Purpose

This review is intended to update the original evidence-based review produced in 2003 to inform the ACC Serious Injury Unit whether the evidence supporting the previous “do not purchase” recommendation for Conductive Education (CE) is still relevant in 2016 on the basis of the most up to date academic peer-reviewed literature and relevant grey literature.

In the previous ACC evidence-based review, academic literature was reviewed up to August 2003. The conclusions from this previous review showed that the evidence from the academic peer-reviewed literature did not show that CE was more effective than other conventional approaches. From these results it was recommended in 2003 that ACC do not purchase CE services.

This evidence update critically appraises academic literature from September 2003 to July 2016 on the efficacy of Conductive Education in children with cerebral palsy.

Background

Conductive education was designed by Dr Andras Peto in Hungary and was originally developed as an education programme for children with motor disorders who were excluded from mainstream education in Hungary at the time. The premise of CE is to maximise the functional potential through teaching the child how to successfully adapt to their environment.

The CE programme is typically run and planned by a ‘Conductor’ who also determines whether the individual is fit for the program or not. Conductors undergo a four year training programme described as a ‘trans-disciplinary’ approach to education which includes a range of techniques: teaching, nursing, physiotherapy and occupational therapy in order to work with the child holistically. Conductors are responsible for organising and co-ordinating other professionals’ (e.g. speech language therapists, specialist teachers and teacher aides) involvement with the individual. The CE programme is customised towards each individual’s needs and can be delivered at home, in a specialised centre or within the child’s school.

There are both benefits and concerns around CE programmes. Benefits include improvements in: motor skills, independence, and cognitive, social and communicative skills. Concerns reported around CE have been around the nature of the physical exercises and that these may cause harm.

In New Zealand CE is supported by a national body, which was established in 1993. There are a number of centres located across the country in Auckland, Hamilton, Wellington, Christchurch and Invercargill with over 20 conductors who provide programmes for babies, primary and high school aged children and adults. Participation in programs ranges from 1 - 2 hours a week to 5 – 6 hours a day, five days a week.
The articles related to conductive therapy were a mixture of reviews of systematic reviews (SRs), SRs, literature reviews, evaluative reports and primary studies. There was crossover in the primary studies reviewed to form the SRs; and a proportion of these primary studies are already included in the original 2003 report produced by the ACC Evidence-based healthcare group. Due to the paucity of studies and variability across available academic articles, two recent grey literature articles used by the NZ Ministry of Health in their assessment of CE are also included.

**Peer-reviewed articles**

One systematic review (Franki et al, 2012) and four primary studies were included in this analysis. Two grey literature sources were also included due to the limited literature found. The systematic review included 10 studies of low quality based on study design (case series, cohort studies with no control), 4 of these studies were already included within the 2003 review. The four other primary studies (Blank et al, 2008; Effegen et al, 2010; Dalvand et al, 2009; and Liberty et al, 2004) were also graded as low quality.

Due to the topic and populations that were measured across the studies there was variability in:
- Age and level of disability in children with Cerebral Palsy (CP)
- Differences in study designs and in how the CE programmes were implemented
- Differences in how outcomes were measured and how they were reported.

This made it difficult to clearly determine the effect CE programmes have and also whether any positive outcomes from these studies are generalisable to a general population of children with CP. Only study (Dalvand et al, 2009) compared the effect of a CE programme against other forms of therapy (e.g. Bobath technique), however no comment was made as to whether the intensity of the two programmes was standardised and how this could have contributed to CE being more effective than the other forms of therapy measured.

The main findings are grouped under: activities of daily living (ADLs) and changes to motor function.

**ADLs:** Only one of the studies reported about specific skills within the functional outcome scores (Dalvand et al, 2009), the other two reported global scores (Blank et al, 2008; Liberty et al, 2004) making it difficult to determine the impact of CE and to determine if there were consistent effects of CE on specific ADLs between the different studies as the ADL scoring systems were all different.

**Changes to motor function:** The definitions of gross motor function varied, and some of the functions described overlapped with ADLs. Outcomes appeared to be better in tasks that were practised (Effgen et al, 2010) and better in children who had higher gross motor function (GMFC) scores (Level III or up).
Grey literature

Two pieces of grey literature regarding CE were summarised, including an evaluation conducted in Australia from 2007 to 2009 on CE as an early intervention (children aged 0 – 4) (Miles Morgan, 2010); and a report that assessed delivery of CE services in New Zealand (Widdowson, 2016).

Outcomes showed that CE is associated with improvements in individual student plans, and that parental feedback from thematic analysis of parent interviews and forums was largely positive and any negativity was associated with the operational side of the service rather than the treatment itself. Both the evaluation and the stocktake report suggest that an integrative approach for parental involvement is beneficial as reported by the parents themselves. It should be noted that the included analyses are performed on small sample sizes for the analytical components of their reports also that both of these reports have not undergone the robust peer-review process that the academic peer-reviewed articles have.

Cost

Where possible and reported in the published research literature any economic analysis of the new treatment is considered. Where possible the following will be considered; total costs of the new intervention and number of claimants likely to be affected are considered, along with comparison with the cost of current treatments or interventions, actuarial assessment of the impact of the intervention on scheme liability (including direct and indirect impact e.g. other services and access), expected “accrued benefit” in terms of quality of life, longer life or speedier return to the workforce, implications of cost to the wider health sector.

Between $3,500 and $8,000 per child per year depending on the centre and on how many sessions a week the child attends.

Equity

The extent to which the intervention reduces disparities in health status; in particular equity of access and health outcome. The extent to which the intervention supports the objectives of the Maori access strategy and will encourage access to assessment, treatment and rehabilitation services for those groups where there is evidence of that access is problematic.

No equity issues were identified.

Consistency with the intent of the Accident Compensation Act 2001

Purchasing decisions made by ACC must be consistent with and reflect consideration of factors described in the ACC Act, Schedule 1, clause 2(1 and 2) and these decisions must be defensible against this statutory requirement in respect of individual claimants.

No issues were identified.

Possible purchasing options

The options are:
1. Purchase,
2. Don’t purchase, or
3. Purchase on a case by case basis on the decision of the Manager Corporate Clinical Advice (or equivalent).
Evidence statements

Summarise the advisory group’s synthesis of evidence relating to this service, product or procedure, taking the above factors into account, and indicate the evidence level that applies.

The SR provided a high quality analysis of 10 high to low quality primary studies (based on study design and small numbers of participants). The main finding from the SR was that the number of studies, quality of these studies and the variable nature of how CE is measured and used makes it difficult to draw any conclusive understanding of the efficacy of CE. Evidence from the two included RCTs showed there was little evidence to support effectiveness of CE due to the variable nature of the topic, with information on effectiveness mainly being drawn from study designs deemed of lower quality – case studies; before and after studies; and case control studies.

Similar findings were seen in the four primary studies. As all the studies were either of case series (n = 2) or before / after intervention (n = 2) design, their quality was deemed to be low. This was due to the low numbers of participants in two of the studies, and differences in the level of CP and motor skill between different participants. How outcomes were measured across the studies differed due to the different focus each of the primary studies had. Two studies used comparison groups; however the comparability is questionable as CE is delivered at a much higher intensity than the comparison therapies and the type of therapies delivered by CE compared to techniques like Bobath are different.

Although the grey literature shows results that support the use of CE programmes, it should be noted that these are from studies with small sample sizes and methodologies that are susceptible to bias. Also these results have less weight than evidence presented by the academic literature as they have not gone through a robust peer-review process.

Purchasing recommendations

What recommendation(s) does the advisory group draw from this evidence?

Analysis of the academic peer-reviewed literature does not clearly present a case for or against purchasing CE programmes. There is some low quality evidence that CE may be more beneficial than other therapy techniques, however it should be noted that CE programmes are not standardised between centres in how the programme is delivered, the intensity of the programme delivered, or the staff providing the treatment. Although CE includes components of best practice paediatric rehabilitation interventions, the evidence from the peer-reviewed literature for it is poor.

For a recommendation derived from the peer-reviewed literature for CE to change, a high quality analysis of a standardised CE programme using well-designed cohort studies or RCTs are needed. These would demonstrate if these programmes do lead to improvement in children with CP over other conventional programmes.

In this most recent up to date analysis of the literature there is no high quality evidence found that justifies a change to the current ACC position on funding CE programmes.

Taking these factors into account the recommendation cannot be changed based on the evidence alone.
PGAG discussions

During the meeting it was suggested that a final purchasing recommendation needed to take into account other considerations. It was also suggested that it is unlikely - for this specific research question in this cohort of children with CP - that the quality and consistency of evidence in the peer-reviewed academic literature is likely to change in the near future. PGAG therefore questioned whether it is fair to base the recommendation mostly on academic evidence.

It was considered by the PGAG that while evidence for the programme itself is low quality, the services provided within the program align with the principles of best practice paediatric rehabilitation for children with needs like those with CP.

The PGAG asked for more information in three key areas before a final quorum could be made regarding the final recommendation for this topic. The information is summarised in the table below:

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<tr>
<th>Question</th>
<th>Information</th>
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<td>How does the Ministry of Health (MoH) justify funding for this service?</td>
<td>- The NZ MoH offers CE as part of Disability Support Services - Child Development Services when a child needs therapies to facilitate and enhance development of neurological and motor skills and function, swallowing and feeding skills, respiratory skills and function and speech, language and communication.</td>
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<td>- All DHB’s also offer Child Development Services, so for the areas where CE is provided, parents can choose between the DHB model or the CE model.</td>
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<td>- ACC children are actively excluded from accessing Child Development Services.</td>
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<td>- The CE provider is often a registered early education centre or kindergarten. Many parents choose CE because they view it as more intensive and the joint early childhood centre approach means the child is accessing therapies in the preschool setting.</td>
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<td>- CE is not perceived as any better or worse than other programmes.</td>
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<td>- The CE provider has a Child Development Service contract with Ministry of Health and is bulk funded by the Ministry based on the role of the provider.</td>
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<td>- If the child gains an accepted ACC Treatment Injury claim, they transition to becoming an ACC client. They may have already chosen to access the CE programme. However, as CE is currently declined by ACC, ACC often meets resistance and anger from parents when transitioning to contracted therapies to meet the child’s needs (Child and Youth Training for Independence Programme). Parents do not want to give up the CE programme.</td>
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<td>What is the Ministry of Education’s policy / position on Conductive Education?</td>
<td>- The Ministry of Education (MoE) includes CE as part of a network of Early intervention and school aged special education services in NZ.</td>
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<td>- The CE programme itself has changed from a purist approach, as it was initially introduced by Peto in Hungary, to a more integrative model that enables it to be made part of an adaptive programme.</td>
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<td>- CE is considered to cause no harm, and is no better or worse than other programmes.</td>
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programmes for children with physical disabilities.

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<th>What are the alternatives if a child with CP does not receive funding for this programme?</th>
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<td>- The alternative to CE that is offered by ACC is a Child and Youth Training for Independence Programme that consists of occupational therapy, speech language therapy and physiotherapy within a home, preschool/school or community setting. Other health professionals can be accessed on this programme depending on the child’s needs including nursing, dietician, psychology, social work. Some families will transition to this programme, but many would prefer to stay with the CE programme if they are already accessing it.</td>
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Recommendation

Taking into consideration the following points:

- The current recommendation cannot be changed based on the evidence alone, as it is unlikely, for this specific research question, that the quality and consistency of evidence is likely to change in the near future

- Both the MoE and the MoH include CE programmes, as part of Disability Support Services – Child Development Services (MoH), or as part of a network of early intervention and school aged special education services which aligns to the NZ national curriculum “Te Whaariki” (MoE)

- Both the MoH and the MoE consider CE as no better or worse than other programmes

- CE includes components of best practice paediatric rehabilitation interventions provided by NZ registered professionals

After consideration by the PGAG and endorsement by the Clinical Governance Committee* the recommendation for Conductive Education Programmes in children with Cerebral Palsy is to:

**Purchase on a case by case basis**

Considerations for case-by-case may include:

- *Was the child receiving conductive education services prior to becoming an ACC client?*
- *Availability of conductive education services in the child’s area*
- *Does the proposed provider have a Child Development Services contract with the MOH?*
- *Is the proposed provider a registered early education centre or kindergarten?*

*This was determined as a pragmatic for a low risk area and endorsed by the CGC on the 26 October 2016*