

## **THE PATTERN OF PENETRATION AND ASPIRATION IN ACUTE STROKE SURVIVORS**

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**Background and Aims:** Aspiration is common in acute stroke survivors with dysphagia, is associated with increased pneumonia rates, and is an independent predictor of mortality. However, studies evaluating the nature and pattern of penetration and aspiration post-stroke are lacking.

**Method:** The Penetration-Aspiration Scale (PAS) was used to rate baseline videofluoroscopic swallowing studies of 17 dysphagic stroke survivors from the STEPS trial of pharyngeal electrical stimulation (onset <14 days, mean 74 years). Analysis was performed on 6 x 5ml boli and 1 x 50ml bolus (thin fluids with contrast agent at 40% wt/vol), recorded at 25 f/s. Every swallow to clear each 5ml or 50ml bolus was counted, given a PAS score and labelled a primary or secondary (clearing) swallow.

**Results:** In total, 285 swallows were viewed. Due to poor image quality, 7% of swallows were excluded. At a bolus level, for 5ml/50ml swallows, results showed 68%/42% normal swallows, 14%/27% penetration and 18%/31% aspiration respectively. At a subject level, 5ml: only 3 patients scored within normal limits for all boli; 50ml: no subject swallowed without showing penetration or aspiration at some point. Higher penetration and aspiration scores occurred on 50ml. Aspirated material was rarely fully cleared, even in those subjects who demonstrated a cough response (5ml: 2%, 50 ml: 0%).

**Conclusion:** Aspiration in post-stroke dysphagia appears to fluctuate in presentation within and between boli. Bedside assessments should take into account variability and sample enough swallows. In addition, clinicians should not assume coughing clears aspirated material. Quality of image capture must be optimised for future studies.