



NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Trends indicating that multi-disciplinary tracheostomy team approach in spinal cord injury has direct clinical benefits including cannulation time, length of stay and use/time to use of speaking valve.

Clinical Question [patient/problem, intervention, (comparison), outcome]:

'In patients with tracheostomies, does management by an identified multidisciplinary team improve patient outcomes?'

Citation: Cameron TS, McKinstry A, Burt SK, Howard ME, Bellomo R, Brown DJ, Ross JM, Sweeney JM, O'Donoghue FJ (2009) Outcomes of patients with spinal cord injury before and after an introduction of an interdisciplinary tracheostomy team. *Critical Care and Resuscitation* 11 (1) 14-19

Design/Method:

- Matched pairs design with two cohorts of SCI patients, before and after intervention (ie: Introduction of TRAMS - Tracheostomy and Review and Management Service).
- In 2002 at the Austin Hospital in Melbourne, TRAMS (was introduced as a consultative team of specialist physicians, clinical nurse consultants, physiotherapists and speech pathologists. The team coordinated tracheostomy care, conducted twice weekly rounds, and provided policy, education and support.
- Patients treated after the introduction of TRAMS were individually matched to pts before its introduction. This was first by the level of SCI (assessed by the VSCS), then injury severity (defined by ASIA score & VSCS), and then age. Pts were matched within one level for spinal for spinal cord injury and one grade for ASIA score. Age was matched within 10 years.

Participants: Spinal Cord Injury (SCI) Patients from the Austin Hospital in Melbourne, who had a tracheostomy tube (TT) removed including 34 patients in the post TRAMS period (Sept 2003- Sept 2006) who were matched to 34 patients from the pre TRAMS period (Sept 1999-Dec 2001)
Exclusion criteria: SCI patients with no neurological deficit, those who required permanent tracheostomy, and those who died of non TT related causes.

Experimental Group: 34 SCI patients in the post TRAMS period from Sept 2003-Sept 2006

Control Group: 34 SCI patients in the pre TRAMS period from Sept 1999-Dec2001

Results: Median patient LOS decreased from 60 days to 41.5 days ($p=0.03$)

- The pre TRAMS median DOC (duration of cannulation) decreased from 22.5 days to 16.5 days ($P=0.08$)
- One way speaking valve use increased from 35% to 82% ($P<0.01$)
- Median time to a one way speaking valve trial decreased from 22 days to 6 days after TT insertion ($P<0.01$)
- There were 2 tracheostomy related emergency calls pre TRAMS and none post TRAMS.
- The annual cost savings from implementing TRAMS was approx 8 x greater than the cost of service provision.

Comments – Strengths/weaknesses of paper

Strengths:

- Good that they outlined all their statistical analyses
- Reported to adhere to a structured decannulation and documentation process.
- Cohorts conducted at the same centre, under the same primary SCI team.
- Participants matched in the two groups by major confounding variables including level of SCI, injury severity, and age.

Weaknesses:

- Pre TRAMS data (control group) was collated retrospectively by file audit: issues related to this re accuracy of documentation.
- No blinding of patient/clinician, or randomisation of groups. Although groups matched, what about pre morbid or other medical issues that can impact on DOC, LOS, costs, etc.
- What other variables could influence the data and outcomes, as not concurrent? Change & knowledge/experience of staff, availability of speaking valves, types of traches used, etc. What occurred in the 20 month interval between the control & experimental groups?
- Not outlined whether there were any ineffective decannulations (ie: recannulations) or any other comparison of complications/outcomes post decannulation.
- Were some of these patients treatment in ICU? Did the TRAMS team make all the decisions or was it also the Intensivist/ICU team?

Level of Evidence (NH&MRC): III (3)

Appraised By: Tracheostomy & Critical Care Discussion & EBP Group

MAY 2002

Date: November 2009

Guidelines for completion of the CAP

Clinical Bottom Line

The consensus of the reviewers on implications of the paper on clinical practice. Whilst this may be somewhat subjective, it is hoped that robust discussion, the Level of Evidence and your comments on the design will enable you to produce a practical/realistic 'bottom line'. Many of the papers in Speech Pathology may have limitations, but the Clinical Bottom line should be aimed to help clinicians apply what evidence there is.

Clinical Question

This should ideally include four components:

- the patient or problem
- the intervention (or diagnostic test or prognostic factor)
- the comparison intervention or test (*optional*)
- the outcome

Design

Refer to pages 12 to 15 of the EBPIG Resource Package for guidance in reviewing the design used.

Comments on Design

Pages 12 to 15 of the Resource Manual should again assist here. You may also find it useful to refer to the forms 'Evaluating case studies/case series' and 'Critical appraisal sheet' adapted from Dr Lil Mikuletic's (see 'Critiquing/Appraising the Evidence').

Level of Evidence

It is recommended that the paper you are reviewing be rated against the NH&MRC Levels of Evidence, as reproduced here. The levels may be updated from time to time by the NH&MRC, but use of the ratings listed here will ensure consistency across CATs and groups. These levels are listed with comments on pages 15 and 16 of the Resource Package.

LEVEL

- I. Evidence obtained from a systematic review of all relevant controlled trials
- II. Evidence obtained from at least one properly designed randomised controlled trial
- III.
 - 1 Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
 - 2 Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group
 - 3 Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group
- IV. Evidence obtained from case series, either post-test or pre-test and post-test