



This worksheet is intended to assist clinicians in identifying the mechanisms behind impaired swallowing safety and efficiency on videofluoroscopy. The specific features of swallowing that are included were based on systematic analyses of videofluoroscopies in healthy adults (Steele et al., 2023; https://doi.org/10.1044/2023_JSLHR-23-00246).

2. SWALLOWING SAFETY							3. SWALLOWING EFFICIENCY						
1a. IDDSI Level and Bolus #	2a. PAS Score	2b. LVC Integrity	2c. PAS Timing	2d. Time-to-LVC	2e. Pre-swallow Residue	2f. PAS Evolution	3a. # of Swallows	3b. Total Pharyngeal Residue		3c. PhAMPC			
	For the initial swallow of the bolus, what is the PAS score? (1-8) <i>If PAS 1, 2 or 4, skip to 2f, else continue to 2b.</i>	For the initial swallow of the bolus, is LVC complete? (Y/N) <i>Continue to 2c.</i>	Did PAS occur before or after LVC? <i>If before, continue to 2d. If after, skip to 2f.</i>	If the answer to 2c. was before LVC, calculate <u>time-to-LVC</u> (frames & milliseconds) ^a . Hyoid burst frame to first frame where laryngeal vestibule is most closed. <i>Continue to 2e.</i>	Is there any residue present at the beginning of the clip (before any new bolus enters the oral cavity)? (Y/N) <i>Continue to 2f.</i>	Is there evidence of a worse PAS score for later swallows of this bolus? If yes, what is that PAS score (1-8)? If no, enter "N/A". <i>Continue to 3a.</i>	Number of swallows taken to clear the bolus (e.g., 3) <i>Continue to 3b.</i>	Is there pharyngeal residue ^b at the end of the initial swallow of the bolus? If no , move to next bolus (1a). If yes , measure. Total pharyngeal residue = (V res. area + PS res. area + Other res. area) / (C2-4 length) ² x 100% <i>Compare to scoring sheet. If atypical, continue to 3c.</i>		For the initial swallow, measure Pharyngeal Area at Maximum Pharyngeal Constriction (PhAMPC). PhAMPC = pharyngeal area / (C2-4 length) ² x 100% <i>Move to next bolus (1a).</i>			
 Thin Cup #1				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		
 Thin Cup #2				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		
 Thin Cup #3				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		
 Thin Cup #4				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		
 Mildly Cup #1				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		
 Mildly Cup #2				frames milliseconds				Total Pharyngeal Residue		calculation	Pharyngeal area		calculation
								C2-4 length			C2-4 length		

^a Convert from frames to milliseconds by dividing the value (in frames) over the recording frame rate (i.e., number of images captured per second) then multiplying by 1000. Example: hyoid burst frame =22, first frame of LVC=40, 40-22 = 18, 18 frame difference/30 frames per second x 1000 (to convert to milliseconds) = 600ms

^b Do not include spill from the mouth into the pharynx after the swallow as pharyngeal residue.

Acronyms:

IDDSI = International Dysphagia Diet Standardisation Initiative

PAS = Penetration-Aspiration Scale

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LVC= Laryngeal Vestibule Closure

V res. area = vallecular residue area in pixels

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PS res. area = pyriform sinus residue area in pixels

Other res. area = other pharyngeal residue area in pixels

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