

## Overview of Typical Development and Examples of Implications for Feeding

Developmental Stage/Domains	General Characteristics	Implications for Feeding
<b>• Newborn</b> (example: bottle)		
Gross motor	Disorganized postures and movements, more reflexive and random than intentional	Little postural control, needs to be fully supported while bottle feeding
Fine motor	Random, exploratory hand movements	Cannot hold bottle independently
Oral-motor	Mouth is primary motor and sensory organ	Survival dependent on reflexive sucking skills
Visual/cognitive	Visual information perceived but not interpreted clearly or meaningfully	First focal fixation on caregiver's face during feeding (beginning of near vision)
Emotional	Emotional state dependent on homeostasis	Sucking is important self-consoling behavior
Communicative/social	Attachment/bonding dependent on primitive senses such as touch, smell, taste, sound	Attachment strengthened by bottle feeding because of sensory and social significance and frequency
<b>• Infant</b> (example: dependent spoon feeding)		
Gross motor	Head and trunk control, up against gravity, more coordinated motor patterns	Head control provides stability for coordinated mouth movements when taking food from spoon
Fine motor	Hand skills still rudimentary, exploratory	Perceives spoon as toy, needs assistance
Oral-motor	Lips, tongue, cheeks move in global patterns	Can handle smooth textures only at first
Visual/cognitive	Visual information increasingly linked with memory and goal-directed movements	Sees food in preparation, impatient to eat, tries to grab spoon and bring to mouth (imitation)
Emotional	Responds pleurably to social interactions	Enjoys being spoon-fed for social reasons as well
Communicative/social	Can give verbal and non-verbal signals to caregiver about present needs and wants	Sensitive caregiver reads signals (when, what, and how much food to present on the spoon)

<b>Developmental Stage/Domains</b>	<b>General Characteristics</b>	<b>Implications for Feeding</b>
<b>• Toddler</b> (example: finger feeding)		
Gross motor	Disorganized postures and movements, more reflexive and random than intentional	Little postural control, needs to be fully supported while bottle feeding
Fine motor	Random, exploratory hand movements	Cannot hold bottle independently
Oral-motor	Mouth is primary motor and sensory organ	Survival dependent on reflexive sucking skills
Visual/cognitive	Visual information perceived but not interpreted clearly or meaningfully	First focal fixation on caregiver's face during feeding (beginning of near vision)
Emotional	Emotional state dependent on homeostasis	Sucking is important self-consoling behavior
Communicative/social	Attachment/bonding dependent on primitive senses such as touch, smell, taste, sound	Attachment strengthened by bottle feeding because of sensory and social significance and frequency
<b>• Walker</b> (example: utensil use)		
Gross motor	Head and trunk control, up against gravity, more coordinated motor patterns	Head control provides stability for coordinated mouth movements when taking food from spoon
Fine motor	Hand skills still rudimentary, exploratory	Perceives spoon as toy, needs assistance
Oral-motor	Lips, tongue, cheeks move in global patterns	Can handle smooth textures only at first
Visual/cognitive	Visual information increasingly linked with memory and goal-directed movements	Sees food in preparation, impatient to eat, tries to grab spoon and bring to mouth (imitation)
Emotional	Responds pleurably to social interactions	Enjoys being spoon-fed for social reasons as well
Communicative/social	Can give verbal and non-verbal signals to caregiver about present needs and wants	Sensitive caregiver reads signals (when, what, and how much food to present on the spoon)

## Examples of Atypical Development and Implications for Feeding

<b>Developmental Stage/Domains</b>	<b>Characteristics of Atypical Development</b>	<b>Implications for Feeding</b>
<b><i>Newborn</i></b>		
Gross motor	Minimal control of posture and movement, reflexive patterns used for function	Needs full postural support, reflexive patterns interfere with voluntary control of self-feeding
Fine motor	Few exploratory hand movements, very low or very high muscle tone (grasp reflex)	Poverty of hand movements, stereotypic patterns which are inefficient for finger feeding, utensil use
Oral-motor	Motor and sensory functions of mouth not well developed	Weak or primitive sucking skills, aspiration or reflux problems, food intake compromised
Visual/cognitive	Poor eye muscle control, incomplete or distorted visual input, limited comprehension	Difficulty focusing on caregiver's face during dependent feeding, locating food for self-feeding
Emotional	Emotional fluctuations linked to problems with self-regulation	Persistent mouthing of non-nutritive objects serves to self-console
Communicative/social	Attachment/bonding blocked by delayed or no expressive speech	Social interactions during feeding more often negative than positive
<b><i>Infant</i></b>		
Gross motor	Incomplete head and trunk control some uncoordinated motor patterns	Without a stable head, mouth movements poorly coordinated or handling food
Fine motor	Hand skills still rudimentary, prehension schemas limited in scope	Utensils perceived as toys, rather than functional tools
Oral-motor	Lips, tongue, cheeks move in global patterns	Can handle smooth textures only
Visual/emotional	Visual information linked with sensory memories most motivating and exciting	Primal senses of smell and taste combine with visual cues for heightened anticipation of eating
Communicative/social	Relies on non-verbal more than verbal signals to communicate needs and wants	Sensitive caregiver reads signals: when, what, and how much food to present on the spoon

<b>Developmental Stage/Domains</b>	<b>General Characteristics</b>	<b>Implications for Feeding</b>
<b><i>Toddler</i></b>		
Gross motor	Decreased mobility variety of movements in limited anti-gravity postures	Without proximal body control, arm and hand movements not skillful for self-feeding
Fine motor	No dissociation of elbow, wrist, fingers, atypical hand patterns	Inefficient grasp of food and utensils
Oral-motor	Delayed dissociation and control of mouth structures, hyper- or hyposensitivity	Immature motor and sensory function limits comfort level in accepting new foods
Visual/cognitive	Eye-hand coordination compromised by poor downward gaze, and limited hand skills	Finger feeding often messy, limited to certain food sizes and shapes
Emotional/ Communicative/social	Communicates feelings and intentions more with gestures than speech	Expresses food likes and dislikes clearly
<b><i>Walker</i></b>		
Gross motor	Spatial awareness and control hampered by lack of movement experience	Manual dexterity with utensils awkward without perfect shoulder and arm control
Fine motor/visual	Inability to configure hand to shape of different objects, limited bilateral hand use	Adapted handles necessary to facilitate grasp, may not use opposite hand to stabilize container
Oral-motor	No finely graded and differentiated movements of mouth structures	External control by caregiver needed to control flow of liquid for cup-drinking without spilling
Social/cognitive	Motivation always present for interactions with others and personal independence	Imitation of peers drinking from milk carton independently
Emotional/ Communicative	Achievement of new skills elicits intrinsic as well as extrinsic rewards (praise)	New feeding skills reinforced by caregiver's verbal praise and excitement

## Feeding Disorders: Sensorimotor Problems, Medical Conditions, & Treatment Suggestions

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<b>Sensorimotor Problems</b>	<b>Treatment Suggestions</b>
Overstuffing the mouth	Pre-meal alerting activities; textured not smooth foods to increase awareness
Swallowing with minimal or no chewing	Non food biting & chewing experiences; oral motor exploration with toys
Strong preference for soft, smooth foods; limited tongue movement to the side for chewing	Thickening and gradual introduction of soft lumps; placing cereal or cracker inside cheek to encourage tongue movement
Strong preference for hard, crunchy foods; helps to know where food is and how it feels in mouth	Including crunchy foods in meals and in combination with smooth foods
Refusing to accept new textures	Pre-meal alerting activities; non-food biting & chewing; oral-motor exploration with toys; battery-operated toothbrush; awareness of child's cues
Upset with any changes in mealtime routines because of limited organizational skills	Slow changes; child's choices of which (foods and utensils presented) and when (sequence)
Poor jaw control, mouth often open, due to low muscle tone	Biting through different textured finger foods; biting games with flexible tubing (tug of war)
Distracted during meals; danger of not concentrating on chewing foods carefully	Sucking activities (straw-drinking) to help child focus and become more calm

Adapted from: Klein, M. D., & Delaney, T. A. (1994). Feeding and nutrition for the child with special needs: Handouts for parents. San Antonio, TX: Therapy Skill Builders.

<b>Medical Disorder</b>	<b>Functional Problems</b>	<b>Treatment Suggestions</b>
AIDS/HIV	Sore mouth; difficulty chewing/swallowing	Soft foods; bland, not spicy or acidic; warm not hot
Bronchopulmonary Dysplasia (BPD)	Breathing difficulties; weak suck; poor coordination of sucking, swallowing, breathing; sensitive mouth area	Adapted nipples & bottles; using mouth to explore fingers & toys
Cancer	Decreased appetite, due to pain, treatments, nausea, fatigue; changed or decreased taste	Frequent finger food & snacks; experimenting with seasonings
Cleft Lip/Palate	Poor lip seal, food loss through nose leading to fear of new textures	Slow transition from strained to thickened to lumpy foods
Cystic Fibrosis (CF)	Difficulty coordinating breathing & swallowing; fatigue	Smaller & more frequent meals & snacks
Down Syndrome	Low muscle tone, weak oral musculature; hyposensitivity; resistance to new textures	Pre-meal alerting activities; non-food biting & chewing; oral-motor exploration with toys; awareness of child's cues
Drug Exposure	Irritability; distractibility; organizational difficulties; inefficient oral-motor skills	Environmental adaptations (noise, lighting, positioning); calming techniques; presentation methods; consistent routines
Gastroesophageal Reflex (GER)	Discomfort (burning sensation, spitting up, choking) associated with eating, leading to food refusal, decreased weight gain	Smaller, frequent feedings; formula thickening, upright positioning (at least 30°), especially after meals
Prader-Willi Syndrome	Low muscle tone, weak oral musculature; slow feeding as babies then preoccupied with food when older	Exercise program for strengthening and weight control
Prematurity	High stress levels, first indicated by yawning sighing, sneezing, hiccupping, shakiness; then coughing, gagging, color changes, breathing difficulties; weak suck, Difficulty coordinating sucking, breathing & swallowing; resistance to new textures	Positioning, calming techniques, adapted bottles and nipples, presentation methods (bottle, spoon, cup), slow transitions to new foods, awareness of child's cues
Rett Syndrome	Difficulty drinking thin liquids, limited ability to eat different textures, limited self-feeding skills	Thickened liquids; analyze chewing skills to determine appropriate foods; adapted tools
Spina Bifida	Low muscle tone, weak oral musculature	Pre-meal alerting activities; non-food biting & chewing experiences
Tracheostomy/Tube Feedings	Medical safety; limited oral-motor skills; sensitivity inside and outside of mouth	Oral feeding preparation (self-directed mouthing toys, sucking on pacifier, pleasant touch games)