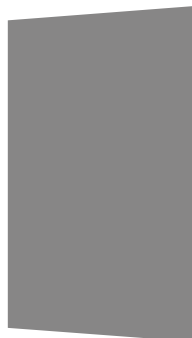


# An Evaluation of Holyoake's Specialist Methamphetamine Team Program



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## **Preventing harmful drug use in Australia**

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# An Evaluation of Holyoake's Specialist Methamphetamine Team Program

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**Program objectives**

*To reduce the harm and improve the quality of life to individuals using methamphetamine, and their families, through a comprehensive service mix of clinical treatment, education, counselling, case management, peer, and family support.*

Executive summary

The project planned to examine the effect of offering a comprehensive health and social care package in addition to standard counselling care in the treatment of methamphetamine use problems. The package offered access to an 'in-house' general practitioner, nurse, mentoring and support workers, plus intensive case management to link participants with external services such as housing, employment, legal and social services. All participants were able to access the standard range of counselling services offered by Holyoake.

All the Intervention participants (n=41) were recruited at the Northam clinic: standard care participants were recruited at Narrogin (n=2), Merredin (n=2) and Northam (n=6). We carried out follow-up interviews at one (n=30, 59%) and six (n=24, 47%) months, but the latter included only three (33%) standard care participants. Due to very small sample and low rate of follow-up, we report just the pre-post change for the Intervention group. We also recruited nine 'significant others' who were likely to be impacted by changes in participants' substance use.

Over six months there were significant improvements in wellbeing and mental health. In terms of substance use, there were significant reductions in the number of symptom of methamphetamine dependence, in the use of stimulants and the use of drugs overall. Participants were typically 'satisfied' or 'very satisfied' with the treatment they received at Holyoake. The significant others showed little change over six months with the exception of a reduction in self-esteem.

There were clear improvements across a range of psychosocial and substance use measure at six months. Despite this, the lack of an effective control group means that it is not possible to make a clear statement about the additional benefit conferred by the comprehensive package, as opposed to standard counselling services.

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## Background

### The rapid rise in 'ice' use in Australia

Australia has higher levels of methamphetamine use than almost any other country in the world (United Nations Office on Drugs and Crime, 2015). Neighbouring the world's major supply hub for methamphetamine in Southeast and East Asia (United Nations Office on Drugs and Crime, 2015), the increased interconnectedness of the global drug market has left Australia vulnerable to large scale shipments of high purity crystalline methamphetamine ('ice') (United Nations Office on Drugs and Crime, 2015). Seizures of methamphetamine have doubled in the region since 2010, up from about 7 tons to over 14 tons in 2013 (United Nations Office on Drugs and Crime, 2015).

The use of ice in Australia has also doubled since 2010 (Australian Institute of Health and Welfare, 2014). It has overtaken less pure forms of methamphetamine (e.g. speed) and has been associated with more frequent use (United Nations Office on Drugs and Crime, 2015), more health and social problems (Degenhardt et al., 2017) and double the number of dependent users – a trend most apparent in the 15-24 year age bracket (Degenhardt et al., 2016), and disproportionately affecting regional and remote communities (Australian Institute of Health and Welfare, 2014).

### Interventions and treatments

There has been a sharp rise in the demand for methamphetamine treatment, with episodes of care increasing from 10,027 in 2009/10 to 69,990 in 2016/17 (Australian Institute of Health and Welfare, 2018). This has placed unprecedented pressure on existing drug treatment services, particularly in regional and remote communities where drug treatment infrastructure is scarce, leading to long waiting lists. A systematic review concluded that, to date, there are insufficient data to support the use of pharmacotherapies such as dexamphetamine, bupropion, methylphenidate and modafinil, in the treatment of methamphetamine dependence (Pérez-Mañá et al., 2013). However, research continues to assess other potential agents in the treatment of stimulant abuse (Galloway et al., 2010; Herin et al., 2010), including a current trial, of Lisdexamfetamine (LDX) dimesylate, in Australia (Ezard et al., 2018).

A review of psychosocial treatments for methamphetamine dependence reported that the intensive application of psychological interventions (e.g., contingency management, cognitive behaviour therapy (CBT), motivational interviewing) can result in a moderate reduction in stimulant use (Aldington et al., 2007). Brief cognitive behavioural interventions, of up to four sessions duration, have also been shown in previous research to be associated with significant reductions in stimulant use and significantly greater likelihood of abstinence than controls (Baker et al., 2005).

Nevertheless, methamphetamine users seeking help from traditional drug and alcohol services frequently report their needs are not being met (Kay-Lambkin, 2008). For example, among a sample of methamphetamine users in Queensland, Australia, the majority felt that more information about methamphetamine use should be available and more accessible outside treatment services and business hours (Ormel et al., 2002). In particular, respondents reported that needle and syringe programs, methadone maintenance programs and outpatient counselling should not be co-located, as doing so is viewed as a key barrier to treatment access. In addition, there may be specific features of methamphetamine use, particular during withdrawal that impact on treatment. Those undergoing withdrawal are likely to show significant cognitive deficits including for sustained attention (Dean et al., 2013; Mehrjerdi et al., 2014). These deficits are likely to limit their ability to engage with and benefit from standard CBT.

In 2014/15 Holyoake, convened a panel of local experts, clinicians, nurses, detoxification services and other treatment providers to develop a comprehensive program for users of methamphetamine. This study evaluated the initial implementation of the new program.

## Methods

### Sample

A convenience sample of newly engaged clients over the age of 18 as well as clients who had not received treatment from Holyoake in the month preceding the trial, were eligible for the study. Clients aged 16 -17, deemed as mature minors by juvenile justice were also eligible to participate. Clients needed to not have a current acute mental health issue and, if possible, provide details of a family member living within a 100km radius. The significant other should be a family member/partner who the participant felt would have their mental health

impacted by the participant's methamphetamine usage. Nevertheless, participants were still eligible for inclusion in the study if they did not nominate a significant other. Finally, participants needed to have a mobile number or landline and indicate that methamphetamine was their main drug of concern or disclosed significant methamphetamine usage during their initial counselling session. Participants were excluded if they were currently using specific pharmacotherapies (naltrexone, bupropion/zyban, modafinil or mirtzapine) or were receiving any other drug or alcohol counselling. Failure to meet these criteria did not exclude participants from treatment however, they did preclude them from inclusion in the study.

A cluster design was used with intervention participants enrolled at the Northam clinic and Control participants enrolled via clinics in Merredin and Narrogin. However, due to low enrolment of Control participants, in the later stages of the project, Control participants were also enrolled at the Northam clinic. Recruitment commenced in June 2017 and closed June 2018.

### Procedure

Potential participants were recruited by clinic staff who obtained informed consent to share information with research staff. Baseline data were collected via an iPad touchscreen device provided by Curtin University, using Qualtrics survey software. Paper-based surveys were completed if the iPad was unavailable. Data were collected from participants who agreed to take part, at their first counselling session. Participants were also asked to complete a consent form allowing for 12 month follow-up via the WA Data linkage system. The significant other nominated by the participant was mailed an information sheet and consent form and asked to return it via a self-addressed pre-paid envelope, if they agreed to take part.

Follow up interviews were conducted at one month and six months after baseline collection, via telephone with the participants. Participants received a \$20 voucher after each interview. Significant others were interviewed at baseline and six months. Due to the brevity of the significant other interviews, no reimbursement was offered. The research was approved by the Curtin University Human Research Ethics Committee (HRE 2017-0366).

### Measures

Participants completed a number of surveys at baseline, one month and six months.



**The Personal Wellbeing Index (PWI)** (Cummins et al., 2003) was used to measure participant's subjective wellbeing. Participants rated items on an 11 point scale (0-10). The PWI was developed and validated in Australia and has high internal reliability (Cronbach's  $\alpha = .94$ ) with a general population norm of approximately 76 (SD 12) in 2015 (International Wellbeing Group, 2016).

**The Kessler K-10** (Kessler et al., 2002) scale was used to assess the global psychological distress of the participants. The Kessler K-10 questionnaire has 10 questions on a 5 point scale. Statistical analysis showed a high internal reliability (Cronbach's  $\alpha = .92$ ). It has a range of scores from 10 -50 these are generally interpreted as 20 - 24 = mild, 25 - 29 = moderate and 30 - 50 = severe distress (Australian Mental Health Outcomes and Classifications Network; AMHOCN (AMHOCH, 2005)). The K-10 has been validated on an Australian injecting drug using population and has high internal reliability (Cronbach's  $\alpha = .84$ ) (Hides et al., 2007).

**The single item self-esteem measure** (Robins et al., 2001) was used to measure participant's subjective wellbeing. This scale asks participants to rate a statement ("I have high self-esteem") on a scale of 1 to 5 (1 = not very true of me; 5 = very true of me). It has a mean score of 3.5 (SD 1.1) among undergraduate students (Robins et al., 2001).

**Family Assessment Device (FAD)** (Epstein et al., 1983) was utilised to measure family relationships. This uses a 4 point Likert scale with 12 questions. After reverse scoring negative items, the score is totalled and divided by the number of items giving a score of 1 (best functioning) to 4 (worst functioning). In the general population, the mean score is 2.2 (SD 0.58) (Epstein et al., 1983).

**The Composite International Diagnostic Interview** (World Health Organization, 1993) stimulant sub-section was included to assess stimulant related problems. The CIDI was used to measure the number of symptoms experienced as a result of stimulant dependence in the last 30 days (World Health Organization, 1993). The number of symptoms (e.g. withdrawal, tolerance) endorsed was summed, with a range of 0 to 7. Impairment involving three or more symptoms in the last 12 months is the criteria for dependence (American Psychiatric Association, 1994).

**The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)** (Humeniuk et al., 2010a) was used to measure poly-drug. The recommended reference time for this measure

is for a three month period, therefore it was assessed at baseline and six months, not at one month. The survey asks about lifetime use of 10 classes of drugs, including alcohol and tobacco. It then collects information on substances used in the last three months together with adverse outcomes arising from that drug use. Numerous scores can be derived from the ASSIST. Specific substance involvements scores range from 0-39 (the sum of recent outcomes questions 2 to 7 for each drug except tobacco 0-31): for illicit drugs value of 4-26 are regarded as moderate risk and 27+ as high risk (Humenuik et al., 2010b). We also summed these specific drug scores to assess recent poly drug use (maximum value of 382 for the 10 classes of drug). ASSIST has been validated on an illicit drug using Australian sample and been determined to have good reliability across all subscales (Cronbach's  $\alpha > .80$ ) (Humenuik et al., 2008).

**Demographic** information included questions on current employment status, main source of income in last month, earnings after tax in the last fortnight, who they lived with in the past month, usual form of accommodation in the last month, level of schooling completed, highest level of tertiary education completed.

Data were collected, via telephone, from significant others at baseline and six months on the PWB (Cummins et al., 2003), Kessler-10 (Kessler et al., 2002), Self-esteem (Robins et al., 2001) and Family Assessment Devise measures (Epstein et al., 1983). Additionally significant others were asked demographic information including what their relationship was to the participant, if they had lived at the same address as the participant in the last month, how the participant's drug used had affected them in the last month, their gender, age range and current employment status.

### Treatment

Standard treatment provided by Holyoake staff include a range of therapeutic approaches including Cognitive Behavioural Therapy (CBT), motivational interviewing and social learning theory. These are provided in individual and/or group sessions, with session lasting typically 60 minutes. The average engagement of clients is six sessions (Tait, 2016).

The intervention group were also provided with the above therapy options but in shorter sessions (especially during the initial stages) due to the limitations of cognitive functioning in early methamphetamine withdrawal (Dean et al., 2013; Mehrjerdi et al., 2014). Additionally the Clinic staff endeavoured to engage the intervention group with services such as the 'in-

house' general practitioner and nurse. Clients were encouraged to work with the peer and family support workers. Intensive case management was provided to the intervention group in order to link them with accommodation, legal and employment services, as required. Clinic staff also used an assertive follow-up procedure if clients from the intervention group dropped out or relapsed.

#### Team configuration

- Full-time Senior Clinical Case Coordinator - providing assessment, counselling and case management for clients
- Part-time Clinical Nurse – providing assistance to the GP, assisting with medical assessments and providing client support (for example, the Clinical Nurse spent considerable time following-up with clients who had not completed a medical assessment and then booking them in to see the GP.)
- Part-time General Practitioner - providing pharmacotherapy and AOD related medical care for clients with methamphetamine use issues, and facilitating linkages to local GP's
- Part-time Peer Support and Family Support Workers (staff with a lived experience of AOD use, or being impacted by another's use) – providing support to clients under the direction of the case manager, including assertive follow-up, transport to appointments and the provision of general peer support and encouragement through individual support or group programs.

#### Analysis

Originally, the intended analysis was a multi-level mixed effects regression model, with a random intercept term. The intercept term controls for clustering of variance in individuals over the repeated measures. The main analysis was to focus on the interaction of study group (Intervention, Control) by time (baseline, one month and six months) on the CIDI symptom score and changes in the K-10 score. Secondary outcomes were intended to be improvements in mental health, poly-drug use and general wellbeing. Changes in housing, employment and financial status were likely to be rare, so we planned to just present these as descriptive information. Finally, we intended to assess data from significant others using the same approach.

However, the limited and unbalanced study numbers meant that the actual analysis was primarily descriptive given the poor fit of the data in the multi-level analysis. Change over time for the Intervention was assessed with repeated measures ANOVA. As ANOVA requires data at each time point, the analysis focused on baseline and six months to maximise the number of cases, as some people completed follow-up interviews at six months but not at one month.

## Results

### Baseline and follow-up rates

We recruited 53 participants, with 43 recruited to the Northam Intervention, two each at Merredin and Narrogin (controls) and six as controls at Northam. Two participants withdrew from the Intervention group, leaving 41 eligible Intervention participants. Table 1 shows the baseline demographic, substance use and survey data. There were no statistically significant differences in the demographic characteristics. However, those in the control group had significantly higher wellbeing scores than the Intervention group ( $t$  2.4 (49)  $p=.019$ ). On the ASSIST lifetime use, recent use and recent stimulant use scores, the Intervention group had marginally higher values than the control group (not significant).

The 'high-risk' threshold for stimulant use on the AUDIT ( $\geq 27$ ) was exceeded by 56% of participants and only two people did not reach the symptom count threshold for 'dependence' ( $\geq 3$ ). The high rate of unemployment, low income and generally low level of educational attainment also reflect the highly disadvantaged backgrounds of the cohort.

Table 1: Demographic and other baseline data

Variable		Intervention (n=41)	Control (n=10)	p value
Sex (female)	n (%)	17 (42)	4 (40)	.933
Age	mean (SD)	32.2 (7.8)	36.5 (10.9)	.157
Unemployed (yes)	n (%)	27 (66)	7 (70)	.803
Income <\$500 / fortnight	n (%)	21 (54%)	4 (50%)	.843
Education (<3 years secondary)	n (%)	22 (54)	4 (20)	.439
Accommodation				n/a
Public housing	n (%)	8 (20)	1 (10)	
Private rental	n (%)	12 (29)	3 (30)	
Private owned	n (%)	5 (12)	2 (20)	
Parent's	n (%)	6 (15)	3 (30)	
Other (including homeless)	n (%)	10 (24)	1 (10)	
Wellbeing	mean (SD)	46.2 (21.3)	63.1 (11.0)	.019
K-10	mean (SD)	31.4 (7.9)	30.1 (8.6)	.640
Self-esteem	mean (SD)	2.7 (1.2)	3.2 (1.4)	.208
FAD	mean (SD)	2.5 (0.5)	2.3 (0.5)	.171
ASSIST (lifetime)	mean (SD)	121.0 (46.1)	98.2 (35.4)	.153
ASSIST (last 3 months)	mean (SD)	100.3 (43.5)	77.6 (34.0)	.131
ASSIST stimulant score	mean (SD)	27.0 (9.4)	25.0 (12.4)	.590
Symptoms of dependence	mean (SD)	5.1 (1.9)	4.7 (2.5)	.563

n/a = not statistically assessed due to low cell frequencies

At one month we interviewed 30 (59%) participants: 21 (51%) from the Intervention and 9 (90%) from the control group (Fisher’s exact test  $p=.034$ ). At six months we interviewed 24 (47%) people with 21 (51%) from the Intervention and 3 (30%) from the control group (Fisher’s exact test  $p = .300$ ). Due to the very small number in the control group, follow-up data were analysed as pre-post change for the Intervention group. Appendix 1 shows the between group comparisons.

One month follow-up

As shown in Table 2, there were no significant changes in either the psychosocial variables or the symptom count between baseline and one month.

Table 2: Psychosocial outcomes and symptom count at one month with pre-post change since baseline

Variable		Intervention (n=21)	F test	p value
Wellbeing	mean (SD)	55.9 (26.70)	3.80 (1,20)	.065
K-10	mean (SD)	30.6 (9.48)	3.43 (1,20)	.751
Self-esteem	mean (SD)	2.7 (1.59)	0.59 (1,20)	.452
FAD	mean (SD)	2.5 (.33)	0.77 (1,20)	.391
Symptoms of dependence	mean (SD)	4.4 (2.54)	0.62 (1,20)	.440

Note, the ASSIST was not collected at one month

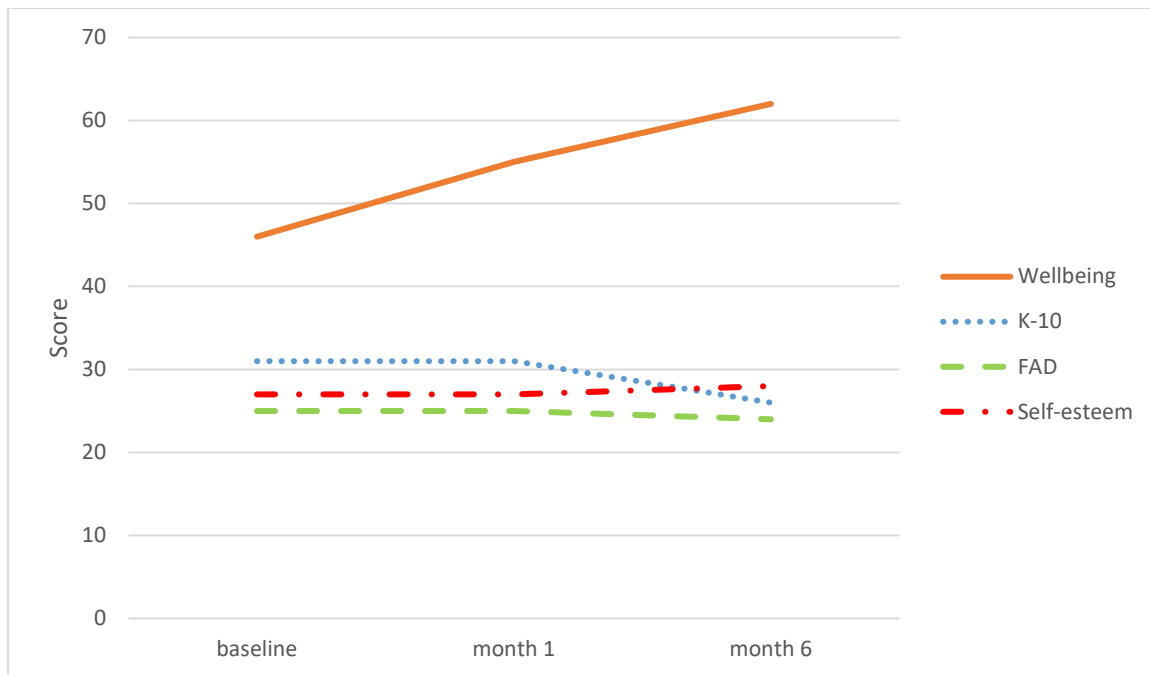
Six month follow-up

There were significant improvements over time in terms of Wellbeing and K-10 scores, but with no significant improvement in self-esteem and FAD scores (Table 3). Nevertheless, the Wellbeing score remained below national norms and the mean K-10 score indicated a moderate level of distress. The changes in psychosocial outcomes over time are shown in Figure 1. There were also significant improvements in both the symptoms of dependence count and the ASSIST substance use outcomes (Table 3).

Table 3: Psycho-social and substance use outcomes at 6 month with pre-post change from baseline

Variable		Intervention (n=20)	F test	p value
Wellbeing	mean (SD)	62.4 (16.8)	21.17 (1,20)	>.001
K-10	mean (SD)	25.6 (8.1)	14.07 (1,20)	.001
Self-esteem	mean (SD)	2.8 (1.4)	2.11 (1,20)	.163
FAD	mean (SD)	2.4 (0.5)	1.26 (1,20)	.276
ASSIST (lifetime)	mean (SD)	79.2 (30.8)	12.62 (1,19)	.002
ASSIST (last 3 months)	mean (SD)	47.2 (22.6)	22.52 (1,19)	>.001
ASSIST stimulant score	mean (SD)	15.9 (12.0)	19.03 (1,19)	>.001
Symptoms of dependence	mean (SD)	2.1 (2.2)	16.62 (1,20)	.001

Figure 1: Change in psychosocial outcomes



(NB FAD and self-esteem values multiplied by 10 to fit on the same scale)

Figure 2: Change in ASSIST substance use outcomes



Figure 2 shows the change in ASSIST values between baseline and six months. Change in recent use and change in stimulant use scores are the most important for assessing the study outcomes as the ASSIST total includes lifetime use, a component that should not change over the study. Also notable is the fact that the recent use line is steeper than the stimulant use line, so there has been a reduction of not only stimulants but also other drugs.

### Use of Services

One of the key features of the Intervention was the potential for clients to access a wide range of services and, when necessary, have access to those services facilitated by the clinical team. Nearly all the Intervention group received case management and individual counselling sessions. Less than half (19/41 = 46%) saw the clinic GP and only one-quarter, the clinic nurse. All participants had at least one appointment/service, with the mean being 22.1 (SD 32.0). One person, who received 176 services or appointments, distorts this figure. In terms of the median and interquartile range, the values were 11 (3.5 – 31.5).



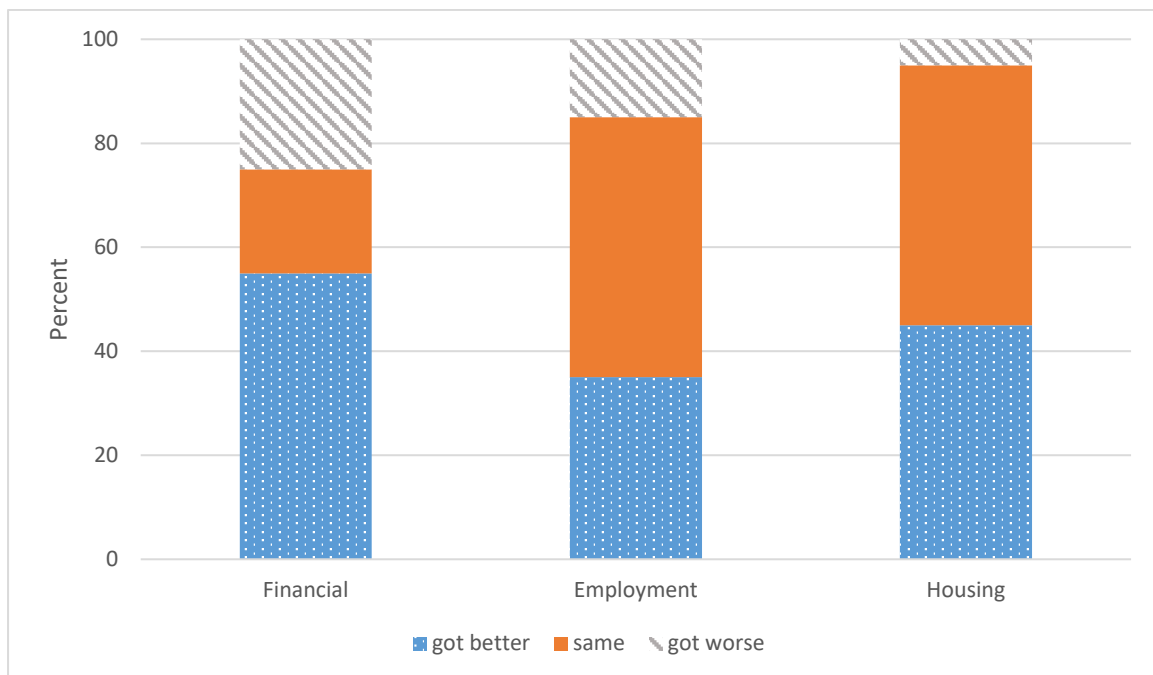
Table 4: Services used by the group: number of people and mean number of services

Service	Intervention (N=41)	
Case management	n (mean)	39 (8.8)
Individual sessions	n (mean)	30 (7.7)
Group sessions	n (mean)	15 (3.6)
Clinic GP	n (mean)	19 (3.0)
Clinic nurse	n (mean)	10 (1.4)
Mentoring	n (mean)	23 (6.5)
<i>Total internal</i>	<i>n (mean)</i>	<i>41 (22.1)</i>
External services	n (mean)	23 (2.9)

Social circumstances

Figure 3 shows the changed circumstances in relation to their financial, employment and housing situation over the course of the study. The majority (55%) of participants reported that their financial situation had improved, with a substantial proportion also reporting improvements in employment (35%) and housing (45%).

Figure 3: Change in social circumstances to six months



### Satisfaction with Holyoake services

At six months, participants were asked about their satisfaction with Holyoake's help in achieving their goals. Ten (50%) were 'satisfied' and seven (35%) 'completely satisfied': one person (4.8%) endorsed each of the three remaining categories. Nineteen (95%) agreed or strongly agreed that the treatment staff were supportive, with the same results for, 'the treatment staff were always honest with me'.

### Client feedback

In addition to quantitative feedback, clients also had the opportunity to comment on the service.

*"This service means the world to me. When things get too bad or I get the urge to want to go and use, I come straight here. Just being able to speak with Steve or Collette or Matt about issues from my past which have come up as a result of coming off the gear. If this team wasn't here, I would still be stuck where I was a year or so ago....probably even worse."*

*"This team has been so supportive. The Peer support has been great with all my health problems and without a licence. I wouldn't have made it to a lot of appointments. They've gone above and beyond."*

*"The guys at Holyoake have helped a lot. I don't know how I would have got through it all without them"*

### Significant others

We recruited nine people, all women, at baseline and reinterviewed 8 (89%) at six months. Seven people were the mother of the participant, with one being the partner and one the daughter of the participant. Most (66%) did not live at the same address as the participant. At baseline, their mean wellbeing scores were above the national average, as were their self-esteem scores. However, their mean K-10 score just exceeded the standard threshold of  $\geq 20$  indicating ‘mild’ mental distress: by six months, the mean had fallen below the threshold. Family functioning was worse (higher score) than typical values at both time points. Informal feedback from significant others indicated a high-level of cynicism that the drug use could or would change. At six months, three of the eight (38%) drug-using pairs were still engaged with treatment. The self-esteem score was the only variable to show significant change (reduced) over six months. Table 5 shows their information for both periods.

*Table 5: Psycho-social outcomes at baseline and six months for significant others*

Variable		Baseline (n=8)	Six months (n=8)	p value
Wellbeing	mean (SD)	81.3 (12.4)	79.1 (14.5)	.501
K-10	mean (SD)	20.1 (7.0)	18.5 (6.8)	.311
Self-esteem	mean (SD)	3.8 (0.9)	3.0 (1.0)	.020
FAD	mean (SD)	2.3 (0.5)	2.3 (0.4)	.917

### Specialist team feedback

- Some clients have taken ownership of the program and assisted in promotion and engagement of others
- The service became a place where participants would frequent to avoid negative influences, which assisted with withdrawal.
- Peer Support Workers can recognise cues early that clients are struggling, which may otherwise be overlooked. Clients can trust them to speak about things they may not be ready to share with their counsellor. Also they were essential for the assertive follow-up and engaging the client in early stages of treatment – especially in terms of trust building.
- Peer workers help model that it (recovery) can be done. They can act as a ‘conduit’ to accessing treatment by helping to build trust in the service or counsellor.

- The importance of an integrated service that provides support in the form of case management, counselling, peer-support worker contact, therapeutic groups and medical support is that clients can receive a range of support under the one roof. Clients with substance use issues often find it difficult to make and keep appointments with service providers. A one stop shop provides less of a hindrance for engagement.

## Discussion

The study was designed to compare outcomes for those who were offered a comprehensive social and health package in addition to standard counselling for their methamphetamine related problems versus those who received standard counselling services. Unfortunately, the low number of people who received standard care, and the fact that only three were retained for follow-up at six months, makes statistical comparison effectively untenable. Therefore, results are reported just for the Intervention group as pre-post changes, rather than differences between the study groups. On this basis, across both substance use and psychosocial measures, there were clear improvements to six months.

In relation to drug use, reductions were seen for specific methamphetamine scores, stimulant use scores, and drug use in general. The last measure being an important marker that shows that there was no evidence of a shift to other types of drug-use as methamphetamine use declined over the study. The reduction in the number of symptoms of dependence (e.g. tolerance, withdrawal, loss of control, extended periods of time in drug use, desire (and failure) to cut down, continued use despite known problems or harms, other important activities reduced (American Psychiatric Association, 1994)) showed that the treatment provided by Holyoake impacted on key problems associated with methamphetamine use.

Wellbeing among those in substance use treatment is likely to be markedly lower than the population norm. For example, in an Australian sample of people who injected drugs, the mean PWI score was 55.4 (Dietze et al., 2010). Similarly, in a sample of substance users in treatment that included those who did and did not inject drugs, the mean PWI was 49.1 (Miller et al., 2014). For the Intervention group, at baseline, the mean was notably low at 46, (parenthetically, significantly lower than that of the control group). Although this improved over time, their mean was still lower than the national norm at six months.

In developing the project, one of the key points considered was the integration of general health services, given the potential for physical and mental health comorbidity in this population. As such, arrangements were made to have a GP and nurse available the Northam clinic. However, the use of these services was lower than anticipated, with less than half the clients opting to see the GP attending the clinic and only one-quarter seeing the nurse. In contrast, more than half used the mentoring services, with an average of more than six sessions per person who used this option. In terms of external services, these reflected the diverse needs of the participants, with external GP and mental health services being the most frequently accessed services. Other services included legal, family and / or community support, job network, and child protection services.

There is extensive evidence that substance dependence causes harms and imposes costs on the family and friends of the user, particularly those who are resident with him or her (Hutchinson et al., 2014; Laslett et al., 2010; Orford et al., 2010). Yet, the impact of drug treatment on other people is seldom assessed. Recently, at the same clinic, significant improvements in subjective wellbeing for partners/parents receiving counselling for substance use by a significant other were reported (Tait, 2018). In the current project, the indirect benefit of drug treatment was assessed i.e. the significant other did not receive treatment, only the substance user. In this small sample, no significant improvements were seen, although it should be noted that baseline levels of wellbeing were above the national norms and the mean K-10 score only marginally exceeded the threshold of  $\geq 20$ , making it difficult improve these measures. Nevertheless, a decline in self-esteem was noted in this group, without a clear explanation.

Overall, there were marked reductions in both methamphetamine use and symptoms, with evidence of reduction in other drug use too. There were improvements in wellbeing and K-10 scores, although these remain at levels that suggest further intervention is required. However, the lack of an appropriate control group, who did not receive the social and health care package, means that we do not know the extent to which these changes are due to standard counselling received or to the additional services.

The high drug use scores and symptom scores at baseline combined with the disadvantaged backgrounds indicate a cohort with significant drug-use problems. It is therefore important to acknowledge that the situation at six months is unlikely to be the final position for these

participants. We expect that many will require continuing support to change their drug use and achieve a more stable lifestyle.

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Appendix 1: Between group comparisons

Table S1: Psychosocial and substance use outcomes at one month

Variable		Intervention (n=21)	Control (n=9)	p value
Wellbeing	mean (SD)	55.9 (26.70)	76.4 (16.05)	.109
K-10	mean (SD)	30.6 (9.48)	18.7 (6.99)	.488
Self-esteem	mean (SD)	2.7 (1.59)	3.4 (1.35)	.330
FAD	mean (SD)	2.5 (.33)	2.0 (.46)	.829
Symptoms of dependence	mean (SD)	4.4 (2.54)	0.8 (2.20)	.094

As shown in Table 2, there were no significant differences between the groups in terms of any of the outcome measures. (Note, the ASSIST was not collected at one month).

Table S2: Psychosocial and substance use outcomes at 6 month

Variable		Intervention (n=20)	Control (n=3)	<i>p</i> value
Wellbeing	mean (SD)	62.4 (16.8)	79.5 (3.6)	.099
K-10	mean (SD)	25.6 (8.1)	13.3 (4.9)	.019
Self-esteem <sup>a</sup>	mean (SD)	2.8 (1.4)	3.0 (2.0)	.782
FAD <sup>a</sup>	mean (SD)	2.4 (0.5)	2.1 (0.1)	.355
ASSIST (lifetime) <sup>a</sup>	mean (SD)	79.2 (30.8)	56.0 (12.8)	.219
ASSIST (last 3 months) <sup>a</sup>	mean (SD)	47.2 (22.6)	26.0 (10.4)	.129
ASSIST stimulant score <sup>a</sup>	mean (SD)	15.9 (12.0)	6.0 (8.45)	.276
Symptoms of dependence	mean (SD)	2.1 (2.2)	0 (0)	<.001*

<sup>a</sup> participant excluded due to incomplete survey.

\* Levene's correction for unequal variance

Those in the control group had significantly lower number of symptoms of dependence ( $t$  4.47 (20)  $p$  <.001). They also had lower ('better') K-10 mental health scores ( $t$  2.53 (22)  $p$  =.019). None of the other between group differences was significant (Table S2).

There were significant improvements over time for some measures: one of the group by time interactions was significant. There was a significant increase in wellbeing ( $F$  8.62 (1,22)  $p$  = .008) and a significant reduction in mental distress (K-10) ( $F$  8.33 (1,22)  $p$  = .006) over time. Self-esteem showed a significant group by time interaction with the Intervention group self-esteem increasing while the control group's declined ( $F$  6.25 (1,21)  $p$  = .021). There were no significant changes in the FAD scores.





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