NSW Speech Pathology Evidence Based Practice Network

Critically Appraised Topic (CAT)

CLINICAL BOTTOM LINE:

The incidence and predictors of post-extubation dysphagia are difficult to clearly determine from the available evidence, due to broad patient populations and heterogeneous study designs. However a number of themes were noted in the literature reviewed.

In a descriptive systematic review for the period 1949-May 2009 (Skoretz 2010) reported the incidence of dysphagia post-extubation as varying from 3-63%. However, the articles included in this review were all rated as low level evidence with heterogeneous patient groups. No consistent themes could be identified in terms of patient factors that predicted the presence of dysphagia.

Higher quality evidence has been published since the systematic review was completed. In a search of the literature (May 2009- May 2015) 4 studies of level 3.3 evidence (as per NHRMC) were found, critiqued and included (Skoretz 2014, Bordon 2011, Macht 2011, Macht 2013). Skoretz (2014, n=909) reported an incidence of 67.5% in a cardiac population, Bordon (2011, n=150) reported 41% in a trauma population. Macht (2011, n=630), reported an incidence of 84% in a general ICU population and Macht (2013, n=184) 93% in a neurologically impaired population. The studies included suggest that predictors of dysphagia are; a longer duration of intubation (Skoretz 2014, Bordon 2011, Macht 2011, and Macht 2013) and increasing age (Skoretz 2014, Bordon 2011).

2. Clinical [PICO] Question *[patient/problem, intervention, (comparison), outcome]:*

What is the incidence and what are the predictors of oropharyngeal dysphagia in extubated patients?

3. Search Terms/Systems:

Systematic review covered 1945 – May 2009.

2 additional searches June 2009- May 2015.

1st search: MEDLINE, CINAHL, Cochrane/EBM reviews, MBase, Health Business elite. DYSPHAGIA, OROPHARYNGEAL DYSPHAGIA, INTUBATION, EXTUBATION, ASPIRATION, SWALLOWING. 2009 – May 2015.

2nd Search: MEDLINE & CINAHL. DEGLUTITION DISORDERS, AIRWAY EXTUBATION / OR INTUBATION, INTRATRACHEAL. 2010 – current. English Language.

Criteria for including an article:

Patients intubated within an acute care hospital, adult population, all clinical specialties, discusses the clinical question – incidence and/or predictive factors.

4. Quantity of the evidence based:

Number of papers identified in search: 20

Number of papers identified for capping: 11

Number of suitable papers actually capped: 7 including a systematic review (Bordon, 2011, Skoretz 2014, Skoretz, 2011, Macht, 2011, Macht, 2013, Moraes, 2013, Kwok, 2013)

Of this 7, 2 were regarded to have significant methodological limitations and were excluded (Kwok, 2013, Moraes, 2013)

5. Overall level of the evidence base: **(number of studies according to each NHMRC level)**

4 articles are rated Level III-3

The systematic review, is rated as level 1, but was descriptive rather than a meta-analysis. The authors also mentioned that all articles in the systematic review are rated as 'very low' quality evidence as per PRISMA.

6. Nature the evidence base: **(number of feasibility, efficacy and effectiveness studies) n/a**

7. Overall findings from the evidence-base are:

❒ compelling ✓suggestive ❒ equivocal

While the findings from the initial systematic review conducted in 2009 appeared equivocal, later evidence is suggestive of themes in relation to incidence and predictors of post-extubation dysphagia. Incidence of post-extubation dysphagia was reported in all four studies ranging from 41% - 93% , while prolonged intubation (Skoretz et al, 2014 and Macht et al, 2011) and increasing age (Skoretz 2014, Bordon 2011) were both identified as predictors of dysphagia. Although the overall evidence base was classified as low and design flaws were noted, a number of the studies included large sample sizes which gives strength to their results.

8. Results: *(including comment on the quality of the studies across the evidence based – which may include a summary of SpeechBITE ratings, comments on limitations in participant numbers and /or design)*

Incidence

- All five studies included in the CAT showed varying incidence of post-extubation dysphagia, percentages as follows; 3-63% (Skoretz, 2010), 93% (Macht, 2013), 84% (Macht, 2011), 41% (Bordon, 2011) and 67.5% (Skoretz, 2014). Two studies reported incidences of dysphagia in patients intubated for greater than 48 hours (Bordon, 2011 and Skoretz, 2014). All other studies did not specify intubation timeframes.

Severity

- Two articles identified the severity of post-extubation dysphagia as a percentage of all participants. This was reported as mild (34%), moderate (26%), and severe (33%) in Macht (2013), and as mild (44%), moderate (23%) and severe (17%) in Macht (2011).

Predictors

- The systematic review performed by Skoretz (2010), found that there were no consistent predictors of post-extubation dysphagia, however the four later articles included in the CAT found that duration of intubation impacts on dysphagia. Macht (2013 and 2011) found that a longer duration of mechanical ventilation was associated with increased severity of dysphagia. Bordon (2011) found that the risk of dysphagia increased by 14% for each day of ventilation, and Skoretz (2014) found that the highest risk of post-extubation dysphagia occurred in patients who were intubated for greater than 48 hours.
- Two studies found additional associations with post extubation dysphagia. Bordon (2011), found that participants aged over 55 years have a 2.5 fold greater risk of post extubation dysphagia and Skoretz (2014) found that for every 10 year increment the incidence of dysphagia increased. Skoretz (2014) also found that participants with dysphagia had a higher rate of reintubation, re-operation and post-operative AF.
- Macht (2011) found that gender, the presence of a tracheostomy and re-intubation times did not increase the risk of post-extubation dysphagia. Bordon (2011) reported that admission GCS, injury severity score, and major medical co-morbidities were also not associated with swallow dysfunction.

Study methodology must be taken into consideration when interpreting these results and it is strongly suggested that clinicians read the articles for clarification. No studies accounted for pre-existing dysphagia and only two studies used instrumental assessment in a very small percentage of the study population (Macht 2013 - 16%, and Macht 2011 - 2.4%). While validated measures of swallowing were used in a number of studies, it is well established that reliability of a BSE is dependent on the judgement of the Speech Pathologist, which is inherently subjective and not sensitive to silent aspiration.

9. Recommendations:

Is *evidence* from current clinical practice the same as clinical bottom-line?

❒ ***Yes (the CAT is now complete)*** ❒ *No* ❒ *Undecided*

Undecided because:

❒ ***more research evidence needed.***

❒ *more evidence on clinical practice is needed*

If clinical practice is not the same as the bottom-line, and the research evidence is ***compelling*** *(or suggestive, if the issue is important and/or addressing an issue with limited if any research)*

❒ **Change is not needed to current clinical practice**, because *evidence* from clinical practice shows that current practice is more effective /efficient that evidence-based recommendations. *(CAT now complete)*

❒ **Change is needed to current clinical practice (then, complete box # 10).**

10. Application to practice (when change has been indicated):

In light of the summary comments from individual CAPS about relevance of the research to practice, check which of the following applies:

❒**Change is needed, and it is possible** – briefly state what needs to change, and, how change could be implemented and evaluated.

❒**Change is needed, but it is not possible** – dot point ideas to address barriers, or, state why change is not possible, and, when the issue will be re-considered.

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

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