Supporting Children with Disabilities at Mealtimes

"No single activity is as critical to the health, education, and happiness of children with disabilities as feeding" (Lowman, 1999). Mealtimes are important for each and every one of us. Mealtimes play a significant part in the growth and development of children and youth. Mealtimes are typically a time when an individual's nutritional needs are met in order for good growth and development to occur. They are also a social time where communication, sharing and being together takes place. Mealtime skills can also be an important part of the student's educational program to help prepare them for more independent or participatory living.

Normally, a child develops most eating and drinking skills in the first 3 years of life.

There are some basic developmental principles to consider prior to looking in depth at the stages of oral motor development (development of patterns of movement in the mouth). These principles "are as follows:

- Development occurs in a predictable sequence.
- Gross movement patterns are learned before fine skilled movements.
- Early development is "sensory/motor" in nature. The sensory and motor systems work closely together, giving continual feedback.

There are also six factors, which are common to all age groups. They are as follows:

Rhythmicity is a child's ability to produce rhythmic movement pattems. Rhythmicity is a vital part of successful feeding and continues through each stage of development, until that child is able to use rhythmic movement patterns in an organized manner.

Stability/mobility is the child's ability to hold the body steady. The establishment of stability is the precursor to the development of coordinated and organized movement patterns.

Separation of movement is the ability to move one part of the body without moving other parts. As the child's stability increases, there is the opportunity of greater separation of movement which allows for the development of more mature patterns to take place.

Movement options are enhanced when there is rhythmicity, stability and separation of movement. The establishment of these skills gives the child options for performing physical activities in more than one way. Movement options also allow the child to experiment with different ways of dealing with unfamiliar oral motor tasks.

The following table shows typical development of oral motor skills, their relationship to food textures, and what the child can manage to eat and drink. Remember that all

children develop at their own rate. Children with disabilities may not advance through all these stages (becoming stuck at one particular stage) or they may advance more slowly, taking longer at each stage.

Normal Infant Development and Feeding Skills

Age	Oral Motor Skills	Child Can:
Birth to 5 months	suck/swallow reflex tongue thrust reflex rooting reflex gag reflex phasic bite reflex	- swallow liquids but pushes most solid objects from the mouth
4 through 6 months	Draws in upper or lower lip as spoon is removed from the mouth; up and down munching movement; can transfer food from the front to the back of the tongue to swallow; tongue thrusting and rooting reflexes begin to disappear; gag reflex diminishes; opens mouth when spoon approaching	- take in a spoonful of pureed or strained food and swallow it without choking - drink small amounts from cup when held by another person, with some spillage
5 through 9 months	Begins to control the position of food in the mouth; up and down munching movement; positions food between jaws for chewing	- begin to eat mashed foods - eats from a spoon easily - hold bottle independently with one or both hands - drink from a cup with some spilling - begin to feed self with hands
8 through 11 months	Moves food from side to side in mouth; begins to curve lips around rim of the cup; begins to chew in rotary pattern (diagonal movement of the jaw as food is moved to the side or center of the mouth)	- eat chopped food and small pieces of soft, cooked table food - begin self spoon feeding with help
10 through 11 months	Rotary chewing (diagonal movement of the jaw as food is moved to the side or centre of the mouth)	- eat chopped food and small pieces of soft, cooked table food - begin self spoon feeding with help

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Most oral motor skill development occurs between birth and 11 months of age as noted above. However, between the ages of 12 months and 3 years the child continues to refine and improve those skills developed earlier. This allows for longer drinking sequences, and safer management of a wider variety and range of foods.

By a very early age, mature feeding patterns have developed which will continue for life. The intense and varied sensory experiences during the first year of life are vital to establishing a good foundation for oral motor development.

Texture plays a critical role in how easy or difficult a food can be for a child to eat safely. "Texture" is determining how smooth, lumpy, thick or thin the food is.

Textures Which Commonly Cause Problems

- **Thin Liquids** - Some children may have trouble swallowing thin liquids, so liquids will need to be thickened. Thin liquid moves rapidly in the mouth and gives less sensory feedback. However, thickened liquid moves slowly, thus making it easier for the child to coordinate muscles in the mouth and swallow.
- **Dry or Lumpy Foods** - Dry or lumpy foods can be difficult for some children to manage safely. These foods may elicit a gag response or trigger coughing and or vomiting. Pureed fruits such as applesauce or pureed vegetables can be given between bites of dry or lumpy food; or they can be used as a "dip" for dry foods. Some children will not be able to safely manage dry or lumpy foods and they may require a pureed diet.
- **Multi-textured Foods** - Multi-textured foods are foods that have a thin liquid mixed with solids, such as soups and some stews. These types of foods can be difficult for some children to manage in their mouth in preparation for swallowing, putting them at risk for choking and or aspiration.
- **Foods That Do Not Dissolve** – Some sold foods do not dissolve in the mouth and require rotary chewing skills in order to prepare them sufficiently for swallowing. Raw fruits and vegetables are examples of these types of foods.

The following table describes different textures and what a child can usually do in order to manage the texture.

Food Texture and Eating Skills

Texture	Description	Example	Child Can:
Level 1 – pureed and blended table foods, commercial baby food approximately 4-6 months of age	Food forms a paste or thick liquid; use strainer or bender and blend to a paste, add liquid for desired consistency; no lumps	Iron fortified infant cereals with breast milk, formula or water; vegetables and fruits	Use suck/swallow pattern; take food from spoon, with lips; lips and jaw closure; swallow thickened purees and not gag
Level 2 – mashed lumpy, thickened pureed foods approximately 6-9 months of age	Food forms a heavy bolus; food is blended or mashed with a fork, may have some small soft lumps; food retains some texture and consistency	Mashed potatoes; blended meats, chicken and tofu; mashed bananas and other soft fruits; mashed hard cooked egg yolk; mashed carrots or squash; well cooked and mashed legumes (beans, peas and lentils)	Handle food through sucking action and cannot move food to sides of mouth; swallow without gagging; close lips while swallowing food; remove food from spoon with lips; beginning up-and-down jaw and tongue movements (munching)
Level 3 – ground/minced approximately 9-12 months of age	Food ground in food chopper, not blended; food retains some lumps for chewing; 1/8″ pieces to 1/4″ pieces; food should be easy to chew	Crumbled/ground meat; tofu; scrambled egg yolk (egg whites at 12 mos.); cottage cheese; small pieces of toasted bread crusts; crackers broken into small pieces	Demonstrate up-and-down jaw and tongue movements (munching); begin to chew in rotary pattern
Level 4 – chopped approximately 12-18 months of age	Cut with knife into bite size pieces; 1/4″ pieces to 1/2″ chunks; no raw hard foods (carrots)	Chopped fruit (soft, raw or cooked); chopped meats; chopped cooked vegetables; grilled cheese or finely chopped meat sandwiches; finely chopped salad or slaw	Perform side to side movement of the tongue, vertical and diagonal jaw movements with enough strength to break up the pieces; do rotary chewing

Level 5 – regular approximately 18+ months of age	Needs to be cut or bitten or order to be eaten	All foods	Close lips and keep food in mouth; bite through food

Preparing Food For Meals and Snacks

Some children have difficulty managing specific textures of food, or they may have difficulty in transitioning from one texture to another. **Deciding which texture best suits the child involves assessing the oral motor skills the child currently demonstrates and matching those specific skills to a suitable texture and consistency of food**. In general, the higher the texture (refer to previous tables) the more skills are required in order to manage eating/ drinking safely. Consistency refers to the amount of moisture contained in a food /liquid. To change consistency, you can add fluids, fats or condiments. Both texture and consistency need to be appropriate and matched to the child's oral motor skill level. Refer to charts below.

Note: Avoid the use of hard, small and round, smooth and sticky solid foods (e.g. popcorn, hard candies, gum, cough drops, raisins, nuts etc.) with young children (under the age of 4 years), as well as older youth who demonstrate immature oral motor patterns. The above items are considered unsafe and can block a young child's airway. The following foods are safer for infants and young children when they are prepared as described: wieners diced or cut lengthwise, grated raw carrots or hard fruit pieces, chopped grapes, and peanut butter spread thinly on crackers or bread.

Choking and Aspiration

The risk of choking can be lowered when care providers are aware of the child's eating and drinking abilities, avoid offering foods/liquids which have the potential to cause choking and know how to handle choking if it occurs.

Oral Motor Patterns and Consistency

Consistency	Examples	When a Problem
sticky	potatoes, rice, pastas, other starches	week or poorly coordinated tongue movements, dry mouth, thick saliva, hypersensitivity to pressure and movement (food can stick to the roof of the mouth or the back of the throat leading to coughing or gagging)
dry	meats, bread, crackers	weak or poorly coordinated tongue movement, thick

		saliva, dry mouth (food may wad in the roof of the mouth leading to coughing or gagging)
wet (slippery)	chopped foods (spinach, peach, banana)	weak or poorly coordinated tongue movements, thick saliva, slow to swallow (wet food may come out of the mouth or move back too quickly for the person to control)
runny	pureed fruits or vegetables with lots of liquid	weak or poorly coordinated tongue movements, thick saliva, slow swallow (runny food may move too fast for the person to control)

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