

Dysphagia in NTM

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What is Dysphagia?

- The term dysphagia refers to any difficulty moving food from the mouth to stomach.
- It is a symptom of disease.
- All age groups.
- As a result of congenital abnormalities, structural damage and/or medical conditions.

Statistics...

- Patients with respiratory disorders will often exhibit disorders of swallowing:
- In a study of 78 patients with chronic obstructive pulmonary disease, it was observed that 85% of them had some degree of dysphagia. Good-Fratturelli, Curlee, & Holle, 2000
- Five studies reported that at least 80% of patients with COPD showed to have swallowing dysfunction O’Kane & Groher, 2009

Pulmonary Disease and Swallow Physiology

- ❑ Relationship between breathing and swallowing:
 - Anatomical: brainstem
 - Anatomical: similar structures used for both upper airway maintenance and swallowing
 - Physiological: swallowing interrupts the cycle of respiration
- ❑ Does disordered respiration lead to disordered swallowing function?

Pulmonary Disease and Swallowing

- Respiratory rate may increase, altering coordination between the shared functions of the upper aerodigestive tract.
- In pulmonary disease, respiratory demand increases.
- Each swallow closes the respiratory system for 1-2 seconds.
- As the respiratory rate increases, it may affect swallowing.

Dysphagia and Pulmonary Disease

- Chronic cough
- Chronic bronchitis
- Chronic obstructive pulmonary disease
- Obstructive sleep apnea
- Pneumonia
- Lung cancer
- **Bronchiectasis and NTM????**

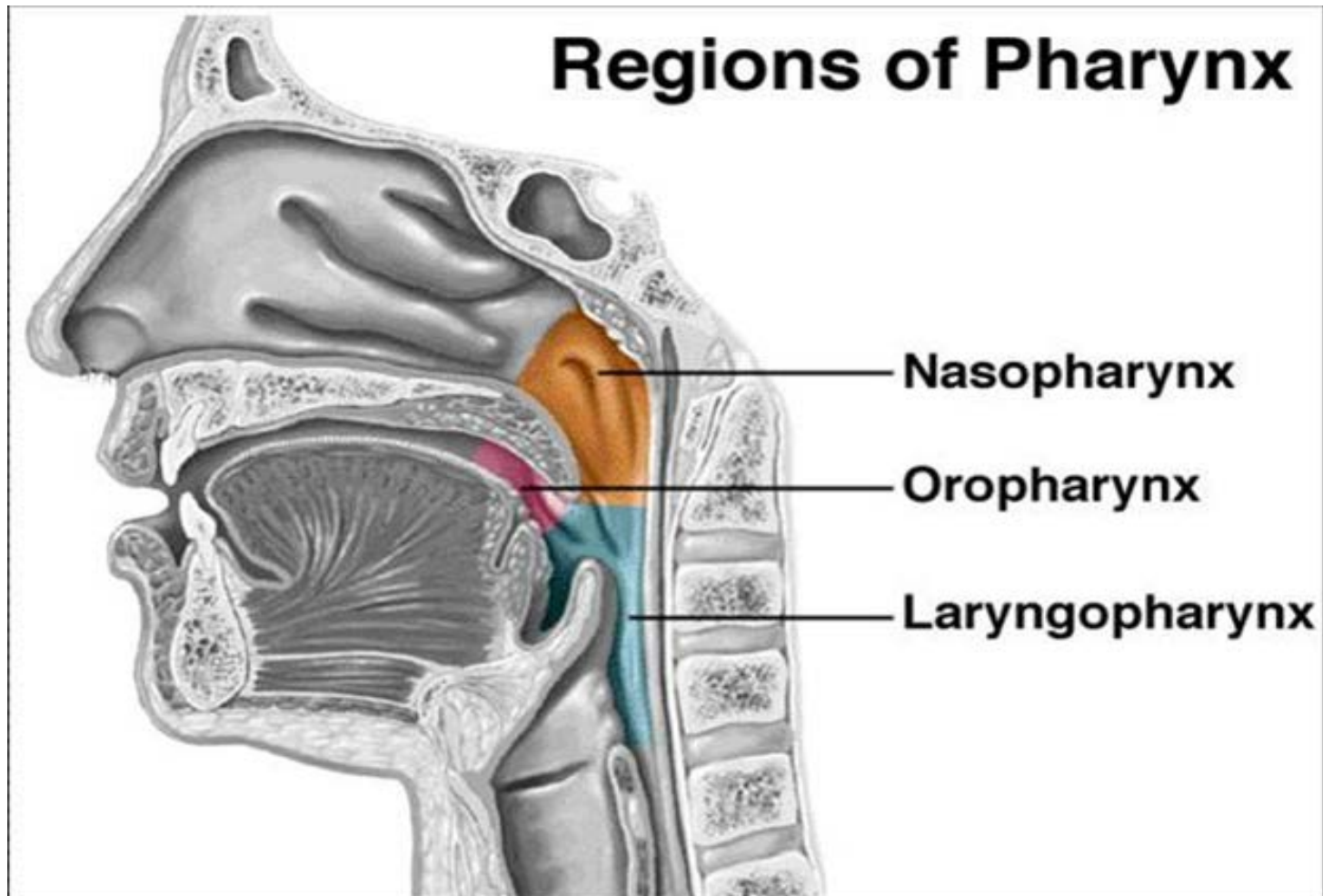
Signs and Symptoms

- Obvious difficulties
- Pneumonia and respiratory infections
- Weight loss
- Patient complaints

Does dysphagia matter?

- ASPIRATION PNEUMONIA!!!!
- Quality of life

Normal Anatomy & Physiology

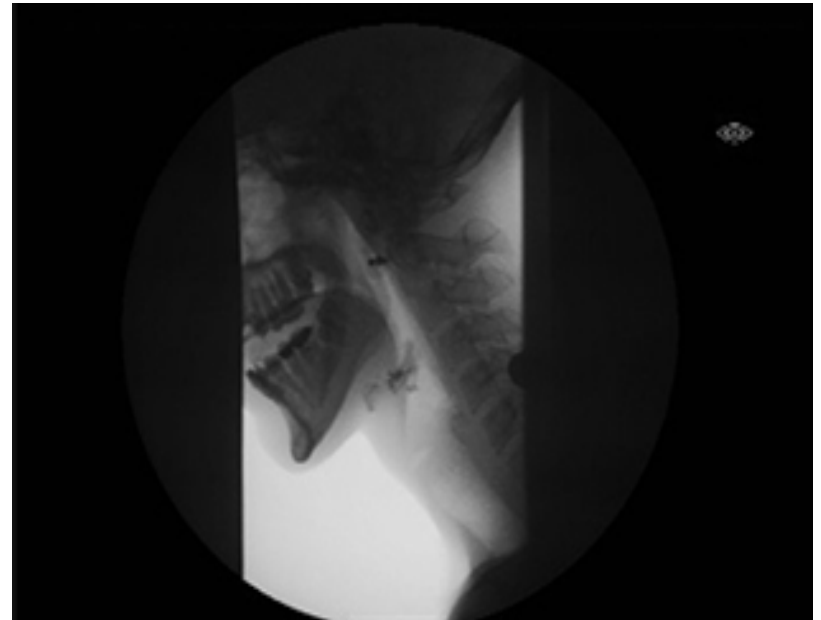


Normal Anatomy & Physiology

View during Laryngoscopy



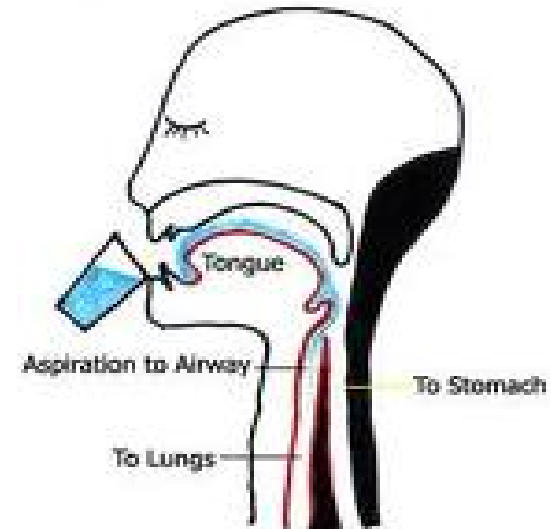
View during Videofluoroscopy

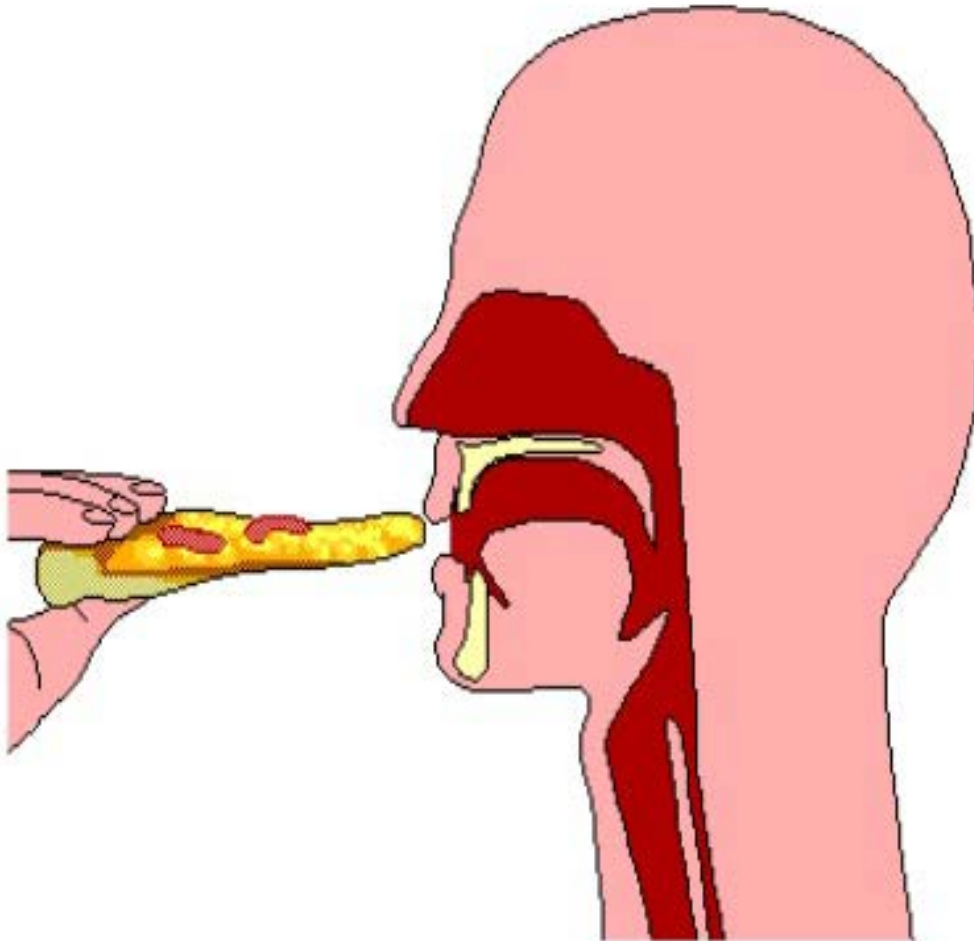


Stages of Swallowing

□ The act of swallowing function is described in 4 phases:

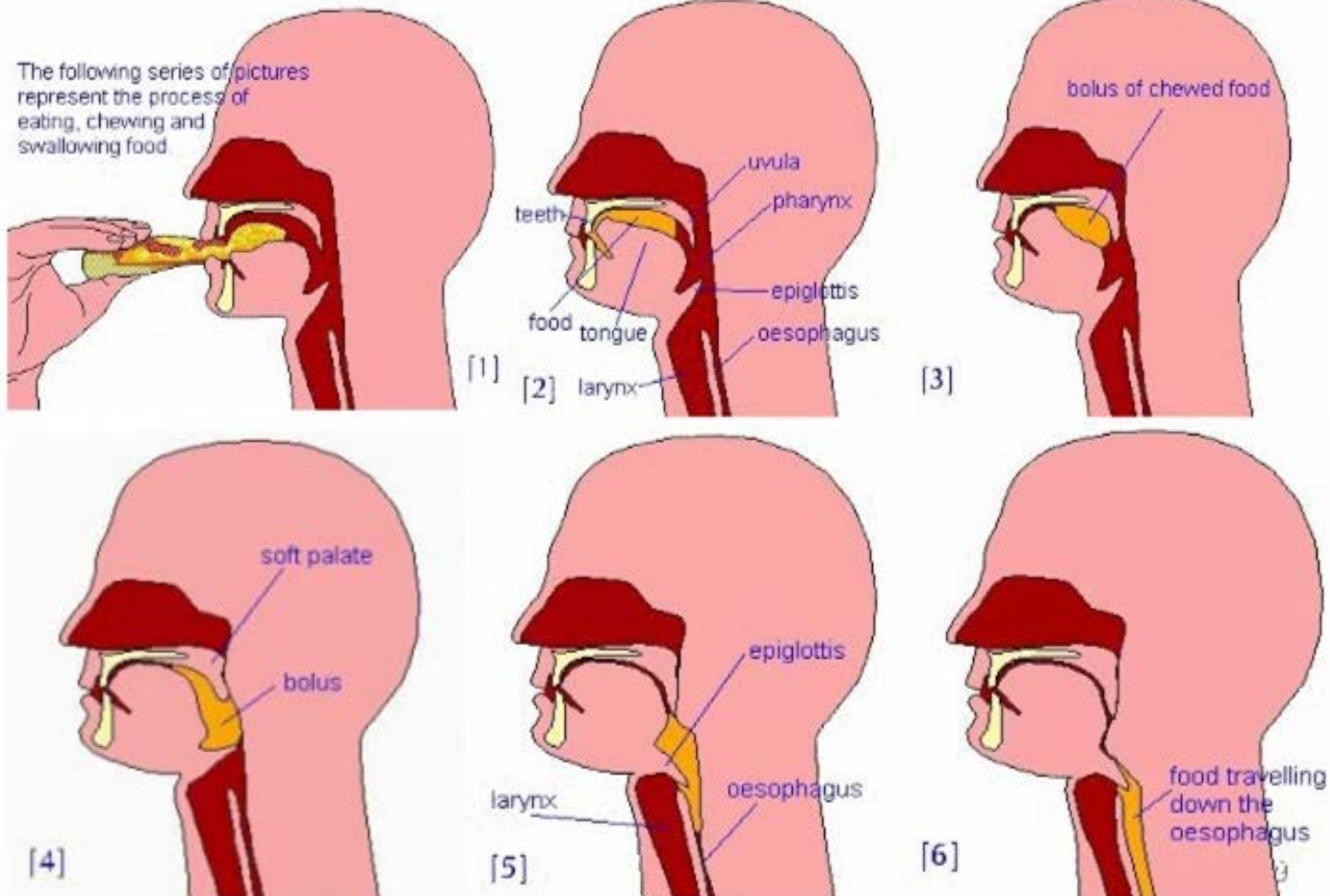
- Oral preparatory phase
- Oral phase
- Pharyngeal phase
- Esophageal phase





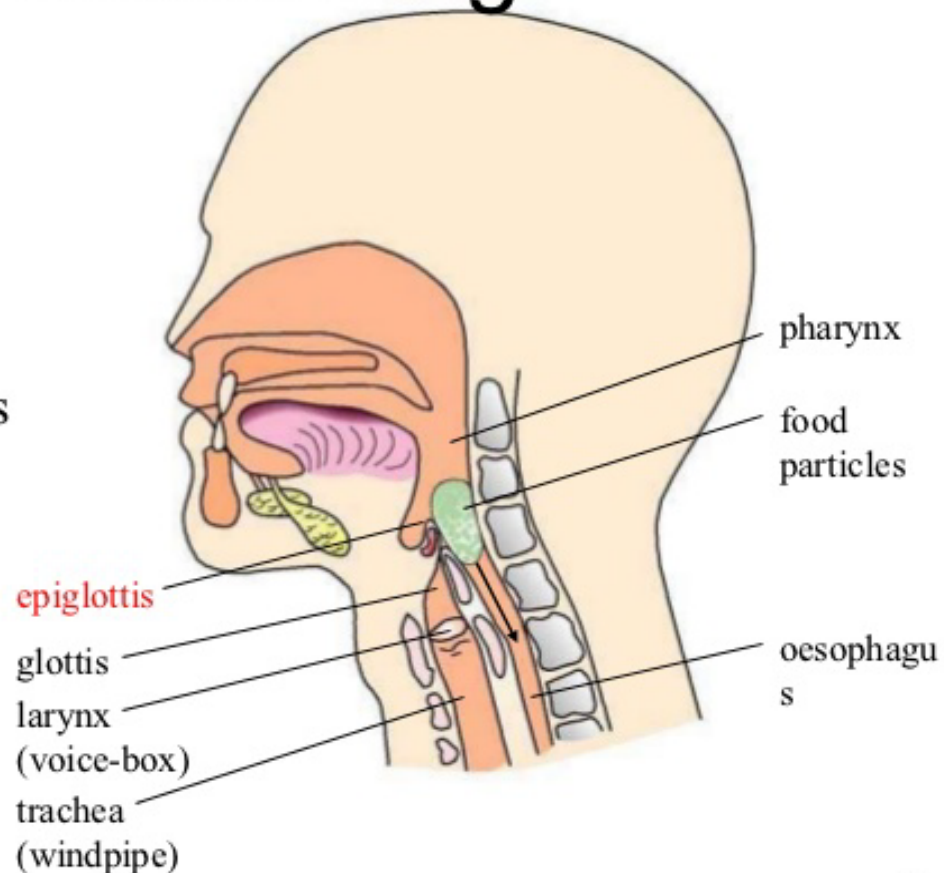
Swallowing

The following series of pictures represent the process of eating, chewing and swallowing food



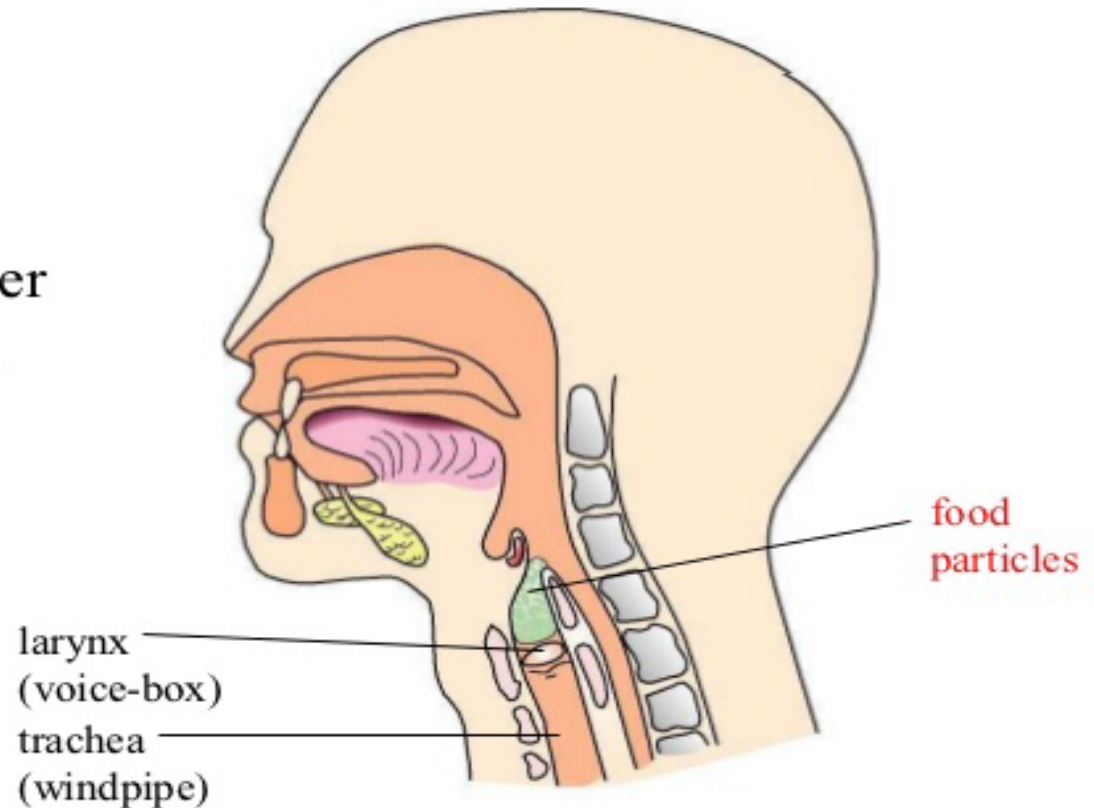
What Happens During Breathing and Swallowing?

During swallowing, the larynx is raised and the glottis is covered by the **epiglottis**. This prevents food particles from entering the trachea.



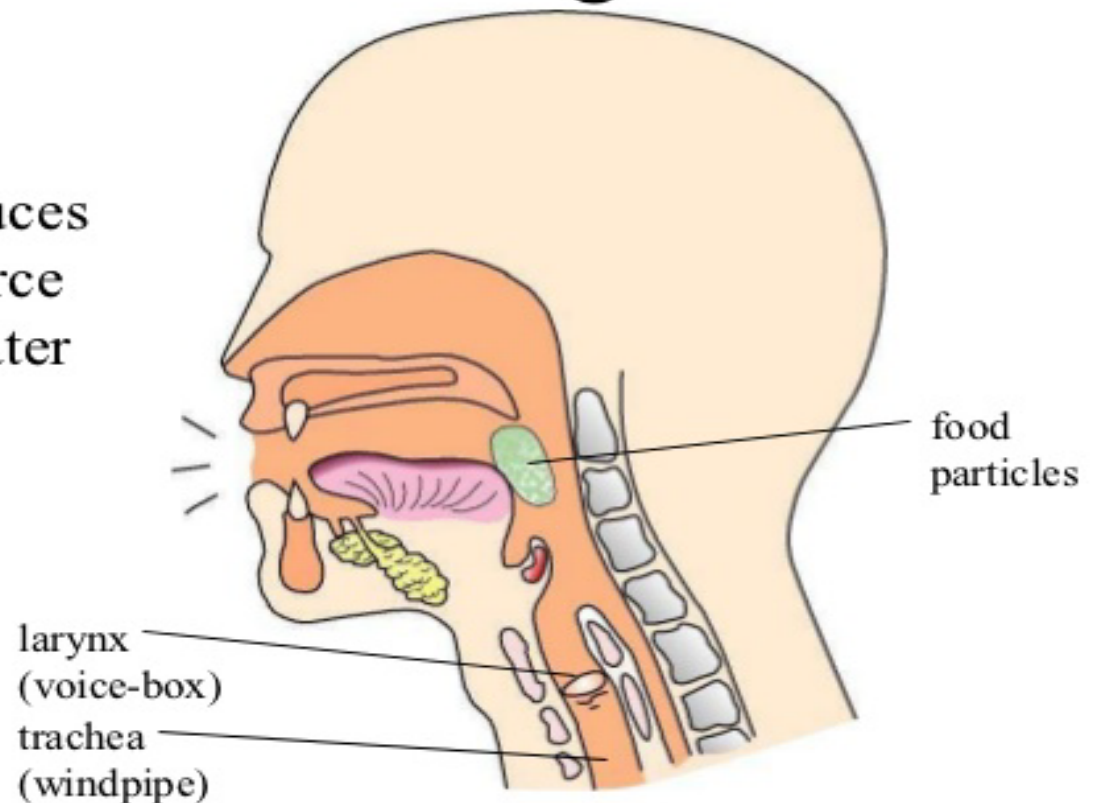
What Happens During Breathing and Swallowing?

Occasionally, small **particles of food** or water may get into the larynx or trachea.



What Happens During Breathing and Swallowing?

This automatically induces **violent coughing** to force the food particles or water out and to **prevent choking**.



Respiratory defenses

- The most highly recognized neural response involved in airway protection is coughing.
- Coughing is a reflex-evoked modification of breathing pattern in response to airway irritation.



Purposes of Swallow Study

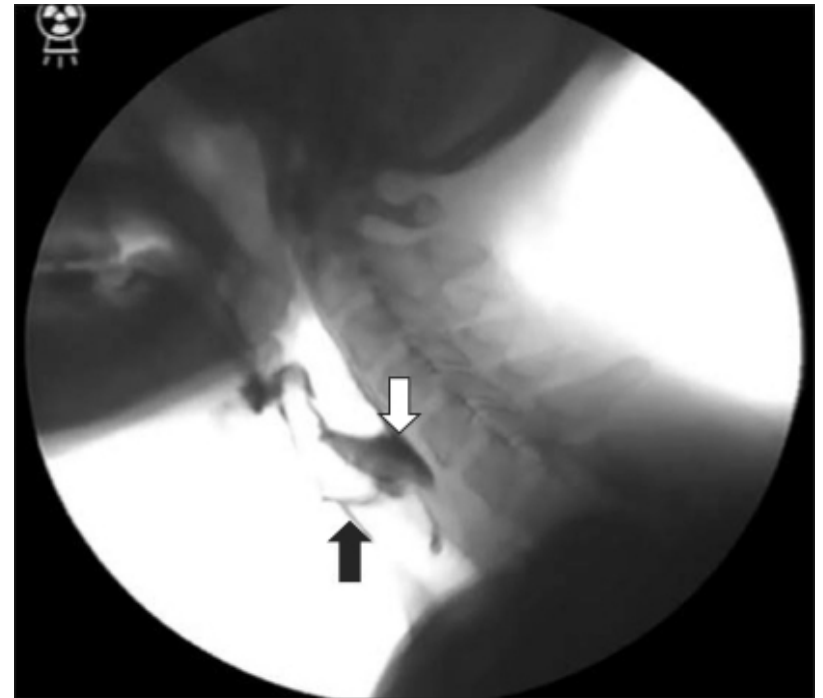
- Adequacy of airway protection.
- Coordination of respiration and swallowing.
- Food/liquid clearance.
- Evaluate the impact of compensatory strategies on physiology.
- Decide whether swallowing treatment is indicated.

Current Research

- Swallow studies were analyzed from 98 newly diagnosed patients with NTM.
- Two swallows were analyzed per patient (N=980 swallows).
- The primary outcome of interest was airway protection.
- The proportion of participants with at least one unsafe swallow was 42.86%.

Current Research

- Another outcome of interest was pharyngeal food/liquid clearance.
- The proportion of subjects with at least one swallow that did not clear from the pharynx was 89.80%.



Treatment Planning

- ❑ The goal of any treatment program is the re-establishment of safe oral intake while maintaining adequate hydration and nutrition.
- ❑ What type of nutritional management is necessary?
- ❑ What type of therapy
 - Compensatory strategies or exercises?
 - Direct or indirect?

Future Research

- Future work should explore swallowing physiology in NTM population.
- Further work needs to determine the relationship between impaired swallowing safety and NTM progression.

Thank you

