# NSW Speech Pathology Evidence Based Practice Network

## Critically Appraised Paper (CAP): External Published DIAGNOSTIC Evidence

**CLINICAL BOTTOM LINE:**
**It is already well established that there is a high prevalence of dysphagia in patients with neurological impairments. Based on multiple design flaws and the number of uncontrolled variables it is difficult to establish the incidence of dysphagia post extubation.**

**Clinical Question** [patient/problem, outcome, assessment tool /diagnostic marker, and comparison]:

What is the incidence and what are the predictors of oropharyngeal dysphagia post extubation?

**Citation:** Post extubation dysphagia is associated with longer hospitalisation in survivors of critical illness with neurologic impairment. Machtm M et al. Critical Care (17); R119 (2013)

**Method:** [including description of assessment tool(s) / assessment procedure / assessment measures]:

- A retrospective, observational cohort study of patients with neurologic impairment who required mechanical ventilation and subsequently received a bedside swallow evaluation (BSE) by a speech pathologist.
- The aim of the study was to identify the prevalence and severity of post extubation dysphagia in this client group and the implications this has on hospital length of stay.

- Neurological disorders were grouped into seven categories: Acute haemorrhagic CVA, Acute Thrombotic CVA, CVA without further classification, Peripheral neuropathy, Movement disorders, MS and other. When multiple neurological disorders were present for a single patient the most dominant or limiting condition was used for the classification
- Primary variables of interest included: Duration of mechanical ventilation, need for re-intubation, endotracheal tube size, severity of illness, underlying neurological disorder. Secondary variables included: re-intubation requirement, development of hospital acquired pneumonia, hospital length of stay, surgical feeding tube placement, in-hospital mortality and the composite of hospital acquired pneumonia, reintubation or death.
- Patients underwent a BSE with speech pathologist who classified the severity of their dysphagia based on ASHA's national outcome measurement system swallowing functional measure which incorporates perceived aspiration risk and subsequent dietary recommendations..

**Participants:**

Inclusion Criteria:

- 18 years or older
- Neurological impairment (new or pre-existing)
- ICU admission and mechanical ventilation for any duration

Exclusion criteria:

- Died prior to extubation
- Did not receive a BSE by a speech pathologist or received the first BSE prior to intubation

**Results:** [including authors comment's on reliability/validity of assessment tool or diagnostic marker(s)
Total of 184 patients in the final analysis

- Mean age 55 +_ 15 years and 51% were male
- A total of 39% (72/184) of patients had a non CVA related diagnosis. Of these 26% (19/72) had peripheral neuropathy, 24% (17/72) a movement disorder, 10% (7/72) had MS and 40% (29/72) primary neurological disease.
- Of the 61% (112/184) of patients with cerebrovascular disease 57% (64/112) had an acute haemorrhagic CVA and 33% (37/112) has an acute thrombotic CVA.

Dysphagia was present in 93% (171/184) of patients. Classified as mild (34%), moderate (26%), Severe (33%). Median time of extubation to initial BSE was 1 day.

Patients with moderate – severe dysphagia were more likely to have a longer duration of mechanical ventilation. The presence of primary cerebrovascular disease was not significantly associated with the development of moderate/severe dysphagia when compared with patients with other neuromuscular disorders.

Dysphagia persisted at the time of discharge from the hospital for 82 of 171 patients (48%) with any degree of dysphagia. Of the patients with moderate/severe dysphagia 66% (72/109) were more likely than patients with mild dysphagia 16% (10/62) to have persistent disease at the time of discharge.

The presence of moderate/severe dysphagia was significantly associated with the number of hospital days after initial BSE.

## Strength of the evidence

(1) Level of evidence (NHMRC, 2009): I II III-1 III-2 III-3 IV

(2) Quality of Evidence (based on Dollaghan, 2007): Appraisal points

## Comments – Strengths/weaknesses of study

- Participants similar/different to clinical practice? Yes, patients with similar neurological diagnoses found in most ICU caseloads.
- Reliability / Validity of assessment tool(s)?
  - 66% of patients who survived to be extubated did not undergo a BSE
  - Poor validity for BSE (dysphagia identification and aspiration risk) and only 16% of patients had a MBS
  - Nil assessment of pre-admission functional state or pre-existing dysphagia – unclear if patients have dysphagia 2' intubation vs. pre-exiting neurological condition
- Blinding of assessors? No
- Replication possible in clinical practice? Yes

Comments

- Data collection limited by inconsistently charted variables - GCS Score, Level of sedation at time of BSE, height data to correlate both body mass index and height / endotracheal tube diameter, rationale for mechanical ventilation,
- Difficult to establish causal relationship between 2' variables measured and dysphagia e.g. need for re-intubation, hospital LOS, in hospital mortality.
- Too many uncontrolled variables to establish the true relationship between intubation and dysphagia and associated outcomes e.g. LOS, enteral feeding, re-intubation etc…
- Highlights the benefits of instrumental assessment to make objective diagnosis of dysphagia and determine the presence of aspiration.
- Reinforced awareness of higher prevalence of dysphagia in patients with neurological impairment irrespective of use of mechanical ventilation.

**Appraised By:**
**NSW Health Tracheostomy and Critical Care EBP Group**

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