Implementing cognitive remediation therapy: lessons from two public mental health services

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Abstract

Objective: Neurocognitive deficits are a core symptom domain of schizophrenia, occurring in 75 -90 % of people with this diagnosis and influencing long term functional outcomes. This article aims to describe the pilot implementation of cognitive remediation therapy (CRT) in two large public mental health services and detail changes made to the delivery of this therapy after this trial.

Conclusions: CRT provides an evidence based approach to targeting cognitive deficits but the translation of this therapy from a research setting to clinical practice has not been well evaluated.

Keywords: cognitive remediation therapy, implementation, neurocognition, schizophrenia.
Over the last 15 years, there has been renewed awareness of the impact of cognitive impairment in schizophrenia and the effect these deficits have on recovery and treatment outcomes\textsuperscript{1-3}. Cognitive remediation therapy (CRT) has been developed to improve neurocognitive abilities such as attention, working memory, cognitive flexibility and planning and executive functioning\textsuperscript{4}. The most recent meta-analysis has demonstrated moderate effect size (0.42)\textsuperscript{5}, however criticism of this treatment has focussed on the translation of cognitive improvement into meaningful functional gain\textsuperscript{6,7}. This is reflected in the evidence that the optimal effect size occurs when CRT is delivered in conjunction with a rehabilitation programme using strategic learning strategies\textsuperscript{5}.

There is little research on the implementation of CRT. Practical guidance on developing programmes exists\textsuperscript{4} but CRT is yet to get unequivocal endorsement in influential guidelines, for example the National Institute for Health and Clinical Excellence (NICE) guidelines 2009.

There is a demand in mental health services to deliver evidence based practice (EBP) and models of care\textsuperscript{7}. CRT provides an evidence based approach to targeting cognitive deficits in people with psychotic disorders\textsuperscript{5}, however psychological therapy approaches including CRT are not widely available\textsuperscript{8}.

This article aims to describe the steps taken in South East Queensland to implement and evaluate CRT. Recommendations will be made for up scaling the dissemination of CRT within public mental health services.
Implementation of CRT

Factors influencing the implementation and dissemination of evidence based practice (EBP)

Implementation of EBP is influenced by the characteristics of the intervention (acceptability, appropriateness, and cost), the adopters (opinion leaders, change agents), and contextual factors (organisational culture, climate and readiness to change)\(^9\).

Implementation/dissemination (ID) research is a relatively new field. Outcomes of interest in ID research include participants’ outcomes (participants’ satisfaction, function and symptoms); service outcomes (efficiency, effectiveness, safety, equity of access) and implementation outcomes (feasibility, fidelity, penetration of the programme, sustainability). Implementation research usually follows scientific rigorous efficacy and effectiveness studies of a particular intervention. Wykes et al.\(^6\), in a recent meta-analysis contended the evidence supporting CRT in schizophrenia was robust and that the time had come to focus on implementation research. Outside of the research setting clinicians are acutely aware that current treatment regimens do not comprehensively address the morbidity associated with psychosis. There are pockets of innovative psychosocial programmes within clinical services which, when subjected to iterative evaluation, can inform implementation of evidence based practice (EBP) like CRT.

The two public mental health services where data was collected were the Royal Brisbane and Women’s Hospital (RWBH), Metro North Health and Hospital Service and the Princess Alexandra Hospital (PAH), Metro South Health and Hospital Service. Both services are primarily inner-city catchments.

Choosing a CRT programme
There are numerous CRT programmes which have been developed and are being developed. Research suggests no advantage of any particular programme. The Neuropsychological Educational Approach to Remediation (NEAR) was chosen as it meets the needs of both public mental health services in terms of cost of the programme and the staffing efficiency of a group format. The NEAR approach has a strong theoretical foundation in educational psychology, focussing on re-engagement with learning and improvement of intrinsic motivation in participants. NEAR is not a fixed programme but is made up of a ‘library’ of educational software programmes that link to cognitive domains such as attention, concentration and executive function. By assessing the cognitive domains targeted by the programmes it is possible to incorporate many commercially available computer games and other CRT programmes into the NEAR ‘library’. NEAR allows flexibility in the choice of remedial exercises as it is not a set package but instead provides guidance as to how to select programmes that are intrinsically motivating to the participant and that also address the cognitive domains of interest. The NEAR programme is based on a minimum of 12 software titles. The unit cost can vary from $10 to $30. This approach allows for greater tailoring of individual treatment plans that match participants’ goals and needs. It also allows for a cost effective service plan for revitalisation of the CRT programme by the evaluation and purchase of commercially available software. NEAR also has a manualised bridging programme which provides a structured approach to training for transfer, assisting participants to make the link between the computer exercises and their day to day lives.

**Implementation Strategy**

As a consequence of the research evidence supporting CRT, clinical directors and leaders lobbied the public mental health services management to support the development of a CRT
programme. Building the capacity to deliver CRT within these mental health services requires a strategy for staff training and ongoing professional development, programme evaluation and operational support for ongoing staff time and physical resources.

Staff training and ongoing professional development

Initial staff training

Funding from industry enabled training by an expert in the field, Professor Alice Medalia. In 2008 six separate services sponsored 24 staff to attend five full days of training. In addition there was a deliberate strategy to quarantine a small number of training positions for discipline seniors, team leaders and clinical directors to become organisational leaders within their services.

Ongoing professional development and support

Following the training in 2008 the Brisbane Cognitive Remediation Interest Group (BCRIG) was formed. The terms of reference for this group include the responsibilities to plan, support and develop CRT programmes within Brisbane metropolitan area, assist in programme evaluation, ensure fidelity to model via peer supervision and advocate for resources including quarantined therapy time. BCRIG meetings are held monthly and report to the mental health executive of the relevant service. All trained staff are invited to attend and services are encouraged by the BCRIG to send at least one representative to this meeting.

After the initial training eight CRT programmes were established. High staff turnover and attrition of programme facilitators resulted in a need for further training by the following year. Since 2009, BCRIG members have formally trained 38 new facilitators in predominately two consecutive day workshops. The form and content of the training is derived from the initial five day, 2008 workshop with modules on the theory behind cognitive
remediation, a description of the NEAR approach, experiential modules using the programmes and modules on bridging. Trainees must achieve 80% on a competency exam that tests each module. New trainees are apprenticed to a more experienced facilitator for around ten sessions or until confident and deemed competent by the experienced staff member to facilitate groups on their own.

Currently ten programmes are running in seven mental health services in South East Queensland. The yield of facilitators from training is low with only 12 therapists currently practising despite 38 staff trained (Table 1).

Programme evaluation

Methods to assess programme outcomes will depend on staff resources and organisational requirements\(^4\). There was no funding for the evaluation of this programme in any of the services, therefore measures were chosen by the BCRIG after a review of the literature based on efficacy of tools, time and cost restraints, and minimal staff training requirements. Consequently the evaluation tools initially recommended were the Brief Cognitive Assessment\(^{11}\) and the Life Skills Profile\(^{12}\). Ethics approval was obtained from PAH & RBWH Human Research Ethics Committee to evaluate and report on their initial programmes.

42 participants were initially recruited and informed written consent was obtained. All participants were community living adults between 21 and 62 years of age who were already clients of the participating mental health services. The main diagnosis of the participants was schizophrenia. The average number of sessions attended was 8.5, well below the recommended 20 sessions\(^{13}\). No data was collected on reasons for drop out. This limited the
evaluation and quality improvement process as facilitators did not know if participants dropped out because they did not like the programme or because they had achieved their goals.

The Brief Cognitive Assessment (BCA) was developed as a brief cognitive screen for use in community clinics and takes about 15-25 minutes to complete. The BCA comprises three tests, the Benton controlled oral word association test (COWA), Hopkins verbal learning test (HVLT) and the Trail making test (TMT) A and B.

The Life Skills Profile (LSP-16) was chosen as the pre and post functional measure as it is part of the mandatory suite of clinical outcome measures used in Queensland Health mental health services. The aim was to cut down on duplication of assessment and support the integration of the therapy into routine practice. In practice, case managers failed to complete this measure. Instead, facilitators collected functional outcomes via informal qualitative feedback at the end of each programme.

Adequate data was available on 20 of the 42 participants with an improvement trend noted in the TMTB (Table 2). The lack of change in other neurocognitive tests may reflect the limitations of such a brief cognitive screen in detecting change or be related to other factors such as inadequate dose of therapy (average number of sessions attended 8.5).

One site collected qualitative evaluation of self-reported functional change since commencement of CRT. This was collected through an ‘exit’ interview at completion of the program. This feedback was categorised into four main themes and included work, study,
social skills and living skills. Examples of positive functional outcomes included one participant commencing work within a month of completing CRT, and another participant reporting improved confidence with conversation resulting in reconnecting with friends not seen for over a year. This same participant also reported feeling more confident catching public transport to unfamiliar locations.

The disappointing completion of quantitative measures and the perception by facilitators that the measures chosen were inadequate to detect observed changes resulted in a revised evaluation protocol (Table 3). This protocol was established after a literature review, consultation with facilitators in BCRIG and informal feedback from participants. Cognitive outcomes are now gathered using the Brief Assessment of Cognition in Schizophrenia BACS, a 30 minute cognitive screen\textsuperscript{17} and the Schizophrenia Cognition Rating Scale (SCoRs)\textsuperscript{18}. The SCoRs is an interview based assessment of cognition and function completed by the participant, carer and facilitator\textsuperscript{18}. The Goal Attainment Scale (GAS) lists the participant’s therapy goals\textsuperscript{19} and the Mental Health Recovery Measure (MHRM) is a self-report recovery measure\textsuperscript{20}. All measures are now collected by the programme facilitators thus reducing reliance on busy clinicians who may not be invested in the evaluation process.

\textit{Operational support}

\textit{Infrastructure}

The favoured delivery mode for CRT using the NEAR model is via computers, either purchased programmes or online access. Services that supported the full implementation of CRT allocated either one single room or scheduled access to a multipurpose space where computers could be permanently set up. Computers were donated from information
technology services and private companies, computer literate staff and consumers were enlisted to provide on-going computer maintenance. The purchase of software was the responsibility of individual sites. This was mostly achieved through staff donations, though some services allocated funding for software. Detailed practical guidance on establishing NEAR programmes has been articulated in a therapists’ guide\(^\text{10}\).

**Ongoing staff time**

The ongoing commitment of a therapist’s time to facilitate CRT, participate in supervision, evaluate individual and group programme outcomes and maintain physical resources requires support from organisational managers. Most sites decided to run one group at a time involving two, one hour sessions per week with up to six participants per group. Sites reported a staff:participant ratio of 1:3 as adequate to successfully facilitate a group. This meant sites with six participants required two facilitators. At least 30 minutes was required before each group meeting to allow for preparation and planning, especially if equipment required attention. Time requirements after each group varied depending on the level of documentation required and the amount of feedback needed to be given to the treating team of each participant.

*Perceived barriers to CRT implementation and maintenance.*

Seventeen staff trained in 2008 and members of BCRIG were surveyed in 2009 to ascertain their subjective opinions around barriers to implementation of CRT. Results from this survey were tabulated and rank ordered 1-5 with 1 being most commonly reported barrier and 5 least commonly reported (Table 4).
Results from this survey indicated that some of the services had funded the initial training but did not have an implementation plan. In particular, many therapists who trained were employed as case managers and they reported a lack of recognition or commitment to the time required to run CRT. There was also a lack of funds needed to source and maintain the infrastructure required to run a CRT programme and therefore programmes were not established.

Discussion
In the discovery-delivery continuum of therapeutic interventions, the challenge for CRT is how to implement this evidence based therapy into the routine service delivery of people diagnosed with psychosis. This paper describes the implementation of CRT programmes within two large metropolitan public mental health services in Queensland. The high attrition rate of trained staff resulted in the development of a local CRT training programme and strategy in 2009. The group peer supervision approach enabled by the establishment of BCRIG has become an integral component of assuring quality of service delivery and clinical support for facilitators.

The barriers identified by staff in 2009 remain challenges to the maintenance of the programmes. In particular, this experience has highlighted the need for this type of therapy to be recognized within the service organisational structure to validate reasonable maintenance expenses and the quarantining of staff therapy time.

Evaluation of programmes in MHS where there is no research budget, needs to focus on outcomes relevant to the participants and their recovery efforts, and outcomes valued by the facilitators and service management.
Conclusion

Implementation of CRT requires a modest resource commitment from services and time commitment from therapists. Directors of services need to complement staff training with a programme implementation strategy to ensure the translation of staff training into enhanced service provision.

Recommendations

Future iterations of treatment guidelines for psychosis should recommend CRT as part of the comprehensive care of people experiencing psychosis. State mental health services need to develop an implementation plan for CRT that addresses the training, therapy time and supervision requirements to run quality programmes as well as funding and infrastructure support. Programme evaluation needs to focus on recruitment and retention of participants if the community functional gains and progress in the persons’ recovery journey are to be realised.

Acknowledgements

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References


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<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
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<tbody>
<tr>
<td>Staff trained (staff practising)</td>
<td>24</td>
<td>10</td>
<td>4 (4)</td>
<td>20 (4)</td>
<td>4 (4)</td>
</tr>
<tr>
<td>MHS</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Programmes</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
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<tr>
<td>New programmes</td>
<td>8 (as above)</td>
<td>0</td>
<td>2</td>
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Table 2: Neurocognitive outcomes of 20 participants in pilot evaluation

<table>
<thead>
<tr>
<th>Test</th>
<th>Pre intervention</th>
<th>Post intervention</th>
<th>Normative data±</th>
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<tbody>
<tr>
<td>Trail Making Test A</td>
<td>30.5, [15.25]</td>
<td>28.5, [12.5]</td>
<td>≥26secs is below 50th percentile</td>
</tr>
<tr>
<td>(time sec) Median, [IQR]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trail Making Test B</td>
<td>78.5, [87.5]</td>
<td>56, [23]</td>
<td>≥58secs is below 50th percentile</td>
</tr>
<tr>
<td>(time sec)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COWA (number words)*</td>
<td>34, [19.5]</td>
<td>39, [21]</td>
<td>≤ 34 is below average</td>
</tr>
<tr>
<td>HVLT (number of words)*</td>
<td>21, [7.5]</td>
<td>22.5, [10]</td>
<td>≤29 is below average</td>
</tr>
</tbody>
</table>

*Higher score indicates better result
±Reported for mean age of patients (39yrs)
Table 3. Revised Evaluation protocol 2010

<table>
<thead>
<tr>
<th>Method</th>
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<tbody>
<tr>
<td>Brief Cognitive Assessment of Cognition Scale (BACS) [17]</td>
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<tr>
<td>Schizophrenia cognition rating scale (SCoRS) [18]</td>
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<tr>
<td>Goal Attainment Scale (GAS) [19]</td>
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<tr>
<td>Mental health recovery measure (MHRM) [20]</td>
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<td>Quarterly utilization report</td>
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Table 4. Staff perceived barriers to implementing CRT 2009

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>Lack of quarantined time</td>
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<td>2.</td>
<td>No critical mass of trained facilitators</td>
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<tr>
<td>3.</td>
<td>Inadequate resources</td>
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<tr>
<td></td>
<td>• Therapy rooms</td>
</tr>
<tr>
<td></td>
<td>• Equipment</td>
</tr>
<tr>
<td></td>
<td>• Programmes</td>
</tr>
<tr>
<td></td>
<td>• Maintenance of programme library</td>
</tr>
<tr>
<td>4.</td>
<td>No funding</td>
</tr>
<tr>
<td>5.</td>
<td>Inadequate organisational support</td>
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