Dysphagia Across the Lifespan

Introduction

Feeding and swallowing are only generally touched upon in entry-level occupational therapy curricula. However, OT providers in any practice area are likely to encounter clients who experience dysphagia. This makes it essential for therapists to demonstrate competency in the identification, management, and potentially also referral of individuals with dysphagia. Dysfunction in feeding and swallowing can be a major safety concern that places patients at risk of health incidents both during and outside of sessions. Therefore, therapists should understand how to avoid such occurrences, teach patients how to manage feeding and swallowing concerns, and educate patients and caregivers alike to look for signs and symptoms. As interdisciplinary team members, OTs will need to navigate a holistic approach to treatment for this population.

Section 1: Dysphagia Classifications & Scope of Practice

References: 1, 2, 3, 4, 5, 6

Dysphagia is a term used to describe swallowing difficulties. It is broad in nature and can occur in varying degrees. Someone living with this health concern may exhibit mild difficulties when swallowing liquids or solids, severe pain and very limited swallowing during mealtimes, or concerns somewhere in between the two ends of the spectrum. Dysphagia can have a range of causes – most of which require intensive, potentially ongoing management.

In a general sense, dysphagia can be categorized in two ways based on its underlying cause. If a neurological condition is the root cause of dysphagia, it may be referred to as neurological dysphagia. Conversely, dysphagia that stems from anatomical abnormalities in the digestive tract is known as structural dysphagia.

These classifications are less common, though, since they do not detail where in the digestive system the dysphagia occurs and during which phase of eating the dysphagia takes place. There are two clinical, more accurate descriptors for dysphagia type.

Dysphagia Types, Symptomatology, & Causes

There are two main types of dysphagia, both of which are determined based on where along the digestive tract the concern takes place. The first is **esophageal dysphagia**. One of the hallmark symptoms of esophageal dysphagia is the sensation of food being stuck in the throat or sometimes even the chest after someone swallows. Other symptoms associated with esophageal dysphagia include discomfort and sometimes pain in the throat or chest after swallowing, regurgitating food after it becomes stuck in the esophagus, drooling, speaking with a hoarse or weak voice, and unintentional weight loss. Some people may mistake dysphagia symptoms such as discomfort in the throat and chest for heartburn, as they feel similar. If someone reports this symptom in such a way to their healthcare providers, this may lead them to be misdiagnosed. It's possible for people with esophageal dysphagia to cough, gag, or choke while eating or drinking, but these symptoms are more commonly seen in another type of dysphagia. There are many causes of esophageal dysphagia, including:

- An esophageal stricture, which is a narrowing of the esophagus that may occur due to the presence of scar tissue, benign tumors, acid reflux, or aging
- The presence of foreign bodies, such as food, fish bones, and inedible objects
- A schatzki ring, also known as an esophageal ring, which is a circular mass of tissue that causes excessive contraction of the esophagus

- Esophageal webs, which are thin, fibrous structures that block the top of the esophagus
- Barrett's esophagus, a precancerous condition that causes cellular abnormalities in the lining of the esophagus
- Gastroesophageal reflux disorder (GERD), a digestive condition that causes acid, food, and liquid to flow backwards from the stomach into the esophagus
- Scleroderma, an autoimmune condition that leads scar tissue to form in the esophagus and stiffens its muscles, preventing food from fully moving down the digestive tract
- Esophageal spasms, which occur when the muscles in the esophagus contract too hard or too frequently
    - Some examples include hypercontractile peristalsis (also known as jackhammer or nutcracker esophagus) that causes overly forceful contraction of several muscles throughout the esophagus when someone swallows. Another common type of esophageal spasm is cricopharyngeal spasms, which are abnormal contractions that cause the muscle at the start of the esophagus to squeeze too hard.
- Achalasia, a progressive condition that causes damage to the nerves and muscles of the esophagus
- Dental problems, such as an overbite, multiple missing teeth, misaligned teeth, a narrow palate, overcrowded teeth, pain or impaired range of motion in the jaw, severe tooth decay, and wearing dentures that fit poorly
- Myositis, an autoimmune condition that leads to weakness in the esophagus and throat

- Radiation therapy, specifically when targeting the head and neck
- Eosinophilic esophagitis (EoE), which is a build-up of white blood cells in the esophagus that may be caused by allergies, reflux, and other inflammatory sources
- Hiatal hernia
    - This injury causes the stomach muscles to protrude into the chest cavity, which places undue pressure on the esophagus.
- Peptic ulcer disease, specifically when ulcers develop in the esophagus
- Chronic alcohol misuse
- Medication side effects, particularly those associated with antipsychotics, opioids, nitrates, calcium channel blockers, non-steroidal anti-inflammatory drugs (NSAIDs), potassium supplements, bronchodilators, bisphosphonates (a class of medications used to treat bone disorders, cancer, and other similar conditions), and tricyclic antidepresssants

The second type of dysphagia, called **oropharyngeal dysphagia**, can cause someone to cough, choke, and gag when they attempt to swallow. Oropharyngeal dysphagia may also lead to the sensation of food 'going into the wrong pipe' such as down the windpipe or up the nose. If food or liquid does travel down the windpipe and doesn't dislodge on its own or cannot be removed, this can lead to serious health concerns such as aspiration pneumonia. For this reason, recurrent chest infections can result as a complication of this health concern. Other symptoms of oropharyngeal dysphagia include bad breath; taking excess time when eating; keeping food in the mouth after the meal has finished; repeated throat clearing or coughing when eating or drinking; having the sensation of breathlessness when eating; talking with an overly wet or gurgling voice when eating or drinking; having food or liquid come out of the nose when attempting to

swallow; and difficulty swallowing after chewing food or sipping liquid. Neurological concerns are predominant reasons for the development of this type of dysphagia, because any damage to the nervous system can impact the nerves that control swallowing. Some causes of oropharyngeal dysphagia include:

- Cancer
- Amyotrophic lateral sclerosis (ALS)
- A range of infections that impact the ear, nose, throat, and surrounding structures
    - Some of these infections may include bacterial tonsillitis (strep throat), gingivitis, pharyngitis, thrush, herpes simplex virus, cytomegalovirus, and more.
- Multiple sclerosis
- Parkinson's disease
- Muscular dystrophy
- Cerebral palsy
- Sjogren's syndrome
- Cerebrovascular accident
- Traumatic brain injury
- Spinal cord injury
- Myasthenia gravis
- Cleft palate
- Premature birth

- Vocal cord paresis
- Dementia
- Zenker diverticulum, also known as pharyngoesophageal diverticulum, which is when a small pouch develops in the throat and accumulates food particles that amass above the esophagus

Many of the above conditions are likely to develop as someone ages, which is why oropharyngeal dysphagia is seen more often in older adults. This form of dysphagia may be insidious in nature, especially if it is one of the initial symptoms of a more serious underlying condition. In fact, doctors may begin diagnostic testing for some of the aforementioned neurological conditions if an elderly individual reports difficulty swallowing. If dysphagia due to a neurological disease goes unchecked for too long, it can worsen along with the disease itself.

There are other negative effects of untreated dysphagia. We mentioned aspiration pneumonia is a major complication that can result from this health concern. In addition, if someone chokes and does not receive immediate medical intervention, they are at risk of death or prolonged oxygen loss to the brain. Someone with either type of dysphagia may also become dehydrated and malnourished as a result of not being able to take in an adequate amount of fluids and food.

Risk Factors and Prevalence

Not everyone with the above medical conditions will experience swallowing difficulties. However, these conditions do increase the likelihood that someone will develop dysphagia. For this reason, most of the aforementioned diagnoses that cause dysphagia are also considered risk factors for dysphagia.

When discussing swallowing difficulties in children, some of the main risk factors include cleft palate, premature birth, and dental problems. However, having a tracheostomy, anatomically large tonsils or tongue, and developmental delays also places a child at risk of dealing with dysphagia. Some of the most common risk factors for dysphagia in children are GERD, functional esophageal disorders, EoE, and abnormalities of the bones in the face and skull. It is difficult to discern exactly how often dysphagia occurs in children, but research shows numbers lie somewhere between 1% and 45% with notable increases in children who have chronic health conditions. Regardless of prevalence and age, dysphagia stands to impact someone's participation in eating and other occupations across the lifespan.

As we mentioned before, age is an intrinsic risk factor for dysphagia. When someone ages, their chances of experiencing dysphagia increase, which happens for several reasons. Firstly, age-related changes to the digestive tract may lead the esophagus to narrow and/or stiffen. This may occur in the absence of a medical condition. However, age also increases someone's risk of neurological conditions such as multiple sclerosis, dementia, and Parkinson's disease. As we mentioned, these and more conditions can potentially lead to dysphagia.

Data confirms the connection between age and dysphagia, as studies show that older adults are more likely to experience dysphagia than other age groups. Dysphagia rates range between 10% and 22% of adults over the age of 50. This number rises to around 40% in adults over the age of 60. Some sources state that dysphagia impacts 1 in 25 adults each year. Research also suggests dysphagia is underreported and may even be misunderstood by people who have it. A dated study shows that over 60% of older adults who specifically stated they did not have swallowing concerns displayed swallowing irregularities when they participated in a swallow evaluation. This data suggests there is a distinct need for

OT providers (and other allied health professionals) to offer feeding and swallowing treatment to older adults.

OT Scope of Practice for Feeding and Swallowing

Feeding and swallowing is one area where occupational therapy's scope of practice overlaps with that of speech-language pathology (SLP). While many aspects of feeding and swallowing intervention fall to SLPs, the field of OT offers many benefits to people living with dysphagia and other feeding-related concerns. An occupational therapist addressing someone's feeding skills can offer intervention focused on a person's cognitive abilities, upper extremity use in the occupation of feeding, seating and positioning during snacks and mealtimes, sensory processing abilities that impact diet and the intake of food, and other areas. Cognitive skills such as memory, attention, problem-solving, judgment, and task sequencing can all impact someone's ability to effectively and safely feed themselves. This may mean OTs offer cognitive remediation or compensatory strategies when addressing dysphagia and feeding. If someone is on a specialized diet (e.g. eating only low-sodium foods to help manage hypertension or a pureed diet to help with dysphagia), their cognition is important for adherence to doctor's recommendations. If they lack the ability to prepare their meals and eat without help, therapists may need to focus on caregiver training to ensure their safety.

Arm and hand function are also central aspects of eating, as someone needs these abilities to utilize eating utensils or finger feed. If there are deficits in upper extremity motor function, an OT can address areas such as coordination, strength, pacing of movement, range of motion, tone, and dexterity. These skills all allow someone to perform the motions necessary to bring food from their plate to their mouth repeatedly over the course of a meal or snack. In some cases, individuals

may be unable to build these skills so an occupational therapist can recommend assistive devices.

Food texture, motor planning, and someone's ability to process and tolerate various smells and tastes also affect the feeding process. Sensory defensiveness in any of these areas may even elicit someone's gag reflex or prevent them from ingesting and keeping food down. OTs can provide sensory integration therapy to assist with regulating difficult types of sensory input with a particular emphasis on managing sensory function during feeding. In addition, positioning and body posture influences the passage of food through someone's digestive system. Occupational therapists may need to use cushions, wedges, pillows, adaptive seating, wheelchair accessories, and more to encourage an ergonomic posture and allow for improved safety and ease of function during mealtime. These are some of the main areas OTs can help manage, but there are a host of other environmental factors that impact feeding and swallowing and, therefore, can fall within OT's scope of practice. Since OTs are well-trained in contextual approaches, this makes feeding and swallowing one of many areas occupational therapists are equipped to address.

Role of Other Allied Health Professionals in Feeding and Swallowing

As we mentioned earlier, speech-language pathologists are also central in treating feeding and swallowing problems. When working with children who have dysphagia, SLPs firstly aim to identify the most ideal feeding techniques to maximize not only the efficiency of feeding, but also the safety of this occupation. Other SLP roles in the realm of pediatric dysphagia include promoting a child's capacity for choice during mealtimes, preventing pulmonary complications and future feeding-related concerns based on the child's medical condition(s), and

developing age-appropriate eating skills across typical settings for them. For example, school-based SLPs can help children with dysphagia eat with their peers in the lunch room and home-based SLPs may assist children with dysphagia in eating at the dinner table with their family. SLPs working in this speciality also focus on quality-of-life and the relationship between a child and their caregiver as it pertains to feeding. An SLP's responsibilities when working with adults who have dysphagia are very similar, with person-centered modifications made for the contexts each adult patient frequents.

As you can see, there is a lot of overlap between the roles of an SLP and an OT in this practice area. Therapists in both disciplines may find this difficult to navigate, yet occupational therapists are able to address dysphagia and other feeding-related concerns as long as occupational performance and functional participation remain the focus of the work they do. This not only offers clinical justification for dysphagia treatment, but allows OTs to effectively collaborate with SLPs to provide such intervention.

Dietitians are other health professionals that can play a part in dysphagia treatment. They are qualified to provide medical nutrition therapy, meaning their treatment can help people with chronic conditions such as cancer and diabetes. Dietitians are also able to offer broader services such as education and nutrition counseling. Specific to dysphagia, dietitians can screen for swallowing problems as part of their assessment process followed by making diet and fluid recommendations accordingly. They typically collaborate with SLPs on the latter of those duties.

It is an OT's duty to communicate with and effectively work alongside dietitians, SLPs, and any other professionals involved in the dysphagia treatment process. This not only serves to supplement the work OTs do, but allows for truly interdisciplinary collaboration and optimal patient outcomes.

Section 1 Personal Reflection

In what practice setting(s) might an OT collaborate with a dietitian to treat someone who has dysphagia? What areas of overlap exist between OT's scope of practice and that of a dietitian?

Section 1 Key Words

Aspiration pneumonia - An infection that occurs when vomit, food, or liquid is inhaled and enters the lungs; this is a complication of pulmonary aspiration, which is when vomit, food, or liquid simply enters the lungs

Dietitian - A board-certified healthcare professional who specializes in creating dietary plans for the management of chronic conditions or promotion of health

Dysphagia - A general clinical term that refers to swallowing difficulties

Section 2: Anatomy of the Digestive System and Phases of Eating

References: 7, 8, 9, 10, 11, 12, 13, 14

There are many parts of the digestive system (also known as the gastrointestinal tract) that can cause or be affected by dysphagia, so therapists should be aware of the interplay between each of its organs and structures. It's best to understand the anatomical location of each as well as what their functions are:

- **Oral cavity**: lips, gums, tongue, soft palate, hard palate, teeth, cheeks
    - The structures in the oral cavity all assist with the mechanical digestion of food. The teeth and tongue do the most work to break food down into smaller, more manageable pieces. However, the gums

support the teeth in this role, the muscular nature of the cheeks assists with movement and processing of food, and the lips offer suction when chewing and sipping liquids. The soft and hard palate both protect the nasal cavities by preventing food from entering those spaces.

- **Esophagus**: Carries food from the mouth to the stomach
- **Stomach**: Contains a range of digestive juices that assist in turning what we know as food into a liquidy paste that is ready to be further processed by the small intestine
- **Small intestine**: Extracts nutrients (proteins, carbohydrates, fats, minerals, vitamins, and some water) from the already processed food and releases them into the bloodstream for use by the body. The small intestine contains its own digestive juices that help with absorption.
- **Large intestine**: Extracts even more water and salt from food that is not able to be otherwise used by the body. Whatever components of food are left by the time it reaches the large intestine are compacted into stool that will later be excreted from the body.
- **Accessory organs of the digestive system**: liver, gallbladder, pancreas, salivary glands
    - Each of these organs secretes enzymes, digestive juices, and hormones that all help with forming appetite, metabolizing food, and absorbing nutrients. This aspect of eating and feeding is a major part of chemical digestion.

Phases of Eating

Many people aren't aware that dysphagia can impact more than just someone's ability to swallow. In fact, someone can be diagnosed with dysphagia when one or more phases of eating are affected. These phases include:

- **Preoral phase**: During this voluntary phase, food and liquid are not yet in the mouth. For this reason, some sources do not consider this as part of the feeding process, yet it is vital. The preoral phase entails the introduction of food and liquid to a person and anything else that leads up to them placing the food or liquid in their mouth. Understandably, the preoral phase varies in length depending on the person's food preferences, hunger levels, and sensory processing skills (sensory difficulties may cause it to take longer).
- **Oral phase**: Also a voluntary stage, the oral phase involves breaking food down into smaller parts so it is able to move further along the digestive system. In the case of liquids, not much needs to be done during the oral phase unless it contains ingredients that require chewing (e.g. smoothies with chunks of fruit). When someone places food in their mouth, they chew it until it becomes an acceptable size and texture to move on to the next phase. The mass of food that is formed by chewing is referred to as a bolus. This is also when the swallow response occurs and it begins when the tongue pushes the bolus toward the throat. Some sources break this phase into two separate parts: the oral preparatory phase (including the mixing of saliva with food and liquid to form a bolus) and the oral propulsion phase, which involves tongue movements that transport the bolus from the oral cavity to the front of the pharynx. Most sources state the oral phase lasts around 1 second.
- **Pharyngeal phase**: This is the first involuntary phase of eating during which the bolus passes through the pharynx and into the esophagus. Sensory

receptors know when the bolus reaches the throat and those receptors trigger involuntary muscle contractions in the pharynx. This movement pushes the food down the pharynx until it reaches the esophagus. The pharyngeal phase lasts, at most, 1 second.

- **Esophageal phase**: As another involuntary phase, this involves the bolus moving from the esophagus to the stomach. This also happens with the help of involuntary muscle contractions collectively called peristalsis. Peristalsis occurs in waves – the esophagus relaxes to make room for the bolus initially, then contracts to move it further along, relaxes again to make more space, and continues until the food reaches the stomach. When food and liquids are moving through this process, it usually lasts 3-5 seconds, but the esophageal phase may take longer if someone has difficulty swallowing or ingests something else (e.g. something inedible, medicine capsules, etc.).

There are also more complex phases of eating that focus on digestion rather than ingestion and consumption. However, there is some overlap between the phases we just discussed and others that are outlined. For instance, the cephalic phase of eating correlates to the preoral phase in that it consists of the sights, tastes, smells, and thoughts about food before eating it. After the cephalic phase is the gastric phase (which involves a bolus being mixed with digestive juices in the stomach), intestinal phase (the occurrence of further digestion and nutrient absorption in the small intestine), and interdigestive phase (the time between meals and snacks when the stomach is empty and the digestive system is mostly idle).

Therapists must have a working knowledge of the phases of eating, since they must be explored during the dysphagia assessment process. If a therapist notices concerns related to any of the anatomical structures in the digestive system or during one or more specific parts of eating, the therapist will also need to know

how to best manage those using OT interventions. We will discuss more about the dysphagia assessment process for OTs in the next section.

Section 2 Personal Reflection

What phases of eating may fall under an occupational therapist's scope of practice? In what practice settings might a therapist be able to address those phases?

Section 2 Key Words

Bolus - A mostly round chunk that is formed from partially chewed food and saliva

Esophagus - A tube made of smooth and striated muscle that is located in the upper/central part of the chest cavity; the esophagus is the third organ to process food and liquid after they are eaten, and connects the throat to the stomach

Pharynx - Another muscular tube located in the neck; the pharynx (also known as the throat) is the second organ to process food and liquid after they are eaten, and connects the nasal cavity and the oral cavity to the esophagus; the upper part of the pharynx starting at the nasal cavity is called the nasopharynx while the middle part of the pharynx starting at the oral cavity is called the oropharynx

Section 3: Dysphagia Occupational Therapy Assessment

References: 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28

When evaluating a patient with dysphagia, there are many areas OTs must explore to get a full picture of someone's feeding and swallowing abilities. Feeding skills

are present across the lifespan, so therapists should have an understanding of relevant reflexes that begin developing in utero and continue to mature in a child's early years. These reflexes may present as areas of concern for both pediatric and adult patients with dysphagia. As a result, a comprehensive evaluation of feeding and swallowing skills should include the following areas:

- Sucking skills
    - The sucking reflex is an involuntary movement that involves a baby sucking (on food and liquids), swallowing (food and liquids), and breathing all at the same time. This reflex helps babies receive nutrients and oxygen simultaneously.
    - **Onset and maturation:** The sucking reflex starts to form around 32 weeks gestation and is fully developed by 36 weeks gestation. Between the ages of 2 and 4 months, a child's sucking abilities transition from reflexive in nature to voluntary. Since much of the suck-swallow-breathe reflex develops in utero, babies born before 32 weeks gestation will have difficulty coordinating these functions.
    - **Signs that point towards potential problems**: There are likely concerns with sucking skills if a child falls asleep while sucking on a bottle or breastfeeding for a brief period, latches/unlatches on a bottle or breast over and over, or nurses for a normal or extended time and still presents as hungry.
- Rooting skills
    - The rooting reflex is an involuntary movement that involves a baby turning their head in the direction of a stroke on the cheek or mouth. This reflex helps them locate food sources.

    - **Onset and maturation:** The rooting reflex starts to develop at 28 weeks gestation and is fully developed by 36 weeks gestation. Between the ages of 4 and 6 months, a child's rooting abilities transition from reflexive in nature to voluntary.
    - **Signs that point towards potential problems**: There are likely concerns with rooting skills if a child's rooting reflex persists beyond 6 months of age, their tongue sits too far forward in their mouth, they drool too much, there are problems with muscle tone, and their mouth is hypersensitive to any kind of input.
- Interest in food
    - Babies typically show more notable interest in food and eating between 4 and 6 months of age. It is during this time period that babies will open their mouths when an adult presents them with food on a spoon. Some skills that support this interest include bringing their hands to their mouth and grasping toys and other inedible objects (often to bring them toward their mouth and suck on them).
    - **Onset and maturation:** By the 6- to 9-month time frame, babies should be able to lean forward toward food while being fed. This is also around the time their gag reflex decreases, so they should be able to tolerate foods more readily.
    - **Signs that point toward potential problems:** Behaviors such as grimacing, crying, turning their head away, and appearing distracted at the sight or smell of meals or snacks all indicate low interest in food. Other signs include squeezing their mouth closed, pushing

utensils away, or opening their mouth only very slightly when food is presented to them by an adult.

- Coordination of tongue and jaw movements
    - Babies need coordination between these structures to help push food to the back of the mouth and into the throat, which helps prepare them to swallow.
    - **Onset and maturation:** This arises around 3 to 6 months of age and helps with efficiency of feeding. Between the ages of 6 and 9 months, lateral tongue movements begin to develop, which helps with the manipulation of food. Between 9 and 12 months of age, babies should be able to chew in a rotary fashion, which helps as they transition to more textured solid foods.
    - **Signs that point toward potential problems:** Potential indications include food falling out of a baby's mouth while they eat, tending toward soft foods, struggling to eat anything with a new texture, and chewing very slowly without breaking down the food much. Uncoordinated jaw and tongue movements can also manifest as speech problems in children of any age. These concerns may present as slurred words, exaggerated mouth movements while speaking, and potentially even adding or skipping syllables from certain words.
- Ability to sit with or without support
    - Assuming an upright posture with any degree of assistance helps babies eat. This is especially important around the time they are introduced to pureed foods and remains crucial as they transition to solid foods.

    - **Onset and maturation:** Between 4 and 6 months of age, babies usually eat while in a reclined position or when strapped into a highchair. Babies should be able to hold their head up independently when sitting upright during mealtimes between the ages of 6 and 9 months. However, they still need lower body support from a highchair at this age.
    - **Signs that point toward potential problems:** Signs that indicate a child has difficulty sitting upright may include fidgeting often, multiple attempts at repositioning, leaning far back against their chair or an adult (if they are sitting on someone's lap), slumping their shoulders, and tilting their head forward.
- Self-feeding and utensil use
    - As babies eat more solid foods, their self-feeding skills transition from finger feeding to
    - **Onset and maturation:** Babies between the ages of 6 and 9 months will start to finger feed by picking small food pieces up with their fingers and bringing that food to their mouth, which is an early pincer grasp. The 6- to 9-month range is also marked by an interest in eating utensils. Between 12 and 18 months, babies should be able to independently use a spoon when eating and be able to drink from a sippy cup. Fork use develops between the ages of 18 and 24 months, which is also when some children may be able to use a blunt safety knife during mealtime.
    - **Signs that point toward potential problems:** Babies may have difficulty using utensils if they use them improperly or unsafely, throw them during mealtime, get food on their hands and mouth, get

frustrated when eating utensils are presented, drop food off their utensil when moving it to their mouth, or use utensils with an immature grasp (i.e. a fist rather than with fingertips).

- Phasic bite reflex
    - The phasic bite reflex involves rhythmic closure and opening of the jaw in a vertical plane only, which mimics munching and is a formative skill that precedes chewing. Before this time, most of a baby's jaw movements are slight and in the lateral plane, which is necessary for sucking. The phasic bite reflex is elicited when babies feel pressure on their gums.
    - **Onset and maturation:** This reflex develops between 4 and 6 months, and helps babies prepare to eat solid foods. During the time the phasic bite reflex is present, babies become better at controlling and sustaining their bite at the appropriate times. The phasic bite reflex usually disappears between 9 and 12 months.
    - **Signs that point towards potential problems**: There are likely concerns with a baby's phasic bite reflex if they attempt to swallow solid foods without much or any chewing, excessively grind or clench their jaw (especially when eating), have a hard time opening and closing their jaw, are not able to close their lips while eating, and attempt to chew with choppy jaw movements that don't use enough force.

Depending on a patient's age, the above skills should all be present at some time or another in their life to assist with feeding. Another part of a dysphagia evaluation involves looking out for motor abnormalities in the realm of feeding mechanisms. Therapists may become aware of these concerns either through

functional observation of a patient eating and swallowing or as a result of standardized testing. Either way, therapists should be well-versed in what these concerns look like, what their potential causes are, and how they interfere with the occupation of feeding. This information allows an OT to form an early plan regarding how to address such deficits within their scope of practice. Feeding-related concerns OTs may become aware of during the evaluation process include:

- Jaw thrust
    - This happens when the jaw is held in a downward and outward position, which leads the jaw's movements to be too forceful. Jaw thrust often leads someone to drool, spill liquids, and drop food items when eating.
    - **Causes**: Overstimulation, hypertonia, hyperextension of the neck, hyperreactivity to the teeth coming into contact with something, poor seated posture, compensatory mechanism resulting from breathing difficulties
- Clamping the mouth shut
    - This is a voluntary action that indicates someone is refusing to eat, full, or all done with their current meal. This is commonly seen in younger children with sensory concerns, strong food preferences, or a lack of speech skills. However, older adults with cognitive deficits that impact their communication skills may also display this behavior.
    - **Causes**: Difficulty communicating lack of interest in food, poor oral motor stability, sensory sensitivity, stress
- Exaggerated jaw movements

    - These are similar to those associated with jaw thrust, but they lack the same force. Exaggerated jaw movements usually cause difficulty with stability during feeding, such as when biting food off their utensils or drinking from an open cup.
    - **Causes**: Hypotonia in the body's musculature, hypertonia in oral musculature, tone fluctuations, poor motor planning and organization, hypersensitivity in the oral cavity, unstable jaw joint, difficulty grading movement patterns, impaired oral motor control, inability to sustain jaw closure
- Jaw instability
    - This occurs when the jaw joint shifts or slips out of place, which leads someone to repeatedly open and close their mouth while eating in an attempt to reset its position and gain more control. Someone with jaw instability can often take controlled chews and bites, but struggles with graded movements.
    - **Causes**: Joint laxity, difficulty grading movement patterns, structural problems with the temporomandibular joint (TMJ), lack of control in the jaw, inability to isolate jaw movements from those of the rest of the body, hypotonia
- Jaw clenching
    - Jaw clenching is when certain body movements cause shortened contractures and excessive tightness of muscles surrounding the jaw. Therapists may confuse jaw clenching with the tonic bite reflex and stability biting. Jaw clenching may or may not be associated with teeth grinding, and typically leads to difficulty initiating and/or

sustaining movements during mealtime. Someone who clenches their jaw may also have poor rhythm when drinking or eating.

    - **Causes**: Stress, overstimulation, poor posture, overly flexed body posture, lack of control over jaw movements

- Jaw retraction

    - When the jaw retracts, the lower jaw moves up and back while the upper jaw remains in a neutral position. This leads to misalignment of the teeth, and may happen more often in people who have smaller-than-average jaws. Jaw retraction is a compensatory strategy that may be used in the event someone's tongue blocks their airway. Jaw retraction can lead to snoring (stemming from breathing difficulties), chronic pain, popping and clicking in the jaw joint, and difficulty chewing.

    - **Causes**: Genetic predispositions, excessive thumb sucking as a child, breathing through the mouth, injuries or other forms of facial trauma, certain congenital conditions

- Pocketing

    - Pocketing occurs when someone holds food in their mouth without swallowing. When pocketing occurs with older adults, it is most often due to forgetfulness. Pocketing can lead to choking, especially if someone changes body posture, engages in physical activity, or simply moves on to other tasks with food still in their mouth.

    - **Causes**: Painful swallowing, oral motor weakness, sensory difficulties, cognitive concerns

- Tongue thrust

    - This is when the tongue pushes against the front teeth when someone is at rest, talking, swallowing, and otherwise active. Tongue protrusion can lead someone to primarily breathe through their mouth, have an open mouth at rest, struggle to pronounce ‘z’ and ‘s’ sounds in a way that is similar to a lisp, and have their tongue stick out between their teeth when they talk or swallow.
    - **Causes**: Dystonia, structural concerns (such as tongue thrust), nervous system conditions
- Tongue retraction
    - This defensive posture prevents the tongue from moving in a way that assists with swallowing. Tongue retraction decreases entry to the mouth, which makes eating and other activities more difficult.
    - **Causes**: Enlarged tonsils, postural misalignment, allergies or other sinus-related problems, foreign objects or other factors leading to a blocked throat cavity
- Stability bite
    - When someone bites down on eating utensils, cups, straws, and other food-related tools in an effort to gain more control over what they consume, this is called a stability bite. This is voluntary, which is what sets it apart from jaw closure.
    - **Causes**: Muscle tone fluctuations, poor (graded and non-graded) jaw control, difficulty with biting exploration, poor chewing efficiency, hypotonia, poor posture, decreased or varied proprioceptive feedback from the jaw
- Tonic bite

    - Tonic bite is an involuntary reflex that causes the jaw to clench after the gums or teeth are stimulated. The tonic bite reflex can lead to difficulty sucking, and may also cause damage to cups, straws, and eating utensils. Those who exhibit the tonic bite reflex may experience frustration, especially since it's difficult to release the bite once it has been triggered.
    - **Causes**: Hypersensitivity, neurological disorders, oral stimulation

As we mentioned earlier, therapists can observe a lot about a patient's feeding and swallowing abilities from observation. However, standardized assessments are also an essential part of the evaluation process. Some of these assessments may be more commonly used by SLPs, but OTs are just as qualified to use any of the below tools as long as they are appropriate for their patient:

- **Neonatal Oral Motor Assessment Scale (NOMAS)**: intended for newborns between 0 and 8 weeks old
- **Neonatal Eating Outcome (NEO)**: intended for newborns
- **Early Feeding Skills (EFS)**: intended for infants
- **Pediatric Eating Assessment Tool (PediEAT)**: intended for children between 6 months and 7 years
- **Infant Eating Assessment Tool (InfantEAT)**: intended for infants up to 1 year old
- **Neonatal Eating Assessment Tool (NeoEAT)**: intended for infants up to 7 months old
- **M.D. Anderson Dysphagia Index (MDADI)**: intended for adults
- **Eating Assessment Tool (EAT-10)**: intended for adults

- **Functional Oral Intake Scale (FOIS)**: intended for all ages, but was originally designed for the assessment of adults who sustained a stroke
- **Kayser-Jones Brief Oral Health Status Examination (BOHSE)**: intended for older adults
- **Oral Health Assessment Tool (OHAT)**: intended for adults
- **Gugging Swallowing Screen (GUSS)**: intended for adults with acute stroke
- **Yale Swallow Protocol**: intended for children and adults
- **Dysphagia Handicap Index (DHI)**: intended for adults
- **Dry Swallowing Test**: intended for adults
- **Timed Water Swallowing Test (TWST)**: intended for children and adults
- **Bedside Swallowing Evaluation (BSE)**: intended for adults
- **Cough Reflex Test (CRT)**: intended for adults, but is most relevant when used with older adults
- **Gastrointestional and Gastroesophageal Reflux (GIGER) Scale**: intended for infants between 0 and 2 years old
- **Child Oral and Motor Proficiency Scale (ChOMPS)**: intended for children between 6 months and 7 years old

While OTs do not have diagnostic capabilities, it is still helpful to be aware of what medical procedures are used to formally diagnose someone with dysphagia. Chart reviews are a large part of the evaluation process, so therapists may come across documentation on these procedures. Therefore, therapists should have a basic understanding of each test's purpose and what structures they look at in order to

determine how they impact the OT evaluation and subsequent care. These diagnostic procedures include:

- **High-Resolution Pharyngeal Manometry (HRPM)**: This minimally-invasive test compares the pressure generated by each of the pharyngeal muscles when someone swallows.
- **Real-time Magnetic Resonance Imaging (RT-MRI)**: As a type of MRI, the RT-MRI is a non-invasive way to continuously monitor pharyngeal and esophageal movements in real-time as someone swallows.
- **Endoluminal Functional Lumen Imaging Probe (EndoFLIP)**: A minimally-invasive procedure that measures movement, diameter, and pressure within the esophagus and other organs in the digestive tract. This is a supplementary procedure that may be performed along with an upper endoscopy.
- **Esophagogastroduodenoscopy (EGD)**: Also known as an upper endoscopy, the EGD requires a camera on the end of a scope be placed down the throat to take images of the throat as well as the esophagus, stomach, and the proximal part of the small intestine (called the duodenum).
- **Colonoscopy**: Also known as a lower endoscopy or a sigmoidoscopy, a colonoscopy allows doctors to view the lower parts of the digestive tract, including all sections of the large intestine and the rectum.
- **Barium esophagography**: Also known as a barium swallow test, a barium esophagography involves drinking a barium solution to illuminate the throat and esophagus. After the solution has been ingested, the patient undergoes x-rays that offer a more detailed view of these structures. This is helpful for concerns related to esophageal dysphagia. The image produced from this test is called a barium esophagram.

- **Videofluoroscopic Swallow Study (VFSS)**: Also known as a modified barium swallow test, a VFSS is a more detailed type of esophagram that involves ingesting barium-coated liquid and food that illuminates the mouth, throat, and esophagus. After the food items have been consumed, the patient undergoes x-rays that offer a more detailed view of these structures. This is helpful for concerns related to any type of dysphagia, as a VFSS covers much of the digestive tract.

- **Laryngoscopy**: This procedure involves placing a camera on the end of a scope up the nose. This camera allows providers to view the throat and voicebox, which is the primary focus for this diagnostic procedure.

- **Fiberoptic Endoscopic Evaluation of Swallowing (FEES)**: This procedure involves placing a camera on the end of a scope up the nose that offers a view of the esophagus and voicebox. After the camera is in place, the patient must ingest food and liquid that contains a special dye to make the digestive structures more visible. The provider watches as the patient ingests these substances and observes whether or not food enters the airway. The FEES is considered the gold standard for diagnosing dysphagia.

- **Esophageal manometry**: This procedure involves placing a tube through the nose that feeds through the upper digestive tract and to the stomach. Once the tube has been placed, the patient is asked to drink water. The tube then measures the pressure of the contractions in the esophagus as the person swallows the water.

Physicians can perform each of these tests, while only certain tests fall under an SLP's scope of practice. That being said, SLPs are typically tasked with performing the VFSS, FEES, and bedside swallow tests because of how closely they relate to SLP interventions. Most of these tests can be completed on an outpatient basis. However, some patients may undergo these procedures while they are

hospitalized if that is when dysphagia symptoms become most apparent or first arise. If this is the case, SLPs are often more closely involved in the process, meaning there may also be room for OTs to collaborate and potentially even perform a co-treatment during such tests, depending on a patient's specific needs. Regardless, it is possible for OTs to come across this terminology during the course of their work, so they should understand how such procedure results will inform their treatment.

Section 3 Personal Reflection

Do you think it's more likely for an occupational therapist to treat a patient before or after they are formally diagnosed with dysphagia? Why or why not?

Section 3 Key Words

Rotary chewing - An advanced chewing skill that involves circular jaw movement, closed lips, and a stable jaw, all of which allow food to be broken down by the rear molars

Temporomandibular joint - A joint characterized by the union of the temporal bone from the side of the face (above the ear) and the lower jaw

Section 4: Occupational Therapy Treatment for Dysphagia

References: 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

As with many health concerns, there are several factors that determine what someone's dysphagia treatment looks like, including its root cause, if there are any comorbidities present, the severity of someone's symptoms, and their cognitive

status. Since dysphagia can impact someone across the lifespan, there are some interventions that may be more appropriate for children while others are better suited for adults. These will be separated by intervention type:

Oral Motor Strengthening

Therapeutic exercises focused on oral motor structures are one class of OT interventions that address dysphagia. OTs can recommend exercises based on the patient's age, cognition, motor skills, and where they have demonstrated weakness. Many exercises that address oral motor skills involve use of the tongue, lips, jaw, and/or soft palate. These exercises jointly address strength, coordination, and motor control. Therapeutic exercises and preparatory activities that focus on oral motor strengthening include:

Those that address the lips

- Making a kiss
- Smacking your lips together
- Smiling as wide as you can
- Making humming noises
- Drinking through fun straw
- Wrapping your lips around a lollipop, squeezing, and holding
- Moving the tongue side to side in between your lips
- Puckering your lips
- Blowing bubbles, pinwheels, or other breath-dependent toys
- Range-of-motion exercises

    - Making a “PPPPPP” sound with your lips
    - Exaggerating pursing your lips (lip protrusion); for kids, this may be presented as a game that involves ‘making fish lips’
    - Closing your lips around a tongue depressor, popsicle stick, or similar object to make a seal and holding for a short period of time (lip closure, also known as lip seal or lip press). After some practice, this can also be done without an object once someone has developed more awareness and strength.
- Touching your tongue to your nose
- Pretending to lick a lollipop
- Pressing your lips together to rub in chapstick or lip gloss
- Listening to rhythmic music while tapping your lips to the beat or coming up with your own rhythm to guide tapping your lips
- Whispering the sounds of each letter in the alphabet or doing deep breathing exercises (with a focus on mouth breathing) while looking in a mirror and observing how your mouth moves
- Doing deep breathing exercises while looking

Those that address the cheeks

- Making silly faces in the mirror
- Blowing bubbles or puffballs
- Blowing into a straw to blow bubbles in a cup of water
- Blowing into a straw to move a facial tissue, pom-pom, cotton ball, or other light object across a table

    - Therapists can turn this into a group activity by making it into a competition between two or more patients or incorporating it into a relay race or obstacle course. To make it more difficult, therapists can have patients blow their items along a straight or even a zig-zag line.
- Filling your cheeks with air and holding before slowly blowing out
- Massaging the cheeks with your fingers in a circular motion
- Holding a popsicle stick between lips
- Drinking from straw
- Listening to rhythmic music while tapping your cheeks to the beat or coming up with your own rhythm to guide tapping your cheeks
- Blowing on a noisemaker, kazoo, whistle, pinwheel, harmonica, or other similar instruments/objects
- Playing the hokey pokey with various commands that involve cheek movement

Those that address the jaw

- Chewing candy, chewy sticks, or inedible chew toys
- Drinking a thick milkshake, smoothie, yogurt, oatmeal, or another thick liquid/food from a straw
- Playing tug-of-war with a chewy candy by pulling it away with your fingers and using your mouth to draw it back in and repeat
- Range-of-motion exercises
    - Opening your jaw wide and making an “AAAAAAH” sound

    - Moving the jaw side to side repeatedly
    - Moving the jaw up and down repeatedly
    - Lifting your chin, using your fingertips to apply downward pressure from under your jaw, then swallowing while resisting the shift of musculature (chin lift)
    - Tucking your chin to your chest while a hand towel, scarf, or something else is positioned there to serve as resistance (chin tuck against resistance)
- Massaging your jaw both gently toward and away from your lips
- Chewing foods like apples, carrots, cucumbers, etc. to make them into a paste
- Rubbing ice chips on your jaw to improve self-awareness of that area
- Chewing on ice cubes or a silicone straw
- Chewing gum, hard candy, or mints
- Making silly faces
- Using teething toys and tools while assuming various body positions

Those that address the tongue

- Licking lollipops in an up and down motion
- Touching your chin with your tongue without moving your head
- Licking honey, yogurt, or another semi-thick substance from your lips and the sides of your mouth
- Clicking your tongue and making popping sounds

- Range-of-motion exercises
    - Extending your tongue out as far as possible and holding it for a short period of time (tongue extension)
    - Pulling your tongue back in your mouth as far as possible and holding fit for a short period of time (tongue retraction)
    - Moving your tongue from side to side while keeping it in your mouth (tongue lateral movement)
    - Placing the tip of your tongue on the roof of your mouth, then exhaling while sticking your tongue out
    - Holding your tongue to the outside of your mouth for a short period of time
    - Touching the tip of your tongue to your nose
    - Pushing and holding your tongue to the inside of each cheek
    - Folding your tongue between your lips and holding it for a short period of time
    - Making various sounds that require tongue movement: “PUH,” “TUH,” “KUH,” “LALALALALA,” “TATATATA,” “SHHHH,” and “BRRRRRR”
    - Playing the hokey pokey with various commands that involve tongue movement
- Holding the tip of your tongue between your teeth while swallowing
- Playing Simon Says tongue games in the mirror to help with self-awareness
- Tongue pressure resistance training

    - Pressing the tongue against the roof of the mouth to strengthen the tongue and aid in swallowing. This can be done using a device (which therapists must be trained in the use of) or by pressing the tongue against the roof of the mouth.

- Chewing a biscuit until it becomes an even texture
- Pushing a lollipop against either side of your tongue and attempting to hold your tongue in place
- Gently pressing a lollipop on your tongue and attempting to hold your tongue in place
- Placing a small piece of cereal or another bite-sized food on the tip of your tongue, lifting it up, and holding your tongue against your hard palate
- Using temperature stimulation to improve self-awareness by feeding yourself with a spoon previously dipped in warm or cold water
- Counting your teeth using only your tongue
- Using a toothbrush to stimulate the tongue and other parts of your mouth

Those that address the palate

- Puffing out your cheeks while breathing through your nose
- Transferring pom-poms or cotton balls between two bowls using suction through a straw in your mouth
- Eating cold food to boost self-awareness of the palate and surrounding areas
- Range-of-motion exercises
    - Making various sounds that require palate stability: “AHHHHH,”

alternating between “MABA” and “NADA”

- Cheek air movement: Filling your cheeks with air and moving that air from one cheek to the other while keeping your mouth closed

Those that strengthen the neck, throat, and surrounding areas

- Effortful swallow
    - The act of willfully swallowing in a forceful manner by pushing the tongue against the roof of the mouth and squeezing all the muscles in the face and throat as hard as you can.
    - By increasing activation of the throat muscles, the effortful swallow helps with coordination and improved swallowing abilities. The effortful swallow can also be used while someone is eating to help clear a bolus, which can prevent aspiration, and to improve the timing and coordination of swallowing muscles.
- Supraglottic swallow
    - This involves inhaling slowly through the nose, holding your breath, placing a bite of food or small sip of liquid in your mouth, swallowing while continuing to hold your breath, and coughing promptly after swallowing.
    - The supraglottic swallow is meant to prevent aspiration by closing the airway while eating. Due to its mechanism of action, this exercise is not appropriate for anyone with COPD or other conditions that impair breathing.
- Super-supraglottic swallow

    - This involves inhaling slowly through the nose, holding your breath, bracing/bearing down, swallowing while still holding your breath, coughing to clear your throat, and then swallowing again.
    - The super-supraglottic swallow takes the previous technique one step further by strengthening the tongue, shielding the airway from food entering, and helping secure the glottis in the closed position.
- Mendelsohn maneuver
    - This involves swallowing normally, then using your throat muscles to hold the Adam's apple at its highest point for a few seconds.
    - The Mendelsohn maneuver helps raise the larynx higher and for longer to assist with swallowing.
- Shaker exercise
    - Also known as the head lift maneuver, the shaker exercise involves laying on your back, raising your head off the bed, and holding this position for 1 minute.
    - The Shaker exercise helps strengthen the neck and throat muscles.
- Expiratory muscle strength training (EMST)
    - This involves breathing out forcefully into a device that offers graded resistance.
    - EMST strengthens the muscles used to exhale, which helps with airway protection, cough strength, lung function, and (indirectly) swallowing.
- Masako maneuver

    - This involves sticking your tongue between your front teeth slightly, holding it in place using a gentle bite, and maintaining this posture while swallowing saliva that may be in the oral cavity. This is also known as the tongue-hold swallow.
    - When completed without food or other liquids in the mouth, the Masako maneuver helps with pharyngeal weakness that may lead excess saliva to accumulate.
- Stretch exercise
    - This involves tilting your head back and opening your mouth while pushing your jaw up toward your nose.
    - The stretch exercise is a throat opening exercise intended to strengthen the voicebox while moving it up to prevent aspiration when eating.

Head and Body Positioning Strategies

Similar to the chin tuck against resistance exercise mentioned above, the chin tuck is a common positioning technique that can assist with swallowing when implemented during mealtime. This involves tucking the chin towards the chest while swallowing. By flexing the head forward, this eases tension in the muscles of the throat and narrows the airway in a way that gently guides food down the esophagus. Depending on how severe someone's dysphagia is, therapists may also instruct patients to perform the chin tuck while tilting their head slightly toward the weaker side of their throat. This helps direct the bolus to the stronger side and prevents choking. Depending on the musculature and specific swallowing difficulties, other head positions may be more helpful. For example, tilting the head to the side (without using a chin tuck) may help someone whose concerns are related to unilateral weakness, such as after a stroke. OTs may make position

recommendations before, during, and after meals to assist with all parts of the feeding process.

Certain body positions can also help with dysphagia symptoms and reduce someone's risk of aspirating. Reclining at a 30° angle while seated in a chair and laying on their side in favor of the stronger side of their throat (called side inclination) are both recommended for people with severe dysphagia. Another option is high Fowler's position, which involves sitting upright with the upper body between 60 and 90° to keep the spine straight with the legs straight or bent. Occupational therapists may encourage more customized positioning solutions for patients in wheelchairs, which may involve recommending various accessories and alterations to assist in feeding. Some examples include an attachable tray table or an adjustable cup holder.

Diet Recommendations

Therapists may make diet recommendations to assist with managing dysphagia. Therapists often tell patients with dysphagia to avoid foods that are hard or dry, since they are known to increase symptoms. An OT may ask patients to stay away from foods such as chips, bread, toast, crackers, seeds, nuts, and hard candies. In addition, someone with dysphagia may have difficulty eating overly fibrous, stringy, or raw foods such as stringbeans, pineapple, celery, corn, potato skins, and beans. Tough and chewy foods such as certain candies, peanut butter, steak, and bacon are also triggers for dysphagia. Foods that are innately moist and soft are typically recommended, since they are easier to swallow.

Some patients may need to be placed on a true dysphagia diet, which falls into the scope of practice of SLPs and dietitians. A dysphagia diet may consist of crushing a patient's medications, feeding through a nasogastric tube, or simply modifying food to be of a more tolerable texture.

Task Modifications

Techniques that impact the presentation of someone's food can minimize the impact of dysphagia, so therapists may offer task modifications during mealtime. Some examples include eating smaller portions at a time, cutting all food into small pieces, and slowing the pace of eating to allow for more thorough chewing and swallowing. People with dysphagia stemming from jaw instability may have more success when placing food at the side of their mouth rather than the front.

Assistive Technology

OTs can recommend various types of adaptive equipment for people with dysphagia. Some examples include:

- Nosey glass (also known as a cut-away cup): Has a nose cut-out, and is appropriate for someone with limited neck motion
- Wedge cup: Limits the flow of liquids through the cup, and is appropriate for someone with dysphagia due to neurological deficits, oral motor weakness, limited tongue function, or poor oral range of motion
- Oralflo: Allows someone to drink water and medication at the same time, and is appropriate for someone with oral motor weakness
- Infa-trainer: Facilitates chin tuck positioning while protecting the neck from entering hyperextension while drinking, and is appropriate for someone with joint hypermobility
- Bendable utensils: Allows someone to feed themselves (or caregivers to feed someone) from a different angle; these are appropriate for someone with jaw instability

- Maroon spoon: Has a shallow and narrow design, and is appropriate for those with tongue thrust, limited lip closure, or oral motor hypersensitivity
- Coated utensils: Are thicker and more durable; these are appropriate for someone with overly sensitive lips and teeth or limited awareness in the oral cavity
- Lidded cups: Allows for better flow from the cup to the mouth and prevents spillage; these are appropriate for someone with poor tongue control or limited lip closure
- One-way valve straws: Remains full of liquid even after someone removes their lips; these are appropriate for people with tongue or palate problems, poor suction, limited strength, or lip closure deficits
- Regulating drinking cup: Measures out small portions of regular liquids, and is appropriate for those who gag, choke, or cough when drinking, or those who cannot take small sips

Clinical Considerations for Dysphagia Treatment

When recommending any adaptive equipment for feeding, therapists should be sure to train patients in proper use. Specific considerations include having all equipment (modified or not) within reach, training someone to use their stronger hand if there is any unilateral weakness, propping their elbows up on the table or other furniture, and assuming the proper body position in a supportive, ergonomic chair or wheelchair.

First-line treatment for some cases of dysphagia involves direct intervention for the underlying cause of swallowing concerns. For example, if someone has dysphagia as a result of an infection such as strep throat, they should firstly receive treatment for the infection before the dysphagia is addressed. Any

residual swallowing deficits should then be further explored and addressed accordingly.

As with most therapy interventions, these should be performed under the supervision of a trained therapist. Some oral motor exercises can worsen dysphagia if they are completed incorrectly (e.g. with improper form) or are performed by someone who has contraindications for that particular exercise.

AOTA's Stance on Feeding and Swallowing Interventions

While the above categories encompass many OT interventions for feeding and swallowing, there are other ways occupational therapy can help patients with presenting concerns in these areas. In a dated position statement, AOTA has outlined several additional feeding intervention types, which include:

- Utilizing desensitization techniques in preparation for improved mealtime engagement
    - Focused on tactile, gustatory, and olfactory function
- Building tolerance, routines, rituals, and habits for oral hygiene
- Forming routines surrounding mealtimes and snacks across all of the patient's contexts
    - In some cases, therapists may adjust a patient's feeding schedule to improve their awareness of hunger sensations and general motivation for eating. Therapists may also encourage the introduction of food at a time that aligns better with the patient's respiration.
- Improving body awareness (in a general sense or on one side of the body) to assist with feeding independence and swallowing abilities

- Facilitating visual-perceptual skills to assist with discrimination of food items and accuracy when self-feeding or drinking
- Incorporating environmental modifications to improve attention and safety during mealtime
- Implementing sensory and cognitive techniques to improve and maintain attention during mealtime
- Providing non-nutritive oral stimulation, exercises, and techniques
    - Many of these can become part of an OT home program to assist with feeding.
- Recommending and fabricating or customizing upper extremity orthoses to be used during the feeding process
- Enhancing a patient's ability to place food and drink in their mouth with or without the use of utensils
    - This may involve addressing skills such as postural control, motor planning, endurance, coordination, fine motor control, strength, and range-of-motion in the upper body.
- Collaborating with patients and their caregivers to encourage the use of problem-solving for feeding concerns
- Teaming up with speech-language pathologists, behavior therapists, and other clinicians to use communication or behavior modification strategies that increase feeding participation
- Referring patients to specialists (dietitians, allergists, ear-nose-throat doctor, gastrointestinal doctor, etc.) as needed

- Incorporating compensatory strategies into mealtimes to assist with changes in oral motor structures or functions or altered sensation
- Improving emotional responses (e.g. self-esteem, etc.) to self-feeding, food exploration, and diet choices
- Using tactile, verbal, and/or written prompts to help patients initiate and follow through with all actions when eating
- Administering physical agent modalities such as neuromuscular electrical stimulation (NMES) to assist with neurological deficits at the root of feeding concerns

In short, there are a range of interventions occupational therapists can utilize to assist patients with feeding concerns. Since patients can easily have more than one presenting concern contributing to their difficulties in this occupation, therapists may use a combination of techniques to address their deficits. As we mentioned earlier, many of these interventions should be paired with educational aspects such as patient and caregiver training and home exercise programs. This ensures their safety, carryover to each of the patient's natural contexts, and adherence within their existing (or newly-created) routines.

Based on the results, therapists may need to modify feeding-related interventions to ensure goodness-of-fit. This may need to take place based on what they observe or in response to medical diagnoses and treatments from other professionals. Either way, therapists should always be mindful of interprofessional collaboration when providing feeding-related OT intervention, as this can impact their own outcomes.

Section 4 Personal Reflection

What indications or responses to treatment might a patient demonstrate that warrant a specialist referral?

Section 4 Key Words

Dyspnea - Shortness of breath or other difficulties breathing; dyspnea is common with cardiac and pulmonary conditions

Section 5: Case Study #1

A 59-year-old man has been referred to outpatient occupational therapy after receiving a diagnosis of relapsing-remitting multiple sclerosis (RRMS). He is currently in the remitting phase, but is motivated to take a proactive approach to prepare for when his symptoms increase again. During the evaluation, he tells his therapist that he has the most difficulty with grooming, hygiene, and eating. He often drops and cannot properly use items like hairbrushes, toothbrushes, and eating utensils. He also reports frequent feelings of food being stuck in his chest when he eats.

1. What type of dysphagia does this patient likely have?
2. Does this patient need a diagnosis of dysphagia for the OT to address his feeding concerns?
3. Based on what the patient reported during the evaluation, the OT should find standardized tests to assess which skill areas?

Section 6: Case Study #1 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What type of dysphagia does this patient likely have?

   Based on the patient-reported sensation of food being stuck in the chest and their recent neurological diagnosis, this patient most likely has oropharyngeal dysphagia.

2. Does this patient need a diagnosis of dysphagia for the OT to address his feeding concerns?

   No. This patient was referred to OT due to RRMS, so the OT can treat the patient's presenting concerns related to that diagnosis as long as they are qualified to do so. The therapist should refer the patient to a specialist if they notice signs and symptoms of aspiration, the patient's dysphagia worsens, or the OT learns more about the case and no longer feels qualified enough to address their concerns.

3. Based on what the patient reported during the evaluation, the OT should find standardized tests to assess which skill areas?

   The therapist can use standardized assessments focused on fine motor dexterity, upper extremity strength, and ADL independence (with an emphasis on grooming, hygiene, and feeding due to his reported concerns).

Section 7: Case Study #2

A 5-year-old girl with Autism Spectrum Disorder and Sensory Processing Disorder has been referred to school-based occupational therapy. Her teacher is reporting that she has increased difficulty with morning ADLs. The lunchroom monitor has also told the teacher that this child rarely eats meals with the rest of her class and has been observed to gag when anyone offers or presents to her any non-starch-based food. When the child does eat, she needs excessive prompting from the monitor, takes 1 bite, and then coughs and grimaces while attempting to swallow. She is then encouraged to drink water from an open cup to assist with this process and attempts to, but spills most of it down her shirt. The monitor states that it doesn't appear she actually drinks anything during these instances.

1. Is an OT qualified to address this child's feeding concerns?
2. Based on the information provided, does it appear this child has dysphagia?
3. Is a school-based setting the most appropriate forum to address these feeding concerns?
4. What concerns might be at the root of this child's feeding concerns?
5. Would another provider be able to help with these concerns, either by working in addition to the OT or instead of them?

Section 8: Case Study #2 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. Is an OT qualified to address this child's feeding concerns?

Yes, an OT can certainly address the aforementioned feeding concerns this child is experiencing.

2. Based on the information provided, does it appear this child has dysphagia?

   Yes, it appears so. Low motivation for eating, coughing, grimacing, liquid spillage, and limited food/water consumption are all signs of dysphagia.

3. Is a school-based setting the most appropriate forum to address these feeding concerns?

   Potentially. The therapist may determine this after completing a comprehensive evaluation. They should be sure to speak to the child's family to learn if these concerns are also happening at home and in the community. If so, outpatient or home-based therapy may be more fitting because it takes place in a more comfortable setting, allows the family to be closely involved, and offers more time/resources to address the concern. If the child's main feeding concerns take place during school, that is certainly the best setting to address the problem.

4. What concerns might be at the root of this child's feeding concerns?

   Sensory Processing Disorder could be the root cause of this child's dysphagia. Since this child has difficulty with other ADLs, motor skills and Autism can also be contributing factors.

5. Would another provider be able to help with these concerns, either by working in addition to the OT or instead of them?

   Based on the above information, this child would likely also benefit from seeing a speech-language pathologist for their dysphagia. Beyond that, the therapist may need to determine the need for assistance from other providers after the OT evaluation. If the therapist learns during their

evaluation that the child is underweight and is not developing physically at the same rate as their peers, they may benefit from referral to a dietitian. If the therapist learns the child has allergies that limit the foods they can eat, an allergist may help. These providers can all make the care this child receives more well-rounded if there are several concerns related to their feeding difficulties.

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