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Abstract | This paper examines patterns of prescription drug use among a sample of police detainees recruited for the 2016 Drug Use Monitoring in Australia program. Forty percent of police detainees engaged in non-medical use of prescription drugs. Those who reported non-medical use were more likely than other detainees to have obtained their income from illegitimate sources in the past 30 days, to consider themselves drug dependent and to have used an illicit drug in the last 30 days or 12 months. Prescription drug use was also associated with property offences. These findings show that non-medical use disproportionately affects police detainees. Risks also exist for first response officers who may need to respond to detainees intoxicated by these substances. To disrupt pharmaceutical diversion processes occurring, further research is needed on where, how and why people involved in non-medical use of prescription drugs obtain their medication. Research into the relationship between crime and prescription drug use will also permit a greater understanding of the impact these drugs have on the community.

Use and misuse of prescription drugs among police detainees

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The non-medical use of prescription drugs is a growing problem in Australia and overseas. In this report, non-medical prescription drug use refers to the consumption of these drugs without a valid prescription. In the 2016 National Drug Strategy Household Survey (AIHW 2016), five percent of Australians aged 14 years or older reported non-medical use of prescription or other pharmaceutical drugs in the previous 12 months. The Department of Immigration and Border Protection and various police jurisdictions have also documented an overall upward trend in pharmaceutical detections and seizures, which include prescription and over-the-counter drugs (ACIC 2016; Nicholas, Lee & Roche 2011). Similarly, increases in the non-medical use of prescription drugs have been reported in the US, Canada and European Union countries (Blanco et al. 2007; European Monitoring Centre for Drugs and Drug Addiction 2016; Fischer & Argento 2012). The rising non-medical use of prescription drugs contrasts with the relatively stable proportion of Australians reporting recent illicit use of drugs excluding pharmaceuticals since 2004 (AIHW 2016).

When used appropriately, prescription drugs improve the health and quality of life of many people. However, evidence suggests individuals can obtain these drugs without prescriptions, acquiring them through means such as 'doctor shopping' or by feigning or exaggerating symptoms; evidence also suggests that people sell prescription drugs or give them away (AIHW 2014; McGregor, Gately & Fleming 2011; Ng & Macgregor 2012). Prescription drugs commonly used non-medically in Australia include benzodiazepines and opioids such as buprenorphine, morphine, methadone and oxycodone (Ng & Macgregor 2012).

The non-medical use of prescription drugs is concerning because of its association with health issues such as increasing levels of overdoses, problems related to how the drugs are administered, and rising demand for treatment services (Nicholas, Lee & Roche 2011). Australian research has also associated non-medical prescription drug use with illicit drug offences (McGregor, Gately & Fleming 2011) and the media has drawn attention to people under the influence of prescription drugs who have committed violent crimes (Loughnan 2016). Research in the United States suggests the abuse of prescription opioids may also serve as a pathway to heroin use (Siegal et al. 2003), although evidence of this in Australia is limited to an exploratory case study (Dertadian & Maher 2013).

Nicholas, Lee and Roche (2011) identified various factors that may be causing or contributing to the rapid increase in the use of prescription and over-the-counter drugs in Australia and affecting patterns of non-medical use. One factor is the increase in the range of pharmaceutical opioids available for prescription in Australia, especially slow-release formulations. Barriers to accessing specialist pain management services and drug treatment services, such as long waiting times, may also have contributed to the rise in prescription drug use. Demographic factors, specifically the ageing Australian population, may be another explanation. An increase in the prevalence of conditions such as chronic pain, associated with an ageing population, may increase the demand for prescription medications (Nicholas, Lee & Roche 2011).

Globally, data from different sources suggest there may have been a 'paradigm shift' (Fischer & Rehm 2007: 499) from heroin to a variety of prescription opioids. Researchers have also linked the rise in non-medical opioid use to relatively easy access to the drugs via the internet (Compton & Volkow 2006). People may purchase prescription drugs this way due to the anonymity afforded to them, the ability to buy without a prescription and the lower cost (ACIC 2016). In response to the increasing supply of pharmaceuticals and the harms associated with non-medical use in Australia, the National Pharmaceutical Drug Misuse Framework for Action (2012–2015) was developed to reduce inappropriate use of prescription and other pharmaceutical drugs.

Limited research has examined associations between non-medical prescription drug use and criminal offending. A Drug Use Monitoring in Australia (DUMA) study found the odds of being charged with an illicit drug offence were 80 percent greater for non-medical prescription drug users compared with the remainder of detainees (McGregor, Gately & Fleming 2011). Another DUMA analysis found detainees who used benzodiazepines were more likely to have received illegal income and to have been arrested or imprisoned in the previous year (Loxley 2007). Individuals may use prescription drugs non-medically to relieve negative emotional states such as anxiety, to treat insomnia, or to experience positive effects associated with its use, such as getting 'high' (McGregor, Gately & Fleming 2011). Prescription drugs can also counter or 'mellow out' adverse effects of illicit drugs, assist users to manage withdrawal symptoms and mimic other drugs' effects (McGregor, Gately & Fleming 2011; Inciardi et al. 2007).

Studies in Australia and overseas have shown that a range of methods can be used to divert prescription drugs from the licit to the illicit market. These include the illegal sale of prescription drugs by 'loose' or 'rogue' pharmacists; doctor shopping (where individuals visit numerous physicians to obtain multiple scripts); theft, forgery or alteration of scripts by users or healthcare workers; and robberies and thefts from manufacturers, distributors or pharmacies (Inciardi et al. 2009, 2007; Rodwell, Ringland & Bradford 2010; Wood 2015). Another common method of diversion is obtaining or purchasing prescription medicine from family and friends (El-Aneed et al. 2009; Inciardi et al. 2009; McGregor, Gately & Fleming 2011; Ng & Macgregor 2012).

Aims

The broader national picture suggests non-medical prescription drug use is increasing. Police detainees are one population from which valuable information about illicit drug use and illicit drug market activity can be drawn. This study aimed to answer the following questions:

- What is the prevalence of prescription drug use among police detainees?
- What are the characteristics of detainees who use prescription drugs non-medically?
- Are there relationships between offence categories and use of prescription drugs?
- What was the extent and nature of legitimate and non-medical prescription drug use in 2011 and 2016? How have the illegitimate sources that detainees use to obtain prescription drugs changed in this period?
- What are the patterns of use of emerging drugs?

Methodology

This study draws on data from the DUMA program, which collects information about social and demographic characteristics of police detainees and their criminal offending and drug use histories. The program interviews police detainees each quarter at selected police stations and watch houses.

This study used data collected from 389 adult police detainees interviewed in January and February 2016 at Perth, Brisbane, Adelaide and Sydney (Surry Hills) police stations and watch houses. All detainees in police custody for less than 96 hours are eligible for the DUMA program unless they are mentally impaired, violent, heavily impaired by drugs or alcohol, or excluded at the discretion of the officer in charge of the site. Generally, a police officer invites detainees to meet with an interviewer, who then explains the survey to the detainee. Participation is voluntary and confidential. For more information on the program see Makkai (1999).

Data for this study were derived from a specially-designed addendum on prescription drug use and misuse. Detainees were asked a series of questions about their use of prescription drugs and their involvement, as source or recipient, in the diversion of these drugs to illicit markets. After consultation with state law enforcement officials, the following pharmaceutical drug types were included in the survey:

- buprenorphine;
- methadone;
- oxycodone;
- morphine;
- benzodiazepines;
- dexamphetamine;
- anabolic steroids and other performance- and image-enhancing drugs (PIEDs);
- clenbuterol;
- Viagra/Cialis;
- fentanyl;
- ketamine;
- zolpidem;
- hydromorphone; and
- quetiapine (Seroquel).

This study measured the prevalence of prescription drugs that historically have had high levels of non-medical use (benzodiazepines, buprenorphine, dexamphetamine, methadone, morphine) and those identified as emerging problems (fentanyl, oxycodone, Seroquel, steroids/PIEDs, Viagra). Ketamine (2%), clenbuterol (0.3%) and hydromorphone (1%) were excluded from the analysis as fewer than 10 detainees reported using any of these drugs in the 12 months before detention. No detainees reported using zolpidem.

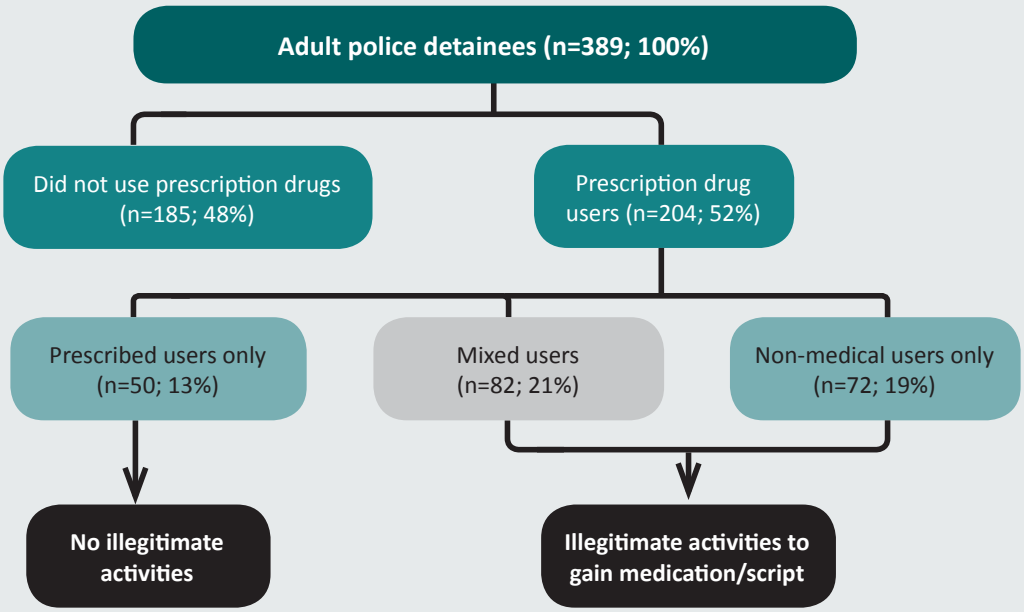
This paper investigated associations between prescription drug use and offending by categorising charges against detainees into four groups according to the Australian Bureau of Statistics' Australian and New Zealand Standard Offence Classification (ABS 2011). These four categories were, from most to least serious: violent, property, drug and other offences. 'Other offences' included DUI (driving under the influence of alcohol and/or illicit drugs), traffic offences, disorder, breach and other lesser offences. The charge recorded against the detainee was based on the most serious offence (MSO) they had been charged with. For instance, if a detainee was charged with both a violent offence and a drug offence, the MSO for that detainee was categorised as violent.

Results

Prescription drug use among detainees

In 2016, 52 percent (n=204) of adult police detainees reported using prescription drugs in the last 12 months. This included detainees who were prescribed medication, those who engaged in non-medical use, and those in both groups (see Figure 1).

Figure 1: Prescription drug use prevalence in the last 12 months among adult police detainees, 2016



Note: All percentages were calculated out of the total number of adult police detainees in the sample (n=389). Excludes 2 respondents where data was missing

Prescribed users were detainees who reported having used one of the specified drug types under prescription in the previous 12 months. In 2016, 34 percent (n=132) of all detainees were prescribed users. Non-medical users were detainees who in the previous 12 months had obtained prescription medication without a valid prescription using illegitimate methods. They also included those who conducted doctor shopping, exaggerated symptoms to their doctors and gave away or sold their prescription medication. Overall, 40 percent (n=154) of detainees were non-medical users of prescription drugs.

These two types of use were not mutually exclusive. As such, 21 percent (n=82) of detainees consumed both legitimate and illegitimately acquired prescription drugs (referred to here as 'mixed users'). Nineteen percent (n=72) used only illegitimately obtained prescription drugs and 13 percent (n=50) used only legitimately obtained prescription drugs. Overall, 75 percent of the prescription drug use sample (n=154) reported non-medical use of prescription drugs or a mix of prescribed and illegally obtained prescription drugs in the previous 12 months.

Prescription drug use at different sites

The Surry Hills site had the highest prevalence of prescription drug use (57%; n=30), followed by Adelaide (56%; n=40) and Brisbane (56%; n=79) (see Table 1). The Adelaide site reported the highest proportion of non-medical prescription drug use (44%; n=31), while detainees in Surry Hills reported the highest proportion of prescribed use (17%; n=9). More than one in two detainees at the Perth site reported that they had not used prescription drugs in the 12 months before detention (55%; n=68).

Table 1: Prescription drug use in the last 12 months by site, 2016

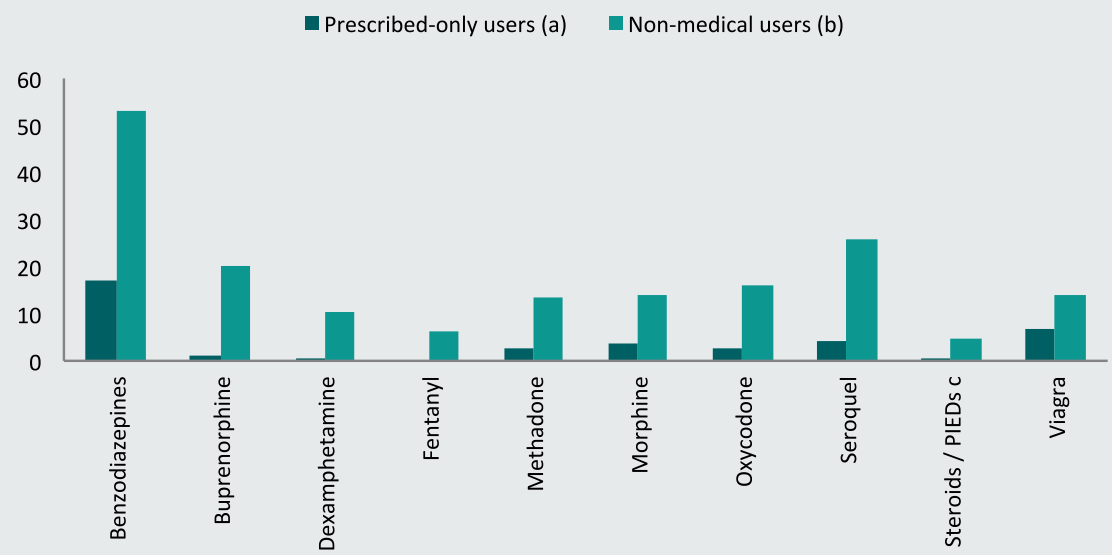
Site	Prescription drug use						No prescription drug use		Total (n)
	Prescribed only		Non-medical		Any use				
	n	%	n	%	n	%	n	%	
Adelaide	9	13	31	44	40	56	31	44	71
Brisbane	20	14	59	42	79	56	63	44	142
Perth	12	10	43	35	55	45	68	55	123
Surry Hills	9	17	21	40	30	57	23	43	53
Total	50		154		204		185		389

Note: Based on all detainees who reported using prescription drugs in the past 12 months. Adjusted for detainees who reported using more than one drug
Source: AIC DUMA collection quarter 1, 2016 [computer file]

Types of prescription drugs used

Among detainees who reported prescription drug use, benzodiazepines (70%; n=143) were the most commonly used drug type in the previous 12 months. Seroquel was the next most commonly reported drug type (30%; n=62), followed by buprenorphine (21%; n=43). For all drugs measured, detainees reported higher levels of non-medical use than prescribed use (see Figure 2).

Figure 2: Percentage of detainees using different types of prescription drugs in last 12 months, by prescribed and non-medical use, 2016



a: Detainees who reported being prescribed the indicated drug in the previous 12 months before detention
b: Detainees who reported using illegitimate methods to obtain prescription medication in the previous 12 months before detention
c: PIEDs—performance and image-enhancing drugs
Source: AIC DUMA collection quarter 1, 2016 [computer file]

Characteristics of non-medical users

The mean age of non-medical prescription drug users was 33 years, similar to that of other detainees (32 years). The proportion of male and female detainees who were non-medical prescription drug users was the same (40%; n=130 vs 40%; n=24). There was also no significant difference between the proportion of Indigenous and non-Indigenous detainees who were non-medical users (34%; n=34 vs 41%; n=120), contrasting with general population data showing that Indigenous Australians were more likely than non-Indigenous Australians to have recently used a pharmaceutical for non-medical purposes (AIHW 2017).

Table 2 shows that, compared with all other detainees, non-medical prescription drug users were more likely to have obtained income from illegitimate sources in the past 30 days, to consider themselves drug dependent, to have used an illicit drug in the last 30 days or last 12 months, and to have tested positive to multiple or any drugs via urinalysis.

Table 2: Characteristics of non-medical prescription drug-using detainees versus other detainees, 2016

	Non-medical users		Other detainees[a]		Total (n)	Statistical test	Effect size
	n	%	n	%			
Currently in a relationship	40	26	71	30	111	$\chi^2(1)=0.92$, p=ns	
Unemployed	90	58	142	60	232	$\chi^2(1)=0.15$, p=ns	
Income from illegitimate sources[b]	66	43	34	14	100	$\chi^2(1)=39.81$, $p<0.001$	V=0.32
Drug dependent	96	66	63	36	159	$\chi^2(1)=27.72$, $p<0.001$	V=0.29
Used an illicit drug in the last 12 months	148	96	178	82	326	$\chi^2(1)=17.40$, $p<0.001$	V=0.22
Used an illicit drug in the last 30 days	135	88	144	61	279	$\chi^2(1)=31.94$, $p<0.001$	V=0.29
Used an illicit drug in the past 48 hours	83	61	84	58	167	$\chi^2(1)=0.29$, p=ns	
Tested positive to multiple drugs via urinalysis[c]	63	57	54	31	117	$\chi^2(1)=18.53$, $p<0.001$	V=0.26
Tested positive to any drug via urinalysis[d]	98	88	127	73	225	$\chi^2(1)=9.54$, $p<0.05$	V=0.18
Arrested in past year	83	55	106	46	189	$\chi^2(1)=2.92$, p=ns	
In prison in past year	34	42	42	40	76	$\chi^2(1)=0.11$, p=ns	
Total detainees[e]	154		235		389		

a: 'Other detainees' includes detainees who did not use prescription drugs at all or who only used prescription drugs which were prescribed to them
b: Includes those who gained an income in the past 30 days from sex work, shoplifting, drug dealing or other crime (such as theft, fraud, burglary, or robbery)
c: Detainees who tested positive via urinalysis to two or more of the following classes of drugs: amphetamines, benzodiazepines, cannabis, cocaine or opiates
d: Detainees who tested positive via urinalysis to any amphetamines, benzodiazepines, cannabis, cocaine, or opiates (including heroin)
e: Adjusted for detainees who used more than one prescription drug
Source: AIC DUMA collection quarter 1, 2016 [computer file]

A multivariate logistic regression was conducted to identify which characteristics were independently associated with non-medical prescription drug use (see Table 3). The model showed that testing positive for multiple drugs via urinalysis, identifying as being dependent on illicit drugs, and reporting an illegitimate income were significantly associated with non-medical prescription drug use after controlling for all other variables in the model. Non-medical prescription drug users were almost three times more likely than all other detainees to have tested positive to multiple drugs and to consider themselves drug dependent, and four times more likely to have reported obtaining income illegitimately. It should be noted that nine cases were excluded due to their influence on the overall model. These nine cases had either high leverage or residual points which affected the overall fit of the model.

Table 3: Multivariate logistic regression identifying characteristics independently associated with non-medical prescription drug use

Variable	OR	Coefficient	*p*-value	95% Confidence Interval	
Age	1.00	0.00	0.78	–0.03	0.04
Gender	2.28	0.82	0.15	–0.28	1.93
Indigenous status	0.78	–0.25	0.53	–1.04	0.54
Unemployment	1.20	–0.18	0.59	–0.48	0.84
Education	1.11	0.11	0.28	–0.08	0.30
Currently in a relationship	0.54	–0.62	0.08	–1.34	0.09
Income from illegitimate sources	4.19	1.43	0.00	0.72	2.14
Drug dependent	2.89	1.06	0.00	0.41	1.71
Used an illicit drug in the last 30 days	2.87	1.05	0.10	–0.23	2.34
Tested positive to multiple drugs via urinalysis	2.77	1.02	0.00	0.32	1.71
Tested positive to any drugs	0.43	–0.84	0.17	–2.04	0.36

$p<0.001$, AUC=0.79, $R^2=0.21$
Note: Excludes 9 cases where data was influential
Source: AIC DUMA collection quarter 1, 2016 [computer file]

Relationship between prescription drug use and offending

Table 4 shows that non-medical prescription drug users were also more likely than other detainees to be classified by MSO as a property offender or drug offender, but the difference was significant only for property offenders ($\chi^2(1)=6.91$, $p<0.05$). These data suggested the likelihood of a non-medical prescription drug user being classified as a property offender was almost twice that of other detainees (24%; n=37 vs 14%; n=32). There was no significant difference between the proportion of non-medical prescription drug users and the proportion of other detainees classified as a violent offender (23%; n=36 vs 30%; n=70).

Table 4: Most serious offence category of non-medical prescription drug-using detainees versus other detainees, 2016

Most serious offence category (MSO)	Non-medical users		Other detainees[a]		Total (n)	Statistical test	Effect size
	n	%	n	%			
Violent	36	23	70	30	106	$\chi^2(1)=1.93$, p=ns	
Property	37	24	32	14	69	$\chi^2(1)=6.91$, $p<0.05$	V=0.13
Drug	17	11	23	10	40	$\chi^2(1)=0.16$, p=ns	
Other[b]	63	41	107	46	170	$\chi^2(1)=0.81$, p=ns	
Total detainees	154		235		389		

a: 'Other detainees' includes detainees who did not use prescription drugs at all or who only used prescription drugs which were prescribed to them
b: Includes the categories of DUI (driving under the influence of illicit drugs and/or alcohol), traffic, disorder, breach and other lesser offences
Note: Excludes cases where data is missing. Detainees may have been charged with multiple offences; each detainee was categorised according to the MSO they were charged with
Source: AIC DUMA collection quarter 1, 2016 [computer file]

Extent and nature of prescription drug use in 2011 and 2016

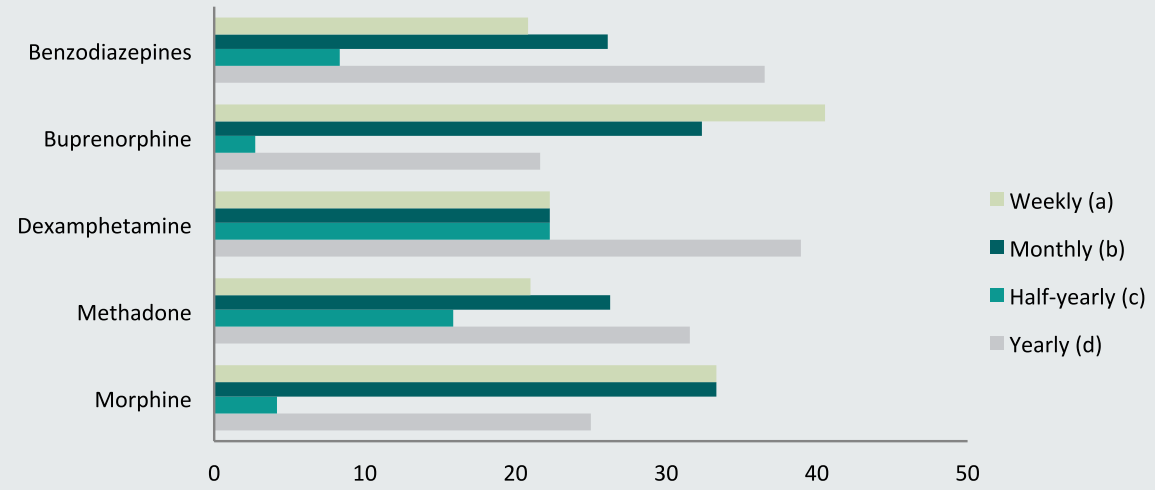
To compare patterns of prescription drug use, source and supply in 2011 and 2016, this paper drew on prescription drug use data collected by the DUMA program in 2011. Data were limited to detainees who reported using drugs included in both surveys: buprenorphine, methadone, benzodiazepines, morphine and dexamphetamine, while the emerging drugs were excluded. The analysis also excluded data collected at sites in 2011 that did not operate in 2016.

The comparison found that in 2016 the percentage of adult detainees who reported using one or more of the selected prescription drugs in the last 12 months was significantly greater than in 2011 (42%; n=165 vs 35%; n=175; $\chi^2(1)=5.10$, $p<0.05$). There was no significant difference in the proportion of detainees who reported prescribed use (12%; n=47 vs 10%; n=50) or non-medical use (30%; n=117 vs 25%; n=123) of prescription drugs in 2011 and 2016.

Frequency of use

Just over one-third of detainees categorised as non-medical users of prescription drugs reported they had used prescription drugs weekly in the previous year (35%; n=39) compared with 32 percent (n=30) who used prescription drugs once or twice a year, 27 percent (n=31) monthly and six percent (n=7) on a half-yearly basis. Patterns of use varied depending on the prescription drug used. Figure 3 shows that benzodiazepines, dexamphetamine and methadone were most likely to be used yearly, buprenorphine was most commonly used weekly and equal proportions of morphine users reported weekly and monthly consumption.

Figure 3: Percentage of detainees reporting use of non-prescribed medication by frequency of use and drug type, 2016



a: Includes detainees who reported using '5–7 days a week', '2–4 days a week' or 'about once a week'
b: Includes detainees who reported using 'about once a month' or 'less than once a month'
c: Includes only those detainees who reported using 'once every 6 months'
d: Includes only those detainees who reported using 'once or twice a year'
Note: Based on detainees who reported using any prescription drug according to the indicated frequency of use (ie weekly, monthly, half-yearly, yearly). Adjusted for detainees who reported using more than one drug
Source: AIC DUMA collection quarter 1, 2016 [computer file]

In 2016 almost two-thirds (61%; n=71) of non-medical prescription drug users reported using non-prescribed medication in the 30 days prior to detention. Non-medical users reported use of morphine, on average, six days out of the 30 days before detention, while benzodiazepines were consumed on an average of five days out of 30. Consumption of the remaining drugs occurred, on average, on fewer than four days out of 30 (see Table 5). Despite non-medical prescription drug users reporting in 2011 that they used each respective drug, on average, more frequently, there was a significant increase in past 30-day consumption rates between 2011 and 2016 (39%; n=48 vs 61%; n=71; $\chi^2(1)=17.28$, $p<0.001$). Thus, in 2016 more detainees reported non-medical use of prescription drugs in the last 30 days than in 2011, but detainees also reported having used the drugs on fewer occasions in the last month.

Table 5: Non-medical users who reported using prescription medication in the 30 days prior to detention, 2011 vs 2016

	Average number of days used drugs		% use[a]		n	
	2011	2016	2011	2016	2011	2016
Benzodiazepines	13	5	56	57	27	48
Buprenorphine	11	3	21	26	10	22
Methadone	14	2	8	13	<5	11
Morphine	15	6	44	17	21	14
Total[b]	–	–	39	61	48	71

a: Based on the number of detainees who had used non-prescribed medication in the past 30 days
b: Adjusted for detainees who reported that they had used more than one drug in the past 30 days
Note: Dexamphetamine was removed from the analysis as the sample size was small. Table cells containing fewer than 5 contributing respondents are represented as <5
Source: AIC DUMA collection quarter 3, 2011 & quarter 1, 2016 [computer file]

Illegitimate sources of prescription drugs

In 2016, 30 percent (n=118) of adult detainees reported that they knew someone who sold prescription drugs on the street, as did 30 percent of detainees (n=148) in 2011. Detainees were asked to rate the ease of obtaining prescription medicines on the street for each individual drug on a scale from one to 10. In 2016, they rated the ease of availability for each drug on average a seven or eight, indicating that prescription medicines ranged from easy to very easy to get from a street dealer. A different scale was used in 2011 to rate ease of availability and is hence not comparable.

In 2016, the most common method detainees used to obtain prescription drugs illegitimately was to receive them from a family member or friend without paying (59%; n=70). The next most common methods were to purchase from a family member or friend (27%; n=32) or from a drug dealer (27%; n=32). Methods of obtaining prescription drugs were similar across drug types, although detainees frequently obtained buprenorphine by swapping other drugs for it (38%; n=14). In 2011, the most common illegitimate source of prescription drugs was also non-cash transactions among family and friends (60%; n=74). This was followed by purchasing from a street dealer (40%; n=49) or buying from family and friends (32%; n=39).

Among morphine users, the proportion of detainees obtaining the drug illegitimately halved between 2011 and 2016 (41%; n=50 vs 21%; n=24), a difference that was significant ($\chi^2(1)=12.06$, $p<0.05$). No significant differences were observed for other prescription drug types.

Emerging drugs

A separate analysis of the emerging drug types in 2016 showed that 47 percent (n=28) of detainees who used illegitimate methods to obtain Seroquel received it from a family member or friend without paying, compared with 46 percent (n=6) for fentanyl, 37 percent (n=14) for oxycodone and 26 percent (n=9) for Viagra. No one reported receiving steroids from a family member or friend without paying. The most common method to obtain steroids was to buy them from a street dealer, although numbers were small.

Small proportions of detainees reported doctor shopping for Seroquel, oxycodone and Viagra, while no users of fentanyl or steroids reported using this method. Similarly low proportions of detainees reported exaggerating their symptoms to garner additional amounts of Seroquel, oxycodone and Viagra, while no one exaggerated symptoms to obtain fentanyl or steroids. Yearly use was the most commonly reported frequency for Seroquel (47%; n=21), Viagra (54%; n=14), oxycodone (38%; n=9) and fentanyl (55%; n=6). Steroids were most commonly used weekly, although numbers were small.

Discussion

This paper provides additional evidence that non-medical prescription drug use is an important issue in Australia, disproportionately affecting police detainees. Forty percent of detainees had used prescription drugs non-medically in the previous 12 months, a level eight times higher than the level at which the Australian population reports non-medical use of pharmaceuticals, including prescription drugs. This may be explained by an association between non-medical prescription drug use and illicit drug use. Detainees who reported recent non-medical use of prescription drugs were more likely than other detainees to have recently used an illicit drug and to report dependency on illicit drugs.

The causal routes by which this association occurs are unclear. If prescription drugs counteract or enhance the effects of illicit drugs, then the greater non-medical use of prescription drugs may be indicative of the high rates of illicit drug use among detainees. There is also evidence the non-medical use of prescription opioids is a risk factor for heroin use (Compton, Jones & Baldwin 2016; Dertadian & Maher 2013; Siegal et al. 2003), although this relationship is still to be established in Australia. Higher levels of psychological distress among DUMA police detainees relative to the general population may also explain these differences (Loxley & Adams 2009).

Changing patterns of non-medical prescription drug use

The rate of detainees' use of prescription drugs in 2016 was greater than in 2011. An increase in the supply of prescription drugs and changes in how these drugs are provided may account for this increase. Another explanation could be the ageing of Australia's population and the rise in conditions such as chronic pain, although the average age of the DUMA sample has been stable in recent years. In the general Australian population, people who have used pharmaceuticals for non-medical purposes have reported higher rates of health conditions than those who have not (AIHW 2017). Male detainees were just as likely as female detainees to report non-medical prescription drug use, contrasting with McGregor, Gately and Fleming's 2011 finding that females were more likely to report non-medical use of prescription drugs. But the finding corresponded with recent Australian population data showing similar rates of pharmaceutical use for non-medical purposes for males and females (AIHW 2017). These demographic changes may have implications for the targeting of treatment programs.

Most detainees who used prescription drugs were non-medical users or consumed a mix of legally and illegitimately sourced prescription drugs. Detainees surveyed in 2016 reported non-medical use of various prescription drugs on fewer occasions in the past 12 months compared with 2011, but were more likely to have reported non-medical prescription drug use in the past 30 days. This rise in recent use is relevant to police officers and health workers who come into contact with detainees experiencing the effects of harmful prescription drug use. Further, non-medical users more commonly inject pharmaceutical drugs, which increases the risk of first response officers being exposed to blood-borne diseases (Nicholas, Lee & Roche 2011). Where polydrug use occurs, police officers must also understand how pharmaceutical drugs interact with illicit drugs and the effect these may have on the behaviour of the user (Fry et al. 2007). First response officers may have to manage users who have overdosed on a combination of pharmaceuticals and other drugs, as the risk of overdose increases in these instances (Fischer & Rehm 2009; Kandel et al. 2017).

The data also showed the non-medical use of morphine had reduced between 2011 and 2016, consistent with a decline in Pharmaceutical Benefits Scheme prescriptions dispensed for morphine (AIHW 2017), and that the non-medical use of Seroquel and buprenorphine in 2016 was greater than that of commonly used opioids such as methadone and morphine. Although detainees were not asked about the types of benzodiazepines they used, some of the increase in non-medical benzodiazepine use may be related to regulatory changes in the prescribing of specific drugs. For example, alprazolam, used to treat anxiety, was 'upscheduled' by the New South Wales Ministry of Health from Schedule 4 (prescribed restricted substances) to Schedule 8 (drugs of addiction) in response to reported increases in illicit use and dependency (New South Wales Ministry of Health 2017). As a consequence, people addicted to alprazolam, or other benzodiazepines, may need to seek non-prescribed sources of this drug. An increase in off-label prescribing, where a drug is prescribed for a condition or patient group it is not approved to treat, can also lead to an increase in non-medical use. Seroquel, an antipsychotic medication, has become easier to obtain in Australia due to off-label prescribing (Brett 2015). Another relevant finding was that for these prescription drugs, a higher proportion of detainees reported non-medical use than prescribed use.

Sources of illicit prescription drugs

In 2016, detainees most commonly obtained prescription drugs from family members or friends at no cost, while proportionally fewer detainees reported purchasing from family members, friends, or a dealer when compared to 2011. However, these methods of diverting prescription drugs for non-medical use are consistent with previous Australian and overseas studies (McGregor, Gately & Fleming 2011; El-Aneed et al. 2009; Inciardi et al. 2007). These data provide further evidence that Australia has a substantial black market in prescription drugs and that the bonds between families and friends play an important role in the illicit exchange of these drugs. When drugs are exchanged for money, this black market can produce significant profits and incentives for diversion (Nicholas, Lee & Roche 2011). While some reports suggest the internet plays a role in the diversion of prescription drugs (Compton & Volkow 2006), the data showed little evidence of this. A study on the use of the internet by Australian police detainees found they preferred to purchase drugs through the physical, rather than online, market (Goldsmid & Patterson 2015).

The illicit market for prescription drugs may overlap with other forms of criminal offending. This study showed that non-medical prescription drug users were significantly more likely than other detainees to have their MSO categorised as a property offence. This is consistent with Australian research linking benzodiazepines, amphetamines and illicit opioid use with property offending (Bradford & Payne 2012). As others have noted (Goldsmid & Willis 2016), the association between drug use and offending is complex. On their own, detainee surveys cannot untangle causal links. However, they can reveal associations that may assist with the development of interventions to minimise the harm experienced by people at greater risk of non-medical use of prescription drugs. In order to disrupt pharmaceutical diversion processes, further research is needed on where, how and why people who engage in non-medical use of prescription drugs obtain these drugs. For example, detainees who report non-medical use of prescription drugs could be asked whether they are motivated by barriers to accessing specialist pain management services and drug treatment services. Further research into the relationship between crime and non-medical use of prescription drugs will also permit a greater understanding of the impact these drugs can have on the community.

References

Australian Bureau of Statistics (ABS) 2011. Australian and New Zealand Offence Classification 2011, 3rd ed. ABS cat. no. 1234.0. Canberra: ABS. http://www.abs.gov.au/ausstats/abs@.nsf/mf/1234.0

Australian Criminal Intelligence Commission (ACIC) 2016. *Illicit drug data report 2014–15*. Canberra: ACIC. https://acic.govcms.gov.au/previous-illicit-drug-data-reports

Australian Institute of Health and Welfare (AIHW) 2017. *Non-medical use of pharmaceuticals: trends, harms and treatment, 2006–07 to 2015–16.* Drug treatment series no. 30. Cat. no. HSE 195. Canberra: AIHW. https://www.aihw.gov.au/reports/illicit-use-of-drugs/non-medical-use-pharmaceuticals/contents/table-of-contents

Australian Institute of Health and Welfare (AIHW) 2016. *National Drug Strategy Household Survey (NDSHS) 2016: Key findings*. Canberra: AIHW. https://www.aihw.gov.au/reports/illicit-use-of-drugs/ndshs-2016-key-findings/contents/summary

Australian Institute of Health and Welfare (AIHW) 2014. *National Drug Strategy Household Survey detailed report: 2013*. Drug statistics series no. 28. Cat. no. PHE 183. Canberra: AIHW. https://www.aihw.gov.au/reports/illicit-use-of-drugs/national-drug-strategy-household-survey-detailed-report-2013/contents/table-of-contents

Blanco C et al. 2007. Changes in the prevalence of non-medical prescription drug use and drug use disorders in the United States: 1991–1992 and 2001–2002. *Drug and Alcohol Dependence* 90(2–3): 252–260

Bradford D & Payne J 2012. Illicit drug use and property offending among police detainees. *Crime and Justice Bulletin: Contemporary Issues in Crime and Justice* no. 157. Sydney: New South Wales Bureau of Crime Statistics and Research. http://www.bocsar.nsw.gov.au/Pages/bocsar_publication/bocsar_pub_cjb.aspx

Brett J 2015. Concerns about quetiapine. *Australian Prescriber* 38(3): 95–97. DOI: 10.18773/austprescr.2015.032

Compton WM, Jones CM & Baldwin GT 2016. Relationship between nonmedical prescription-opioid use and heroin use. *The New England Journal of Medicine* 374(2): 154–163

Compton WM & Volkow ND 2006. Abuse of prescription drugs and the risk of addiction. *Drug and Alcohol Dependence* 83: S4–S7

Dertadian GC & Maher L. From oxycodone to heroin: Two cases of transitioning opioid use in young Australians. *Drug and Alcohol Review* 33(1): 102–104

El-Aneed A et al. 2009. Prescription drug abuse and methods of diversion: The potential role of a pharmacy network. *Journal of Substance Use* 14(2): 75–83

European Monitoring Centre for Drugs and Drug Addiction 2016. *European drug report 2016: Trends and developments*. Luxembourg: Publications Office of the European Union

Fischer B & Argento E 2012. Prescription opioid related misuse, harms, diversion and interventions in Canada: A review. *Pain Physician* 15(3 Suppl): ES191–203

Fischer B & Rehm J 2009. Deaths related to the use of prescription opioids. *Canadian Medical Association Journal* 181(12): 881–882

Fischer B & Rehm J 2007. Illicit opioid use in the 21st century: Witnessing a paradigm shift? *Addiction* 102(4):499–501

Fry C, Smith B, Bruno R, O'Keefe B & Miller P 2007. *Benzodiazepine and pharmaceutical opioid misuse and their relationship to crime: An examination of illicit prescription drug markets in Melbourne, Hobart and Darwin*. NDLERF monograph 21. Hobart: National Drug Law Enforcement Research Fund. http://www.ndlerf.gov.au/publications/monographs/monograph-21

Goldsmid S & Patterson E. 2015. *Findings from the DUMA program: Internet access, and frequency and nature of use among police detainees*. Research in practice No. 42. Canberra: Australian Institute of Criminology. http://www.aic.gov.au/publications/rip/rip42

Goldsmid S & Willis M. 2016. Methamphetamine use and acquisitive crime: Evidence of a relationship. *Trends & issues in crime and criminal justice* No. 516. Canberra: Australian Institute of Criminology. http://www.aic.gov.au/publications/tandi/tandi516

Inciardi JA, Surratt HL, Cicero TJ & Beard RA 2009. Prescription opioid abuse and diversion in an urban community: The results of an ultrarapid assessment. *Pain Medicine* 10(3): 537–548

Inciardi JA, Surratt HL, Kurtz SP & Cicero TJ 2007. Mechanisms of prescription drug diversion among drug-involved club- and street-based populations. *Pain Medicine* 8(2): 171–183

Kandel DB, Hu MC, Griesler P & Wall M 2017. Increases from 2002 to 2015 in prescription opioid overdose deaths in combination with other substances. *Drug and Alcohol Dependence* 178: 501–511

Loughnan A 2016. The drugs made me do it: Can prescription side-effects be an excuse for crime? *The Conversation*, July 8 2016. https://theconversation.com/the-drugs-made-me-do-it-can-prescription-side-effects-be-an-excuse-for-crime-45821

Loxley W. 2007. Benzodiazepine use and harms among police detainees in Australia. *Trends & issues in crime and criminal justice* No. 336. Canberra: Australian Institute of Criminology. http://aic.gov.au/publications/tandi/tandi336

Loxley W & Adams K. 2009. *Women, drug use and crime: findings from the Drug Use Monitoring in Australia program*. Research and public policy series No. 99. Canberra: Australian Institute of Criminology. http://www.aic.gov.au/publications/rpp/rpp99

Makkai T. 1999. *Drug Use Monitoring in Australia (DUMA) : a brief description*. Research and public policy series No. 21. Canberra: Australian Institute of Criminology. http://www.aic.gov.au/publications/rpp/rpp21

McGregor C, Gately N & Fleming J. 2011. Prescription drug use among detainees: Prevalence, sources and links to crime. *Trends & issues in crime and criminal justice* No. 423. Canberra: Australian Institute of Criminology. http://aic.gov.au/publications/tandi/tandi423

New South Wales Ministry of Health 2017. *Up-scheduling of alprazolam from Schedule 4 to Schedule 8.* Pharmaceutical Services Unit. http://www.health.nsw.gov.au/pharmaceutical/Pages/alprazolam-upscheduling.aspx

Ng S & Macgregor S. 2012. *Pharmaceutical drug use among police detainees*. Research in practice No. 23. Canberra: Australian Institute of Criminology. http://aic.gov.au/publications/rip/rip23

Nicholas R, Lee N & Roche A 2011. *Pharmaceutical drug misuse problems in Australia: Complex issues, balanced responses.* Adelaide: National Centre for Education and Training on Addition, Flinders University. http://nceta.flinders.edu.au/society/publications/

Rodwell L, Ringland C & Bradford D 2010. What do police data tell us about criminal methods of obtaining prescription drugs? *Crime and Justice Bulletin: Contemporary Issues in Crime and Justice* no. 139. Sydney: New South Wales Bureau of Crime Statistics and Research. http://www.bocsar.nsw.gov.au/Pages/bocsar_publication/bocsar_pub_cjb.aspx

Siegal HA, Carlson RG, Kenne DR & Swora MG 2003. Probable relationship between opioid abuse and heroin use. *American Family Physician* 67(5): 942–945

Wood D 2015. Drug diversion. *Australian Prescriber* 38: 164–166. https://www.nps.org.au/australian-prescriber/articles/drug-diversion-5

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