Alcohol and drug Cognitive Enhancement (ACE) Program

NADA Conference 2018

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Project Team

Steering Committee

- Advanced Neuropsychological Treatment Services (ANTS)
- We Help Ourselves Residential Services (WHO)
- University of Wollongong
- The National Drug and Alcohol Research Centre, UNSW
- Macquarie University
- Newcastle University
- Aboriginal Health and Medical Research Council
- Agency for Clinical Innovation
- Ministry of Health
The Case for Change

- Up to 80% of clients accessing AOD treatment have a degree of cognitive impairment, yet no standard intervention for this population exists.

- Executive functioning is most impaired in this population and impacts an individuals’ ability to plan, organise, set goals, solve problems, make effective decisions and regulate emotions.

- All of the above are required for individuals to engage in positive behaviour change, which is a primary focus of AOD treatment.
Introductory Video

https://vimeo.com/263089751/fdcdf4fc8f
Evolution of the project and partners

2010
Practice Enhancement Project
+WHOS

2012
Testing for cognitive impairment
+UoW
+ANTS
+Macq.U

2014
Cognitive Remediation Intervention
+WHOS New Beginnings

2016
Innovation Forum
+ACI, D&A Network

2016-2018
Planning and Implementation
+Mac Uni
+UoN / HMRI
+NDARC / UNSW
+AH&MRC
+ACI
+MOH + UoW
Process Map
Alcohol and drug Cognitive Enhancement (ACE) Program

**PHASE 1**
Introductory resources development
- Introductory video
- Screening tool
- Brief intervention
- Executive assessment tool (BEAT)
- Online community of interest

**PHASE 2**
Residential proof of concept study
- Stepped wedge cluster study
- Aboriginal populations feasibility study
- Program evaluation
- Refine Program from feedback

**PHASE 3**
Outpatient feasibility study
- Feasibility study
- Program evaluation
- Refine Program from feedback

**PHASE 4**
Implementation and resource sharing
- Finalise all Program resources
- Resources available for state-wide implementation
- Web resources published

# The Study – Stepped Wedge Cluster

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- **TAU** = Treatment as usual
- **CR** = Cognitive Remediation

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**Notes:**
- Test Phase 2 weeks
- Treatment Period 6 weeks
- F/U Period
Aboriginal Populations Feasibility Study

- Cultural safety and appropriateness of the resources for use within an Aboriginal population

- Cultural Advisor – Uncle Bob Morgan Newcastle University
The Intervention – 12 Modules

- 1 Introduction
- 2 Attention
- 3 Learning and Memory
- 4 Executive Functions I
- 5 Executive Functions II
- 6 The Self Reflector
- 7 The Inhibitor
- 8 The Visualiser
- 9 The Self Talker
- 10 The Emotion Regulator
- 11 The Player
- 12 Revision
ACI Implementation Support

- Full implementation support
- Key contact for implementation and program delivery support
- Site visits at study initiation
- Tailored implementation plans for each site

- Ongoing implementation support and coaching to:
  - Build capability
  - Overcome barriers to implementation and
  - Manage any other risks or issues to program delivery and sustainability.
Original Trial - Pilot
Initial Trial

- Non randomised controlled trial
  - Cohort allocation to CR and TAU groups
  - CR (Intervention) Group
    - 12 x 2 hour sessions, run 3 times per week over 4 weeks
    - Intervention comprised of:
      - 1 hr of group work- **Top down** (strategies to address memory, attention and executive function weaknesses)
      - 1 hr Lumosity training - **Bottom up** (completed on iPads)
  - Control Group
    - Treatment as usual after washout of CR participants (i.e. once all clients who had completed the intervention had left the service)

2015 – Pilot of 24 hour CR Program

- Compared to TAU Control Group, CR group improved on:
  - Self-reported executive functioning (BRIEF-A)
  - Performance-based executive functioning tests (e.g., Stroop)
  - Quality of Life (Q-LES-Q)

2015 – Pilot of 24 hour CR Program

BRIEF-A GEC Scores

Effect Size = 0.92
2015 – Pilot of 24 hour CR Program

![Chart showing Everyday Goals – 3 month Follow-up with Control Group and CR Group comparison]
2015 – Pilot of 24 hour CR Program

Likelihood of CR vs Control Group

- Self-charged
- Non-compliant
- Completed Program
2017 Trial - RCT
Randomised controlled trial

- Random allocation to CR (Strategy Training) and Control (CCT) groups
- CR (Intervention) Group
  - 12 x 1 hour sessions, run 3 times per week over 4 weeks
  - Top down (strategies to address memory, attention and executive function weaknesses)
- Control Group
  - 12 x 1 hour sessions, run 3 times per week over 4 weeks
  - Lumosity training - Bottom up (completed on iPads)
2017 – RCT of 12 hour CR Program

BRIEF-A GEC Scores

Effect Size = 0.66

Pre          Post

Lumosity

CR
2017 – RCT of 12 hour CR Program

2017 RCT Intact vs Impaired

![Bar chart showing pre and post results for Intact and Impaired groups in 2017 RCT study.](image)
Screening Tool
Cognitive Impairment Screening Tool

- Aim: to develop a questionnaire screening tool that predicts cognitive impairment
- Focus on risk factors:
  - History of head injury
  - History of overdose (hypoxic brain injury risk)
  - History of other neurological events
  - History of developmental learning or behaviour difficulties
- N=193 individuals sampled
  - N=129 clinical (residential rehab)
  - N=64 normal controls
Cognitive Impairment Screening Tool

Cut score of >1 correctly classifies 84.5% of the sample
Brief Executive Assessment Tool (BEAT)
Montreal Cognitive Assessment (MoCA)
- Originally developed to detect cases of probable dementia
- Validated for a younger SUD population
- Sensitive to executive function impairment, which is the most common type of cognitive impairment in a SUD population
- Used in our previous research to screen for cognitive impairment

However, as of 2016/2017, MoCA do not support independent MoCA training, but require online training at a cost of US$125 per user
- Barrier to cognitive screening in AOD services

Aim: to develop a cognitive screening test developed specifically to detect executive function impairments in a (younger) SUD population
Brief Executive Assessment Test (BEAT)

MoCA

BRIEF-A GEC
Brief Intervention - Psychoeducation
Psychoeducation Intervention Study

- N=23 TAU control group
- N=27 TAU + intervention group

- Both groups were assessed at baseline and received TAU
- Both groups were followed up 5 weeks later and given the Cognitive Impairment Knowledge Questionnaire (CIKQ) and asked about their use of cognitive impairment strategies over the previous week
- Intervention group received a one hour psychoeducation session and given the:

COGNITIVE IMPAIRMENT IN ALCOHOL AND OTHER DRUG (AOD) TREATMENT INFORMATION SHEET
Cognitive Impairment Treatment Information Sheet

- 8 pages, two sections (Information + Tips and Strategies)
- Information:
  - What is Cognitive Impairment?
  - How might having a cognitive impairment impact my treatment?
  - What causes cognitive impairment?
  - Could I have cognitive impairment?
  - What can I do about it?
- Tips And Strategies To Assist With Cognitive Impairment
  - Attention Strategies – 22 strategies
  - Memory Strategies – 10 strategies
  - Higher Level Thinking Skills Strategies – 14 strategies

Total = 46 strategies
"I have cognitive impairment"
Strategy Use Evaluation

- “I have used this in the past week”
- “Might be helpful in the future”

Measured at baseline for Psychoeducation group and Control Group
Measured at Follow-up for Psychoeducation Group
Strategies Used in Past Week

p=0.014

Baseline  Follow-Up

Control  Psychoeducation
“Learning about cognitive impairment helped me get more out of my program”

“I found the tips and strategies helpful in getting more out of my program”
Conclusion

- We now have:
  - Better screening tools
  - A simple, low-cost brief intervention
  - A 12-hour manualised CR program
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