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Substance Abuse in Our World: Then, Now and Future - Part II

In our increasingly connected world, events and trends that originate in one country, region or state impact us all. Globalization influences almost every area of our lives. Even in the realm of substance abuse, what happens in Australia affects what happens in Arkansas. Constantly changing, tumultuous and dangerous, drug abuse and its associated harms present tremendous social, political and economic challenges to the world as a whole and to each effected region. In this edition of the Journal, we present two pieces on important substance abuse issues, written by authors from opposite sides of the globe, which have the potential to affect substance abuse policy and practice world-wide.



We offer a piece on a specific area of substance abuse treatment that describes the use of morphine to reduce the severity and duration of withdrawal symptoms while undergoing rapid opiate detoxification (ROD) from methadone under medical supervision. The results and conclusions are based on a pilot study and a later main study and suggest that the use of morphine for 10 to 14 days prior to detoxification among methadone-dependent patients significantly reduces the severity and duration of withdrawal and diminishes the severity of delirium.

Also included in this edition of the Journal is a commentary on the issue of marijuana legalization in the U.S. The author discusses the impact within the states that have already passed marijuana initiatives, Washington and Colorado, and the implications for the rest of the U.S. He points out that these initiatives are in conflict with US international treaty obligations and violate federal law. Further, the author suggests that the policy crisis triggered by marijuana legalization must be used to create a new, improved and more comprehensive drug policy.

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Rapid Methadone Detoxification using Morphine to Reduce Severity of Withdrawal

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Abstract

This paper describes the use of morphine to reduce severity and duration of withdrawal symptoms while undergoing rapid opiate detoxification (ROD) from methadone under medical supervision. A pilot study of 24 randomly selected patients, some using heroin and others being dosed on methadone were surveyed between two months and three months from the time of their detoxification to gauge subjective ratings of satisfaction and the severity of the detoxification. In the later main study, the medical records of 75 patients, who were detoxified from methadone or morphine over a period of nearly two years from two different time periods were randomly selected from the files: 32 methadone dosed patients were from a period (Time 1) when morphine (MS Contin) was not prescribed prior to ROD, 33 methadone patients from a recent period (Time 2) when morphine was routinely prescribed prior to ROD and 10 were chronic pain patients from each time period, (5 from Time 1 and 5 from Time 2) who had been detoxified directly from morphine. Patients were monitored for withdrawal symptoms during and after the

detoxification to gauge the severity and acceptance of the procedure. Comparisons of withdrawal measures between the group which was not prescribed morphine prior to ROD showed statistically significant differences compared to the groups prescribed morphine, including the Time 2 group and the chronic pain groups at both Time 1 and Time 2. These results suggest that the use of morphine for 10 to 14 days prior to detoxification among methadone-dependent patients significantly reduces the severity and duration of withdrawal and diminishes the severity of delirium. Not only does this result in less subjective discomfort for the patient group, but it also reduces the level of medication needed and therefore to improve safety.

Introduction

Since early 1997, techniques for ROD have been developed and used in Australia and elsewhere. Different practitioners used different methods, with varying levels of sedation, including general anaesthesia, varying periods of patient abstinence from opiates prior to detoxification, shorter or longer hospital stays, and a range of medications to ameliorate withdrawal symptoms (Currie, Collins, Mudaliar, Cox, Guant, Lutz & Ward, 1999).

Some programs used the much shorter-acting opiate antagonist naloxone to precipitate detoxification rather than naltrexone (Ali, R., Thomas, P., White, J., McGregor, C., Danz, C., Gowing, et al 2003; O'Neill, 1999, personal communication). The aim of these developments was to design protocols for ROD that maximised safety and effectiveness and that minimised discomfort and maximised patient satisfaction and acceptance of the procedure.

Compared to other methods of detoxification, research results show that rapid opiate detoxification using opiate antagonists is highly effective when patients are sedated or

anaesthetised, and the treatment so rapid that they inevitably complete treatment (Bearn, Gossop & Strang 1999; Mattick et al., 2001; Currie et al., 1999; Colquhoun, 1999).

Traditional detoxification rates, either at home or under medical supervision as in-patient or out-patient interventions, vary from 6% to 46% for successful completion, compared to 64% to nearly 100% for this type of Rapid Opiate Detoxification (Miotto, McCann, Rawson, Frosch & Ling, 1997; Loimer, Lenz, Schmid & Presslich, 1991; Brewer, Rezae & Bailey, 1988; Ritter, 2003; Mattick, Diguist, Doran, O'Brien, Shanahan, Kimber., 2001; Currie et al., 1999; Colquhoun, 1999). Slow reduction detoxification (tapering) from methadone results in around 5% succeeding (Nosyk, Marsh, Sun, Schechter and Anis, 2010).

While detoxification precipitated by opiate antagonists under anaesthesia or sedation is considered to be less safe than traditional methods, it is undeniably effective (Brewer, 1998a). In 1999, Bearn and colleagues concluded that “although the daily costs of personnel and equipment are likely to be higher, the total treatment time may be reduced, so that the overall cost of completed treatment episodes could be less than conventional in-patient treatment” (p. 76). The recently completed National Evaluation of Pharmacotherapies for Opiate Detoxification (NEPOD) study has now shown that due to the high completion rates and the short stay in hospital, compared to traditional long-stay in-patient detoxification procedures, it has been shown to be cost-effective (Wodak, Saunders, Mattick & Hall, 2001; Ritter, 2003; Mattick et al., 2001).

The Rapid Opiate Detoxification (ROD) procedure used in this study involved a 24 hour period of non-opiate use prior to admission, the use of light sedation, naltrexone, a range

of symptomatic medications to ameliorate withdrawals and follow-up procedures to deal with complications among patients completing detoxification from methadone. Patients were monitored for withdrawal symptoms during and after the detoxification to gauge the severity and acceptance of the procedure and to compare these results from other detoxification procedures. It was noted by clinicians that patients detoxifying from methadone, compared to heroin, suffered more severe withdrawal symptoms and tended to have a longer recovery time. Over the past 10 years a number of patients have also undergone detoxification from prescribed opiates including MS Contin and Oxycontin. Again it was readily noted that they appeared to suffer from less severe withdrawals, the duration of withdrawals were shorter and resolved earlier and there appeared to be less delirium, which was a common feature of ROD.

The present study compared outcomes for patients who were prescribed morphine for 10 to 14 days prior to detoxifying from methadone, to those who underwent ROD without the preceding period of morphine dosing. It was hypothesised that completion rates would be higher, severity of withdrawal would be reduced, as would patient satisfaction with the procedure would be higher and safety associated with the procedure would prove to be acceptable for the first group.

Method

Protocol

The program of Rapid Opiate Detoxification (ROD) described in this paper was first used in September, 1999. Since that time, the procedure has undergone a number of changes. Modifications have endeavoured to minimise time in hospital, levels of discomfort, both

before, during and after the precipitated detoxification and to maximise patient acceptance. At the same time, efforts were directed at increasing safety.

Measures

To enable us to review the effectiveness of the procedure, two different methods were employed. Initially, in a pilot study, a group of patients, who were being detoxed from heroin, methadone and morphine were asked to complete a self-report questionnaire which sought to determine the level of satisfaction and severity of the precipitated detoxification (ROD) and the incidence of post detoxification after-effects. The survey was based on the same instrument used by Bell et al. (1999). Ratings were recorded on a Likert (visual analogue) scale of 0 to 10. For Acceptability, 0 = Completely Acceptable, 5 = Quite Acceptable, 10 = Completely Unacceptable. For Severity, 0 = Minimally Severe, 5 = Quite Severe, and 10 = Extremely Severe. This survey was conducted between the beginning of December, 2000, and the end of May, 2001, after the changes were implemented to the protocol (intra muscular midazolam for sedation and dexamethasone to prevent pulmonary oedema), when they attended the clinic for aftercare counselling. Patients were also monitored for objective withdrawal symptoms, and vital signs such as heart rate, blood pressure and blood oxygen saturation throughout the procedure.

In the second main study, the medical records of two groups of patients from different time periods were reviewed. The data recorded by medical staff for withdrawal severity of patients undergoing ROD from methadone during a period when morphine was not used (when the detoxification protocol was very similar in other respects) were extracted

from the patients' clinic files. Also extracted were the withdrawal severity data from the medical records of a group of patients who were more recently detoxified from methadone who were prescribed MS Contin (morphine) 10 to 14 days prior to detoxification. The withdrawal severity data recorded by medical staff of patients undergoing ROD from methadone during a period when morphine was not used (when the detoxification protocol was very similar in other respects) and medical records of a group of patients who were more recently detoxified from methadone who were prescribed MS Contin (morphine) 10 to 14 days prior to detoxification were extracted from their medical files. At the same time, two groups of patients from both time periods, who had been detoxified from prescribed morphine were also extracted to be compared to the other two groups. Severity of withdrawal was monitored by staff throughout the procedure by allotting a score of 0, 1, 2 or 3 (0 = None; 3 = Severe) for each of the symptoms and the scores summed. The range of symptoms to be scored are: Tossing and Turning (T&T), Hot and Cold (C&H), Delusion (D), Stomach Cramps (SC), Nausea (N), Heart Pounding (HP), Muscular Tension (MT), Aches and Pains (A&P), Yawning (Y), Runny Eyes (RE), Goosebumps (GB), Pupil Dilation (PD), Muscle Spasms (MS), Sneezing (S), Insomnia (In), Diarrhoea (Di), Runny Nose (RN), Leg Cramps (LC).

Sampling

Pilot Study

To substantiate the view that people detoxing from heroin suffered less severe withdrawal compared to those detoxing from methadone, a group of 24 patients were included in a pilot study. They were randomly selected to be surveyed between two months and three

months from the time of their detoxification. Eighteen were using heroin only, while six were on the methadone program when they presented for treatment. Four of the six methadone patients were also using heroin intermittently or regularly.

Table 1.1 shows the means and standard deviations of the pilot study group on a number of characteristics, including gender, age, total time they had been using opiates (heroin and methadone), the time they were involved in a methadone program, the amount of heroin being used at the time of the interview (most methadone patients were also using heroin), methadone dosage at the time of the interview, the year they left school, whether they were employed and whether they used other drugs for the group who completed surveys post detoxification.

Table 1.1: *Characteristics of Patients at Time of Initial Interview*

Gender	Age	Time on	Time on	Heroin	Meth Dose	Education	Employed	Poly	
Men	(years)	Opiates	Meth	(grams)	(mg)	(years)	(years)	(years)	
		(years)	(years)						
Means	15	26.71	6.29	3.43	0.40	78.57	9.75	14	16
	(62.5%)						(58%)	(67%)	
SD	8.07	5.88	4.04	0.24	22.12	1.48			

SD = standard deviation

Main Study

Subsequently, the medical records of 75 patients, who were detoxified from methadone or morphine over a period of nearly two years from two separate time periods were randomly selected from the files: 32 were from the period when MS Contin (morphine) was not used prior to ROD (Dec 2004 to Oct 2005; Time 1), 33 from a recent period

when morphine was routinely used (Oct 2007 to Jan 2009; Time 2) and 10 patients files (5 from Time 1 and 5 from Time 2), who had been detoxified from morphine were taken from each time period.

All patients gave informed consent for the procedure and the possible risks and discomforts associated with it, and for data to be collected and used for research purposes. The study was approved by the Deakin University Human Research Ethics Committee, Deakin University, Melbourne, Australia. There were no recorded adverse events for any of the groups over the two time periods.

The characteristics of the patients were recorded at their first interview, prior to detoxification. Table 1.2 shows the characteristics of the groups whose records were extracted from the files over two one-year periods, prior to morphine being used and after morphine was used as a standard protocol. The equivalent methadone dose was calculated to provide an adequate dose of morphine to methadone patients. For example, a patient on 50 mg methadone daily would be prescribed 100mg MS Contin twice daily.

Table 1.2: *Characteristics of patients from the period prior to use of Morphine (Time 1,) from the period after use of Morphine (Time 2) and from the Prescribed Morphine group (Times 1 & 2)*

Time Period	Age (mean)	Males (%)	Time on Methadone Years	Equivalent Methadone dose (mg)
Time 1	29.81	18 (56%)	5.1	77.42
Time 2	32.88	20 (60%)	6.75	73.71
Times 1 & 2 (Mor)	36.2	7 (70%)		92.7

While the morphine group tended to be older and were using a higher equivalent dose of methadone, none of these differences reached statistical significance. Also, the methadone group prescribed morphine tended to be on methadone for more years. Again, none of these differences were statistically significant.

Results

The program was highly effective in terms of completion rates. Of the 345 patients, which included the sample of patients included in this main study, admitted for detoxification over nearly two years, two did not complete the detoxification and were therefore not inducted onto naltrexone. This represents a completion rate and successful induction onto naltrexone of over 99%. All of those in the initial pilot study of 24 patients who completed the survey and the 75 patients whose records were extracted for the main study completed detoxification and were inducted onto naltrexone.

Pilot Study: Acceptability and Severity of ROD

Of the 24 patients included in the pilot study, to the survey question “Please rate how acceptable you found the ROD”, 17 patients reported that the procedure was Completely Acceptable and 7 patients reported that it was Quite Acceptable. To the question “Please rate the severity of withdrawal during the ROD” 18 patients rated the severity was Minimally Severe, 5 rated it as Quite Severe and 1 patient rated it as Very Severe. To the question “ Please rate how ill you were on the first day following ROD”, 8 patients reported they felt Minimally Ill, 8 patients said they were Quite Ill and 8 patients reported they felt Very Ill to Extremely Ill. Of those who said they were Very Ill to Extremely Ill, 3 were high dose methadone patients, and 1 of those reported being Quite Ill was also a

methadone patient. The other 2 methadone patients reported that they were Minimally Ill. By the fifth day following ROD, 15 reported feeling Minimally Ill, 5 reported feeling Quite Ill and 4 still reported feeling Very Ill. The mean subjective scores and standard deviations for these assessments of the acceptability of the ROD are shown in Table 2.1

Table 2.1: *Mean Scores and Standard Deviation of Subjective Ratings of Acceptability and Severity of ROD (n = 24)*

	Q1. Acceptance of ROD	Q2. Severity of Withdrawal	Q3. Illness on Day 1	Q4. Illness on Day 5 Mean days
Mean	1.79	1.52	5.10	3.27
SD	1.81	2.43	3.72	2.99

Ratings were recorded on a Likert (visual analogue) scale of 0 to 10. Acceptability, 0 = Completely

Acceptable, 5 = Quite Acceptable, 10 = Completely Unacceptable.

Severity, 0 = Minimally Severe, 5 = Quite Severe, and 10 = Extremely Severe. SD = Standard Deviation

Table 2.2 shows the difference in subjective ratings of Acceptability and Severity of detoxification between those who were addicted to heroin and those who were being dosed on methadone, as well as the number who gave scores of less than 5 (the median score). While those on heroin indicated slightly lower scores on Acceptability with the detoxification, those on methadone reported less satisfaction with levels of Severity. In both cases the majority reported high levels of Acceptability and did not believe that symptoms were Severe.

The mean subjective withdrawal scores after eight hours were 5.6. Scores prior to detoxification ranged between 3 and 6. In other words, patients presented with some level of withdrawal as they had been required to remain abstinent overnight. As the

detoxification proceeded, scores went as high as 21 on the Short Opiate Withdrawal Scale (SOWS) and then declined over the latter stages of the procedure.

When patients received naltrexone, the symptoms of withdrawal became obvious. They would toss and turn, become delirious, have runny eyes and nose, sneeze and yawn, have signs of aches and pains, stomach cramping and muscle tension. When they completed the procedure they reported some slight symptoms of withdrawal which were comparable to those they had when admitted in the morning. All patients reported having no memory of the procedure.

Table 2.2: *Rating for Acceptability and Severity of ROD for Heroin and Methadone Patients*

		Heroin	Methadone
Acceptability	Mean rating (range)	1.722 (0-5)	2.0 (0-4)
	Number with rating < 5	16 (88.89%)	5 (80%)
Severity	Mean rating (range)	1.14 (0-7)	2.66 (0-8)
	Number with rating < 5	17 (94.44)	4 (66.67%)

Ratings were recorded on a Likert (visual analogue) scale of 0 to 10. Acceptability, 0 = Completely Acceptable, 5 = Quite Acceptable, 10 = Completely Unacceptable.

Severity, 0 = Minimally Severe, 5 = Quite Severe, and 10 = Extremely Severe.

Table 2.3 shows the mean number of days and the standard deviation of these scores that patients indicated they still felt the effects of the ROD. All patients reported some tiredness or fatigue following ROD, although most had recovered most of their levels of energy in the first three to four days.

Table 2.3: *Symptoms Reported after Detoxification in Length of Time (Days) from ROD*

Symptom	Tiredness	Insomnia	Lack of Appetite	Diarrhoea	Vomiting	Stomach Cramps	Leg/ Back Pain	Depression	Headaches
Mean	21.83	18.79	13.04	8.27	0.71	4.44	10.06	11.52	2.29
SD	18.01	19.82	14.69	11.89	2.89	9.00	16.15	18.17	6.04

While patients said they felt tired or fatigued for an average of three weeks, eight said they felt this way for a month or more. The average length of time patients reported not sleeping well was nearly three weeks (18.8 days), while three patients said they were still having trouble sleeping at the time of the interview, two months later. On average, patients said they had not regained their appetite for two weeks. Patients also reported having diarrhoea for an average of one week after the ROD.

Six patients reported minor diarrhoea for two weeks or more. The average length of time for the remainder was less than three days. Only two of the 24 patients reported any vomiting with one patient still being nauseous two weeks after ROD and the other for three days. Other symptoms complained of were: cramping and leg/back pain, headaches and depression. Two patients reported still feeling depressed three months later at the time of the interview. No patients had diarrhoea or vomiting during the procedure.

Main Study: Use of Morphine for Methadone Detoxification

Table 3.1 shows the results of the scoring of withdrawal symptoms from the time from first dose of naltrexone until symptoms had subsided, normally over a period of 4 to 6 hours for each of the groups at Time 1 (no pre-detox prescribed morphine) and Time 2 (pre-detox prescribed morphine).

Table 3.1: *Objectively rated withdrawal scores during detoxification:*

Period	Duration of Withdrawal Symptoms Hours	No Symptoms	Lowest Score (Mean)	Highest Score (Mean)	Median Withdrawal Score	Mean Withdrawal Score
Time 1	5.55	8.0	5.34	14.53	10.06	10.08
Time 2	4.86	6.45	2.97	12.30	8.45	8.28
Times 1&2 (Mor)	3.8	6.2	2.6	10.40	6.3	6.61

Tables 3.2 to 3.4 show the results of comparative T tests which indicate that the difference between various measures of the severity of withdrawal during the detoxification were not statistically significant between the groups that had been prescribed morphine, either prior to admission (chronic pain) or in the period immediately prior to detoxification for those presenting with methadone dependence. Contrastingly, the results show that measures of withdrawal severity were statistically significant when comparing the group on methadone (Time1), who did not use morphine prior to detoxification to those groups that were prescribed morphine. Examination of the medical records also showed that those who were prescribed morphine prior to admission had very few symptoms of delusions or delirium and, if so, of very short duration (30 to 90 minutes). Normally these symptoms in an untreated (no-morphine/methadone) group persist for a minimum of 4 hours and sometimes for up to 12 hours post detoxification.

A number of variables were recorded including duration of significant withdrawal (SOWS > 6), no of symptoms and severity of symptoms. The duration of withdrawal symptoms for each group were compared. The differences in scores for the no-morphine group (Time 1) compared to the morphine groups were statistically significant (mean 5.5 v 4.86 hours, $t=0.031$, $P<0.05$ and 5.5 v 3.8 hours, $t= 0.0019$ $P<0.01$) while the differences between the morphine/methadone group (Time 2) and morphine groups at times 1 and 2 were not significant (mean 4.86 v 3.8 hours, $t=4.39$, $P>0.05$).

Table 3.2: Objectively rated duration of withdrawal symptoms during detoxification: Number of Hours Recorded – statistical significance

Duration	Time 1	Time 2	Time 1 & 2 (Mor)
Time 1		T score= 0.031 $p>0.05$	T score= 0.0019 $p> 0.01$
Time 2			T score= 0.439 Not sign

This relationship also held for all the other measures including: Mean number of withdrawal symptoms (8.04 v 6.45 symptoms $t=0.0001$, $P<0.01$ and 8.04 v 6.2 symptoms, $t=0.0028$, $P<0.01$ and mean 6.45 v 6.2 symptoms, $t=0.073$, non-significant respectively); mean scores on the SOWS (mean 10.08 v 8.28 score, $t= 0.0123$, $P>0.05$ and 10.08 v 6.61 mean score, $t= 0.00047$ $P>0.001$ and 8.28 v 6.61 mean score, $t=1.124$, non-significant, respectively).

Table 3.3: Objectively rated withdrawal scores during detoxification: Number of Withdrawal Symptoms recorded – statistical significance

Symptoms	Time 1	Time 2	Times 1 & 2 (Mor)
Time 1		T score= 0.00011 P>0.001	T score= 0.0028 p> 0.01
Time 2			T score= 0.0731 Not sign

Table 3.4: Objectively rated withdrawal scores during detoxification: Mean Withdrawal Scores recorded – statistical significance

Symptoms	Time 1	Time 2	Times 1 & 2 (Mor)
Time 1		T score= 0.0123 P>0.05	T score= 0.00047 p> 0.001
Time 2			T score= 0.1254 Not sign

Discussion

It is clear from trials of naltrexone in Australia and elsewhere that naltrexone is very effective in facilitating completion of detoxification, allowing the early and effective induction of patients onto maintenance doses of naltrexone (Bearn et al., 1999; Foy, Sadler & Taylor, 1988; Simon, 1997; Gerra et al., 1995; Krabbe et al., 2003; Currie et al., 1999). When anaesthesia or, more so, when sedation is used and if performed in the proper medical environment, it is also seen to be relatively safe (Foy et al., 1998; Simon, 1997; O' Malley, 1995; Krabbe et al., 2003 Currie et al., 1999). Moreover, the recently

completed NEPOD (Wodak et al., 2001; Ritter, 2003; Mattick et al., 2001) showed that ROD was effective, and concluded that it was also a cost-effective means of detoxification from opiates due to the high completion rates and shortened time in treatment. A review of detoxification procedures by Gowing, Ali and White (2001) indicated that the use of opiate antagonists ensured higher completion rates. What is obvious is that withdrawals will be more severe in the short-term and the present protocol provides a means by which these are controlled; and as a consequence patients report high levels of satisfaction with the present detoxification procedure at acceptable levels of safety.

In evaluating the acceptability of the program compared to other protocols, there are very few papers available with which to make comparisons. A paper by Krabbe and colleagues (2003) reported few subjective or objective withdrawal symptoms following ROD under general anaesthetic, and these had resolved in three days. They also suggest it is a more acceptable form of detoxification compared to methadone tapering, not only in terms of completion rates, but also because of the reported withdrawal distress. Two papers (Bell et al, 1999; Glasgow et al., 2001) which described minimal-sedation RODs, also used the same surveys for acceptability and severity of withdrawal. Ratings of acceptance seemed to be similar, although ratings of severity of withdrawal were much higher for the Bell group (1999). The descriptions of patient reactions were very similar, although they seemed to have a higher incidence of vomiting and diarrhoea, both during and after the detoxification procedure.

In the Glasgow and colleagues study (2001), 19 methadone-dependent people were enrolled in the study. However only 14 underwent detoxification using naltrexone, as 5

withdrew before detoxification. In this study, the clients were required to cease methadone 72 hours before precipitation of withdrawal, and this appeared to be unacceptable to a number of potential clients with many withdrawing prior to enrolment. On an 'intention to treat' basis this study yielded very completion-poor results. In this case, 12 clients reported that the detoxification was 'Completely Acceptable', while the remaining two reported that the detoxification was 'Acceptable'. On rating the severity of withdrawal, two reported that it was 'Excellent'. However the majority said it was 'Severe' although more acceptable than slow reduction in methadone dose. This was similar to the findings of Bell and colleagues (1999).

In evaluating the effectiveness of the use of morphine (MS Contin) prior to detoxification for methadone patients, the observations of clinicians over the years has been confirmed by the present analysis of measures of severity of withdrawal during detoxification.

Comparisons of withdrawal measures between the group which was not prescribed morphine (Time 1) prior to detoxification all showed statistically significant differences compared to the group prescribed morphine (Time 2), including the chronic pain group at both Time 1 and Time 2. These results suggest that the use of morphine for 10 to 14 days prior to detoxification among methadone dependent patients significantly reduces the severity of withdrawal and reduces the duration of withdrawal and there is a tendency to reduce severity of delirium. Not only does this result in less subjective discomfort for the patient group, but it also has a tendency to reduce the level of medication needed to be given and therefore to improve safety.

Research to date indicates that the method of detoxification has no bearing on long-term outcomes (Colquhoun, 1999; Bearn et al., 2001). Long-term outcomes seem to be related

to other factors, although high completion rates for detoxification at least enhance the chances of higher rates of long-term outcomes as more people are able to enter treatment and begin the recovery process (Krabbe et al., 2003).

Other reports have concluded that ROD was not effective based on reported relapse rates to heroin some months after completion of the detoxification (Bell et al., 1999). Research has consistently shown that abstinence rates or other measures of successful treatment are related to a number of factors independent of the means of detoxification (Crabtree, 1984; Simon, 1997; Currie et al., 1999; Colquhoun, 1999), including a positive therapeutic relationship, counselling and monitoring of medication compliance (World Health Organisation, 2004). It is also important to note that lapses to heroin during recovery should not constitute failure as they are part of the normal process of achieving long-term abstinence (Hulse & Basso, 2000). Compliance rates to oral naltrexone seem to be of crucial importance (Brewer, 1988b) and this includes daily supervision and family support, which may in itself predict better outcomes (Hulse et al., 2001). A comprehensive aftercare counselling program has also shown to improve outcomes. Another important factor is the selection of motivated patients, who have some level of social support and emotional stability (Washton & Potash, 1984; Shufman et al., 1997; Colquhoun, 1999; Tucker & Ritter, 2000). The use of slow release depot injections or naltrexone implants when combined with a comprehensive follow-up program shows increases of compliance rates and improvement in long-term outcomes (Colquhoun, Tan & Hull, 2005). These factors, including naltrexone implants, selection of suitable patients and an integrated aftercare program, are important in enhancing long-term outcomes independent of the means of detoxification, and to confound the evidence of the

effectiveness of this procedure with long-term outcomes is to misrepresent the importance of this medical procedure.

Conclusion

The evidence from the present study indicates that naltrexone-precipitated detoxification can be performed safely and effectively under the regime described in this paper and from other recent research including that of Currie and colleagues (1999). The protocols refined over ten years appear to produce results which are acceptable to the patient group, and where the completion rates and reported severity of detoxification appear to be superior to the Bell et al. (1999) and Glasgow et al. (2001) studies using light sedation. The results show that the procedure is undoubtedly effective, and recent research has shown it to be cost-effective (Mattick et al., 2001; Currie et al., 1999). Moreover, the study shows that when morphine is prescribed prior to detoxification for patients being dosed on methadone, severity and duration of withdrawal is significantly reduced. Not only are better outcomes possible for the patient group, but also safety levels seemr to be superior. When patients are assessed for suitability, individual treatment plans developed, family support established and aftercare counselling implemented, ROD can play an integral role in the treatment of opiate dependence. The present program that incorporates ROD as an effective means of detoxification adapts this holistic approach. While further research is required to refine these protocols, it is important that policy changes be implemented to make the procedure available to those who wish to be free of opiate dependence and to provide a comprehensive support program to maximise the chances of long-term recovery.

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He has published two books, “The Use of Naltrexone in the Treatment of Opiate Dependence”, (Lambert Academic, Germany), based on his doctoral thesis and “Is Dementia a Bigger Word than Cancer?” (Xlibris, USA).

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Marijuana Legalization and Federal Law: A Missed Opportunity

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The state marijuana legalization ballot initiatives passed in November 2012 in the states of Colorado and Washington make United States the only nation in the world to legalize the production, sale and use of marijuana.

These initiatives violate federal law and are in conflict with US international treaty obligations. The recent announcement by the US Department of Justice (DOJ)(1) that it will not enforce federal law is a green light for these two states to pursue regulation of legal marijuana. In contrast, on other controversial issues the Obama administration has taken strong stands against state laws that conflict with federal law. In 2010, the DOJ brought a lawsuit against Arizona after determining that the state's immigration law, S.B. 1070, conflicted with federal law.(2) Similarly, in August, 2013, it filed suit against Texas over S.B. 14, a voter identification law, due to a conflict with federal law.(3) Where is the federal leadership on marijuana legalization? Marijuana remains an illicit drug under the Controlled Substances Act (CSA). The supremacy of federal law regarding marijuana was reaffirmed in 2005 by the US Supreme Court in *Gonzales vs. Raich*.

The guidance recently provided by the DOJ to federal prosecutors identified eight priorities for enforcement related to legal marijuana including, among others, preventing distribution of marijuana to minors, preventing diversion of marijuana to other states and preventing drugged driving and other adverse public health consequences of marijuana use.(4) Conspicuously absent from the DOJ position were answers to questions such as: How can the regulatory schemes of Colorado and Washington achieve these goals? How will these priority areas be monitored? What are the thresholds for federal intervention?

We can expect all of the dangers captured in the DOJ's eight priority areas to grow under marijuana legalization because use of a drug is greater when it is legal. Among Americans 12 and older, 52.1% used

alcohol in the prior 30 days and 26.7% used tobacco.(5) These figures vastly exceed the rate of illegal drug use; 9.2% of the population used any illegal drug, including marijuana, in the past month. Only 7.3% of Americans used marijuana in the past month. Many people do not use marijuana because it is illegal. How can anyone look at these numbers and not see the public health benefit of keeping marijuana and other drugs illegal? How can anyone not see that legalizing marijuana will lead to huge increases in marijuana use, and consequentially, increases in the negative results of marijuana use?

The federal government, which now is a passive bystander in the reckless rush to legalize marijuana, must scientifically monitor the impact of marijuana legalization in Colorado and Washington with the full understanding that the impact of these radical policies extends beyond these two states. Now is the time to collect national baseline data on every facet of life impacted by marijuana use and addiction so that the current wave of permissive marijuana policies is carefully studied to assess its impact on public health and safety, with particular interest given to the effects on youth, education, health, productivity and highway safety.

Marijuana legalization is fueled by a lavishly funded campaign decades in the making that promotes marijuana use as harmless. Not long ago, the negative health consequences of the use of alcohol and tobacco were similarly trivialized. Scientific evidence shows that marijuana is an addictive drug; about 9% of individuals who use marijuana become dependent.(6) Marijuana is responsible for 58.9% of all Americans age 12 and older, and 80.9% of all youth age 12 to 17, suffering from illicit drug abuse or dependence.(7) Marijuana was the primary drug of abuse for 73% of all teen admissions to state-funded treatment in 2010, more than any other drug, including alcohol.(8) Marijuana is harmful to the developing adolescent brain,(9) causes significant impairment(10) and contributes to deaths and injuries on the nation's roads and highways.(11)

Opposing marijuana legalization is neither cool nor politic. Those who do oppose it are mocked and ridiculed when not ignored. The individuals, organizations and coalitions that have spoken with courage and conviction in opposition to the legalization of marijuana should be applauded.

Our nation's experiment with marijuana legalization will not end with Washington and Colorado. The pro-drug lobby is following through on their plans to bring marijuana legalization to many more states through ballot initiatives and state legislation. The crisis caused by marijuana legalization will be hastened by the certain entry of major business into marijuana production and sale. The result will be powerful

economic interests that will reinforce their political interests, a pattern that mirrors the well-established alcohol and tobacco industries and lobbies.

Today's drug policy initiative is not only about the legalization of marijuana. It is about the legalization of all drugs of abuse. That is where the pro-drug lobby is headed. Every argument used in support of marijuana legalization applies to all of the other drugs of abuse. This adds weight to the importance of documenting the impacts of drug policy changes starting, but not ending, with marijuana.

If any drug, including marijuana, were to be legalized in the US, such a move should be achieved through legislative action at the federal level where the merits and the hazards of such historic action could be fully assessed and discussed. Federal action could authorize state "experiments" with drug legalization and establish data collection to assess the effects of these experiments in a systematic way. In contrast, with ballot initiatives, any thoughtful, deliberative process has been abandoned in favor of backdoor maneuvers that are easily manipulated by money and clever, deceptive media campaigns.

Drug addiction is a powerful teacher. Only when addicts "hit bottom", when the negative consequences of their drug use become intolerable, do drug addicts seek freedom from chemical slavery. Today with marijuana legalization, the US is headed to a similar fate. Perhaps only after the negative consequences of a more permissive drug policy become unmistakable and intolerable will the country sober up on marijuana.

The policy crisis triggered by marijuana legalization must be used to create a new, improved and more comprehensive drug policy. This is the time for bipartisan consideration of the larger problems of drug abuse, including the ascendant problems of designer drugs and prescription drug abuse. While the country is mesmerized by the battles over states legalizing marijuana, the modern drug epidemic is rapidly evolving to become even more menacing. The new American drug policy needs to focus on reducing drug use, including reducing marijuana use, through balanced restrictive drug policies that lower incarceration rates. (12) There are abundant new ideas to achieve those goals. Marijuana legalization is not part of those better drug policies for the future.

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Conflict of Interest Statement:

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled "Marijuana Legalization and Federal Law: A Missed Opportunity."