

# Chapter 83

## Approach to Swallowing Dysfunction in the ICU



### 83.1 Introduction

Swallowing dysfunction, or dysphagia, is a critical concern in intensive care unit (ICU) patients. It is particularly prevalent among those with prolonged intubation, ICU-acquired weakness, or neurological impairments. Post-extubation dysphagia (PED) affects up to 62% of ICU patients and is associated with increased morbidity and mortality. Complications include aspiration pneumonia, malnutrition, dehydration, and prolonged hospital stays. Early recognition and comprehensive management are essential to mitigate these risks and optimize patient outcomes [1, 2] [Ref: Algorithm 83.1].

### 83.2 Epidemiological Insights

- Prevalence and Impact:
- PED: Affects up to 62% of ICU patients post-extubation.
- General Dysphagia: Occurs in up to 84% of patients with neurological impairments.
- Consequences: Increased risk of aspiration pneumonia, longer ICU stays, higher healthcare costs, and elevated mortality rates.

### 83.3 Detailed Risk Factors

- Key Question: Does the patient exhibit risk factors for dysphagia?
- Common Risk Factors:

- Prolonged Intubation: Can cause laryngeal trauma and altered sensation, impairing swallowing reflexes.
- ICU-Acquired Weakness: Muscle weakness affects swallowing muscles.
- Reduced Sensorium: Cognitive or neurological deficits delay protective reflexes.
- Additional Risk Factors:
- Polypharmacy: Sedatives, anticholinergics, and other medications can impair swallowing.
- Altered Laryngeal Sensation: Due to intubation, leading to silent aspiration.
- Comorbidities:
  - Chronic obstructive pulmonary disease (COPD).
  - Diabetes mellitus.
  - Hypertension.
- Others: Preexisting dysphagia, local malignancy/postsurgical medical conditions affecting anatomic structures of the swallowing tract, and/or considerable quantitative/qualitative reduction of consciousness.

Action: If risk factors are present, proceed to bedside dysphagia screening.

### 83.4 Advanced Screening Techniques

Bedside tests for assessing swallowing dysfunction in ICU patients:

1. Yale Swallow Protocol:

- Purpose: Screen for aspiration risk and swallowing safety.
- Procedure:
  - Perform a brief cognitive screen to assess alertness.
  - Conduct an oral mechanism exam to evaluate the patient's ability to control and swallow saliva.
  - Administer a 90-mL water swallow challenge. The patient drinks water continuously without stopping.
- Interpretation:
  - Pass: No coughing, choking, or voice changes after drinking.
  - Fail: Coughing, wet voice, or inability to complete the task indicates a risk of dysphagia.

2. Gugging Swallowing Screen (GUSS):

- Purpose: Assess risk of aspiration and grade dysphagia severity.
- Procedure:
  - Part 1: Indirect swallowing test (saliva swallowing). Assess for voluntary saliva swallow, drooling, or wet voice.
  - Part 2: Direct swallowing test with increasing textures (semisolids, liquids). Start with a small bolus size and progress as tolerated.
- Interpretation:

- Assign scores based on performance (0–20 points). A higher score indicates better swallowing function and lower aspiration risk.
  - Scores guide recommendations for oral or enteral feeding.
3. Three-Ounce Water Swallow Test:
- Purpose: Identify overt aspiration.
  - Procedure:
  - Provide 3 ounces (90 mL) of water.
  - Instruct the patient to drink it without interruption.
  - Interpretation:
  - Pass: No coughing, choking, or wet voice during or after drinking.
  - Fail: Any signs of coughing, choking, or altered voice indicate potential dysphagia.
4. Other tests: Post-Extubation Dysphagia Screening Tool, Bernese-ICU Dysphagia Algorithm, modified Volume Viscosity Swallow Test, Clinical Swallowing Examination (CSE).

Next Decision Point: Determine if the patient passes the screening.

## 83.5 Screening Outcome: Does the Patient Pass?

- Yes:
  - Action: Initiate gradual reintroduction of oral intake.
  - Start with safe textures and monitor for tolerance to prevent aspiration.
  - Early oral intake improves patient morale and nutritional status and prevents translocation of gut bacteria.
- No:
  - Action: Refer for instrumental evaluation to determine the nature and extent of dysphagia.

## 83.6 Instrumental Evaluations

- Refer for Instrumental Evaluation: Flexible endoscopic evaluation of swallowing (FEES), videofluoroscopic swallowing study (VFSS), ultrasonography, tissue Doppler imaging, high-resolution manometry, and oropharyngo-esophageal scintigraphy (OPES).
- Videofluoroscopic Swallowing Study (VFSS): Is done in the radiology room and a barium dye is given to assess all four stages of swallowing. Risk: Radiation exposure and difficulty to perform in ICU patients who cannot be mobilized.
- Benefits: Dynamic imaging to evaluate swallowing mechanisms and detect silent aspiration.

- Role: Identifies detailed pathophysiology of dysphagia.
- Fiber-optic Endoscopic Evaluation of Swallowing (FEES): Penetration and aspiration scale ranging from 1 to 8 is used, where 1 indicates no penetration and 8 indicates aspiration without coughing.
- Benefits: Direct visualization of pharyngeal and laryngeal structures during swallowing.
- Role: Detects structural abnormalities and aspiration events.

Next Decision Point: Determine if there are signs of aspiration or impaired swallowing mechanisms.

### 83.7 Management Algorithms

Are There Signs of Aspiration or Impaired Swallowing Mechanisms?

A. Yes:

- Implement Aspiration Precautions:
- Modified Diet: Thickened liquids, pureed foods.
- Nil per Oral (NPO) Status: If severe aspiration, risk is present.
- Alternative Nutrition: Nasogastric (NG) feeding, percutaneous endoscopic gastrostomy (PEG) [3, 4].
- Propose Evidence-Based Management Algorithms:
- Systematic Approach: Regular assessments, individualized care plans.
- **Handling Tracheostomized Patients:**
  - Close observation of the patient's medical/health status, alertness, and cognition, including the impact of sedation, delirium, and agitation levels on their ability to actively participate.
  - Cuff Management: Deflation trials—air flow through and air pressures through upper airway help in increasing sensation and thus reduce aspiration risk.
  - Speaking Valves: Facilitate swallowing and vocalization.
  - Minimize Risk and Further Complications: Elevating the head of the bed, dental brushing with antiseptic rinse and suctioning; patient mobilization.
  - Reduce oral secretions.
  - Swallowing maneuvers (e.g., supraglottic maneuver).
  - Regular instrumental assessments to assess readiness for oral diet.
  - Dislodging of tracheostomy *cannula* during active treatment needs to be mitigated.
  - PES (Pharyngeal Electric Stimulation): For treatment of neurogenic dysphagia in stroke, traumatic brain injury, and desensitization following prolonged mechanical ventilation.
  - Post-Extubation Dysphagia (PED):
  - Specialized Protocols: Early screening post-extubation.

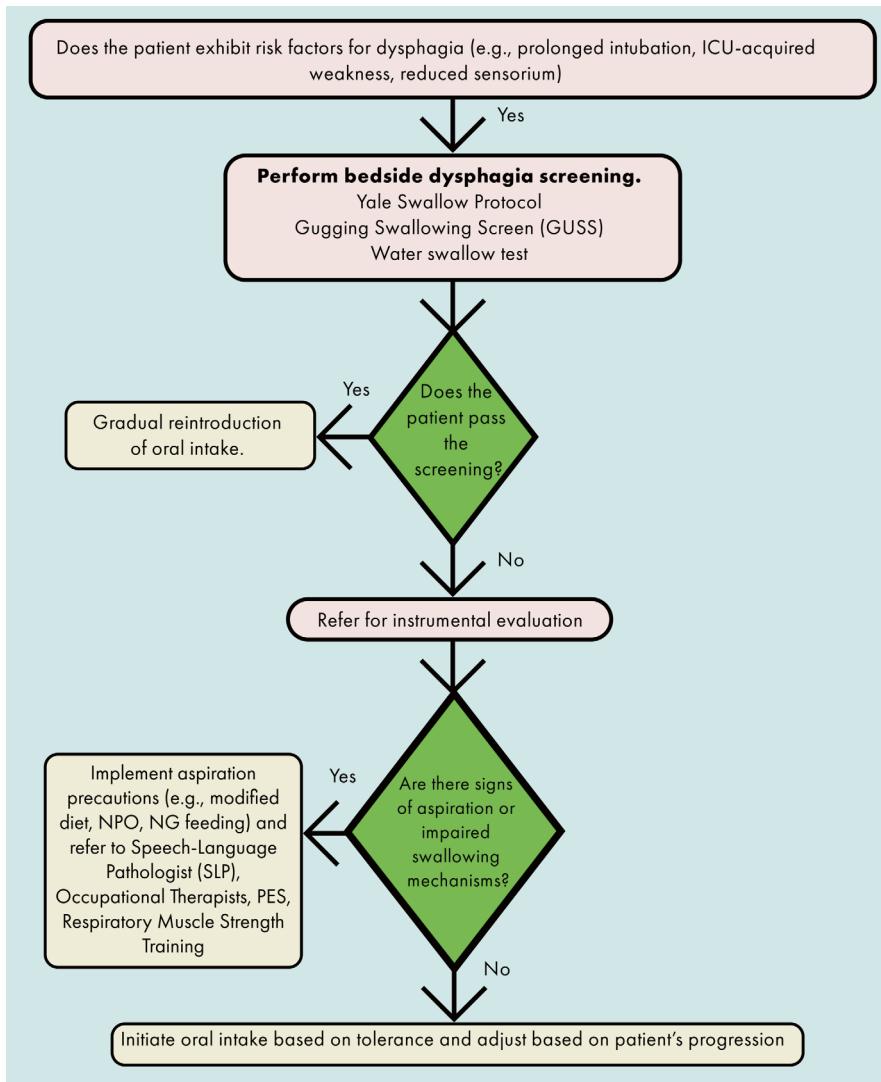
- Emerging Therapies:
- Pharyngeal Electrical Stimulation:
- Mechanism: Enhances neural pathways involved in swallowing.
- Evidence: Shows promise in improving swallowing function.
- Respiratory Muscle Strength Training:
- Mechanism: Strengthens muscles coordinating breathing and swallowing.
- Evidence: May reduce aspiration risk.
- Interdisciplinary Role:
- Speech-Language Pathologists (SLPs): Specialized assessment and therapy.
- Dietitians: Nutritional management tailored to swallowing ability.
- Occupational Therapists: Adaptive techniques for safe feeding.

B. No:

- Action: Initiate oral intake based on tolerance, with regular monitoring. Safe progression of diet to full oral intake.

## 83.8 Conclusion

Managing swallowing dysfunction in ICU patients is a comprehensive process requiring early recognition, advanced screening techniques, and a multidisciplinary approach. Incorporating detailed risk assessments, utilizing instrumental evaluations like FEES and VFSS, and adopting evidence-based management algorithms are crucial steps. Emerging therapies such as pharyngeal electrical stimulation and respiratory muscle strength training offer promising advancement in treatment. Overcoming barriers through education, protocol adherence, and collaboration enhances patient care. Emphasizing quality-of-life considerations ensures that long-term impacts are addressed, promoting overall well-being and recovery.

**Algorithm 83.1: Approach to swallowing dysfunction in the ICU**

## Bibliography

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