

## Important Developmental Milestones Relevant to Feeding

Age	Motor/Postural Stability	Oral-Motor	Sensory
7-8 weeks PCA			<ul style="list-style-type: none"> <li>- appearance of specialized taste cells</li> <li>- primary olfactory receptors present</li> </ul>
10 weeks PCA			<ul style="list-style-type: none"> <li>- mature taste cells</li> <li>- olfactory bulbs form</li> </ul>
11 weeks PCA – 13 weeks PCA		<ul style="list-style-type: none"> <li>- Non-nutritive sucking movements</li> </ul>	<ul style="list-style-type: none"> <li>- Taste buds develop, with majority of buds on the dorsal surface of the tongue; additional buds seen on palatoglossal arches, palate, posterior surface of epiglottis, posterior wall of the oropharynx</li> </ul>
12 weeks PCA		<ul style="list-style-type: none"> <li>- fetal swallowing begins</li> </ul>	
20 – 28 weeks PCA			<ul style="list-style-type: none"> <li>- nares plugs dissolve and airway is then open and continuously bathed in amniotic fluid</li> <li>- markers of olfactory function are present (24 weeks)</li> </ul>
28 - 29 weeks PCA		<ul style="list-style-type: none"> <li>- Transverse tongue reflex</li> </ul>	<ul style="list-style-type: none"> <li>- respond to nasally administered odors (eg. changes in facial responses and movement)</li> <li>- olfactory neurons mature ~ 29 weeks. Can now detect and discriminate between 2 different odors</li> </ul>
32 weeks PCA		<ul style="list-style-type: none"> <li>- Gag reflex</li> <li>- Rooting reflex</li> </ul>	
34 - 36 weeks PCA		<ul style="list-style-type: none"> <li>- Nutritive sucking</li> </ul>	
37 weeks PCA		<ul style="list-style-type: none"> <li>- Coordinated suck/swallow/breathe</li> </ul>	
<b>38 - 40 weeks PCA</b>		Present at Birth: <ul style="list-style-type: none"> <li>- Swallow reflex</li> <li>- Phasic bite reflex</li> <li>- Palmental reflex</li> <li>- Transverse tongue reflex</li> <li>- Sucking is supported by a central pattern generator</li> </ul>	<ul style="list-style-type: none"> <li>- Can discriminate between different concentrations of sweet flavors</li> </ul>
2 weeks old			<ul style="list-style-type: none"> <li>- Reject bitter flavors</li> </ul>
2 months			<ul style="list-style-type: none"> <li>- Reject sour flavors</li> </ul>

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2 ½ - 3 ½ months	<ul style="list-style-type: none"> <li>- Steady head control achieved</li> <li>- Can maintain a semi-flexed posture during feeding</li> </ul>	<ul style="list-style-type: none"> <li>- Transition to volitional sucking (range = 1.5 to 3 months)</li> </ul>	<ul style="list-style-type: none"> <li>- Can detect flavor differences (e.g. increased suckling to new flavors)</li> </ul>
4-6 months	<ul style="list-style-type: none"> <li>- Beginning hand-to-mouth play (independent oral exploration of objects)</li> <li>- Increased reaching skills</li> <li>- Reaches for bottle or spoon when hungry</li> </ul>	<p>2 to 6 months: Integrating Reflexes</p> <ul style="list-style-type: none"> <li>- Rooting</li> <li>- Palmomentary</li> <li>- Phasic Bite</li> </ul> <ul style="list-style-type: none"> <li>- Loss of Central Pattern Generator that supports sucking rhythms</li> <li>- Opens mouth when spoon approaches/ touches the lips</li> <li>- Tongue used to move purees to back of mouth for the swallow</li> <li>- Munching jaw movements</li> <li>- Lateral jaw movements</li> <li>- Diagonal jaw movements</li> <li>- Lateral tongue movements</li> </ul>	<ul style="list-style-type: none"> <li>- Preference for salty flavors emerges</li> </ul>
6-7 months	<ul style="list-style-type: none"> <li>- Trunk control sufficient for independent sitting for greater than 3-5 seconds</li> <li>- Stable head control in sitting (no head bobbing)</li> <li>- Transfers toys and food from one hand to the other</li> <li>- Holds bottle in both hands</li> </ul>		
7-8 months		<ul style="list-style-type: none"> <li>- Able to bring upper lip down to draw food off of the spoon.</li> <li>- Full lip closure emerges.</li> <li>- Consistent tongue lateralization seen when foods presented to sides of tongue.</li> <li>- Active movement of foods from side of mouth to central tongue groove and back</li> <li>- Mature tongue lateralization emerging</li> <li>- Diagonal rotary movements</li> </ul>	
8-10 months	<ul style="list-style-type: none"> <li>- Trunk rotation and weight shift</li> <li>- Beginning to move in and out of positions</li> <li>- Voluntary release patterns</li> <li>- Uses fingers to rake food toward self</li> <li>- Puts finger in mouth to move food and keep it in</li> <li>- Introduction of cup drinking</li> </ul>	<ul style="list-style-type: none"> <li>- Circular rotary movements</li> <li>- Able to transition to slightly more texture (small bumps)</li> <li>- With assist, able to break off pieces of meltable foods</li> <li>- "Chewing" (munching) of softer foods</li> </ul>	

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10-12 months	<ul style="list-style-type: none"> <li>- Independent sitting in a variety of positions</li> <li>- Pincer grasp developing</li> <li>- Pokes food with index finger</li> <li>- Uses fingers to self-feed soft, chopped foods</li> </ul>	<ul style="list-style-type: none"> <li>- Clearing food off of lips emerges.</li> <li>- Simple tongue protrusion may occur.</li> <li>- More controlled biting, isolated from body movements.</li> <li>- Full transfer of foods from sides across midline occurs, without difficulty.</li> <li>- Rotary movements begin to emerge</li> </ul>	
12-14 months	<ul style="list-style-type: none"> <li>- Typically “co-feeding” with a parent</li> <li>- Grasps spoon with whole hand</li> <li>- Holds and tips bottle</li> <li>- Holds cup with 2 hands</li> </ul>	<ul style="list-style-type: none"> <li>- Chews and swallows firmer foods without choking.</li> <li>- Chews foods that produce juice.</li> <li>- Able to keep most bites in mouth during chewing</li> </ul>	
14-16 months	<ul style="list-style-type: none"> <li>- Efficient finger feeding</li> <li>- Practicing utensil use versus effective use for volume</li> </ul>	<ul style="list-style-type: none"> <li>- Uses tongue to gather shattered pieces</li> <li>- Sweeps pieces into a bolus with the tongue</li> <li>- Chews bigger pieces of soft table foods</li> <li>- Working on chewing foods increasing in texture “hardness”</li> </ul>	
18-24 months	<ul style="list-style-type: none"> <li>- Able to pick up, dip, and bring foods to mouth</li> <li>- Increasing utensil use (not efficient until after 24 months of age)</li> <li>- Scoops purees with utensil and brings to mouth</li> </ul>	<ul style="list-style-type: none"> <li>- Working on increasing speed and efficiency</li> <li>- Chewing strength improves</li> <li>- Better able to manage hard-to-chew foods</li> </ul>	
24-36 months	<ul style="list-style-type: none"> <li>- Use fingers to fill spoon</li> <li>- Increasing fork skill</li> <li>- Open cup drinking without spilling</li> <li>- One handed cup holding</li> </ul>	<ul style="list-style-type: none"> <li>- Circulatory jaw movements improve</li> <li>- Chews with lips closed</li> <li>- Working further on increasing speed, strength and efficiency with bigger and bigger pieces of harder and harder to chew table foods</li> </ul>	

(Schwaab, et al, 1986; Winberg & Porter, 1998; Porter, 1999; Carruth et.al. 2002; Delaney & Arvedson, 2008; Browne, J. V. 2008; Torola 2012)