

ASPEKT-CAnalysis of Swallowing Physiology: Events, Kinematics and Timing *for Clinical Practice*

Worksheet

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

C2-4 length

Acronyms:

IDDSI = International Dysphagia Diet Standardisation Initiative PAS = Penetration-Aspiration Scale Steele Swallowing Lab © 2025

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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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.



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| | 2. SWALLOWING SAFETY | | | | | | 3. SWALLOWING EFFICIENCY | | | | |
|------------------------|---|--|---|--|---|--|--|--|-------------|---|-----------|
| 1a. IDDSI Level and | 2a. PAS Score | 2b. LVC Integrity For the initial swallow of the bolus, is LVC complete? (Y/N) Continue to 2c. | 2c. PAS Timing Did PAS occur before or after LVC? If before, continue to 2d. If after, skip to 2f. | If the answer to 2c. was before LVC, calculate time-to- LVC (frames & milliseconds)a. Hyoid burst frame to first frame where laryngeal vestibule is most closed. Continue to 2e. | 2e. Pre-swallow Residue Is there any residue present at the beginning of the clip (before any new bolus enters the oral cavity)? (Y/N) Continue to 2f. | 2f. PAS Evolution 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". Continue to 3a. | 3a. # of Swallows Number of swallow taken to clear the bolus (e.g., 3) | Is there pharyngeal residue 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% Compare to scoring sheet. If atypical, continue to 3c. | | 3c. PhAMPC For the initial swallow, measure Pharyngeal Area at Maximum Pharyngeal Constriction (PhAMPC). PhAMPC = pharyngeal area / (C2-4 length) ² x 100% Move to next bolus (1a). | |
| Bolus # | For the initial swallow of the bolus, what is the PAS score? (1-8) If PAS 1, 2 or 4, skip to 2f, else continue to 2b. | | | | | | | | | | |
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⁸ 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

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