

**METHAMPHETAMINE  
TREATMENT EVALUATION STUDY  
(MATES): FINDINGS FROM THE  
BRISBANE SITE**

**Shelley Cogger, Rebecca McKetin, Joanne Ross and  
Jake Najman**

**Technical Report No. 295**

**NDARC**

ISBN: 978-0-7334-2658-2

**©NDARC, 2008**

This work is copyright. You may download, display, print and reproduce this material in unaltered form only (retaining this notice) for your personal, non-commercial use or use within your organisation. All other rights are reserved. Requests and enquiries concerning reproduction and rights should be addressed to the information manager, National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW 2052, Australia.

## TABLE OF CONTENTS

<b>LIST OF TABLES</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>iv</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>v</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1.1 Background .....	1
<b>1.2 Aims of the current study</b> .....	<b>3</b>
<b>2 METHOD</b> .....	<b>5</b>
<b>2.1 Participants and procedure</b> .....	<b>5</b>
<b>2.2 Measures</b> .....	<b>6</b>
2.2.1 Baseline measures.....	6
2.2.2 Three month measures .....	9
2.2.3 Twelve month measures.....	10
2.2.4 Statistical analysis.....	10
<b>3 BASELINE RESULTS</b> .....	<b>11</b>
3.1.1 Treatment history .....	11
3.1.2 Demographics.....	11
3.1.3 Drug use.....	13
3.1.4 Comorbid psychiatric disorders .....	15
3.1.5 Psychosis and hostility .....	16
3.1.6 Other harms .....	18
3.1.7 Summary .....	20
<b>4 THREE MONTH RESULTS</b> .....	<b>21</b>
4.1.1 Status three months post-treatment entry .....	21
4.1.2 Treatment exposure .....	21
4.1.3 Demographics.....	22
4.1.4 Drug use.....	22
4.1.5 Psychotic symptoms and hostility.....	27
4.1.6 Other harms .....	29
4.1.7 Lifetime diagnosis of Schizophrenia.....	31

4.1.8	Childhood diagnosis of Conduct Disorder .....	31
4.1.9	Summary .....	31
<b>5</b>	<b>TWELVE MONTH RESULTS .....</b>	<b>32</b>
5.1.1	Status twelve months post-treatment entry .....	32
5.1.2	Treatment exposure .....	32
5.1.3	Demographics .....	33
5.1.4	Drug use.....	33
5.1.5	Psychotic symptoms and hostility .....	36
5.1.6	Other harms .....	37
5.1.7	Comorbid psychiatric disorders .....	38
5.1.8	Lifetime diagnosis of a Manic Episode .....	40
5.1.9	Summary .....	40
<b>6</b>	<b>PREDICTORS OF TREATMENT OUTCOME.....</b>	<b>42</b>
6.1.1	Demographics and drug use .....	42
6.1.2	Treatment exposure .....	42
6.1.3	Psychiatric comorbidity .....	42
6.1.4	Summary .....	46
<b>7</b>	<b>DISCUSSION .....</b>	<b>48</b>
7.1.1	Summary of findings.....	48
7.1.2	Methodological considerations.....	51
7.1.3	Implications.....	52
7.1.4	Conclusion.....	54
<b>8</b>	<b>REFERENCES.....</b>	<b>56</b>
<b>9</b>	<b>APPENDIX I .....</b>	<b>63</b>
<b>9.1</b>	<b>DSM-IV definitions of Axis I Psychiatric Disorders .....</b>	<b>63</b>
9.1.1	Major Depression.....	63
9.1.2	Social Phobia (Social Anxiety Disorder) .....	64
9.1.3	Panic Disorder (with or without Agoraphobia).....	64
9.1.4	Schizophrenia.....	65
7.1.5	Manic Episode .....	68
<b>10</b>	<b>APPENDIX II.....</b>	<b>70</b>

## LIST OF TABLES

Table 1.	Demographic characteristics of the sample at baseline .....	12
Table 2.	Methamphetamine use and drug use in the sample at baseline .....	14
Table 3.	Polydrug use in the sample at baseline.....	15
Table 4.	Psychiatric comorbidity in the sample at baseline.....	17
Table 5.	Other harms in the sample at baseline.....	19
Table 6.	Demographic characteristics at three month follow-up.....	24
Table 7.	Methamphetamine use at three month follow-up.....	25
Table 8.	Other drug use at three month follow-up .....	26
Table 9.	Psychotic symptoms and hostility at three month follow-up.....	28
Table 10.	Other harms at three month follow-up .....	30
Table 11.	Methamphetamine use at twelve month follow-up.....	35
Table 12.	Other drug use at twelve month follow-up.....	35
Table 13.	Psychotic symptoms and hostility at twelve month follow-up.....	36
Table 14.	Other harms at twelve month follow-up .....	38
Table 15.	Psychiatric comorbidity at twelve month follow-up.....	39
Table 16.	Relationship between demographics and drug use at baseline, and abstinence at three and twelve month follow-up .....	43
Table 17.	Relationship between treatment exposure and abstinence at three and twelve month follow-up.....	44
Table 18.	Relationship between psychiatric comorbidity at baseline and abstinence at three and twelve month follow-up.....	45
Table A1.	Demographic characteristics at baseline for participants lost to follow-up at three and twelve months .....	70
Table A2.	Drug use at baseline for participants lost to follow-up at three and twelve months.....	73
Table A3.	Psychiatric comorbidity at baseline by participants lost to follow-up at three and twelve months.....	74

## Acknowledgements

This research was funded by the Australian Government Department of Health and Ageing. It is part of a larger project, the Methamphetamine Treatment Evaluation Study (MATES), which is funded by the National Health and Medical Research Council. We wish to acknowledge the investigators on the MATES project: Dr Rebecca McKetin, Professor Richard Mattick, Professor Robert Ali, Dr Joanne Ross, Dr Dan Lubman, Professor Sharon Dawe, Dr Amanda Baker, Dr Nicole Lee and Professor Jake Najman. We would like to acknowledge and thank our colleagues at NDARC with whom we have closely collaborated throughout the duration of the study, particularly Kate Hetherington, Grace Ho, Erin Kelly, Cathie Sammut, Sagari Sarkar, Rachel Sutherland and Miriam Wynzenbeek. In Brisbane, thanks particularly go to Sue Conrad, Andrew Conroy, Jane Fischer, Clinton Kempnich, Stuart Kinner, Belinda Lloyd, Fairlie McIlwraith and Meg Richardson for their assistance, support and advice throughout the duration of the project.

Many thanks to staff at Brisbane and Gold Coast participating treatment agencies for their assistance with participant recruitment. Participating agencies were: Biala Acute Care Service (BACS), Biala Community Team, Chermside Community Team, Drug Arm, Fairhaven, Goldbridge, Inala Alcohol and Drug Service, Indooroopilly Hot House, Logan-Beaudesert ATODS, Logan House, Mirikai, Moonyah Detoxification Unit, Ozcare Illicit Drug Detoxification Service, Pine Rivers Community Team, and QuIHN (Brisbane and Gold Coast teams).

Finally we would like to acknowledge and extend our thanks to the all the individuals who participated in the study and who shared their stories with us.

The logo for NDARC (National Drug and Alcohol Research Centre) is displayed in a large, white, sans-serif font. The letters are bold and spaced out, with the 'N' and 'D' being particularly prominent. The logo is centered horizontally and partially overlaid by a faint, light gray silhouette of a kangaroo's head and neck, which is a common symbol for NDARC.

## EXECUTIVE SUMMARY

### Background and aims

Australia has a substantial population of problematic stimulant users, namely dependent, injecting, methamphetamine users. Methamphetamine dependence is associated with serious mental and physical health consequences that include psychological morbidity, methamphetamine-induced psychosis, increased risk of stroke, insomnia, malnutrition, and the risks of blood-borne virus transmission. Over 15,000 Australians present to drug treatment services with methamphetamine use problems each year, and there is concern about the number of dependent users presenting with psychiatric problems like psychosis and depression. Knowledge about people presenting to treatment for methamphetamine and whether treatment is effective is currently limited.

The aims of the current study were to examine:

- (i) the characteristics of those entering treatment for methamphetamine dependence, in terms of drug use, criminal involvement, general health functioning, and contact with health services and the criminal justice system;
- (ii) rates of psychiatric disorders (i.e., Major Depression, Social Phobia, Panic Disorder, Agoraphobia) and psychotic symptoms among people seeking treatment for methamphetamine dependence;
- (iii) treatment outcomes at three and 12 months post-treatment, including changes in drug use, psychiatric morbidity, general health, criminal involvement and HIV risk behaviour; and
- (iv) predictors of positive treatment outcomes and whether psychiatric disorders impact on treatment outcomes.

This study forms part of the Methamphetamine Treatment Evaluation Study (MATES), the first longitudinal treatment cohort study of dependent methamphetamine users in Australia. MATES is coordinated by the National Drug and Alcohol Research Centre (NDARC), with a second study site in Brisbane, which was conducted in collaboration with the Queensland Alcohol and Drug Research and Education Centre (QADREC). This report documents the findings from the Brisbane arm of the study.

### Method

Methamphetamine treatment entrants (N = 100) were recruited from 15 government and non-government drug treatment services in Brisbane (n = 11) and on the Gold Coast (n = 4). Treatment modalities included in the study were withdrawal management (inpatient and outpatient), residential rehabilitation and counselling. Participants were required to meet the following criteria for inclusion in the study: (i) having entered treatment with methamphetamine (or amphetamine) as the primary or secondary drug of concern; (ii) no meth/amphetamine treatment in the month before treatment; (iii) no inpatient drug treatment in the month before treatment; (iv) no incarceration in the month before treatment; (v) fluency in English; (vi) being aged at least 16 years; and (vii) a willingness to provide contact details for follow-up at three and 12 months. All participants were

volunteers who provided informed consent prior to completing a structured face-to-face interview with the project researcher at baseline.

Methamphetamine treatment entrants were interviewed on entry to treatment (baseline) and at three and 12 months post-treatment entry. A structured interview was used to assess demographics, drug use and psychiatric status. Participants were volunteers who completed informed consent and were reimbursed \$30 per interview. Baseline interviews took approximately 1.5 hours and were conducted face-to-face, while follow-up interviews were conducted either face-to-face or by phone and took around one hour to complete.

Baseline measures included: demographics; mental health history; drug use history; methamphetamine use and other drug use in the month before treatment; a past year DSM-IV diagnosis of Major Depression, Social Phobia and Panic Disorder (with or without Agoraphobia); lifetime psychosis; current symptoms of psychosis and hostility; HIV risk-taking behaviour; and crime.

The three month follow-up interview re-assessed methamphetamine and other drug use, symptoms of psychosis and hostility, HIV risk-taking behaviour and crime. The 12 month interview re-assessed these same variables, and also re-assessed past year DSM-IV diagnoses of Major Depression, Social Phobia and Panic Disorder (with or without Agoraphobia). Lifetime DSM-IV diagnoses of Schizophrenia and Mania were assessed at three and 12 month interviews respectively.

Methamphetamine outcome measures were assessed using the Opiate Treatment Index. DSM-IV diagnoses of Axis I psychiatric disorders were assessed using the Composite International Diagnostic Interview. Substance-Induced disorders were defined as those disorders where the symptoms were always the result of medication or substance use. Lifetime psychosis was assessed using Jablensky's Psychosis Screen. Current symptoms of psychosis and hostility were assessed using the Brief Psychiatric Rating Scale.

Descriptive comparisons at each time point were undertaken using the Kruskal-Wallis tests for continuous variables and Pearson's Chi-Square tests for categorical variables. Pair-wise comparisons were made between measures at each respective follow-up interview and baseline using the Wilcoxon test for continuous variables, the McNemar test for dichotomous variables, and the Marginal Homogeneity test for multinomial categorical variables.

## **Results**

### *Characteristics of the sample at baseline*

Participants were enrolled in residential rehabilitation (n = 55), withdrawal management (n = 29) or counselling (n = 16). They tended to be male (72%), single (71%) and in their late twenties (median age 27). Most were unemployed (86%), and they were mainly living with non-related adults (33%) in rental accommodation (44%), or with their parents (24%) or partners (23%). The majority had been previously diagnosed with a

mental health problem, most commonly depression or anxiety. Twenty-six per cent had been to prison and 69% had an arrest history.

Participants had long histories of drug use. They first became intoxicated at around 13 years of age (typically with alcohol or cannabis) and they had used a median of 10 drug classes in their lifetime (including methamphetamine). Their first methamphetamine use occurred when they were about 17 years old, and most (80%) began injecting it, at around 18 years of age. The onset of dependence occurred at a median age of 20 years and, at the time of recruitment to the study, participants had been using methamphetamine for a median of 10 years.

All participants met DSM-IV criteria for methamphetamine dependence in the past year. Participants were typically injecting base (41%) or crystal (46%) methamphetamine twice per day, and they had used on a median of 16 days in the past month. Polydrug use was common, with notably high levels of tobacco, cannabis and alcohol consumption. Use of ecstasy and benzodiazepines, although common, was less frequent.

#### *Prevalence of DSM-IV Disorders*

Major Depression: the prevalence of Major Depression was 44%. A further 45% had Substance-Induced Major Depression. Suicidal ideation was common and one in five had attempted suicide in the past year.

Social Phobia: the prevalence of Social Phobia was 31% in the past year. A further 22% had Substance-Induced Social Phobia during this time.

Panic Disorder (with or without Agoraphobia): 31% met DSM-IV criteria for Panic Disorder in the past year, of whom 58% had symptoms of Agoraphobia. Ten percent had Substance-Induced Panic Disorder in the past year.

#### *Psychosis and hostility*

Lifetime psychosis: most treatment entrants had experienced an episode of psychosis in their lifetime (83%), irrespective of whether they had been previously diagnosed with a chronic psychotic disorder (i.e., Mania, Bipolar Disorder, Schizophrenia or Schizoaffective Disorder, 100% vs. 78%).

Past month symptoms of psychosis: almost half the sample (47%) had experienced a clinically significant symptom of either suspiciousness, unusual thought content or hallucinations in the month before treatment. Twenty-nine per cent reported clinically significant suspiciousness, 27% reported clinically significant unusual thought content (i.e., delusions), and 23% reported clinically significant hallucinations.

Hostility: three quarters of the sample reported clinically significant levels of hostility in the month before treatment.

## Treatment outcomes

Follow-up rates were similar to other major international treatment outcome studies: 81% of participants were followed up at three months and 75% were followed up at 12 months post-treatment entry. Treatment outcomes at both time points were very positive despite participants' pre-treatment drug use levels, psychiatric comorbidity, criminal involvement, and HIV risk behaviour.

### *Methamphetamine and other drug use*

There were marked reductions in all measures of methamphetamine use at both three and 12 month follow-up in comparison with pre-treatment levels. There were no increases in polydrug use at follow-up. There were reductions in the use of most illicit drugs, but the use of licit drugs did not decrease.

Abstinence from methamphetamine: 61% of the sample was abstinent from methamphetamine at three month follow-up (cf. 2% at baseline,  $p < 0.001$ ). Abstinence levels were sustained at 12 month follow-up (61%,  $p < 0.001$ ).

Dependence on methamphetamine: 26% of participants met DSM-IV criteria for methamphetamine dependence at three month follow-up (cf. 100% at baseline,  $p < 0.001$ ), with the proportion remaining low at 12 month follow-up (29%,  $p < 0.001$ ).

### *Psychiatric comorbidity*

Overall, there was a drop in the proportion of the sample who met criteria for the comorbid psychiatric disorders (including Substance-Induced disorders) measured in this study.

Major Depression: while the prevalence of Major Depression was the same as baseline at 12 month follow-up (44%), there was a significant decrease in the prevalence of Substance-Induced Major Depression (16% cf. 47% at baseline,  $p < 0.001$ ).

Social Phobia: significant reductions in the prevalence of Social Phobia were found at 12 month follow-up compared to baseline (9% cf. 33% at baseline,  $p < 0.001$ ). The prevalence of Substance-Induced Social Phobia also decreased (5% cf. 27%,  $p = 0.001$ ).

Panic Disorder: there were non-significant trends toward reductions in the prevalence of Panic Disorder and Substance-Induced Panic Disorder at 12 month follow-up compared to baseline (20% cf. 32% and 5% cf. 12% respectively). Conversely, there was a significant increase in the proportion of participants who did not meet criteria for either Panic Disorder or Substance-Induced Panic Disorder at 12 month follow-up (56% cf. 75%,  $p = 0.014$ ).

### *Psychosis and hostility*

Symptoms of psychosis and hostility decreased significantly at both three and 12 month follow-up in comparison with pre-treatment levels. The proportion reporting any clinically significant symptom of suspiciousness, unusual thought content or hallucinations decreased to 23% at three month follow-up and 19% at 12 month follow-

up (cf. 47% at baseline  $p < 0.01$ ). The prevalence of past month hostility reduced significantly to 40% at three months, and 41% at 12 months (cf. 75% at baseline,  $p < 0.001$ ).

### **Conclusion**

The current study found that methamphetamine treatment entrants respond very well to treatment that is already being provided in the general community. Participants showed considerable reductions in drug use and the majority had ceased methamphetamine use altogether by their final follow-up. Nonetheless, this sample had extraordinary levels of psychiatric comorbidity at baseline, with clinical levels of depression and symptoms of psychosis being prevalent among the group. Although substance-induced psychiatric symptoms abated by the end of the study, a significant proportion was still experiencing comorbidity, particularly Major Depression, suggesting that supplementary treatment for comorbidity is required to maximise longer-term treatment outcomes.

