NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Paper: TREATMENT (CAP-T)

CLINICAL BOTTOM LINE:
In 10 individuals with Parkinson's disease and identified penetration/aspiration with thin fluids, a four week program of EMST increased cough volume acceleration, and decreased severity of penetration/aspiration. EMST is a viable treatment option for patients with midstage PD at risk of aspiration however further research is required.

Clinical [PICO] Question *[Patient/problem, Intervention, (Comparison), Outcome]:*
In patients with dysphagia does EMST improve airway protection during swallowing?

Citation: Pitts, T., Bolser, D., Rosenbek, J., Troche, M., Okun, M., Sapienza, C. (2009) Impact of expiratory muscle strength on voluntary cough and swallow function in Parkinson's disease. *Chest*, Vol 135 (5): 1301-1308

Method: Design and Procedure *(e.g., note type of research design, comment on randomization, summarize treatment intensity as appropriate, such as dose (trials) per session, session length, frequency, total treatment duration, summarize general procedure, resources / materials required)*

- Pre-test/post-test case series
- One baseline session, 4 week EMST program, follow up session 1 week post EMST program
- Used device 5 days a week, completing 5 sequential sets of 5 breaths per day (total 25 breaths/day)
- Measured parameters from airflow waveform produced during voluntary cough (following 3 trials):
    - Inspiration phase duration (IPD)
    - Compression phase duration (CPD)
    - Expiratory rise time (EPRT)
    - Expiratory phase peak flow (EPPF)
    - Cough VA (volume acceleration)
- Swallow outcome measured by degree of penetration/aspiration on videofluroscopy, on 30mL thin fluid bolus. Measured by blinded assessor using Rosenbek scale
- Expiratory muscle strength measured by PEmax. EMST set at 75% PEmax

Method: Participants *(where relevant note number of participants, inclusion/exclusionary criteria, characteristics of participants in experimental group and control group/s):*

- 10 participants
- Male, aged 60 -82
- Diagnosed with Parkinson's disease - mid stage (by neurologist specialised in movement disorders)
- MMSE above 24, participants were able to follow 2-3 step commands
- Evidence of penetration/aspiration on thin fluids during videofluroscopy
- No Hx of stroke, pulmonary disease, tobacco use in past 5 years, dementia.
- All on typical Parkinson's medications, not taking potential cough stimulating medications e.g. codeine
- Videofluroscopy and voluntary cough productions sampled during medication 'on' phase
- No control group

Critically Appraised Paper: TREATMENT (CAP-T) *continued....*

Results: *(Briefly summarize the results – you could note whether the outcome was evaluated with/without blinding; note how many (if any) of the participants 'dropped out' of the study; note if **effect size** was reported, and what it was – see manual for more information about effect sizes.)*

- Significant decrease in penetration/aspiration scores – 8/10 reduced scores
- Significant increase in PEmax from 108.2 +/-23.3 to 135.9 +/-37.5
- Non-significant reduction in IPD
- Significant reduction in CPD and EPRT
- Significant increase in cough VA
- Nil significant training effect for IPPF or EPPF
- No blinding during evaluation

Level of Evidence (NHMRC, 2009) *Circle one* **I** **II** **III-1** **III-2** **III-3** **IV**

Quality of Evidence: ❒Rated ☑ Not Rated

(i) rating system (e.g., PEDRo, SCED Scale from SpeechBITE) _____

(ii) **score** _____ *If the paper has not been rated, just check 'not rated'.*

Nature of Evidence: ❒ feasibility ❒efficacy study ☑effectiveness study

Additional comments about level, quality and/or nature of the evidence: *(e.g., limitations of the study, need for further research addressing a specific issue; assessors weren't blind, insufficient baseline or baseline not stable, effect size not reported)*

- Need for longer/larger research study to evaluate carryover and retaining of skills post treatment phase e.g. at 6 months post follow up
- Does not meet minimum time threshold to elicit practice effect, as demonstrated by Ramig et al (1995)
- Further studies to evaluate more diverse group with both genders and various disease stages.

Relevance to practice *(e.g., In this section just note down the clinical groups thoughts about the relevant of the research findings fro clinical practice. Consider some of the following questions - were the participants and/or treatment context similar/different to everyday clinical practice? Is replication possible in clinical practice? What barriers might prevent the results from be applied to everyday clinical practice? What could be done to address barriers? If barriers can't be modified, how could the procedure be modified to accommodation limitations in clinical practice?)*

- Could be replicated in outpatient setting
- Need for EMST equipment and equipment for outcome measures e.g. pressure manometer, oral pneumotachograph- ?potential for government/organisation funding

Appraised By: Adult swallowing EBP group

Date: 01/05/2015