Drug & Alcohol Services South Australia

Management of Methamphetamine Psychosis

Stage 2: Acute Care Interventions for the Treatment of
Methamphetamine Psychosis &
Assertive Community Care for the Post-discharge
Treatment of Methamphetamine Psychosis

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

This report presents the findings of the Acute Care and the Assertive Community Care Trials which are part of the Methamphetamine Research Program currently being undertaken by Drug and Alcohol Services South Australia (DASSA). The impetus for an investigation into methamphetamine-induced psychosis in South Australia arose from discussions held during a meeting of World Health Organisation (WHO) international experts in Bangkok in November 1999. A consensus was reached at this meeting that a priority area for study should be the nature and clinical management of methamphetamine-induced psychotic disorders.

The Acute Care project was Part I of a study investigating treatment options for methamphetamine-induced psychosis in South Australia. This project built upon the work that was undertaken in Stage I (conducted in 2000 to 2002). Stage 1 was a multi-site World Health Organization Study conducted in Australia, Japan, Thailand and the Philippines. The Australian arm of this study clarified the nature of the methamphetamine-induced psychosis problem in South Australia, explored the characteristics of individuals presenting with the condition to acute care facilities (including their concomitant drug and alcohol and other psychiatric diagnoses), and provided the first indications of the true scope of the problem in South Australia. This study also indicated that there would be sufficient numbers of patients with methamphetamine psychosis eligible for recruitment into future research projects including the current research.

The Acute Care project sought to examine the optimum approach to the acute management of persons experiencing methamphetamine-induced psychosis. It consisted of a randomised controlled trial which examined the relative efficacy of an oral benzodiazepine (clonazepam) alone, compared with an oral atypical antipsychotic (olanzapine) in combination with adjunctive benzodiazepine treatment as medication for the acute treatment of methamphetamine-induced psychosis.

Unexpectedly low numbers of eligible patients were recruited into the Acute Care Trial (Phase I). The challenges faced by emergency department clinicians when attending to patients presenting with an acute psychosis was an important factor which contributed to the low recruitment. It is extremely difficult for clinicians to apply accepted diagnostic criteria in the acute setting in order to determine if the psychosis is methamphetamine-induced or caused by another illness, the latter rendering the patient ineligible for inclusion in the study. Despite intensive efforts to address the recruitment problem, including locating project staff within the emergency departments of some of the hospitals included in the study, the decision was made to redesign the project to include a review of staff perceptions of methamphetamine-induced psychosis, a case note review of thirteen consecutive patients admitted for this disorder, a three months prevalence study conducted at the Royal Adelaide Hospital (RAH) and an analysis of reasons for such low recruitment numbers. A number of patients were reported to be presenting with co-morbid mental health problems with many being poly-drug users/abusers, many are typically experiencing their first psychotic episode with less than a quarter of patients being repeat presentations. The prevalence study, as with the casenote review, identified that there is an inconsistent approach to the medical management of methamphetamine-induced psychosis.

The Assertive Community Care project was Phase II of a study investigating treatment options for methamphetamine-induced psychosis in South Australia. This study used assertive follow-up techniques (to enhance patient retention in treatment) combined with a coordinated care approach wherein a case manager facilitated the patients' access to treatment services, as the individual patients' needs required. Interviews were conducted at baseline (while hospitalised), and 3 months and 6 months post-discharge (where possible) to compare client outcomes with those participants allocated to the control treatment arm, consisting of routine hospital post-discharge care.

Of the nineteen study participants, twelve were allocated to the case management arm and seven to the control treatment arm and participants in both treatment arms reduced their methamphetamine use at 6-month follow-up. However, due to the low number of participants at follow-up it was not possible to determine the factors likely to be responsible for reduction in use. Case managed clients reported how the experience of being admitted to hospital, and in particular to a closed psychiatric ward, was a deterrent to their future methamphetamine use. Other explanations for reductions in use may be due to their current financial situation, their desire to stop using drugs or a realisation of the problems that have been caused by drug use. Some participants expressed at follow-up that they had changed their social networks.

Methamphetamine-induced psychosis remains a major problem in South Australian hospitals as indicated by the number of presentations and experiences of clinical staff treating these patients, a large proportion of whom also have co-morbid mental health problems. Whilst the medical management of patients with methamphetamine-induced psychosis appears to be inconsistent, clinical staff are keen to address these issues.

Due to the high levels of anxiety and depression amongst the participants in this study an extension of this project could include a cognitive behaviour therapy (CBT) treatment option and an antidepressant treatment option. Further research may also be required to determine the role of the social environment in a person's drug use and whether assertive community care can help clients to find alternative social networks.

Future research projects around methamphetamine induced psychosis must take into account the difficulties faced in both recruitment and follow-up and realistic goals should be established when such projects are planned.

SECTION 1 INTRODUCTION

1.1 Background

The impetus for an investigation into methamphetamine-induced psychosis in South Australia arose from discussions held during a meeting of World Health Organisation (WHO) international experts in Bangkok in November 1999. A consensus was reached at this meeting that a priority area for study should be the nature and clinical management of methamphetamine-induced psychosis.

Methamphetamine use is an increasing problem in Australia, particularly among young people. A survey undertaken in 2004 showed that 4.4% of persons aged 14-19 years and 10.7% of those aged between 20-29 years reported recent use (last 12 months) of amphetamines/methamphetamines (Australian Institute of Health and Welfare, (AIHW) 2005). Amphetamine-type stimulants (ATS), principally methamphetamines, are the second most common illicit drugs, after cannabis, used in Australia. There has been a steady increase in rates of lifetime and recent use of amphetamines/ methamphetamines since 1988. Furthermore, poly-drug use is widespread among methamphetamine users, and there is a high level of intravenous injecting. Users report significant levels of physical, psychological and social harms related to their methamphetamine use and coexisting psychiatric disorders, including dependence, are common. Recently it has been reported that there are 73,000 dependent methamphetamine users in Australia. (McKetin et al., 2005). The increasing availability and use of more potent forms of methamphetamine has been observed in recent years, and is of considerable public health concern (Longo et al., 2002).

Of particular concern is the risk of acquiring blood borne virus infections through intravenous injecting. While the prevalence of HIV is low among injecting drug users generally, hepatitis C (HCV) is widespread. Although the prevalence of HCV is significantly greater among heroin users than injecting methamphetamine users, many users engage in polydrug use, and thus the risk of infection remains very high for injecting methamphetamine users who do not adhere to safe injecting practices (Longo et al., 2002).

There is a generally accepted view among clinicians who come into contact with patients with acute methamphetamine-induced psychosis that the extent of the problem is increasing in South Australia. There are severe health and behavioural consequences for those individuals afflicted with methamphetamine psychosis. There are also considerable demands and pressures placed on the families of the affected individual and on the health care system in managing the acute care situation. In the year 2003-2004 there were 3,190 hospital episodes of care in Australia for mental and behavioural disorders due to stimulant use and around half of these were for psychosis (McKetin et al., 2005). Despite this, our previous research has shown that the disease classification and data monitoring procedures in place in the South Australian hospital system make it difficult to accurately gauge the true number of presentations for this condition (Morefield et al., 2004). Up to 3% of psychiatric unit discharges in South Australia (i.e. around 120 cases per year) may be related to methamphetamine-induced psychosis. However, it is difficult to know the true extent of the problem, because additional cases could be added to account for acute hospital admissions that did not result in subsequent psychiatric admission and formal diagnosis. Also prevalence of substance abuse and poly-drug use among mental health patients is common. A further unknown but substantial proportion of cases remain unidentified due to the patient absconding from accident and emergency departments, or remaining untreated in the community (Morefield et al., 2004)

Another issue that has emerged is that while the acute care system is generally successful in dealing with the acute crisis of methamphetamine-induced psychosis, the treatment approaches used are not consistent or universally agreed upon. The principal types of medication used to deal with acute presentations of psychosis (i.e. antipsychotics and tranquillisers, principally benzodiazepines) have been in widespread use for some time, but the indications for one type of agent over another in a given situation are not always clear or widely agreed upon among clinicians. In addition, it appears that patients' who have presented with methamphetamine-induced psychosis do not always have their drug and alcohol dependence issues fully dealt with, and after-care is not optimised to prevent relapse to methamphetamine use and possible further episodes of psychosis (Morefield et al., 2004). Furthermore, there are indications from previous research that depressive symptoms may commonly be present among dependent methamphetamine

users, and there may be a need to address these symptoms, as well as drug and alcohol use, following resolution of psychotic symptoms, in order to reduce the risk of relapse to use. Stage I of the research program indicated that quite often, treatment for drug abuse and dependence among these patients is lacking or is poorly integrated with the management of their psychosis, and the post-discharge follow-up of these patients is lacking (Morefield et al., 2004).

1.2 Significance of Study

This project builds upon the work that was undertaken in Stage I (conducted in 2000 to 2002), which clarified the nature of the methamphetamine-induced psychosis problem in South Australia, explored the characteristics of individuals presenting with the condition to acute care facilities (including their concomitant drug and alcohol and other psychiatric diagnoses), and provided the first indications of the true scope of the problem in South Australia. This earlier research was an integral part of a larger WHO-sponsored multi-site study, which verified that psychosis caused by methamphetamine abuse is a significant public health problem for countries in the Asia-Pacific region, and that there is an urgent need for developing integrated and evidence-based approaches to the treatment of the condition.

Indeed, there is a lack of reliable research information worldwide concerning methamphetamine-induced psychosis, its nature and sequelae, and appropriate management of the acute psychosis and after-care. While there is a considerable body of knowledge on the acute treatment of psychosis, little has been done to formally evaluate how well the standard treatment approaches apply to methamphetamine-induced psychosis in particular, and how such treatment might impact upon subsequent progression of drug using behaviour and the presence of psychiatric diagnoses relating to drug dependence and depression.

Morefield et al., (2004) published the South Australian results of Stage 1 of the Methamphetamine Research Program which was conducted as part of a World Health Organisation (WHO)-sponsored multi-site project on methamphetamine psychosis in conjunction with collaborating centres in Japan, the Philippines and Thailand. All of these countries, including Australia, have exhibited a high prevalence of methamphetamine abuse, and increasing problems of methamphetamine-induced psychosis.

Fifty inpatients with methamphetamine-induced psychosis were interviewed in psychiatric wards across the Adelaide metropolitan area. Information was also gathered from a twelve-month retrospective case note review of all patients discharged from participating institutions between 1 July 2000 and 30 June 2001 with a diagnosis of psychosis. The treatment review and retrospective case note review found that a wide range of medications were used to treat patients with methamphetamine-induced psychosis. A large majority of these patients were treated with antipsychotic medication during their hospitalisation and nearly all were also treated with benzodiazepines. The results also highlighted an inconsistent approach to the medical treatment of patients who present with this condition (Morefield et al., 2004)

As a result of the Stage I findings, the current project was proposed to examine the optimum approach to the acute medical management of methamphetamine-induced psychosis, as Phase 1 of a two-phase investigation of treatments for this disorder, with Phase 2 involving the post-discharge assertive community care of patients admitted to hospital with methamphetamine psychosis.

Stage I of the methamphetamine psychosis in SA found that there were varying approaches to the acute treatment of methamphetamine psychosis, and that while these might be effective in the acute care situation to varying degrees, they were not informed by an evidence-base on the relative efficacy of the different approaches (Morefield et al., 2004). A Cochrane review of treatments for methamphetamine-induced disorders showed that there have been no published randomised controlled trials of treatment for methamphetamine-induced psychosis (Srisurapanont, Kittiratanapaiboon & Jarusuraisin, 2004). This situation, in combination with indications of increasing prevalence, the disorder's severe and debilitating consequences, and indications that a similar picture is emerging for other countries in the region and beyond, highlight the importance of developing evidence-based approaches to the acute management of methamphetamine-induced psychosis.

1.3 Phase 1: Study Aims

This project sought to examine the optimum approach to the acute management of persons experiencing methamphetamine-induced psychosis. It consisted of a randomised controlled trial which examined the relative efficacy of an oral benzodiazepine (clonazepam) alone, compared with an oral atypical antipsychotic (olanzapine) in combination with adjunctive benzodiazepine treatment as medication for the acute treatment of methamphetamine-induced psychosis.

The major objectives were to:

- Investigate the relative impact of a benzodiazepine (clonazepam) and an atypical antipsychotic combined with adjunctive benzodiazepine treatment (olanzapine + clonazepam) on the severity and duration of psychotic symptoms among patients with acute methamphetamine-induced psychosis.
- Explore the relative impact of a benzodiazepine (clonazepam) compared to an atypical antipsychotic combined with adjunctive benzodiazepine treatment (olanzapine + clonazepam) on the severity of craving for methamphetamine and the severity and duration of both depressive and methamphetamine withdrawal symptoms among patients treated for acute methamphetamine-induced psychosis.

1.4 Hypotheses

Based on literature and theory, as well as the clinical experience of investigators involved in the proposed research, a number of specific hypotheses were of interest and considered amenable to exploration.

- Clonazepam will reduce the severity and duration of psychotic symptoms as effectively as treatment with olanzapine combined with adjunctive clonazepam in the management of acute presentations of methamphetamine-induced psychosis.
- Patients receiving clonazepam will report lower levels of craving for methamphetamine than will those receiving a combination of olanzapine and clonazepam.
- Clonazepam will not adversely affect the severity or duration of depressive symptoms reported by patients with acute methamphetamine-induced psychosis, whereas olanzapine (used in combination with clonazepam) may worsen depressive symptomatology.

1.5 Phase 2: Study Aims

This research sought to investigate the efficacy of an Assertive Community Care Program, compared to regular hospital discharge care, as treatment for patients who have been discharged from hospital following an episode of methamphetamine-induced psychosis. The objectives of this research centred on four main areas of harm experienced by persons with methamphetamine psychosis.

The major aims were to:

- To investigate the relative impact of an assertive community care program with routine outpatient care on the prevalence and severity of psychiatric symptomatology (including psychotic, depressive and anxiety-related symptoms).
- To investigate the relative impact of an assertive community care program with routine outpatient care on the severity of individuals' abuse of or dependence on methamphetamine.
- To investigate the relative impact of an assertive community care program with routine outpatient care on the incidence of blood-borne virus risk taking behaviour.
- To investigate the relative impact of an assertive community care program with routine outpatient care on health and social functioning.

SECTION 2 LITERATURE REVIEW

2.1 Methamphetamine

Methamphetamine belongs to the psychostimulant class of drugs. The primary targets of psychostimulants are neurons containing the neurotransmitters dopamine, noradrenaline and serotonin. These neurons are involved in mediating a wide range of physiological and homeostatic functions (Dean 2004). 'Amphetamine' is used to denote the sulphate of amphetamine which, throughout the 1980's, was the form of illicit amphetamine most available in Australia. As a result of the legislative controls introduced in the 1990s on the distribution of the main precursor chemicals of amphetamine sulphate, illicit manufacturers were forced to rely on other ways to manufacture the drug (Stafford et al., 2005). Methamphetamine is prepared from precursor chemicals like ephedrine and pseudoephedrine (Cho & Melega, 2002) and is now the dominant drug on the market, compared with amphetamine sulphate. Although closely chemically related to amphetamine, it has been suggested that methamphetamine has more pronounced central nervous system effects (Iwanami et al., 1994).

The effects of amphetamines include increased wakefulness, alertness, increased energy, reduced hunger and an overall feeling of wellbeing or euphoria (Brands et al., 1998), and have been employed for various therapeutic purposes, such as the treatment of narcolepsy and asthma (as a bronchodilator), attention deficit hyperactivity disorder, obesity and depressive disorders. However, the effects produced by the drug are dependent on the dose, the characteristics of the individual and the route of drug administration. Chronic use of methamphetamine can result in drug dependence and a variety of psychological consequences including depression, paranoia, sleep problems, anxiety, panic attacks, mood swings, and psychosis (Domier et al., 2000; Vincent et al., 1998; Iwanami et al., 1994). Users' physical health may also be affected. A local sample of 100 amphetamine users was found to have significantly poorer health on average than the general South Australian population (Vincent et al., 1998). Amphetamine consumption can also result in violent or aggressive behaviour (Asnis et al., 1978; Vincent et al., 1998; Wright & Klee, 2001).

2.1.1 *Pharmacology and neurobiological actions of methamphetamine*

The amphetamine-type stimulants include amphetamine itself, dexamphetamine and methamphetamine amongst others (Holman, 1994). Related compounds such as methylphenidate, methylenedioxymethamphetamine (MDMA, or ecstasy) and methylenedioxyamphetamine (MDA) have amphetamine-like activity (Brands et al.,1998; Gowing et al., 2001).

Methamphetamine, the focus of the present research, is an indirectly acting sympathomimetic drug that primarily increases the actions of dopamine, noradrenaline and serotonin in the central nervous system and the actions of noradrenaline in the peripheral sympathetic nervous system (Cho & Melega, 2002). Methamphetamine blocks the reuptake and increases the direct release of dopamine from newly synthesised pools in the pres-synaptic neurone, increases the release and blocks the reuptake of noradrenaline, but in general has a lesser effect on serotonin (King & Ellinwood, 1997).

The mood changes associated with methamphetamine use may be due to its action on the dopamine neurons in the mesolimbic area. Similar actions on the mesocortical dopamine neurons are likely to mediate methamphetamine's effects on judgement and insight. The increased arousal associated with methamphetamine use is likely to result from the increased activity of noradrenaline neurons in the reticular-activating system (Miller, 1991). The potential for abuse of methamphetamine is thought to be primarily due to its euphorigenic effects and its psychomotor stimulating properties (King & Ellinwood, 1997).

2.1.2 *Physiological effects of methamphetamine*

Methamphetamine use produces a number of effects including wakefulness, alertness, increased energy, reduced hunger and an overall feeling of wellbeing or euphoria (Brands et al., 1998). However, chronic use of methamphetamine can result in the development of dependency and a variety of psychological consequences, such as depression, paranoia, hallucinations (Domier et al., 2000), sleep problems, anxiety, panic attacks (Williamson et al., 1997), mood swings (Vincent et al., 1998) and the more extreme adverse psychological consequences can include psychosis (Davis & Schlemmer, 1980). Adverse behavioural consequences of amphetamine consumption can

also include violent or aggressive behaviour (Asnis et al., 1978; Vincent et al., 1998; Wright & Klee, 2001).

Dependent amphetamine users have been found to have cognitive impairments and a reduction in D2 receptor availability in the orbitofrontal cortex, a region where disruption is associated with obsessive and compulsive behaviours (e.g., McKetin & Mattick, 1997; Volkow et al., 2001; Simon et al., 2002). Amphetamines can also have undesirable effects on the users' physical health. Vincent and colleagues (1998) found that a sample of 100 amphetamine users in South Australia had significantly poorer health on average than the general South Australian population.

Although amphetamine-type stimulants have been found to be effective in treating certain disorders such as narcolepsy, obesity and depressive disorders, they have generally been found to be of limited value due to the serious consequences of chronic use including tolerance, dependence, sleep disorders and psychological disturbances (Brands et al., 1998). Students and long distance truck drivers have also been known to use amphetamines in order to stay awake for long periods (Kaplan et al., 1994).

2.1.3 Routes of methamphetamine administration

Methamphetamine can be administered orally (by swallowing or rubbing on gums), nasally (snorted), intravenously (injected), or smoked. The intensity and timing of the methamphetamine "rush", which results primarily from the release of high levels of dopamine in the brain, depends in part on the route of administration employed. Injecting or smoking methamphetamine results in an almost immediate effect as the nerve cells are exposed to a high concentration of the drug. Smoking as a route of administration allows a very rapid onset of drug action, comparable to intravenous injection, without the injection-related risks (Brands et al., 1998). The effects from snorting methamphetamine occur approximately five minutes after administration and are less intense than smoking or injecting the drug. The effects of oral methamphetamine usually occur within 30 minutes and are less intense than the effects generated by other methods of administration (Burrows et al., 1993; Anglin et al., 2000).

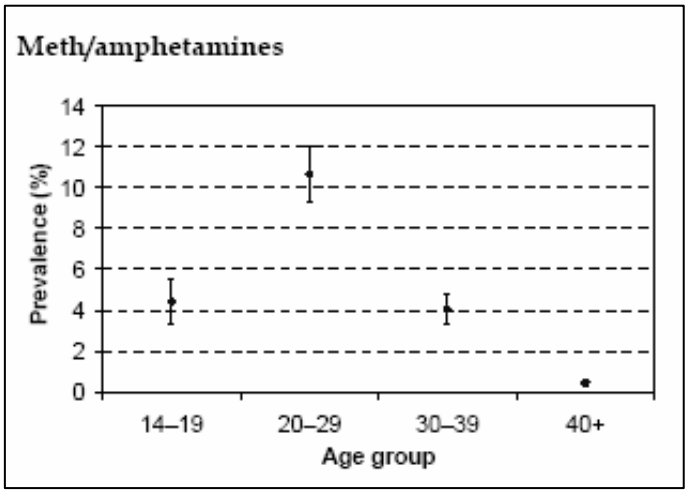
2.1.4 Methamphetamine abuse and dependence

Dopamine (DA) is the neurotransmitter most directly implicated in the positive reinforcing effects of drugs of abuse, including methamphetamine. Two behaviour-modulating factors contribute to the development of dependence – reinforcement and neuroadaptation (Roberts & Koob, 1997). The neuroadaptation that occurs with continued methamphetamine use reflects users' bodies' attempts to maintain or re-establish homeostasis. The measurable withdrawal symptoms experienced by methamphetamine users occur as a result of neuroadaptation, and users may be motivated to readminister methamphetamine to avoid or relieve withdrawal symptoms (Srisurapanont et al., 1999a; 1999b; Topp & Mattick, 1997). Reduced dopamine levels are also associated with depression (Chesher, 1993), and depressive symptomatology is known to follow chronic methamphetamine use (Anthenelli & Schuckit, 1993; Chesher, 1993; Vincent et al., 1999). Chronic, high dose methamphetamine use is also known to be neurotoxic to dopaminergic cells (Nestler, 1998).

2.2 Methamphetamine use in Australia

The 2004 National Drug Strategy Household Survey (AIHW, 2005a), in which almost 30,000 Australians participated, indicated that nearly one in ten Australians aged 14 years and over had ever used amphetamine/methamphetamine and 3% had recently used (in last 12 months). In the 20-29 age group, this figure was considerably higher with 24.3% reporting that they had ever tried amphetamines, with males (21.1%) and females (17.9%) indicating similar rates of lifetime use. Figure 2.1 shows prevalence of recent use of methamphetamines across age groups, with the highest rates of use for those in the 20-29 year age group. There was no significant difference between the rates of people having used amphetamines in the 12 months prior to interview between 1998 (3.7%), 2001 (3.4%) and 2004 (3.2%). The National Drug Strategy Household Survey also reports that amphetamines are the second most widely used illicit drugs in Australia after cannabis.

Figure 2.1 *Prevalence of recent (in past 12 months) methamphetamine use by age group in Australia reported in the 2004 National Drug Strategy Household Survey (AIHW, 2005a).*



(Reproduced with permission, AIHW, October 2006)

However, there are data which indicate an increase in the prevalence of methamphetamine use in certain groups. The Australian Drug Trends report of the 2001 Illicit Drug Reporting System (IDRS) results (Topp et al., 2002) indicated that both the prevalence and frequency of methamphetamine use increased between 2000 and 2001. In 2004, the IDRS indicated that 74% of the national injecting drug users (IDU) sample reported using a form of methamphetamine (powder, base or crystal) in the past 6 months and this is similar to that reported in previous years (75% in 2003, 73% in 2002 and 76% in 2001). The national sample also reported 22 median days of methamphetamine being used in the past 6 months, reflecting almost weekly use (Stafford et al., 2005). In South Australia the median days used in the past 6 months was slightly higher (24 days), however, this is almost half of the median days used reported in previous years (48 days in 2003, 36 days in 2002, and 52 days in 2001).

The apparent conflict between the Australia-wide trends indicated by these different research programs reflects differences in sampling methods, data collection, and target populations. The National Drug Household Survey uses large household-based samples to produce estimates of the general Australian population's drug use patterns, attitudes and behaviours, whereas the IDRS focuses on monitoring the price, purity, availability and use patterns of the main drug classes (including methamphetamine), drawing from specific

populations which are highly involved with illicit drug issues. The IDRS reports a triangulation of data from interviews with injecting drug users, key experts (who by the nature of their work have regular contact with drug users), and other drug-related data sources.

More recently, McKetin et al., (2005) estimated that there are 73,000 dependent methamphetamine users in Australia, and suggested that there are a greater number of heavy methamphetamine users than there are heavy heroin users (estimated at 45,000 in 2002). This is supported by data obtained from The Australian Crime Commission (ACC) Illicit Drug Data Report for 2004-05. This report provides indirect indications that the use of methamphetamine is increasing in Australia. Detection of clandestine laboratories has continued to increase since 1996, with 380 detected in 2004/05. The ACC also reports that production techniques are likely to change according to the equipment and chemicals available and possibly include the decentralisation of production methods to minimise detection risk and this could lead to an increasing trend in domestic illicit drug manufacture by people in domestic homes (ACC, 2006).

Methamphetamine is readily synthesised in clandestine laboratories, albeit often imprecisely and with impurities (Moore et al., 1995). The process of manufacturing some forms of methamphetamine from pseudoephedrine is easy and rapid, though dangerous, and the equipment required for its manufacture readily transported, with none of the process dependent on season or climate (Australian Bureau of Criminal Intelligence, (ABCI) 2002). Demand for amphetamine-type stimulants within Australia appears to be increasing, with no reduction likely in the near future. In particular, there appears to be increasing demand for high purity crystal methamphetamine, which is readily available in Asia and likely to create an increase in attempted importation of this form of the drug (ACC, 2006).

2.2.1 Forms of methamphetamine used in Australia

During the 1980s, the kind of illicit amphetamine most available in Australia was amphetamine sulphate (Chesher, 1993). In Australia today, however, the amphetamine available is almost exclusively methamphetamine (Longo et al., 2002). It is probable that the predominance of methamphetamine in Australia's illicit drug market is due to the increased production of methamphetamine over

amphetamine sulphate. This is likely to have occurred as a consequence of the relative ease of availability of pseudophedrine, one of methamphetamine's precursor chemicals and the relatively short production cycle and higher yields produced by this method of amphetamine manufacture (ABCI, 2002).

In Australia, distinct forms of methamphetamine are available. These forms are referred to differently by different groups of users, but can be described as "powder methamphetamine", "point (non-powder) methamphetamine", "pills" and "ice". Powder methamphetamine (also often known as "speed", "goey" or "whiz") is the form of methamphetamine which has traditionally been available in Australia. It ranges in consistency from fine to more coarse powder, and its colour ranges from white to pink, yellow, orange or brown, with the colour varying according to the chemicals used in its manufacture, and the skill of the chemists ("cooks") who make it (Topp & Churchill, 2002). The IDRS indicates that powder methamphetamine is generally sold in grams, with prices (per gram) in Australia ranging from $50 in South Australia to $300 in the Australian Capital Territory (Breen et al., 2003). Point or non-powder methamphetamine (known as "base", "pure", or "paste", among other names) is a sticky, waxy or oily form of damp powder, paste or crystal, often of a yellow or brownish colour, and is generally sold in "points" (0.1 of a gram), for between $25 in South Australia and $50 in New South Wales (Breen et al., 2003). These forms of methamphetamine tend to be manufactured in Australia, rather than imported (Topp et al., 2002). The 2001 IDRS (Topp et al., 2002) found that point-form methamphetamine appeared to be increasing in availability, a change in Australia's illicit drug markets also noted by the ABCI (2002). The current predominance of point-form methamphetamine was reflected in the findings of the 2002 IDRS (Breen et al., 2003).

"Ice", or "shabu", or "crystal" is the imported crystalline form of methamphetamine. Of high purity, it is the form of methamphetamine most suited to smoking. Also sold in "points", ice reportedly costs $50 per point in most Australian jurisdictions (Breen et al., 2003) and its availability appears to have increased across Australia in recent years (Topp & Churchill, 2002), as has the prevalence of its use (Topp et al., 2002). "Ice" tends to be imported, rather than manufactured in Australia, as few illicit manufacturers in Australia have the expertise to produce this form of methamphetamine (Topp et al., 2002). Methamphetamine does not seem to be commonly used in pill or tablet

form in Australia, although it is known that some of the pills sold as ‘ecstasy’ in Australia are actually methamphetamine tablets (ABCI, 2003). The 2001 National Drug Household Survey (AIHW, 2002) indicated that 13.8% of the illicit amphetamines consumed were taken in tablet form.

According to the ABCI (2003), the purity of methamphetamine varies widely, for a number of reasons. The type and quality of the precursor chemicals, the expertise of the “cooks” who manufacture the product, the amount of added diluent or ‘cutting agent’, and whether the methamphetamine was produced in Australia or imported each impact on the resultant purity. Interpreting information gained from law enforcement sources on the purity of drugs including methamphetamine is difficult, since drugs can only be seized and tested if they are detected, and may only be analysed in a contested court matter (ABCI, 2003). Moreover, the different forms of the drug are not analysed separately. Forensically analysed seizures of methamphetamine in Australia revealed purity levels ranging from less than one percent to 99 percent in 2001/02, with a total median purity of 18 percent (ABCI, 2003). However, as the different forms of methamphetamine are aggregated in these analyses, we must therefore rely on drug users’ reports (which tend to be fairly consistent) of their relative purity (Topp & Churchill, 2002).

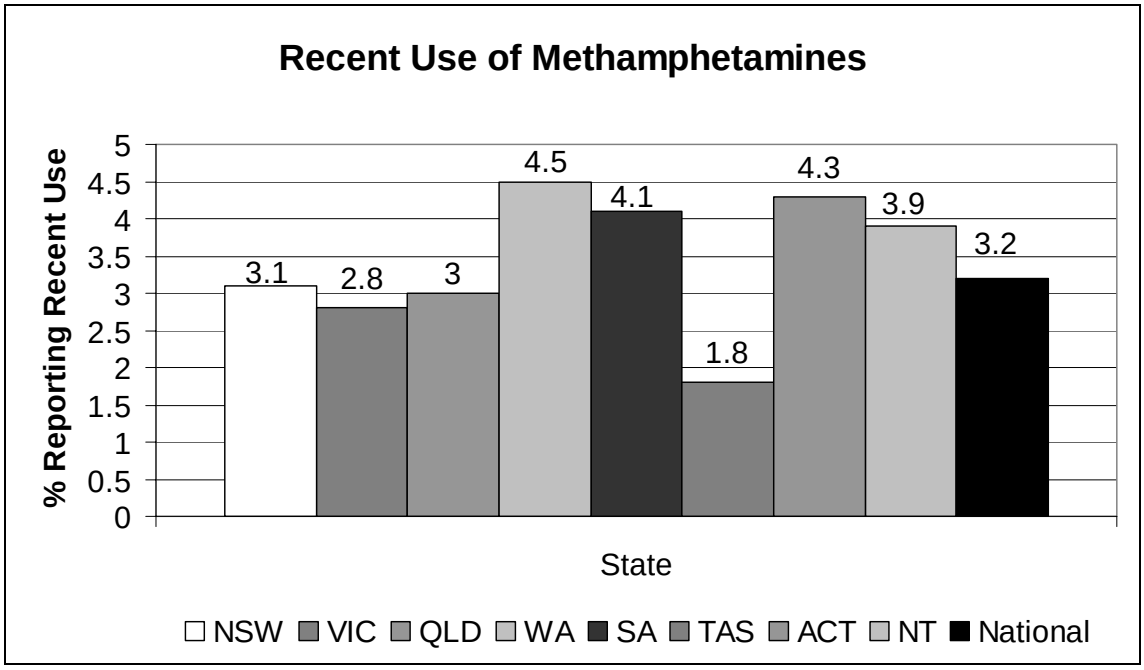
One of the inherent difficulties associated with research into illicit substances is the unknown quantity of psychoactive drug in “street deals”, and the types or quantities of adulterants that may be present in the substances that participants report using (Coomber, 1997). The ABCI (2002) indicates that “point” or “base” methamphetamine is the purest form of street methamphetamine available, containing little cutting agent. Powder methamphetamine, however, contains more diluent to increase the product’s bulk (Longo et al., 2002). Hence, one gram of the point form of methamphetamine is likely to contain a greater quantity of psychoactive substance (methamphetamine) than one gram of the powder methamphetamine.

2.2.2 Methamphetamine use in South Australia

Results from the 2004 National Drug Household Survey indicated that 4.1% of the South Australian population had recently used meth/amphetamine, within the past 12 months of the survey as shown in Figure 2.2 (AIHW, 2005b). This

is slightly lower than reported in the 2001 survey where 4.3% of South Australians reported recent meth/amphetamine use (AIHW, 2002b). The proportion of recent amphetamine users in South Australia is higher than that reported for the general Australian population (3.4%) (AIHW, 2002a), and the reported rate of recent amphetamine use in this state is in the mid-to-upper range of those reported for the other Australian states and territories (AIHW, 2002b).

Figure 2.2 *Recent methamphetamine use (in last 12 months) reported in the 2004 National Drug Strategy Household Survey by state (AIHW, 2005b).*



South Australia recorded the third highest (4.1%) percentage of participants reporting recent use after Western Australia (4.5%) and the Australian Capital Territory (4.3%).

The South Australian Illicit Drug Reporting System (Longo et al., 2003) provides considerable information regarding drug trends within South Australia. According to this study, methamphetamine is readily available and its use appears to have increased in recent years, particularly among young people. Recent use by the interviewed Injecting Drug Users (IDU) was much greater than that for heroin. This apparent prevalence of use is likely to be at least in part due to the relative cheapness of street supplies of the drug (Peters, Davies & Richardson, 1997). The price of both powder and non-powder forms of methamphetamine in South Australia was lower than that reported in other Australian jurisdictions (Breen et al., 2003).

2.3 Methamphetamine psychosis

Methamphetamine-induced psychosis may be defined as a transient drug-induced psychotic state that closely resembles the acute symptoms of paranoid schizophrenia and in most cases occurs after ingesting a large amount of methamphetamine. Young and Scoville (1938) were the first to report a link between psychosis and the usage of amphetamine-type stimulants, publishing a report of three individuals who had developed paranoid psychoses, including delusions of persecution and hallucinations, after being treated with benzedrine for narcolepsy, a condition that is seldom associated with psychosis.

Many other case histories and small studies have been subsequently published in this area. In 1958, Connell reviewed these studies prior to discussing the results of the first sizeable study of amphetamine psychosis, in which he described 42 patients who had come under his own observation. He found that the clinical picture is primarily a paranoid psychosis with ideas of reference, delusions of persecution, auditory and visual hallucinations, in a setting of clear consciousness and there are not necessarily any physical signs diagnostic of amphetamine intoxication. Other findings also included that patients with amphetamine psychosis tended to recover within a week and that there was a high recurrence rate, owing to relapse to the addiction which appears to be severe.

The results of another observational study were published in 1965 by Bell, who examined 14 patients thought to have amphetamine-induced psychosis, of which three were subsequently diagnosed with schizophrenia. It was commented that the similarity of amphetamine psychosis to paranoid schizophrenia in some cases was such that they were indistinguishable. Ellinwood (1967) also used observational research to investigate the differences between the amphetamine addict (daily use exceeding 30 mg) and the general addict to afford a detailed description of individual reactions to the use of large doses of amphetamines, to investigate, evaluate and explore reasons for differences in reaction patterns within the addict population and to differentiate between the types of individuals who are consistently drawn to the use of amphetamines and those addicts who prefer other drugs. Ellinwood found that some characteristics were present in both psychotics and non-psychotics and these characteristics became progressively severe as the

psychosis developed. Fear, suspiciousness, awareness of being watched and visual hallucinations in the peripheral fields were quite definitely progressive. Over half of the patients developed well formed delusions of persecution which appeared to be an extension of suspiciousness and awareness of being watched. Also amphetamine users were more withdrawn, sociopathic, resentful of authority and had a higher incidence of non drug hospitalisations than the usual addict.

In 1970, Griffith and colleagues published the first research involving experimental induction of amphetamine psychosis with four volunteers in a controlled hospital environment. Doses of between 5 and 10 mg of d-amphetamine sulphate solution were administered hourly, and they monitored the effects on the subjects, each of whom was experienced in self administration of the drug. Subjects tolerated the intravenous administration of amphetamine for one to five days before experiencing a psychosis. The sequence of symptoms preceding the psychosis and the type of psychosis elicited was remarkably similar in all subjects. Initially subjects experienced seemingly mild euphoric symptoms. However, once the cumulative dose exceeded 50mg, the patients became depressed, spent more time in bed, were irritable, showed less interest in television and people, complained when required to eat or drink and were extremely hypochondriacal. During this stage patients were quite lucid and showed considerable modulation of affect as assessed by a psychiatrist. The onset of florid psychosis amongst the patients was quite rapid, with the symptoms experienced including paranoid ideas and ideas of reference. No true visual hallucinations were experienced, however, they were prone to attach personal significance to familiar objects, for example, one patient saw an exit sign which he felt had been placed there as a message for him to leave the hospital. Neither did the patients experience prominent auditory hallucinations, although they commonly wondered if poorly heard conversations might be about them. This study demonstrated that intravenous administration of large doses of d-amphetamine can precipitate a paranoid psychosis in non-psychotic individuals.

Amphetamine was administered orally by Jönsson and Sjöström (1970), inducing amphetamine psychosis in 15 participants with a current history of intravenous amphetamine abuse, administering 50 to 75 mg doses of amphetamine at six hourly intervals for 36 hours. Symptoms were noted during

the first 36 hours. Angrist and Gershon, (1970) administered large oral doses (5 to 50 mg per hour) of amphetamine sulphate to four experienced amphetamine users, one of whom failed to develop a psychosis, even after the experiment was repeated. The symptoms of the other three participants were monitored for psychiatric phenomenology. Bell (1973) monitored the psychiatric symptoms of 16 amphetamine-dependent inpatients in whom psychosis was induced by intravenously administering methamphetamine hydrochloride. Finally, Angrist et al. (1974) undertook a near-replication of Griffith's experiments using a more aggressive dosage schedule, to more accurately replicate the doses taken by chronic amphetamine users.

These studies of experimentally induced amphetamine psychosis have provided much information about this disorder. However, ethical and legal considerations have meant that amphetamine psychosis can no longer be experimentally induced in the laboratory, and can thus only be studied on an opportunistic basis when affected individuals present for treatment.

In a review of documented cases of amphetamine psychosis conducted by Davis and Schlemmer (1980), the most consistently reported symptom was found to be the emergence of paranoid ideation. As shown in Table 2.1, paranoia is typically accompanied with ideas of reference and well-formed delusions which usually develop in progressive stages.

Table 2.1. *Symptoms of methamphetamine-induced psychosis as reported by Davis and Schlemmer (1980).*

Frequently Reported	**Occasionally Reported**
Persecutory ideation	Tactile hallucinations, Delusions of parasitosis
Delusions of persecution	Olfactory hallucinations
Stereotyped, compulsive behaviour	Distortions of body image
Social Withdrawal, autistic behaviour	Changes in libido
Auditory hallucinations	Flattening of affect
Increased philosophical concern	Thought disorder
Overemphasis on visual cues and hypervigilance	
Clear consciousness and correct orientation	
(wide individual variation in symptomatology)	

In 1990 and 1991, Wada and Fukui investigated the relationship between years of methamphetamine abuse and the symptoms exhibited at various stages of hospitalisation in 207 patients with methamphetamine psychosis. The authors propose that two kinds of methamphetamine psychosis exist, differentiated by symptom duration. They suggest there is a possibility that five years of methamphetamine use is the turning point in terms of the frequency of symptoms occurrence. Sato (1986) proposed a similar categorisation based on observations of 246 patients with methamphetamine psychosis, again focusing on relapse antecedents.

Sato (1986) suggested that “Type A” methamphetamine psychosis is a psychotic state that begins to improve along with changes in the acute central action of methamphetamine, effectively a psychotic condition dependent on the methamphetamine–induced hypercatecholaminergic state. The participants classified as having “Type B” methamphetamine psychosis experienced psychosis for considerably longer, presumably a psychotic condition in which the clinical course is independent of a methamphetamine-induced hyperdopaminergic state. Sato proposes that chronic methamphetamine use results in a lasting change in neural dopaminergic and non-dopaminergic systems relating to the psychotic state. Wada and Fukui’s delineation consisted of an “early disappearing type” of methamphetamine psychosis, wherein the symptoms resolve within a month, (although they may recur), and a “delayed lasting type”, in which the symptoms may last a month or more, in some cases cycling through lulls and relapses. Iwanami et al. (1994) classified their participants’ methamphetamine psychoses as “transient” (resolving within weeks) or “persistent” (lasting for months).

Yui and colleagues (1997 and 2001) also studied recurrence of methamphetamine psychosis, conducting a series of studies investigating recurrences in response to psychosocial stressors. Substantial recurrence rates are reported in a review of hospital separations in Japan (Nakatani et al., 1989). This review found that 132 patients were hospitalised for methamphetamine psychosis between 1978 and 1987, generating 216 admissions for the disorder. These patients’ clinical files were analysed for demographic information, length of hospitalisation, and number of admissions.

Another Japanese research group (Iwanami et al., 1994) reported the psychotic symptoms of 104 psychiatric inpatients with methamphetamine psychosis. Most of the patients were reported to show a paranoid psychotic state similar to schizophrenia and although more than half of the patients were discharged within one month, 16 patients were hospitalised for more than 3 months. The authors suggest that an explanation for the persistence of a psychotic state, which has been put forward by researchers, is that since the range of doses that can precipitate a psychotic episode is large, the persistence of the psychotic state may be the result of non-specific psychological vulnerability and have little to do with the pharmacological effect of methamphetamine per se.

Earlier Japanese research employing a medical record review reported a mean length of hospitalisation of 82.3 days, although 72 percent of their sample were hospitalised for less than two months (Nakatani et al., 1989). With the exception of one patient hospitalised for 6.7 years due to persistent hallucinations, it is not clear whether the lengths of hospitalisation reflect the duration of the patients' methamphetamine-induced psychoses or whether the patients remained hospitalised during the resolution of residual symptoms such as depression. These extended hospitalisations may reflect cultural influences in the treatment of psychiatric disorders. The tendency for Japanese researchers to report protracted hospitalisations is noted by Nakatani et al. (1989), who indicates that this tendency reflects Japanese researchers' findings that methamphetamine use can result in psychotic symptoms persisting over several years.

It is also believed that sleep deprivation, which can occur when a methamphetamine user is on a "run", may exacerbate psychotic symptoms. Case studies have reported that mania can occur following consecutive nights of sleep deprivation (Wright, 1993) which has also been reported to be associated with elevated levels of depression (Benca, 2005) in non-drug using patients.

Most authors agree that presentations of methamphetamine psychosis are strikingly similar to paranoid schizophrenia, with some suggesting that the presentations of the disorders are indistinguishable. The positive symptoms of methamphetamine psychosis are similar to those of paranoid schizophrenia,

consisting mainly of delusions (particularly of persecution, but also delusions of reference) and hallucinations. The recurrent nature of methamphetamine psychosis is also suggested as another apparent similarity, as recurring methamphetamine psychosis may mimic the clinical course of endogenous schizophrenia. The extreme variation in the clinical presentations of methamphetamine psychosis in the literature compounds the already difficult task of differentiating this disorder from schizophrenia. Moreover, accurate diagnoses of methamphetamine-induced psychoses rely on information that patients or their families provide about methamphetamine use and this can sometimes be unreliable.

2.3.1 Duration of methamphetamine psychosis

Connell (1958) reported that patients with amphetamine psychosis tend to recover within a week. Davis and Schlemmer (1980) supported Connell's results, indicating that typically a slow but complete recovery takes place from amphetamine psychosis, with florid symptoms diminishing within a few days. These findings concur with those of studies in which amphetamine and methamphetamine psychoses were experimentally induced.

The amphetamine psychoses induced by Griffith et al. (1970) were found to resolve within hours, with one participant exhibiting residual symptoms for three days. The delusions of persecution and thought disorder experienced as part of the amphetamine psychoses induced by Jönsson and Sjöström (1970) were found to resolve within two days, and all symptoms had resolved within five days. Similarly, the methamphetamine psychoses induced by Bell (1973) lasted from one to two days in nine cases and for six days in two others, although one patient (who was later found to have been secretly taking additional methamphetamine) experienced the psychosis intermittently for 26 days.

The possibility that persistent psychotic symptoms may represent a triggering or unmasking of pre-existing schizophrenia was raised by Iwanami et al. (1994) but countered in the same paper by the contention that methamphetamine psychosis shares a similar clinical course to schizophrenia and a tendency to recur. The length of these hospitalisations may, however, also be to some degree self-perpetuating, possibly due to some kind of "institutional neurosis" induced by lengthy hospital stays (Muijen, 1992). Such neurosis is

characterised by dependency, apathy, lack of initiative and withdrawn behaviour, symptoms similar to the negative symptoms of schizophrenia, which itself leads to long stays in hospital. This dependency syndrome is at least partly the result of institutional processes, and is correlated with duration of hospital stay (Muijen, 1992). However, Iwanami et al (1994) reported that the long-staying patients did not exhibit symptoms of social isolation, withdrawal, blunted or inappropriate affect or poverty of speech.

There is considerable variation in the reported duration of amphetamine and methamphetamine psychoses. It is clear, however, that this disorder may continue for a considerable time after the excretion of methamphetamine from the urine, the latter taking 3-5 days (Sato, 1992). Most research indicates that methamphetamine and amphetamine psychosis tends to resolve within days or a week, although psychotic states lasting months were noted by several studies. The incongruence between the durations of psychotic symptoms/hospitalisation found by most of the research and that reported in some of the Japanese research has not been resolved.

2.3.2 Recurrence of methamphetamine psychosis

Many studies have reported the recurrent nature of methamphetamine psychosis. The high recurrence potential of this disorder is highlighted by Sato's (1992) review of studies relating to the first and second epidemics of methamphetamine abuse in Japan. Sato reported that nearly half of the admissions for methamphetamine psychosis during the second epidemic were persons who had suffered a recurrence and some had been readmitted for treatment of methamphetamine psychosis more than 10 times. Nakatani and colleagues (1989) review of separation data from a hospital in Japan for the period of 1978 to 1987 found that only 20% of these hospitalisations were for a first episode of methamphetamine psychosis, indicating substantial rates of recurrence associated with this disorder.

The triggers for recurrence of methamphetamine induced psychosis can include methamphetamine use (Sato, 1986), or other drug use (Tomiyama, 1990), psychosocial stressors (Yui and colleagues, 1997; 2000a; 2000b; 2001), sleep deprivation (Wright, 1993) or other non-specific stimuli (Wada & Fukui, 1991). Notably, if methamphetamine use is recommenced, a significantly

shorter period of abuse may be sufficient to reproduce the psychotic state than that which produced the initial episode (Sato, 1986).

2.3.3 *Acute treatment for methamphetamine-induced psychosis*

Several case studies in which medications such as risperidone and olanzapine have been used to treat methamphetamine psychosis have been published (Misra & Kofoed, 1997; Misra, et al., 2000). Several papers also refer to the use of antipsychotic medication to ameliorate the symptoms of methamphetamine-induced psychosis (Sato, 1986). However, the authors could find no large-scale studies in this area, and a comprehensive Cochrane Review undertaken in 2001 and updated in 2005, found no controlled trials of treatment for this disorder meeting their criteria for considering studies (Srisurapanont et al., 2001). As indicated earlier, psychotic symptoms appear in many cases to cease within a week of abstinence from the drug, although in some cases this may be longer.

A number of patients with methamphetamine-induced psychosis are adolescents when they present with their first episode and according to Patel et al., (2005) there are unanswered questions regarding the use of antipsychotics in children and adolescents, medications which may be used to treat this condition. This is supported by McConville & Sorter (2004) who suggest that adolescents and children are especially vulnerable to adverse effects, including weight gain, sedation and extrapyramidal symptoms, which may be more prevalent and more severe than in adults. Another consideration is that the long term effects of early and prolonged exposure of adolescents to antipsychotics are unknown.

2.3.4 *Post-discharge treatment for methamphetamine psychosis*

Beyond prescribing medications, the literature does not discuss post-discharge psychosocial or outpatient treatments for methamphetamine-induced psychosis. Interviewed patients' case notes, from the WHO-sponsored study (Morefield et al., 2004), found that 85.1% of the 50 interviewed participants were offered follow-up psychiatric care at discharge, and it was suggested to 48% that they seek drug and alcohol input on leaving hospital. A subsequent review of the Drug and Alcohol Services South Australia (DASSA) client data-bases found that, of the patients referred to drug and alcohol services (the majority of which in South Australia are provided by DASSA), 26% (n=13)

attended for treatment of some kind during the six months following their discharge from hospital. It was not possible to establish the rate of uptake of the suggested psychiatric input. These findings highlight the need to identify effective ways of providing input to these patients, after their acute psychotic symptoms have been stabilised in the inpatient setting.

2.4 Overview of research into models of case management

Research shows that substance abusers who are in treatment programs have significant problems in addition to their drug problem. Clients often present with a myriad of associated health, social and mental health problems often caused by their substance use or exacerbated by their lack of preventative health care and neglect (Regier, et al, 1990). Many substance abusers suffer from a variety of health related problems including HIV/AIDS, hepatitis strains often transmitted directly or indirectly through risky injecting or sexual behaviour, also abscesses, sores, malnutrition and problems associated with high immune deficiency. Higher rates of mental health disorders are found in substance abusers compared to the general population, with an estimated 23% to 56% of individuals having a co-morbid axis I mental disorder including depression, schizophrenia, personality disorder, and adjustment disorder (Regier, et al, 1990). The consequences of substance abuse are also often seen in many aspects of the individual's social circumstances. Many are unemployed and lack an education or the skills to acquire one, many are homeless and unable to afford housing and many have no social ties or affiliations such as family or friends who are not substance abusers (McLellan, et al, 1993).

Addiction and substance abuse can have detrimental effects on many aspects of an individual's life and wellbeing. Research suggests that for substance abusers, receiving comprehensive, coordinated treatment may facilitate and promote recovery and enhance the client's integration back into society (National Clearinghouse for Alcohol and Drug Information (NCADI), 1998). Comprehensive treatment, in order to be effective, must deal with all affected facets of the client's life in way that facilitates engagement and motivation at an appropriate intensity level. The coordination of services is vital to ensure smooth transitions between areas of care and to avoid gaps and the fragmentation of treatment and services. Case management provides a way to

coordinate fragmented services to provide efficient, adequate treatment to meet the needs of the substance-abusing population.

Reviews of recent research into the delivery of outpatient treatment have indicated that the effectiveness of outpatient programs for people with co-occurring mental illness and substance abuse or dependence issues can be reliably enhanced via the provision of consistent integrated treatment for both the psychiatric and substance-related symptomatology, case management involvement, assertive outreach components and a motivational approach to the substance abuse treatment (e.g., Drake et al., 1998; Wingerson & Reis, 1999). Moreover, linkage to outpatient psychiatric services can be facilitated by the initiation of contact with treatment providers whilst the patient is still hospitalised (Boyer, et al., 2000). Programs of assertive community care that incorporate these features are likely to not only retain patients' contact with services, but also help patients attain meaningful improvement of their psychiatric symptomatology and reductions of substance use disorders over time.

Numerous case management models have been developed over recent times, highlighting the fact that there is no single definition or set of rules that describes and characterises case management. Any definition of case management is contextual and based on the needs of the population, the environmental reality and treatment service availability. However, as discussed by Sledge et al (1995) and NCADI: National Clearinghouse for Alcohol and Drug Information (1998) , all models of case management share in common, a set of generalised functions including (1) assessment, (2) planning, (3) linkage, (4) monitoring, and (5) advocacy. What is unique to each model of case management is the level of direct clinical treatment provided by the case manager or case management team and the level of referrals to other treatment service agencies. In particular, four models of case management have been adapted to suit the substance using population including (1) broker; (2) strengths-based; (3) assertive community treatment; or (4) clinical rehabilitation. While each has been proven effective in treating substance abuse, the effectiveness of each model is generally determined by matching the appropriate model to the needs of the specific population (NCADI, 1998).

Case brokerage models encompass a relatively short-term, low intensity relationship between client and case manager whose role generally is one of assessment and referral (NCADI, 1998). Also known as standard case management, the case manager is an advocate for the client whereby rather than providing direct clinical treatment or service to clients, they are responsible for assessing clients needs, treatment planning, coordinating and referral to appropriate treatment services. In this model, the case manager acts as a 'broker' whereby they match available services and resources with clients needs. The case manager is also responsible for the ongoing assessment of needs and monitoring of care (Mueser et al, 1998).

Comparatively, assertive community treatment encompasses the following functions, including (1) frequent contact between client and case manager in the clients home or natural environment; (2) focusing on daily living problems as well as physical and mental concerns; (3) smaller, shared case loads; (4) long-term clients – case manager contact; and (5) assertive advocacy on behalf of the client (NCADI, 1998). An individual case manager and a team of core support services are responsible for providing comprehensive treatment rather than being 'brokered out' to other treatment agencies. This model and associated derivations are designed as a 'community-based alternative to the hospital' (Mueser et al, 1998) but with a similar advantage of offering 24-hour crisis service provision (Grech, 2002 & Mueser et al, 1998).

Clinical Case Management Model: The clinical case management model was developed to allow case managers the ability to act as clinicians by providing direct psychoeducative and psychotherapeutic services to the clients. This model specified the provision of services by the case manager to four main areas: (1) initial phase including client engagement, assessment and planning; (2) environmental interventions and client advocacy including linkage with community resources, consultation with families and caregivers, development of social networks and collaboration with clinicians and hospitals; (3) patient interventions including the provision of intermittent individual psychotherapy, psychoeducation, counselling and training in independent living skills; and (4) patient-environmental interventions including the provision of crisis intervention and monitoring (Grech, 2002 & Mueser et al, 1998). While many of the clinical activities specified in point one, two and four may also be provided in the Broker Model of case management, the Clinical Case Management

Model requires the case manager to have the clinical skills to provide patient interventions including psychotherapy, psychoeducation and training in independent living skills (Mueser et al, 1998). Many programs using the assertive community treatment model of case management have used the original conceptualisation of the model but have shifted and adapted its components to meet the needs of the specific populations and local communities (Mueser et al, 1998).

Intensive Case Management: In an effort to meet the needs of high, regular service users, the intensive case management model was developed. In comparison to the assertive community treatment model of case management, intensive case management shares many features including low client to staff ratios and provision of outreach services in the client's own environment and assistance with daily living skills (Mueser et al, 1998). However, one difference between the two models is that the intensive case management model caseloads are not shared between members of the case management team and each member works closely with other areas of the psychiatric service and provide treatment in a variety of settings not just in the community (Gournay, 2000).

A large proportion of the research conducted in this area has been using the assertive community treatment (ACT) or intensive case management (ICM) models. This research generally indicates both models can reduce duration and frequencies of hospital stays and can moderately improve symptomatology and quality of life, particularly in high service users (Mueser, et al, 1998). However, this has mainly been tested for patients with severe mental illness and not patients suffering from drug-induced psychoses who may be more difficult to engage in services.

2.4.1 Assertive Community Care Model of Case Management

As described in the previous section, models and definitions of case management are dependent on the specific population, their needs and the contextual environment of the service setting. However, regardless of the model, there exists a high degree of consensus regarding the basic functions of case management. Commonly accepted as the core functions of all approach's to case management are (1) assessment; (2) planning; (3) linkage; (4) monitoring and (5) advocacy (NCADI, 1998).

In light of the research in this area, which is notable for its paucity of randomised controlled trials, the present research design adopts the features of other programs of assertive community care which have been associated with better patient outcomes with clients similar to those involved in the present trial. The current model uses assertive follow-up techniques (to enhance patient retention in treatment) combined with a coordinated care approach wherein a case manager facilitated the patients' access to treatment services, as the individual patient's needs required. In this sense, the current Assertive Community Care program incorporates many of the elements of case brokering, whereby the case manager brokers or facilitates access to agencies. The present research takes a multidisciplinary approach to patients' health and wellbeing, by addressing patients' mental health concerns and problems, their substance abuse and dependence-related problems, blood borne virus risk taking behaviours, and in patients physical health concerns and social problems, including finding appropriate accommodation etc. Patients were first seen by the case manager prior to their discharge from hospital. This was done in order to assist with rapport building and to enhance the linkage and coordination of services in preparation for the patients discharge.

2.5 Summary

Methamphetamine psychosis is a disorder associated with a large inter-individual variation in presentation and response to treatment. This is demonstrated by the substantial differences seen between the results of published research. Methamphetamine psychosis is generally characterised by delusions of persecution and ideas of reference, and many individuals experience auditory and visual hallucinations. Some individuals also experienced olfactory and tactile hallucinations. Thought disorder was found in some studies, but completely absent in others. Psychotic symptoms seem to resolve in many cases within a week, although more persistent psychoses are commonly reported, and this disorder may be very difficult to differentiate from schizophrenia. Recurrences of this disorder are common, triggered by methamphetamine use, other substance use or psychosocial stressors, and recurrences tend to manifest in a similar fashion to those episodes already experienced. The apparently increasing availability of high potency methamphetamine and the also apparently increasing prevalence of its use in South Australia highlights the importance of continued local research into its

psychological consequences, including methamphetamine-induced psychosis. This research program constitutes the first Australian study of methamphetamine psychosis, and provides the context for future controlled trials of treatments for this disorder.

3.1 Acute Care Interventions for the Treatment of Methamphetamine Psychosis

The study consisted of an open label, randomised controlled study of sequentially presenting patients with methamphetamine-induced psychosis admitted to the Emergency Departments of the Royal Adelaide Hospital (RAH), Flinders Medical Centre (FMC) and Noarlunga Health Service (NHS), comparing the clinical outcomes of clonazepam (oral) and olanzapine (oral) used in combination with clonazepam (oral) alone for the treatment of methamphetamine-induced psychosis. The design included facility for participants in the clonazepam-only treatment arm to receive the "crossover" medication (olanzapine) during the course of treatment, should this be necessary to achieve adequate control of psychotic symptoms.

In addition to the treatment protocols (which included regular assessment of the participants' levels of agitation), which were administered by acute care medical staff for the trial, research staff also administered a number of data collection instruments during research interviews conducted throughout the course of treatment.

3.1.1 Participants

The target population for the study was male and female methamphetamine users between the ages of 18 and 59 years, who presented to acute care services for treatment of a methamphetamine-induced psychosis. Diagnosis of a psychotic illness was made by clinicians based on the accepted signs and symptoms of a clinical presentation, according to DSM-IV criteria for schizophrenia and other disorders (American Psychiatric Association, 2000). However the psychotic symptoms themselves were later measured by the PANSS (Appendix F). Thus at presentation, the clinician was required to make the diagnosis that the psychosis was caused by methamphetamine and not another diagnosis. This approach relied heavily on the patient history, available collateral information and clinical judgment of the doctor. In this way, eligible participants were identified by the treating emergency department clinicians and allocated to treatment groups according to the randomisation procedure outlined below:

3.1.2 Randomisation

Participants were randomly allocated for initial treatment with either clonazepam alone or olanzapine plus clonazepam, such that even numbers of participants were allocated to each treatment arm. A simple randomisation procedure was followed, whereby equal numbers of study group labels (i.e. for clonazepam alone or olanzapine + clonazepam) were placed in participant packs. Participant packs were made up with the allocated treatment guidelines contained inside (not visible from the outside of the pack) and the participant number on the outside. Each site was allocated a number of packs at the start of the trial. Clinicians responsible for the presenting patient with methamphetamine psychosis opened a participant pack. Medication was then provided according to the treatment guidelines of the arm to which the patient was allocated.

Patients were included if the following criteria were satisfied:

- There was evidence of methamphetamine-induced psychotic disorder
- Methamphetamine use was reported within the week prior to admission to hospital
- The patient had the ability to understand the purpose of the study and complete study procedures and
- They were aged between 18 and 59 years.

Participants were excluded on the basis of the following criteria:

- The patient had a prior history of psychotic disorder not related to substance use (e.g. schizophrenia or bi-polar disorder)
- The patient was experiencing current acute alcoholic intoxication with depression of vital signs, however, the patient could be entered into trial once acute intoxication resolved
- There was a risk of violence to clinical or research staff and/or severe risk of self-harm
- The patient was pregnant or had a known hypersensitivity to benzodiazepines, olanzapine or benztropine
- The patient was known to have the following: Parkinson’s disease, spastic disease, prolactin dependent tumour, manifest occult lesions of the basal ganglia, chronic obstructive airways disease with incipient respiratory failure, myasthenia gravis or acute narrow angle glaucoma

- The patient exhibited indications of hepatic failure such as jaundice, ascites
- The patient had impaired sensorium to an extent that would be detrimental to study procedures (With regard to psychotic symptoms, only severe symptoms will lead to exclusion, e.g. hallucinations; the presence of other psychotic symptoms which do not adversely affect comprehension or ability to communicate and give consent will not necessarily result in exclusion).

Research staff noted the importance of excluding persons with psychotic disorders not related to amphetamine use, particularly schizophrenia. It is possible that some patients with pre-existing schizophrenia or who where experiencing a first schizophrenic episode may have been inadvertently recruited for the trial. During the course of treatment and assessment while in hospital, efforts were made to confirm schizophrenia as a possible diagnosis for those participants where amphetamine use as a causative factor was less certain. Since the medications proposed for treating methamphetamine psychosis are also commonly used to treat psychotic agitation in persons with schizophrenia (Diamond, 1998), adherence to the trial medication regime was not detrimental to the clinical care of such patients. However, no patients with a suspected first episode of schizophrenia were identified.

3.1.3 Initial presentation and recruitment of participants

Due to the emergency nature of psychosis presentations to acute care facilities, treatment must be implemented as soon as possible, and for the purposes of this trial, was implemented before patient consent-to-participate could be obtained. As each of the trial medications are currently in widespread use for acute management of psychosis, the randomisation to one or the other treatment arm occurred immediately by medical staff, prior to commencement of treatment, so as to not compromise the usual standard of care for these patients.

Prior to any assessment by research staff, all participants received an explanation of the purpose of the trial and its procedures and they chose whether they wanted to participate. An information sheet was provided explaining the purpose of the trial and the procedures involved. Signed consent, in accordance with the specific requirements of each hospital, was

secured before participants took part in the initial research assessment interview.

Investigators also established a register of all refusals to enter the trial that included age, gender and reason for refusal. Patients who did not consent to the assessment procedures were treated by hospital clinicians as per usual hospital practice for this disorder.

3.1.4 Medication protocols

A set of guidelines or protocols for the administration of study medications in the two randomised arms of the trial were formulated (see Appendix A). These protocols were designed to achieve the goal of ensuring that for the proposed trial a standardised approach to the acute pharmacological management of patients presenting with methamphetamine-induced psychosis was maintained.

3.1.5 Research assessments

Research staff conducted interviews following stabilisation of participants' initial psychotic symptoms and once informed consent was obtained. An effort was made to complete the research assessments at 48 hours, and 5 days after admission, as well as at discharge from hospital, however this was not possible in all cases.

3.1.6 Outcome measures and Instruments

The principal outcome measures were the type, severity and duration of the psychotic symptoms experienced by the participants during their hospitalisation for methamphetamine-induced psychosis. The duration of hospitalisation was examined, as were the types, dosages and timing of all medications administered to the participants. Appendix B provides detailed information regarding the composition and timing of the research assessments. At patients' initial presentation to hospital, Emergency Department Triage Coding procedures were applied (Appendix C). The Level of Agitation Scale (see Appendix D) was administered throughout the course of the trial treatment. Clinicians and ward staff recorded patients' scores on these scales and subsequent clinical decisions were made. Additional information about the various instruments used can be found in Appendices E, F, G, H, I, J, and K.

SECTION 4 METHODOLOGY PHASE 2 ASSERTIVE COMMUNITY CARE

4.1 Assertive Community Care for the Post-discharge Treatment of Methamphetamine Psychosis

The study consisted of a randomised controlled study of sequentially presenting patients admitted with a methamphetamine induced psychosis at the Royal Adelaide Hospital, Flinders Medical Centre, Noarlunga Health Services, and Glenside Psychiatric Hospital. The aim was to compare the clinical outcomes of treatment when receiving either routine hospital post-discharge care or a model of assertive community care.

The Assertive Community Care intervention was carried out over a period of three months for each participant during which time access to various treatment agencies was facilitated by a dedicated case manager. Research staff administered a number of data collection instruments on three occasions during the study; shortly after the participant's admission to hospital (baseline), and at 3 and 6 months post-discharge. The instruments are designed to measure outcomes on the following four dimensions; (1) Psychiatric morbidity; (2) Drug use; (3) Risk taking behaviour; (4) Health and social functioning.

4.1.1 Research Questionnaire

A questionnaire was developed for the study focussing on four dimensions, (1) participants' psychiatric and mental health status; (2) methamphetamine abuse, dependence and risks of relapse; (3) blood-borne virus risk taking behaviour and (4) health and social functioning. The questionnaire collected information on participants' methamphetamine and other drug use over the previous month and level of dependence, their level of cravings for methamphetamine, levels of anxiety and depression, blood-borne virus risk taking behaviours (injecting, sexual and skin penetration), and psychiatric symptoms. The questionnaire also collected participants' demographic information and measured participants' general health profile.
(See Appendix P).

The study questionnaire comprised of a number of published, validated measures or scales and items derived from them. These consisted of forced choice questions which were asked and recorded by the interviewer on the questionnaire sheet. Incorporated into the study questionnaire was The Time-

Line-Follow-Back (TLFB) (Sobell et al, 2000) to provide a measure of frequency and quantity of methamphetamine and other drug use (licit and illicit drugs) over the past month. Participants were provided with a calendar of the month prior to hospitalisation and were asked to indicate on which days they had consumed methamphetamine or any other illicit or licit drugs and to provide a quantitative estimation of the amount of the drug(s) used on that day. (see Appendix E)

The Methamphetamine Craving Scale (see Appendix O) was incorporated into the interview to provide a multidimensional measure of participants' level of craving for methamphetamine. This scale assesses five dimensions of craving including (1) current craving intensity; (2) intensity of cravings during the past 24 hours, (3) frequency of cravings; (4) reactivity of craving to drug-related environmental cues and (5) imagined likelihood of use if in a setting with access to drugs. The Methamphetamine Craving Scale was adapted for use in the current study from the Cocaine Craving Questionnaire originally developed as a multidimensional measure of craving for cocaine users (Weiss & Griffin, 1995).

The Hospital Anxiety and Depression Scale (HADS), (Zigmond & Snaith, 1983), (see Appendix G) was used to measure patients' present level of anxiety and depression, as felt over the past day or two. This well established self-rating instrument comprises seven items which assess anxiety levels and seven items which assess depression levels in somatic, psychiatric and primary care patients (Montazeri et al, 2003). Each question is rated on a 0-3 scale reflecting the patient's severity of anxiety and depressive symptoms for each item (Mykletun, Stordal & Dahl, 2001).

The Severity of Dependence Scale (SDS) (see Appendix I) was used to gain a measure of the level of dependence the studies clients had on methamphetamine. As a five-item scale concerned with the psychological components of dependence, this scale specifically assesses impaired control over drug taking and with patients' degree of preoccupation and anxieties over their methamphetamine use (Gossop, Darke, Griffiths, Hando, Posis, Hall & Strang,1995).

The Blood Borne Virus Transmission Risk Assessment (BBV-TRAQ) (Fry, Rumbold & Lintzeris, 1998) was included in the interview to assess the frequency within the previous month where injecting drug users engaged in injecting and sexual practices that could have potentially exposed them to blood-borne viruses. The BBQ-TRAQ comprises three subscales aimed at measuring the frequency of injecting risk behaviours, sexual risk behaviours and other skin penetrating risk behaviours. A total risk score is derived for each of the subscales and an overall total risk is derived combining all subscales (See Appendix Q)

The Short Form 12 Health Survey (SF12) (Ware, Kosinski & Keller, 1996) was incorporated into the interview to provide a measure of patients' perceived health status. The SF-12 is a shorter version of the SF-36, the latter being well tested and widely used in many countries. The SF-12 comprises eight subscales; physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality (energy/fatigue), social functioning, role limitations due to emotional problems and general mental health (psychological distress and psychological well-being). The SF-12 has been demonstrated to be reliable and valid in clinical and population-based applications (See Appendix R).

Incorporated into the study were three scales from the Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein & Opler, 1987), including the positive syndrome scale, negative syndrome scale and the aggression risk profile to get a valid, reliable assessment of patients positive, negative and aggression symptoms associated with psychosis (see Appendices E and F) The positive syndrome scale assesses active symptoms that reflect an excess or distortion of normal functioning such as hallucinations, delusions and incoherent speech for example. The negative syndrome scale assesses negative symptoms that reflect a reduction or diminution of normal functioning including blunted affect, passive social withdrawal and psychomotor retardation for example. The Aggression Risk profile was included to get an accurate gauge of a patient's aggressiveness using the three domains for assessment: anger, difficulty delaying gratification and affective liability. Ratings for each of the scales were made on a 7-point scale ranging from 'absent' (1) to 'extreme psychopathology' (2).

4.1.2 Recruitment settings

Participants for the Assertive Community Care Project were recruited from the Royal Adelaide Hospital, Flinders Medical Centre, Noarlunga Health Services, and Glenside Psychiatric Hospital.

4.1.3 Recruitment Procedures

The target population for the study was male and female methamphetamine users aged between 18 and 59 years who had been admitted to hospital with a diagnosed methamphetamine induced psychosis, without an underlying Axis I psychotic disorder (e.g. schizophrenia and bipolar depression). Patients were identified as being potentially appropriate for the study by the ward staff of each of the participating hospitals involved during twice-weekly telephone contacts by the research staff. Research staff then visited the wards in which potential participants were inpatients and reviewed the patients' case notes to determine their suitability for the study. Patients were excluded from the study if they posed a significant risk of violence to clinical and research staff, were at severe risk of self-harm or if they had significant impaired sensorium that could result in inadequate understanding and participation in the research, unless this resolved in the proceeding days.

Patients who were eligible to participate were introduced by ward staff to the research staff member. Potential participants were given a brief explanation of the nature and purpose of the study. Those patients expressing interest in participating were provided with a detailed study information sheet to read, and the relevant hospital participant consent form. Once informed consent had been obtained from those patients agreeing to participate, the researcher commenced the interview. Consent was also obtained from participants to enable research staff to contact them for further follow-up interviews.

4.1.4 Research Interview Schedule

Following inpatient recruitment and obtainment of informed consent, all participants completed the baseline research interview while in hospital (baseline). Participants were subsequently followed up at three and six months post-discharge to undertake comparative research interviews. Casenote information was also obtained (See Appendices S and T)

During inpatient interviews, duress alarms were provided to all research staff and interviews were conducted in interview rooms that were in view of the nurses' station or with a dedicated staff member outside the room. Post discharge follow-up interviews were arranged with each participant to be completed in an agreed upon neutral, public place such as a café or park (See Appendix U)

4.1.5 Randomisation of Participants

Participants were randomised following the completion of the inpatient baseline research interview. Initially, participants were randomised into the studies two treatment arms whilst balancing for gender and whether the individuals had previously received inpatient treatment for methamphetamine psychosis. This was done using a DOS-based computer program called The Urn Randomisation Program, developed by Project MATCH and supported by the National Institute on Alcohol Abuse and Alcoholism (US). The urn design is a highly studied method of randomisation, used when sample sizes are not large enough (e.g., <200 participants) for simple randomisation procedures such as coin-tossing, and where particular variables (such as gender, and previous treatment episodes, as in the present study) need to be stratified between groups to reduce possibly confounding effects. The urn design forces a relatively small-size trial to be balanced but does approach complete randomisation as the number of subjects increases, meaning that the urn design is less vulnerable to experimental bias than other restricted randomisation procedures. However, due to the unforseen low recruitment rate (<30 participants) and the low numbers allocated to the control arm of the study, the research team decided to convert to a simple randomisation procedure.

Participants randomly allocated into the control group received normal hospital post-discharge care. Comparatively, participants allocated to the treatment group received three months post-discharge assertive case management.

4.1.6 Blinding

To reduce the likelihood of patient expectations or the expectations of the case manager conducting the initial psychosocial intervention potentially contaminating the study's results, the initial phases of the trial were blinded. Firstly, the case manager who conducted the initial (inpatient) psychosocial

intervention was blinded to the treatment arm to which each participant was allocated to. Following the initial research interview and inpatient psychosocial intervention, the researchers and case manager learned the participants' group allocation. The participants were effectively blinded to their group allocation although obviously aware of the treatment they received.

4.2 Case management

4.2.1 Personnel

The case manager for the project was a qualified mental heath nurse with experience and knowledge in the areas of case management, mental health and drug and alcohol. The dedicated case manager conducted the inpatient interventions for both the treatment and control groups as well as providing case management for participants randomly allocated into the treatment arm.

4.2.2 Procedures

During patients' hospital admission period, the case manager conducted a single inpatient psychosocial education session with all participants, following the base line research interview. All participants were then randomly allocated into either the control group, to receive normal hospital post-discharge care or into the case management treatment group, to receive three months of assertive community care treatment.

4.2.3 Control Group

Following the inpatient psychosocial education session, participants allocated to the control group received normal hospital post-discharge care and were not seen again by the assertive community care case manager. Members of the control group, where possible, were followed up at three and six months post-discharge and under went a research interview.

4.2.4 Case Management Treatment Group

Following the inpatient psychosocial education session, participants allocated to the case management treatment group were seen again prior to their discharge by the case manager, where a needs assessment was done. Following patients discharge from hospital, the case manager scheduled to see participants weekly during the first month, fortnightly during the second month and once during the third and final month.

As with the control group, participants in the case management treatment group were followed up with a research interviews at three months (after the final meeting with the case manager) and six months post-discharge.

4.2.5 Inpatient Psychosocial Education Session

Following patient recruitment and the baseline research interview, the Assertive Community Care case manager conducted a one-hour psychosocial inpatient education session intervention for all participants (control and treatment). Psychoeducative and Motivational Interviewing techniques were used to address the four main domains of harm: Psychiatric / mental health, Methamphetamine abuse and dependence and risk of relapse, Blood-borne virus risk taking behaviour and Health and social functioning.

As a supplement to the information provided during the psychosocial education session, an information pack was provided for all participants. The information pack followed on from the information provided in the psychosocial education session with printed materials regarding the following issues; hepatitis C, coping with cravings and withdrawal, tips on how to quit, local support services available and contact information, sexual health information, dietary information, and clean needle programs.

4.2.6 Needs Assessment

A Needs Assessment was undertaken for all Case Managed clients within the Assertive Community Care project. Given the broad range of health, social and economic harms associated with drug misuse, an integrated approach based on partnership was required to underpin the commissioning and delivery of support services.

Overall case management principles were based on a social model of health. The Needs Assessment took approximately one hour to complete with the client and included client demographic details, accommodation status, satisfaction level with current living arrangements, principle source of income, dependent children, previous contact with DASSA and/or other services and treatment agencies, barriers preventing the client from accessing services, identifiable cultural issues, employment status and levels of education attained. The four identified domains of harm were also included within the Needs Assessment, detailing the clients psychiatric/mental health,

methamphetamine abuse, dependence and risk of relapse, blood-borne virus risk taking, including injecting and sexual behaviours and health and social functioning. Areas covered within the clients' health and social functioning included dietary/nutrition levels, level of physical health, sleeping patterns, doctor or GP visits, clients' interests and leisure activities, physical activity, legal issues, outstanding debts and fines, and family relationships & supports.

The Needs Assessment provided the client with the opportunity to identify priorities and issues and what they identified as their main needs. Furthermore, the case manager and client would evaluate some of the barriers which would prevent the client meeting these needs and determine strategies to minimize the impact of identified barriers.

4.2.7 Post-Discharge Case Management Sessions

At each post-discharge meeting with the client, the case manager discussed the patient's status and progress in each of the four domains, and identified ways to address areas of concern or problems arising for the client. Assertive follow-up techniques (including telephone calls) were employed by the case manager to maintain contact with the participants in the treatment arm, and to enhance linkages between the patient and service providers, and to monitor appointment compliance. (See Appendix T)

4.3 Data entry and analysis

Both numerical and qualitative written data was entered into SPSS for Windows Version 12.0. Quantitative data was analysed using SPSS for Windows Version 12.0 and qualitative data was organised into broad themes.

4.4 Ethics approval

This study was approved by the Flinders Clinical Research Ethics Committee, Flinders Medical Centre/Flinders University of South Australia, The Noarlunga Health Services Research Ethics Committee and The Royal Adelaide Hospital Research Ethics Committee. Informed consent was obtained in all cases before research interviews were conducted.

SECTION 5 PHASE 1 RESULTS ACUTE CARE

5.1 Participants

Only 3 participants were recruited into the study, two participants at NHS and one at RAH.

5.1.1 Case 1

Medication regime assigned – clonazepam only

Unemployed male, 33 years of age who had recently been released from prison and reported using methamphetamine since the age of 19. Patient used about ½ gram of methamphetamine everyday intravenously in the week prior to hospitalisation and his recent use had been almost everyday for the previous 30 days. The patient was also reported using illicit benzodiazepines and alcohol in the past 30 days.

5.1.2 Case 2

Medication regime assigned – clonazepam only

Unemployed male, 26 years of age who started using methamphetamine at 23 years. The patient reported using methamphetamine on 3 days in the week prior to hospitalisation and used approximately $50 worth of the drug on each occasion. The patient also reported using cannabis and illicit benzodiazepines in the week prior to admission. Recent drug use was reported on 13 out of the previous 30 days, in particular over the weekend.

Patient was admitted for four days and received two doses of diazepam (10mg each), one dose of temazepam (20mg) and one dose of clonazepam (2mg), even though the case notes clearly demonstrated that he was participating in a research trial and was to receive clonazepam only.

Only one interview was conducted due to the patient being discharged shortly after the first interview.

5.1.3 Case 3

Medication regime assigned – clonazepam + olanzapine

Unemployed male, 18 years of age, started using methamphetamines at 16 years and also reported to take fantasy (GHB), cannabis and alcohol in the week prior to hospitalisation. Patient was receiving a disability pension due to

mild cerebral palsy. The patient reported to have taken approximately $50 worth of methamphetamine on each of 3 days orally or via snorting prior to admission. Patient had great difficulty determining how frequently he had taken methamphetamine in the last 30 days, however, he stated that he was a regular user.

Two eligible patients refused to participate in the study due to no financial reward for participating and not being interested at the current time. Another 5 patients were discharged from hospital before interview.

5.1.4 *Ineligible patients*

Seventeen patients admitted to the participating sites with drug-induced psychosis were previously diagnosed with schizophrenia. Another nine patients were diagnosed with schizoaffective disorder and therefore they were ineligible to participate.

In the case of 10 patients, research personnel were unable to determine if methamphetamine was used prior to admission to hospital or otherwise the psychosis was believed, by medical staff reports, to be related to other drug use, for example, excessive cannabis use.

5.2 Redesign of Study

Due to the unexpected difficulties in recruiting after the project had been in operation for 6 month and despite intensive efforts by research staff to address this problem, it was decided that the trial would cease and the research staff would investigate the reasons for lack of recruitment.

Potential explanations for recruitment problems:

Decline in eligible patients:

- It is possible that the case note review conducted in Stage 1 overestimated the true incidence of eligible methamphetamine psychosis patients presenting to SA hospitals over a 12 month period. This is possible and may have had an impact on recruiting as the target subject pool may have been smaller than anticipated. Separations data for 2002/2003 across the three hospitals indicated a total of 76 patients for whom a drug-induced psychosis was recorded in the principal diagnosis. There are always a number of presentations to the ED which do not result in an admission and therefore would not have been counted in the

separation statistics but we do not have any indication of how many this may have been.

- Since the case note review (Stage I 2002/2003) a significant decline in admissions to SA hospitals for isolated methamphetamine psychosis could have occurred. There is a possibility that a decline in methamphetamine psychosis presentations occurred as the effects of the 2001/2002 heroin shortage eased and users reduced the quantity of methamphetamines consumed. There is some evidence in the IDRS (Stafford et al, 2005) to suggest this may have happened. However, there doesn't appear to have been any significant decline in separations from the three hospitals since 2002/03 (Department of Health SA, 2005)
- A change in diagnostic practices may have occurred in the health system resulting in an increasing incidence of mental health diagnoses being made in drug using individuals who might have otherwise gone undiagnosed therefore making them ineligible.
- Failure of physicians to identify and recruit patients into the study: Two possible reasons are:
    - Training and education of staff may have not been effective or extensive enough as participating sites experience high staff turnover
    - Staff may not be willing to recruit participants into the trial due to work pressures
- Further investigations included: questionnaires to all the principal investigators and key clinical staff (appendix L) working at each of the sites, a small casenote review (13 sequential patients) and a 3 month prevalence study conducted at the Royal Adelaide Hospital.

5.2.1 Staff Perceptions of Methamphetamine Psychosis

Hospital personnel including clinical nurse consultants, directors of emergency and psychiatry departments, registrars, medical officers, consultants and general nursing staff at each of the participating sites completed a short questionnaire to indicate staff perceptions about methamphetamine psychosis prevalence and issues surrounding the treatment of these patients. (See Appendix L)

A total of forty-four staff completed the questionnaire, the majority of respondents were general and clinical nursing staff (n=36). The majority of staff believed that the incidence of methamphetamine psychosis presentations

had increased (52.2%, n=23) or remained the same (34%, n=15) in the previous 12 to 24 months. Fifty percent (n=22) believed that the profile of these patients had remained the same. Those who believed that the profile had changed (40.9%, n=18) cited the following reasons for their belief;

- A lot more co-morbidity presentations
- Overall violence and aggression in the ED had increased
- Patients were harder to deal with
- There was more poly substance misuse, therefore more aggression and patients were more difficult to handle
- Patients had more bizarre behaviour; and also
- Staff were more educated in identifying drug-induced behaviour

Staff were also asked about the proportion of repeat presentations of patients they saw. The highest proportion of staff (52.3%, n=23) believed that less than 25% of these patients were repeat presentations and 59.1% (n=26) indicated that this situation had not changed over the last 12 months or so. Those staff who believed the situation had changed gave the following reasons for their belief:

- That drugs and readily available and were cheaper
- Changes in drug trends

5.2.2 Casenote Review

A case note review was conducted on 13 sequentially admitted patients to RAH between Dec 2004 and February 2005 (See Appendix M). Patients were eligible if they had a principal diagnosis ICD-10 coding F15.5 (mental and behavioural disorders due to use of other stimulants including caffeine + psychotic disorder). Two of these patients were recruited into the Assertive community care trial (Phase 2 of this study), one patient was recruited into the Acute Care Trial but they were discharged before interview. Two patients had previous Axis-I mental health diagnoses (one bi-polar and one schizophrenia not related to drug use) and one patient was admitted to the general psychiatric ward at the RAH with drug induced psychosis but did not agree to participate in the Assertive Community Care Trial.

Discounting the two patients with mental health diagnoses, one recruited into the Assertive Community Care Trial and one who was admitted to hospital; analysis was conducted on 9 patients.

Six patients were male and three female, mostly admitted to hospital on the weekend. The mean length of stay was 2.6 days with time of admission: 4-12 pm = 6 patients, 1-7am = 2 patients, after 7am =1 patient. Four patients were admitted to the short stay Extended Emergency Care Unit (EECU) and five patients were admitted to a general ward. Of these nine patients, only two had a previous drug-induced psychosis diagnosis.

In summary, patients attended hospital at various stages over the weekend and due to limited bed availability in the psychiatric ward were treated for a short period in a general medical ward or EECU before being discharged. It appears that patients were originally assessed by a medical officer in ED and then assessed by a psychiatric registrar. In most cases they were also assessed by an Assessment & Crisis Intervention Service (ACIS) support team member. Most case notes reported that the patient used methamphetamine by a number of routes such as intravenous, snorting or swallowing and some patients also reported cannabis use.

Temazepam, lorazepam, clonazepam, diazepam, olanzapine, midazolam and haloperidol were all reported to be used as treatment, though it was predominantly olanzapine + lorazepam. However, some patients were administered up to four different medications. Haloperidol was used with one patient transferred from a country hospital and another was administered intravenous haloperidol at the RAH after physical restraint. Midazolam was used only on one occasion.

No patients had a diagnosis of SAD (seasonal affective disorder). One patient had possible schizophrenia – however this statement did not appear to be backed up by any clinical query that the patient had schizophrenia.

5.2.3 Three Month Prevalence Study

Thirty-three patients with psychosis attending the RAH Emergency Department from June 2005 to September 2005 were examined. These patients were typically male (69.7%, n=23), and referred by police (51.5%, n=17), with 21.2% (n=7) also transferred from a regional area.

In most cases drug use history was via self report or from a friend/parent accompanying the patient to hospital. In very few cases a blood or urine test

was used to determine the presence of illicit drugs and to differentiate the particular drug taken, as many of these patients self reported poly drug use. Thirty one patients (93.9%) self reported past methamphetamine use (mainly administered intravenously). Patients also reported past cannabis use/abuse (63.6%, n=21) and past alcohol use/abuse (33.3%, n=11).

The mean age of these patients at hospital admissions was 28.9 yrs (SD ± 6.3), ranging between 19 – 46 yrs of age. Ten of the patients (30.3%) were 25 yrs old or younger. The range of hospital stay was from 1 – 23 days. Seventeen patients were admitted for 1 Day or less, however 11 of those were transferred to closed psychiatric ward, 3 were admitted to the emergency department only, and 2 were admitted to the short stay emergency extended care unit (EECU).

The study also found that 14 patients had a previous axis I diagnosis (42.4%), indicating an underlying mental health problem. Of these patients seven were diagnosed previously with schizophrenia and four patients were diagnosed with bi-polar affective disorder (BPAD). One patient received a diagnosis of possibly schizophrenia/BPAD and another two patients schizophrenia/schizoaffective disorder and BPAD/SAD, indicating that medical staff were possibly undecided or unsure of the underlying reason for the psychosis. As explained earlier, this is a problem associated with methamphetamine psychosis; the symptomatology is similar to paranoid schizophrenia and sometimes the two conditions are undistinguishable, The diagnostic criteria, which were guided by those in the DSM-IV (American Psychiatric Association, 200) are very difficult to apply in the acute care setting for acutely psychotic individuals. Medical officers are therefore often unable to make an accurate differential diagnosis as they must rely on their own estimate that what the patient is exhibiting is, in fact, methamphetamine-induced psychosis.

As the acute care treatment trial was designed to examine two common medical treatment regimes, the 3-month prevalence study also examined the medications administered to these patients. It was apparent that an inconsistent approach to the medical management of these patients was utilised.

Medications administered:

- Olanzapine 66.6% (n=22)
- Lorazepam (n=12)
- Risperidone (n=5)
- Clonazepam (n=5)
- Diazepam (n=5)
- Thiamine (n=4)
- Midazolam (n=3)
- Haloperidol (n=3)
- Temazepam (n=2)
- Chlorpromazine (n=2)
- Quetiapine (n=2)
- Fluvoxamine (n=1)
- Lithium (n=1)
- Amisulpride (n=1)

Medication Combinations administered to patients included:

- A single antipsychotic only (n=4)
- Benzodiazepine(s) only (n=1)
- Risperidone + Olanzapine (n=3), both antipsychotic medications
- Haloperidol + Olanzapine (n=2), both antipsychotic medications
- Quetiapine + Olanzapine (n=1), both antipsychotic medications

Twenty-one patients (63.6%) received the preliminary diagnosis of drug induced psychosis. The diagnosis was made in the majority of cases by the psychiatric registrar (42.4%, n=14), however diagnoses were also made by an emergency registrar (24.2%, n=8) or medical officer (3%, n=1).

6.1 Participants

Nineteen participants were recruited into the study between November 2004 and September 2005. As shown in Figure 6.1, Participants were originally admitted to a number of Adelaide metropolitan hospitals where they were recruited into the study, or they were transferred from an emergency department to closed wards within the RAH Glenside psychiatric facility for further treatment. Table 1 demonstrates where the initial (baseline) interviews were conducted.

Figure 6.1 Flow diagram of hospital admissions and transfers for the Assertive Community Care Project.

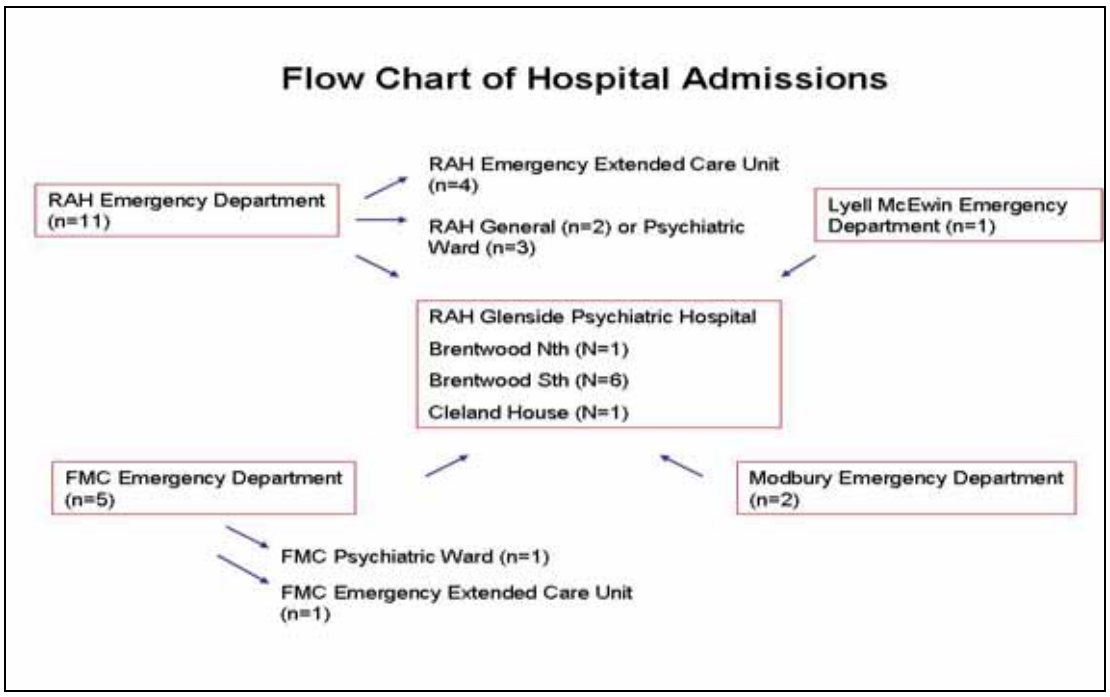


Table 6.1 Location of initial (baseline) participant interview

Hospitals where interviews were conducted	No. interviews
RAH Glenside Psychiatric Hospital	
Closed Ward - Brentwood South	6
Closed Ward - Brentwood North	1
Open Ward - Cleland House	1
Royal Adelaide Hospital	
Closed Psychiatric Ward	3
General Medical Ward	2
Extended Emergency Care Unit	4
Flinders Medical Centre	
Psychiatric Ward	1
Extended Emergency Care Unit	1
Total	19

6.1.1 Characteristics of sample

Overall, ninety-seven potential participants where identified by ward staff. Of these 19 individuals agreed to participate, 5 patients refused and 7 patients were discharged before research staff could conduct the initial interview. Table 6.2 shows all the patients who were found to be ineligible for the study upon review of their case notes.

Twelve participants were allocated to be case managed (9 males and 3 females), with the remaining six participants allocated to normal hospital post-discharge care (treatment control). Interviews were conducted when the ward nursing staff thought the patient was in a suitable medical condition to give informed consent and in some cases this was a couple of days after admission to the ward.

Table 6.2 Potential participants identified to be ineligible for the study

Reason for patient ineligibility	No.
Location – transferred from country area	17
Previous Schizophrenia diagnosis	27
Previous Bi-Polar Disorder diagnosis	11
Previous Schizoaffective Disorder diagnosis	9
Other	2
Total	66

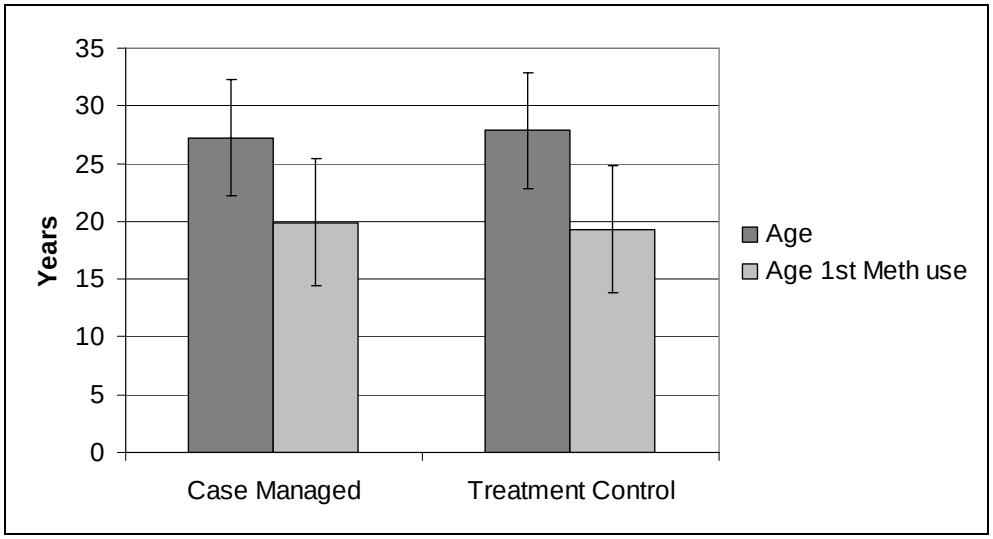
Demographic information gathered from the 19 participants at the initial interview is presented in Table 6.3. Participants in the study were predominantly non indigenous males. The highest proportion of participants reported living in a family home, paying rent (36.8%) and had ended their schooling before completing year 10 (42.1%). Not surprisingly, the majority of participants were either unemployed (63.2%) or were involved in part-time employment (21.1%) at the time of the baseline interview and of those receiving government financial support, the most common were the New Start Allowance (31.6%) and the Disability Support Pension (21.1%).

Table 6.3 Demographic Characteristics of the Sample

Demographic Characteristics of the Sample	
Characteristics	N* *(%)*
Sex	
Males	15 (78.9%)
Females	4 (21.1%)
Country of Birth	
Australia, nonindigenous	14 (73.7%)
Australia, indigenous	3 (15.8%)
Other than Australia	2 (10.6%)
Living Situation	
Family home (paying rent)	7 (36.8%)
Family home (not paying rent)	2 (10.5%)
Private share house (paying rent)	3 (15.8%)
Private residence	3 (15.8%)
Hostel	2 (10.5%)
No fixed address	2 (10.5%)
Education	
Up to year 10	8 (42.1%)
Up to or part of year 11	3 (15.8%)
Year 12	5 (26.3%)
Incomplete Degree/Diploma	1 (5.3%)
Completed Degree/Diploma	1 (5.3%)
Employment	
Unemployed	12 (63.2%)[#]
Part-time employed	4 (21.1%)
Full-time employed	3 (15.8%)
Financial Support	
New Start Allowance	6 (68.4%)
Disability Support Pension	4 (21.1%)
Parenting Support/Sole Parent pension	2 (10.5%)
Unemployment Benefit	1 (5.3%)
Youth Allowance	1 (5.3%)

*N=19 [#] 2 participants were full-time mothers (participated in no paid work)

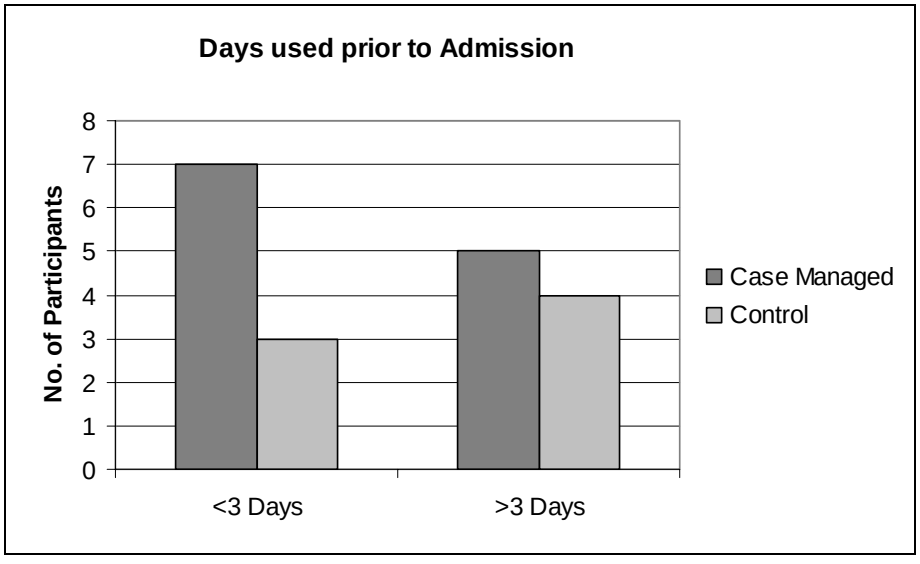
Figure 6.2 *Age of participants in each treatment group at time of baseline interview and age when 1st used methamphetamine.*



There were no significant differences between the treatment groups for either age at interview (P=0.979) or age when first used methamphetamine (P=0.581).

As shown in Figure 6.2, the age of participants in each group were not significantly different (P=0.979) with a mean of 27.25 (± 4.9) years for the case managed and a mean of 27.86 (± 5.1) years for the treatment control. Participants' ages ranged overall from 19 to 37 years. The age of 1st methamphetamine use was also similar for both groups with a mean of 19.92 (± 5.6) years for the case managed and 19.29 (± 4.8) years for the treatment control. The age of 1st methamphetamine use ranged from 15 to 32 years. This indicates a mean of almost 10 years of methamphetamine use.

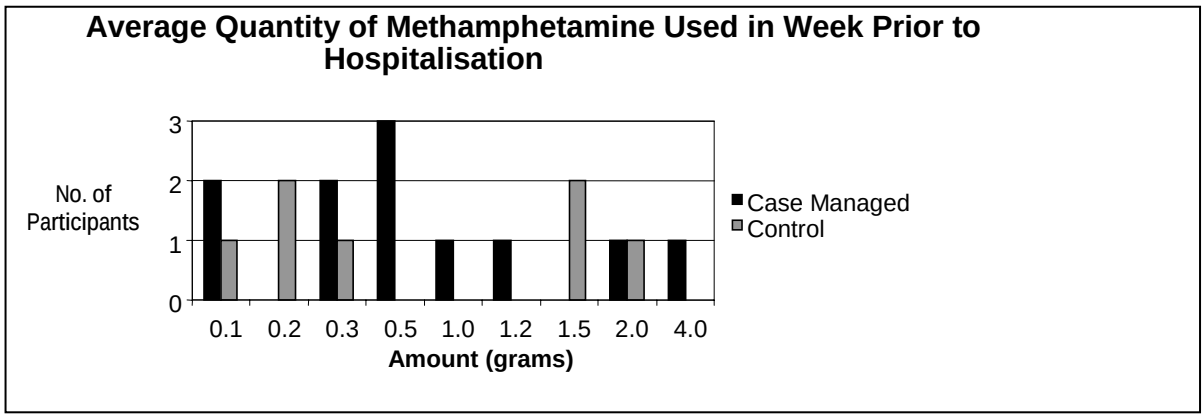
Figure 6.3 *Participants days of recent methamphetamine use in the week prior to admission to hospital.*



In the week prior to admission to hospital, patients reported using methamphetamine on 3.3 (± 2.5) days if they were in the case managed arm compared to 2.6 (± 1.3) days for patients in the treatment control group who. As shown in Figure 6.3, 10 participants used methamphetamine on 3 days or less in the week prior to hospitalisation and 9 participants used on more than 3 days. This may indicate “binge” use, or a pattern of regular, daily use of methamphetamines prior to hospitalisation. Of the patients allocated to the case management arm of the study, all clients reported engaging in poly-substance use from adolescence, typically cannabis and alcohol.

The median time patients spent in hospital was 6 days, ranging from one to 26 days. Four patients were hospitalised for 10 days or more and only one of those patients was experiencing a first psychotic episode. One patient was suspected of having schizoaffective disorder, one a suspected bi-polar effective disorder and the other was previously diagnosed with personality disorder. If patients were interviewed at a different location to that of their admission, patients’ casenotes were reviewed from each attending hospital to establish the total duration of hospitalisation.

Figure 6.4 *Quantity of methamphetamine consumed in the week prior to hospitalisation for the two treatment groups.*

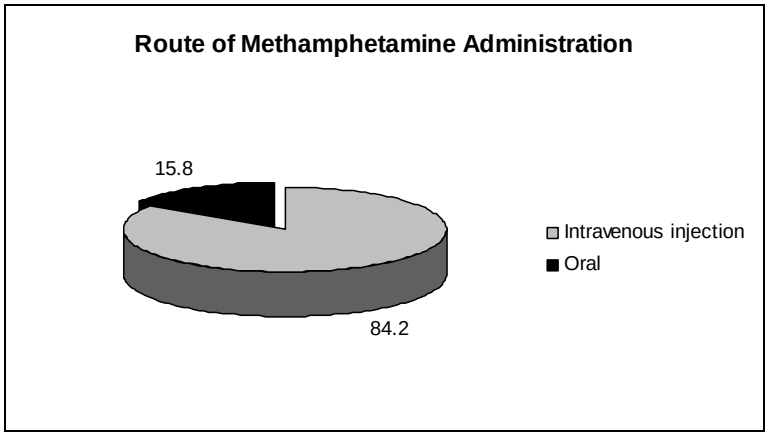


Note that generally a point of methamphetamine is the equivalent of 0.1 grams (many participants reported the number of points that they consumed which was subsequently converted to grams for comparability).

As shown in Figure 6.4, the majority of participants reported consuming between 0.1 grams (1 point) to 0.5 grams (5 points) of methamphetamine in the week prior to hospitalisation. As a whole, the case managed group reported administering a mean of 0.95 grams which was slightly higher than 0.83 grams for the control treatment group. Two participants reported consuming two and one participant four grams of methamphetamine in that

week, indicating escalating or “binge” use. This may also demonstrate a high level of dependence of the drug for these participants. The main form of administration was via intravenous injection, however some participants reported only ever administering methamphetamine orally (Figure 6.5).

Figure 6.5 *Percentage of participants and common route of administration of Methamphetamine.*



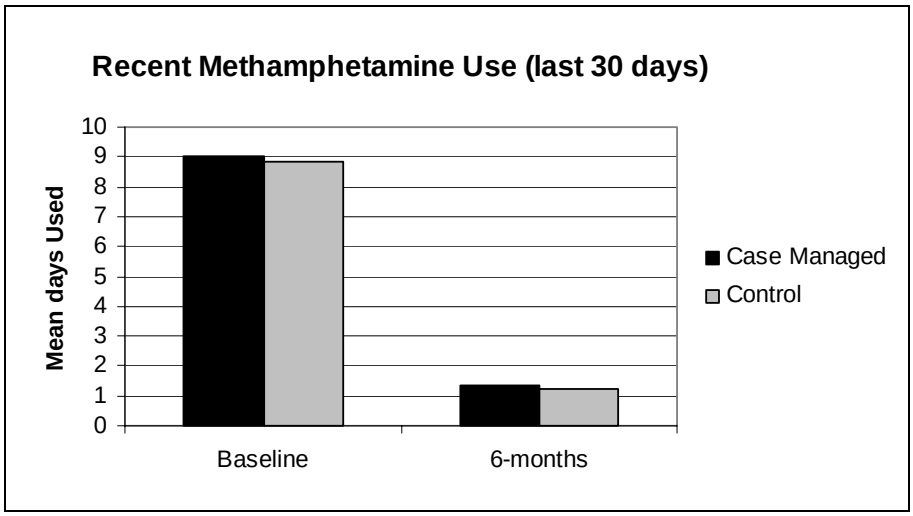
Participants were also asked about their other drug use in the week preceding hospitalisation for methamphetamine psychosis. The most commonly reported drug was cannabis, followed by alcohol, as shown in Table 6.4. However, a range of drugs were reported to be used.

Table 6.4 *Other drugs used in week prior to admission*

Other Drug	No. of participants
Cannabis	14
Alcohol	4
Ecstasy	2
LSD	1
Ketamine	1
Heroin	1
Morphine	1
Illicit Benzodiazepines	1

Participants were also asked to report on their recent drug use (in last 30 days). Due to difficulties in obtaining participants’ 3 and 6 month follow-ups, particularly participants in the control group, numbers were reduced in a comparison of recent drug use at 6-months. However, as shown in Figure 6.6, those participants who were followed-up showed a dramatic decrease in use in both treatment groups. The range of days used at baseline was 1 – 30 days (case managed group) and 2 – 19 days (control group).

Figure 6.6 *Recent Methamphetamine Use (last 30 days) for each of the treatment groups at baseline (interview in hospital) compared with 6-month follow up.*



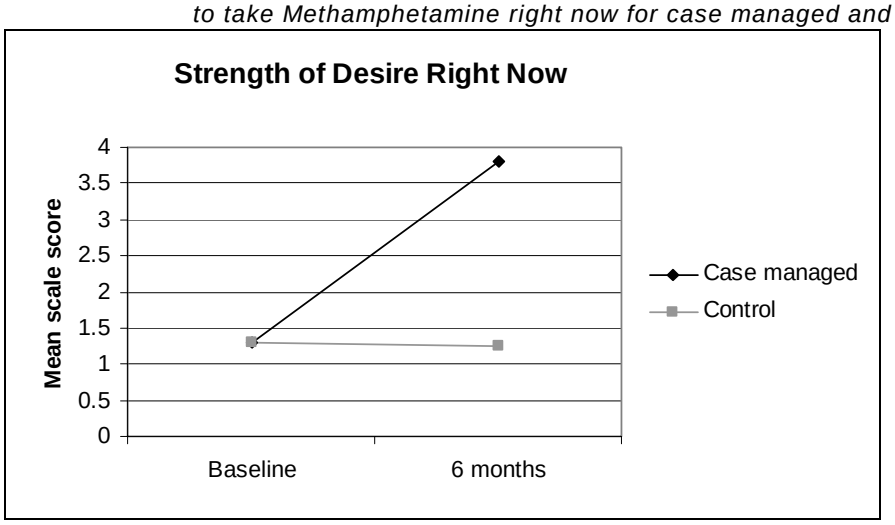
Baseline: case management (N=12), control (N=7). 6-Month follow up: case management (N=6), control (N=4).

6.2 Research Instruments

6.2.1 Methamphetamine Craving Questionnaire

The methamphetamine craving questionnaire was used to determine different aspects of methamphetamine craving. As shown in Figure 6.7, patients in both treatment groups had relatively little desire to use methamphetamine at the time of baseline interview. However, the strength of desire had increased for case managed clients at the 6-month follow-up. It must be kept in mind that there were substantially fewer subjects at the 6 month follow-up compared to baseline.

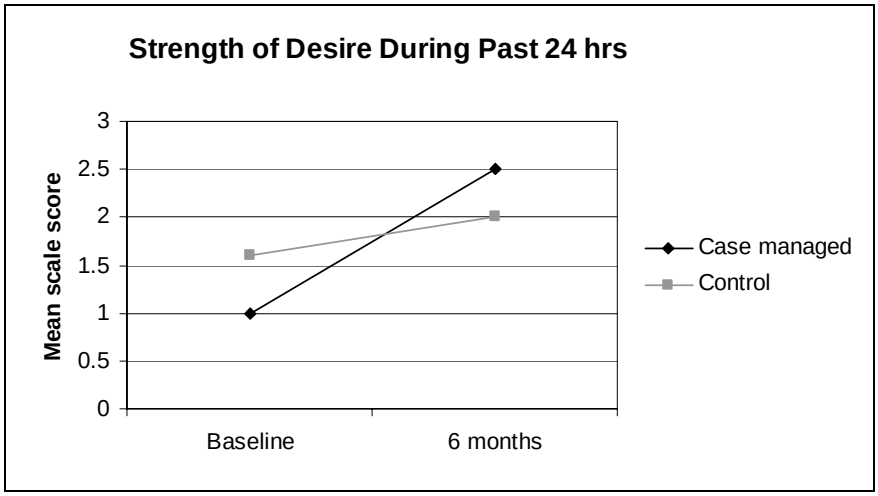
Figure 6.7 *Question 1 of the methamphetamine craving questionnaire: Strength of desire to take Methamphetamine right now for case managed and control participants.*



Scores were determined using a Likert scale 0 – 9, where 0 = No Desire and 9 = Extremely Strong.

Participants were also asked to rate how strong their desire for methamphetamine was during the past 24 hours. As shown in Figure 6.8, both groups demonstrated a slight increase their desire for methamphetamine at 6-months when compared to baseline.

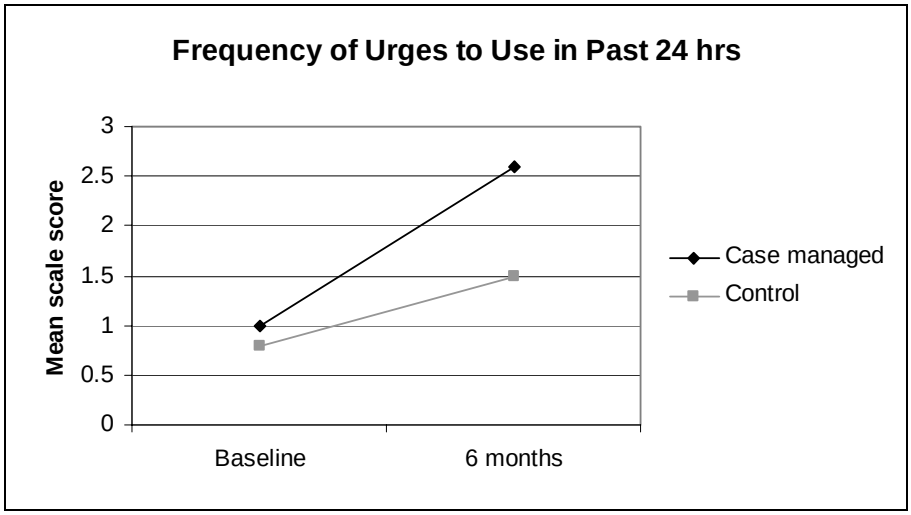
Figure 6.8. *Question 2 of the methamphetamine craving questionnaire: Strength of desire for methamphetamine during the past 24 hours.*



Scores were determined using a Likert scale 0 – 9, 0=No Desire and 9=Extremely Strong.

Participants in both the case managed and the control treatment groups reported a slight increase in how often they had the urge to use methamphetamine in the past 24 hours prior to the interview at 6-months compared to baseline (Figure 6.9).

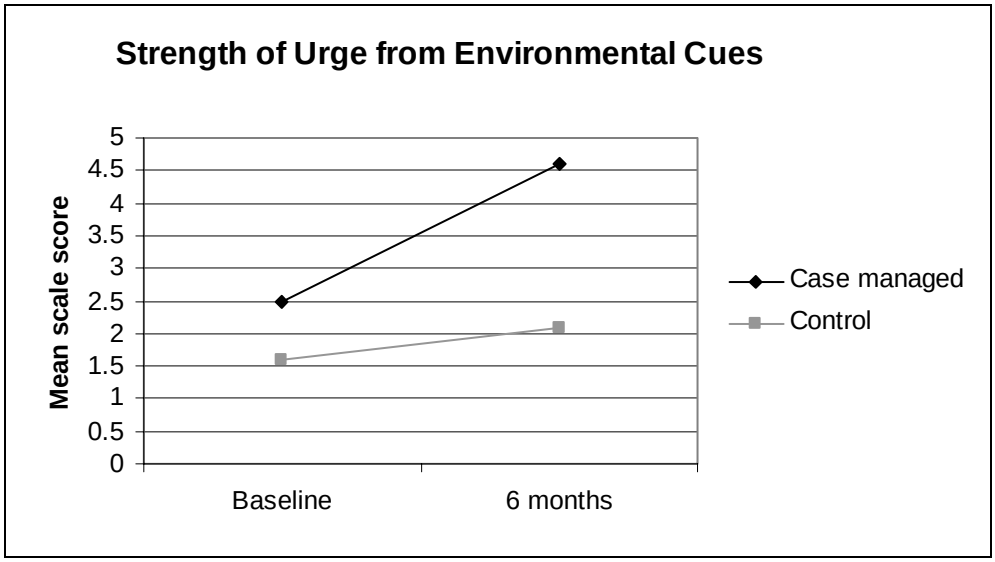
Figure 6.9 *Question 3 of the methamphetamine craving questionnaire: How often have you had the urge to use during the past 24 hours?*



Scores were determined using a Likert scale 0 – 9, 0=Not at all and 9=Extremely Often.

To investigate methamphetamine users strength of craving to drug-related environmental cues, the participants were asked to rate how strong their urges had been for methamphetamine in the past 24 hours when something in the environment had reminded them of drug use, Figure 6.10. The two treatment groups both showed an increased trend in the strength of urges to use at 6-month follow-up compared to baseline. However, case managed clients' urges to use showed a greater increase than control clients.

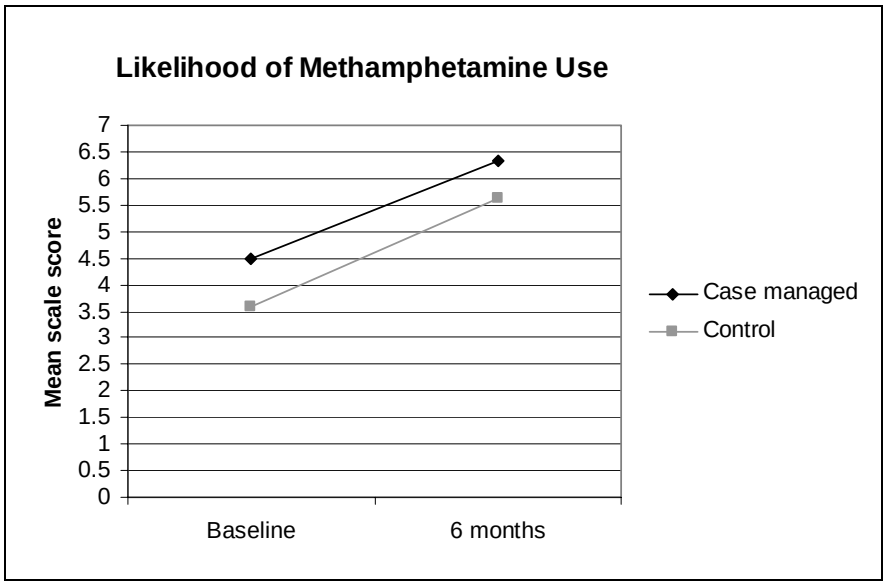
Figure 6.10 *Question 3 of the methamphetamine craving questionnaire: In the past 24 hours, how strong have your urges been for methamphetamine when something in the environment has reminded you of it (environmental cues to drug use).*



Scores were determined using a Likert scale 0 – 9, 0=No Urges and 9=Extremely Strong.

An interesting finding at baseline related to the mean scale score for patients in both treatment groups for occasions when they were in the environment where they had previously used drugs. When compared to the other craving questions, the mean scale score for both treatment groups was high indicating that even though the participant had experienced a drug-induced psychosis, if they were in their drug-using environment they believed they would use methamphetamine again. This score increased in both groups at the 6-month follow-up, as shown in Figure 6.11. However, this was not reflected in participants' reports of recent drug use.

Figure 6.11 *Question 3 of the methamphetamine craving questionnaire: Likelihood of taking methamphetamine if you were in the environment of previous use.*



Scores were determined using a Likert scale 0 – 9, 0=Not at all and 9=I'm sure I would use.

6.2.2 *Hospital Anxiety and Depression Scale*

Participants' anxiety and depression was assessed using the Hospital Anxiety and Depression Scale (HADS). From this assessment a normal, borderline abnormal or abnormal score was determined. Because of the reduction in the number of participants at 6-month follow-up for both treatment groups relative to baseline, it is difficult to comment on any changes in participants' depression and anxiety over that time. However, Table 6.5 shows that a number of participants had "borderline abnormal" and "abnormal" levels of anxiety and depression at baseline, which was to be expected amongst this client group.

Table 6.5 Hospital Anxiety and Depression Scale

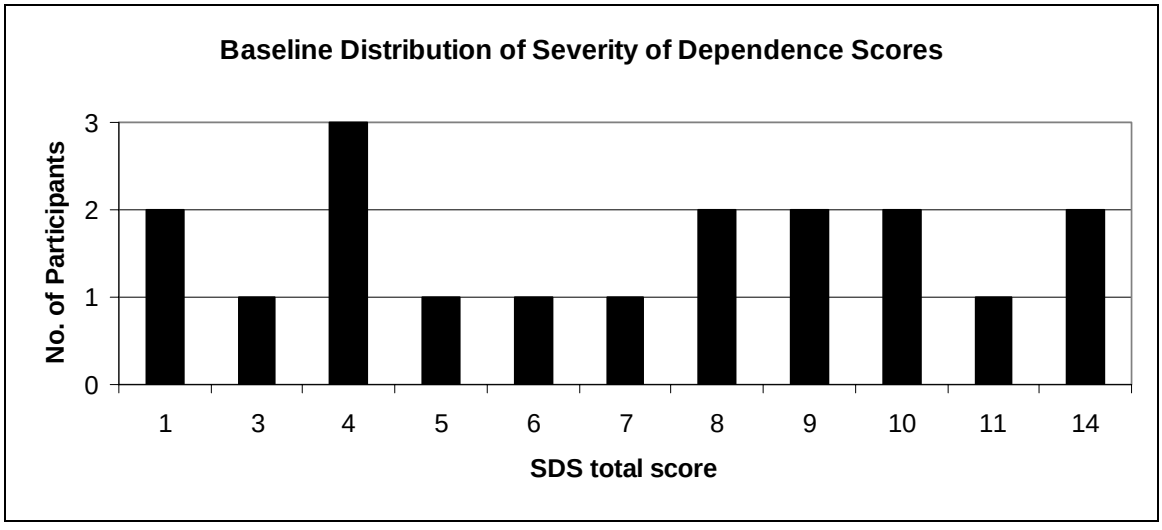
	Baseline		**6-month follow-up**	
Anxiety	Case Managed	Control	Case Managed	Control
Normal	6	2	1	1
Borderline Abnormal	3	1	2	1
Abnormal	3	3	3	2
Depression				
Normal	7	2	2	3
Borderline Abnormal	2	2	2	0
Abnormal	3	2	2	1

6.2.3 Severity of Dependence Scale

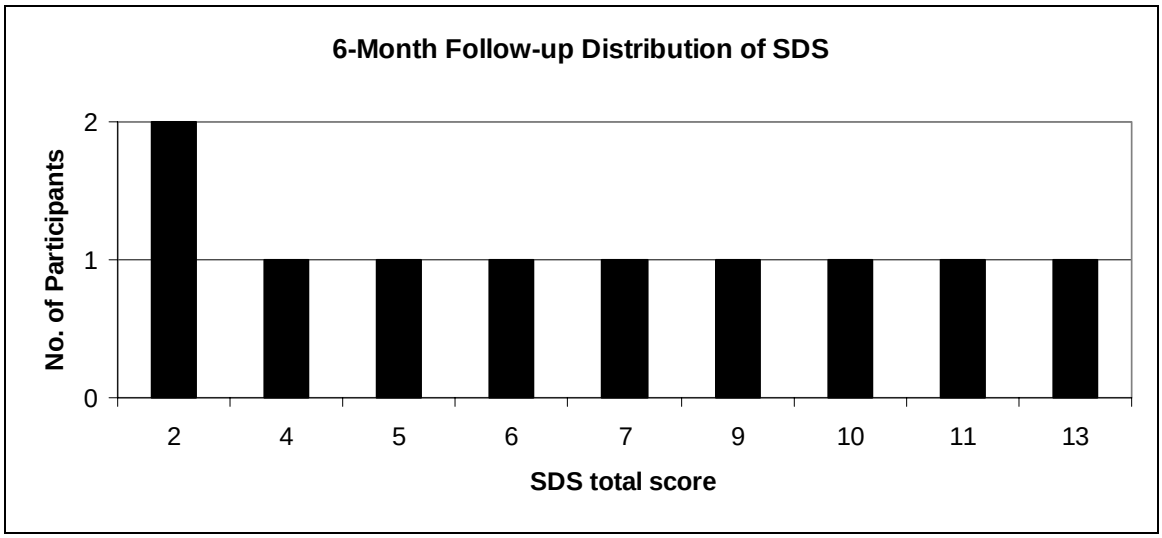
The degree of methamphetamine dependence of the participants was assessed using the severity of dependence scale (SDS). This is a five-item scale concerned with the psychological components of dependence and specifically assesses impaired control over drug taking and with patients' degree of preoccupation and anxieties over their methamphetamine use. A score of 4 or greater is indicative of problematic methamphetamine use.

Figure 6.12 A: Baseline distribution of severity of dependence scores for all participants (N=18). B: 6-month follow-up distribution of SDS for all participants (N=10). A score greater than 4 is indicative of problematic/dependent methamphetamine use.

A



B



As shown in Figure 6.12, at baseline 15/19 (78.9%) of participants had a SDS score indicating problematic methamphetamine use. At 6-month follow-up, eight participants had a SDS score of four or greater.

6.2.4 *The Blood Borne Virus Transmission Risk Assessment Questionnaire*

The blood borne virus transmission risk assessment questionnaire (BBV-TRAQ) is an instrument that examines the frequency with which individuals who, in the last month, engaged in risky injecting, sexual and skin penetration practices. The maximum possible scores for the injecting, sex, and other skin-penetration sub-scales are 100, 40 and 30 respectively.

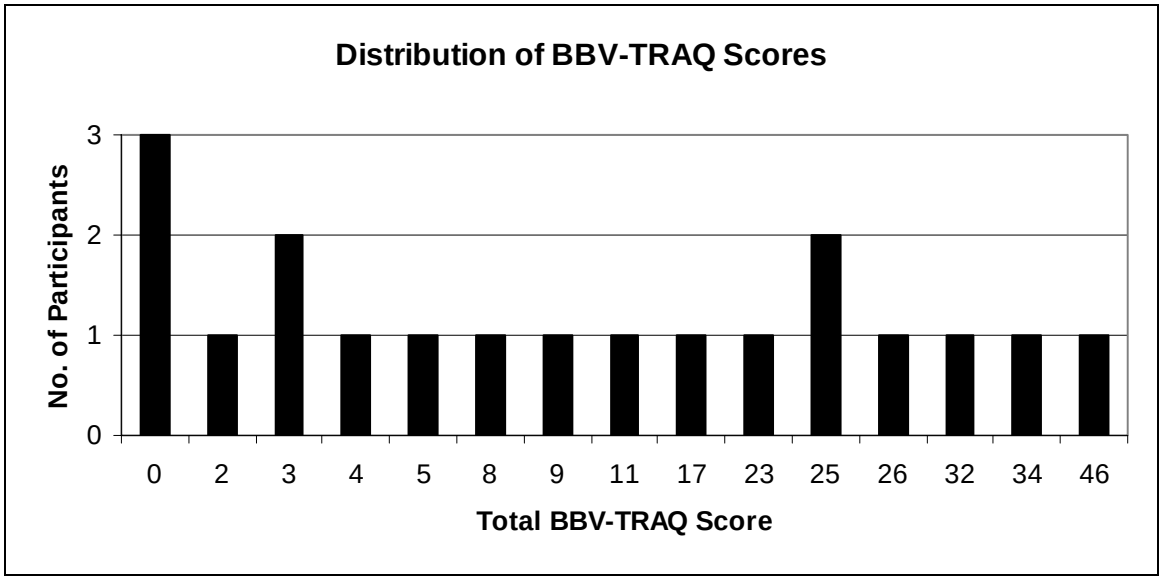
Table 6.6 *Mean scores at baseline and 6-month follow-up for the two treatment groups*

	Baseline		**Follow-up (6-months)**	
	Case Managed (N=12)	**Treatment Control (N=7)**	**Case Managed (N=6)**	**Treatment Control (N=4)**
Injection Risk				
Mean	9.58	13.57	0.67	1.57
SD	9.968	14.58	2.309	3.047
Range	0-32	0-39	0-8	0-8
Sexual Behaviour				
Mean	3.08	2.71	0	0.86
SD	4.981	4.112	0	2.268
Range	0-16	0-10	0	0-6
Skin Penetration				
Mean	0.58	0	0.08	0.29
SD	1.379	0	0.289	0.756
Range	0-4	0	0-1	0-2

*NB Number of participants at 6-month follow-up was reduced (N=10) compared to baseline (N=19).

As shown in Table 6.6, participants in the treatment control group had a higher mean injection risk score than those in the case managed group. This could indicate a lack of understanding of injection risk behaviours, particularly with regards to the use of other injecting equipment, for example, sharing of spoons or mixing containers and assisting another person with their injection without washing their hands. Sub-scores for sexual behaviour and skin penetration practices were quite low, with many participants reporting no engagement in sexual intercourse in the last month. However, many indicated that they would use protection if they were sexually active. A number of participants (N=7) had a total score greater than 20, as shown in Figure 6.13, for the BBV-TRAQ. Scores for injecting and sexual risk behaviours were substantially lower for both groups at the 6 months follow-up compared to baseline.

Figure 6.13 Distribution of total BBV-TRAQ scores for all patients at baseline.

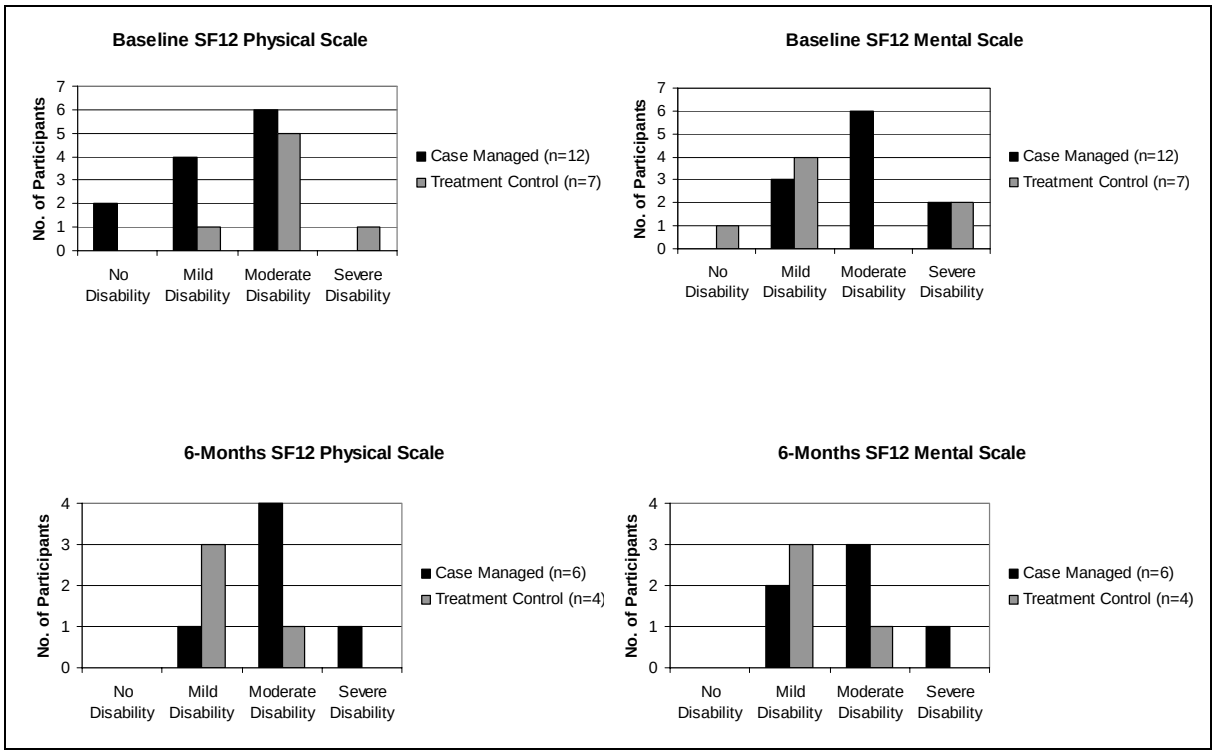


6.2.5 Short Form-12 Health Survey

The Short Form 12 Health Survey (SF12) was incorporated into the interview to provide a measure of patients' health status. The SF-12 comprises eight subscales; physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality (energy/fatigue), social functioning, role limitations due to emotional problems and general mental health (psychological distress and psychological well-being). This questionnaire indicates physical and mental health problems even though the participant may not perceive there to be a problem. Each question relates to the month prior to admission to hospital or month prior to the follow-up interview.

As shown in Figure 16.14, the majority of participants were suffering mild to severe physical and mental disabilities. This is despite one participant (5.3%) reporting their general health as excellent, one (5.3%) as very good, nine (47.4%) as good and seven (36.8%) as fair. Only one participant reported that their general health was poor. It is difficult to interpret the changes in SF 12 scores between baseline and 6 month follow-up due to low number of patients available for follow-up. However, 100% of the participants (n=10) were found to be suffering mild to severe physical and mental disabilities in the month prior to the 6 month follow-up.

Figure 6.14 SF12 Physical and Mental Scale at baseline and 6-month follow-up



6.3 Themes Identified By Case Manager

The following section describes some commonalities exhibited by clients participating in the Assertive Community Care Project as identified by the case manager.

6.3.1 Demographics

Clients were recruited to the study after admission to one of four major city hospitals. Clients who were case managed in the Assertive Community Care Project generally resided within 20 kilometres of the Adelaide metropolitan

area. The average age of clients was approximately 28 - 32 years. The majority of clients were male and Caucasian.

6.3.2 Psychiatric Symptomatology

Of the case managed clients who were able to be followed-up, none experienced a further incidence of psychotic recurrence or methamphetamine psychosis-related hospital admission. Similarly, no recurrence of psychosis was experienced by those patients in the control group who were available for follow-up. On the whole, levels of depressive symptoms were observed to increase, with clients generally reporting low mood, teariness and mood swings within weeks following hospital discharge. Furthermore, anxiety-related symptoms generally remained unchanged.

The majority of case managed clients expressed no suicidal ideation or had made any attempts at suicide post discharge from hospital. Three of the case managed clients with diagnosed personality disorders had further episodes of self harm. This included self-inflicted injuries such as burning, cutting & genital mutilation.

With regard to clients adhering to their medication regimens following discharge from hospital, it was observed that generally clients found it difficult continuing with prescribed medications. The reasons for this included that generally clients did not identify their medication as a priority and had difficulty attending GP appointments for further assessment and prescribing of medications. From a case management perspective, GP appointments were often made for clients, with clients' intention to attend, however, on the scheduled day, even though transport and assistance were provided, clients generally failed to attend. Clients' reasons for non-attendance included not presenting/or being unable to be contacted on the day, or clients having other activities taking precedence on the day.

6.3.3 Drug Frequency

Prior to clients' psychosis and subsequent hospitalisation, they generally had increased their usual level of methamphetamine use, with accompanying increased frequency of injecting methamphetamine. For example, preceding their psychosis, clients would go on a binge-like pattern of using five days in a

row, injecting approximately half a gram, to a gram and a half of methamphetamine per day.

All case managed clients had engaged in poly-substance use from adolescence, on average from thirteen years of age, with cannabis & alcohol being the first substances used. Throughout the case management period, no clients sought drug & alcohol counselling/support, with some clients expressing that they were already seeing a case manager, which negated their need to engage with a Drug & Alcohol community worker. Drug & Alcohol appointments were scheduled for certain clients who were seeking counselling, however due to a variety of reasons, as well as being actively encouraged and supported, these clients did not subsequently attend for drug & alcohol counselling.

The majority of clients decreased their use of methamphetamines after discharge from hospital. The majority of clients didn't return to any further methamphetamine use within the three month post discharge period. Two clients subsequently used, one using one point (0.1g) on one occasion only, with the other using orally approximately five times post discharge. It was very difficult to ascertain exact amounts of methamphetamine used by these clients. Some clients who remained abstinent from methamphetamine post psychosis substituted further drug use with another drug, commonly alcohol or cannabis. Once again, it was difficult to ascertain exact amounts.

6.3.4 Motivations for drug use

A commonly cited factor by clients in regard to positive aspects regarding their methamphetamine use was increased energy; however the majority of clients indicated that no advantages could be identified. In regard to negatives of their methamphetamine use, clients commonly cited the main detriments of their methamphetamine use as being paranoia, irritability and having disturbed sleeping patterns. On discharge, many clients recounted their negative experiences of being detained in a mental health facility which had clearly impacted on the way they approached future methamphetamine use. Clients clearly recalled being physically restrained by staff and being injected with sedating agents and antipsychotic drugs. Client feedback indicated that they did not wish to place themselves at risk of readmission to a psychiatric facility and the subsequent perceived loss of control and reduced rights and privileges

whilst being detained in a closed psychiatric facility. These factors were often at the forefront of clients' thoughts as a deterrent to further methamphetamine use.

6.3.5 *Blood Borne Virus Risk Taking Behaviour*

One case managed client was HIV positive and 5 were Hepatitis C (Hep C) positive. Clients generally had limited awareness of the risk factors associated with Hep C and how the Hep C virus is transmitted. Clients who were Hep C positive also generally lacked an understanding of their Hep C status, for example, the potential for contracting another genotype of Hep C.

With regard to sexual behaviour, none of the case managed male clients engaged in regular sexual intercourse. The reasons for not being sexually active included not residing with their regular partner, or their partners refusing to see the client due to erratic or potentially violent behaviours. When questioned on practicing safe sex, the majority of clients reported that they would wear condoms whilst engaging in sexual intercourse.

For all case managed clients, route of administration for methamphetamine was intravenous.

6.3.6 *Health & Social Functioning*

The general attainment level of education for case managed clients was completion of year 10, often dropping out of school during year 11. The majority of clients were unemployed, with only one client being employed full-time. Case managed clients all had current legal issues/pending court cases, and many reported they had often been involved in various criminal activity. The clients' legal issues were often due to violent and erratic behaviours relating to their methamphetamine use. Five of the case managed clients had experienced the death of a parent from a young age, four of whom had lost their mothers. This resulted in the absence of a parent from a young age and as a result these clients received limited parental guidance and support. Some of these clients recalled their drug use commencing shortly after the death of their mothers with significant grief and loss issues surrounding this.

In regard to personal relationships, none of the case managed clients were married and most were separated from their partners. The majority of these

clients had limited contact with family members or significant others, resulting in very limited support mechanisms. This was commonly attributed to their partner being frustrated at the clients drug use and associated erratic behaviours, in particular, unreliability, aggression and violence. The majority of the clients were separated from their partners and rarely saw their children, which often contributed to their level of depression.

The general physical health of clients was often below what they considered optimal. For example, clients reported that were frequently tired and predisposed to catching various colds and other viruses. Clients further reported that within the six to twelve month period prior to being hospitalised they had incurred a weight loss of approximately six kilos. This was related to clients' methamphetamine use and associated lifestyle factors including not consuming a regular or balanced diet and erratic sleep/wake cycles.

6.3.7 Problems with participant follow-up

A number of difficulties were also encountered when following-up participants. Reasons included phones were disconnected or the participants were homeless or couch hopping, Phone contact with friends and family was also found to be unhelpful as clients did not make regular contact with these designated people. Every attempt possible was made to follow-up each of the participants but unfortunately this was unsuccessful for nine participants.

6.4 Case Studies

A couple of case studies have been included to give more detail into the motivations for use and issues related to dealing with their drug and alcohol problems. Names have been changed or abbreviated to protect the clients' identity.

6.4.1 Case One

KL was a 19 year old single aboriginal mother admitted to a public hospital emergency department for methamphetamine-induced psychosis and subsequently transferred to a closed unit psychiatric facility due to her highly agitated behaviour. Preceding hospital admission, KL had received police attendance on previous occasions due to her behavioural disturbances. This was her first admission for methamphetamine induced psychosis and she had experienced no previous psychiatric history. The mother of the client suicided

when she was aged 13 years and she frequently had difficulties dealing with angry feelings and aggression.

The client was physically run down, often tired, and had experienced a recent weight loss of 6 kilos, primarily due to methamphetamine use and poor diet. KL also had a seven year history of poly substance abuse, commencing with alcohol & cannabis at twelve years of age and she had been using methamphetamine for 6 to 12 months. Preceding hospital admission, KL had increased her methamphetamine use, using in a binge like pattern. However, it was difficult to ascertain frequency and amounts of drugs used as she was generally uncommunicative and a vague historian. KL also continued to be a heavy cannabis user and binge drinker.

KL had presenting psychotic symptoms of disorganised thoughts, hallucinations and agitation. Duration of hospital stay was approximately two days, with all symptoms of psychosis resolving prior to discharge. Following hospitalisation, the client did not continue with olanzapine (antipsychotic medication) and reported no further cravings for methamphetamine.

When discussing safe injecting and safe sexual practices, the client indicated that she had never shared needles or other injecting equipment. She was sexually active with her partner and stated that her partner always wore condoms.

KL had been residing in a single mothers' residence for four months prior to her psychotic episode and before this had been in an aboriginal shelter. KL had ongoing accommodation issues due to having difficulty adhering to various accommodation venue rules and regulations. KL had a son aged approximately 18 months old, with the primary carers of her son being her grandmother and auntie. The client had no contact with her father and had strained relationships with the majority of her family members. KL was also continually plagued by financial difficulties and trouble with the police which included previous assault charges and outstanding fines. KL was receiving a supporting mother's pension. From a social perspective all of the client's acquaintances were using speed on a regular basis. The client was unable to identify any interests and/or hobbies or activities that she wished to participate in.

At six month follow-up, the client was residing at her auntie's residence and still encountering problems securing stable accommodation, with another auntie continuing to care for her child. With regard to her drug use, KL reported that she rarely used methamphetamine, and if using, would use orally. Reasons given for rarely using speed was that she didn't like the comedown and was fearful of re-hospitalisation. KL continued to use cannabis heavily, using approximately 4 – 5 money bags per week. Additionally, she consumed moderate levels of alcohol, with no other drug use reported, including licit, illicit or prescribed medications.

6.4.2 Case Two

TL was a 30 year old Caucasian male apprehended and brought in by police to a hospital emergency department after being found driving around aimlessly and exhibiting bizarre & paranoid behaviours. The client was subsequently admitted to a closed ward psychiatric unit. For approximately one month preceding the methamphetamine-induced psychosis, the client reported that he was awake 24 hours a day. During this period of being constantly awake, TL spent much of his time out driving in his car, claiming that he was out searching for his soul mate, alleging that people were smiling, waving, talking in codes and sending messages to him. TL further reported that his television was also sending him messages. This was the first presentation for methamphetamine-induced psychosis for TL and he had no previous psychiatric history.

The client's father, who experienced alcohol related issues, died in a fatal truck accident when the client was aged twelve. A few years later, TL's mother died suddenly of an aneurysm. TL experienced significant grief issues surrounding these events which subsequently impacted on his drug use. TL also had a long standing history of poly substance use, commencing with cannabis use at 13 years of age.

TL initially presented to DASSA services in 2003 for problematic speed use, entering detoxification and receiving counselling support. He began experimenting with amphetamines at 17 years of age and had been using amphetamines for approximately 8 years, administering intravenously. However, TL was negative for blood borne viruses. Preceding hospitalisation,

TL had been using approximately a half to one and a half grams of speed per day.

TL presented to hospital with psychotic symptoms of paranoia, irritability & delusions. All psychotic symptoms abated within a few days of admission to a closed psychiatric ward. Post hospitalisation, the client often felt depressed and was prone to experiencing mood swings. He ceased taking his prescribed antipsychotic medication due to uncomfortable side effects, negatively affecting his work as a manual labourer.

The motivator for ceasing methamphetamine use was that TL was frightened that he had lost control, he had incurred financial loss whilst being hospitalised and had generally disliked his experiences whilst being detained in a closed unit psychiatric facility. Another motivator for TL was that he wished to get himself well and strive towards reconciliation with his partner enabling him to get access to see his child.

At 3 month follow-up the client reported that he had used methamphetamine approximately six times orally, and felt as though his speed use was in control. Cravings for methamphetamine had been significant and often difficult to deal with. From a case management perspective, we revisited earlier motivational interviewing, discussed strategies for coping with cravings and encouraged client to engage with regular drug & alcohol counselling. TL continued moderate daily use of cannabis and alcohol consumption of two to four standard drinks per day.

TL continued to be employed as a full-time labourer, and had managed to reduce some of his financial debt. The client owned his own house, but resided in rental accommodation to enable his ex-partner and three year old child to live in the house. TL experienced ongoing relationship issues with his ex-partner and due to this, had difficulty accessing visits with his child. TL had a restraining order against him due to previous issues of aggression and violence towards his partner. Just prior to the 6 month follow-up, the case manager was contacted and advised that TL had returned to methamphetamine use and had entered inpatient detoxification for methamphetamine. Furthermore, TL was no longer employed and had no current accommodation.

At 6 month follow-up the client had recently spent eight days in jail due to breaching his bond. He had found accommodation living with a friend and had plans of starting his own business. He had remained abstinent from methamphetamine for approximately one month and had moderate cravings. TL had also remained abstinent from cannabis. Alcohol consumption was five to six standard drinks of spirits (Rum) every second day. TL frequently felt depressed, however expressed no suicidal ideation. TL was receiving frequent support from his sister. His relationship with his partner remained strained, resulting in restricted access to his son. TL remained unemployed, was considering a possible career change, and was remaining strong in his resolve to abstain from further methamphetamine use.

SECTION 7 DISCUSSION AND RECOMMENDATIONS

7.1 Discussion

This research program initially sought to examine the efficacy of two different medication protocols for the treatment of methamphetamine-induced psychosis – a benzodiazepine (clonazepam) and a combination regimen – clonazepam and the antipsychotic, olanzapine.

Due to low recruitment into the Acute Care Trial (Phase I), the project was redesigned to include a review of staff perceptions of methamphetamine-induced psychosis, a case note review of thirteen consecutive patients admitted for this disorder, a three months prevalence study conducted at the Royal Adelaide Hospital (RAH) and an analysis of reasons for such low recruitment numbers.

The questionnaire examining staff perceptions of methamphetamine-induced psychosis indicated that they believed the incidence of methamphetamine-induced psychosis presentations to hospital emergency departments had increased. Patients were reported to be more agitated, aggressive and violent and therefore harder to deal with in the emergency setting. A number of patients were reported to be presenting with co-morbid mental health problems with many being poly-drug users/abusers, many were typically experiencing their first psychotic episode with less than a quarter of patients being repeat presentations.

The casenote review of 13 sequentially presenting patients with methamphetamine-induced psychosis indicated that presentations mainly occurred on the weekend and patients were treated between 4pm and 12am. The mean length of patient stay was 2.6 days much less than 15.3 days reported by Morefield et al., (2004). However, in the current casenote review many patients were found to have been transferred to closed psychiatric facilities and the time patients spent there was not included in this calculation. Consistent with the findings of Morefield et al., (2004), the current review found that a range of medications were being used to treat this disorder indicating a continuing inconsistent approach to the medical treatment of methamphetamine-induced psychosis.

The 3-month prevalence study conducted at the RAH, identified 33 patients with psychosis, suggesting the RAH admits an average of about 11 cases per month. Patients were typically male, mean age of patients were 28.9 years of age, however, 30.3% were 25 years of age or younger and the range of hospital stay was 1-23 days. The prevalence study, as with the casenote review, identified that there is still an inconsistent approach to the medical management of methamphetamine-induced psychosis.

The Assertive Community Care (Phase ll) research sought to investigate the efficacy of an Assertive Community Care Program, compared to regular hospital discharge care, as treatment for patients who have been discharged from hospital following an episode of methamphetamine-induced psychosis.

Nineteen patients were recruited into the study, with twelve allocated to the case management arm of the trial and seven into the control treatment arm. The majority of participants were Caucasian males, 27 years of age, living in a family home paying rent, unemployed and receiving some form of government financial support. These characteristics were similar to those previously identified by Morefield et al., (2004). For all the participants the mean time spent in hospital was 6 days. Emergency department admission notes indicated that most of the participants presented to hospital with persecutory ideation, this mainly involved the concept of motorcycle gangs or police officers casing them. Many of the participants were very agitated and aggressive at the time of hospital presentation and the majority were accompanied to hospital by police officers.

Participants in both treatment arms reduced their methamphetamine use at 6-month follow-up. However, due to the low number of participants at follow-up it was not possible to determine the main factors involved in this reduction in use. As identified by the case manager, the case managed clients reported how the experience of being admitted to hospital, and in particular to a closed psychiatric ward, was a deterrent to their future methamphetamine use. Other explanations for reductions in use may be due to their current financial situation, their desire to stop using drugs or a realisation of the problems that have been caused by drug use. Some participants expressed at follow-up that they had changed their social networks and no longer “hung out” with people

who they previously used drugs with or accessed drugs from, although if they were offered drugs they would find it very hard to refuse.

Of the participants who were followed-up, many reported that they still used cannabis on a daily basis and did not see their use as problematic. This is despite media attention and scientific reports linking cannabis use and psychosis. There has also been speculation in the scientific literature that cannabis is a gateway drug to other illicit drug use (Hall & Lynskey, 2005). Participants did not see cannabis as a “hard drug” or perceive that its use could be associated with any of their health or social related problems.

Participants mean craving scale scores were relatively low at baseline (less than 2 out of a possible total of 9) when asked questions from the methamphetamine craving questionnaire. This increased for all questions at 6-month follow-up. An interesting finding was that even though participants were in hospital for a psychotic episode related to their methamphetamine use they reported that they believed that they would be likely to use the drug again if they were in the environment where they previously used drugs. This increased further at 6-month follow-up for participants in both treatment groups. However, this did not reflect their recent use of the drug as reported by their drug use in the past 30 days. Wada & Fukui (1990) found in their study that a relationship with a particular social group gives most methamphetamine users the chance to use, suggesting that there is a social aspect to a person’s drug use. Ogai and colleagues (2005) have also suggested that medical treatment has mainly targeted psychotic symptoms such as hallucinations and delusion, and ignored the symptoms of craving, which are the major cause of dependence. Therefore for patients hospitalised with methamphetamine psychosis, the risk of lapse into methamphetamine reuse remains very high (Ogai, et al., 2005). One of the roles of the case manager in this study was to try to help the client identify other hobbies or social activities that they might be interested in, to encourage the client to disassociate themselves from the social environment in which they previously used drugs.

The hospital anxiety and depression scale identified that 10/19 (52.6%) participants had borderline abnormal/abnormal levels of anxiety and 9/19 (47.4%) had borderline abnormal/abnormal levels of depression at baseline. This is consistent with data presented by Zweben et al., (2004) who found that

the use of methamphetamine can result in depressive symptoms not only in the aftermath of the use episode, but for many months thereafter. Due to the high levels of anxiety and depression amongst the participants in this study, an extension of this project could include a cognitive behaviour therapy (CBT) treatment option and an antidepressant treatment option. CBT aims to help individuals to recognise that they have a problem with their drug use, to understand their problem and to assist users to modify the dysfunctional cognitions underlying this problem behaviour. As a psychosocial intervention, this type of treatment has previously been associated with better outcomes (Baker et al., 2004).

The Severity of dependence scale identified 15/19 (78.9%) participants as having problematic methamphetamine use at baseline. At 6-month follow-up this was 8/10 (80%). However, as with the increase in mean scale scores for the methamphetamine craving questionnaire, this finding was not reflected in participants reported recent drug use (last 30 days) at this time.

Seven participants were found to have a BBV-TRAQ total score greater than 20. This may indicate a lack of understanding of blood borne virus transmission amongst some of the participants in this study. As described by the case manager, clients who were Hepatitis C positive generally lacked an understanding of their Hepatitis C status. For example, many participants reported that they did not wash their hands before aiding someone else with their injection. Case managed clients also reported to be unaware that they could contract another genotype of Hepatitis C. This finding has implications for harm reduction information and education.

The SF12 questionnaire indicated physical and mental health problems even though the participant may not perceive there to be a problem. At baseline and 6-month follow-up almost all of the participants had some physical and mental disability, this was despite many of the participants reporting that their general health was good or fair. This also reflects on reports from participants in the case managed treatment arm that did not see their drug use as a health problem. From this it could be speculated that this group of methamphetamine users are not associating their use with any health or mental issues that they may be having. Methamphetamine users mental and physical health along with

their levels of anxiety and depression need to be addressed in future treatment strategies.

A large proportion of patients admitted to metropolitan South Australian hospitals with methamphetamine-induced psychosis also have co-morbid mental health problems which contributed to the number of ineligible patients who were identified over the course of both the Acute and Assertive Community Care studies. This prevented the latter project from recruiting the number of participants required to do significant statistical analysis to compare the outcomes of the two treatment groups. Stage 1 of the Methamphetamine Psychosis Research Program indicated that fourteen cases of methamphetamine psychosis were treated in South Australian hospitals each month, comprising approximately 170 treated episodes per year (Morefield et al., 2004). However, the present study found that a number of patients presenting with methamphetamine psychosis also had a previous history of schizophrenia or bi-polar affective disorder and due to strict eligibility criteria were therefore ineligible to participate. In Australia, the National Survey of Health and Wellbeing revealed that a majority of the 25% of adults that have a mental disorder in any one year also suffer some form of substance use (Hall et al., 1999). Studies in the U.S.A. have also indicated that the rate of co-morbid substance use disorder in patients with schizophrenia is 3 times higher than that in the general population (Green, 2005).

The above is an important finding with implications for the methodology employed in future research into the effects of methamphetamine use and is aptly summarised by the following:
“Comorbid substance use and mental disorder is more likely to be chronic and disabling, and to result in greater service utilisation. They are therefore more likely to cause misery and suffering among those afflicted by them, and considerable social cost in terms of marriage breakdown, social isolation, poor educational attainment, unemployment and chronic financial difficulties” (Hall, 1996 pg 168).

A number of difficulties were encountered when following-up participants. Phones were disconnected, the participants were homeless or couch hopping and phone contact with friends and family was also found to be unhelpful as clients did not make regular contact with these designated people. This client

group are typically difficult to contact due to their accommodation situations, strained or non-existent family relationships and unpaid mobile phone bills and while every attempt possible was made to follow-up each of the participants, this was unsuccessful for 9 participants in the Assertive Community Care trial.

In summary, methamphetamine-induced psychosis remains a major problem in South Australian hospitals as indicated by the number of presentations and experiences of clinical staff treating these patients, a large proportion of whom also have co-morbid mental health problems. Whilst the medical management of patients with methamphetamine-induced psychosis appears to be inconsistent, clinical staff were keen to address these issues. The current research also suggests that clear-cut cases of methamphetamine–induced psychosis are uncommon (i.e. where methamphetamine is the only possible cause of the psychosis). In contrast, while methamphetamine use in individuals presenting with psychosis is quite common, the psychosis may or may not be induced by methamphetamine.

7.1 Recommendations

- The current research confirmed the inconsistency of treatment for methamphetamine- induced psychosis between hospital emergency departments. It is important that evidence-based treatment guidelines are developed for use by emergency staff to ensure that management of these patients is appropriate and consistent.
- Clinical staff in emergency departments need to be consistently informed and updated about drug and alcohol related illnesses, changing drug trends and evidence-based treatment options to maximise the medical management of patients admitted for this disorder.
- Effective training and education packages should be developed for staff involved in the care of patients with methamphetamine induced psychosis.
- Future research projects around methamphetamine- induced psychosis must take into account the difficulties faced in both recruitment and follow-up and realistic goals should be established when such projects are planned. Furthermore, investigation is required into the role of methamphetamines in psychotic presentations in people with and without pre-existing psychiatric disorders.

- Due to the high levels of anxiety and depression amongst the participants in the current research, an extension of this project could include a cognitive behaviour therapy (CBT) treatment option and an antidepressant treatment option.
- Further research may be required to determine the role of the social environment in a person's drug use and whether assertive community care can help clients to find alternative social networks.
- Future harm reduction information and education should address the finding that case managed clients reported that they were unaware they could contract another genotype of Hepatitis C.

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APPENDIXES

Appendix A: Acute Care Medication Protocol

1. Medication regime for midazolam

Midazolam may be used prior to randomisation in cases of severe behavioural disturbance requiring urgent intravenous sedation.

- The decision to administer this is made by the assessing clinician in accordance with institutional guidelines. Usually the patient would be assessed as Triage code 1 or 2 (see Appendix C).
- Extreme caution is required because there is a risk of respiratory depression. Airways support should be available.
- Post-sedation care is required in accordance with the hospital's clinical guidelines.

2. Medication protocols - general principles

The following are the guiding principles for treatment:

- the goal is tranquillisation (ie, calming without sedation), however, when there is an acute behavioural disturbance, the goal may also be sedation;
- Two-hourly Level of Agitation Scale assessments by ward-staff (see Appendix D), commencing at the patient's admission, will be used to determine medication administration within the treatment arm to which the patient has been allocated;
- Medication will only be used when attempts to settle a patient in other ways fails. Calm reassurance and brief reality-oriented, supportive interventions will accompany the pharmacological treatments;
- Minimal effective dosages of the agents will be used to alleviate patients' distress;
- Repeat doses, where necessary, will be in accordance with the medication protocol;
- A single dose of midazolam may be administered to patients prior to entry into the trial in accordance with the medication protocol;
- A participant in the benzodiazepine-only (clonazepam) arm may only be given a "cross-over" medication (i.e. switched to the medication used for the other arm of the trial: olanzapine + clonazepam) in accordance with the medication protocol in order to achieve optimum control of psychotic symptoms;
- Combining an antipsychotic and benzodiazepine may theoretically increase the risk of respiratory depression. When these two medications are combined, patients will be observed closely, as per usual clinical practice;
- No psychotropic medications are to be administered other than those indicated in the medication protocol.

3. Medication regime for clonazepam only arm:

Oral dose: 2mg.

- Criteria for initial dose: Level of Agitation Scale (see Appendix D) score of 3 – 5; not responding to calming reassurance
- Expect patient to begin to settle within 30 - 60 minutes
- Repeat dose every 30-60 minutes if necessary (if the participant does not settle, as assessed by Level of Agitation Scale score)
- Hold medication if Level of Agitation Scale score is 1 or 2
- Maximum total dose of 30mg (oral) per 24 hour period
- If additional sedation is needed [after maximum of 30mg clonazepam (oral) has been given in 24 hours], go to crossover medication.

3.1 Cross-over medication for clonazepam treatment arm

Prescribe olanzapine (as per guidelines given for the olanzapine + clonazepam treatment arm, in doses of 10 mg) to patients in the clonazepam treatment arm **only if**:

- Maximum daily dose of clonazepam will be exceeded AND
- Patient scores 5 on the Level of Agitation Scale (severely agitated with extreme verbal outbursts and/or physical aggression) OR
- Patient scores of 17or higher on the PANSS Aggression Risk Profile (see Appendix E).

4. Medication regime for olanzapine + clonazepam arm

Oral dose olanzapine (10mg- tablets or wafers) + oral dose clonazepam (1mg)

- Criteria for initial olanzapine + clonazepam doses: Level of Agitation Scale score of 3 – 5; not responding to calming reassurance
- Expect patient to begin to settle within 30 – 60 minutes
- Repeat doses every 30 – 60 minutes if necessary (if the participant does not settle, as assessed by Level of Agitation Scale)
- Hold medication if Level of Agitation Scale score is 1 or 2
- Maximum total dose of 40mg olanzapine (tablets or wafers), maximum dose of 8mg clonazepam (oral) per 24 hour period
- If additional sedation is needed, only exceed the 40mg maximal olanzapine and 8mg clonazepam doses with extreme caution and if there are no signs of respiratory depression or extrapyramidal symptoms
- Prescribe clonazepam as per the guidelines for the clonazepam treatment arm (except at doses of 1mg) BUT to a maximum of 8mg per 24 hour period

4.1 Benztropine for extrapyramidal side effects

Benztropine 1 – 2mg oral or intramuscular may be given to a maximum of 6mg per day for observed adverse effects such as acute dystonic reactions, tremor and muscle rigidity.

Appendix B: Acute Care Research Assessment Schedule

Overview

The Positive and Negative Syndrome Scale (PANSS) will be used to collect data on psychotic symptoms, and the Hospital Anxiety and Depression Scale (HADS) will be used to assess depressive symptoms. In addition, the Time-Line Follow-Back (TLFB) procedure will be used to collect information on recent drug use, the Severity of Dependence Scale (SDS) will be used to measure methamphetamine dependence, the Amphetamine Cessation Symptom Assessment (ACSA) to measure the intensity of patients' methamphetamine withdrawal, and a visual analogue scale will be used to assess craving for methamphetamine. A visual analogue scale (VAS) will also be used to measure the efficacy of the medication(s) as perceived by the patients. Medication-induced side effects will be assessed using the Barnes rating scale for akathisia, and the Simpson-Angus Scale (SAS) for extrapyramidal side effects.

Research assessment interviews will be conducted at 48 hours (2 days), 96 hours (4 days), and at 240 hours (10 days) after patients have been admitted to hospital. It is acknowledged that not all participants will participate in all of the assessment interviews, as some participants may be discharged from hospital prior to the completion of 3 research interviews. Throughout the participants' hospitalisation, ward staff will conduct two-hourly assessments using the Level of Agitation Scale, and these scores will be recorded on a form for later addition to the participants' research files.

Composition and Timing of Assessments

BASELINE

When a patient is admitted to hospital and identified as suitable for the trial, several assessments will take place:

- *ROUTINE PHYSICAL OBSERVATIONS (TEMPERATURE, HEART RATE, BLOOD PRESSURE) BY WARD STAFF*

48 HOURS AFTER ADMISSION (2 DAYS)

CONSENT FOR PARTICIPATION IN THE STUDY WILL BE OBTAINED AT THIS TIME. THE FOLLOWING ASSESSMENTS WILL ALSO OCCUR:

- *REVIEW OF MEDICAL RECORDS FOR PREVIOUS MEDICAL AND PSYCHIATRIC HISTORY*
- *DEMOGRAPHIC AND OTHER DATA COLLECTION*
- *PRE-ADMISSION DRUG USE QUESTIONNAIRE:* **TLFB**
- *PSYCHOTIC SYMPTOMS:* **PANSS**
- *DEPRESSIVE SYMPTOMS:* **HADS**
- *SEVERITY OF METHAMPHETAMINE DEPENDENCE:* **SDS**
- *SEVERITY OF METHAMPHETAMINE CRAVING:* **CRAVING SCALE**
- *METHAMPHETAMINE WITHDRAWAL:* **ACSA**
- *MEDICATION SIDE-EFFECTS (AKATHISIA):* **BARNES**
- *MEDICATION SIDE-EFFECTS (EXTRAPYRAMIDAL):* **SIMPSON-ANGUS**
- *PERCEIVED EFFICACY OF MEDICATION:* **PERCEIVED EFFICACY VAS**

96 hours after admission (4 days)

- *PSYCHOTIC SYMPTOMS:* **PANSS**
- *DEPRESSIVE SYMPTOMS:* **HADS**
- *SEVERITY OF METHAMPHETAMINE CRAVING* **CRAVING SCALE**
- *METHAMPHETAMINE WITHDRAWAL:* **ACSA**
- *MEDICATION SIDE-EFFECTS (AKATHISIA):* **BARNES**
- *MEDICATION SIDE-EFFECTS (EXTRAPYRAMIDAL):* **SIMPSON-ANGUS**
- *PERCEIVED EFFICACY OF MEDICATION:* **PERCEIVED EFFICACY VAS**

240 hours after admission (10 days)

- *PSYCHOTIC SYMPTOMS:* **PANSS**
- *DEPRESSIVE SYMPTOMS:* **HADS**
- *SEVERITY OF METHAMPHETAMINE CRAVING:* **CRAVING SCALE**
- *METHAMPHETAMINE WITHDRAWAL:* **ACSA**
- *MEDICATION SIDE-EFFECTS (AKATHISIA):* **BARNES**
- *MEDICATION SIDE-EFFECTS (EXTRAPYRAMIDAL):* **SIMPSON- ANGUS**
- *PERCEIVED EFFICACY OF MEDICATION:* **PERCEIVED EFFICACY VAS**

Throughout admission

The clinicians and ward-staff treating the trial participants will use the Level of Agitation Scale (see Appendix D) to guide clinical decision-making regarding patient management and medication administration. This scale will be administered on a two-hourly basis from the time of patients' admission. Scores at each of the 2-hourly assessments, as well as any medication or other clinical decisions made as a result of the assessments will be recorded on a form in the patient's notes for later addition to the participant's research file.

Decisions relating to use of crossover medication for patients in the clonazepam-only treatment arm may be made using the PANSS Aggression Risk Profile (see Appendix E) or the Level of Agitation Scale. When clinicians use either scale, the date, time, score and subsequent clinical decision are recorded in the patient's notes for later addition to the participant's research file

After discharge

When patients have been discharged from hospital, their medical records will be reviewed for:

- Compliance with medication protocols, including Level of Agitation Scale scores used in clinical decision making
- Prescription of discharge medications (indicative of residual psychiatric or physical symptomatology)

INSTRUMENTS

- **Demographic and other information**

Information relating to patients' age, gender, living arrangements, education and employment status, legal issues and previous treatment contacts will be collected using a form in development.

- **Pre-admission drug use questionnaire – Time-Line Follow-Back**

Participants will be asked if they have ever used a range of named drugs, and (if ever used) whether they had used the drugs within the past 30 days. If participants indicate that they had used the named drug in the past 30 days, they will be asked to complete a Time-Line Follow-Back (TLFB) calendar with the research officer. The calendar will cover the period of 30 days prior to hospitalisation, with the day of hospitalisation marked. Patients are asked to mark on the calendar the days on which they used the drug and how many times on that day the drug was used.

Some of the named drugs require prescriptions for licit distribution. For these drugs, if the participant indicates that they had used the drug in 30 days prior to admission, they will be asked if the drug was prescribed to them, and if it was, whether they used the drug according to the prescribing doctor's instructions. Patients will still be asked to complete the TLFB calendar for drugs used as prescribed.

- **Level of Agitation Scale**

Decisions relating to medication changes will be made on the basis of agitation scores derived from a five-point Level of Agitation Scale used at the Royal Adelaide Hospital for assessing the need for seclusion and physical restraint (see Appendix D). Nursing staff and/or clinicians in the recruitment settings will conduct these assessments every two hours from the time of the patients' admission. Each time this scale is used, the date and time of assessment, the patient's score and any subsequent clinical decision will each be recorded.

- **The Positive and Negative Syndrome Scale (PANSS) Aggression Risk Profile**

The PANSS for schizophrenia (Kay, Fizbein & Opler, 1987) is a thirty-item valid and reliable instrument designed to provide a balanced representation of positive and negative symptoms associated with psychosis, their relationship to one another, and their severity. The incorporated Aggression Risk Profile provides a systematized way of gauging a patient's aggressiveness using three subscales: anger, difficulty in delaying gratification, and affective lability (see Appendix E).

- **The PANSS Positive and Negative Scales**

The PANSS for schizophrenia (Kay, Fizbein & Opler, 1987) is a thirty-item valid and reliable instrument designed to provide a balanced representation of positive and negative symptoms associated with psychosis, their relationship to one another, and their severity. Positive symptoms, reflecting an excess or distortion of normal functioning, include delusions and hallucinations, while negative symptoms, reflecting a reduction or diminution of normal functioning, include flattened affect and psychomotor retardation. Ratings are made on a 7-point scale ranging from 'absent' (1) to 'extreme psychopathology' (7). Requiring between 30-40 minutes to complete, the PANSS yield separate scores along nine clinical dimensions, including scales for a Positive Syndrome, a Negative Syndrome, Depression, Composite Index, and General Psychopathology. Only the 14 items of the Positive and Negative subscales of the PANSS will be used for the present trial (see Appendix F).

- **The Hospital Anxiety and Depression Scale (HADS)**

The Hospital Anxiety and Depression Scale is a much applied and convenient instrument for assessing anxiety and depression in patients with both somatic and mental problems. The scale comprises 7 questions addressing anxiety and 7 questions addressing depression, with each question rated on a 0 – 3 scale to reflect the severity of the item addressed in each question (see Appendix G).

- **The Amphetamine Cessation Symptom Assessment (ACSA)**

The Amphetamine Cessation Symptom Assessment is a 16-item scale in which each item is assessed on a 5-point scale anchored with verbal descriptions. The scale is designed to measure the nature and severity of withdrawal phenomena experienced by dependent amphetamine and/or methamphetamine users on cessation of regular use. This instrument adds to the symptom range assessed by the Amphetamine Withdrawal Questionnaire (Srisurapanont, Jarusuraisin & Jittiwuticarn, 1999), to provide a more comprehensive profile of the symptoms and severity of withdrawal symptoms (see Appendix H).

- **The Severity of Dependence Scale (SDS)**

The Severity of Dependence Scale is a short, easily administered scale that can be used to measure the degree of dependence experienced by users of different types of drugs. This scale has 5 items, each of which is concerned with the psychological components of dependence. These items are specifically concerned with impaired control over drug taking and with preoccupation and anxieties about drug use. For the purposes of this research, the SDS will be used to measure methamphetamine dependence (see Appendix I).

- **Methamphetamine Craving Scale – Craving VAS**

A simple Drug Craving Score will be derived from a 10-point visual analogue scale which requires that participants rate the severity of their current craving for methamphetamine, with one end of the scale marked as representing “No craving” and the other end marked “Extreme craving”.

- **The Barnes Rating Scale for Drug-Induced Akathisia**

The Barnes Rating Scale yields four separate component scores, each relating to drug/medication-induced akathisia. Ratings are made for the observable, restless movements that characterise the condition, the patient’s subjective awareness of restlessness, the degree of distress related to such restlessness, and a global clinical assessment of the severity of the patient’s akathisia. A score of 2 or more on the global assessment indicates the presence of akathisia (see Appendix J).

- **The Simpson-Angus Scale for Extrapyramidal Side Effects**

The Simpson-Angus Scale was devised to measure drug-induced parkinsonism, and provides standardized ratings for rigidity, tremor and salivation. The scale has ten items; each rated on a 5-point scale (0 – 4), with descriptive anchors at each point and a clearly described examination procedure for each item (see Appendix K).

- **Perceived Efficacy of Medication Scale – Perceived Efficacy VAS**

A simple measure to gauge patients’ perceptions regarding the efficacy of the medication they are receiving will be constructed from a 100-point visual analogue scale, which requires that patients rate how well the medication they have received is “working”, by rating the medication from 0 to 100 in response to the question: “How effective do you think the medication you have received has been?”

Appendix C: Acute Care Emergency Department Triage Coding for Psychiatric Presentations

Triage Code	Description	Treatment Acuity	Typical Presentation
1	Immediate Active violent behaviour	Immediate	• Active violent behaviour
2	Emergency Threatening behaviour	Within 10 minutes	• Threatening behaviour • Agitated • Physically/verbally aggressive • At risk to self or others
3	Urgent Disturbed behaviour	Within 30 minutes	• Obvious perceptual disturbances • Suicidal ideation • Intrusive/pacing • Possibly at risk to self or others
4	Semi-urgent Requests psychiatric review	Within 60 minutes	• Vague presentation • Non intrusive behaviour • Appears not at risk to self/others
5	Non urgent	Within 120 minutes	• Requests medication • Missed outpatient appointment • Accommodation issues • Financial issues

Reproduced from the Royal Adelaide Hospital Emergency Department *Triage Coding for Psychiatric/Psychosocial Presentations* form.

Appendix D: Level of Agitation Scale

SCORE	
1	Patient is asleep
2	Patient is awake but calm, without verbal aggression or agitation
3	Patient is angry, but this is primarily focused on the situation, and requests are not delivered in an obviously threatening or aggressive manner
4	Patient is awake and agitated with some verbal outbursts but no physical aggression
5	Patient is severely agitated with extreme verbal outbursts and/or physical aggression.

Reproduced from the Royal Adelaide Hospital Emergency Department *Policy and Protocol for the Use of the Safe/Seclusion Rooms* form.

Appendix E: The PANSS Aggression Risk Profile

The PANSS Aggression Risk Profile consists of three sub-scales, each of which is scored 1 (absent) – 7 (extreme), according to the definitions provided below. The sum of these (3) scores represents a patient's PANSS Aggression Risk Profile Score. The maximum possible score is 21.

S1. ANGER

There is a subjective state of displeasure and irritation directed at others*.*

BASIS FOR RATING – verbal report of angry feelings during the course of the interview and thereupon, corresponding hostile behaviours observed during the interview or noted from reports by primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient expresses some irritation or ill feelings toward others but otherwise shows no emotional or behavioural signs of anger
4	Moderate	The patient presents an overtly angry exterior but his or her temper remains under control
5	Moderate Severe	The patient appears highly irritable and his or her anger is vented frequently by raising his or her voice, occasional verbal abuse, or thinly veiled threats
6	Severe	The patient appears highly irritable and his or her anger is vented through repeated verbal abuse, overt threats, or destructiveness
7	Extreme	An explosive level of anger is demonstrated by physical abuse directed, or attempted to be directed, at others

S2. DIFFICULTY IN DELAYING GRATIFICATION

The patient is demanding or insistent that his or her needs be satisfied immediately, and he or she is noticeably upset when the fulfilment of needs or desires is delayed.

BASIS FOR RATING – observation of behaviour during the interview as well as reports from primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	Patient is occasionally demanding and impatient but settles down quickly when spoken to
4	Moderate	The patient's demanding behaviour occurs more than just occasionally or else has an insistent quality that makes the patient a "nuisance". No outbursts of hostility typically follow, however, and the patient can ordinarily be managed without difficulty
5	Moderate Severe	Demanding behaviour is both frequent and persistent, resulting in occasional confrontations with other patients, staff, or family. As a rule, however, the patient regains control without serious incident
6	Severe	The patient gets seriously upset whenever his or her needs or demands are not met immediately. Explosive or violent behaviour may ensue once or twice and control loss is an ever-present possibility
7	Extreme	Failure to instantly cater to the patient's needs or demands tends to provoke explosive, violent, or impulsive behaviour. Close supervision is typically required

S3. AFFECTIVE LABILITY

Emotional expressions are unstable, fluctuating, inappropriate, and/or poorly controlled.
BASIS FOR RATING – affective state observed during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	Some incongruous affective responses are observed or a few unexplained shifts in emotional tone may occur
4	Moderate	The patient's affect is frequently incongruent with his or her thoughts (e.g., inappropriate silliness, anger, or worry), or there are several radical changes in emotional tone during the course of the interview
5	Moderate Severe	The patient's emotional expressions are highly unstable and occasionally seem beyond the patient's control. The patient's affective picture may show sudden shifts to extremes, generally with poor modulation
6	Severe	The patient's emotions appear to be uncontrolled during most of the interview and may be dominated by autistic or irrelevant stimuli. The affective state takes on a fleeting quality, with peculiar or kaleidoscopic changes. Primitive emotional discharge may be seen (e.g., displays of ecstasy or rage)
7	Extreme	The patient seems to lack any control over his or her emotional state, which fluctuates freely in response to inappropriate external or internal events. Extreme emotional states, such as excitement or fury, at times dominate.

Reproduced from the Positive and Negative Syndrome Scale User's Manual (1992, 2000) by Kay, Opler, Fiszbein, Ramirez & White. MHS Inc.

Appendix F: The PANSS Positive and Negative Scales

The **PANSS POSITIVE SCALE** consists of seven sub-scales, each of which is scored 1 (absent) – 7 (extreme), according to the definitions provided below. The sum of these (7) scores represents a patient's PANSS Positive Scale Score. The maximum possible score is 49.

P1. DELUSIONS

Delusions are beliefs that are unfounded, unrealistic, and idiosyncratic.
BASIS FOR RATING – thought content expressed during the interview and its influence on the patient's social relations, and the patient's behaviour as reported from primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	Presence of one or two delusions that are vague, uncrystalized, and not tenaciously held. The delusions do not interfere with the patient's thinking, social relations, or behaviour.
4	Moderate	Presence either of a kaleidoscopic array of poorly formed, unstable delusions or a few well-formed delusions that occasionally interfere with the patient's thinking, social relations or behaviour.
5	Moderate Severe	Presence of numerous well-formed delusions that are tenaciously held and occasionally interfere with the patient's thinking, social relations or behaviour.
6	Severe	Presence of a stable set of delusions that are crystallized, possibly systematized, tenaciously held, and clearly interfere with the patient's thinking, social relations, and behaviour.
7	Extreme	Presence of a stable set of delusions that are either highly systematized or very numerous, and that dominate major facets of the patient's life. This behaviour frequently results in inappropriate and irresponsible action that may even jeopardize the safety of the patient or others.

P2. CONCEPTUAL DISORGANISATION

There is a disorganised thinking process characterized by goal-directed sequencing disruptions (e.g., circumstantiality, tangentiality, loose associations, non-sequiturs, gross illogicality, or thought block).

BASIS FOR RATING – cognitive-verbal processes observed during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient's thinking is circumstantial, tangential or paralogical. He or she has some difficulty directing his or her thoughts toward a goal and some loosening of associations may be evidenced under pressure.
4	Moderate	The patient is able to focus his or her thoughts when communications are brief and structured, but becomes loose or irrelevant when dealing with more complex communications or when under minimal pressure.
5	Moderate Severe	The patient generally has difficulty organising his or her thoughts, as evidenced by frequent irrelevancies, disconnectedness, or loosening of associations even when not under pressure.
6	Severe	The patient's thinking is seriously derailed and internally inconsistent, resulting in gross irrelevancies and disruption of his or her thought processes, which occur almost constantly.
7	Extreme	The patient's thoughts are disrupted to the point where the patient is incoherent. There is marked loosening of associations, which results in total failure of communication (e.g., word salad or mutism).

P3. HALLUCINATORY BEHAVIOUR

Verbal report or behaviour indicate perceptions that are not generated by external stimuli. These occurrences may be auditory, visual, olfactory, or somatic.
BASIS FOR RATING – verbal report and physical manifestations during interview as well as behaviour reports from primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	One or two clearly formed but infrequent hallucinations, or else a number of vague abnormal perceptions that do not result in thinking or behaviour distortions.
4	Moderate	Hallucinations occur frequently but not continuously, and the patient's thinking and behaviour are minimally affected.
5	Moderate Severe	Hallucinations are frequent, may involve more than one sensory modality, and tend to distort thinking and/or disrupt behaviour. The patient may have a delusional interpretation of these experiences and respond to them emotionally and, on occasion, verbally.
6	Severe	Hallucinations are present almost continuously, causing major thinking and behaviour disruptions. The patient treats these experiences as real perceptions, and his or her functioning is impeded by frequent emotional and verbal responses to them.
7	Extreme	The patient is almost totally preoccupied with hallucinations that virtually dominate his or her thinking and behaviour. Hallucinations are rigidly and delusionally interpreted and provoke verbal and behavioural responses, including obedience to command hallucinations.

P4. EXCITEMENT

Hyperactivity is reflected in accelerated motor behaviour, heightened responsivity to stimuli, hypervigilance, or excessive mood lability.
BASIS FOR RATING - behavioural manifestations during the interview, as well as behaviour reports from primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient tends to be slightly agitated, hypervigilant, or mildly overaroused throughout the interview, but without distinct episodes of excitement or marked mood lability. The patient's speech may be slightly pressured.
4	Moderate	Agitation or overarousal is clearly evident throughout the interview, affecting speech and general mobility, or episodic outbursts occur sporadically.
5	Moderate Severe	Significant hyperactivity or frequent outbursts of motor activity are observed, making it difficult for the patient to sit still for longer than several minutes at any given time.
6	Severe	Marked excitement dominates the interview, delimits attention, and to some extent affects personal functions such as eating and sleeping
7	Extreme	Marked excitement seriously interferes with eating and sleeping and makes interpersonal interactions virtually impossible. Acceleration of speech and motor activity may result in the patient's incoherence and exhaustion.

P5. GRANDIOSITY

There exists an exaggerated self-opinion and unrealistic convictions of superiority, including delusions of extraordinary abilities, wealth, knowledge, fame, power, and moral righteousness.
BASIS FOR RATING – thought content expressed in the interview and its influence on behaviour as reported by primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	Some expansiveness or boastfulness is evident, but without clear-cut grandiose delusions.
4	Moderate	The patient feels distinctly and unrealistically superior to others. Some poorly formed delusions about special status or abilities may be present but are not acted upon.
5	Moderate Severe	Clear-cut delusions concerning remarkable abilities, status, or power are expressed and influence the patient's attitude but not his or her behaviour.
6	Severe	Clear-cut delusions of remarkable superiority involving more than one parameter (wealth, knowledge, fame etc.) are expressed, notably influence interactions, and may be acted upon.
7	Extreme	Thinking, interactions, and behaviour are dominated by multiple delusions of amazing ability, wealth, knowledge, fame, power, and/or moral stature, which may take on a bizarre quality.

P6. SUSPICIOUSNESS / PERSECUTION

Unrealistic or exaggerated ideas of persecution are shown, as reflected in guardedness, a distrustful attitude, suspicious hypervigilance, or frank delusions that others mean one harm.
BASIS FOR RATING – thought content expressed in the interview and its influence on behaviour as reported by primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient presents a guarded or even openly distrustful attitude, but his or her thoughts, interactions, and behaviour are minimally affected.
4	Moderate	The patient's distrustfulness is clearly evident and intrudes on the interview and/or his or her behaviour, but there is no evidence of persecutory delusions. Alternatively, there may be indications of loosely formed persecutory delusions, but these do not seem to affect the patient's attitude or interpersonal relations.
5	Moderate Severe	The patient shows marked distrustfulness, leading to major disruptions in his or her interpersonal relations, or else there are clear-cut persecutory delusions that have limited impact on his or her interpersonal relations and behaviour.
6	Severe	Clear-cut pervasive delusions of persecution that may be systematized significantly interfere in the patient's interpersonal relations.
7	Extreme	A network of systematized persecutory delusions dominates the patient's thinking, social relations, and behaviour.

P7. HOSTILITY

There are verbal and nonverbal expressions of anger and resentment, including sarcasm, passive-aggressive behaviour, verbal abuse, and ability/desire to commit assault.

BASIS FOR RATING – interpersonal behaviour observed in the interview and reports by primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient shows indirect or restrained communication of anger, such as sarcasm, disrespect, hostile expressions, and occasional irritability.
4	Moderate	The patient presents an overtly hostile attitude, showing frequent irritability and direct expression of anger or resentment.
5	Moderate Severe	The patient is highly irritable and occasionally verbally abusive or threatening.
6	Severe	Uncooperativeness and verbal abuse or threats notably influence the interview and seriously impact upon the patient's social relations. The patient may be violent and destructive but is not physically assaultive toward others.
7	Extreme	Marked anger by the patient results in extreme uncooperativeness, precluding other interactions, or in a physical assault episode directed toward others.

PANSS NEGATIVE SCALE

The **PANSS NEGATIVE SCALE** consists of seven sub-scales, each of which is scored 1 (absent) – 7 (extreme), according to the definitions provided below. The sum of these (7) scores represents a patient's PANSS Negative Scale Score. The maximum possible score is 49.

N1. BLUNTED AFFECT

There is a diminished emotional responsiveness characterized by a reduction in facial expression, modulation of feelings, and communicative gestures.

BASIS FOR RATING – observation of the patient's affective tone and emotional responsiveness during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	Changes in the patient's facial expression and communicative gestures seem to be stilted, forced, artificial, or lacking in modulation.
4	Moderate	The patient displays a reduced range of facial expressions and few expressive gestures, resulting in a dull appearance.
5	Moderate Severe	Affect is generally "flat", with only occasional changes in the patient's facial expression and few communicative gestures.
6	Severe	The patient exhibits marked flatness and a deficiency of emotions most of the time. There may be unmodulated extreme affective discharges, such as excitement, rage, or inappropriate uncontrolled laughter.
7	Extreme	Changes in the patient's facial expression and evidence of communicative gestures are virtually absent. The patient seems constantly to show a barren or "wooden" expression.

There is a lack of interest in, involvement with, and affective commitment to life events.
BASIS FOR RATING – reports of functioning from primary care workers or family, and interpersonal behaviour observations during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient usually lacks initiative and may occasionally show deficient interest in surrounding events.
4	Moderate	The patient is generally emotionally distanced from his or her surroundings and its challenges but can be engaged with encouragement.
5	Moderate Severe	The patient is clearly emotionally detached from other people and his or her surroundings, resisting all efforts at engagement. The patient appears distant, docile, and purposeless, but can be involved in communication at least briefly and tends to his or her personal needs, sometimes with assistance.
6	Severe	The patient's marked deficiency of interest and emotional commitment results in limited conversation with others and frequent neglect of personal functions, for which the patient requires supervision.
7	Extreme	The patient is almost totally withdrawn, uncommunicative, and neglectful of his or her personal needs, resulting from a profound lack of interest and emotional commitment.

N3. POOR RAPPORT

There is a lack of interpersonal empathy, a lack of openness in conversation, and also a minimal sense of closeness, interest, or involvement with the interviewer. Poor rapport is evidenced by interpersonal distancing and reduced verbal and nonverbal communication.
BASIS FOR RATING - interpersonal behaviour during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient's conversation is characterized by a stilted, strained, or artificial tone. It may lack emotional depth or tend to remain on an interpersonal, intellectual plane.
4	Moderate	The patient is typically aloof, with interpersonal distancing evident in his or her behaviour. The patient may answer questions mechanically, act bored, or express disinterest.
5	Moderate Severe	The patient's disinvolvement is obvious and clearly impedes interview's productivity. The patient may tend to avoid eye or face contact.
6	Severe	The patient is highly indifferent, with marked interpersonal distance. His or her answers are perfunctory, and there is little nonverbal evidence of involvement. The patient frequently avoids eye and face contact.
7	Extreme	The patient is totally uninvolved with the interviewer. He or she appears to be completely indifferent and consistently avoids nonverbal interactions during the interview.

N4. PASSIVE / APATHETIC SOCIAL WITHDRAWAL

Diminished interest and initiative in social interactions due to passivity, apathy, anergy, or avolition leading to reduced interpersonal involvements and neglect of daily living activities.
BASIS FOR RATING – social behavior reports from primary care workers or family.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient shows occasional interest in social activities but in a disinterested or mechanical way.
4	Moderate	The patient passively goes along with most social activities but in a disinterested or mechanical way. He or she tends to recede into the background.
5	Moderate Severe	The patient passively participates in a few activities and shows virtually no interest or initiative. Generally, he or she spends little time with others.
6	Severe	The patient tends to be apathetic and isolated, participating very rarely in social activities and occasionally neglecting his or her personal needs. The patient has very few spontaneous social contacts.
7	Extreme	The patient is profoundly apathetic, socially isolated, and personally neglectful.

N5. DIFFICULTY IN ABSTRACT THINKING

The patient shows impairment using the abstract-symbolic thinking mode, as demonstrated by difficulty with classification, forming generalizations, and moving beyond concrete or egocentric thinking in problem solving tasks.
BASIS FOR RATING - responses to questions on similarities and proverb interpretation, and use of concrete vs. abstract mode during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	The patient tends to give literal or personalized interpretations to the more difficult proverbs and may have some problems with concepts that are fairly abstract or remotely related.
4	Moderate	The patient often utilises a concrete mode. He or she has difficulty with most proverbs and some categories and tends to be distracted by functional aspects and salient features.
5	Moderate Severe	The patient deals primarily in a concrete mode, exhibiting difficulty with most proverbs and many categories.
6	Severe	The patient is unable to grasp the abstract meaning of proverbs or figurative expressions and can formulate classifications for only the most simple of similarities. The patient's thinking is either vacuous or locked into functional aspects, salient features, and idiosyncratic interpretations.
7	Extreme	The patient can only use concrete thinking modes. He or she shows no comprehension of proverbs, common metaphors or similes, and simple categories. Even salient and functional attributes do not serve as a basis for classification. This rating may apply to those who cannot interact even minimally with the examiner due to marked cognitive impairment.

N6. LACK OF SPONTANEITY AND CONVERSATION FLOW

There is a reduction in the normal flow of conversation associated with apathy, avolition, defensiveness, or cognitive deficit. This disruption in normal flow is manifested by diminished fluidity and productivity of the verbal-interactional process.

BASIS FOR RATING – cognitive-verbal processes observed during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	There is little initiative in the patient's conversation. The patient's answers tend to be brief and unembellished, requiring direct and leading questions by the interviewer.
4	Moderate	The patient's conversation lacks free flow and appears uneven or halting. Leading questions are frequently needed to elicit adequate responses and proceed with the conversation.
5	Moderate Severe	The patient shows a marked lack of spontaneity and openness, replying to the interviewer's questions with only one or two brief sentences.
6	Severe	The patient's responses are limited mainly to a few words or short phrases intended to avoid or curtail communication (e.g., "I don't know" or "I'm not at liberty to say"). The conversation is seriously impaired as a result and the interview is highly unproductive.
7	Extreme	The patient's verbal output is restricted to an occasional utterance at most, making conversation impossible.

N7. STEREOTYPED THINKING

There is decreased fluidity, spontaneity, and flexibility of thinking, as evidenced in rigid, repetitious, or barren thought content.

BASIS FOR RATING – cognitive-verbal processes observed during the interview.

RATING		CRITERIA
1	Absent	The definition does not apply
2	Minimal	Questionable pathology; the patient may be at the upper extreme of normal limits
3	Mild	There is some rigidity in the patient's attitudes or beliefs. The patient may refuse to consider alternative positions or have difficulty shifting from one idea to another.
4	Moderate	Conversation with the patient revolves around a recurrent theme, resulting in difficulty shifting to a new topic.
5	Moderate Severe	The patient's thinking is so rigid and repetitious that, despite the interviewer's efforts, conversation is limited to only two or three dominating topics.
6	Severe	The patient's uncontrolled repetition of demands, statements, ideas or questions severely impairs conversation.
7	Extreme	The patient's thinking, behaviour, and conversation are dominated by constant repetition of fixed ideas or limited phrases, leading to gross rigidity, inappropriateness, and restrictive communication.

Reproduced from the Positive and Negative Syndrome Scale User's Manual (1992, 2000) by Kay, Opler, Fiszbein, Ramirez & White. MHS Inc.

Appendix G: The Hospital Anxiety and Depression Scale

Patients are asked to choose one response from the four given for each interview question. They should give an immediate response and be dissuaded from thinking too long about their answers. “Don’t take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought out response”. Instruct the patient to answer how it currently, or over the last day or two, describes their feelings

A1. I feel tense or ‘wound up’:

	score
Most of the time	3
A lot of the time	2
From time to time, occasionally	1
Not at all	0

D2. I still enjoy the things I used to enjoy:

	score
Definitely as much	0
Not quite so much	1
Only a little	2
Hardly at all	3

A3. I get a sort of frightened feeling as if something awful is about to happen:

	score
Very definitely and quite badly	3
Yes, but not too badly	2
A little, but it doesn’t worry me	1
Not at all	0

D4. I can laugh and see the funny side of things:

	score
As much as I always could	0
Not quite so much now	1
Definitely not so much now	2
Not at all	3

A5. Worrying thoughts go through my mind:

	score
A great deal of the time	3
A lot of the time	2
From time to time, but not too often	1
Only occasionally	0

D6. I feel cheerful:

	score
Not at all	3
Not often	2
Sometimes	1
Most of the time	0

A7. I can sit at ease and feel relaxed:

	score
Definitely	0
Usually	1
Not often	2
Not at all	3

D8. I feel as if I am slowed down:

	score
Nearly all the time	3
Very often	2
Sometimes	1
Not at all	0

A9. I get a sort of frightened feeling like ‘butterflies’ in the stomach:

	score
Not at all	0
Occasionally	1
Quite often	2
Very often	3

D10. I have lost interest in my appearance:

	score
Definitely	3
I don’t take as much care as I should	2
I may not take quite as much care	1
I take just as much care as ever	0

A11. I feel restless as if I have to be on the move:

	score
Very much indeed	3
Quite a lot	2
Not very much	1
Not at all	0

A13. I get sudden feelings of panic:

	score
Very often indeed	3
Quite often	2
Not very often	1
Not at all	0

D12. I look forward with enjoyment to things:

	score
As much as I ever did	0
Rather less than I used to	1
Definitely less than I used to	2
Hardly at all	3

D14. I can enjoy a good book or radio or TV program:

	score
Often	0
Sometimes	1
Not often	2
Very seldom	3

SCORING:

Add scores from all 7 questions preceded by D for an overall Depression Score. Add scores from all 7 questions preceded by A for an overall Anxiety Score.

NORMS:

score	**Level of anxiety / depression**
0 – 7	**Normal**
8 – 10	**Borderline abnormal**
11 – 21	**Abnormal**

Appendix H: The Amphetamine Cessation Symptom Assessment

QUESTIONS REFER TO THE PAST 24 HOURS ONLY		PLEASE CIRCLE ONE RESPONSE TO EACH QUESTION				
1	Have you had difficulty concentrating? (eg on reading, conversation, tasks, or making plans)	Not at all	A little	Moderately	Quite a lot	Extremely
2	Have you been sleeping (or wanting to sleep) a lot?	Not at all	A little	Moderately	Quite a lot	Extremely
3	Have you been tense?	Not at all	A little	Moderately	Quite a lot	Extremely
4	Have you had vivid, unpleasant dreams?	Not at all	A little	Moderately	Quite a lot	Extremely
5	Have you felt irritable?	Not at all	A little	Moderately	Quite a lot	Extremely
6	Have you been tired?	Not at all	A little	Moderately	Quite a lot	Extremely
7	Have you been agitated?	Not at all	A little	Moderately	Quite a lot	Extremely
8	Have you felt that life is not worth living?	Not at all	A little	Moderately	Quite a lot	Extremely
9	How active have you been compared to your usual level of activity?	Usual level of activity	A little less active	Moderately less active	Quite a lot less active	No activities at all
10	Have you felt anxious?	Not at all	A little	Moderately	Quite a lot	Extremely
11	Have you lost interest in things or no longer take pleasure in them?	Not at all	A little	Moderately	Quite a lot	Extremely
12	Have you found it difficult to trust other people?	Not at all	A little	Moderately	Quite a lot	Extremely
13	Have you felt sad?	Not at all	A little	Moderately	Quite a lot	Extremely
14	Have you felt as if your movements were slow?	Not at all	A little	Moderately	Quite a lot	Extremely
15	In the past 24 hours, how much of the TIME have you been craving for amphetamines?	None of the time	A little of the time	Moderate amount of the time	Quite a lot of the time	All of the time
16	How STRONG has your craving for amphetamines been?	No craving	A little	Moderately	Quite a lot	Extremely

Appendix I: The Severity of Dependence Scale

This questionnaire is going to ask you five questions about your drug use. For each of the five questions we want you to tick the most appropriate response answer.

	Never/ almost never	Sometimes	Often	Always/ nearly always
Do you think your use of methamphetamine was out of control?	○ 0	○ 1	○ 2	○ 3
Does the prospect of missing a fix/shot or dose make you anxious or worried?	○ 0	○ 1	○ 2	○ 3
Do you worry about your use of methamphetamine?	○ 0	○ 1	○ 2	○ 3
Do you wish you could stop?	○ 0	○ 1	○ 2	○ 3
SUBTOTAL SCORES FOR MARKED BOXES IN EACH COLUMN				

	Not difficult	Quite difficult	Very difficult	Impossible
How difficult do you find it to stop or go without methamphetamine?	○ 0	○ 1	○ 2	○ 3

TOTAL SCORE ☐

The greater the score, the higher the degree of psychological dependence.

This questionnaire has been adapted to participants' methamphetamine use. Standard version of instrument has "named drug".

Appendix J: The Barnes Rating Scale for Akathisia

Patients should be observed while they are seated, and then standing while engaged in neutral conversation (for a minimum of two minutes in each position). Symptoms observed in other situations, for example, while engaged in activity on the ward, may also be rated. Subsequently, the subjective phenomenon should be elicited by direct questioning. This scale, yielding four separate component scores, comprises items for rating the observable, restless movements that characterize the condition, the subjective awareness of restlessness, and any distress associated with the akathisia. In addition, there is an item for rating the global severity of the patient's akathisia.

OBJECTIVE

0 Normal, occasional fidgety movements of the limbs
1 Presence of characteristics restless movements: shuffling or tramping movements of the legs/feet, or swinging of one leg, while sitting, *and/or* rocking from foot to foot or 'walking on the spot' when standing, *but* movements present for less than half the time observed
2 Observed phenomenon, as described in (1) above, which are present for at least half the observation period
3 The patient is constantly engaged in characteristic restlessness movements, *and/or* has the inability to remain seated or standing without walking or pacing, during the time observed.

SUBJECTIVE

Awareness of restlessness

0 Absence of inner restlessness
1 Non-specific sense of inner restlessness
2 The patient is aware of an inability to keep the legs still, or a desire to move the legs, *and/or* complains of inner restlessness aggravated specifically by being required to stand still
3 Awareness of an intense compulsion to move most of the time *and/or* reports a strong desire to walk or pace most of the time

Distress related to restlessness

0 No distress
1 Mild
2 Moderate
3 Severe

GLOBAL CLINICAL ASSESSMENT OF AKATHISIA

0 Absent. No evidence of awareness of restlessness. Observation of characteristic movements of akathisia in the absence of a subjective report of inner restlessness or compulsive desire to move the legs should be classified as pseudoakathisia.
1 Questionable. Non-specific inner tension and fidgety movements
2 Mild akathisia. Awareness of restlessness in the legs *and/or* inner restlessness worse when required to stand still. Fidgety movements present, but characteristic restless movements of akathisia not necessarily observed. Condition causes little or no distress.
3 Moderate akathisia. Awareness of restlessness as described for mild akathisia above, combined with characteristic restless movements such as rocking from foot to foot when standing. Patient finds the condition distressing.
4 Marked akathisia. Subjective experience of restlessness includes a compulsive desire to walk or pace. However, the patient is able to remain seated for at least 5 minutes. The condition is obviously distressing
5 Severe akathisia. The patient reports a strong compulsion to pace up and down most of the time. Unable to sit or lie down for more than a few minutes. Constant restlessness which is associated with intense distress and insomnia.

Reproduced from Barnes, T.R.E. (1989). A rating scale for drug-induced akathisia. *British Journal of Psychiatry, 154,* 672-676.

Appendix K: The Simpson-Angus Scale For Extrapyramidal Side Effects

The Simpson-Angus scale is a 10-item instrument used to evaluate the presence and severity of parkinsonian symptomatology. The ten items focus on rigidity, and items are rated for severity on a 0 – 4 scale, with definitions provided for each anchor point.

1. **GAIT** – The patient is examined as he walks into the examining room, his gait, the swing of his arms, his general posture, all form the basis for an overall score for this item. This is rated as follows:
   0 - Normal
   1 - Diminution in swing while the patient is walking
   2 - Marked diminution in swing with obvious rigidity in the arm
   3 - Stiff gait with arms held rigidly before the abdomen
   4 - Stooped shuffling gait with propulsion and retropulsion

2. **ARM DROPPING** – The patient and the examiner both raise their arms to shoulder height and let them fall to their sides. In a normal subject a stout slap is heard as the arms hit the sides. In a patient with extreme Parkinson's syndrome the arms fall very slowly:
   0 - Normal, free fall with loud slap and rebound
   1 - Fall slowed slightly with less audible contact and little rebound
   2 - Fall slowed, no rebound
   3 - Marked slowing, no slap at all
   4 - Arms fall as though against resistance; as though through glue

3. **SHOULDER SHAKING –** The subject's arms are bent at a right angle at the elbow and are taken one at a time by the examiner who grasps one hand and also clasps the other around the patient's elbow. The subject's upper arm is pushed to and fro and the humerus is externally rotated. The degree of resistance from normal to extreme rigidity is scored as follows:
   0 - Normal
   1 - Slight stiffness and resistance
   2 - Moderate stiffness and resistance
   3 - Marked rigidity with difficulty in passive movement
   4 - Extreme stiffness and rigidity with almost frozen shoulder

4. **ELBOW RIGIDITY –** The elbow joints are separately bent at right angles and passively extended and flexed, with the subject's biceps observed and simultaneously palpated. The resistance to this procedure is rated. (The presence of cogwheel rigidity is noted separately). Scoring is 0 – 4 as in Shoulder Shaking test:

5. **FIXATION OF POSITION OR WRIST RIGIDITY –** The wrist is held in one hand and the fingers held by the examiner's other hand, with the wrist moved to extension flexion and both ulnar and radial deviation. The resistance to this procedure is rated as in Items 3 and 4:

6. **LEG PENDULOUSNESS –** The patient sits on a table with his legs hanging down and swinging free. The ankle is grasped by the examiner and raised until the knee is partially extended. It is then allowed to fall. The resistance to falling and the lack of swinging form the basis for the score on this item:
   0 - The legs swing freely
   1 - Slight diminution in the swing of the legs
   2 - Moderate resistance to swing
   3 - Marked resistance and damping of swing
   4 - Complete absence of swing

7. **HEAD DROPPING –** The patient lies on a well-padded examining table and his head is raised by the examiner's hand. The hand is then withdrawn and the head allowed to drop. In the normal subject the head will fall upon the table. The movement is delayed in extrapyramidal system disorder, and in extreme parkinsonism it is absent. The neck muscles are rigid and the head does not reach the examining table. Scoring is as follows:
   0 - The head falls completely with a good thump as it hits the table
   1 - Slight slowing in fall, mainly noted by lack of slap as head meets the table
   2 - Moderate slowing in the fall quite noticeable to the eye
   3 - Head falls stiffly and slowly
   4 - Head does not reach examining table

8. **GLABELLA TAP –** Subject is told to open his eyes wide and not to blink. The glabella region is tapped at a steady, rapid speed. The number of times patient blinks in succession is noted:
   0 - 0 – 5 blinks
   1 - 6 – 10 blinks
   2 - 11 – 15 blinks
   3 - 16 – 20 blinks
   4 - 21 and more blinks

9. **TREMOR –** Patient is observed walking into examining room and is then re-examined for this item:
   0 - Normal
   1 - Mild finger tremor, obvious to sight and touch
   2 - Tremor of hand or arm occurring spasmodically
   3 - Persistent tremor or one or more limbs
   4 - Whole body tremor

10. **SALIVATION** – Patient is observed while talking and then asked to open his mouth and elevate his tongue. The following ratings are given:
    0 - Normal
    1 - Excess salivation to the extent that pooling takes place if the mouth is open and tongue raised
    2 - When excess salivation is present and might occasionally result in difficulty speaking
    3 - Speaking with difficulty because of excess salivation
    4 - Frank drooling.

Reproduced from Simpson, G.M. & Angus, J.W.S. (1970). A rating scale for extrapyramidal side effects. *Acta Psychiatry.*

Appendix L: RAH Staff Questionnaire

As you may be aware, Drug and Alcohol Services South Australia (DASSA) have been conducting research looking at patients with Methamphetamine-induced Psychosis. Our first study was investigating the medical management of patients in the ED. We are also currently conducting research into the Post-discharge Community Care of patients who present to ED with Methamphetamine-induced Psychosis.
We would like to take this opportunity to ask you about your perceptions of the prevalence of Methamphetamine-induced psychosis at the RAH. We would appreciate if you could answer some simple questions regarding what you THINK has been occurring in the past 12 – 24 months.

Staff Position: ☐ **Nurse** ☐ **Registrar** ☐ **Medical Officer** ☐ **Consultant**

1. In the last 12 to 24 months, do you think that the **INCIDENCE** of Methamphetamine-induced Psychosis has:

Increased ☐ Decreased ☐ stayed the same ☐

2. In the past 12 to 24 months, do you think that the **PROFILE** of Methamphetamine-induced Psychosis patients has changed?

Yes ☐ No ☐

If yes, in what ways (e.g. more aggressive, harder to deal with, less aggressive, more co-morbidities)

Specify:……..

3. What proportion of presentations are you seeing as **REPEAT** presentations of the same clients?

Less than 25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐

Do you think that this has changed over time? e.g. decreased in the last 12 months, stayed the same

Yes ☐ No ☐

If yes, please specify:…….

Thank you for your time, it is greatly appreciated.

Appendix M: Acute Care: Casenote review protocol

CASENOTE REVIEW PROTOCOL **Reviewer Initials_____**

Site ☐ RAH
☐ Glenside
☐ Noarlunga
☐ FMC

Casenote ID Number _____

Date of Review ___ /___ / 2004

Date of Admission ___ /___ / 2004

Date of Discharge ___ /___ / 2004

Duration of Inpatient Stay _____ days

Eligibility Checklist (If any of the crossed boxes are checked, do not proceed)

	YES	NO
Aged between 18 and 59 years at time of admission	☐	☒
Methamphetamine use within week prior to admission	☐	☒
Evidence of drug induced psychotic disorder	☐	☒
Prior history of non drug induced psychotic disorder	☒	☐
Risk of violence towards clinical or research staff	☒	☐
Severe risk of self harm	☒	☐
Pregnancy	☒	☐
Hypersensitivity to benzodiazepines, haloperidol or benztropine	☒	☐
Indicates of hepatic failure such as jaundice, ascites etc	☒	☐

Demographic Information

Age _____ yrs

Gender ☐ Male ☐ Female

Country of birth _____

Ethnicity _____

Education Level ☐ Completed primary education
☐ Some secondary education completed
☐ Secondary education completed
☐ Some post-secondary education completed
☐ Post-secondary education completed

Employment Status ☐ Full-time employed
☐ Part-time employed
☐ Unemployed
☐ Part/full time student

If unemployed, length of unemployment period _____ days/months/years

If part/full-time employed, length of employment period _____ days/months/years

Number of jobs had over last 12 months _____ job/s

Receiving financial support or pension ☐ No ☐ Yes, specify _____.

Age at first methamphetamine use _____ years

In the week prior to admission the patient used methamphetamine on how many days?_____.

Average quantity of methamphetamine used on each of these days _____.

When did the patient last use methamphetamine prior to admission

- ☐ 6-7 days
- ☐ 4-5 days
- ☐ 2-3 days
- ☐ 1 day
- ☐ day of admission, number of hours _____.

Other illicit drugs used in the week prior to admission, list

_____

_____

_____

_____

_____

_____

Source of Patient Referral to Hospital

- ☐ Self
- ☐ Police
- ☐ Family
- ☐ Assessment & Crisis Intervention Service
- ☐ General Practitioner (GP)
- ☐ Friend
- ☐ Neighbour
- ☐ Other, specify

_____.

Person(s) Accompanying Patient to Hospital

- ☐ Police only
- ☐ Family only
- ☐ No one
- ☐ Assessment and Crisis Intervention Service Only
- ☐ Ambulance officers only
- ☐ Police + ambulance officers
- ☐ Family + ambulance officers
- ☐ Family + police + Assessment & Crisis Intervention Service
- ☐ Friend only
- ☐ Other, specify _____.

Ward/s or department/s the patient treated in

- ☐ A+E
- ☐ Psych. Ward
- ☐ General ward
- ☐ Other, specify _____.

Name of the treating doctor _____.

Notes on the events leading up to admission

_____
_____
_____
_____
_____
_____

Drug screening test upon admission, list

Date of Testing	**Substance tested for**	**Results**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Recorded Medical Diagnoses on Admission

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Previous Medical Diagnosis History

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Recorded Current Medications Prior to Admission, tick and record dosage

		Dosage	Regular Dose	Dose As Needed
Antipsychotics	☐ Olanzapine	____	☐	☐
	☐ Risperidone	____	☐	☐
	☐ Zuclopenthixol	____	☐	☐
	☐ Unspecified depot	____	☐	☐
	☐ Other, specify			
	_____	____	☐	☐
	_____	____	☐	☐
Antidepressants	☐ Venlafaxine	____	☐	☐
	☐ Paroxetine	____	☐	☐
	☐ Sertraline	____	☐	☐
	☐ Fluvoxamine	____	☐	☐
	☐ Other, specify			
	_____	____	☐	☐
	_____	____	☐	☐
Anxiolytic	☐ Alprazolam	____	☐	☐
	☐ Lorazepam	____	☐	☐
	☐ Other, specify			
	_____	____	☐	☐
	_____	____	☐	☐
Mood Stabiliser	☐ Sodium valproate	____	☐	☐
	☐ Other, specify			
	_____	____	☐	☐
	_____	____	☐	☐
Other Meds	☐ Benztropine	____	☐	☐
	☐ Methadone	____	☐	☐
	☐ Ventolin	____	☐	☐
	☐ Other, specify			
	_____	____	☐	☐
	_____	____	☐	☐
	_____	____	☐	☐
No Medications	☐			

Medications given upon/ during admission, list drug names.

Drug	Dosage	Route	Regular Dose	As Needed (tick)
_____	_____	_____	☐	☐
_____	_____	_____	☐	☐
_____	_____	_____	☐	☐
_____	_____	_____	☐	☐

Other treatments/ investigations performed, list

_____
_____
_____
_____

Method of determining methamphetamine use in the week prior to admission

- ☐ Self report
- ☐ Relative report
- ☐ Other, specify _____.

_____

Hospital Admission History

Is this the patients first admission to this hospital for methamphetamine induced psychosis?

☐ Yes ☐ No ↴

If NO, list the date of admissions to this hospital for methamphetamine induced psychosis, length of stay and treating doctor.

1. ___ /___ / 2004, _____days, Treating Doctor_____.
2. ___ /___ / 2004, _____days, Treating Doctor_____.
3. ___ /___ / 2004, _____days, Treating Doctor_____.
4. ___ /___ / 2004, _____days, Treating Doctor_____.
5. ___ /___ / 2004, _____days, Treating Doctor_____.

Has the patient been admitted to any other hospital for methamphetamine induced psychosis?

☐ *No* ☐ *Yes, please specify* _____

_____

Has the patient been admitted previously to this hospital for any other reason?

☐ *No* ☐ *Yes* ↴

If YES, list the date of admissions to this hospital, length of stay, and reason for admittance

1. ___ /___ / 2004, _____days, reason _____.
2. ___ /___ / 2004, _____days, reason _____.
3. ___ /___ / 2004, _____days, reason _____.
4. ___ /___ / 2004, _____days, reason _____.
5. ___ /___ / 2004, _____days, reason _____.

Discharge Diagnoses (DSM IV / ICD 10), list

_____

_____

Discharge location ☐ Parental home
☐ Own residence
☐ Hostel
☐ Warinillia
☐ Other detoxification / rehabilitation service
☐ Absconded, destination unknown
☐ Police custody
☐ Other, specify _____.

Discharge medications, list drug name and dosage

1. Drug _____, Dosage _____.
2. Drug _____, Dosage _____.
3. Drug _____, Dosage _____.
4. Drug _____, Dosage _____.
5. Drug _____, Dosage _____.
6. Drug _____, Dosage _____.
7. Drug _____, Dosage _____.
8. Drug _____, Dosage _____.
9. Drug _____, Dosage _____.
10. Drug _____, Dosage _____.

Post discharge referral

Referral	**Offered**	**Patient Accepted**	**Patient Refused**
Outpatient: Psych	☐	☐	☐
Outpatient: D+A	☐	☐	☐
Inpatient rehab: Psych	☐	☐	☐
Inpatient rehab: D+A	☐	☐	☐
Other, specify _____	☐	☐	☐
Other, specify _____	☐	☐	☐
Other, specify _____	☐	☐	☐

Past Psychiatric History

Family history of
☐ Psychotic illness
☐ Drug and/or alcohol use/dependence
☐ Other, specify _____.

Recorded previous psychiatric diagnoses

a. Substance induced psychosis
b. Substance abuse/ dependence
c. Suicide attempt/ self harming behaviour
d. Depression
e. Personality Disorders
f. Bipolar affective disorder
g. Overdose (intentional or accidental)
h. Mania
i. Post traumatic stress disorder
j. Anxiety disorder
k. Adjustment disorder
l. Organic brain syndrome
m. Delusional jealousy disorder
n. Other, specify _____.
o. No previous psychiatric diagnosis

3b. Past Psychiatric History – Recorded previous psychiatric symptomatology

a. Angry/hostile behaviours
- ☐ Highly irritable
- ☐ Anger frequently vented by raising voice
- ☐ Verbally abusive
- ☐ Making overt threats
- ☐ Demonstrated/attempted physical abuse directed at others

b. Difficulty in delaying gratification
- ☐ Evidence that demanding and violent insistent behaviours are displayed if needs are not satisfied immediately.

c. Affective lability (uncontrollable emotional behaviours)
- ☐ Radical changes in emotional tone (display of rage then ecstasy)
- ☐ Evidence of a lack of control of emotions
- ☐ Emotional fluctuations in response to inappropriate stimuli

d. Delusions – Evidence of frequent:
- ☐ Stabilized, well formed delusions
- ☐ Interference in patient thinking, social relationships, behaviours and majors facets of the patients life.
- ☐ Inappropriate reactions that are a safety risk for themselves and others.

e. Hallucinatory Behaviour
- ☐ Behavioural, functional and thinking disruptions/distortions caused by the hallucinations
- ☐ Hallucinations are treated as real by eliciting verbal/emotional responses from patient

f. Excitement and hyperactivity
- ☐ Agitation and overarousal
- ☐ Accelerated speech and incoherence
- ☐ Heightened responsivity to stimuli
- ☐ Accelerated motor activity making sitting still difficult
- ☐ Limited attention span
- ☐ Interference with sleeping and eating and other personal functions

g. Grandiosity
- ☐ Exaggerated self-opinion
- ☐ Delusions of extraordinary abilities, wealth, knowledge, fame, power.
- ☐ Social interactions influenced by delusions
- ☐ Thinking, attitudes and behaviours are influenced by the delusions

h. Suspiciousness / Persecution
- ☐ Patient has exaggerated ideas of persecution by being guarded, distrustful, suspicious that others mean harm.
- ☐ Patient has persecutory delusions that interfere with
  - ☐ Patients thinking
  - ☐ Social Relationships
  - ☐ Behaviour

i. Hostility
- ☐ Patient shows indirect / restrained anger such as sarcasm, disrespect, hostile expressions, irritability
- ☐ Uncooperative
- ☐ Verbally abusive impacting on social relations
- ☐ Indirect violence and destructiveness (not towards others)
- ☐ Violent, assaultive and physically aggressive toward others

j. Emotional Withdrawal
- ☐ Emotionally distanced from surroundings and other people but can be engaged with encouragement
- ☐ Appears completely distant, docile and purposeless and is resistant to encouragement to become engaged and attentive
- ☐ Limited communication and social interaction abilities due to withdrawal
- ☐ Neglecting of personal functions and needs

k. Passive / Apathetic Social Withdrawal
- ☐ Attends social activities but is disinterested and mechanical and tends to recede
- ☐ Spends little time with others
- ☐ Apathetic and isolated
- ☐ Rarely/never attends social activities
- ☐ Neglecting of personal needs

l. Akathisia – restlessness movement
- ☐ Presence of characteristic movements including, shuffling or tramping of legs/feet, swinging legs, rocking from foot to foot, pacing and walking on the spot.
- ☐ Constant restlessness
- ☐ Distress related to restlessness
- ☐ Unable to sit or lie down for more than a few minutes

4. Previous Hospital Admissions

Hospital 1: Institution_____.
Admission Date _____ Discharge Date_____.
Treating Doctor_____.
Treatment Medications_____.
Admission Status ☐ Voluntary ☐ Detained
Discharge diagnoses_____
_____.
Discharge medications_____
_____.
Discharge referrals_____
_____.

Hospital 2: Institution_____.
Admission Date _____ Discharge Date_____.
Treating Doctor_____.
Treatment Medications_____.
Admission Status ☐ Voluntary ☐ Detained
Discharge diagnoses_____
_____.
Discharge medications_____
_____.
Discharge referrals_____
_____.

Hospital 3: Institution_____.
Admission Date _____ Discharge Date_____.
Treating Doctor_____.
Treatment Medications_____.
Admission Status ☐ Voluntary ☐ Detained
Discharge diagnoses_____
_____.
Discharge medications_____
_____.
Discharge referrals_____
_____.

Hospital 4:

Institution_____.
Admission Date _____ Discharge Date_____.
Treating Doctor_____.
Treatment Medications_____.
Admission Status ☐ Voluntary ☐ Detained
Discharge diagnoses_____
_____.
Discharge medications_____
_____.
Discharge referrals_____
_____.

Appendix N: Research Assessment Tools - Assertive Community Care: *Demographic and other information*

Information relating to patients' age, gender, living arrangements, education and employment status, legal issues and previous treatment contacts will be collected.

PRE-ADMISSION DRUG USE QUESTIONNAIRE – TIME-LINE FOLLOW-BACK

Participants will be asked if they have ever used a range of named drugs, and (if ever used) whether they had used the drugs within the past 30 days. If participants indicate that they had used the named drug in the past 30 days, they will be asked to complete a Time-Line Follow-Back (TLFB) calendar with the research officer. The calendar will cover the period of 30 days prior to hospitalisation, with the day of hospitalisation marked. Patients are asked to mark on the calendar the days on which they used the drug and how many times on that day the drug was used.

Some of the named drugs require prescriptions for licit distribution. For these drugs, if the participant indicates that they had used the drug in 30 days prior to admission, they will be asked if the drug was prescribed to them, and if it was, whether they used the drug according to the prescribing doctor's instructions. Patients will still be asked to complete the TLFB calendar for drugs used as prescribed.

THE PANSS POSITIVE AND NEGATIVE SCALES

The PANSS for schizophrenia (Kay, Fizbein & Opler, 1987) is a thirty-item valid and reliable instrument designed to provide a balanced representation of positive and negative symptoms associated with psychosis, their relationship to one another, and their severity. Positive symptoms, reflecting an excess or distortion of normal functioning, include delusions and hallucinations, while negative symptoms, reflecting a reduction or diminution of normal functioning, include flattened affect and psychomotor retardation. Ratings are made on a 7-point scale ranging from 'absent' (1) to 'extreme psychopathology' (7). Requiring between 30-40 minutes to complete, the PANSS yield separate scores along nine clinical dimensions, including scales for a Positive Syndrome, a Negative Syndrome, Depression, Composite Index, and General Psychopathology. Only the 14 items of the Positive and Negative subscales of the PANSS will be used for the present trial.

THE HOSPITAL ANXIETY AND DEPRESSION SCALE (HADS)

The Hospital Anxiety and Depression Scale is a much applied and convenient instrument for assessing anxiety and depression in patients with both somatic and mental problems. The scale comprises 7 questions addressing anxiety and 7 questions addressing depression, with each question rated on a 0 – 3 scale to reflect the severity of the item addressed in each question.

THE SEVERITY OF DEPENDENCE SCALE (SDS)

The Severity of Dependence Scale is a short, easily administered scale that can be used to measure the degree of dependence experienced by users of different types of drugs. This scale has 5 items, each of which is concerned with the psychological components of dependence. These items are specifically concerned with impaired control over drug taking and with preoccupation and anxieties about drug use. For the purposes of this research, the SDS will be used to measure methamphetamine dependence.

***METHAMPHETAMINE CRAVING SCALE* – Weiss & Griffin, 1995**

A multidimensional measure of participants level of craving for methamphetamine. This scale assess five dimensions of craving including (1) current craving intensity; (2) intensity of cravings during the past 24 hours, (3) frequency of cravings; (4) reactivity of craving to drug-related environmental cues and (5) imagined likelihood of use if in a setting with access to drugs. The Methamphetamine Craving Scale was adapted for use in the current study from the Cocaine Craving Questionnaire originally developed as a multidimensional measure of craving for cocaine users.

Appendix O: Research Assessment Tools - Assertive Community Care

Methamphetamine Craving Scale

INSTRUCTIONS:
This questionnaire is going to ask you five questions about your cravings for methamphetamine. For each of the five questions we want you to indicate the most appropriate response.

1. Please rate how STRONG your desire for Methamphetamine is <u>RIGHT NOW</u>

NO DESIRE ... **STRONG**

EXTREMELY									
0	1	2	3	4	5	6	7	8	9

2. Please rate how STRONG your desire for Methamphetamine was <u>DURING THE PAST 24 HOURS</u>

NO DESIRE ... **STRONG**

EXTREMELY									
0	1	2	3	4	5	6	7	8	9

3. Please rate how OFTEN you had the urge to use Methamphetamine DURING THE PAST 24 HOURS

4. In the past 24 hours, please rate how strong your urges have been for Methamphetamine when something in the environment has reminded you of it (examples: seeing a spoon, a needle)

NO URGES									EXTREMELY STRONG
0	1	2	3	4	5	6	7	8	9

5. Please imagine yourself in the environment in which you have previously used drugs and/or alcohol (a bar, a dealer's house etc). If you were in this environment right now, what is the likelihood that you would use Methamphetamine.

NOT AT ALL									I'M SURE I WOULD USE
0	1	2	3	4	5	6	7	8	9

Appendix P: Research Assessment Tools - Assertive Community Care: Baseline Interview Demographic Information Sheet

Site of Interview
- ☐ RAH
- ☐ Glenside
- ☐ Noarlunga
- ☐ FMC

Date: ___ /___ / 200__

Time of Interview: _____ am/pm

Eligibility Checklist (If any of the crossed boxes are checked, do not proceed)

	YES	NO
Evidence of methamphetamine-induced psychotic disorder	☐	☒
Methamphetamine use within week prior to admission	☐	☒
Ability to understand the purpose of the study and complete study procedures	☐	☒
Prior history of psychotic disorder not related to substance use	☒	☐
Risk of violence to clinical or research staff	☒	☐
Severe risk of self harm	☒	☐
Pregnancy	☒	☐
Impaired sensorium such that informed consent could not be obtained at any stage	☒	☐

Demographic Information

SURNAME:	GIVEN NAMES:	
DATE OF BIRTH:	AGE:	GENDER:
COUNTRY OF BIRTH:	MARITAL / RELATIONSHIP STATUS:	
ETHNICITY:	EDUCATION LEVEL COMPLETED TO DATE:	

ACCOMMODATION STATUS AT POST-DISCHARGE:

1 ☐ Family home (paying rent)……

2 ☐ Family home (NOT paying rent)……

3 ☐ Private share house (paying rent)……

4 ☐ Private residence (living alone & paying rent)……

5 ☐ Hostel (paying rent / fee)……

6 ☐ Supported Accommodation (not paying rent)……

7 ☐ Correctional Facility……

8 ☐ Medical Facility ……

9 ☐ No fixed address……

10 ☐ Homeless……

11 ☐ Other, specify……

……

CURRENT PLACE OF RESIDENCE: ADDRESS (If applicable)

Address:	Number & Street:	Suburb/Town:	Postcode:
Contact Numbers:	Home phone:	Work Phone:	Mobile Phone:
	Email Address:		

IF NO CURRENT PLACE OF RESIDENCE: LAST KNOWN ADDRESS

Number & Street:	Suburb/Town:	State:	Postcode:

NEXT OF KIN CONTACT DETAILS

Name:		Relationship to client:	
Address:	Number & Street:	Suburb/Town:	Postcode:
Contact Numbers:	Home phone:	Work Phone:	Mobile Phone:
	Email Address:		

ALTERNATIVE CONTACT DETAILS

Name:			Relationship to client:	
Address:	Number & Street:		Suburb/Town:	Postcode:
Contact Numbers:	Home phone:	Work Phone:		Mobile Phone:
	Email Address:			

Employment Status ☐ Full-time employed ……..

☐ Part-time employed……..

☐ Unemployed……...

☐ Part/full time student…….

If unemployed, length of unemployment period …… days/months/years

If part/full-time employed, length of current employment period ……days/months/years

Number of jobs had over last 12 months …… job/s

Receiving financial support or pension ☐ No ☐ Yes, specify

……

……

Age at first methamphetamine use …….. years of age

In the week prior to admission the patient used methamphetamine on how many days?…… days

Average quantity of methamphetamine used on each of these days ……

Route(s) of administration……..

When did the patient last use methamphetamine prior to admission

☐ 6-7 days

☐ 4-5 days

☐ 2-3 days

☐ 1 day

☐ day of admission, number of hours ago ……

Other illicit drugs used in the week prior to admission, list

.....

.....

.....

.....

.....

Appendix Q: Research Assessment Tools - Assertive Community Care: BBV-TRAQ Blood Borne Virus Transmission Risk Assessment Questionnaire

INSTRUCTIONS

- Please consider the following questions carefully and answer each one as accurately and truthfully as you can. **All questions refer to your behaviour in the past MONTH / 4 week period.**
- Record your responses to each of the following questions by circling the answer option that you think is most relevant to you.
- Try and remember that the only correct answer is an accurate and honest answer. Remember that the information you provide will remain completely confidential.

SECTION A - INJECTING PRACTICES

1.In the last month, how many times have you handled another person's used needle/syringe *(eg. to dispose, to break-off needle)* at a time when you had cuts, sores or lesions on your fingers and hands?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

2.In the last month, how many times have you sucked or licked left-over drugs from a spoon or other mixing container which had been used by another person?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

3.In the last month, how many times have you sucked or licked a filter which had been used by another person?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

4.In the last month, how many times have you sucked or licked a plunger after using it in a mix which has been used by another person?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

5.In the last month, how many times have you injected a drug that was filtered through another person's filter?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

6a.In the last month, how many times have you injected a drug that was prepared in another person's used spoon or mixing container?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times" to this question (6a) please GO TO QUESTION 7

6b.On those occasions how often did you clean the spoon or mixing container before using it?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

7.In the last month, how many times have you injected a drug prepared with water which had been used by another person?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

8.In the last month, how many times have you injected a drug which had come into contact with another person's used needle/syringe?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

9a.In the last month, how many times have you injected a drug that you prepared immediately after 'assisting' another person with their injection (eg. injecting them, holding their arm, handling their used needle/syringe; touching their injection site to feel for a vein, to wipe away blood, or to stop bleeding)?

No times	Once	Twice	3 – 5 times	6 – 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' for this question (9a) please GO TO QUESTION 10a

9b.On those occasions, how often did you wash your hands before preparing your mix?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

10a.In the last month, how many times have you injected a drug that was prepared by another person who had already injected or assisted in someone else's injection?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (10a) please GO TO QUESTION 11a

10b.On those occasions, how often did the person preparing the mix wash their hands before preparing the mix?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

11a.In the last month, how many times have you been injected by another person who had already injected or assisted in someone else's injection?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (11a) please GO TO QUESTION 12a

11b.On those occasions, how often did the person injecting you wash their hands before injecting you?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

12a.In the last month, how many times have you injected with a needle/syringe which had been handled or touched by another person who had already injected?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (12a) please GO TO QUESTION 13a

12b.On those occasions, how often did they wash their hands prior to handling the needle/syringe that you used?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

13a.In the last month, how many times have you injected with another person's used needle/ syringe?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (13a) please GO TO QUESTION 14

13b.On those occasions, how often did you rinse it with a combination of full-strength bleach and water (ie. the '2x2x2' method) before you used it?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

14.In the last month, how many times have you injected with a needle/syringe after another person has already injected some of its contents?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

15a.In the last month, how many times have you touched your own injection site (eg. to feel for a vein, to wipe away blood, or to stop bleeding) soon after 'assisting' another person with their injection (eg. injecting them, holding their arm, handling their used needle/syringe; touching their injection site to feel for a vein, to wipe away blood, or to stop bleeding)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (15a) please GO TO QUESTION 16a

15b.On those occasions, how often did you wash your hands before touching your own injection site?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

16a.In the last month, how many times has another person touched your injection site (eg. to feel for a vein, to wipe away blood, or to stop bleeding)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ **If you answered 'No Times' to this question (16a) please GO TO QUESTION 17**

16b.On those occasions, how often did the person wash their hands before they touched your injection site?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

17.In the last month, how many times have you wiped your own injection site with an object (eg. swab, tissue, hanky, towel, etc) which had been used by another person

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

18.In the last month, how many times have you used a tourniquet (eg. medical tourniquet, belt, rope, tie, cord, etc) which had been used by another person?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

19.In the last month, how many times have you received an accidental needle-stick/prick from another person's used needle/syringe?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

20a.In the last month, how many times have you re-used a needle/syringe taken out of a shared disposal/sharps container?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

➲ If you answered 'No Times' to this question (20a) please GO TO SECTION B

20b.On those occasions, how often did you rinse it with full-strength bleach before you re-used it?

Never	Rarely	Sometimes	Often	Every time
☐	☐	☐	☐	☐

SECTION B - SEXUAL PRACTICES

1.In the last month, how many times have you engaged in unprotected vaginal sex with another person *(ie. penetration of the vagina with the penis)*?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

2.In the last month, how many times have you engaged in unprotected vaginal sex with another person *(ie. penetration of the vagina with the penis)* during menstruation?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

3.In the last month, how many times have you engaged in unprotected vaginal sex with another person *(ie. penetration of the vagina with the penis)* without lubrication?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

4.In the last month, how many times have you engaged in unprotected anal sex with another person *(ie. penetration of the anus with the penis*)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

5.In the last month, how many times have you engaged in unprotected oral sex with another person *(ie. lips and tongue come into contact with the vagina, penis and/or anus*)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

6.In the last month, how many times have you engaged in unprotected manual sex with another person *(ie. fingers and hands come into contact with the vagina, penis and/or anus*) during menstruation?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

7.In the last month, how many times have you engaged in unprotected manual sex with another person (*fingers and hands come into contact with the vagina, penis and/or anus*) after injecting?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

8.In the last month, how many times have you engaged in unprotected manual sex with another person (*fingers and hands come into contact with the vagina, penis and/or anus*) without lubrication?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

SECTION C – Other Skin Penetration Practices

1. In the last month, how many times have you come into contact with another person's blood (through fights, slash-ups, self-mutilation, accidents, blood nose etc)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

2. In the last month, how many times have you been tattooed by someone who was not a professional tattooist?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

3. In the last month, how many times have you how many time have you been pierced (eg. Ear or body) by someone who was not a professional piercer?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

4. In the last month, how many times have you used another person's used razor (eg disposable razor or razor blades)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

5. In the last month, how many times have you used another person's toothbrush?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

6. In the last month, how many times have you how many times have you used another persons personal hygiene equipment (eg. Nail file, nail scissors, nail clippers, tweezers, combs brush)?

No times	Once	Twice	3 - 5 times	6 - 10 times	More than 10 times
☐	☐	☐	☐	☐	☐

Appendix R: Research Assessment Tools - Assertive Community Care The Short Form 12 Health Survey (SF12)

INSTRUCTIONS: Please answer every question. Some questions may look like others, but each one is different. Please take the time to read and answer each question carefully by filling in the bubble that best represents your response.

EXAMPLE QUESTION

How strongly do you agree or disagree with each of the following statements?

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
a) I enjoy listening to music.	☐	☑	☐	☐	☐
b) I enjoy reading magazines.	☑	☐	☐	☐	☐

YOUR GENERAL HEALTH

1. In general, would you say your health is:

Excellent	Very Good	Good	Fair	Poor
☐	☐	☐	☐	☐

The following questions are about activities you might do during a typical day.

		Yes, limited a lot	Yes, limited a little	No, not limited at all
2a	**Does your health now limit you in performing moderate activities, such as moving a table, pushing a vacuum cleaner, bowling or playing golf?**	☐	☐	☐
2b	**Does your health now limit you in activities such as climbing several flights of stairs?**	☐	☐	☐

3. During the past 4 weeks, how often have you had of the following problems with your work or other daily activities that <u>are a result of your physical health?</u>

		All of the time	Most of the time	Some of the time	A little of the time	None of the time
a	**Accomplished less than you would like**	☐	☐	☐	☐	☐
b	**Were limited in the kind of work or other activities**	☐	☐	☐	☐	☐

4. During the <u>past 4 weeks</u>, how often have you had the following problems with your work or other daily activities that are <u>a result of emotional problems</u> (such as feeling depressed or anxious)

		All of the time	Most of the time	Some of the time	A little of the time	None of the time
a	**Accomplished less than you would like**	☐	☐	☐	☐	☐
b	**Did work or other activities less carefully than usual**	☐	☐	☐	☐	☐

5. During the <u>past 4 weeks</u>, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐	☐	☐	☐	☐

These questions are about how you feel and how things have been with you during the <u>past 4 weeks.</u> For each question, please give the answer that best describes the way you have been feeling.

6. How much of the time during the <u>past 4 weeks</u>…….

		All of the time	Most of the time	Some of the time	A little of the time	None of the time
a	**Have you felt calm and peaceful?**	☐	☐	☐	☐	☐
b	**Did you have energy?**	☐	☐	☐	☐	☐
c	**Have you felt downhearted and depressed?**	☐	☐	☐	☐	☐

7. During the <u>past 4 weeks</u>, how often has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

Appendix S: Research Assessment Tools - Assertive Community Care: Patient Casenote Information

---

Patient Number ……

Date of Hospital Admission …… /…… / 200…

Date of Discharge …… /…… / 200…

Duration of Inpatient Stay …….. days

Source of Patient Referral to Hospital

☐ Self
☐ Police
☐ Family
☐ Assessment & Crisis Intervention Service
☐ General Practitioner (GP)
☐ Friend
☐ Neighbour
☐ Other, specify

……

Person(s) Accompanying Patient to Hospital

☐ Police only
☐ Family only
☐ No one
☐ Assessment and Crisis Intervention Service Only
☐ Ambulance officers only
☐ Police + ambulance officers
☐ Family + ambulance officers
☐ Family + police + Assessment & Crisis Intervention Service
☐ Friend only
☐ Other, specify

……

Ward/s or department/s the patient treated in

☐ A + E
☐ Psych. Ward
☐ General ward
☐ Other, specify…….

Name of the treating doctor

……

Notes on the events leading up to admission

……

……

……

……

……

Drug Screening Test Upon Admission

Date of Testing	Substance tested for	Results
……		
……		
……		
……		
……		
……		

Recorded Medical Diagnoses on Admission

11. ……
12. ……
13. ……
14. ……
15. ……
16. ……
17. ……

Previous Medical Diagnosis History

11. ……
12. ……
13. ……
14. ……
15. ……
16. ……
17. ……

Inpatient Medications

		Dosage	Regular Dose	As Required (PRN)
Antipsychotics	☐ Olanzapine	___	☐	☐
	☐ Risperidone	___	☐	☐
	☐ Zuclopenthixol	___	☐	☐
	☐ Unspecified depot	___	☐	☐
	☐ Other, specify			
	……..	___	☐	☐
	……	___	☐	☐
Antidepressants	☐ Venlafaxine	___	☐	☐
	☐ Paroxetine	___	☐	☐
	☐ Sertraline	___	☐	☐
	☐ Fluvoxamine	___	☐	☐
	☐ Other, specify			
	……	___	☐	☐
	……	___	☐	☐

Anxiolytic	☐ Alprazolam	___	☐	☐
	☐ Lorazepam	___	☐	☐
	☐ Other, specify			
	……	___	☐	☐
	……	___	☐	☐
Mood Stabiliser	☐ Sodium valproate	___	☐	☐
	☐ Other, specify			
	……	___	☐	☐
	……	___	☐	☐
Other Meds	☐ Benztropine	___	☐	☐
	☐ Methadone	___	☐	☐
	☐ Ventolin	___	☐	☐
	☐ Other, specify			
	……	___	☐	☐
	……	___	☐	☐
	……	___	☐	☐

☐ No Medications

Hospital Admission History

Is this the patients first admission for a methamphetamine induced psychosis? ☐ Yes ☐ No ↴

If NO, list the hospital admissions for methamphetamine induced psychosis, length of stay and treating hospital(s).

1. ….. /….. / 200……, …….. days, Treating

Hospital(s)……..

2. ….. /….. / 200……, …….. days, Treating

Hospital(s)……..

3. ….. /….. / 200……, …….. days, Treating

Hospital(s)……..

4. ….. /….. / 200……, …….. days, Treating

Hospital(s)……..

5. ….. /….. / 200……, …….. days, Treating

Hospital(s)……..

Past Psychiatric History

Family history of

☐ Psychotic illness

☐ Drug and/or alcohol use/dependence

☐ Other, specify

……

……

Recorded previous psychiatric diagnoses / symptomatology

- ☐ Substance induced psychosis
- ☐ Substance abuse/ dependence
- ☐ Suicide attempt/ self harming behaviour
- ☐ Depression
- ☐ Personality Disorders
- ☐ Bipolar affective disorder
- ☐ Overdose (intentional or accidental)
- ☐ Mania
- ☐ Post traumatic stress disorder
- ☐ Anxiety disorder
- ☐ Adjustment disorder
- ☐ Organic brain syndrome
- ☐ Delusional jealousy disorder
- ☐ No previous psychiatric diagnosis
- ☐ Other, specify

  ……

  ……

Reported Psychiatric Symptomatology

……

……

ADDITIONAL CASENOTES INFORMATION

……

……

Appendix T Research Assessment Tools - Assertive Community Care: Discharge Information Sheet

Discharge Medications

Drug	Dosage	Route	Regular Dose	As Required (PRN)
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐
……	……	……	☐	☐

Other treatments/ investigations performed

……
……
……
……
…

Method of determining methamphetamine use in the week prior to admission

☐ Medical Test
☐ Self report
☐ Relative report
☐ Other, specify
……
……
……..

Discharge Diagnoses (DSM IV / ICD 10), list

……
……
……
……

Discharge location

☐ Parental home
☐ Own residence
☐ Hostel
☐ Warinillia
☐ Other detoxification / rehabilitation service
☐ Absconded, destination unknown
☐ Police custody
☐ Other, specify

……
……
……

Referral	Offered	Patient Accepted	Patient Refused
Outpatient: Psych	☐	☐	☐
Outpatient: D+A	☐	☐	☐
Inpatient rehab: Psych	☐	☐	☐
Inpatient rehab: D+A	☐	☐	☐
Other, specify ……..	☐	☐	☐
Other, specify ……..	☐	☐	☐
Other, specify ……..	☐	☐	☐

Appendix U: Research Assessment Tools - Assertive Community Care: Post Discharge interview topics

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(a) Psychiatric / Mental Health

- ☐ Undertake Mental State Examination (MSE)
- ☐ Detecting early warning signs of relapse
- ☐ Discussion on detecting early warning signs of relapse and prevention of psychiatric relapse
- ☐ Medication review
- ☐ Identifying sources of stress with the client, Issues Identified:

  ……

  ……

- ☐ Discussion of psychiatric issues identified in section of the Needs Assessment (eg, depression, anxiety, suicide ideation/intention)

Issues Identified:
……
……
……

(b) Methamphetamine Abuse Dependence

- ☐ Discussion of client's current level of drug use post discharge
- ☐ Discussion and identification of client's plans and motivation for change
- ☐ Discussion on relapse prevention
  - ☐ Coping with cravings and challenging thought processes
  - ☐ Discussion and identification of cues, environments and triggers for drug use
  - ☐ Drug refusal skills
- ☐ Discussion and identification of services available in this area

(c) Blood Bourne Virus Risk Taking Behaviour

- ☐ Discussion of clients current level of BBV risk taking behaviours post discharge
  - ☐ Safe sex practices
  - ☐ Safe injecting practices
  - ☐ Vein Care
- ☐ Reiteration of harm information relating to BBV-risk taking behaviours
  - ☐ blood-borne viruses, their effects and how these viruses are transmitted
  - ☐ Safe sex practices
  - ☐ Safe Injecting practices
  - ☐ Vein Care
  - ☐ Awareness/accessibility to clean needle programs
  - ☐ Vein Care
- ☐ Discussion regarding most recent blood screen
- ☐ Discussion of services available in this area

(d) Health and Social Functioning

- ☐ Discussion and identification of support systems available (e.g. family, friends, services)
- ☐ Discussion and identification of the clients health complaints and concerns
- ☐ Discussion and identification of possible relaxation and leisure activities for clients to engage in
- ☐ Discussion of issues identified in section of the Needs Assessment

Issues Identified:

……

……

Discussion regarding clients aims to achieve by next scheduled meeting in 1 week

(e) Treatment Compliance

- ☐ Discussion regarding appointments that have been/will be setup