

**Feeding, Eating, and Swallowing
in School-Based Practice**

Occupational Therapy Association of California
Annual Conference

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Objectives

- Differentiate the terms according to the OTPF-3
- Identify the policies that address feeding, eating, and swallowing
- Identify the impact of feeding, eating, and swallowing issues on school performance
- Within school-based practice, identify the role of the occupational therapist to address these needs

Terms

AOTA, 2014 OTPF-3

- **Feeding:**
 - Setting up, arranging, and bringing food [or fluid] from the plate or cup to the mouth; sometimes called *self-feeding*
- **Eating:**
 - Keeping and manipulating food or fluid in the mouth and swallowing it;
- **Swallowing:**
 - Moving food from the mouth to the stomach

Advanced Practice Act – California Board of Occupational Therapy (CBOT)

- "Swallowing" as used in Code section 2570.3 is the passage of food, liquid, or medication through the pharyngeal and esophageal phases of the swallowing process.
- "Instrumental evaluation" is the assessment of any aspect of swallowing using imaging studies that include, but are not limited to, endoscopy and videofluoroscopy.
- Swallowing assessment, evaluation or intervention may be performed only when an occupational therapist has demonstrated to the Board that he or she has met the post professional education and training requirements established by this section as follows:

Advanced Practice Act - CBOT

- Education: Completion of 45 contact hours in the following subjects:
 - (A) Anatomy, physiology and neurophysiology of the head and neck with focus on the structure and function of the aerodigestive tract;
 - (B) The effect of pathology on the structures and functions of the aerodigestive tract including medical interventions and nutritional intake methods used with patients with swallowing problems;
 - (C) Interventions used to improve pharyngeal swallowing function.
- Completion of 240 hours of supervised on-the-job training
- NOTE: Advanced Practice Act ONLY applies to the pharyngeal phase of the swallow; DOES NOT apply to oral preparatory or oral phase of eating

American Occupational Therapy Association - Certifications

- AOTA Board & Specialty Certification
 - Board Certification – only available to OT clinicians
 - Specialty Certification – available to clinicians & assistants
- Board Certification in Pediatrics
- Specialty Certification in Feeding, Eating, and Swallowing
 - OT Clinician: SCFES
 - OT Assistant: SCEFS-A
- Specialty Certification in School Systems
 - OT Clinician: SCSS
 - OT Assistant: SCSS-A

Federal Policies

- Several Federal Policies provide nutritional guidelines regarding school lunches
 - USDA: Accommodating Children with Special Dietary Needs in the School Nutrition Program
 - USDA: National School Lunch Program (NSLP)
 - USDA School Breakfast Program (SBP)

Federal Policies

- National School Lunch Act 42 U.S.C. §§ 1751-1769 (NSLA) created a federal program aimed at providing free or low-cost nutritious meals to the nation's school children in an effort to combat hunger and malnutrition in the classroom.
- Supreme Court of Maryland ruled that although a school needs to provide the meal, the school is not responsible for the individual dietary needs of the students receiving NSLA services

Court Cases Addressing School Meals

- Liebau v. Romeo Community Schools
- State of Michigan court case
- Michigan court case where the school created a nut-free environment to allow a student with severe nut allergies to attend school, a parent of another child filed a suit that creating a nut-free environment infringed on her child's right to have a peanut butter sandwich
- Courts determined that the nut-free environment did not discriminate against the other student's ability to attend school

Federal Policies and School Lunches

- School must provide food substitutions for students who are disabled and whose disability restricts their diet
- Disability is defined in the following documents
 - Section 504 of the Rehabilitation Act of 1973
 - Americans with Disabilities Act of 1990
 - Part B of the Individuals with Disabilities Education Act (IDEA)

Meeting Student Needs: School Lunches

- The accommodations to the food must be made at no additional charge
- The disability determination must be made by a licensed physician
- The food substitutions are reimbursable

Considerations for Diet Modifications

- What is the disability?
- How does the disability restrict diet?
- What major life activity(ies) affected?
- What foods need to be omitted?
- What foods can be substituted?

Food Accommodations

- Food Related Disabilities
 - Diabetes
 - PKU
 - Food Anaphylaxis
- Other Food Accommodations
 - Texture
 - IV
 - Tube Feeding

Children Who Are Not Disabled But Have Other Special Dietary Needs

- Food allergies or intolerances
 - **NOT** generally considered a disability **UNLESS** anaphylactic
- Accommodation **MAY** be made **BUT** is **NOT** Required
- In many cases, allergies can be dealt with through "Offer-Versus-Serve" or by providing additional selections

Statement For Children Who Are Not Disabled

- The substitutions must be supported by a statement signed by a recognized medical authority (physicians, physician assistants, nurse practitioner, or other professionals) specified by the State agency.
- The statement must include:
 - an identification of the medical or other special dietary condition which restricts the child's diet,
 - the food or foods to be omitted from the child's diet; and
 - the food or choice of foods to be substituted.

Responsibility of the School

- NEVER Revise or Change a Prescription or Medical Order
- It is important that all recommendations for accommodations or changes to existing diet orders be documented in writing to protect the school and minimize misunderstandings. Schools should retain copies of special, non-meal pattern diets on file for reviews.
- The diet orders do not need to be renewed on a yearly basis; however, schools are encouraged to ensure that the diet orders reflect the current dietary needs of the child

Responsibility of the School - IDEA

- Requires the provision of “specially designed instruction” to meet the unique needs of students with disabilities (34 CFR § 300.39[a][1])
- A student’s functional performance, a term used to describe the abilities “used in the context of routine activities of everyday living”, can include eating and feeding within IDEA

Responsibility of the School - 504

- Section 504 of the Rehabilitation Act of 1973 does not allow students to be excluded from participation in school activities (including snacks and meals) solely on the basis of a disabling condition
- School is responsible for promoting participation in all school day activities including lunch

Impact of feeding, eating, and swallowing on school performance

- Safety Considerations
 - Many children with neurological disorders have difficulties with eating and swallowing
 - These conditions place the child at risk for choking or aspiration
 - These neurological conditions may compromise the child's ability to have sufficient nutritional intake during the day
 - What are these issues?

Review of Normal Anatomy and Physiology of the Swallow

- Oral phase
 - Requires: Intact labial musculature, intact lingual movement, intact buccal musculature, normal palatal musculature, and the ability to breathe comfortably through the nose
 - Typically respiration stops as the food moves posteriorly
 - The soft palate begins to flare and elevate
 - This phase is under voluntary control and typically lasts approximately 1 second

Review of Normal Anatomy and Physiology of the Swallow

- Pharyngeal phase
 - Swallow response occurs when bolus passes through faucial arches and the middle of the tongue base.
 - Respiration does not occur during this phase
 - Physiological activities:
 - Velopharyngeal closure (nasopharynx) to avoid nasal regurgitation
 - Elevation and closure of the larynx to avoid aspiration
 - Progressive top to bottom peristaltic action of the pharyngeal wall
 - Relaxation of the cricopharyngeal sphincter

Review of Normal Anatomy and Physiology of the Swallow

- **Pharyngeal phase**
 - This is the phase where the “reflexive swallow” is initiated; this is considered the involuntary phase of the swallow
 - Ramping of the base of the tongue followed by tongue base retraction
 - This phase lasts approximately 1 second

Review of Normal Anatomy and Physiology of the Swallow

- **Esophageal phase**
 - This phase is also involuntary during the process of swallowing
 - Peristaltic action propels the food through the esophagus to the stomach
 - At the onset of this phase the upper esophageal sphincter relaxes to allow food to pass into the esophagus
 - At the end of this phase the lower esophageal sphincter opens to allow food to pass into the stomach
 - The length of time varies depending on the viscosity of the food but typically is completed within 20 seconds

Anatomical Structures

- **Anatomical problems and the impact on swallowing – Pediatric**
 - Anatomical disorders of the oral cavity
 - Size of the tongue relative to the oral cavity
 - Cleft palate, submucosal cleft
 - Anatomical disorders of the jaw
 - Small jaw that compromises mastication
 - Mal-alignment that compromises mastication
 - Anatomical disorders of the esophagus
 - Obstructions to the esophageal tube
 - Esophageal fistulas and atresia

Incidence of Dysphagia – CP

(Calis et al, 2008; Clancy et al, 2011; Gisel et al, 2003; Motion et al, 2002)

- Eating and swallowing problems are seen in 38% - 57% of children diagnosed with cerebral palsy (CP) during the first year of life
- Children with more severe forms of CP have a much higher rate of dysphagia with swallowing problems seen in over 90% of clients
- Dysphagia continues in many of these children throughout their lifetime and presents as a persistent compromise to nutritional status
- Many parents do not report issues with eating and swallowing which may place the child at risk for aspiration

Incidence of Dysphagia – Pre-term Infants

(Bingham, 2009; Norman et al, 2007; Ramsey et al, 2002)

- Premature infants are typically dependent upon the use of G or NG tube feedings for nutritional support and have not developed the suck-swallow-breath coordination of a full-term infant
- Bottle/breast feeding may be seen at 34-36 weeks gestational age but swallow is poorly coordinated
- Dysphagia often persists beyond the time when the infant has reached full-term; may continue into childhood with poor persistency for chewing
- Diminished development of hunger-satiety with tube feedings
- Poor intake during the school day

Incidence of Dysphagia – Developmental Delays

(Brown et al, 2008; Field et al, 2003)

- Children with Down Syndrome often have an issue of dysphagia
 - Reduced oral cavity and small jaw
 - Poor tongue control and low muscle tone
- Self-feeding skills are often delayed, but these skills typically emerge prior the start of Kindergarten
- Children with Down Syndrome often have a co-morbidity of congenital heart disease compromising endurance and breath support

Incidence of Dysphagia – Developmental Delay

(Hashimoto et al, 2014; Morgan et al, 2012; O'Neill & Richter, 2013)

- Oral preparatory deficits are frequent in children who have Down syndrome and the ability to effectively grind foods is compromised
- Oral phase deficits are very common and due to poor tongue control of bolus and poor oral transit time
- Poor tongue pressure noted during the oral phase to propel food posteriorly and due to poor tongue control and short, narrow palate
- Over 50% of children diagnosed with Down syndrome display pharyngeal dysphagia

Incidence of Dysphagia – Developmental Delays

(Brown et al, 2008; Field et al, 2003)

- Additional developmental delays and related eating/swallowing issues
- Pierre Robin sequence, Williams syndrome, Rett syndrome:
 - Frequent problems seen with chewing and swallowing foods – poor endurance
 - Poor nutritional intake during the school day
- Myelomeningocele and Arnold-Chiari II malformation
 - Compression to the brainstem impacting cranial nerves involved with chewing and swallowing

Addressing these “Medical Problems” in the School Setting

- Focus on safety issues
 - Safe eating and swallowing
 - Safe self-feeding skills
- Nutritional support to foster participation as best as possible in the school setting
 - Foods that are nutritional beneficial
 - Foods that are comparable to peers
- Access to the school environment
 - Settings where meals/snacks are provided with peers

Skills of the Child

- Strengths based approach
- Determine what skills/abilities the child can use to circumvent the difficulties
- Foster self-determination with the child as a contributor in decision making and problem solving
- Use of a forced choice paradigm if the child has difficulties with initial participation in making a choice

Skills of the OT Practitioner

- Clearly identify the phase of the eating process that will be addressed with the student
- Identify how that phase of the eating process is limiting participation in the school setting
- Identify the intended outcome for intervention
 - What would you like the child to be able to do and how soon?
 - What would be the negative consequences if the child is unable to change the eating behavior?

Knowledge of the OT Practitioner

- Practitioner examines knowledge of child's condition
 - Chronic or Acute
 - Static or Variable
- Practitioner, most often clinician, examines professional knowledge regarding the specific issue
 - Identifies elements involved
 - Prioritizes issues
- Practitioner, most often clinician, examines evidence available to address the specific issue
 - OT Interns can be an incredible resource!

Access to the School Environment

- Physical environment
 - Lunches and snacks are typically provided in a specific location
 - Is the child able to access the environment?
 - Are the foods offered of a texture/consistency appropriate for the child?
- Social environment
 - Is the child able to participate with peers in typical school settings where foods are offered?
 - Is the child able to engage in similar activities?
- Restrictive environment
 - Is the child restricted from these school settings?
 - What can be done to allow the child access to these settings?

Role of OT Practitioner - Assessment

- Assessment includes OT as part of the student study team to consider the student's functional performance (Present Level of Performance)
- The OT directs the OT assessment process while the OT assistant participates in the assessment process
- The assessment process does not always require the administration of a specific instrument, evidence identifies the strength in skilled and directed observations

Role of OT Practitioner - Assessment

- Why is the child unable to participate in the general mealtime experiences?
- How do other children participate in this school experience?
- What is the intended outcome for participating in mealtime experiences?
- These questions should be answered prior to selecting an assessment instrument

Role of OT Practitioner - Assessment

- How long does it take for the child to eat a meal or be fed?
- Is the child dependent on others for eating and drinking? If yes, what can the child do independently or with modifications?
- Does the child refuse foods? If yes, is it proteins? Carbohydrates? Fruits? Vegetables?
- Are mealtimes stressful? If yes, what causes the stress?
- Has the child slowed or stopped weight gain during the previous 2 to 3 months?
- Does the child have respiratory distress?
- Does the child regularly vomit, gag, or cough during or following meals?
- Does the child become irritable or lethargic during mealtimes?

Role of OT Clinician - Assessment

- A Basic Feeding and Swallowing Scale – Children (ABFS-C)
- Designed for children ages 2 mos. to 14 yrs. 7 mos.
- Composed of 5 items
 - Wakefulness
 - Head control
 - Hypersensitivity
 - Oral motor control
 - Saliva control
- Highly correlated with the Wee-FIM

Role of OT Clinician - Assessment

- The Screening Tool of Feeding Problems (STEP; Matson & Kuhn, 2001; Matson, Fodstad, & Boisjoli, 2008) identifies feeding problems in five areas:
 - risk of aspiration,
 - food selectivity,
 - feeding skills,
 - food refusal, and
 - nutritional behaviors that affect eating and feeding
- A recent study using the STEP found 97% of children with severe or profound intellectual disabilities living at home had a much greater chance of aspiration and problems with feeding and eating skills than children with moderate or mild intellectual disabilities

Role of OT Clinician - Assessment

- The Screening Tool of Feeding Problems for Children (STEP-CHILD; Seiverling, Hendy, & Williams, 2011) is a modified version of the STEP designed for use with a wider diagnostic group of children, aged 2 to 18 years, with potential feeding problems.
- This parental report instrument has good reliability and validity, assessing six specific areas related to eating and feeding behaviors:
 - chewing problems,
 - rapid eating,
 - food refusal,
 - food selectivity,
 - vomiting, and
 - stealing food.

Role of OT Clinician - Assessment

- The Brief Autism Mealtime Behavior Inventory (BAMBI; Lukens & Linscheid, 2008) was specifically developed to identify mealtime behaviors that negatively impact on feeding skills for children with autism, aged 3 to 11 years.
- Parents use this inventory to rate their child's mealtime behaviors on 18 items using a 5-point Likert scale.
- The items are clustered into three areas:
 - limited variety, food refusal, and features of autism.
- A study found that the BAMBI demonstrates adequate validity and reliability and is able to differentiate between children with ASD and neurotypical children

Interventions to address Eating/Swallowing problems

- Why address these problems in schools?
 - Nutritional support for student
 - Participation in school environment
 - Foster student's functional performance
- Modifications to volume, rate of presentation, use of simple feeding techniques, bolus placement
- Strategies to modify environment to reduce sensory problems

Interventions

- Focus on access and participation with general school program
- Decisions regarding complexity of intervention
 - Positioning
 - Food texture modifications
 - Environmental and sensory modifications

Intervention – Role of School-Based OT

- Positioning for safety
 - 75% of intervention provided to address eating and swallowing is proper positioning
- Look at food textures and consistencies
- Look at timing of food delivery
 - Eating too fast/too slow
- Alternating stiffer foods or more textured foods (bites of a sandwich) with softer/slick foods (pudding/applesauce)
- Use of frequent small sips of water between bites of food

Interventions – Positioning

- Slight chin tuck – head in midline with slight chin tuck, avoid hyper extension
- Pelvic position – neutral and weight evenly distributed, chair that supports child including the child’s back
- Body position – midline orientation, often best with arms supported in midline and elbows in a weight bearing position on table

Interventions
Food Texture Modifications - Solids

- Diet Textures/Consistencies
- National Dysphagia Diet (American Dietetic Association, 2002)
 - Level I: Pureed
 - Level II: Soft Foods that stay together as a cohesive bolus
 - Level III: Dysphagia Advanced or chopped, ground food, used as a transition to regular diets

Interventions
Food Texture Modifications - Liquids

- Diet Textures – Liquid classifications:
 - Thin: water, milk, coffee, tea, carbonated beverages
 - Nectar-like: fruit juices, thick milkshakes, strained creamed soups
 - Honey-like: thicken juices, regular applesauce, commercial thickeners
 - Spoon-thick: commercial thickeners

Skilled OT intervention to support student in school setting

- Oral motor skill development
 - Tongue exercises such as pushing tongue into cheek on either side to promote lateral tongue control and diminish tongue thrust
 - Tongue exercises of protrusion and retraction
 - Lip closure exercises with blowing bubbles and drinking from various sized straws
 - Chewing exercises – use of “chewlery” and other chewies
- Sequencing of foods during mealtime
- Behavioral supports to improve habit formation

Modification to Volume, Rate and Placement of Food

- Variations in sensory
 - Offering ice chips or cold fluids between solids
- Pacing
 - Speed of presentation
 - Hunger/satiety paradigm
- Placement
 - Position of food within oral cavity
- Flipped spoon
 - Placing spoon in mouth and then flipping over to deposit food on tongue

Interventions

- Use of Cheek and Jaw support
 - Support provided by placing fingers on either side of the student's cheeks
 - Provide slight pressure inward and towards the corners of the lips
 - Bottle/nipple presented in midline
 - Technique improved oral intake for pre-term infants and can be applied to children who need support during mealtime to eat
- Hwang et al, 2010

Interventions

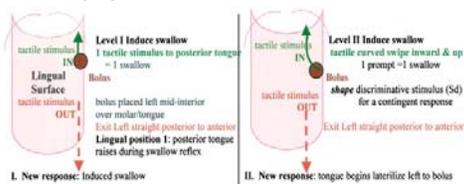
- Flipped spoon technique was found to be effective in a pre-test/post-test design for children with developmental delays and oral preparatory/oral phases of the swallow
- Often used for children who pack foods in the cheeks and lack the tongue control to maneuver the bolus
- Collect the bolus onto the spoon
- Insert the spoon into the child's mouth
- Flip the spoon 180° and deposit the food on the tongue while applying slight downward pressure on the tongue as you pull the spoon out of the mouth maintaining the pressure on the tongue
- Rivas et al, 2011; Volkert et al, 2011

Sensory Modifications

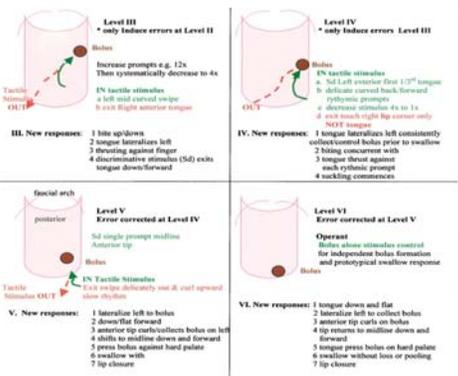
- Textures
 - Decisions about consistency in textures or altering textures
 - Rates of changing textures during the meal
- Olfactory
 - Use of olfactory stimulation prior to meal to enhance feeding
 - Use of alternating olfactory stimulation to promote sustained interest in feedings

Intra-oral Facilitation

- Tongue (Lamm et al, 2005)
- Use of tactile stimulus to tongue to induce a swallow
- 6 stage process



Tongue Facilitation (Lamm et al, 2005)



Environmental Cues

- Environmental cues and supports
 - Psychological supports for eating – external cues
 - Eating habits – internal cues and habit formation
- Habits
 - Timing
 - Types of foods presented at the beginning of the meal/end of meal
- Sensory cues
 - Lighting
 - Noise level of environment
 - Competing distractions

Feeding Issues and ASD

- School-age children with ASD have substantial food refusal and restriction problems, including acceptance of only a few food textures and varieties
 - (Schreck, Williams, & Smith, 2004)
- Up to 90% of children with ASD have feeding and eating problems
 - (Kodak & Piazza, 2008)
- Children with ASD had fewer self-feeding skills and greater food avoidance and fear of trying new foods when compared to typically developing peers. However, the two groups were similar in ritualistic feeding behaviors and the amount of control

Feeding Issues and ASD

- A comparison between over 500 children with ASD to more than 500 children with PDD-NOS was made to look for similarities and differences in feeding behaviors
 - (Kozlowski, Matson, Belva, & Rieske, 2012)
- The authors found that children who met the diagnostic criteria for autism exhibited more severe feeding disorders when compared to children with the diagnosis of PDD-NOS
 - NOTE: Data collected on children diagnosed under DSM IV-TR

Feeding Issues and ASD

- Children with ASD often have sensory issues that cause food selectivity where specific flavors or textures are completely avoided
 - (Matson & Fodstad, 2009)
- These sensory-processing problems and their relation to eating and feeding issues have been documented where a child will refuse to eat meats or vegetables
 - (Tomchek & Dunn, 2007)

Feeding Issues and ASD

- Intervention focused on systematic approximations can be successfully used within the school setting
- The student is supported through the following steps to accept the food
 - Sit next to a peer eating two of the less preferred foods
 - Place the foods on a separate plate next to the student's meal
 - Place the foods placed on the student's plate
 - Offer a forced choice of smelling one of the less preferred foods
 - Forced choice of touching one of the foods to the tongue
 - Forced choice of tasting (and spitting out) a food

Feeding Issues and ASD

- Behavioral supports to improve habit formation of eating/feeding skills in the school setting
- Self-determination balanced with concepts of least restrictive environment
- Social participation and consideration of future skill needed for best outcomes
 - Public education designed to support participation in the future and needs to consider options available for students

Decision Regarding Focus of Services to Support Eating, Feeding & Swallowing

- **Nutritional support during the day**
 - Energy expenditure to support function
 - May use smaller meals and snacks to support the student
- **Advancement of skills to improve functional performance**
 - Improving eating skills
 - Improving self-feeding skills
 - Improving social aspects of mealtime behaviors
- **Potential safety risks for student**

Interventions – Flipped Spoon

- Flipped spoon technique was found to be effective for children with developmental delays and problems in oral preparatory/oral phases of the swallow
- Repeated measures single subject design used
- Often used for children who pack foods in the cheeks and lack the tongue control to maneuver the bolus
- Collect the bolus onto the spoon
- Insert the spoon into the child’s mouth
- Flip the spoon over, open bowl side on the tongue and deposit the food on the tongue while applying slight downward pressure on the middle of the tongue
- Maintain pressure on the tongue as you pull the spoon out of the mouth
 - Rivas et al, 2011; Volkert et al, 2011

Role of OT service in Eating, Feeding & Swallowing in Schools

- **Training of staff**
 - Basic skills to support student
 - Habit formation
- **Role transfer and role release**
 - Needs identified through the IEP/ITP process
 - Including student in decision making process
- **Incremental monitoring of progress of student**
 - Develop clear outcomes and periodic check-points
 - Adjust intervention as needed
- **Timeframes with contingency plans developed**
 - Consider the “What if…” the outcome is not reached
 - Provide a time sensitive “escape plan” to move to the contingency plan

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Questions?

- Thank you!

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References for Feeding, Eating, and Swallowing in School-Based Practice

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