Diagnosis and treatment of swallowing disorders (dysphagia) in acute-care stroke patients

Agency for Healthcare Research and Quality (AHRQ)

Record Status
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Citation

Authors' objectives
Four key questions are addressed in this report:

1. How does diagnosis of dysphagia or aspiration affect the subsequent course of treatment and outcomes?

2. What are the appropriate indications for having patients diagnosed using a full bedside exam, the modified barium swallow, fiberoptic endoscopy, or another instrumented exam?

3. Is there any evidence that one diagnostic technology provides more useful information than another?

4. When is noninvasive swallow therapy appropriate? Does it work particularly well or particularly poorly in any particular patient population? What can the evidence tell us about this therapy? Are feeding tubes useful, or a last resort that might be avoided for some patients by dysphagia diagnosis and therapy?

Authors' conclusions

Findings related to question number 1:

Current evidence suggests that a systematic program of diagnosis and treatment of dysphagia in an acute stroke management plan may yield dramatic reductions in pneumonia rates. Because these data are derived from historically controlled studies rather than randomized controlled trials, the exact magnitude of this reduction in pneumonia is difficult to determine. However, because the effects observed in these studies are substantial, it would be imprudent to ignore them, and these results must be taken as evidence of efficacy of these programs.

Despite the sparse available data, it seems prudent to include dysphagia-specific management with formal diagnosis and treatment as part of the standard protocol of stroke management in the acute care setting. Also, these programs appear to have a minimal potential to harm patients.

Findings related to question number 2:

The risk for developing aspiration pneumonia cannot be accurately predicted from any single clinical sign or symptom. There is a clear-cut need to optimize a brief initial exam that accurately detects patients with possible unsafe swallows, and who therefore need more extensive testing. An optimum combination of signs and symptoms for such an initial test has not been determined, and further research is needed.

Findings related to question number 3:

Neither videofluoroscopy nor fiberoptic endoscopy can serve as a perfect "gold standard" for detection of aspiration, because each yields false negative and false positive results. Without a third, better reference standard, these two methods to detect aspiration cannot be compared.
Full bedside exams can have sensitivities for aspiration near 80 percent - with specificities near 70 percent. Epidemiologic evidence indicates that about half of the patients with dysphagia who aspirate do so silently (without a cough). These two points, taken with the very low pneumonia rates observed in dysphagia management programs that used full bedside exams, indicate that these exams are capable of detecting most aspiration, even silent aspiration.

The ability of the full bedside exam to detect silent aspiration should be optimized in future research. Whether it can be conclusively stated that an optimized full bedside exam can entirely replace imaging exams such as videofluoroscopy and fiberoptic endoscopy depends partly on the degree to which the bedside exam is optimized, and partly on the additional benefit that results from the direct internal visual information provided by the imaging exams.

The studies that attempted to predict pneumonia from the results of a diagnostic test were distorted by intervening treatment that prevented some pneumonia from occurring. This distortion cannot be circumvented by withholding treatment, because this would be unethical. This means that the only ethical method of comparing various diagnostic tests is to conduct controlled trials that measure the combined effects of diagnosis and treatment on the rate of pneumonia and/or other patient outcomes.

Another reason why current studies do not conclusively show the superiority of any diagnostic test is because they are too small.

The differences in the ability of various diagnostic tests to predict pneumonia are likely to be small because the two studies using bedside exams were so successful (nearly all pneumonia was prevented). It is difficult to obtain a statistically significant improvement on their results.

Currently available data do not allow one to determine the degree to which (or even whether) the use of videofluoroscopy or other instrumented exams leads to lower pneumonia rates than does the full bedside exam. However, it is entirely reasonable to expect that their use might lead to lower pneumonia rates because instrumented exams provide more information than the full bedside exam. Research on this issue is needed.

Because there are no data that satisfactorily compare the abilities of the full bedside exam and videofluoroscopy to prevent pneumonia, ECRI investigators constructed two clinical value models to address this issue. These models assume that patients will receive a preliminary bedside assessment, and that one result of this assessment is that no more than 39 percent of patients will be referred for further evaluation. The clinical value analysis suggests that dysphagia diagnosis and treatment programs that use the bedside exam would either save money or have very little net cost if they reduced pneumonia rates by amounts similar to those obtained in certain published studies.

Some evidence suggests that dysphagia patients who aspirate have about a 50 percent greater risk of developing aspiration pneumonia than dysphagia patients who do not aspirate during videofluoroscopy exams. However, since other patient characteristics may play equal or greater roles in causing pneumonia, aspiration should not be considered a definitive marker for the patient outcomes of pneumonia.

Findings related to question number 4:

Most study designs used in the evaluation of noninvasive therapy have made it impossible to assess the effectiveness of individual treatments.

The results of a single RCT supported the use of a soft mechanical diet over a pureed diet for preventing aspiration pneumonia in stroke patients with dysphagia who had a history of aspiration pneumonia.

A single RCT reported inconclusive results about the effect of treatment intensity level on patient outcomes. The statistical power of this trial may have been too low to detect the appropriate differences.

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