



iCAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	Lyell McEwin Hospital
JC Facilitator	Janine Young
JC Discipline	Speech Pathology

Question

NA

Review Question/PICO/PACO

P: N/A

I: N/A

C: N/A

O: N/A

Article/Paper

Butler, S.G., Stuart, A., Markley, L., Feng, X. and Kritchevsky, S.B., 2018. Aspiration as a Function of Age, Sex, Liquid Type, Bolus Volume, and Bolus Delivery Across the Healthy Adult Life Span. *Annals of Otology, Rhinology & Laryngology*, 127(1), pp.21-32.

Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the [DOHSA librarian](#).

Article Methodology: Cohort Study

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Ques No.	Yes	Can't Tell	No	Comments
1	✓			<p>Did the study address a clearly focused issue?</p> <p>The purpose of this investigation was to examine, via flexible endoscopic evaluation of swallowing (FEES), factors that affect penetration and aspiration during swallowing across the adult lifespan</p>
2	✓			<p>Did the authors use an appropriate method to answer their question?</p> <p>Since our early findings challenged the notion of normal swallowing (ie, all aspiration is abnormal), we sought to address this issue and examine swallowing in healthy adults spanning the third to the ninth decades of life. We previously performed FEES in 76 healthy adults, whose ages ranged from 61 to 90 years, and published that data first while we continued to collect the remaining adults from younger decades of life. Herein, we include additional analyses of aspiration and risk for aspiration of a complete cohort across the healthy adult life span from the third to ninth decades.</p> <p>Is it worth continuing? YES</p>
3	✓			<p>Was the cohort recruited in an acceptable way?</p> <p>Participants reported no history of swallowing, speech, and voice problems and no known neurologic or otolaryngologic disorders. All participants were ambulatory and reported they were in good health. Participants were recruited by bulletins approved by the Wake Forest University Health Sciences Institutional Review Board. Informed signed written consent was obtained prior to participation.</p>
4	✓			<p>Was the exposure accurately measured to minimize bias?</p> <p>Participants underwent FEES while sitting in the upright position. A 3.1-mm digital flexible endoscope was lubricated with Surgilube, passed transnasally, typically on the floor of the nose to obtain a superior view of the hypopharynx. The endoscope was moved throughout the study between swallowing and post-swallow positions to collect the data. Swallowing position required that the distal end of the endoscope was just above the top of the epiglottis so that the entire base of tongue, tip of the epiglottis, posterior pharyngeal wall, lateral pharyngeal walls (eg, lateral channels), and laryngeal vestibule were visualized prior to bolus administration. The endoscope was maintained in swallowing position throughout bolus administration and was moved only while the scope was advanced to post-swallow position following a bolus presentation. To obtain post-swallow position, the distal end of the scope was advanced lower into the pharynx, past the tip of the epiglottis and into the upper portion of the laryngeal vestibule where the glottis and trachea could be well visualized. Post-swallow position was only held long enough to determine the Penetration Aspiration Scale (PAS) score, and then the scope was pulled back into swallowing position.</p>

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5	✓		<p>Was the outcome accurately measured to minimize bias?</p> <p>Each PAS score was assigned after reviewing each swallow in real time, slow motion, and frame-by-frame. Using the PAS in FEES has been shown in the present cohorts and others to have excellent inter- and/or intrarater reliability, and PAS scores were assigned in accordance with previously published methods. Higher PAS scores reflect more abnormal swallows. A PAS score of 1 is a normal swallow with no material in the airway, scores between 2 and 5 indicate that material entered the laryngeal vestibule (ie, penetration), and scores of 6 to 8 indicate that material passed below the vocal cords into the trachea (ie, aspiration).</p>
6	✓		<p>Have the authors identified all important confounding factors?</p> <p>Some important factors were considered; however, it is possible more confounding factors existed. Given the population group was meant to be a healthy population group, and participants were recruited in the absence of a history of swallowing, speech, and voice problems and required to have no known neurologic or otolaryngologic disorders, this may be acceptable for this group.</p> <p>Have they taken account of the confounding factors in the design and/or analysis?</p> <p>Design of study included recruiting participants who did not have pre-existing or confounding conditions. Confounding factors were not considered within the analysis.</p>
7	✓		<p>Was the follow up of subjects complete enough?</p> <p>Given the nature of this assessment, follow-up was at the point of swallowing. Extended or long-term follow-up is not required for aspiration.</p>
8			<p>What are the results of this study?</p> <p>The PAS scores differed significantly by liquid type ($P < .0001$) and age group ($P < .0001$). In general, PAS scores were higher for milk versus water swallows and for older age groups. Significant interactions of liquid type by age ($P = .0042$) and sex by volume ($P = .020$) were also evidenced. In addition, the odds of penetration and aspiration increased significantly with milks compared to water and age ($P < .05$). Increased bolus volume also increased the odds of aspiration ($P < .05$). Aspiration may be an underappreciated phenomenon in healthy adults. The inclusion of both water and milk test boluses of various volumes during FEES may be important for the appropriate assessment of adult penetration and aspiration.</p>
9			<p>How precise are the results?</p> <p>P values and 95% Confidence intervals are reported. Confidence intervals demonstrated a range of precision across conditions.</p>
10		Journal Club to discuss	<p>Do you believe the results?</p>

11	<p>Can the results be applied to the local population? CONTEXT ASSESSMENT (please refer to attached document)</p> <ul style="list-style-type: none"> - Infrastructure - Available workforce (? Need for substitute workforce?) - Patient characteristics - Training and upskilling, accreditation, recognition - Ready access to information sources - Legislative, financial & systems support - Health service system, referral processes and decision-makers - Communication - Best ways of presenting information to different end-users - Availability of relevant equipment - Cultural acceptability of recommendations - Others
12	Were all important outcomes considered?
13	Are the benefits worth the harms and costs?
14	What do the study findings mean to practice (i.e. clinical practice, systems or processes)?
15	<p>What are your next steps? ADOPT, CONTEXTUALISE, ADAPT</p> <p>And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)</p>
16	What is required to implement these next steps?

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