

## **Development and implementation of a structured intervention for alcohol use disorders for telephone helpline services**

BEST, David <<http://orcid.org/0000-0002-6792-916X>>, HALL, Kate, GUTHRIE, Anna, ABBATANGELO, Moses, HUNTER, Barbara and LUBMAN, Dan

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## **Development and implementation of a structured intervention for alcohol use disorders for telephone helpline services.**

**Running title: Structured alcohol intervention for telephone**

**David Best<sup>1,2</sup>, Kate Hall<sup>1,3</sup>, Anna Guthrie<sup>4</sup>, Moses Abbatangelo<sup>1</sup>, Barbara Hunter<sup>1,2</sup>, Dan Lubman<sup>1,2</sup>**

*<sup>1</sup>Turning Point Alcohol and Drug Centre*

*54-62 Gertrude Street*

*Fitzroy*

*Melbourne*

*Victoria 3065*

*Australia*

*<sup>2</sup>Monash University, Melbourne, Australia*

*<sup>3</sup>Deakin University, Melbourne, Australia*

*<sup>4</sup>Victorian Alcohol and Drug Association*

Corresponding author: Associate Professor David Best

Email: [davidb@turningpoint.org.au](mailto:davidb@turningpoint.org.au)

Telephone: 0061 3 8413 8510

## Abstract

A six-session intervention for harmful alcohol use was piloted via a 24-hour alcohol and other drug (AOD) helpline, assessing feasibility of telephone-delivered treatment. The intervention, involving practice elements from Motivational Interviewing, Cognitive Behavioural Therapy, and node-link mapping, was evaluated using a case file audit (n=30) and a structured telephone interview one month after the last session (n=22). Average scores on the AUDIT dropped by more than 50% and there were significant reductions in psychological distress. Results suggest that, even among dependent drinkers, a telephone intervention offers effective and efficient treatment for those unable or unwilling to access face-to-face treatment.

## Introduction

Approximately 48% of the global population drink alcohol (Anderson, 2006). Within Australia, 20% drink alcohol at levels that place themselves at risk of harm over their lifetime (Australian Institute of Health and Welfare, 2011) with 4% meeting criteria for alcohol dependence (Teesson et al. 2010; Andrews, Henderson, & Hall, 2001). High risk alcohol consumption is associated with a significant burden of disease relating to hospitalisation (Begg, Vos, Stevenson, Stanley, & Lopez, 2007; Dietze et al. 2000; Lesjak, McMahon, & Zanette, 2008), suicide and other mental illnesses (Begg et al. 2007). While specialist alcohol and other drug (AOD) services provide treatment to a relatively small cohort of people who seek treatment for alcohol dependence, the bulk of costs and harms associated with alcohol are attributable to the large cohort drinking at hazardous and harmful levels who never access treatment (Kaner et al. 2007).

Low rates of treatment seeking for alcohol use disorders is one of the largest challenges facing policy makers and service providers in devising an effective public health response to the impact of alcohol use disorders, with less than 10% of Australian men and 16% of women, who meet criteria for alcohol dependence, seeking help in a 12 month period (Teesson, Baillie, Lynsky, Manor & Degenhardt, 2006). Of particular concern is evidence indicating that rates of help-seeking are even lower for young people (Reavley, Cvetkovski, Jorm & Lubman, 2010). Attitudinal barriers to seeking treatment for alcohol use disorders have been identified, and include beliefs that the problem will get better on its own and that the drinker should be able to handle the problem themselves (Oleski, Mota, Cox & Sareen, 2010). In response to this literature, calls for population health approaches that tackle recognition of problem alcohol use and erroneous beliefs about alcohol related harms and treatment effectiveness have been made (Reavley et al. 2010).

Structural barriers to seeking treatment play a significant role in service accessibility and policy makers have targeted improved access for service users in recent system reforms (Victorian Department of Health, 2012). The specialist alcohol and other drug service system in Australia offers residential and outpatient psychosocial treatment, with face-to-face counselling as the predominant mode of psychosocial treatment. Geographic location (especially for those in regional settings) and practical issues around appointment attendance, such as transport and child-minding, and limited availability of treatment spaces after-hours and on weekends, contribute to a service model that excludes many due to restrictions in accessibility. Telephone-based services such as 24-hour AOD helplines, are ideally placed to overcome many of the structural barriers to accessing treatment and are therefore worthy of examination as a mode of delivering evidenced based interventions for alcohol use disorders. The 24-hour availability of helplines offers increased accessibility for those people wanting help from regional areas, who require childcare, who feel stigmatised and prefer anonymity, or who have full-time employment. This is a compelling reason to examine the effectiveness and feasibility of telephone delivered treatment. Finally, telephone delivered treatment has been found to be more cost effective than face-to-face treatments and offer additional benefits for clients including greater flexibility and anonymity (Jackson, Lawton & Connor, 2003). In the face of increasingly constrained resources, telephone delivered interventions for alcohol use disorders offer a realistic way of achieving a more efficient delivery of AOD treatment (Kennedy, 2008) that is more accessible to many service users than existing services.

The literature on the effectiveness of telephone delivered interventions is limited. In a review by Hailey, Roine and Ohinmaa (2008), there was evidence of success with telephone delivered treatment in the areas of child psychiatry, depression, dementia, schizophrenia, suicide prevention, post-traumatic stress, panic disorders, substance abuse, eating disorders, and smoking prevention. However, there is a need for more good-quality studies on the use of telephone delivered treatment. Telephone delivered structured interventions for alcohol use disorders is a new area

within the literature. Standard helplines provide referral information or crisis support where the nature of the caller contact is often anonymous and brief. Two studies of telephone delivered continuing care have demonstrated that this mode of delivery was effective as a step-down treatment for most patients with alcohol and cocaine dependence who had completed initial stabilization treatment (McKay et al. 2005 (a); Mackay et al. 2005(b)). In another study, recovering stimulant users who received telephone counselling after an intensive phase of outpatient substance abuse treatment were comparable to a no call control condition in terms of reduction of stimulant use and increase in aftercare attendance, however, a reduction in Addiction Severity Index scores in the intervention group was observed (Farabee, Cousins, Brecht & Antonini, 2013).

In a randomised controlled trial of telephone delivered treatment for non-treatment-seeking primary care patients with alcohol use disorders Brown et al. (2007) found a significant difference in the number of risky drinking days between males receiving telephone delivered Motivational Interviewing compared to controls who received a pamphlet including healthy lifestyle information. These intervention effects were not observed for females. Greater numbers of telephone counselling sessions were associated with greater declines in drinking. The small number of studies of telephone delivered treatment for alcohol use disorders have promising results that suggest this treatment model warrants further study.

The present study piloted a structured intervention delivered via a 24-hour AOD helpline to determine the feasibility of providing telephone delivered treatment for alcohol use disorders. The structured intervention was based on Motivational Interviewing and Cognitive Behavioural Therapy and used node-link mapping techniques throughout. Motivational Interviewing and Cognitive Behavioural Therapy are empirically supported treatments that have established efficacy in the treatment of alcohol related disorders (Vasilaki, Hosier, & Cox 2006; Martin & Rehm, 2012) and both receive the highest level of recommendation for the psychological treatment of alcohol disorders in

clinical treatment guidelines (Haber, Lintzeris, Proude & Lopatko, 2009). The use of node-link mapping has a strong evidence base as a clinical strategy in the addiction field where maps can be used by counsellors to facilitate communication and problem solving (Czuchry & Dansereau, 2003).

Although the 24-hour helpline used in the present study was a long-established AOD service provider that delivered nationwide AOD and gambling help, its service model typically provided brief responses to anonymous callers, with the majority of callers receiving referral information and crisis counselling. This service model was adapted to support the delivery of the structured intervention, including comprehensive changes to clinical governance structures, staff training and supervision forums, staff rosters and shifts, and technological support systems and referral pathways. These adaptations were made to incorporate delivery of longer counselling sessions through outbound, appointment-based calls. By adapting the service model to include a structured intervention for alcohol use disorders, the current pilot sought to determine whether a telephone delivered structured intervention could be delivered by a 24-hour helpline and whether it was effective in reducing alcohol use and associated psychological distress in callers.

### **Rationale**

To implement and test the feasibility and effectiveness of a structured evidence-based intervention for problem drinkers delivered via a statewide 24-hour AOD helpline. The aim was to assess the extent to which the support materials were implemented by workers (based on a case file audit of 30 active cases) and to measure the impact of the intervention on alcohol problems and related psychological distress in an evaluation of pilot cases.

## **Methods**

### **Setting**

Based in Melbourne Australia, Directline is a 24-hour, 7-day a week, free, anonymous statewide telephone counselling, information and referral service for people who use alcohol and other drugs.

### **Development of intervention**

The intervention content was informed by Cognitive Behaviour Therapy (CBT; Beck, 1995) and Motivational Interviewing (MI; Miller & Rollnick, 2012). The development of the intervention (labelled Portal to Alcohol Counselling Therapy; PACT) drew on principles of technology transfer in order to maximise implementation fidelity. Two strategies were employed in the development of the intervention manual: a modular 'practice elements' approach informed the structure of the manual and node-link mapping provided visual representations of the practice elements. This resulted in a manual that each participating worker was trained in the delivery of by a clinical psychologist with ongoing support and supervision provided over the course of the initiative.

#### *Practice Elements*

Barriers to effective technology transfer include highly structured or prescriptive manuals with written text that is difficult to navigate (Mitchell, 2011). Most empirically validated interventions, including CBT and MI, are comprised of numerous discrete and separable practice elements. Practice elements denote a discrete component of an active therapeutic intervention that can be applied in combination with other practice elements to achieve a therapeutic outcome. A practice element approach has been recommended to maximise implementation fidelity of evidence-based treatment in applied alcohol and drug service settings (Mitchell, 2011). The intervention practice elements were incorporated into six modules which could be delivered sequentially over 1-6 sessions by clinicians, or in a flexible and modular way depending on client needs: Screening assessment and feedback, Enhancing motivation; Building strengths and setting goals; Learning new coping skills; Building resilience against relapse; and Consolidating goals and achievements.



### *Node-link mapping*

To facilitate the technology transfer, practice elements were presented in the manual alongside a spatial representation through a cognitive (node-link) mapping exercise. The maps were contained in a client workbook that was mailed to clients after they had agreed to participate in the intervention.

Dansereau and Dees (2002) cited research in the field of cognitive psychology that has established the importance of representing issues graphically, rather than in written text, to aid the clustering and organisation of complex information. The use of node-link mapping has a strong evidence base as a clinical strategy in the addiction field, where maps are used to spatially organise related thoughts and actions and can be used by treatment counsellors to facilitate communication and problem solving in group and individual sessions (Czuchry & Dansereau, 2003). The intervention specifically used pre-structured guide maps, which had guiding questions and blank nodes to be filled in collaboratively by the counsellor and client. Pre-structured guide maps were used to facilitate collaboration and engagement over the telephone, where both the counsellor and client were working from the same blank guide map during each session.

### **Training and coaching of clinicians**

Training of clinicians was conducted in small groups. Manuals were disseminated and case-based supervision in the delivery of the intervention was provided through fortnightly clinical supervision by a senior project team member. Further coaching in the intervention was conducted by one of the intervention developers via group consultation sessions. Implementation fidelity was assessed through an audit of cases, where the number of node-link maps completed by the clinicians was assessed.

### **Procedure**

Case-file audit: Thirty case files where at least one session of PACT had been delivered were audited by the research team. A standard pro forma was developed which measured the number of sessions completed, the number of drink diaries and node link maps undertaken, and worker ratings (on a scale of 1-10) of each session.

Client follow-up: Callers to Directline (the telephone helpline involved in the study) who met the eligibility criteria (over 18, not already in treatment and who perceived themselves to have an alcohol problem) were screened for suitability for the intervention and were asked if they were willing to participate in both the intervention and the evaluation. If they consented, they were offered the first session of the intervention immediately and were invited to make a time with a counsellor to call them back for the next session, with up to six sessions available. After the initial session, they were posted a copy of the workbook containing node-link maps, drink diaries and information linked to each of the relevant modules. One month after the last session, a researcher called the participant to complete a follow-up assessment by telephone. Twenty-two participants were involved in the follow-up assessment.

The study was approved by the Eastern Health Research and Ethics Committee.

There were two standard measures used at baseline for the intervention:

- Alcohol Use Disorder Identification Test: is a standardised 10-item alcohol screening instrument with acceptable psychometrics and cut-off scores (Babor et al, 2006). The AUDIT provides a score of between 0 and 40 – with scores of 0-7 indicating low risk; 8-15 as indicating moderate risk of harm; 16-19 as high risk or harmful use; and scores of 20 or over as high risk with dependence likely.
- Kessler K6: The Kessler K-6 (Kessler et al, 2003) is a 6-item measure of psychological distress and is an established brief screening measure for psychological distress. The K6 is scored between 6 and 30 with higher scores indicating higher distress and an optimal cut-off score of 19+.

- Client Evaluation of Self and Treatment (CEST; Joe et al, 2002) is a 144 item instrument measuring patient motivation, psychosocial functioning, treatment process, social network support, and services received are needed for monitoring drug abuse treatment delivery and patient progress. For the PACT assessment, treatment motivation and engagement scales only were used to assess treatment readiness and desire for help (motivation) and client satisfaction and counsellor rapport (to measure engagement). The CEST has acceptable psychometric properties and published population norms.
- Client satisfaction with PACT: Participants were asked to rate their experience (satisfaction) with PACT on a scale of 1-10.
- Qualitative component: Open-ended comments on experiences of PACT, and how things have been since completing the program were offered and recorded by the researcher during the telephone interview.

## Results

### Implementation fidelity

Implementation fidelity was assessed through an audit of 30 cases where the number of completed node-link maps and drink diaries was examined. Of the audited cases, 50% of cases completed 2 maps, while the vast majority of cases (93.3%) received between 2 and 4 maps during the intervention – the mean number of maps completed was 2.9 ( $\pm 1.1$ ), among participants who had completed a mean of 3.4 sessions ( $\pm 2.3$ ). Reasons for discontinuing the intervention were (i) participant had dropped out ( $n=14$ , 46.7%), (ii) completed the relevant aspects of the program ( $n=11$ , 36.7%), (iii) referred on to another service ( $n=4$ , 13.3%) and (iv) maintaining ongoing contact and support ( $n=1$ , 3.3%).

Only one of the sessions was less than one hour in duration. On a scale of 1-10, the mean worker rating for client motivation was 5.8 ( $\pm 1.9$ ). Eight of the 30 files showed that clients had completed

drink diaries (26.7%), but all of the case files reported map completion – ranging from 2 to 6 maps completed. Clinicians rated the client motivation on a scale of 1-10 with greater motivation associated with more sessions completed ( $r=0.54$ ,  $p<0.01$ ) and with more maps completed ( $r=0.59$ ,  $p<0.01$ ). The number of maps completed was also linked to the number of sessions completed ( $r=0.56$ ,  $p<0.01$ ).

## **Client outcomes**

### ***Engagement with the program***

The sample of clients involved in the follow up component of the evaluation consisted of 22 individuals (9 males and 13 females) with a mean age of 43.1 years ( $\pm 12.9$  years). Eleven (50.0%) of the sample were employed (8 full-time and 3 part-time), 7 (31.8%) were unemployed, 3 were retired and one was a student.

Among the 22 participants who completed the evaluation component, the mean number of sessions completed was 4.2 ( $\pm 3.0$ ). Apart from those who completed all of the sessions ( $n=17$ ), one person stopped the sessions because they had ceased drinking; one person stopped because they felt it raised their anxiety about drinking; two people were referred on to face-to-face services, and one person moved house to an area where there was poor phone reception.

Overall, on a scale of 1-10, participants rated their satisfaction with the intervention at 8.1 ( $\pm 1.8$ ). Forty-eight per cent completed a drink diary as part of the program, with positive feedback about the drink diary including “helpful – I noticed a pattern with my drinking – I also liked the maps”; “Was quite good at first, monitoring was good – dropped back a bit though” and “pretty good. I read the workbook daily”.

***Impact on drinking and psychological distress***

There was a reduction in scores on the AUDIT from 27.1 ( $\pm 7.8$ ) at baseline to 13.8 at follow-up ( $\pm 9.7$ ;  $t=5.83$ ,  $p<0.001$ ) and a reduction in K6 scores from 17.9 ( $\pm 5.3$ ) to 13.5 ( $\pm 5.4$ ;  $t=4.41$ ,  $p<0.001$ ). There was a positive correlation of 0.51 between the reduction in AUDIT scores and the rating of satisfaction with the intervention – clients who rated the program more highly also reported greater reductions in alcohol problems. In response to the question, ‘how have things been for you since finishing the program?’, responses included:

- “100% improvement”
- “A lot better than before”
- “Excellent – I haven’t had a drink for six weeks and I feel great. I can sleep, my diet is good and I am much happier”
- “I have no desire to drink but the challenge is being in a social setting around drinkers....I’ve had definite improvements but I still have some way to go”
- “I’m drinking again because there’s other emotional stuff going on for me. But I did find PACT useful at the time”
- “Things on downhill spiral in the last month, but at the time, PACT was very helpful. I’m now getting help from other services”.

PACT was seen as valuable and important by many participants, although its effects were perceived to have been short-lived or it acted as a bridge into another service.

At baseline, 20 of the 22 participants scored 20 or more on the AUDIT signifying ‘high risk drinking or alcohol dependence likely’ (90.9%) – by follow-up that had reduced to 9 (40.9%). There was also an inverse association between change in AUDIT scores and the baseline score ( $r=-0.48$ ,  $p<0.05$ ) – in other words, it was those with the highest baseline AUDIT scores who reported the greatest reductions in problem drinking indicators.

A significant inverse relationship between rating of the intervention and change in drinking ( $r = -0.52$ ,  $p < 0.05$ ) was evident – those who were most satisfied with the intervention reported the greatest reductions in their drinking. There was no relationship between baseline AUDIT score and number of sessions completed ( $r = -0.03$ ,  $p = 0.91$ ).

### ***Treatment motivation and engagement***

Based on the TCU scales for client engagement and satisfaction, the mean scores for two sub-scales on treatment motivation and two on treatment engagement are given below in Table 1. They are set against the mean scores for two UK locations (taken from Simpson et al, 2009) and from the US adult treatment population norms taken from the Texas Christian University Institute of Behavioural Research website.

(Insert Table 1 here)

On the engagement scales, where comparison data are available, PACT clients are broadly comparable with both UK and US treatment populations established in face-to-face treatment. On scales ranging from 10-50, scores over 30 indicate positive endorsement and clients in the telephone pilot are reporting equivalent levels of treatment engagement – indeed, the mean score for treatment satisfaction is slightly higher than those reported in the UK and US face to face treatment services.

The scores are in the normal range for both engagement and motivation – the only significant association with change in behaviour is that higher scores on Treatment Readiness were associated with greater reductions in AUDIT scores from baseline to follow-up ( $r = -0.52$ ,  $p < 0.05$ ), while Treatment Readiness was also strongly linked to clients rating of their overall satisfaction with PACT

( $r=0.55$ ,  $p<0.05$ ). Additionally, higher scores on Desire for Help were associated with greater psychological distress – both at baseline ( $r=0.46$ ,  $p<0.05$ ) and at follow-up ( $r=0.49$ ,  $p<0.05$ ). No measure of motivation or engagement was associated with the number of sessions of PACT completed.

### ***Additional qualitative feedback***

Overall functioning was variable at follow-up with some participants still reporting alcohol problems - *“Up and down. Have good days and bad days. At least now I’m catching the cravings early”; “Much better, although I’m still drinking. I did a home-based withdrawal and got myself organised. I’m a bit more aware, proactive in managing my drinking.”* However, the outcomes for others were much more positive - *“Things were on downhill spiral in last month, but at the time, PACT was very helpful. I’m now getting help from other services.”* Another participant reported *“PACT saved me. I’ve been monitoring how much I’m drinking. Only had one drinking occasion with 4 drinks.”*

## **Discussion**

It is evident from this pilot study that the use of a structured intervention for alcohol disorders delivered over the telephone is a feasible option to complement the existing AOD treatment services currently available, and has the potential to fill a gap in our current treatment options and provide greater accessibility for evidence-based alcohol interventions for the community. The implementation methods employed suggest a modular, practice element approach successfully overcomes clinician barriers to implementation fidelity and node-link mapping is a tool that encourages telephone counsellors’ adherence to evidence based practice protocols.

The pilot demonstrated clients benefited from the intervention, resulting in significant reductions in alcohol problems and psychological distress, and reported levels of treatment engagement and

satisfaction that were similar to those reported by recipients of face to face addiction treatment services in the UK and US on standardised client engagement measures. The 24-hour availability of the telephone counselling option, in addition to the anonymity and accessibility, indicate considerable scope for using this intervention with a range of drinking populations and vulnerable groups who won't or can't access face to face counselling services.

The study would also suggest that this form of structured intervention can be effective with a population that is more problematic than was originally intended. The target population for the intervention was harmful and hazardous drinkers but the evaluation results would suggest high levels of alcohol dependence at intake along with high levels of associated psychological distress. In spite of this, the results show significant improvements in drinking and psychological wellbeing, based on active engagement in the treatment process and the underlying support materials, particularly the node-link maps that were posted out to participants at the start of treatment.

There are major limitations to the study. The number of participants in the pilot is small and also represents only a small (and unknown) proportion of clients receiving the intervention in the evaluation window. Thus, inclusion in the evaluation may have been inadvertently restricted to more motivated participants or to those who benefited from it. Also, we were not able to link the case file audit information to the research-administered follow-ups so the overlap between the two populations is not known.

While significantly more controlled research will be needed with a larger sample to replicate and verify the results reported here, there are some positive, albeit tentative, conclusions that can be drawn. The first is that telephone interventions can be delivered to problem drinkers, including those whose use indicates dependent drinking, with positive results. Second, participants can be actively engaged in the therapeutic process to the extent of completing 'homework' tasks and



participants reported satisfaction levels roughly equivalent to those of clients in standard face to face treatment. Finally, the audit would suggest that this model successfully sits within a 'continuity of care' approach, where key practice elements of evidence-based practice can be delivered by telephone either as a standalone intervention, as a form of 'early intervention' prior to treatment, and as aftercare. Significant further exploration is required to assess the possibilities for telephone interventions (along with their online equivalents) as adjunctive forms of therapeutic support. Thus, PACT and its developments can be delivered as an evidence-based intervention prior to, concurrent with or after more structured interventions, or as a standalone intervention depending on client needs, preferences and responsiveness to different interventions. As a result of the 'practice element' design, it can readily be tailored to the needs of specific client groups and delivery contexts depending on the time and resources available. In the face of increasingly constrained resources, telephone-based interventions for alcohol use disorders offer a realistic way of achieving better health results, and more efficient delivery of health care.

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## References

- Anderson, P. (2006). Global use of alcohol, drugs and tobacco. *Drug and Alcohol Review*, 25:489-502.
- Andrews, G., Henderson, S., & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation: Overview of the Australian Mental Health Survey. *British Journal of Psychiatry*, 178:145-153.
- Australian Institute of Health and Welfare (2011) 2010 National Drug Strategy Household Survey Report, Drug Statistics Series no.25. Cat. No. PHE 145. Canberra: AIHW
- Babor, T., Higgins-Biddle, J., Saunders, J. & Monteiro, M. (2006) AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for use in primary care, World Health Organisation: Geneva
- Begg, S., Vos, T., Barker, B., Stevenson, C., Stanley, L., & Lopez, A. D. (2007). The burden of disease injury in Australia. Cat. No. PHE 82. Canberra: AIHW
- Beck, J.S. (1995) *Cognitive therapy of depression*, New York: Guildford Press.
- Brown, R.L., Saunders, L.A., Bobula, J.A., Mundt, M.P., & Koch, P.E. (2007). Randomized-controlled trial of a telephone and mail intervention for alcohol use disorders: three-month drinking outcomes. *Alcohol Clin Exp Res*, 31(8):1372-1379.
- Czuchry, M. & Dansereau, D.F., (2003) A model of the effects of node–link mapping on drug abuse counselling. *Addictive Behaviors* 28:537–549.
- Dansereau, D. F. & S. M. Dees (2002). Mapping training: The transfer of a cognitive technology for improving counseling. *Journal of Substance Abuse Treatment* 22(4): 219-230.
- Dietze, P. M. Rumbold, G. R. Cvetlovski, S. Hanlin, K. J. Laslett, A. & Jonas, H. A. (2000) Using population-based data on alcohol consumption and related harms to estimate the relative need for alcohol services in Victoria, Australia. *Evaluation and Program Planning*, 23(4):429-436.
- Farabee, D., Cousins, S.J., Brecht, M. Antonini, V.P., Lee, A.B., Brummer, J., Hemberg, J. Karno, M., & Rawson, R.A. (2012). A Comparison of Four Telephone-Based Counseling Styles for Recovering Stimulant Users. *Psychology of Addictive Behaviors*, 27(1):223–229.
- Haber, P., Lintzeris, N., Proude, E. & Lopatko, O., (2009). The Treatment of Alcohol Problems. Australian Government Department of Health and Ageing.
- Hailey, D., Roine, R., & Ohinmaa, A. (2008). The Effectiveness of Telemental Health Applications: A Review, *Can J Psychiatry*; 53(11):769–778
- Jackson, C., Lawton, R. & Connor, M. (2003) Testing implementation intentions in the field: is non-intentional non-adherence really a problem, *Health Psychology Update*, 12(4):35-37.
- Joe, G., Broome, K., Rowan-Szal, G. & Simpson, D. (2002) Measuring patient attributes and engagement in treatment, *Journal of Substance Abuse Treatment*, 22(4):183-196.

- Kaner, E., Beyer, F., Dickinson, H., Pienaar, E., Campbell, F., Schlesinger, C., Heather, N., Saunders, J. & Burnand, B. (2007). Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews, Issue 2*.
- Kennedy, G.J., (2008) Targets for Telephone-Based Behavioral Health Interventions *Primary Psychiatry*, 15(5):35-39.
- Kessler, R., Barker, P., Colpe, L., Epstein, J., Gfroerer, J., Hiripi, E., Howes, M., Normand, S-L., Manderscheid, R., Walters, E. & Zaslavsky, A. (2003) Screening for serious mental illness in the general population, *Journal of the American Medical Association*, 60 (2):184-189.
- Lesjak, M.S., McMahon, G.J. & Zanette, L. (2008). Alcohol harm and cost at a community level: data from police and health. *Rural and Remote Health* 8: 878. (Online).
- Oleski, B.A. Mota, N., Cox, B. J. & Sareen, J. (2010). Perceived Need for Care, Help Seeking, and Perceived Barriers to Care for Alcohol Use Disorders in a National Sample. *Psychiatric Services* 61(12)
- Martin, G.W. & Rehm, J. (2012). The Effectiveness of Psychosocial Modalities in the Treatment of Alcohol Problems in Adults: A Review of the Evidence. *Can J Psychiatry*; 57(6):350-358.
- McKay, J.R., Lynch, K.G., Shepard, D.S., et al. (2005). The effectiveness of telephone-based continuing care for alcohol and cocaine dependence: 24-month outcomes. *Arch Gen Psychiatry*; 62:199–207.
- McKay, J.R., Lynch, K.G., Shepard, D.S. & Pettinati, H.M. (2005). Do patient characteristics and initial progress in treatment moderate the effectiveness of telephone-based continuing care for substance use disorders? *Addiction*, 100:216–226.
- Miller, W. R. & Rollnick, S. (2012). *Motivational interviewing: Helping people change* (3rd edition). New York, NY US, Guilford Press.
- Mitchell, P. F. (2011). Evidence-based practice in real-world services for young people with complex needs: New opportunities suggested by recent implementation science. *Children and Youth Services Review* 33(2): 207-216.
- Reavley N.L., Cvetkovski, S. Jorm A.F. & Lubman, D.I. (2010) Help-seeking for substance use, anxiety and affective disorders among young people: results from the 2007 Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*, 44:729–735
- Simpson, D., Rowan-Szal, G., Joe, G., Best, D., Day, E. & Campbell, A. (2009) Relating counselor attributes to client engagement in England. *Journal of Substance Abuse Treatment*, 36:313-320.

- Teesson, M., Hall, W., Slade, T., Mills, K., Grove, R., Mewton, L., Baillie, A., & Haber, P. (2010). Prevalence and correlates of DSM-IV alcohol abuse and dependence in Australia: Findings of the 2007 National Survey of Mental health and Wellbeing. *Addiction*, 105:2085-2094.
- Vasilaki, E.I., Hosier, S.G. & Cox, W.M. (2006). The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review. *Alcohol & Alcoholism*, 41(3):328–335.
- Victorian Department of Health (2012). New directions for alcohol and drug treatment services: A roadmap, State of Victoria, Department of Health.

Tables and figures

**Table 1: CEST scores among PACT clients (means and standard deviation)**

Domain	Treatment motivation		Treatment engagement	
Scale	Desire for help	Treatment readiness	Treatment satisfaction	Counsellor rapport
PACT clients	33.7 ( $\pm 7.9$ )	38.1 ( $\pm 6.4$ )	42.5 ( $\pm 6.2$ )	39.2 ( $\pm 9.2$ )
US norms	-	38.4	40.0	40.9
Birmingham, UK	-	40.9	42.2	39.5
Manchester, UK	-	41.2	41.7	39.8