

How reliable is the Penetration Aspiration Scale? A Retrospective Assessment Using Data from the Swallowing Treatment Using Electrical Pharyngeal Stimulation (STEPS) Trial

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Abstract

Purpose: To compare reliability of the penetration aspiration scale (PAS) on data from a multi-center trial.

Methods: Retrospective analysis of video fluoroscopy swallow studies (VFSS) from the STEPS Trial was carried out on a subset of blinded data from 17 hospital sites (5 countries). Participants were given up to 7 boli (comprising 6 × 5 ml boli and 1 × 50 ml bolus) of level 0 fluids at 40% w/v, at a variety of frame rates. The intra-class correlation coefficient (ICC) estimate with 95% confidence intervals was calculated using 2-way random effects, single measures, and absolute agreement. The study underpinning the data had national ethics approvals and patients (or surrogates) had given written informed consent.

Results: Conditions analyzed: Every swallow (719) in each bolus (including clearing swallows) showed moderate reliability: ICC 0.743 (0.708-0.775). The first swallow only (293) in each bolus also showed moderate reliability: 0.747 (0.692-0.794). The mean worst PAS score (49) from all 7 boli showed excellent reliability: 0.914 (0.853-0.951). For both groups, the most frequent score was a 1 (>50%) and scores of 4 and 6 were rare (<1%). Moderate reliability scores related to issues such as sub-optimal data quality and different scoring conventions between groups for specific scenarios, such as trace aspiration in the laryngeal vestibule, residue and clearing swallows.

Conclusions: Calculating the mean worst PAS score over a number of boli yielded the highest reliability. Research groups should ensure they have specific scoring criteria for the PAS and even experienced SLTs require training and practice in scoring to increase reliability.

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