

Evaluating a telehealth delivered, GP-Led, Home Detox Service

The GP-led, home based alcohol withdrawal service for patients with mild to moderate alcohol dependence is an established clinical model, with a supporting evidence base that shows it to be both safe and cost-effective.¹ However, the model has traditionally relied on a face-to-face approach, through either home visits, or patients visiting their GP practice throughout the duration of their assessment and treatment. A new GP-led home detox model utilising telehealth and supporting technology to assist with the process of GP-led home detox has recently been developed and implemented in Sydney, NSW, Australia. There has not yet been any formal evaluation of this model of care.

Given the scarcity of available evidence about the potential benefits associated with the use of telehealth and supporting technology to assist patients with withdrawing from alcohol, there is a need to address this research gap. Accordingly, this study will evaluate this new model of care, including the adoptability, acceptability and effectiveness of using telehealth and supporting technology to assist with the process of GP-led home detox. We hypothesised that a GP-led home detox service utilising telehealth and supporting technologies would demonstrate good uptake and retention and be an acceptable and effective model of service delivery.

Primary Objectives

- A. Adoptability:
 - i) Number of suitable referrals to the service who commenced treatment
 - ii) Number of patients who completed detox
- B. Acceptability: Patient Experience questionnaire - Subset of the Australian Hospital Patient Experience Question Set (AHPEQS)
- C. Effectiveness: Abstinence at one month (self-reported), changes in Alcohol Use Disorders Identification Test (AUDIT) score (pre-detox and at one-month), changes in Kessler Psychological Distress Scale (K10) score (pre-detox and at one-month), blood pressure, heart rate and blood tests.

Secondary Objectives

Predictors of adoptability and effectiveness such as alcohol dependence severity (Severity of Alcohol Dependence Questionnaire; SADQ), physical and mental comorbidity (Psychick Mental Health Screen), and socio-demographics such as age, gender.

Methods

Model of care / service design

The study was funded by the Clean Slate Clinic and three Primary Health Networks (PHNs: Coorinare, Central and Eastern Sydney PHN and Northern Sydney Health Network). The three PHNs promoted the study to their GP networks through newsletters and local forums, and the Clean Slate Clinic raised awareness through local radio and news channels, social media (LinkedIn, Instagram) and educational webinars. Participants were either referred by their GP or self-referred through the Clean Slate website.

Participants with alcohol dependence were recruited to a 28-day observational study that involved completing a baseline assessment and receiving GP-Led Home Detox for alcohol withdrawal for a 5-day period with daily nursing check-ins, followed by a GP discharge appointment (within 5 days post detox completion) and 28-day nursing follow-up. Thiamine (200mg, 3 times daily) and a multivitamin were commenced 2 weeks prior to detox and 100mg daily throughout, Diazepam was taken throughout detox and anti-craving medications were prescribed as appropriate following detox (Appendix A).

The study was conducted over a 12-month period from the GP-Led Clean Slate Clinic Home Detox program between 2021 and 2022. The evaluation was approved by the Human Ethics Review Committee of the Sydney Local Health District (RPAH Zone, Ethics Committee Approval #: X21-0211 & 2021/ETH01298).

Participants

To be included in the study, participants had to be aged between 18 and 80 years and participating in the GP led home detox service. Exclusion criteria included a history of withdrawal seizure, complex comorbidities, drug dependency, suicide risk, current domestic violence, no support person during detox and lack of secure housing.

Procedure

A prospective design was used to evaluate an existing service developed and implemented in Sydney, NSW, Australia. Outcomes related to the GP-Led Home Detox program were retrieved from clinic documentation (number of patients who commenced treatment after screening, number of patients who completed treatment, attendance rate, and adverse events) and questionnaires (self-report of goal attainment, AUDIT scores, K10 scores, patient experience of program). Clinical observations were performed by the Clean Slate Clinic research nurse (blood pressure, and heart rate) and biochemistry. Follow-up research assessments were conducted at 1-month (weekly standard drinks, AUDIT, K10), 3-months (weekly standard drinks, AUDIT, K10) and 6-months (patient experience questionnaire) post detox.

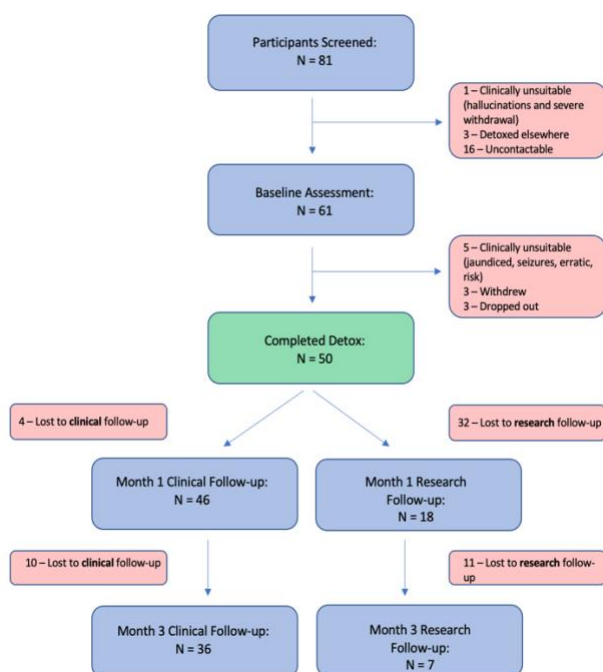
Results

As depicted below (Fig 1.), a total of 81 participants were screened for the study, with 61 completing baseline assessments and commencing treatment, 50 completing

¹ Nadkarni et al, 2017, Community detoxification for alcohol dependence: A systematic review. *Drug and Alcohol Review*: 36:389-399

detox, 18 completing follow-up assessments at 1-month post-detox, and 7 completing follow-up assessments (patient experience questionnaire) at 3-months post-detox. Reasons for not completing detox included being clinically unsuitable (physician judgement) (46%) and choosing to discontinue (54%). All participants attended their GP discharge appointment and 96% of detox completers followed the daily dosing recommendations. Positive breathalyser readings were only found for three participants (on one occasion each). Peak Clinical Institute Withdrawal Assessment (CIWA) scores were >10 for 9.3% of participants.

Fig 1. Clean Slate Clinic Participant Flow:



Baseline Characteristics

Baseline characteristics are displayed in Table 1. Enrolled participants had a mean age of 49.8 years, most lived in accommodation they owned, were married or in a de facto relationship, were of North-West European descent, and were female (57.4%). They were largely recruited through their GP and almost half of the participants were recruited from services within the Central and Eastern Sydney Primary Health Network (CESPHN). Within the sample, 93.4% indicated that they have been persisting with their drinking despite experiencing related harms, and the mean AUDIT score was in the high risk (dependency likely) range. The SADQ mean score was in the mild physical dependency range². A history of mental health problems was also very common, with K10 scores indicating a high level of psychological distress, and almost one in five participants having made a suicide attempt or self-harmed. Many of the sample had also experienced a major illness at some time in their life.

Table 1. Baseline Characteristics

Demographics		
Age (mean)		49.8 years
Gender:	Female	57.4%
	Male	41%
	Non-binary	1.6%
Sexual Orientation:	Gay or lesbian	19.7%
	Straight (heterosexual)	73.8%
	Bisexual	4.9%
	Don't know	1.6%
Accommodation:	Owned	60.7%
	Rented	29.5%
	Family member	4.9%
	None	4.9%
Marital Status:	Married/De Facto	60.7%
	Single	23%
	Divorced/Separated	11.5%
	Widowed	4.9%
Ethnicity:	North-West European	73.8%
	Oceanian	19.7%
	Southern/Eastern European	4.9%
	North African/Middle Eastern	1.6%
Children		52.5%
Recruitment		
Referral Source:	GP	52.5%
	Self	37.7%
	Health Professional	9.8%
PHN:	CESPHN	45.9%
	NSHN	27.9%
	SENSW	26.2%
Substance Use		
Alcohol Use Profile	Persist despite harm	93.4%
	Cravings, compulsions	80.3%
	Impaired control	72.1%
	Increased tolerance	68.9%
	Drinking taking over life	52.5%
	Withdrawal symptoms	41%
AUDIT score (mean)		24.68
SADQ score (mean)		13.32
Family history of addiction issues		57.4%
Illegal or prescription drug use		37.7%
Mental Health		
Has seen doctor or psychiatrist for emotional problems		85.2%
Previously prescribed medication for mood disorder		54.1%
Currently seeing specialist for anxiety or depression		34.4%
K10 score (mean)		24.64
Suicide	Thoughts (ever)	44.3%
	Suicide attempt/self-harm (ever)	18%
	Recent thoughts	11.5%
	Recent plan	6%
Medical History		
Major illness or operation		39.3%
Eating poorly (lack of appetite)		34.4%
Recent weight loss without trying		13.1%
Seizures, hallucinations or blackouts		13.1%
Hepatitis or HIV		1.6%
Social History		
Employment, housing or finance issues		23%
Criminality or outstanding legal issues		4.9%
Gambling problem		1.6%

Note: A total of 61 participants completed the baseline assessment. AUDIT scores were only obtained from 41 participants. SADQ score was derived from 14 out of 20 possible items and averaged to compute a standard score. PHN = Primary Health Network, CESPN = Central and Eastern Sydney PHN, NSHN = Northern Sydney Health Network PHN, SENSW = South Eastern New South Wales PHN. SADQ ranges: 0-7 = not dependent, 8-15 = mild dependence, 16-30 = moderate dependence, 30-60 = severe dependence. AUDIT ranges: 0-7 = low risk, 8-15 = risky or harmful level, 16-19 = high-risk or harmful level, 20+ = high-risk dependence likely. K10 ranges: 10-15 = low psychological distress, 16-21 = moderate psychological distress, 22-29 = high psychological distress, 30-50 = very high psychological distress.

² Stockwell, T., Murphy, D., & Hodgson, R. (1983). The Severity of Alcohol Dependence Questionnaire: Its Use, Reliability and Validity. *British Journal of Addiction*, 78(2), 145-155. doi:10.1111/j.1360-0443.1983.tb05502

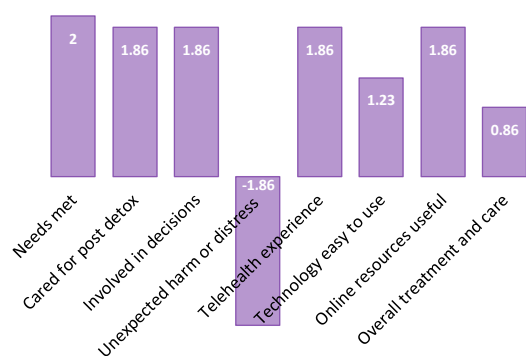
Patient Experience

Responses to the Patient Experience Questionnaire indicated that participants who completed the 3-month follow-up assessment (n=7) were highly satisfied with the Clean Slate Clinic detox service (see Fig 2.).

Facilitators identified by respondents included: the regular frequency of telehealth appointments, rapport established with practitioners, supportive staff, good resources, and increased accessibility through telehealth.

Barriers included: a lack of clarity in the overview of the service, the need for appointment reminders, timing of sessions (e.g. starting on the Monday meant that medication would be tapered off during the most difficult weekend period), having to wait two weeks to commence detox, text message reminders about the daily diary having ceased after two weeks, inconsistencies in technology (link sent via email or text message), and needing more assistance with using technology.

Fig 2. Patient Experience



Note: A total of 7 participants completed the Patient Experience Questionnaire. Patient experience was scored on a scale from “-2” (Strongly Disagree) to “2” (Strongly Agree).

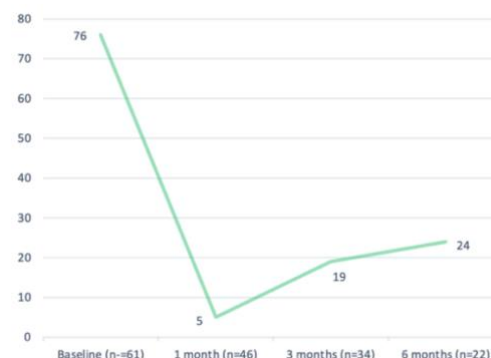
The 1-month follow-up assessment (n=18) also revealed that 22% of respondents had accessed additional support services and found them useful, while 11% of respondents had experienced barriers accessing additional services to support them in meeting their alcohol goals. Barriers included “cost and waiting times” and “no response or returned calls”.

Primary Outcomes

Primary outcomes measured 1-month post detox were self-reports of alcohol goal attainment, number of standard drinks consumed, and scores on the AUDIT and K10 assessment tools. Self-reports (n=50) revealed that 84% (42) of participants were “Meeting Alcohol Goals”, 14% (7) had “Reduced Alcohol Dependence”, and 2% (1) had “Relapsed”. The mean number of standard drinks consumed weekly decreased from 76 at baseline to 5 at 1-month post detox, and then increased to 19 at 3-months post detox and to 24 at 6-months post-detox (Fig 3.). Changes in AUDIT scores (Fig 4.) ranged from 24.63 at baseline (high-risk, dependence likely) to 1.72 (low risk) at

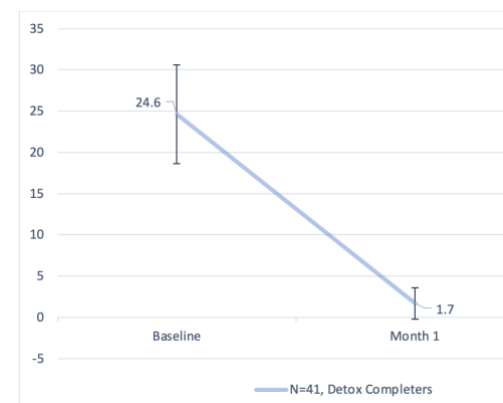
1-month post detox and 3.43 (low risk) at 3-months post detox. K10 scores (Fig 5.) ranged from 24.61 at baseline (high psychological distress) to 16 at 1-month post detox (moderate psychological distress) and 15.71 at 3-months post detox (moderate psychological distress).

Fig 3. Change in Weekly Standard Drinks Consumed



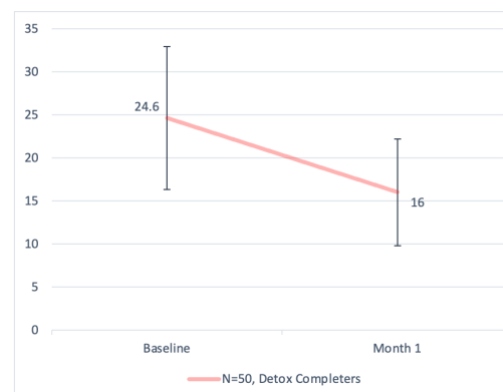
Follow-up data related to weekly standard drinks consumed was obtained separately from the AUDIT and K10 questionnaires. Consequently, more data is available for this outcome.

Fig 4. Change in AUDIT mean scores



Note: 0-7 = low risk, 8-15 = risky or harmful level, 16-19 = high-risk or harmful level, 20+ = high-risk dependence likely.

Fig 5. Change in K10 scores



Note: 10-15 = low psychological distress, 16-21 = moderate psychological distress, 22-29 = high psychological distress, 30-50 = very high psychological distress.

Likewise, follow-up K10 scores were obtained for 18 participants at 1-month and 7 participants at 3-months. Mean K10 scores for 3-months follow-up were also not included in this chart due to the possibility of selection bias.

Unfortunately, there was insufficient data captured for blood pressure, heart rate readings and blood tests to provide meaningful before and after comparisons.

Although there were not sufficient numbers of responses to follow-up assessments to justify an analysis of predictors of adoptability and feasibility, there was a significant correlation between baseline SADQ scores and reduction in weekly drinks consumed between baseline and 1-month follow-up, SADQ scores $r(47) = -.530, p < .001$. We have therefore described the feasibility of the Clean Slate Clinic as it relates to the SADQ ranges represented in this sample of participants (Table 2).

Table 2. Drinking outcomes by Severity of Alcohol Dependence

SADQ range	Baseline				Follow-up (1-month)	
	SADQ mean	AUDIT mean	Medical History	K10 mean	AUDIT mean	K10 mean
Moderate Dependence (n=21)	23.1	29.9	47.6%	30.5	2.6	21.3
Mild Dependence (n=18)	11.4	22.9	50%	24.1	0.3	17.5
Not Dependent (n=17)	3.7	20.8	17.6%	18.8	0	14.8

Note: All scores represent mean scores or percentage of responses indicating a significant medical history. SADQ ranges: 0-7 = not dependent, 8-15 = mild dependence, 16-30 = moderate dependence, 30-60 = severe dependence. AUDIT ranges: 0-7 = low risk, 8-15 = risky or harmful level, 16-19 = high-risk or harmful level, 20+ = high-risk dependence likely. K10 ranges: 10-15 = low psychological distress, 16-21 = moderate psychological distress, 22-29 = high psychological distress, 30-50 = very high psychological distress.

Discussion

The primary aim of this study was to evaluate the adoptability, acceptability and effectiveness of a GP-led home detox service utilising telehealth technology (i.e. the Clean Slate Clinic), with a secondary objective of determining predictors of adoptability and drinking outcomes. This model of service delivery is highly adoptable (82% completion rate) and acceptable. Results from this study indicate that the Clean Slate Clinic is a feasible model for enabling participants to achieve their goals (84%), substantially reducing alcohol intake and reducing psychological distress. It is interesting to note the relatively large representation of female participants in this study. Further investigation into the possible reasons for this might provide useful information about specific benefits of this telehealth, GP-led home detox model for females.

Acknowledgements:

This study was funded through Coordinare, Central and Eastern Sydney Primary Health Network, and Northern Sydney Health Network. This funding covered the clinical costs of service delivery and the costs of the external evaluation. The Clean Slate Clinic provided funds for the project management and administrative costs, as well as the costs of delivering promotional activities and webinars.

Appendix A

Management of Alcohol Withdrawal				
Daily Standard Drinks	10-14	15-25	30-40	>50
Severity of Dependence (SADQ)	<16	16-30	>30	>30 (plus medical problems)
Starting dose of Diazepam	5mg qds and 5mg prn	10mg qds and 10mg prn	Up to 15-20mg qds	Up to 20mg qds
Setting	Home	Home	Inpatient	Inpatient

Suggested Prescribing Guidelines - Diazepam				
Day	5mg qds	10mg qds	15mg qds (closely supervised)	Hospital Guideline for Inpatients
Day 1	5mg qds	10mg qds	10mg qds	
Day 2	5mg qds	10mg qds	10mg qds	
Day 3	5mg tds	5mg qds	10mg qds	
Day 4	5mg bd	5mg tds	5mg qds	
Day 5	5mg nocte	5mg bd	5mg tds	
Day 6	5mg nocte	5mg nocte	5mg bd	
Day 7		5mg nocte	5mg nocte	
Day 8			5mg nocte	