mg capsules and prices ranged between $1 and $11 per capsule. The most common price was $5 per capsule, with three quarters of this group paying $5 or less.

Over half of those that bought either 10mg (57%) or 20mg temazepam capsules (57%) on the street after May 1st 2002, responded that the street values had remained stable relative to January - April. Minorities of those who had purchased 10mg (29%) and 20mg capsules (18%) responded that the price had increased. Ten percent of those that bought 10mg capsules and 6% that bought 20mg capsules thought the street price fluctuated in the last month. Three participants that bought 20mg capsules (6%) thought the price was decreasing. The remainder (4% for 10mg capsules and 14% for 20mg capsules) did not know if the price had changed.

Forty one percent of the national sample had bought benzodiazepine tablets on the street between January and April 2002, while 31% bought them in the month prior to interview.

There were 110 reports of individual tablets being bought on the street in the month prior to interview. The most common tablets bought on the street were Valium (n=37), Serepax (n=21), Xanax (n=8), Rohypnol (n=8), and Hypnodorm (n=8). Two thirds of the respondents who bought tablets (68%) thought the price remained stable, 14% thought it had increased, and 4% thought it fluctuated.

Seventy-one respondents gave a price per tablet. The price of tablets ranged from 75 cents to $40 per tablet. Half of the respondents paid $3 or less per tablet, with three quarters of the respondents paying $5 or less per tablet.

3.5.9.2 December 2002

Half of the national sample (55%) (n=139) reported buying either tablets or capsules on the street in the last month. There were jurisdictional differences in the proportion of participants reporting buying benzodiazepines on the street and in the type of benzodiazepines purchased (Table 19).

Table 19: Types of benzodiazepines bought on the street in the last month by jurisdiction, December 2002

	Bought tablets or capsules %	Bought tablets %	Bought capsules %	Bought 20mg capsules %	Bought 10mg capsules %	Bought both 10 and 20 mg capsules %
National N=255	55	47	32	26	14	8
NSW n=50	70	60	40	26	22	8^
NT n=52	84	70	60	54	19	14^
QLD n=53	26	23	13^	11^	4^	2^
TAS n=50	74	74	30	24	12^	6^
VIC n=52	22	12^	17	13^	12^	8^

^ small numbers n<10 reporting

Price of capsules on the street

A third (32%) of participants in the national sample had bought temazepam capsules on the street in the month prior to interview. A quarter of the sample (26%) had bought 20mg capsules and 14% had bought 10mg capsules in the month prior to interview.

There were twenty-four comments on the individual price of a 10mg capsule, and prices ranged from $2 to $15 per 10mg capsule. The median price for a 10 mg capsule was $3. The most common price reported for a 10 mg capsule was $2.50 (n=8) or $5 (n=7).

The most common 10mg capsules purchased on the street were Normison (n=14), followed by Euhypnos (n=7) then Temaze (n=3).

The majority of the twenty-four comments on whether the street values had changed in the last month reflected that the price was stable (n=20) 83%, two IDU reported an increase, one participant commented that the price fluctuated and one did not know if the price had changed.

There were sixty four comments on the price of 20mg capsules: prices ranged between 50 cents and $20 per capsule. The most common price was $5 per capsule (n=36). The median price for a 20mg capsule was also $5.

Again, Normison was the most common brand purchased on the street (n=32) followed by Euhypnos (n=16) then Temaze (n=12) and Nocturne (n=4).

The majority (65%) of the 62 participants that commented on whether the street value had changed in the last month responded that the price was stable. Fifteen participants reported an increase, five reported that the price fluctuated and two did not know.

Ability to obtain capsules on the street

Of those that had bought benzodiazepines on the street, 106 participants responded regarding the ability to get capsules on the street currently. Thirty five percent reported that it was easy to get capsules on the street and 14% reported it was very easy. Twenty six percent reported that it was difficult, 9% very difficult and 15% did not know.

When those that had got capsules on the street (n=97) were asked whether the ability to get them on the street had changed in the last six months, 30% of participants responded there had been no change. Sixty percent reported that it had become more difficult, 9% easier and one participant reported that it fluctuates.

A quarter of these participants noticed that the changed occurred pre May 2002, 18% in May, 16% in June and the remainder between July and November 2002.

When asked about possible reasons for the availability on the street changing, 70% reported that it was harder to get capsules from the doctor so there were less on the street, 11% did not know and 20% reported other reasons.

Of those that said it was harder to get capsules on the street, two people made comments that people were abusing or injecting capsules, two reported that it was due to Christmas, two reported that it was due to heroin availability (one stating that it was because heroin was back and one because heroin availability and purity was low) and one reported there was no dealing due to a lack of interest.

Of those that said it was easier to get capsules on the street or that it fluctuated (n=6), two indicated that a black market had started up because it was harder to get them from doctors, three indicated it was easier as doctors were supplying and one commented it was because heroin was bad.

Price of tablets on the street

Forty seven percent of the national sample had bought benzodiazepine tablets on the street in the month prior to interview.

There were 195 reports of individual tablets being bought on the street in the month prior to interview. The most common tablets bought on the street were Valium (n=41), Serepax (n=30), Xanax (n=11), Hypnodorm (n=17), Rivotril (n=16) and Normison tablets (n=15). The price of tablets ranged from 25 cents to $15 per tablet. The vast majority of purchases (94%) were $5 or less per tablet.

The vast majority (83%) reported that the price for tablets had remained stable, 8% reported an increase in price, 5% did not know, 4% said it fluctuates and one reported a decrease.

Ability to obtain tablets on the street

One hundred and eighteen participants commented on how easy or difficult it was to get tablet forms of benzodiazepines on the street. Forty two percent reported that is was easy, 30% very easy, 15% difficult and 14% didn't know.

Ninety seven commented on whether there was a change in the ability to get tablets on the street. The majority (74%) reported that there was no change, 20% reported that it had become more difficult and 5% easier. One participant said ability fluctuates.

The timing for the change in the ablitiy to obtain tablet was more dispersed than capsules, with 16% reported pre May, May, June, July and September and 8% reported October and November, 4% (n=1) August.

Of those that said it was more difficult (n=19) to get tablets, 16 reported that this was because it was harder to get them from doctors and therefore there were less on the street. The other three comments related to demand; one reported that heroin was back so there was less demand for tablets, one reported that more were wanting tablets as it was harder to get capsules and one reported that people preferred capsules so there were less tablets on the street.

3.5.9.3 Summary of street availability and price

- There appears to be a substantial black market for benzodiazepines, with little indication that the restriction in the prescription of temazepam capsules has impacted upon the ability of regular IDU to obtain capsules on the street.
- Half of the IDU reported buying benzodiazepines on the street both pre and post the policy change.
- A third of the IDU samples reported buying temazepam capsules on the street. Similar proportions reported buying 10mg and 20mg capsules pre and post the policy change.
- In the December 2002 survey, substantial proportions reported buying 20mg temazepam capsules, which may be indicative that some individuals are obtaining private 20mg prescriptions and paying full price for them (they are not PBS listed) to then sell on the street. Half (54%) of participants in the NT reported buying 20mg capsules on the street, while 26% in NSW and 24% in TAS reported doing so.
- Similar proportions reported buying tablets on the street in June and December, the most common being Valium, Serapax and Xanax.
- The price of capsules purchased on the street was reported to be stable by the majority, with a 20mg capsule being purchased for $5 and 10mg capsules for $3.
- Half of respondents reported capsules were easy or very easy to get on the street in December, although the majority reported that it had become more difficult to get them on the street in the previous six months.
- The price of tablets on the street was reported to be stable, ranging from 25 cents to $15 per tablet.
- The majority reported that there had been no change in the ability to get tablets and that it was easy or very easy to get tablets on the street.

3.5.10 Health Effects of benzodiazepine use

3.5.10.1 June 2002

Among those who had injected benzodiazepines in the month prior to interview (n=78), the majority of respondents (73%) reported arms as the most common injection site in the last month. Those who had injected during this period were asked what sorts of problems they had experienced as a result of their benzodiazepine injecting. The most commonly reported problems were prominent scarring or bruising at injection sites (n=35, 45% of users who had injected any benzodiazepine) and difficulty finding veins to inject into (n=35, 45% of users who had injected any benzodiazepine).

The mean number of injection related problems users reported in the last month was 2 among those who had injected any benzodiazepine (range 1 through 10) and those who had injected capsules only (range 1 through 6). The mean number of injection related problems was 1.5 among those only injecting tablets (range 1 through 7). Thirty nine percent of users who were only injecting capsules (n=21) and 39% injecting any benzodiazepine (n=28) reported three or more problems (n=21). Twelve percent of users only injecting tablets (n=2) reported three or more injection related problems in the last month.

3.5.10.2 December 2002

Among those that injected benzodiazepines in the month preceding interview (n=84), the majority of respondents (72%) reported arms as the most common injection site, 9% reported hands and 7% reported their groin as the most common injection site in the last month.

The majority (68%) of the national December sample that had injected benzodiazepines in the month prior to interview reported having some injection related problems. As in the June survey the most common problems reported as a result of injecting benzodiazepines were prominent scarring or bruising (40% of users who had injected benzodiazepines) and injection sites and difficulty finding veins to inject into (37% of users who had injected benzodiazepines).

The mean number of injection related problems reported by users who had injected any benzodiazepine in the last month was 2.7 (range 1-8), and 40% reported three or more problems.

In December 2002, only three participants reported solely injecting tablets, two of whom did not report any injection related problems and the other participant reported they had difficulty finding veins to inject into in the last month.

Table 20: Proportions of participants that injected benzodiazepines that reported injection-related problems in the last month

	JUNE 2002			DECEMBER 2002	
Problem	**Only injected capsules % (n=54)**	**Only injected tablets* % (n=16)**	**Injected any benzo % (n=78)**	**Only injected capsules % (n=60)**	**Injected any benzo % (n=84)**
Overdose	2	6	4	-	1
Abscesses / infections from injecting	9	6	11	13	13
Dirty hit	6	12	10	5	8
Prominent scarring / bruising	44	37	45	45	40
Thrombosis / blood clotting	9	6	10	5	9
Swelling of arm	22	19	22	25	23
Swelling of leg	4	-	5	4	3
Swelling of hand	11	6	11	13	14
Swelling of feet	2	-	4	7	8
Hospitalisation	-	-	1	-	3
Contact with Ambulance	-	-	1	2	3
Contact with Police	-	-	3	4	3
Benzodiazepine dependence	26	12	24	23	20
Difficulty finding veins to inject into	50	25	45	30	37
Skin Ulcers	9	-	6	4	4
Gangrene	-	-	-	-	-

* 3 participants injected tablets only in Dec 2002, of whom only one had reported difficulty finding veins to inject into.

3.5.10.3 Summary of injection related problems

- Most IDU that injected benzodiazepines reported that they mainly injected into their arms.
- The majority of IDU that injected benzodiazepines reported injection related problems, suggesting that the harms associated with injecting benzodiazepines continues to be an issue requiring attention.
- The most commonly reported problems were prominent scarring or bruising, difficulty finding veins to inject into and benzodiazepine dependence.
- Similar proportions in the June and December samples reported the same injection related problems, suggesting there has been no change in the types of problems associated with injection.

4 DISCUSSION

The examination of the temazepam prescription data provides a clear indication that there has been a switch in the general Australian population from the prescription of temazepam capsules to temazepam tablets after the May 1st 2002 restriction on capsule preparations. There was an increase in the number of private 10mg temazepam capsule prescriptions after the policy change, however the percentage increase in private prescriptions for 10mg capsules was substantially less than the decrease in PBS prescriptions for 10mg temazepam capsules. However, it cannot be discounted that the the increase in private prescriptions of 10mg capsules may, at least in part, be due to IDU accessing private prescriptions. The limited feedback available from doctors and pharmacists suggest that overall, the impact of the policy restricting temazepam capsules has not caused major administrative or clinical problems (Roughead and Barratt, 2003).

This report is focused on the impact of the policy on a sentinel group of IDU, the group on which the restriction was aimed to impact. The data collected from IDU gives an indication of patterns of benzodiazepine use and supply of benzodiazepines among a sample of IDU that were surveyed approximately one month after the May 1st policy change and another group of IDU that were interviewed six months after the policy change. The report contains data from five jurisdictions and provides some indication on the impact of the restriction of temazepam capsules. The information is not representative of all IDU that use benzodiazepines and data was not collected from IDU that may have ceased using benzodiazepines or injecting temazepam as a result of the restriction.

The policy restriction in 10mg temazepam capsules is recognised as a positive approach to limiting the availability of the easily injectable temazepam capsules and possibly reducing the harm associated with the injection of benzodiazepines. Despite this restriction, the results of the surveys conducted suggest that the availability and injection of benzodiazepines, and temazepam capsules specifically, continues to be an issue that needs ongoing monitoring and specific strategies to limit the injection of, and reduce the harms associated with benzodiazepine use. IDU continue to access temazepam capsules, either on the street or through doctors' prescriptions, and continue to misuse them despite the policy restriction particularly aimed at reducing supply to this group.

Participants in both benzodiazepine surveys were selected on the basis that they had used benzodiazepines recently (between January to April for the June survey and in the month prior to interview for the December survey). Almost half (49%) of the IDU surveyed in June had injected benzodiazepines prior to the policy change with 37% injecting temazepam capsules. Despite a significant reduction in the numbers of prescriptions of 10mg capsules as seen in the PBS prescription data after May 1st, the IDU surveyed still accessed temazepam capsules, with 18% of the sample reporting injecting temazepam capsules after May 1st 2002 in the June survey and 32% having injected capsules in the month preceding interview in the December sample.

As discussed previously, there are several ways to interpret the increase from June to December in the proportion that reported injecting capsules. It may be indicative of the different sampling between the two surveys. The December sample, by definition, are a more frequent group of benzodiazepine users, and may also be a more dedicated group

of benzodiazepine users, as IDU that ceased benzodiazepine use due to the policy restriction were not included in this sample. Alternatively, this finding could represent a real increase in the injection of temazepam capsules. Data from another sentinel population of IDU from the Sydney MSIC indicates an increase in the injection of temazepam capsules since May 2002, although it is not clear to what extent the injection is of 10mg or 20mg temazepam capsules. Further monitoring is required to determine if the injection of temazepam capsules is increasing.

One possible impact of the restriction in the supply of capsules could have been an increase in the injection of tablet preparations or increases in other drug use. Data collected from the IDU surveys do not provide evidence to suggest an increase in tablet injection. Similar proportions reported injecting tablets in the June and December surveys, and the frequency of tablet injection was also similar. Hypnodorm, Valium and Xanax were the most commonly tablets injected (by small proportions of the samples) in both samples. There was also no evidence from either survey to suggest that the policy restriction has resulted in a shift to increased use of other drugs.

In both surveys most participants reported that they were mainly obtaining their benzodiazepines legitimately, with 53% in the June survey getting them from doctors and presenting with genuine symptoms between January and April 2002. In the month prior to interview in the June survey 42% had reported obtaining their benzodiazepines legitimately, and 55% reported doing so in the December survey. Small proportions (5% and 3% in June and December respectively) presented with 'fake symptoms' to obtain benzodiazepines from a doctor, however the symptoms described are quite diffuse and it may be difficult to ascertain individuals who are faking symptoms to obtain benzodiazepines.

Before the restriction on prescription of temazepam capsules, about a third of participants that had requested capsules from a doctor thought they were 'very easy' to obtain. It appeared to be more difficult to obtain temazepam capsules from doctors since the May 1st restriction, with the majority (58%) reporting it being 'very difficult', although almost a quarter still thought it 'easy' or 'very easy'. This may indicate that some doctors are unaware of the restriction, or are willing to provide private prescriptions. In the December survey 47% reported that it was 'very difficult' or 'difficult', although a third (31%) reported that it was 'easy' or 'very easy'. This suggests that there are still doctors that will provide 10mg temazepam capsules with an authority or capsules on private prescription. Clearly, further specific strategies targeting doctors and their prescribing practices may be required. Procedures need to be put in place to ensure doctors assess patients adequately, provide viable alternatives to benzodiazepines and reduce the overall prescription of benzodiazepines. Although there has been progress in this area, increasing awareness of the issues relating to benzodiazepine use and misuse is still required.

The majority of participants that obtained benzodiazepines from a doctor in the month prior to interview in the December sample reported only visiting one (73%) or two (15%) doctors for benzodiazepines. Although the vast majority appear to be requesting benzodiazepines from a few doctors, there was some doctor shopping among the national sample, with eleven participants reporting going to five or more doctors in the month preceding interview. Despite efforts to reduce doctor shopping, and evidence that this has occurred, there appears to be a small proportion of dedicated doctor shoppers

who may be supplying benzodiazepines on the black market or obtaining large quantities of benzodiazepines for their personal use.

It appears that there is a substantial black market for benzodiazepines with almost a quarter of the sample reporting obtaining benzodiazepines from friends both pre and post the policy change, and about 10% mainly buying them on the street in the June sample. The majority of those that bought on the street bought capsules. IDU continue to have access to capsules on the street, with over half of those that purchased benzodiazepines on the street buying temazepam capsules. In December over half (55%) of participants reported purchasing any benzodiazepine on the street in the month prior to interview with a third (32%) purchasing temazepam capsules. Substantial proportions reported buying 20mg capsules, which may indicate that some individuals are obtaining unrestricted 20mg scripts and paying full price for them (they are not PBS listed) to then sell on the street.

Key informants, mainly doctors and pharmacists that were interviewed between June and August, reported it was too early to assess the full impact of the policy change. Generally there was support for the policy restriction although there were comments that it was overdue and alone it would not solve the problem of benzodiazepine misuse. There were suggestions that there should be further restrictions on benzodiazepines generally and temazepam capsules specifically; with one key informant suggesting they should be banned completely as there were viable alternatives. Some key informants thought the change in prescribing practices had been initiated before the policy restriction. The majority of the doctors interviewed had not been providing capsules before the restriction and commented that their patients would not request capsules. The pharmacists noted a substantial increase in dispensing of tablets. A few reported an increase in 20mg capsules although they reported it to be less than the increase in tablets.

As the issue of benzodiazepine injection and concern of the associated harms prompted the policy change, it is important to acknowledge activities prior to the prescription restriction and examine changes over time. There were informant reports of drug and alcohol clinicians changing prescribing practices prior to the policy change as well as the impact of more formal initiatives. In Victoria, the Temazepam Injection Prevention Initiative (TIPI) was introduced in October 2001. The initiative targeted doctors, pharmacists, health workers and IDU regarding the harms associated with injection of benzodiazepines. As can be seen from the PBS prescription data there were decreases in prescribing temazepam capsules in VIC prior to the May 1st policy change.

A qualitative study examining the impact of the restriction of temazepam gel capsules in the UK (Fountain et al. 1999) reported there were positive and negative impacts of the decreased availability. The restriction of the temazepam gel capsules was successful in reducing the numbers that injected them, however there was a reported increase in activities to raise money (prescription fraud, selling drugs and shoplifting) to adjust to increases in price of benzodiazepines still available on the illicit market. There was also a reported increase in the experimentation with other substances such as flunitrazepam (Rohypnol) and some evidence of users injecting benzodiazepine formulated for oral use (Fountain et al 1999).

The data from this study also suggest positive and negative impacts. It appears that it is more difficult to obtain the capsules from doctors after the restriction in prescription. The policy change and the accompanying information that was provided to the doctors

provided the opportunity for GPS to review why and to whom they were prescribing benzoziazepines. This provided an opportunity to reassess some patients and increase awareness of benzodiazepine prescription generally. However a substantial proportion of the IDU continued to obtain and inject temazepam and other benzodiazepines. The 20mg capsules are still available without authority and are being used by IDU. Temazepam capsules (10mg and 20mg) continue to be purchased on the street.

The findings from the June and December survey show that the proportion of users reporting harms associated with benzodiazepine use have remained relatively stable over time, as have the types of injection related problems reported by benzodiazepine users. Substantial proportions of both the June and December surveys reported injection related problems. This is indicative that benzodiazepine users continue to inject benzodiazepines despite the harms associated with this activity, and that restricting the supply of temazepam capsules is only one possible strategy to reduce these harms. Other strategies such as the treatment of benzodiazepine dependence, the promotion of safe injecting, more proactive education about the harms and vein care advice need to be addressed in order to reduce misuse of benzodiazepine and limit the associated harms.

This report only investigates use patterns among IDU who continued to use benzodiazepines following the changes introduced in May 2002. It is not known how many IDU ceased benzodiazepine use as a result of the policy restriction; it is also unknown whether those who may have ceased use shifted to other drug use. These issues are areas that require further investigation, since it is important to monitor the impact of a change in policy on both those who continue with a behaviour, and those who cease it.

4.1.1 Caveats

Conclusions regarding the generalisability of the impact of the prescription restriction to all IDU should be made with caution. The IDU surveys provide information on benzodiazepine use patterns of a specific sample of the general population for which the restriction in the prescription of capsules was designed to impact. The IDU may not be representative of *all* IDU who use benzodiazepines, but they provide some information on the use patterns of a group of sentinel IDU who report recent benzodiazepine use.

The December data collection required that IDU had used benzodiazepines in the month prior to interview. Therefore anyone that had ceased benzodiazepine use due to the restriction in the availability of temazepam capsules would not be included in the survey. Given that the December survey recruited more recent users than the June survey, it may be that the December sample consisted of a more dedicated group of benzodiazepine users. However, when the frequency of benzodiazepine use of the December sample was compared with those who had used in the previous month in the June survey, the groups appeared similar. Generally the demographic and drug use patterns were also similar. Although the December sample had a higher proportion of users that were unemployed, had a prison history and were not in treatment. This may indicate that the December sample was less functional.

4.2 Conclusions

There appears to have been a marked effect on population trends in prescription of 10mg temazepam capsules following the increased restriction of such preparations. Data from a range of sources indicates that a significant decrease occurred in the rate of prescription of 10mg temazepam capsules, with an increase of almost the same proportions in prescription of 10mg tablets. This suggests that the change in subsidisation of the benzodiazepine resulted in fewer being prescribed. The feedback available suggests that there were no dramatic administrative or other burdens upon doctors or pharmacists as a result of the change in prescription formulation.

Evidence (from indicator data and IDU) also suggests that *among injecting drug users who continue to use benzodiazepines*, there is continued use of temazepam capsules, and that such preparations continue to be injected by this group. Although the total number of IDU using (and injecting) these capsules may have decreased, it would appear that further policies, such as those introduced in Victoria in 2001 targeting health professionals and IDU, may be needed to further reduce the misuse of this drug.

Procedures need to be put in place to ensure doctors assess patients adequately, provide viable alternatives to benzodiazepines, and further reduce the overall prescription of benzodiazepines. Although there has been progress in this area, increasing awareness of the issues relating to benzodiazepine use and misuse is still required.

One issue that must be noted, which may have affected the patterns of benzodiazepine use observed among IDU, is the Australia heroin 'shortage', which is thought to have begun in late 2000 or early 2001 (Topp et al in press). Anecdotal evidence suggests that some primary heroin users may have switched to benzodiazepine use following the reduction in the availability of heroin; it may be that the continued reduced availability of heroin may have resulted in higher levels of benzodiazepines use among former primary heroin users.

In summary, it would appear that while there have been clear reductions in the population prescription of temazepam 10mg capsules following the introduction of a more restrictive subsidisation, IDU continue to use this drug. The current study suggests that greater restrictions upon supply may need to be considered to restrict use among IDU. This supply reduction effort needs to be supplemented with other changes to reduce problematic use among IDU.

REFERENCES

Bruno, R. & McLean S. (2001) *Tasmanian Drug Trends 2000: Findings from the Illicit Drug Reporting System (IDRS).* Technical Report No. 109. Sydney: National Drug and Alcohol Research Centre, University of NSW.

Darke, S. (1994). The use of benzodiazepines among injecting drug users. *Drug and Alcohol Review, 13, 63-69.*

Darke, S., Hall W., & Topp, L (2001). *The Illicit Drug Reporting System (IDRS) 1996-2001.* National Drug and Alcohol Research Centre Technical Report No. 101. Sydney: University of New South Wales

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, 27-32.*

Dupont R.L. (1998) Abuse of benzodiazepines: the problems and the solutions. *American Journal of Drug and Alcohol Abuse, 14 (Supplement 1) 1-69.*

Eddey, D.P., Westcott, M.J. (2000). 'The needle and the damage done': Inter-arterial temazepam. *Emergency Medicine,* 12, 248-252.

Fountain, J., Griffiths, P., Farrel, M., Gossop, M., & Strang J. (1999). Benzodiazepine in Poly-drug using repertoires: the impact of the decreased availability of temazepam gel-filled capsules.

Fry, C. & Bruno, R. (2002). Recent trends in benzodiazepine use by injecting drug users in Victoria and Tasmania. *Drug and Alcohol Review, 21, 363-367.*

Fry, C., & Miller, P. (2001). *Victorian Drug Trends 2000: Findings from the Melbourne arm of the Illicit Drug Reporting System (IDRS) Study.* Technical Report No. 108. Sydney: National Drug and Alcohol Research Centre, University of NSW.

Fry, C., & Miller, P. (2002). *Victorian Drug Trends 2001: Findings from the Illicit Drug Reporting System (IDRS) Study.* Technical Report No. 129. Sydney: National Drug and Alcohol Research Centre, University of NSW.

Iguchi, M.Y., Handelsman L, Bickel, WK & Griffiths RR (1993). Benzodiazepine and sedative use/abuse by methadone maintenance clients. *Drug and Alcohol Dependence*, 32, *257-266*

Klee H., Fluagier J., Hayes C., Boulton T., and Morris J (1990). AUDS related risk beavhiour, poly drug use and temazepam. *British Journal of Addiction, 85, 1125-1132.*

MSIC Evaluation (2002). *Twelve month process evaluation report on the Medically Supervised Injecting Centre.* Sydney. UNSW.

MSIC Evaluation (2002). *Fifteen month process evaluation report on the Medically Supervised Injecting Centre.* Sydney. UNSW.

Roughead, L., & Barratt, J. (2003). *Restriction temazepam capsules to authority on the Pharmaceutical Benefits Scheme. Feedback from doctors, pharmacists and residential aged care facilities.* Report prepared for the Commonwealth Department of Health and Ageing.

Sayer GP, McGeechan K, Kemp A, Bhasale A, Horn F, Hendrie L, Swan, L., & Scahill, S. (in press). The General Practice Research Network: the capabilities of an electronic patient management system for longitudinal patient data. *Pharmacopepidemiology and Drug Safety*

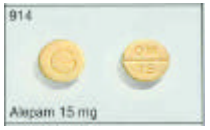
Strang J., Griffiths P, Abbey, J & Gossop M. (1994). Survey of injected benzodiazepines among drug users in Britain. *British Medical Journal, 308, 23 April.*

Topp L., Day C., & Degehardt, L. (in press). Changes in patterns of drug injection concurrent with a sustained reduction in the availability of heroin in Australia. *Drug and Alcohol Dependence.*

Topp, L., Darke, S., Bruno, R., Fry, C., Hargreaves, K., Humeniuk, R., McAllister, R., O'Reilly, B. & Williams, P. (2001). *Australian Drug Trends 2000: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Monograph No. 47. Sydney: University of New South Wales.

Topp, L., Kaye, S., Bruno, R., Longo, M., Williams, P., O'Reilly, B., Fry, C., Rose, G. & Darke, S. (2002). *Australian Drug Trends 2000: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Monograph No. 48. Sydney: University of New South Wales.

APPENDIX A - CHART USED TO IDENTIFY BENZODIAZEPINE TYPES

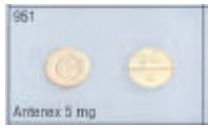


Alepam 15mg

Alepam 30mg

Alodorm 5mg

Antenex 2mg



Antenex 5mg

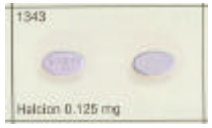
Ativan 1mg

Ativan 2.5mg

Ducene 2mg

Euhypnos 10mg/Euhypnos 20mg

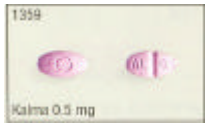
Frisium 10mg



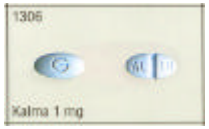
Halcion .125mg

Hypnodorm 2mg

Kalma .25mg



Kalma .5mg

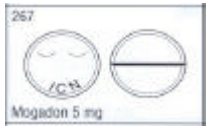


Kalma 1mg

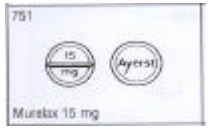
Kalma 2mg

Lexotan 3mg

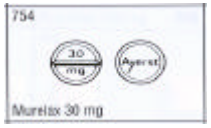
Lexotan 6mg



Mogadon 5mg



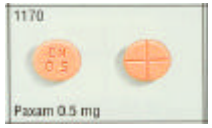
Murelax 15mg



Murelax 30mg

Normison 10mg / Normison 20mg

Normison 10(tab)



Paxam .5mg

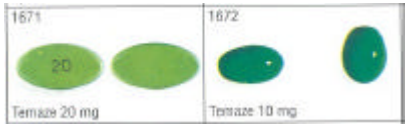
Paxam 2mg

Rivotril .5mg

Rivotril 2mg

Serepax 15mg

Serepax 30mg

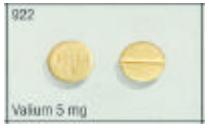


Temaze 20mg / Temaze 10mg

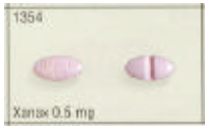
Temaze 10 (tab)

Temtabs 10mg

Valium 2mg



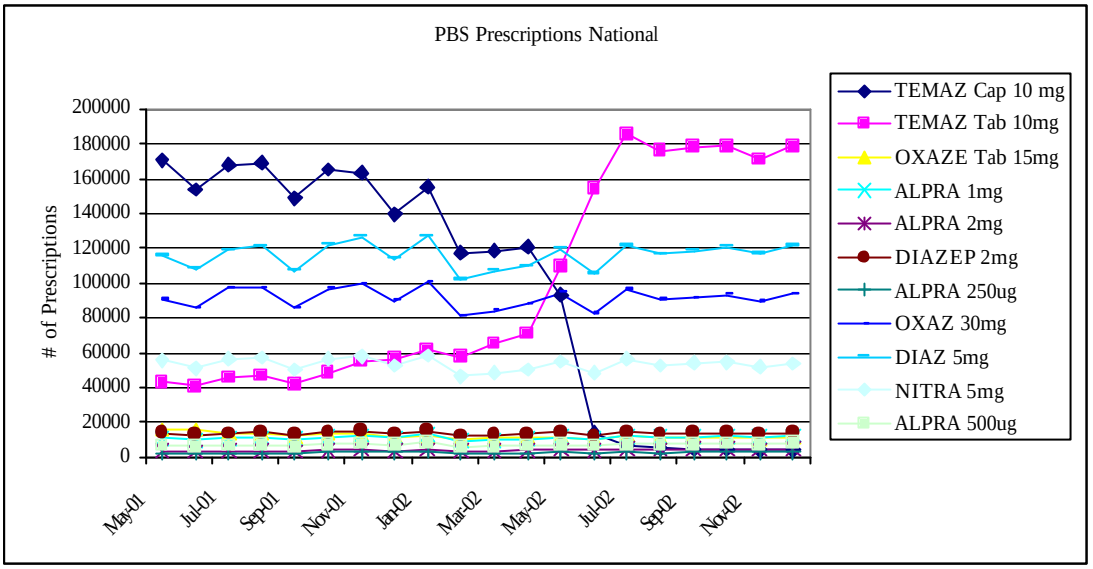
Valium 5mg

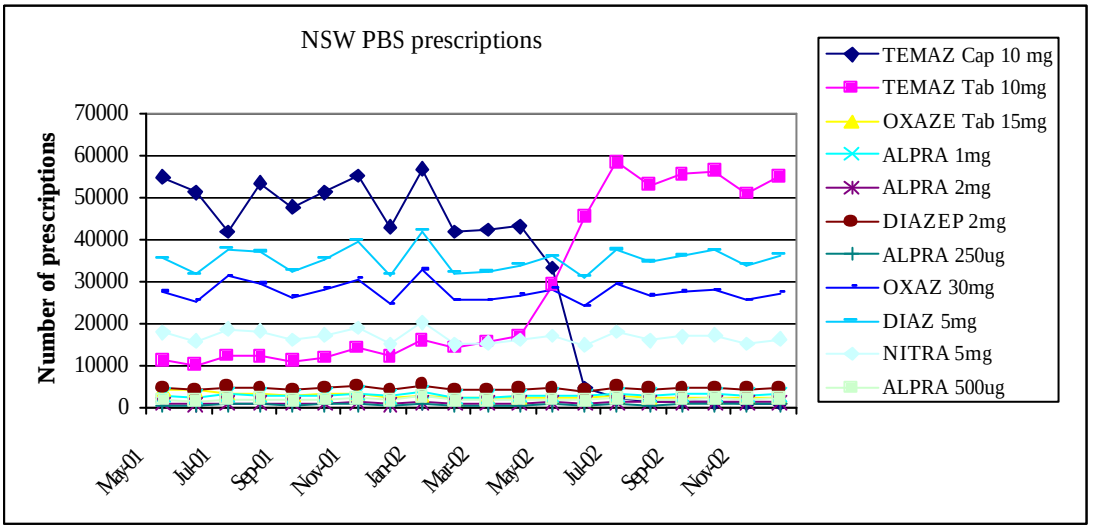


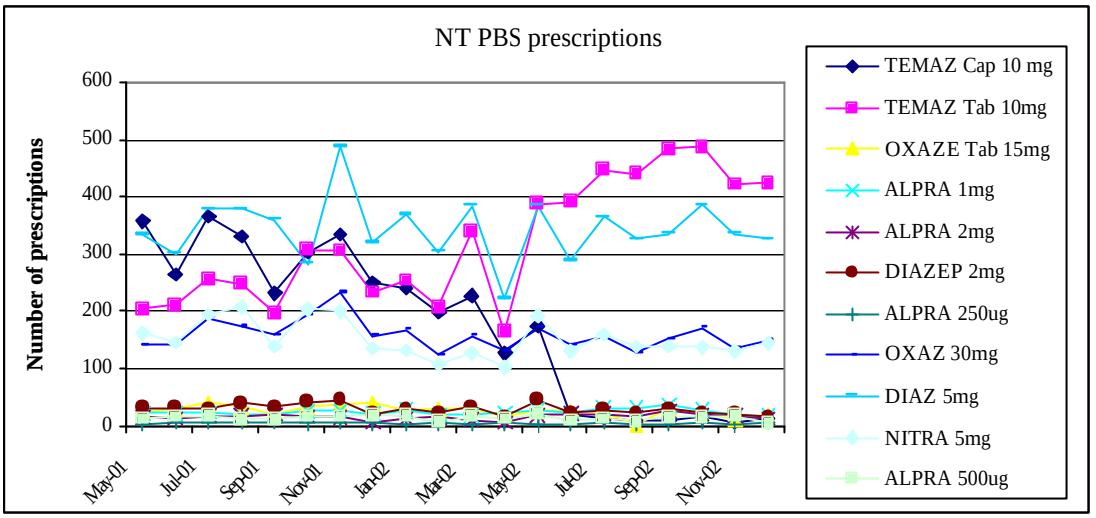
Xanax .5mg

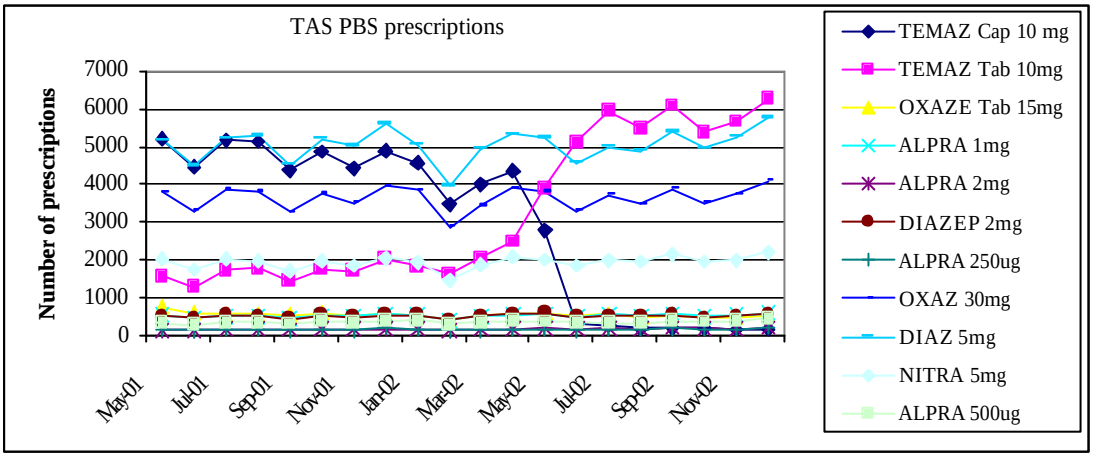
Xanax 1mg

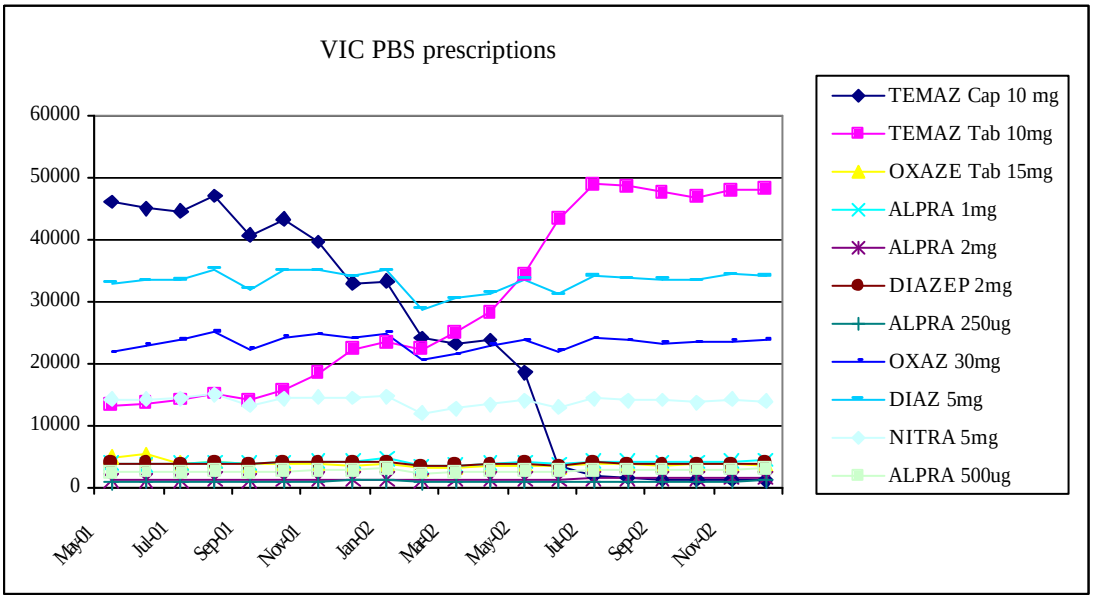
APPENDIX B - TRENDS IN BENZODIAZEPINE PRESCRIBING BY JURISDICTION






NT PBS prescriptions
Number of prescriptions
600
500
400
300
200
100
0
May-01
Jul-01
Sep-01
Nov-01
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
TEMAZ Cap 10 mg
TEMAZ Tab 10mg
OXAZE Tab 15mg
ALPRA 1mg
ALPRA 2mg
DIAZEP 2mg
ALPRA 250ug
OXAZ 30mg
DIAZ 5mg
NITRA 5mg
ALPRA 500ug


TAS PBS prescriptions
Number of prescriptions
7000
6000
5000
4000
3000
2000
1000
0
May-01
Jul-01
Sep-01
Nov-01
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
TEMAZ Cap 10 mg
TEMAZ Tab 10mg
OXAZE Tab 15mg
ALPRA 1mg
ALPRA 2mg
DIAZEP 2mg
ALPRA 250ug
OXAZ 30mg
DIAZ 5mg
NITRA 5mg
ALPRA 500ug


VIC PBS prescriptions
60000
50000
40000
30000
20000
10000
0
May-01
Jul-01
Sep-01
Nov-01
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
TEMAZ Cap 10 mg
TEMAZ Tab 10mg
OXAZE Tab 15mg
ALPRA 1mg
ALPRA 2mg
DIAZEP 2mg
ALPRA 250ug
OXAZ 30mg
DIAZ 5mg
NITRA 5mg
ALPRA 500ug

APPENDIX C - BENZODIAZEPINE USE AMONG IDU IN TASMANIA, 2001

Benzodiazepine misuse in Hobart: Findings from the 2001 IDRS Benzodiazepine Module

Raimondo Bruno
School of Psychology, University of Tasmania

Introduction

Results of the 2000 IDRS indicated that IDU surveyed in Hobart and Melbourne reported high rates of both oral and intravenous use of benzodiazepines in comparison to those IDU sampled in other jurisdictions (Topp et al., 2001). Tasmanian Needle Availability Program (NAP) data for 2000 also suggested an increase in the injection of benzodiazepines among IDU in Hobart (Bruno & McLean, 2001). To provide further information about local patterns of benzodiazepine use, associated harms and supply characteristics, a specific benzodiazepine module was developed and added to the IDRS IDU Survey in 2001.

Method

The 2001 IDRS IDU survey was completed during July and August 2001, and consisted of face-to-face interviews with 100 people who regularly inject illicit drugs. Inclusion criteria for participation in the study were that the individual had injected at least once monthly in the six months prior to interview, and have resided in Hobart for the past twelve months or more. A convenience sampling approach was used, with participants recruited via advertisements through pharmacies and NAP outlets. Participants were interviewed at two NAP outlets in Hobart and one service in the Northern suburb of Glenorchy.

The IDU survey is a standardised interview schedule, containing sections on demographics; drug use; price, purity and availability of drugs; crime; risk-taking; health; and general drug trends. The interviewer-administered survey took 30-50 minutes to complete, and respondents were reimbursed $30 for their time and out-of-pocket expenses. Further details regarding the IDRS IDU interview schedule and recruitment procedures is available in the 2001 Tasmanian IDRS report (Bruno & McLean, 2002).

The Benzodiazepine Module was administered immediately following completion of the standard IDRS IDU survey to those participants who reported use of benzodiazepines in the preceding six-month period. This module took 10-30 minutes to complete, depending on the extent of benzodiazepine use of the participant. Seventy-eight of the 85 participants in the IDU survey that reported recent use of benzodiazepines completed the module. The seven IDU survey respondents meeting criteria for inclusion in the Benzodiazepine Module that did not participate were not surveyed due to time constraints; or fatigue, restlessness, or unwillingness to continue with the interview on the part of the respondent.

Sample Characteristics

Demographic patterns of IDU that had used benzodiazepines in the past 6 months were generally similar to those of the entire 2001 IDRS IDU sample (see Bruno & McLean, 2002 for further details regarding demographics of the sample), in terms of age, sex, cultural background, employment status, education, and prison history. However, those that had recently used benzodiazepines were more likely to have been in methadone maintenance therapy at some stage in the preceding six months (64% of those using benzodiazepine vs. 33% of those not recently using the drug had been in methadone maintenance in the past six months: χ^2 (1, n=100) = 4.81, p=0.044). There were no significant differences in any demographic characteristics between those that had used benzodiazepines in the past six months intravenously or solely via swallowing (Table 1).

Table 1: Demographic characteristics of the injecting drug user (IDU) sample that reported some benzodiazepine use in the preceding six months (n=85)

Characteristic	Oral use only (n=47)	Intravenous use (n=38)	Any use (n=85)
Mean age (years)	27 *(range 17-45)*	25 *(range 14-41)*	26 *(range 14-45)*
Sex (% male)	70% *(n=33)*	82% *(n=31)*	75% *(n=64)*
Ethnicity (%):			
English speaking background	100% *(n=47)*	100% *(n=38)*	100% *(n=85)*
Non-English speaking background	0% *(n=0)*	0% *(n=0)*	0% *(n=0)*
Aboriginal or Torres Strait Islander	9% *(n=4)*	11% *(n=4)*	9% *(n=8)*
Employment (%):			
Not employed	62% *(n=29)*	76% *(n=29)*	68% *(n=58)*
Full time	2% *(n=1)*	0% *(n=0)*	1% *(n=1)*
Part time / casual	9% *(n=4)*	8% *(n=3)*	8% *(n=7)*
Student	13% *(n=6)*	16% *(n=6)*	14% *(n=12)*
Home Duties	15% *(n=7)*	0% *(n=0)*	8% *(n=7)*
School education (mean years)	10.1 *(range 7-14)*	9.8 *(range 7-14)*	9.9 *(range 7-14)*
Tertiary education (%):			
None	75% *(n=35)*	84% *(n=32)*	79% *(n=67)*
Trade / technical	23% *(n=11)*	16% *(n=6)*	20% *(n=17)*
University	2% *(n=1)*	0% *(n=0)*	1% *(n=1)*
Prison History (%)	26% *(n=12)*	40% *(n=15)*	32% *(n=27)*
Current Treatment (%):			
Not currently in treatment	51% *(n=24)*	32% *(n=12)*	42% *(n=36)*
Methadone maintenance therapy	49% *(n=23)*	68% *(n=26)*	58% *(n=49)*
Drug & alcohol counselling	0% *(n=0)*	0% *(n=0)*	0% *(n=0)*

The mean age of first injection (of any drug) among those IDU that reported use of benzodiazepines in the past six months was 17.6 years (SD, 4.0; range 10-37). There was a high level of poly-drug use amongst this group, with a median of seven drug types used in the preceding six months. The majority of those recently using benzodiazepines were primary users of opioids (67%), with 21% reporting morphine (primarily MS Contin), 45% methadone, and 1% reporting heroin as the substance they had most often injected in the past month. Median frequency of injection of any drug amongst this group was more than once weekly (but less than daily – 64%), with 25% injecting once per day or more.

There were no significant differences between IDU that had reported recent use of benzodiazepines and the remainder of the 2001 IDRS IDU sample in terms of age of were more likely to report a central nervous system depressant as their drug of choice (71% vs. 21% respectively: χ^2 (1, n=100) = 14.62, p=0.002), or as the drug they most often injected in the past month (72% vs. 20% respectively: χ^2 (1, n=100) = 12.67, p<0.001).

Patterns of Benzodiazepine Use

Almost all (92%) of the full IDU sample had used benzodiazepines at some stage in their lives. Similarly, 89% had ever swallowed benzodiazepines, with 81% swallowing in the past six months. While this indicates a particularly high level of use of these drugs amongst this IDU cohort, of particular note is the fact that 67% of the sample had ever injected benzodiazepines, with 38% injecting in the six months prior to interview. Similar rates of injection were seen in the 2000 Tasmanian IDRS participants (61% ever injected, 37% in the six months prior to interview). Frequency of use of benzodiazepines was a median of 48 days in the past six months among those using the drug (range 1-180), almost double the median frequency of use amongst the 2000 IDRS sample.

High levels of benzodiazepine use in the last six months were seen among those IDU who had most often injected methadone (92%), morphine (85%) and methamphetamine (66%), with injection of benzodiazepines more common among regular users of methadone and morphine (Table 2).

Table 2: Patterns of use of benzodiazepines amongst primary users of other drugs in the IDU sample *(n=100, number of respondents in parentheses)*

Drug most injected in the past month	**Swallowed benzodiazepines in past 6 months**	**Injected benzodiazepines in the past 6 months**
Methadone (n=39)	92% *(n=36)*	51% *(n=20)*
Morphine (n=20)	85% *(n=17)*	40% *(n=8)*
Methamphetamine (n=35)	66% *(n=23)*	14% *(n=5)*

Oral Use

When asked to nominate the benzodiazepines they had swallowed in the last six months, the most common types reported by IDU were Valium (diazepam, 84%), Normison (temazepam, 45%), Serepax (oxazepam, 36%), Mogadon (nitrazepam, 34%) and Rohypnol (flunitrazepam, 24%) (Table 3). Benzodiazepine Module respondents were also asked to nominate the type they most preferred for oral use, and Valium (diazepam) was by far the most common benzodiazepine of choice, nominated by 50% of respondents, followed by Rohypnol (flunitrazepam, 12%), Serepax (oxazepam, 12%), Xanax (alprazolam, 7%) and Normison (temazepam, 7%).

Table 3: Recent oral benzodiazepine use and preferences for oral use among Benzodiazepine Module respondents (n=78)

Benzodiazepine	Proportion using this benzodiazepine/brand orally in the preceding six months (n=74)	Proportion reporting each as benzodiazepine/brand of choice for oral use (n=74)
Xanax (*alprazolam)*	16% *(n=12)*	7% *(n=5)*
Rivotril (*clonazepam)*	8% *(n=6)*	1% *(n=1)*
Antenex (*diazepam)*	12% *(n=9)*	0% *(n=0)*
Diazemuls (*diazepam)*	3% *(n=2)*	0% *(n=0)*
Ducene (*diazepam)*	8% *(n=6)*	1% *(n=1)*
Valium (*diazepam)*	84% *(n=62)*	50% *(n=37)*
Hypnodorm (*flunitrazepam)*	5% *(n=4)*	4% *(n=3)*
Rohypnol (*flunitrazepam)*	24% *(n=18)*	12% *(n=9)*
Alodorm (*nitrazepam)*	1% *(n=1)*	0% *(n=0)*
Mogadon (*nitrazepam)*	34% *(n=25)*	3% *(n=2)*
Alepam (*oxazepam)*	1% *(n=1)*	0% *(n=0)*
Murelax (*oxazepam)*	5% *(n=4)*	0% *(n=0)*
Serepax (*oxazepam)*	36% *(n=27)*	12% *(n=9)*
Euhypnos* (*temazepam)*	4% *(n=3)*	0% *(n=0)*
Normison* (*temazepam)*	45% *(n=33)*	7% *(n=5)*
Temaze* (*temazepam)*	18% *(n=13)*	3% *(n=2)*

**signifies those benzodiazepines available in gel capsule formulation*

Intravenous Use

When asked to nominate the benzodiazepines injected in the six months prior to interview, temazepam was by far the predominant benzodiazepine reported, with 82% of those that had injected reporting intravenous use of Normison, 24% reporting Temaze and 8% Euhypnos (Table 4). Injection of benzodiazepines in tablet formulation was less common overall, with 11% reporting injection of Xanax (alprazolam), 8% Valium (diazepam) and 5% Rohypnol (flunitrazepam). When asked to nominate their benzodiazepine of choice for intravenous use, temazepam available in gel capsule formulations were again the most commonly suggested: 78% nominating Normison, 8% Temaze and 5% Euhypnos. In support of this, Table 5 details the formulations most commonly injected, with 63% reporting injection of 10mg gel capsules, and 50% reporting injection of 20mg gel capsules in the past six months, and 82% reporting gel capsules as their preferred benzodiazepine formulation for injection.

Table 4: Recent intravenous benzodiazepine use and preparation preferences for intravenous use among Benzodiazepine Module respondents (n=78)

Benzodiazepine	Proportion using this benzodiazepine/brand intravenously in the preceding six months (n=38)	Proportion reporting each as benzodiazepine/brand of choice for intravenous use (n=38)
Xanax (*alprazolam)*	11% *(n=4)*	5% *(n=2)*
Valium (*diazepam)*	8% *(n=3)*	5% *(n=2)*
Hypnodorm (*flunitrazepam)*	3% *(n=1)*	0% *(n=0)*
Rohypnol (*flunitrazepam)*	5% *(n=2)*	3% *(n=1)*
Serepax (*oxazepam)*	3% *(n=1)*	0% *(n=0)*
Euhypnos* (*temazepam)*	8% *(n=3)*	5% *(n=2)*
Normison* (*temazepam)*	82% *(n=31)*	74% *(n=28)*
Temaze* (*temazepam)*	24% *(n=9)*	8% *(n=3)*

**signifies those benzodiazepines available in gel capsule formulation*

Table 5: Recent intravenous benzodiazepine formulation use and preferences for intravenous use among Benzodiazepine Module respondents (n=78)

Formulation	Proportion using this formulation intravenously in the preceding six months (n=38)	Most commonly injected formulation in the preceding six months (n=38)
1 mg tablets	3% *(n=1)*	3% *(n=1)*
2 mg tablets	3% *(n=1)*	3% *(n=1)*
5 mg tablets	8% *(n=3)*	8% *(n=3)*
10 mg tablets	8% *(n=3)*	5% *(n=2)*
15 mg tablets	5% *(n=2)*	0% *(n=0)*
10 mg gel capsules	63% *(n=24)*	58% *(n=22)*
20 mg gel capsules	50% *(n=19)*	24% *(n=9)*

Use of Temazepam Formulations

While gel capsule formulations of temazepam were clearly the most preferred benzodiazepines and formulations for injection, Table 6 below indicates that there was a substantial amount of overlap between oral and intravenous use of these formulations, with many IDU reporting both oral and intravenous use of temazepam gel capsules.

Table 6: Recent oral and intravenous use of temazepam formulations among Benzodiazepine Module respondents (n=78)

Temazepam Formulation	Number using this formulation orally in the preceding six months	Number using this formulation intravenously in the preceding six months	Number using this formulation by both oral and intravenous routes in the preceding six months
Euhypnos	3	3	2
Normison	33	31	18
Temaze	13	9	8

Polydrug Use

Of the 38 participants in the Benzodiazepine Module who reported injecting some form of benzodiazepine in the six months prior to being interviewed, 58% (n=22) reported that they had mixed and injected benzodiazepines with other substances in this time. Twenty-two participants reported injecting benzodiazepine-methadone mixtures, and five reported injecting benzodiazepine-morphine mixtures. Similarly, 38% (n=30) Benzodiazepine Module respondents reported using benzodiazepines orally in combination with other drugs in the past six months, including methadone (22%), morphine (17%), alcohol (12%), and heroin (1%).

Pathways to Accessing Benzodiazepines

Among the sample of IDU participating in the Benzodiazepine Module, it was common for benzodiazepines to be accessed via illicit means: as gifts or purchased from friends (67%, n=46), purchased or traded with a dealer (23%, n=16, and 4%, n=3 respectively) or accessed through family members (3%, n=2). However, over half of the sample reported accessing benzodiazepines from a medical practitioner in the preceding six month period, with 57% (n=39) self-reporting receiving benzodiazepines for genuine clinical issues, and 9% (n=6) reporting receiving the drug for feigned problems (Table 7). The majority of individuals accessing benzodiazepines for legitimate reasons were also involved in methadone maintenance treatment in the six months prior to interview (67%, n=26).

When asked about their main source for obtaining benzodiazepines in the six months preceding interview, licit access via a medical practitioner was most common, with 45% (n=31) accessing benzodiazepines for genuine symptoms and 9% through faking symptoms. Again, a substantial proportion of those most commonly accessing benzodiazepines for legitimate symptoms (61%, n=19) were in contact with a medical practitioner for methadone maintenance therapy. Forty-six percent of the sample reported their main source of obtaining benzodiazepines as via illicit means, predominantly through friends (42%, n=29), with a few individuals usually accessing through dealers (3%, n=2) or family (1%, n=1).

Table 7: Pathway to accessing benzodiazepines among Benzodiazepine Module respondents (n=78)

Mode of access	**Methods of obtaining benzodiazepines in the preceding six months (n=69)**	**Primary method of obtaining benzodiazepines in the preceding six months (n=69)**
Doctors (genuine symptoms)	57% *(n=39)*	45% *(n=31)*
Doctors (fake symptoms)	9% *(n=6)*	9% *(n=6)*
Forged prescriptions	0% *(n=0)*	0% *(n=0)*
Altered existing prescriptions	0% *(n=0)*	0% *(n=0)*
Friends (gift or purchase)	67% *(n=46)*	42% *(n=29)*
Family	3% *(n=2)*	1% *(n=1)*
Dealer / street (purchased)	23% *(n=16)*	3% *(n=2)*
Dealer / street (swap drugs)	4% *(n=3)*	0% *(n=0)*

Price and Availability

Perhaps reflecting the multiple paths to access of benzodiazepines by IDU, there was a substantial degree of variation in accounts of the cost of their last purchase of diverted benzodiazepines. Median prices reported were $5 per 2mg alprazolam (Xanax) tablet, $1 per 5mg diazepam (Valium) tablet, $5 per 2mg flunitrazepam (Rohypnol) tablet, $2 per 5mg nitrazepam (Mogadon) tablet, $2 per 10mg temazepam capsule, and $4 per 20mg temazepam capsule (Table 8).

Table 8: Median price of last purchase of diverted benzodiazepines among Benzodiazepine Module respondents (n=78)

Benzodiazepine	N Purchasing	Median Price (each tablet)	Price Range (each tablet)
Xanax (*alprazolam)*			
2mg	7	$5	$2-$5
Rivotril (*clonazepam)*			
2mg	5	$2.50	$1-$5
Diazemuls (*diazepam)*			
5mg	1	$1.25	-
Valium (*diazepam)*			
5mg	30	$1	$0.5-$5
Hypnodorm (*flunitrazepam)*			
2mg	2	$5	-
Rohypnol (*flunitrazepam)*			
2mg	22	$5	$1.25-$5
Alodorm (*nitrazepam)*			
5mg	1	$1.25	-
Mogadon (*nitrazepam)*			
5mg	9	$2	$1-$5
Murelax (*oxazepam)*			
15mg	1	$1	-
Serepax (*oxazepam)*			
15mg	3	$2.50	$1-$5
30mg	11	$2.25	$1-$5
Euhypnos (*temazepam)*			
**20mg*	3	$4	$1.25-$10
Normison (*temazepam)*			
**10mg*	30	$2	$0.8-$5
**20mg*	12	$4	$2-$10
Temaze (*temazepam)*			
**10mg*	5	$2	$1-$5

** signifies gel capsule formulation*

Among respondents that had purchased diverted benzodiazepines, prices were considered to have remained stable (50%, n=16) or increasing (41%, n=13) in the six months prior to interview. Views on availability of benzodiazepines were mixed, with many reporting availability as easy (36%, n=15) or very easy (26%, n=11), but a substantial proportion also reported finding benzodiazepines as difficult (26%, n=11) or very difficult (12%, n=5) to access. This level of availability was generally regarded as remaining stable (62%, n=26) in the preceding six months, with equal proportions of respondents believing availability had increased (17%, n=7) or decreased (17%, n=7).

Similarly, among those who had primarily accessed benzodiazepines from a medical practitioner (whether for genuine symptoms or faked symptoms), there was little agreement as to the ease of accessing benzodiazepines, with half of this group reporting the medication as easy (35%, n=7) or very easy (15%, n=3) to access, and half reporting it as difficult (40%. n=8) or very difficult (10%, n=2) to access. Again, the majority of this group of respondents reported that this level of availability had remained stable (53%, n=10) in the prior six months, with 26% (n=5) suggesting that availability had decreased, and 21% (n=4) reporting that benzodiazepines had become easier to access.

Health Effects

Benzodiazepine injection (particularly of temazepam capsules) is of significant clinical concern as it may cause severe vascular damage leading to limb amputation due to venous thrombosis and ensuing ischaemia (Eddey & Westcott 2000). Respondents to the Benzodiazepine Module that had injected the drug were asked to nominate any health effects they had experienced in the past six months that they perceived to be related to benzodiazepine injection. While a substantial proportion of benzodiazepine injectors reported experiencing no problems (29%, n=11), the most commonly reported problems were difficulty finding veins to inject into (reflecting venous damage: 45%, n=17), prominent scarring or bruising at injection sites (32%, n=12), swelling of arm (26%, n=10) or thrombosis (24%, n=9).

Injection-related harms were not solely restricted to those that had injected gel capsule benzodiazepine preparations, with 3 of the 4 IDU who had recently injected benzodiazepine tablets reporting experience of prominent scarring/bruising (n=2), difficulty finding veins (n=1), swelling of their arm (n=1) or thrombosis (n=1) which they associated with benzodiazepine injection.

Table 9: Perceived injection-related harms experienced due to benzodiazepine injection in the six months prior to interview among Benzodiazepine Module respondents (n=78)

Problem	Injected both gel capsules and tablets in the past six months (n=34)	Only injected tablets in the past six months (n=4)	Injected any benzodiazepine in the past six months (n=38)
Overdose	1 *(3%)*	1 *(25%)*	2 *(5%)*
Abscesses / infections from injecting	1 *(3%)*	0 *(0%)*	1 *(3%)*
Dirty hit	4 *(12%)*	1 *(25%)*	5 *(13%)*
Prominent scarring / bruising	10 *(29%)*	2 *(50%)*	12 *(32%)*
Thrombosis / blood clotting	8 *(24%)*	1 *(25%)*	9 *(24%)*
Swelling of arm	9 *(26%)*	1 *(25%)*	10 *(26%)*
Swelling of leg	0 *(0%)*	0 *(0%)*	0 *(0%)*
Swelling of hand	2 *(6%)*	0 *(0%)*	2 *(5%)*
Swelling of feet	1 *(3%)*	0 *(0%)*	1 *(3%)*
Hospitalisation	2 *(6%)*	1 *(25%)*	3 *(8%)*
Contact with Ambulance	0 *(0%)*	0 *(0%)*	0 *(0%)*
Benzodiazepine dependence	8 *(24%)*	1 *(25%)*	9 *(24%)*
Difficulty finding veins to inject into	16 *(47%)*	1 *(25%)*	17 *(45%)*
None	*10 (29%)*	*1 (25%)*	*11 (29%)*

Summary

Of the 100 regular injecting drug users sampled in the 2001 Tasmanian IDRS, 89% reported swallowing a benzodiazepine, and 38% reported injecting the drug, in the preceding six months. The most common benzodiazepines used orally were Valium (diazepam, 84%), Normison (temazepam, 45%), Serepax (oxazepam, 36%), Mogadon (nitrazepam, 34%) and Rohypnol (flunitrazepam, 24%). Temazepam was by far the predominant benzodiazepine reported as injected, with 82% of those that had recently injected reporting intravenous use of Normison, 24% reporting Temaze and 8% Euhypnos. Temazepam was also the benzodiazepine of choice for intravenous use, nominated by 91% of benzodiazepine injectors, and 82% reported gel capsules as their preferred benzodiazepine formulation for injection. However, despite the popularity of temazepam gel capsules for injection, a substantial proportion of respondents reported using this formulation by both oral and intravenous means in the six months preceding interview.

While a substantial proportion (29%) of benzodiazepine injectors reported experiencing no problems associated with the intravenous use of the drug, the most commonly reported problems in the preceding six month period were difficulty finding veins to inject into (45%), prominent scarring or bruising at injection sites (32%), swelling of the arm (26%) or thrombosis (24%).

When asked about their main source for obtaining benzodiazepines in the six months preceding interview, licit access via a medical practitioner was most common, with 45% accessing benzodiazepines for genuine symptoms and 9% through faking symptoms. Respondents were mixed in their views on how easy it was to access benzodiazepines from a medical practitioner, with equal numbers reporting access as easy, and half reporting access from a doctor as difficult, but most agreed that this situation had remained stable in the six months prior to interview. Forty-six percent of the sample reported their main source of obtaining benzodiazepines as via illicit means, predominantly through purchasing or as gifts from friends (42%). Among those purchasing the drug illicitly, median prices reported were $1 per 5mg diazepam (Valium) tablet, $5 per 2mg flunitrazepam (Rohypnol) tablet, $2 per 10mg temazepam capsule, and $4 per 20mg temazepam capsule. These prices were considered as remaining stable or increasing in the six months prior to interview. Illicit benzodiazepines were generally considered easy or very easy to access, with this level of availability considered as remaining stable over the first half of 2001.

References

Bruno, R. & McLean, S. (2001). *Tasmanian Drug Trends 2000: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Technical Report No. 109. Sydney: University of New South Wales

Bruno, R. & McLean, S. (2002). *Tasmanian Drug Trends 2001: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Technical Report No. 135. Sydney: University of New South Wales

Eddey DP, Westcott MJ. (2000). 'The needle and the damage done': Inter-arterial temazepam. *Emergency Medicine 12:248-252.*

Fry, C. & Bruno, R. (2001). Trends in benzodiazepine use among injecting drug users in Victoria and Tasmania: Findings from the Illicit Drug Reporting System. *Drug Trends Bulletin, June, 2001.*

Topp, L., Darke, S., Bruno, R., Fry, C., Hargraves, K., Humeniuk, R., McAllister, R., O'Reilly, B. & Williams, P. (2001). *Australian Drug Trends 2000: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Monograph No. 47. Sydney: University of New South Wales

APPENDIX D - BENZODIAZEPINE USE AMONG IDU IN MELBOURNE, 2001

Craig L Fry[1,2]
[1] Research Fellow, Turning Point Alcohol and Drug Centre
[2] Fellow, Department of Public Health, The University of Melbourne

Introduction

The 2000 IDRS study showed that injecting drug users (IDU) surveyed in Hobart and Melbourne had higher rates of reported oral and intravenous benzodiazepine use compared to IDU sampled in other jurisdictions (Topp et al., 2001). In the Melbourne arm of the 2000 study (Fry & Miller, 2001) of 152 IDU interviewed, 36% had injected benzodiazepines during the past six months, compared to 19% (of N=154) in 1999, 22% (of N=293) in 1998 and 21% (of N=254) in 1997. Further analyses revealed that intravenous benzodiazepine use for the 2000 Melbourne IDU sample was significantly associated with recent experience of thrombosis, difficulty injecting, public injecting and injecting equipment sharing (Fry & Bruno, in press). Significantly, key informants interviewed across each of the Melbourne IDRS study years reported that they were seeing evidence of a growing illicit market for benzodiazepines, and that more IDU with whom they were in contact were experiencing health harms associated with intravenous use.

During March and April of 2001, a study of the impact upon IDU of the heroin shortage in Melbourne was conducted at Needle & Syringe Programs within Melbourne's main illicit drug market places (Miller, Fry & Dietze, 2001). This research showed that 36% of the sample of 103 IDU had injected benzodiazepines during the height of the heroin shortage (December 2000 to March 2001). Significant numbers reported that they had obtained benzodiazepines from illicit sources such as the street (temazepam gel 25%, temazepam 13%, oxazepam 8%) and from friends (temazepam gel 40%, temazepam 13%, oxazepam 24%, diazepam 19%). The most frequent route of administration reported by those using temazepam and temazepam gel-capsules was intravenous (58% and 78% respectively).

Through routine drug trend monitoring studies in Victoria such as these, the picture that had emerged was that of a growing benzodiazepine misuse problem among IDU in this jurisdiction – a pattern which most recent evidence suggested had consolidated during the severe heroin shortage here. A key adjunct to existing drug trend surveillance efforts should be the conduct of in-depth research studies that seek to further explain emerging trends already identified. An informed public health response to this issue requires better knowledge about: harms; supply sources; preferences; initiation to benzodiazepine injecting; and benzodiazepine dependence to mention just a few.

The current study was conducted in order to obtain more detailed Victorian data around benzodiazepine use among IDU, with a specific focus on procurement methods, dose and preparation preferences and self-reported health harms from intravenous use. The research recognises the need to better understand the harmful consequences of benzodiazepine misuse amongst IDU in Melbourne, and represents the first in a series of planned studies to gather reliable data on this emerging public health problem.

Method

The Melbourne benzodiazepine misuse study was completed during June and August 2001 as an additional module to the annual IDRS study. To be eligible to participate in the IDRS study, individual must have injected at least once monthly in the six months prior to interview, and have resided in Melbourne for the past twelve months. The IDRS employs convenience sampling facilitated by advertisements and recruitment notices distributed through Needle and Syringe Programs (NSPs), and snowballing methods (recruitment of friends and associates via word of mouth). Recruitment and interview of the 2001 IDRS IDU sample (N= 151) occurred at six sites across metropolitan Melbourne: AIDS Prevention and Support Unit (APSU), Dandenong; St Kilda Crisis Centre; Southern Hepatitis/HIV/AIDS Resource and Prevention Service (SHARPS), Frankston; Western Region AIDS & Hepatitis Prevention (WRAP), Footscray; Turning Point Alcohol & Drug Centre Inc., Fitzroy; and the Urban Mission Unit, Baptist Church, Melbourne.

Of the 151 IDRS participants, 108 people reported that they had used benzodiazepines during the month preceding their interview. This group comprised the sample for the 2001 Melbourne benzodiazepine module. The structured interview schedule employed in this study was administered immediately following completion of the standard IDRS IDU survey. Participants were asked detailed questions regarding recent benzodiazepine misuse, with a specific focus on procurement methods, preparation and dosage preferences and self-reported harms from intravenous use. This supplemented core IDRS questions relating to socio-demographics, drug use, price, purity and availability of drugs, crime, risk-taking behaviour, health and general trends.

The duration of the interviews was approximately 60 minutes and participants were reimbursed $20 for their time and out-of-pocket expenses. Ethics approval for this study was obtained from the University of Melbourne, Human Research Ethics Committee. Data analysis was conducted using SPSS for Windows Version 10.1. Further details regarding the IDRS IDU interview schedule and recruitment procedures is available in the 2001 Victorian IDRS report (Fry & Miller, 2002).

Sample Characteristics

The demography of IDU that had used benzodiazepines in the past month was broadly similar to that of the entire 2001 IDRS IDU sample (see Fry & Miller, 2002 for further detail). The 108 study participants who had used benzodiazepines in the past month were recruited from Fitzroy (n=23, 21%), Dandenong (n=23, 21%), Footscray (n=14, 13%), the Central business district (n=7, 7%), St Kilda (n=18, 17%), and Frankston (n=23, 21%).

There were no significant differences in any demographic characteristics between those that had used benzodiazepines in the past month intravenously or solely via swallowing (Table 1). The mean age of first injection among those IDU that reported use of benzodiazepines in the past month was 17.5 years (SD, 4.1; range 9-34). There was a high level of poly-drug use amongst this group, with a median of eight drug types used in the preceding six months. The majority of those using benzodiazepines reported that heroin (60%) was the substance they had most often injected in the past month, with 32% reporting amphetamines.

Table 1: Demographic characteristics of the injecting drug user (IDU) sample that reported benzodiazepine use in the past month (n=108)

Characteristic	Oral use only (n=54)	Intravenous use (n=51)	Any use (n=108)
Mean age (years)	29.5 *(range 18-47)*	27.6 *(range 17-48)*	28.5 *(range 17-48)*
Sex (% male)	57% *(n=31)*	61% *(n=31)*	41% *(n=44)*
Ethnicity (%):			
English speaking background	96% *(n=52)*	86% *(n=44)*	92% *(n=99)*
Non-English speaking background	4% *(n=2)*	14% *(n=7)*	8% *(n=9)*
Aboriginal or Torres Strait Islander	6% *(n=3)*	6% *(n=3)*	6% *(n=6)*
Employment (%):			
Not employed	76% *(n=41)*	78% *(n=40)*	78% *(n=84)*
Full time	6% *(n=3)*	4% *(n=2)*	5% *(n=5)*
Part time / casual	7% *(n=4)*	10% *(n=5)*	8% *(n=9)*
Student	0% *(n=0)*	4% *(n=2)*	2% *(n=2)*
Home Duties	1% *(n=2)*	0% *(n=0)*	1% *(n=1)*
Sex worker	9% *(n=5)*	1% *(n=27)*	6% *(n=6)*
School education (mean years)	10.8 *(range 6-19)*	10.8 *(range 2-13)*	10.8 *(range 2-19)*
Tertiary education (%):			
None	56% *(n=30)*	55% *(n=28)*	55% *(n=59)*
Trade / technical	39% *(n=21)*	35% *(n=18)*	38% *(n=41)*
University	6% *(n=3)*	10% *(n=5)*	7% *(n=8)*
Prison History (%)	44% *(n=24)*	43% *(n=22)*	44% *(n=48)*
Current Treatment (%):			
Not currently in treatment	54% *(n=29)*	61% *(n=31)*	56% *(n=61)*
Methadone maintenance therapy	26% *(n=14)*	19% *(n=15)*	29% *(n=31)*
Drug & alcohol counseling	6% *(n=3)*	2% *(n=1)*	4% *(n=4)*

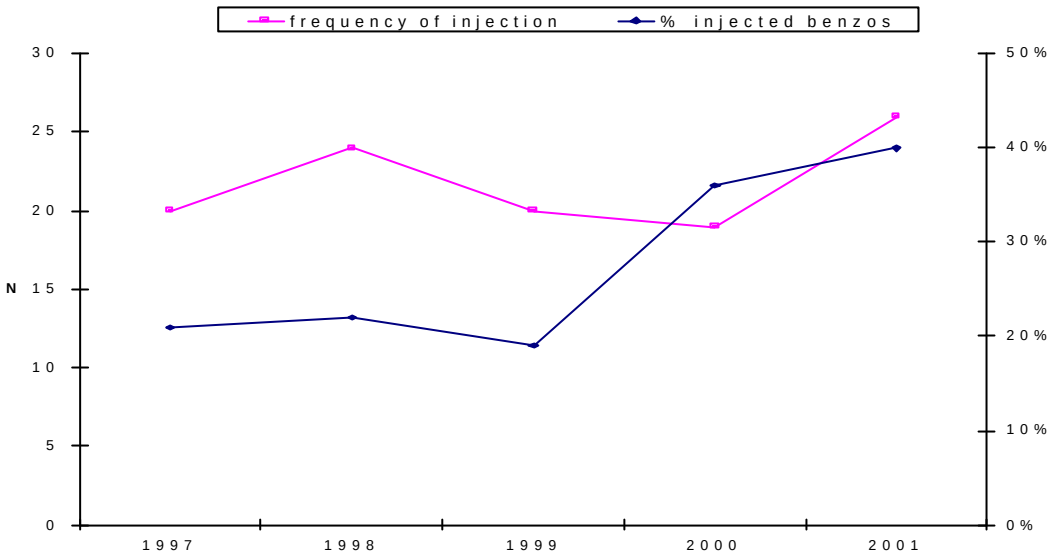
Forty-six percent of people had injected more than once per day during the last month. Drugs of choice included heroin (63%), amphetamine (13%) and cannabis (10%). Sixty-two percent reported that heroin was the drug they had last injected, and 27% had last injected amphetamines.

Patterns of Benzodiazepine Use

Melbourne IDRS 2001

Most of the entire IDRS 2001 Melbourne sample (N=151) had used benzodiazepines in the last six months (78%), with 40% reporting intravenous (compared to 36% in 2000 and 19% in 1999, 55% ever), and 71% oral routes of administration during this period. Of the group who had used benzodiazepines, the types most commonly used in the preceding six months were temazepam (45%), diazepam (38%), and oxazepam (9%). The types of benzodiazepines most commonly injected by IDU survey respondents included temazepam (41%), diazepam (22%) and oxazepam (9%). Figure 1 reports benzodiazepine injection trends between 1997 and 2001. It shows that the proportion of benzodiazepine injection amongst successive Melbourne IDU samples in the IDRS study has steadily risen.

Figure 1: Self-reported benzodiazepine injection amongst IDU in Melbourne, 1997 to 2001



Many key informants (n=24) interviewed as part of the 2001 IDRS reported that they had witnessed a major increase in the injection of benzodiazepines. Whilst increases were reported in the 1999 and 2000 IDRS studies, key informants reported that the heroin drought had led to the major increase in the injection of benzodiazepines among heroin users, in particular *Normison*® (temazepam). Key informants (n=10) expressed concern at the serious nature of problems associated with injecting *Normison*®, such as vein damage and increased likelihood of overdose. Six key informants had also noted that many heroin dealers were now exchanging *Normison*® for heroin. Four key informants reported that around 50% of benzodiazepines use was now injecting.

Informants reported that benzodiazepines were used as a substitute when heroin was unavailable, for the relief of substance related symptoms (e.g. sleep disorders, withdrawal, anxiety), or to enhance or to supplement/heighten the effects of heroin or other drugs (when unable to purchase their preferred amount). This was particularly identified by key informants (n=6) as being the case for temazepam (*Normison*®). One key informant noted that there was an increase in Southeast Asians injecting into the groin, which they believed to be due to the stigma attached to injecting drug use in that community. Key informants (n=6) suggested that benzodiazepines were accessed through "doctor-shopping" and through black market street-level selling.

2001 Melbourne benzodiazepine module - Oral Use

When asked to nominate the preparations of benzodiazepines used in the last month, the most common forms used were Valium (diazepam, 76%), Temaze (temazepam, 56%), Serepax (oxazepam, 46%), Normison (temazepam, 39%) and Mogadon (nitrazepam, 33%) (Table 2). Benzodiazepine Module respondents were also asked to nominate the preparation they most preferred for oral use. Valium (diazepam) was the most common preparation of choice, nominated by 34% of respondents, followed by Serepax (oxazepam, 23%), Temaze (temazepam, 14%) and Normison (temazepam, 10%).

Table 2: Recent oral benzodiazepine use and preparation preferences

Benzodiazepine	% oral use in past month (n=93)	% preferred preparation for oral use (n=93)
Xanax (*Alprazolam)*	8% (n=7)	2% (n=2)
Rivotril (*Clonazepam)*	9% (n=8)	3% (n=3)
Antenex (*Diazepam)*	8% (n=7)	2% (n=2)
Diazemuls (*Diazepam)*	1% (n=1)	0% (n=0)
Ducene (*Diazepam)*	4% (n=4)	0% (n=0)
Valium (*Diazepam)*	76% (n=71)	34% (n=32)
Hypnodorm (*Flunitrazepam)*	1% (n=1)	1% (n=1)
Rohypnol (*Flunitrazepam)*	9% (n=8)	2% (n=2)
Alodorm (*Nitrazepam)*	1% (n=1)	0% (n=0)
Mogadon (*Nitrazepam)*	33% (n=31)	4% (n=4)
Alepam (*Oxazepam)*	1% (n=1)	0% (n=0)
Murelax (*Oxazepam)*	11% (n=10)	2% (n=2)
Serepax (*Oxazepam)*	46% (n=43)	23% (n=21)
Euhypnos* (*Temazepam)*	6% (n=6)	1% (n=1)
Normison* (*Temazepam)*	39% (n=36)	10% (n=9)
Temaze* (*Temazepam)*	56% (n=52)	14% (n=13)

**Signifies those benzodiazepines available in gel capsule preparations*

2001 Melbourne benzodiazepine module - Intravenous Use

Fifty-seven percent of intravenous benzodiazepine users had injected on four days or less during the past 28 days (past month), while 27% (n=14) had done so on more than 10 times during this period. Forty-eight participants reported that the most usual location of injection during last month was either at home (n=29, 60%), a friend's home (n=6), public toilet (n=7) or laneway (n=5). Fifty-one reports were obtained for the most common injection site during the last month, which included arms (n=35, 69%), the groin (n=9), hands (n=3), neck (n=2,) and feet (n=1).

When asked to nominate the preparations of benzodiazepines injected in the month prior to interview, temazepam preparations were by far the predominant benzodiazepine reported, with 73% of those that had injected reporting intravenous use of Normison, 53% reporting Temaze and 16% Euhypnos (Table 3). Injection of tablet preparations was less common overall, with only 4% indicating that they had injected Valium during this time. When asked to nominate their benzodiazepine of choice for intravenous use, temazepam preparations available in gel capsule formulations were again the most commonly suggested: 59% Normison, 31% Temaze and 6% Euhypnos. In support of this, Table 4 details the dose preparations most commonly injected, with 71% reporting injection of 10mg gel capsules, 10% reporting injection of 20mg gel capsules in the past month, and 8% reporting gel capsules of unknown dose as their preferred benzodiazepine preparation for injection.

Table 3: Recent intravenous benzodiazepine use and preparation preferences

Benzodiazepine	% intravenous use in past month (n=51)	% preferred preparation for intravenous use (n=51)
Xanax (*Alprazolam)*	0% (n=0)	0% (n=0)
Valium (*Diazepam)*	4% (n=2)	2% (n=1)
Hypnodorm (*Flunitrazepam)*	0% (n=0)	0% (n=0)
Rohypnol (*Flunitrazepam)*	0% (n=0)	0% (n=0)
Serepax (*Oxazepam)*	0% (n=0)	0% (n=0)
Euhypnos* (*Temazepam)*	16% (n=8)	6% (n=3)
Normison* (*Temazepam)*	73% (n=37)	59% (n=30)
Temaze* (*Temazepam)*	53% (n=27)	31% (n=16)

**Signifies those benzodiazepines available in gel capsule preparations*

Table 4: Recent intravenous benzodiazepine use and dose formulation preferences

Dose formulation	% intravenous use in past month (n=51)	% most commonly injected preparation in past month (n=51)
1 mg tablets	0% (n=0)	0% (n=0)
2 mg tablets	0% (n=0)	0% (n=0)
5 mg tablets	0% (n=0)	0% (n=0)
10 mg tablets	4% (n=2)	4% (n=2)
15 mg tablets	0% (n=0)	0% (n=0)
10 mg gel capsules	73% (n=37)	71% (n=36)
20 mg gel capsules	10% (n=5)	10% (n=5)
gel capsules / unknown dose	14% (n=7)	8% (n=4)

2001 Melbourne benzodiazepine module - Polydrug use

Of the 108 participants who had use benzodiazepines during the month prior to their interview, 33% (n=34) reported that they had mixed and injected these pharmaceuticals with other drugs. The most common mixing drug reported by these people was heroin (67%, n=23). Eighty-two percent (n=88) of the sample had used benzodiazepines in combination with other drugs in the past month, including: heroin (67%), other opiates (8%), methadone (20%), amphetamines (29%), alcohol (26%) and cannabis (49%).

Pathways to Accessing Benzodiazepines

Among the sample of IDU participating in the Melbourne 2001 benzodiazepine module, it was common for benzodiazepines to be accessed via illicit sources, including: from friends (43%), purchased or traded with a dealer (17% and 19% respectively) or accessed through family members (4%). However, over half of the sample reported accessing benzodiazepines from a medical practitioner in the preceding month, with 67% (n=73) receiving benzodiazepines for genuine clinical symptoms, and 34% receiving the drug for feigned problems (Table 5).

When asked about their main source for obtaining benzodiazepines in the month preceding interview, illicit access via a medical practitioner or pharmacist (without prescription) was most common (n=54, 50%). Twenty-one percent of participants (n=23) reported that they mostly accessed benzodiazepines for genuine symptoms, 17%

mostly through friends (n=18), with a few individuals usually accessing through dealers (n=6) or family (n=1).

Table 5: Pathway to accessing benzodiazepines

Mode of access	Methods of obtaining benzodiazepines in past month (n=108)
Doctors (genuine symptoms)	67% (n=73)
Doctors (fake symptoms)	34% (n=37)
Forged prescriptions	2% (n=2)
Altered existing prescriptions	3% (n=3)
Friends (gift or purchase)	43% (n=47)
Family	4% (n=4)
Dealer / street (purchased)	17% (n=18)
Dealer / street (swap drugs)	19% (n=21)

Price and Availability

Forty-three participants provided reports on types of benzodiazepines available on the street. The most common types reported were Normison (n=18, 42%), Temaze (n=17, 39%) and Valium (n=10, 23%). Fewer reports were received for Serepax (n=5), Mogadon (n=4), Euhypnos (n=4) and Rohypnol (n=3).

These participants were also able to comment on the current street value of particular preparations and doses of benzodiazepines. The majority of street value reports provided were for the temazepam gel capsule varieties Temaze and Normison. The modal price reported (n=29) for temazepam gel capsules was $50 for a script of 25 (range $15-$80). Reports were also received to suggest that a script of 25 capsules could be obtained for a $50 heroin rock or deal (n=11) with some reporting that 50 capsules could be obtained for this amount of heroin (n=2). 20mg gel capsule varieties were reported as more expensive (n=5), with respondents quoting $80-$150 for scripts of 25. Per capsule price estimates (n=14) ranged between $1-$10 with higher prices quoted for 20mg doses.

The wide variation in reported street prices / value of benzodiazepines may be indicative of a diffuse black-market in these pharmaceuticals, with many access options for users at this level. It may also be suggestive of a still emerging market place that has yet to stabilise.

Among respondents that had purchased diverted benzodiazepines, prices were considered to have remained stable (37%, n=16) or increasing (49%, n=21) in the month prior to interview.
Views on availability of benzodiazepines were mixed, with many reporting availability as easy (37%, n=16) or very easy (28%, n=12), but a substantial proportion also reported finding benzodiazepines as difficult (49%, n=21) or very difficult (16%, n=7) to access. This level of availability was generally regarded as having been more difficult (56%, n=24) in the preceding six months. However 19 respondents (43%) believed that this had been stable, seven believed it had been easier, and three people thought it had fluctuated during this period

Health Effects

Benzodiazepine injection (particularly of temazepam capsules) is of significant clinical concern as it may cause severe vascular damage leading to limb amputation due to venous thrombosis and ensuing ischaemia (Eddey & Westcott, 2000). Participants in the Melbourne 2001 benzodiazepine module were asked to nominate any lifetime and recent (past month) health effects they had ever experienced that they perceived to be related to benzodiazepine injection. The most commonly reported problems experienced in the past month were difficulty finding veins to inject into (44%), prominent scarring or bruising at injection sites (33%), swelling of arm (25%) thrombosis (18%), and dependence (16%). Thirty-six percent of respondents reported that they had experienced no recent harms that they would attribute to intravenous benzodiazepine usage.

The most severe problem reported as ever experienced was difficulty finding veins (34%, n=20), while only 17% (n=10) of intravenous users had sought treatment for benzodiazepine related problems.

Table 6: Self-reported lifetime and recent (past month) benzodiazepine injection-related harms

Problem	Experienced ever (n=58)	Experienced past month (n=55)
Overdose	3 (5%)	1 (2%)
Abscesses / infections from injecting	5 (9%)	1 (2%)
Dirty hit	1 (2%)	0
Prominent scarring / bruising	32 (55%)	18 (33%)
Thrombosis / blood clotting	15 (25%)	10 (18%)
Swelling of arm	26 (45%)	14 (25%)
Swelling of leg	6 (10%)	4 (7%)
Swelling of hand	15 (25%)	8 (14%)
Swelling of feet	5 (9%)	3 (5%)
Hospitalisation	3 (5%)	1 (2%)
Contact with Ambulance	5 (9%)	2 (4%)
Benzodiazepine dependence	14 (24%)	9 (16%)
Difficulty finding veins to inject into	37 (64%)	24 (44%)
Contact with Police	5 (9%)	1 (3%)
None	9 (15%)	20 (36%)

References

Eddey DP, Westcott MJ. 'The needle and the damage done': Inter-arterial temazepam. *Emerg Med 2000;12:248-252*.

Fry, C., & Miller, P. (2001). *Victorian Drug Trends 2000: Findings from the Melbourne arm of the Illicit Drug Reporting System (IDRS) Study.* (Technical Report No. 108). Sydney: National Drug and Alcohol Research Centre, University of NSW.

Fry, C., & Miller, P. (2002). *Victorian Drug Trends 2001: Findings from the Illicit Drug Reporting System (IDRS) Study.* (Technical Report No. 129). Sydney: National Drug and Alcohol Research Centre, University of NSW.

Fry, C. L., & Bruno, R. B. (2002) Recent trends in benzodiazepine use by injecting drug users in Victoria and Tasmania. *Drug and Alcohol Review, 21, 363-367*

Miller, P., Fry, C., & Dietze, P. (2001). *A study of the heroin drought in Melbourne: Results of the Drug Availability Monitoring Project (DAMP).* Melbourne: Turning Point Alcohol & Drug Centre.

Topp, L., Darke, S., Bruno, R., Fry, C., Hargraves, K., Humeniuk, R., McAllister, R., O'Reilly, B. & Williams, P. (2001). *Australian Drug Trends 2000: Findings From the Illicit Drug Reporting System (IDRS).* National Drug and Alcohol Research Centre Monograph No. 47. Sydney: University of New South Wales