

Evaluation of a Managed Alcohol Program in Vancouver, BC

Early Findings and Reflections on Alcohol Harm Reduction

Overview

Managed Alcohol Programs (MAPs) provide regulated doses of alcohol to residents in supportive accommodation to address seemingly intractable health and social problems experienced by people with alcohol dependence, use of non-beverage alcohol and unstable housing. The Station Street MAP was evaluated for housing stability, access and use of health care services, social functioning, harms and patterns of alcohol use and changes in health (see www.carbc.ca for a more detailed report).

Methods and Measures

A mixed method qualitative and quantitative approach including: in-depth surveys, liver function tests, physician assessments, daily alcohol administration and health records, and qualitative interviews with a small sample of people - seven participants and seven staff. The main purpose was to inform implementation of a multi-site national study of MAPs.

Improved Outcomes

- All participants maintained their housing and expressed high satisfaction with housing quality.
- Participants reported greater wellbeing and positive changes in their lives.
- Staff confirmed positive outcomes e.g., improved access to services, and relationships.
- Physician and participant ratings of mental health measures improved.
- Reduction in frequency and quantity of non-beverage alcohol consumption.
- Reductions in several alcohol-related harms (social, financial, withdrawal seizures).

Program Challenges and Issues of Concern

- Self-rated physical health declined for most residents.
- Liver functioning deteriorated for some participants during the 6-month study period.
- Alcohol consumption increased for some residents after 6 months of starting the program, possibly due to public drinking being more prevalent in the warmer summer months.

Conclusions and Recommendations

No firm conclusions can be drawn about overall program effectiveness of the program from this small pilot study. Housing and harm reduction objectives appear to have been met in relation to reducing acute social and health-related problems. Given the severity and range of problems in this population, the deterioration of physical health may have occurred in spite of MAP participation. A controlled study is needed to confirm this pattern of results with a larger sample of participants across multiple sites. In the development of MAPs, we recommend:

- Clear eligibility criteria focusing on acute harms and severity of dependence.
- Monitoring chronic alcohol-related harms be made part of ongoing clinical care.
- Risks from continuous high-level alcohol consumption be fully explained to participants.
- Alcohol administration be tailored so consumption does not increase due to MAP participation.
- Opportunities for both short- and longer-term abstinence are made available on demand.

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Introduction

Alcohol Dependence and Homelessness

Approximately 76.3 million people suffer from alcohol use disorders globally and in Canada alcohol dependence is estimated to affect around 2.6% of the general population (WHO, 2004; Tjepkema, 2004). Severe alcohol dependence almost invariably carries heavy health and social costs and is sometimes associated with homelessness or housing instability (Muckle et al., 2008; Cordray, 1993; WHO, 2007). Those who are severely dependent on alcohol and experience homelessness face significant barriers to accessing temporary accommodation and may go without shelter as a consequence of alcohol use (Williams, 2011). In some cases, non-beverage alcohol such as rubbing alcohol, mouthwash, or alcohol-based hand sanitizers may be used which contributes to additional health risks (Podymow et al., 2006).

Managed Alcohol Programs

A managed alcohol program (MAP) is an approach aimed at preventing some of the harms of severe alcohol dependence, especially as experienced by people who may be homeless or unstably housed. The first program in Canada at Seaton House, Toronto was established as a result of a public inquiry into the freezing deaths of three homeless men whose drinking had prevented their receiving adequate shelter (Svoboda, 2009). In Vancouver in 1998, Frank Paul died of hypothermia in an alley after he'd spent time in the drunk tank. Following an inquiry into his death more than a decade later, the Vancouver Police Department issued an apology. In part, the Vancouver program was initiated to prevent similar tragedies and provide a more compassionate response to the problems of severe alcohol dependence and intoxication for people who have run out of housing and treatment options.

In a MAP, small doses of alcohol are dispensed to the participant at regular intervals so as to replace non-beverage alcohol (e.g., mouthwash, hand-sanitizer, hairspray) with less harmful alcohol. In Canada, there are MAPs located in emergency shelters, supportive housing, residential care and hospital settings. In previous research on Housing First initiatives, housing alone has been found to provide benefits and reduced alcohol consumption (Collins et al., 2012). MAPs take this one step further by providing safe sources of alcohol onsite.

One published evaluation of a MAP showed promising results (Podymow et al., 2006).

Station Street MAP

In early 2011, Vancouver Coastal Health Authority (VCHA) led the implementation of a new MAP and invited the Centre for Addictions Research of BC (CARBC) to conduct an evaluation. The program is located in a building with self-contained supported apartments for people at risk of homelessness. The provision of regular doses of beverage alcohol on-premises at hourly intervals was intended to reduce harm by (i) replacing more hazardous non-beverage sources of alcohol (ii) smoothing out overall drinking patterns away from bouts of explosive heavy drinking and their associated problems and (iii) replacing more hazardous public drinking settings with a safer more sociable environment.

While not explicitly stated as a program objective, the evaluation also investigated whether there were any changes in the overall volume of alcohol consumed from before to after onset of the MAP.

The program began in October 2011. Seven out of eight residents consented to take part in the evaluation. Before entering the program, a VCHA physician screened each participant for dependence on alcohol, evidence of serious social and health problems linked to drinking and unwillingness to enter, or repeated failure with, alcohol treatment. The VCHA physician also discussed each case with the PHS program manager to discuss their use of emergency health services, contact with police and non-beverage alcohol use.

At the time the program started, professional staff (including practice nurses) administered one standard drink per hour over up to a maximum of 12 in one day unless participants were impaired or ill. One standard drink is 17.05 mL of pure alcohol, usually consumed in the form of wine, beer or spirits. For example, a 9 oz. glass wine contains about two standard drinks if the alcohol content is 14%.

For two residents, larger doses came to be administered: one and a half standard drinks every hour and two drinks first thing in the morning respectively.

Methods

This small-scale pilot study focused on:

1. Changes in housing success and satisfaction, social functioning, health status, alcohol related harms, health service use, patterns of alcohol consumption.

2. Perceptions of program staff, administrators, and participants regarding the program's objectives, benefits and challenges.

An in-depth quantitative assessment of social functioning, housing satisfaction, health services use, physical health and patterns of substance use was conducted using a range of indicators from baseline up to 9 months after program initiation. Each participant was asked for their perceptions of the program. A member of our research team interviewed each participant when they started the program and then at both 3 and 6 months after program initiation. The primary focus was on "before and after" comparisons of progress for each individual participant. We obtained the participants' permission to look at their clinical records including liver function tests and physician-administered ratings of mental health, physical health, social functioning, and alcohol-related problems. We also conducted semi-structured qualitative interviews with seven program personnel. Limitations of the design were the small sample size, the lack of a comparison group of similar individuals who were not on the MAP and that the 6 month follow-up point occurred during the summer when heavier drinking off the program may have been more likely.

Findings

Participant Characteristics

Five men and two women with a mean age of 47.4 years (range 35 to 61) completed the baseline, 3 month and 6 month follow-up assessments. Most participants (6) identified themselves as Aboriginal, had completed high school or above (4), were never married (5), were unemployed (5) and were on some form of income assistance or welfare (6) - in most cases disability income (5).

Participants reported a mean number of 14.9 standard drinks per day at baseline (range 7 to 23.7). At the baseline interview, six people drank every day of the week and one only three days a week. Four participants reported consumption of non-beverage alcohol such as mouthwash, hand sanitizer, or rubbing alcohol. All participants met criteria for "alcohol dependence" by scoring above 15 on the Alcohol Use Disorders Inventory Test (Saunders et al., 1993). Prior to living at Station Street, all were inadequately housed based on the Canadian Definition of Homelessness (Canadian Homeless Research Network, 2012).

MAP Participant and Staff Opinions of the Program

Even when asked specifically, none of the participants reported any problems that they attributed to taking part in the MAP. In fact, participants reported improved health and social relationships with family and other MAP participants, less time spent drinking downtown in bars, and in some cases they reported a switch from "hard alcohol" to beer, and from non-beverage (Listerine, rubbing alcohol, hand sanitizer) to beverage alcohol. They also acknowledged the positive choices they had begun to make since joining the program and the impact this had on their ability to better manage their own health and social relationships. As one participant stated, "it made me stop drinking Listerine and going downtown. I used to fight all the time, but now I stay home. I used to be really mean, now I make friends with people in the building and staff." When asked about the benefits of being in the program after 6 months these positive findings continued. Another participant observed, "My health's getting better. More energy. Feel like going for a walk. Appetite coming back. My drinks are more healthy now and drinking less. Have not drunk Listerine in 3 months." Another participant simply stated, "It changed my life. I get along with my sister more now".

Staff highlighted the importance of understanding the MAP as part of an integrated harm reduction response to the twin problems of inadequate housing and severe alcohol dependence. They specifically identified the goal of reducing harms associated with drinking non-beverage alcohol and/or excessive quantities of alcohol as priorities to achieve better health outcomes. As one staff member stated, "The goal of the program is basically to get them off of the [non-beverage alcohol] onto the alcoholic beverages and to get them... the proper medical treatment, this way we have ... more contact with them, better health for them in the long term, so keep them close by."

Housing Retention and Satisfaction

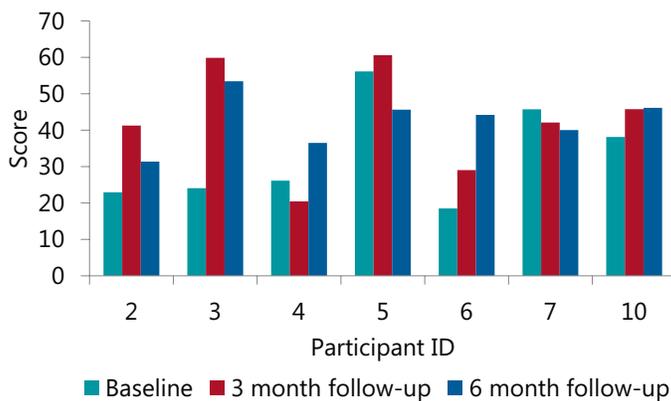
At baseline and subsequent data collection points, all of the participants consistently rated the quality of their housing very high in terms of safety, privacy, affordability, spaciousness, and friendliness. All of the participants remained housed during the course of the evaluation. None were evicted or became homeless. Thus, a major program objective, maintenance of housing, was achieved.

Health and Social Functioning

Both MAP participants and staff perceived improvements in the participants' physical and mental health, social functioning and relationships. Physician ratings of health and social functioning showed improvements from baseline to 6 months. Most MAP participants also reported improved mental health at 3 and 6 months. Figure 1 shows results of a standardized measure of mental health, the Short Form 12 (SF-12) Mental Component survey. A score of 50 is considered "normal". Six people scored below 50 at baseline but at both 3 and 6 month follow-up points, five of the seven participants showed an increase (i.e., improvement) on this scale.

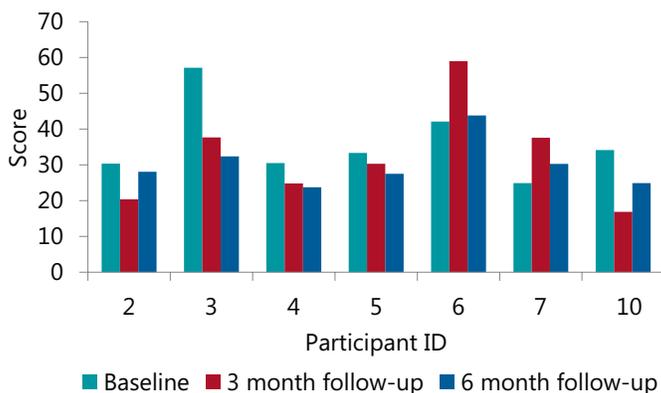
Participants' self-rated physical health, however, declined at 3 and 6 months. Figure 2 shows the results of the Short Form 12 Physical Component survey. As with the SF-12 Mental Component, a score of 50 is "normal". Six participants scored below 50 at baseline, and five showed further declines at 3 and 6 month follow-up. Two showed some improvement.

Fig. 1 SF-12 Mental Component Summary



A score of 50 is "normal," higher numbers indicate better health

Fig. 2 SF-12 Physical Component Summary



A score of 50 is "normal," higher numbers indicate better health

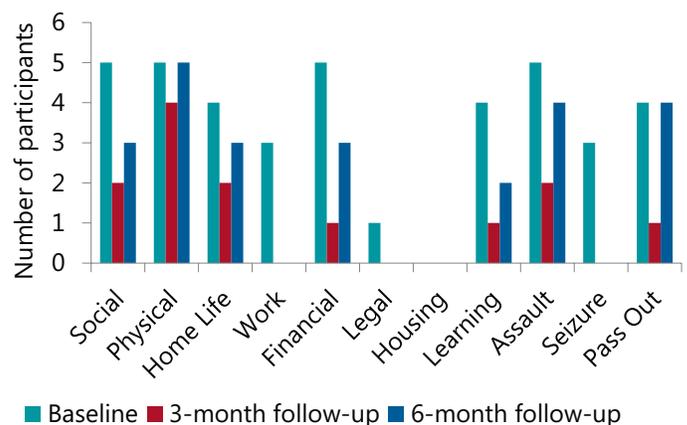
In addition, liver function test results indicated some deterioration with an increase in the number of participants meeting criteria for alcohol-related liver damage from two up to five participants after 6 months on the program. This may have occurred regardless of being on the program

Alcohol-Related Harms

Staff noted that participants were less volatile and hostile after starting the program, and more likely to maintain medical treatment and attend medical appointments. One staff observed, "I think now we can really see the benefits. You know, ...clients that used to be really aggressive, and kind of scary for staff, and had a history of punching staff in the face at other projects when they were drinking rubbing alcohol, don't anymore, now they're crocheting and taking exercise classes and....watching Who Wants to Be a Millionaire and....it's a lot better." Staff also noted a decrease in police and ambulance calls to the building since initiation of MAP, and police were never called for any MAP-related incident.

Participant responses to the quantitative interviews indicated a decrease in the number of alcohol-related harms at 3 and 6 months for the majority of participants as shown in Figure 3. The extent of this reduction in self-reported harms was less for most participants by 6 months and varied by type of harm. Participants reported decreased harms between baseline and 6 months for social, financial, seizure, work, legal and learning related harms. Physical health problems, assaults, and passing out improved at three months and then returned almost to baseline levels at six months. Furthermore, data collected on emergency department visits showed that only two participants were frequent emergency department attendees before starting the program, and

Fig. 3 Harms experienced in past 3 months

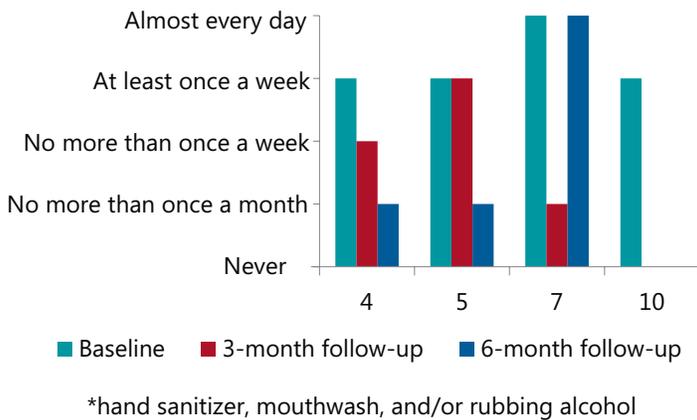


that there was no clear reduction in the emergency room visits for these participants or the others.

Non-Beverage Alcohol Consumption

At baseline, four participants reported drinking non-beverage alcohol such as hand sanitizer, mouthwash, and rubbing alcohol. Surveys and qualitative interviews both clearly showed that while some continued using non-beverage alcohol on the MAP, they did so at a lower level and less frequently. Figure 4 shows participants' reports of how frequently they used non-beverage alcohol at baseline, 3 and 6 month follow-up.

Fig. 4 Frequency of self-reported non-beverage alcohol* use in the past 3 months



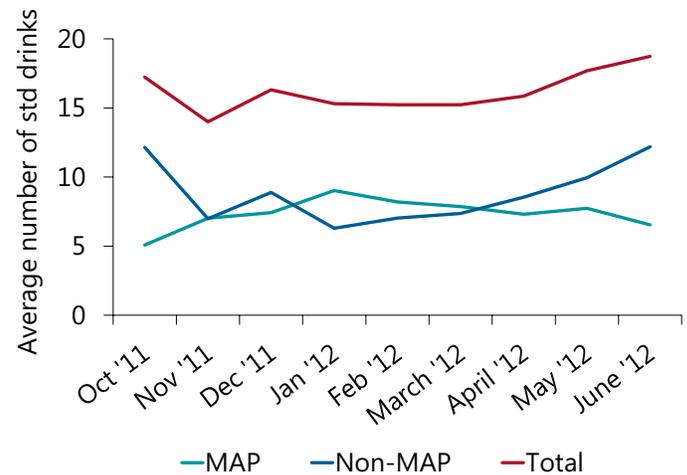
Total Alcohol Consumption

The participants consumed on average 16 to 18 standard drinks per day while in the program - including both MAP-administered and non-MAP drinks. However, this varied by individual and time. At baseline, participants self-reported an average of 15 drinks per day - most likely an underestimate of the actual consumption compared with staff reports of MAP-administrative drinks. Figure 5 shows the average number of drinks per day for all participants over monthly periods from the beginning of the MAP as recorded by the staff while administering the alcohol. A "MAP drink" is a drink administered by a MAP staff member according to the prescribed schedule. A "non-MAP" drink is alcohol a MAP participant obtains themselves outside of the program and self-report the next day to MAP staff - if they attended the lounge. The average number of non-MAP drinks declined from 12 drinks per day in the first month to roughly half that 3 months later, and then rose back up to almost 12 drinks

a day 9 months after starting the program. Program managers suggest this pattern of results likely reflects a seasonal pattern of participants being more likely to drink outside the program from late spring to early fall when the weather is better. Overall, consumption was stable at approximately 16 to 18 standard drinks per day with the increases in non-MAP consumption being compensated for by decreases in consumption on the MAP.

The balance of probability suggests there was no overall increase in alcohol consumption after initiation of the MAP for a majority of the participants. At the 3 month follow-up, five of seven participants had a reduction in overall volume of alcohol consumption. Compared with baseline, by 6 months three participants had reduced their overall consumption, one reported little change and three had increased. Again, this may be understood as a seasonal effect with the 6 month follow-up period coinciding with the warmer months when heavier non-MAP drinking may be more likely.

Fig. 5 Average daily MAP & non-MAP drinks by month



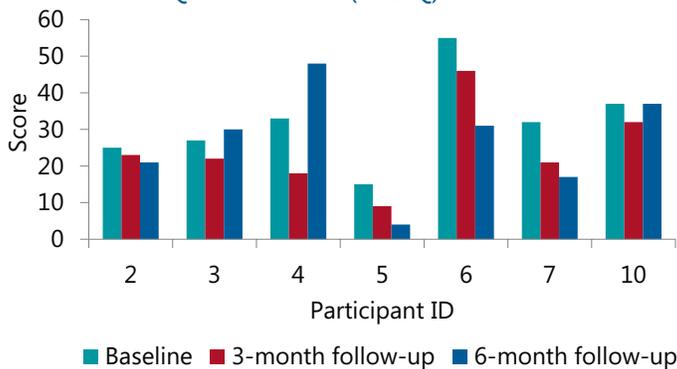
Note: Non-MAP drink averages were calculated only of those days that had clearly quantifiable reports

Severity of Alcohol Dependence

We measured participants' dependence on alcohol using the Severity of Alcohol Dependence Questionnaire (SADQ), a standardized list of questions widely used in alcohol research (Stockwell et al., 1994) focusing particularly on experience of alcohol withdrawal, drinking to relieve withdrawal symptoms, tolerance and

reinstatement of this pattern after a period of abstinence. At baseline, four participants were severely alcohol dependent, two were moderately dependent and one was mildly dependent according to SADQ scores. Figure 6 shows SADQ scores for participants at baseline, 3 and 6 months. After 3 months in the MAP, all participants reported fewer signs of alcohol dependence. However, at 6 months, two participants showed an increase in degree of dependence over baseline measures. Four other participants maintained their reductions in degree of dependence, and one showed no change from baseline.

Fig. 6 Severity of Alcohol Dependence Questionnaire (SADQ) scores



Severe: >31, Moderate: 16-30, Mild <16

Challenges Implementing a MAP

While staff were very positive about the overall benefits of MAP, they did discuss some issues that need to be addressed in the development and implementation of MAPs. Concerns were raised that not all participants may have experienced sufficiently severe problems to be included on the program and that stricter eligibility criteria may need to be applied; there were some who thought the dose of alcohol was too high or administered too frequently for particular individuals. These two issues directly align with quantitative findings related to deterioration in physical health on some indicators and suggest potential for chronic harms of alcohol use. MAPs appear to successfully reduce acute health and social problems and strategies related to reducing chronic harms are discussed below.

Further, staff indicated that it was necessary to provide good information about the program in advance to non-drinking residents of the housing complex to help them understand the program's purpose. They also suggested that anyone setting up a MAP consider costs and space needs as MAPs require additional staffing time

to administer alcohol as well as designated space. Also, it was felt that there needed to be public education about the program to facilitate understanding of the needs and avoid misinterpretation in the wider community. However, these fears did not materialize and in fact, there were several very positive media reports published about the program.

Discussion

While the findings of this small pilot study cannot be generalized, several issues are suggested for future program management and research consideration. Firstly, in this population characterized by longstanding and chronic problems with alcohol, and need for housing and supports, there were promising reductions in the acute and social harms of alcohol use associated with participation in this particular MAP. There were some indications that these benefits may be partially offset by deterioration in some physical health indicators – though it is unclear whether this would have occurred without participation in the MAP. As a result, there is a definite need for a more rigorous, longer lasting and well-controlled study across multiple sites to both confirm the promising trends and explore further the challenges identified here.

As summarized in Figure 7, most participants exhibited improvements in mental health, social connectedness and general wellbeing across a variety of quantitative and qualitative indicators. There were also reductions in alcohol-related harms and alcohol dependence between baseline and the two follow-up periods. However, the extent of improvement was greater at 3 months than at 6 months. Interestingly, improvement was most marked in relation to finances, relationships and fewer seizures caused by alcohol withdrawal. The reduction in seizures can be related to the fact that with the exception of one client who was referred to detoxification, the participants only very rarely had abstinent days. Participants also expressed a high degree of satisfaction with the quality of their housing. Importantly for this unstably housed group, all successfully retained their housing for the study duration.

It is also clear that participants drank less non-beverage alcohol (mouthwash, rubbing alcohol, hand sanitizer) after joining the program and they reduced consumption in more hazardous settings, i.e., outside of MAP and usually in public places. Furthermore, the balance of evidence from both qualitative and quantitative sources suggests a smoothing of drinking patterns with fewer problems

Figure 7: A Balance sheet of potential benefits and risks from a MAP in relation to different types of alcohol-related harms

Patterns of Risky Drinking	Heavy Episodic Drinking	Non-Beverage Alcohol (NBA) Consumption	Drinking in Unsafe Settings	High Volumes of Alcohol Consumed Over the Long-Term
Potential harms	Violence, injuries, poisoning, seizures, unstable housing, legal and social problems	Exacerbate chronic diseases, higher ethanol consumption, poisoning	Violence, injuries, freezing, problems with police, intoxication from hurried consumption	Liver cirrhosis, cancers, other chronic diseases, dependence, housing and social problems, nutritional deficiencies
Potential MAP benefits	Smooth drinking pattern, fewer injuries & seizures, secure housing, improved relationships	Reduced consumption of NBA	Shelter from cold, protected supply of alcohol, personal safety, food	Housing security, reduced consumption, improved nutrition
Potential MAP risks	Higher blood alcohol concentrations if non-MAP consumption continues	Increased ethanol consumption if MAP drinks are additive	Less exercise, unhealthy weight gain for some	Fewer abstinent days may increase liver disease risk
Remedial Strategies	<ol style="list-style-type: none"> 1. Protocols to manage non-MAP drinking 	<ol style="list-style-type: none"> 1. Protocols for non-MAP drinking 2. Ensure no increase in ethanol consumption 	<ol style="list-style-type: none"> 1. Incorporate leisure and physical activities 2. Nutrition advice 	<ol style="list-style-type: none"> 1. Strict eligibility criteria 2. No increase in amount or frequency of use 3. Medication to assist with regular days off 4. Offer detox referrals

Balance of benefits versus risks needs to be reviewed continually

of intoxication for most participants after joining the program. Three participants showed some reduction in alcohol consumption after 6 months, three showing an increase (in two cases quite marked) and in one case there was no change. As such, a major objective of the program, namely harm reduction, appears to have been met for the majority of participants.

Alongside the program's significant benefits, there are some areas of potential concern (see Figure 7). In particular, the deterioration in physical health was suggested by results of a well validated and widely used self-report scale (the SF-12) and also liver function tests. One participant with extremely raised liver function test

results decided to enter detoxification on the physician's advice. The provision of regular doses of alcohol to this population may successfully reduce more acute health and social problems, but not necessarily chronic physical health concerns for all participants. While some deterioration in physical health would likely have occurred if they were not on the program, there may be increased risk due to drinking every day in the program (Royal College of Physicians, 2010) unlike previous less regular patterns that included some non-drinking days. On the plus side, the more regular and smoother pattern of drinking appeared to have reduced frequency of withdrawal seizures.

Conclusions

While firm conclusions about the effectiveness of MAPs are not possible from this small pilot study, the findings suggest the Station Street MAP is meeting its stated objectives for these formerly unstably housed individuals with alcohol and multiple other problems. The majority of the participants drank less non-beverage alcohol and experienced fewer alcohol-related harms. They were also highly satisfied with their housing, successfully retained their housing and reported better mental health and increased social functioning. While the level of alcohol consumption and related harms were not reduced for all participants and tended to increase for some by 6 months (possibly a seasonal effect), much of this consumption was intrinsically less hazardous for the participants by virtue of being in a safer environment and mostly from safer sources. Physical health benefits of the program were less evident for some participants. Liver functioning and self-rated (though not physician-rated) health were worse at 6 months. This may have occurred to the same or even greater degree had they not been on the MAP hence the need for a larger controlled study which is now underway across multiple MAP sites in Ontario and BC.

We conclude with some suggestions and reflections on the design and conduct of MAPs. We suggest that consideration is given to stringent entry criteria in relation to both severity of alcohol dependence and acute alcohol-related harms among other criteria. While reducing alcohol consumption was not an objective of this program, we suggest that more attention could be given to ensuring that participation does not result in increased consumption given the many toxic effects of alcohol. Increased consumption was also a concern suggested both by the staff and participant interviews. Increased alcohol consumption could be avoided both by enforcing strict eligibility criteria and tailoring alcohol administration so that frequency and quantity of drinking are not increased for any individual when they enter the program. Because the more chaotic drinking style off the program will often come with periods of enforced abstinence from alcohol due to lack of money, hospital stays or incarceration, it may be necessary to build in more frequent opportunities within the MAP for occasional, regular and even sustained periods of abstinence to try and reduce chronic physical harms of alcohol use. We recommend that this potential be discussed with participants so they are fully informed of the risks and, further, that the full array of acute and chronic health and social harms are assessed thoroughly in future evaluations of MAPs.

Acknowledgments

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