

Assessing Dysphagia Risk using the BOLUS framework

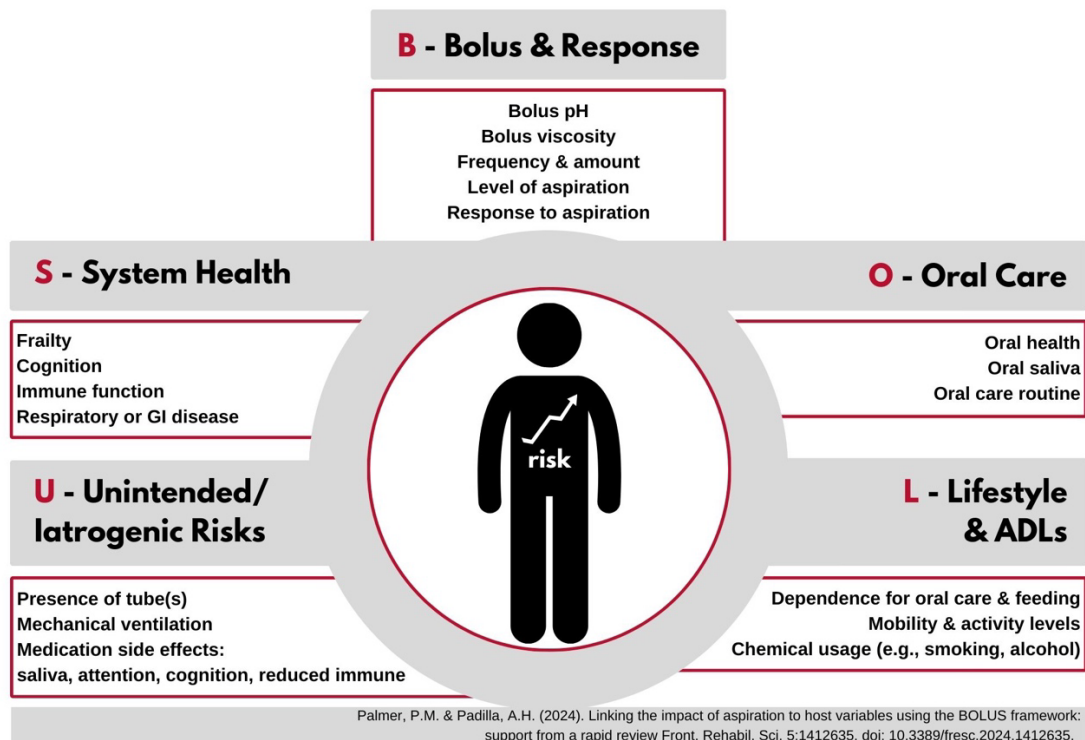
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An overview of the BOLUS framework.



Questions associated with the BOLUS framework categories.



Palmer, P.M. & Padilla, A.H. (2024). Linking the impact of aspiration to host variables using the BOLUS framework: support from a rapid review Front. Rehabil. Sci. 5:1412635. doi: 10.3389/fresc.2024.1412635.

BOLUS FRAMEWORK CHECKLIST

BOLUS VARIABLES & RESPONSE

- ☐ Is my patient aspirating thick or dense materials?
- ☐ Is my patient aspirating frequently or aspirating large amounts?
- ☐ Is my patient aspirating acidic material?
- ☐ Does my patient have a weak cough or silent aspiration?

ORAL HEALTH & ORAL CARE

- ☐ Is there evidence of oral neglect or poor oral infection control?
- ☐ Does my patient have inadequate oral hygiene routines or a recent decrease in oral hygiene routines?
- ☐ Does my patient have reduced saliva?

LIFESTYLE & ACTIVITIES OF DAILY LIVING

- ☐ Does my patient have limited mobility or physical activity?
- ☐ Does my patient smoke or drink with regularity?
- ☐ Is my patient dependent on others for activities of daily living, specifically feeding and oral hygiene?

UNINTENDED / IATROGENIC RISKS

- ☐ Does my patient have tubes in the oropharynx or airway?
- ☐ Is my patient receiving mechanical ventilation?
- ☐ Is my patient on medication with side effects that impact alertness, cognition, immune function of saliva production?
- ☐ Does my patient have negative side effects from radiation or other medical procedures that impact the oropharynx?

SYSTEM STATUS

- ☐ Is my patient frail or deconditioned?
- ☐ Does my patient have respiratory disease or GI disease?
- ☐ Does my patient have limited cognition?
- ☐ Does my patient have compromised immune function?
- ☐ Does my patient have reduced cough response or strength?

The BOLUS Framework Applied to HNCa

Table of potential BOLUS Framework modifiers for use with individuals with HNCa who aspirate

Category	Proposed Questions
Tumor Characteristics	<ul style="list-style-type: none"> • Is the disease staged at III or higher? <ul style="list-style-type: none"> ○ Is tumor size T3 or higher? ○ Is there node involvement? ○ Is there distant metastatic disease?
Surgical Intervention	<ul style="list-style-type: none"> • Did surgery involve resection of multiple subsites? • Did surgery involve BOT or pharynx thereby greatly reducing bolus propulsion? • Was the surgery a major ablative procedure? • Did reconstruction require a free flap? • Were there significant post operative challenges such as fistula or poor healing? • Was bilateral neck dissection completed? • Was there cranial nerve damage from surgery that impacts swallow sensory or motor function?
Radiation	<ul style="list-style-type: none"> • Was the total radiation dose > 60 Gy? • Did the radiation field include > 50% of pharyngeal structures?
Chemotherapy/ Systemic therapy	<ul style="list-style-type: none"> • Was chemotherapy performed in conjunction with radiation? • Was there induction versus concurrent chemo?
Iatrogenic effects of treatment	<ul style="list-style-type: none"> • Did the patient suffer from severe mucositis, candidiasis or odynophagia? • Any evidence of osteoradionecrosis? • Is there radiation-induced xerostomia or dental complications? • Is there trismus limiting access for oral care? • Is radiation fibrosis or lymphedema impacting swallow kinematics? • Did radiation treatment require breaks due to toxicity? • Was chemotherapy dose reduction or holding of any chemo treatments required due to reaction or toxicity?
General	<ul style="list-style-type: none"> • Was this curative-intent treatment? • Was this palliative treatment? • Did treatment require two modalities (e.g., radiation and chemotherapy)? • Did the treatment require 3 modalities? • Did any treatment require unplanned hospitalization for supportive care? • Will treatment require prolonged nil per os (NPO) status? • Is the patient undergoing active cancer treatment? • Are they in their first 6 months of cancer treatment or beyond?

The BOLUS Framework Applied to Stroke

Table of potential BOLUS Framework modifiers for use with individuals s/p stroke who aspirate.

Category	Proposed Questions
Neurologic Status	<ul style="list-style-type: none">• Was there brainstem damage?• Is there involvement of CN V, VII, IX, X, XII)?• Are there multiple brain lesions?
Physical	<ul style="list-style-type: none">• Does the hemiplegia impact patient's ability to sit upright during mealtimes?• Does patient have significant oral motor weakness?
Social/ Emotional	<ul style="list-style-type: none">• Is there post-stroke depression affecting motivation for oral intake?

Aspiration and the Pulmonary Biome (Presented at ASHA Convention, 2021)

- <https://www.youtube.com/watch?v=JVq0iQJrbp4>
- <https://youtu.be/BzisjH7xqj8?si=vN5i-258joZ7C0wV>
- <https://youtu.be/COlUHjSJ1uw?si=McLVAFmL178PIKHZ>

TIMS University Presentation on the BOLUS Framework

- <https://www.youtube.com/watch?v=cE5NfdhUHb8>

References regarding the BOLUS framework

Palmer, P. M., & Padilla, A. H. (2022). Risk of an adverse event in individuals who aspirate: A review of current literature on host defenses and individual differences. *American Journal of Speech-Language Pathology*, 31(1), 148-162.

Palmer, P.M. & Padilla, A.H. (2024). Linking the impact of aspiration to host variables using the BOLUS framework: support from a rapid review. *Frontiers in Rehabilitation Sciences*, 5:1412635. doi: [10.3389/fre.2024.1412635](https://doi.org/10.3389/fre.2024.1412635).

Palmer, P. M., & Leslie, P. (2025). Aspiration management and rehabilitation. *Frontiers in Rehabilitation Sciences*, 6, 1558680.