Disorders of Eating and Feeding, and Disorders Following Prenatal Substance Exposure

Why Won’t My Baby Eat?

---Joe, age 4

I had to take antibiotics for sixtyhundred weeks.

OUTLINE

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OBJECTIVES

1. Describe the skills that underlie the feeding process.
2. Define and describe the concepts of eating and feeding disorders in childhood.
3. Explain how prenatal substance exposure puts a child at risk for developmental delays, and appraise the needs of the child as part of the family unit.
4. Apply an understanding of the influences of environmental (physical and cultural) and child factors (motor, sensory, and behavior) on challenges to feeding and development.
Introduction

In beginning to understand medical issues children may face, two medical conditions are briefly addressed in this chapter: feeding and eating disorders and prenatal substance exposure. Both have broad application to the rest of this section. Feeding and eating disorders may be found along side any number of other disorders, ranging from neuromotor to intellectual disorders. Rather than include this information in each of the following chapters, it is collected here. Prenatal substance exposure may underpin a number of disorders presented in this chapter. Thus children with sensory processing disorders, learning disorders, intellectual disability, and even neuromotor disorders may have experienced prenatal substance exposure. The basics of prenatal substance exposure are presented to give the reader foundational knowledge with regard to its impact. You will be introduced to Jonah and Raymond, and their vignettes will guide you through the content, focusing on the impact of the conditions on occupation and activity. Subsequent chapters will address information on many other medical issues.

Here’s the Point

- Medical conditions are complex; they must be understood in a multidimensional manner and viewed in the context of occupational participation.
- Overlap exists in the expression of development between the myriad of medical conditions of childhood and will influence the evaluation process and intervention.

Disorders of Feeding and Eating

Overview of Feeding and Eating Mechanics

Feeding and eating are driven by hunger, and when hunger signals are received by the brain, the infant or child works to communicate the need for food to a caregiver. The response of the caregiver should match the developmental age of the child in the provision of food. For instance, the cry of a 3-month-old would be matched by soft, comforting sounds from the caregiver and offering of bottle or breast to address the hunger needs. A toddler may signal hunger in a behavioral way that comes across as being whiny and somewhat cranky; the caregiver here could appropriately give voice to the behaviors (“Oh, Marissa must be hungry!”), and offer finger foods while a meal is prepared.

It has long been suggested that there is not only a need for sustenance, but also a need for nurturing that corresponds with the feeding experience, and the absence of pain or discomfort with food intake. This merger between the physical need for food and the social and mental health need for contact comfort is one of the reasons that issues of feeding and eating disorders become so complex. In the absence of nurturing, or in the face of pain or discomfort associated with food, the child may learn to refuse food in the future (Bernstein, 1978; Gagan, Cupoli, and Watkins, 1984). The emotional overtones that can be associated with the feeding and eating processes are well depicted in the case study of Jonah, which begins here:

Vignette 23-1 Jonah: Strong Bonds Are Tied to Feeding an Infant

Jonah’s grandmother brought Jonah to the feeding clinic when he was 6 months of age. Jonah was on nasogastric (NG) tube feedings at the time of referral. Grandma very much wanted Jonah to be able to eat without the tube. Jonah’s father did not engage in the feedings as he was unable to place the NG tube. Grandma reported that Dad had very little to do with Jonah; she thought that if Jonah could be moved to oral feedings, Dad might participate in this aspect of Jonah’s care and get to know his son better.

Jonah was the result of a noneventful pregnancy, although prenatal care had been minimal. Jonah was born full term, but his mother had serious medical complications associated with the birth process. Because of the medical care required by his mother during the birth process, Jonah suffered prolonged anoxia. Jonah’s mother died shortly after giving birth, and Jonah and his older sister were being cared for by their grandmother and father.

Oral feeding had not been feasible because of Jonah’s oral motor problems.

An initial assessment suggested that Jonah had a severe bite reflex, triggered by significant oral sensory over-responsivity to touch; sucking was difficult to initiate and ineffective. In addition, Jonah had very low muscle tone throughout his body and no head control. When the bite reflex was triggered, Jonah postured strongly in extension, with a profound asymmetrical tonic neck reflex. Although it was not always easy to tell, Grandma felt that Jonah seemed quite distressed when this happened.

FEEDING PHASES

The actual process of eating begins with the oral phase, sometimes referred to as the oral preparatory phase (Rogers and Senn, 2008). In this phase, solid food is
chewed and formed into a bolus in preparation for swallowing. This requires adequate tongue, lip, and jaw coordination, along with adequate sensory processing and awareness. Liquids are also formed into a bolus during the oral preparatory phase, and formation of the bolus leads to the next phase of feeding: swallowing.

Swallowing consists of three sub-phases: oral transport, pharyngeal transfer, and esophageal transport (Eicher, 2007) (Fig. 23-1). The **oral transport phase** involves the movement of the bolus of food or liquid from the front to the back of the oral cavity. This movement is begun by the tongue and results in the trigger for swallowing.

The **pharyngeal transfer phase** of swallowing is triggered by the physical contact of the bolus with the posterior throat. It is necessary for the oral and pharyngeal structures to engage in a complex coordinated interaction to begin swallowing because the pharynx serves as a pas sageway for both food and air. During swallowing, breathing must be stopped so that food can be successfully transported into the esophagus. This phase includes closure of the nasal cavity, which is accomplished by the rising of the soft palate and crucial to prevent food or liquid from entering the nasal cavity, and closure of the glottis to prevent food from entering the larynx. Protection of the larynx is assisted by the base of the tongue, which also helps to close the laryngeal opening. Importantly, the larynx sits between the pharynx and the trachea, and contains the vocal cords. The trachea connects to the bronchi and carries air to the lungs. In the absence of this coordinated interaction, aspiration (liquids entering the larynx and traveling below the vocal cords to the trachea and lungs) can occur. This was the case for Jonah.

**Vignette 23-2 Jonah (Continued)**

A barium video fluoroscopy (VF) was conducted on Jonah to determine if he would be able to successfully swallow liquids provided orally. VF provides a radiograph of the swallowing process. Jonah’s VF demonstrated that he was aspirating liquids, indicating that he did not have the oral motor skills to take liquids by mouth because the larynx was not sufficiently protected.

In the **esophageal transport** phase, the food or liquid now gathered together into a bolus is moved down the esophagus to the stomach. Esophageal motility is responsible for this movement. Once food is in the esophagus, breathing can resume, and the normal rhythm is reestablished.

As food approaches the stomach, the upper esophageal sphincter closes, and the lower esophageal sphincter, which is typically closed, must momentarily relax to allow the food to pass from the esophagus into the stomach (Fig. 23-2 illustrates the oral structures involved in eating and the food passageway from mouth to stomach). The pressure developed in the esophagus between swallows, when the lower sphincter is closed, is an important factor in the prevention of reflux, which is discussed later in this chapter (Rogers and Senn, 2008).

Swallowing has been viewed in utero as early as 10 weeks’ gestational age (Miller et al., 2003). The fetus’

ability to swallow is thought to be important in the regulation of amniotic fluid volume. It has also been linked to maturation of the gastrointestinal tract (Ross and Nijland, 1998). Further, in utero development includes tongue cupping (i.e., curling the borders of the tongue in preparation for sucking) at 28 weeks and the development of suckling movements of the tongue between 18 and 28 weeks (Rogers and Senn, 2008).

Coordination between sucking, swallowing, and breathing is minimal before 32 weeks’ gestation age. Suckling rhythm becomes increasingly stable after 32 weeks, as does suck/swallow coordination. And, it has been suggested that the successful interaction between sucking, swallowing, and breathing may be a reliable indicator of neurologic maturation in infants born prematurely (Gewolb et al., 2001). The ratio of one suck to one swallow is seen at 40 weeks’ gestation age; as infants mature, they develop the ability to match 2 or 3 sucks to each swallow. Mature suck, swallow, and breath coordination is characterized by maintenance of the suck rhythm, increasing speed, larger suck-to-swallow ratios, and increased volume with each suck (Mizuno and Ueda, 2003). The predictability of development in coordinating these three mechanisms suggests that this process is not learned or experience dependent but rather is part of typical development (Gewolb et al., 2001).

**LINKING FEEDING AND DEVELOPMENTAL MILESTONES**

It is important to note that key milestones in the development of typical feeding skills parallel other developmental skills; feeding and eating skills do not develop in a vacuum but rather are linked to such things as head and trunk control. As such, more advanced feeding skills emerge in parallel with the acquisition of head control; better control of the tongue emerges along with exploration of objects by the mouth. This means that as you assess and plan intervention for feeding and eating difficulties, you will want to look at what is happening with the whole child, and how the child is interacting with his or her environment. Select milestones in feeding and age-linked motor development skills are presented in Table 23-1.

**Here’s the Point**

- Feeding and eating are driven by internal body signals of hunger and thirst. In early development, it is important for both caregiver and infant to be able to give and interpret cues for optimal feeding and eating patterns to develop.
- Caregiver responses to infant and child cues should be paired with the infant’s or child’s developmental level.
- Feeding and eating are a multistage process.
  - Oral: chewing and the formation of a food or liquid bolus
  - Pharyngeal: swallowing
  - Esophageal transport: movement of food from pharynx to stomach
- Skills needed for successful development of feeding and eating skills emerge in parallel with other developmental milestones.

**Defining Feeding and Eating Disorders**

Feeding and eating are essential skills of childhood, as well as essential activities for the family; eating has both physical and social importance in most households (Fig. 23-3). The disruption of this process can, therefore, have profound effects on both physical and psychological health. Disorders of feeding and eating, as used in this chapter, are those disorders that interfere with the ability of a child to take food or liquid into the mouth and manipulate and swallow them. They are considered to be an activity of daily living by occupational therapists and are important for health and well-being, as well as social participation. Although it is crucial to consider the impact of feeding disorders on body structure and function, it is equally as crucial to understand the impact of a feeding disorder on social participation. Jonah, the case you have been following in this chapter, provides an
excellent example of a child with a profound feeding disorder that has the potential to significantly impact his physical and psychosocial well-being.

DISORDERS OF FEEDING

Difficulties with feeding are found in children who are otherwise developing typically, as well as in children with developmental challenges (Mackay, Morgan, and Bernstein, 1992; Melvin, Wright, and Goddard, 1997; Rudolf and Link, 2002; Sullivan et al., 2000). The incidence of such disorders is reported to range from 25% in typical children to 70% in children with other medical issues (Rudolf and Link, 2002; Lindberg, Bohlin, and Hagekull, 1991), and in as many as 90% of children with severe disabilities (Dahl, Thommessen, Rasmussen, and Selberg, 1996; Reilly, Skuse, and Poblete, 1996). Thus, feeding-related concerns are very common during the preschool years. Some children with feeding concerns have no challenges with the actual feeding and swallowing mechanics, while other children have significant neuromotor disorders that also interfere with the sensory and motor aspects of feeding. The pervasive nature of feeding disorders means there is a high likelihood that such disorders will be encountered in pediatric occupational therapy practice.

Rudolf and Link (2002) described a comprehensive list of the underlying causes of feeding disorders in children, which includes such things as poverty, sensory over-responsivity, structural abnormalities of the oronasal structures, suck-swallow-breath discoordination, metabolic and/or chromosomal disorders, infection, syndromes, and allergies. Jonah shows sensory over-responsivity along with difficulties with suck-swallow-breath coordination. He also has a neuromotor disability, further impairing his ability to take food and liquids by mouth, safely. Table 23-2 includes a myriad of pediatric disorders that put children at risk for feeding difficulties. Lowman and Lane (1999) describe associated issues and potential effects on feeding and nutrition. Medications prescribed for such
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<td><strong>Neurological problems</strong></td>
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<td>Cerebral palsy</td>
<td>Poor sucking, swallowing, lack of head and trunk control, reflux, aspiration</td>
<td>Poor nutritional intake, failure to thrive, increased rate of infections</td>
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<tr>
<td>Traumatic brain injury</td>
<td>Depends on severity of brain injury and motor deficits but look for spasticity, ataxia, or tremor</td>
<td>Weight loss from reduced food intake, reflux, difficulties swallowing</td>
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<td><strong>Congenital anomaly syndromes</strong></td>
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<tr>
<td>Down syndrome (trisomy 21)</td>
<td>Hypotonia, inadequate lip closure, poor sucking, tongue protrusion</td>
<td>Overall developmental delay, persistent catarrh, and recurrent illness</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>Problems with sucking, swallowing, <em>gagging</em>, oral sensory over-responsivity, gastrointestinal problems</td>
<td>May lose food out of mouth, discomfort sitting during feeding, poor nutrition</td>
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<td>Cleft lip and/or cleft palate</td>
<td>Poor oral suction, poor intake, nasal regurgitation, choking and <em>gagging</em>, excessive air intake</td>
<td>Slow weight gain, psychological or emotional problems that may impact eating</td>
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<td>Prader-Willi syndrome</td>
<td>Low muscle tone during infancy; later voracious appetite and constant search for food</td>
<td>Obesity, microdontia, enamel defects, and dental caries</td>
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<td>Pierre Robin anomaly</td>
<td>Airway obstruction, tracheostomy may be necessary</td>
<td>May require supplemental tube feedings</td>
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<td><strong>Endocrine disorders</strong></td>
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<tr>
<td>Hypothyroidism (childhood or juvenile)</td>
<td>Hoarse voice, poor feeding, mental retardation</td>
<td>Growth retardation, delayed bone and dental maturation</td>
</tr>
<tr>
<td>Hyperthyroidism (neonatal-Graves’ disease)</td>
<td>Infants born to mothers who have Graves’ disease</td>
<td>Feeding problems, vomiting, diarrhea</td>
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<tr>
<td>Diabetes (type 1)</td>
<td>Monitoring blood glucose and watching for signs of hypoglycemia (low blood glucose) or hyperglycemia (high blood sugar)</td>
<td>Monitor (fruit, protein, and bread exchange)</td>
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<tr>
<td><strong>Gastrointestinal disorders</strong></td>
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<tr>
<td>Gastroesophageal reflux</td>
<td>Aspiration, increased risk for reactive airway disease, partial or total closure of the airway</td>
<td>Discomfort eating, feeding aversion, recurrent pneumonia</td>
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<td>Supplemental tube feedings or dependence</td>
<td>Tubes may be placed because of structural abnormalities, inability to eat orally, or unable to get enough nutrition by mouth</td>
<td>Maintain oral feedings, oral simulation, and mealtime interactions</td>
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<td>Short bowel syndrome</td>
<td>After surgery, receives parenteral nutrition</td>
<td>Transition back to “real” food, diet will be lactose-restricted, low-fat, and low-sugar</td>
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<td><strong>Metabolic disorders</strong></td>
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<td>Phenylketonuria (PKU)</td>
<td>Test at birth, placed on phenylalanine-restricted diet</td>
<td>Older children have difficulty following diet and engage in food stealing</td>
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<td><strong>Storage disorders</strong></td>
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<tr>
<td>Mucopolysaccharidosis (Hurler syndrome)</td>
<td>Short stature, progressive mental retardation, liver and spleen enlargement, full lips</td>
<td>Deteriorating motor and mental skills may affect feeding</td>
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<td><strong>Intrauterine growth retardation</strong></td>
<td>The five TORCH infections cause similar defects, including microcephaly, hydrocephalus, mental retardation, or brain damage</td>
<td>Varying effects depending on the degree of mental retardation or brain damage</td>
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<td>TORCH (toxoplasmosis, syphilis, rubella, cytomegalovirus [CMV], herpes virus)</td>
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<tr>
<td>Fetal alcohol syndrome</td>
<td>Cleft palate, low or weak muscle tone, weak suck</td>
<td>Slow postnatal growth, small and tire easily</td>
</tr>
<tr>
<td>Small for gestational age and prematurity</td>
<td>Immature oral musculature, high risk for Bronchopulmonary dysplasia, medical complications requiring ventilation and feeding tubes</td>
<td>Sleepy, reduced endurance, aversion to oral feedings</td>
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*The table continues with more entries.*
conditions as seizure disorders also can affect feeding by influencing appetite and taste.

Arvedson (2008) differentiates swallowing and feeding disorders. Disorders of swallowing, or *dysphagia* may occur during stage of the swallowing process, from oral through any esophageal swallowing phase. She notes that timing and coordination of the swallowing process are crucial to the prevention of aspiration, or passing liquid or food into the trachea. Disorders of feeding are broader and may include food refusal, behavioral challenges around eating and meal time, rigid food preferences, and disrupted attainment of milestones needed for self-feeding.

The diagnosis of “feeding disorder” is based on criteria in the *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition, Text Revision (DSM-IV-TR)*; American Psychological Association [APA], 2000). Because it is so broad, it can be somewhat confusing. The DSM-IV-TR defines a “feeding disorder of infancy or early childhood” as one in which there is an ongoing failure to eat and sustain weight, over no less than 1 month’s duration and with onset prior to 6 years of age. This would include disruption of skills associated with food intake and ingestion, and includes symptoms such as failure to gain weight; failure to thrive; difficulty with sucking or failure to swallow following suck; pooling of food in the mouth; coughing during feeding (Garg, 2003), oral aversion, aspiration, and esophagitis (Rudolf and Link, 2002). If there is a specific medical diagnosis (e.g., gastroesophageal reflux disorder [GERD]) or mental health diagnosis (e.g., rumination disorder), the child may not receive a diagnosis of feeding disorder.

**GASTROESOPHAGEAL REFLUX DISORDER**

GERD is one example of a specific feeding disorder and the outgrowth of a regurgitation disorder in infants (Hymen et al., 2006). Regurgitation differs from vomiting. Vomiting involves a central nervous system reflex involving the small bowel, stomach, esophagus, and diaphragm that forcefully expels food from the stomach. Regurgitation, the involuntary backward flow of food and liquid from the stomach back into the esophagus and mouth, is not uncommon in infants and becomes an issue only when coupled with other complications. When regurgitation results in tissue damage or inflammation, it is considered GERD; it becomes a medical condition when it occurs at least twice daily and has a duration of 3 weeks or longer (Hyman et al., 2006).

GERD can be associated with failure to thrive, obstructive apnea, reactive airway disease, aspiration, and other feeding or swallowing difficulties. Often reflux
shows spontaneous improvement as the infant develops. Positioning changes (placing infants on the left side or in prone following feeding) (Corvaglia, Rotatori, Ferlini, Aceti, and Faldella, 2007) and thickening food (Chao and Vandenplas, 2007; Wenzl, Schneider, Scheele, Silny, Helmann, and Skopnik, 2003) are often all that is needed to achieve improvement.

®

The DSM-IV-TR defines feeding disorders of infancy or early childhood by failure to eat and sustain weight over a period of at least 1 month.

®

Disorders of feeding may co-exist with physical, psychosocial, and medical concerns.

The Context of Feeding and Eating

Consistent with the ecocultural foundation presented throughout this text, feeding and eating take place within the context of life; influenced by the culture in which the child grows up, these skills are integrated across the boundaries of all environments, and involve all individuals with whom the child interacts. Eating is a physical necessity, but it also has significant sociocultural overtones (Fig. 23-4).

Here’s the Point

➤ The DSM-IV-TR defines feeding disorders of infancy or early childhood by failure to eat and sustain weight over a period of at least 1 month.
➤ Disorders of feeding may co-exist with physical, psychosocial, and medical concerns.

CAREGIVER AND INFANT INTERACTION

Davies and colleagues (2006) argued that the current classification system of feeding disorders fails to take into account the partnership in feeding between parent and child. Further, the contextual factors that may influence feeding are often used as exclusionary criteria in identification of the disorder. Examples of contextual factors that may influence eating include an environment that is highly chaotic such that meals are not offered regularly or food that is inappropriate; extreme need by the caregiver to control food intake; caregiver mental health disorder; too much or too little caregiver support; and food offered that is inadequate nutritionally or of inappropriate texture for developmental skills. If these contextual factors appear primary, for instance, if the caregiver is so controlling as to severely limit food availability, the diagnosis of Feeding Disorder may be inappropriate. Instead, Davis and colleagues have proposed criteria for Feeding Disorder Between Parent and Child (p. 414); while this disorder will not be found in the DSM-IV-TR, it is one worth considering. Davies et al. proposed five criteria that must be met to carry this diagnosis:

1. Persistent failure by the child to eat in keeping with developmental expectations and cultural and subcultural norms.
2. Child characteristics such as failure to grow and thrive, and food sensitivity or selectivity. This criterion also includes the situation in which the child shows adequate nutritional intake and growth, but only with tube feeding or medical interventions, ongoing interaction struggles between parent and child, or interaction with caregivers other than the parents. Thus, while these criteria are specific to the child, they include the context in which the eating and feeding takes place.
3. Interaction during the feeding process, including characteristics such as child aggressive or disruptive behavior, parental withdrawal or inadequate self-control, caregiver intrusiveness on child choices with regard to the eating process, inappropriate attitudes about food and eating, failure to provide support or structure for meal time, lack of response to child cues, and failure to provide appropriate meals and snacks.
4. Onset prior to age 6.
5. Duration no less than 1 month.

This unique approach to examining feeding and eating puts the disorder in the context of interaction between child and caregiver and recognizes challenging behaviors on both sides of the interaction. While it is clear that Jonah would be diagnosed with a feeding disorder, as per the DSM-IV-TR, a feeding disorder between parent and child should also be considered, as can be seen in the continued vignette.

FIGURE 23-4 Feeding and eating take place within the context of everyday life, and involve all of the people with whom the child interacts. A stress-free and fun environment is a perfect start for the feeding/eating process.
Consideration of the physical environment is crucial to understanding the feeding process. Jonah’s Grandma had given some thought to how best to feed this fragile baby, and she had endeavored to create an environment in which he could function. Table 23-3 explains how features of the physical environment may substantially affect a child’s feeding and eating.

In observation of Grandma working with Jonah during a tube feeding, and by her report, the therapist determined that the interaction during feeding times was stressful for both parties. Grandma was uncomfortable placing the tube, and although she managed it adequately, it could sometimes take a few attempts to get the tube in place. Jonah’s response to passage of the NG tube was gagging and choking, and by the time the tube was placed, he was exhausted. Thus, once the feeding could begin, Grandma was frustrated and Jonah was asleep. The entire process was not a pleasant one, and not one that promoted positive caregiver–infant interactions.

Chatoor (2002) recognized feeding disorders in the newborn and infancy period that were linked to state regulation and interaction with a caregiver. Thus, newborns may fail to eat because they cannot attain and maintain the state of quiet alertness that is needed for feeding. As the newborn ages into infancy, feeding disorders may reflect a lack of relatedness between infant and caregiver, such that the infant does not demonstrate social interaction and shows signs of inadequate growth and nutrition. Chatoor also identified feeding disorders linked with food refusal, sensory sensitivity, medical conditions, and traumatic events.

The diagnostic categorizations of both Chatoor (2002) and Davies et al. (2006) promoted investigation of not just child issues but also caregiver–infant interaction issues. Chatoor stated, “Regulation of food intake is closely linked to the infant’s affective engagement with the caregiver. If caregiver and infant are not successfully engaged with each other, feeding and growth of the infant suffer” (Chatoor, 2002, p. 167). Caregiver interactions may be characterized by inadequate or negative engagement or by noncontingent interaction. Caregivers may fail their child in the provision of regular meals and snacks and not respond appropriately to cues of either hunger or satiety. Infants who have inadequate relationships with caregivers appear insecure in attachment; tend not to cuddle when held; and may be lethargic, limp, and potentially hypotonic. They may be aggressive, disruptive, or noncompliant.

The issue of poor caregiver–child interaction may also be due to poor cue giving and responding on the part of the child. For instance when children have neuromotor difficulties that make feeding very challenging, such as we see with Jonah, caregivers can become frustrated and worried about food intake. This sets up tension during the feeding process which itself results in feeding difficulties. Children may have oral sensory sensitivity that makes them withdraw from the touch of a breast or the nipple of a bottle, providing cues to the caregiver that may be read as “I do not like you.”

Jonah was fed in the kitchen, away from the television and other noise in the house. Grandma made every attempt to create an environment that was peaceful and calming, both for herself and for Jonah. This was a great decision on her part, and laid the stage for a peaceful meal. Jonah sat semireclined in his infant seat, with his head supported, although it often tilted to the side during feeding. With Jonah in this position Grandma could be either face-to-face with Jonah or to his side. Once the tube was placed for the “meal,” the quiet environment and his positioning could allow for caregiver–child interaction. Since Grandma could sit facing Jonah, eye contact could be made and if this was not overwhelming for him, this could lay the foundation for communication. Alternatively, Grandma could sit to Jonah’s side, talk softly or touch his hand or arm to let him know she is there. The overall set up and environment had the potential to support interaction. However, the fact that placement of the NG tube was very tiring for Jonah, coupled with the quiet environment, meant that Jonah slept throughout each meal.
expectations overlie all other aspects of feeding and eating and influence the assessment and intervention approaches that can be used successfully. Culture will dictate food type and quantity, when and where a child can be fed, who will do the feeding and who will be present, and how the feeding process will take place. Asking questions that elicit information about these issues can be the first step toward the development of a feeding program that families will embrace.

Take a few minutes to search the Internet to find out about foods in cultures other than your own. Consider how these foods match up to the foods in your own diet. Are these foods you might recommend to a caregiver for feeding a child? How might you deal with these cultural differences?

Now, do the Internet search again and see if you can uncover information about the culture of eating this food. For instance, consider the following questions:

- Is there a sequence to who eats when?
- A sequence of how the food is presented?
- Some guidance on what constitutes “baby” food, and when infants transition to “table” food?
- What else can you find out about the culture of feeding and eating, within this cultural group?

Finally, consider how these cultural mores might influence feeding and eating for a child with cerebral palsy and difficulty coordinating lips and tongue to drink from a bottle. How might they influence feeding and eating for a toddler with significant sensory sensitivities such that he cannot tolerate chunky food textures?
Sponsivity is “invisible” to others in the environment. The infant dyad because sensory overresponsivity or underresponsivity is part of the transmission systems, such as is seen in neuro-developmental disorders. Thinking back to Jonah, consider what may result from noxious early oral experiences such as intubation or lung suctioning, prolonged lack of exposure to oral experiences, such as is seen with long-term tube feedings in the absence of oral stimulation, or damage to sensory transmission systems, such as is seen in neurological disorders. Thinking back to Jonah, consider what might underlie the sensitivity to oral touch he displays.

Sensory issues pose unique challenges to the caregiver-infant dyad because sensory overresponsivity or underresponsivity is “invisible” to others in the environment. The caregiver who does not understand sensory sensitivities will not understand the child’s behavior; other adults who are not involved in the feeding process may misinterpret both child and caregiver behavior. If not addressed at all levels, from sensory processing through caregiver–child interaction, these sensory problems can lead to ongoing power struggles between caregiver and child. Suggestions for intervention for sensory sensitivity related to eating and feeding are presented in Table 23-4 in the Interventions section.

**ORAL MOTOR ISSUES**

Oral motor deficits, generally seen in conjunction with other neuromotor dysfunction, can involve any and all aspects of the feeding process. Thus, deficits may be seen in the development of the sucking response, the ability to form a food or liquid bolus, transporting the bolus to the back of the mouth, and initiating and completing swallowing. Using the barium swallow technique, Jonah was shown to have oral motor deficits. Oral motor dysfunction often can be complicated by the presence of abnormal reflexes (such as the tonic bite reflex, as seen with Jonah). Abnormality in muscle tone, seen in children with cerebral palsy and other neurological disorders, can impact the oral mechanisms. Secondarily, but of critical importance, abnormalities of muscle tone in the neck and trunk can negatively impact postural control. Head and trunk alignment are crucial for safe and functional feeding.

Swallowing presents particular difficulties for infants born prematurely whose suck/swallow/breathe mechanisms are not fully mature. Infants born prematurely tend to suck and swallow repeatedly while holding their breath because of the immaturity of this process (Hanlon, Tripp, Ellis, Flack, Felley, and Shoesmith, 1997). Oral motor deficits can make the feeding process time consuming and stressful. The focus of the caregiver will...
necessarily be on making sure the child receives adequate nutrition and calories. When this process is challenged by poor oral motor skills, growth and development are at risk. Oral motor interventions are presented in Table 23-5 in the Interventions section.

**Here’s the Point**

- Oral sensory processing can be influenced by early sensory experiences such as suctioning and intubation, and later be reflected in behaviors such as food refusal or food pocketing.
- Oral motor dysfunction can impact any and all aspects of feeding and eating.

### Evaluation and Intervention for Disorders of Feeding and Eating

As with many medical disorders, assessment of and intervention for feeding and eating disorders will be a multidisciplinary process. Further, these processes must involve not just the child, but the caregiver, the family, and the cultures in which the family is embedded because all will influence successful feeding and eating.

#### Evaluation

The initial step with any feeding or eating disorder will be to rule out medical concerns. It is likely this will happen either prior to an occupational therapy referral or will be taking place as the OT assessment also begins, and will likely involve videofluoroscopy, as was done with Jonah. Videofluoroscopy will permit analysis of the feeding mechanisms, and has in the past been successfully used to determine the best position for feeding (Morton, Morris, Foureie, and Minford, 1993). In addition to the basic question of “Is food available?” a medical assessment will include examination of swallowing, absorption, digestion, assimilation of nutrients, and the presence/absence of organ system disorders (Kerzner, 2009).

Aside from the medical issues, Arvedson (2008) suggests that the evaluation begin with questions about the length of time it takes to feed the child (consistently more than about 30 minutes is reason for concern), the degree of dependence the child has on others for the feeding process (children who are totally dependent on others are at higher risk for aspiration), the presence of food refusals and the behaviors that are associated with the refusal, and the stress associated with mealtime.

The actual assessment is best carried out using observation of the caregiver feeding the child. The natural environment will be best, but a simulated clinic environment will work if caregiver and child appear comfortable. During the feeding, observations can be made about caregiver–child interaction during preparation, actual feeding, and clean-up time. The therapist will be looking at the issues addressed earlier here and working to determine if the feeding disorder is due to a problem with the mechanics of the feeding process (oral motor issues), sensory issues, behavior and caregiver–child interaction, or environmental problems (Manikam and Perman, 2000). Thinking back to Jonah, he has clear difficulties with sensory processing on his face and in his mouth. He also has poor oral mechanics. His feeding disorder is highly complex.

### Intervention

As was the case for assessment, intervention for feeding disorders will involve the caregiver as an essential participant (Fig. 23-6). The person primarily responsible for feeding the child will also be the person who oversees the intervention plan and team activities; the intervention must fit into the natural rhythms of the mealtime process within the household. Eicher (2007) suggests that successful intervention programs will include strategies to cover multiple bases, including minimizing negative medical

#### Vignette 23-6 Jonah (Continued)

In spite of the VF results, the therapist and Grandma were given cautious permission by the physician to begin oral stimulation toward the goal of oral feeding. The therapist recommended only slight variation in the feeding position, providing lateral head supports to keep Jonah’s head at midline. The initial stages of intervention were focused on gradually providing firm pressure to the face, in the area of the mouth, to begin desensitizing Jonah’s oral region. Grandma generally began by holding Jonah’s hand and talking softly to him. She found that she could massage his shoulders and neck without making him tense, and tried this before she moved to his face. Touch on the face was firm, and Grandma found that Jonah’s response to her touch was better if her hands were cool. Placing hands on his face first, Grandma also found that she could wait for Jonah to accept this touch and relax, then she could gently but firmly massage his cheeks in the area of lower and upper jaw. All of these activities took place outside of feeding time initially. While, at the start it was not possible to work inside Jonah’s mouth, this was the goal set by Grandma. Therapy would progress from firm pressure and touching on the face and mouth, to the use of a covered spoon inside the mouth. The spoon could be lightly dipped into pureed fruit to provide some flavor and encourage oral motor actions within the mouth, while minimizing the risk of aspiration. Intervention for Jonah would blend the context Grandma had already established, a slight change in position, and slow progression toward getting into his mouth. Grandma would experiment with face to face interaction, or sitting to Jonah’s side and talking quietly to him as she worked on his sensitivity. Grandma also worked with the occupational therapist and the nurse to identify better ways to get Jonah’s tube in place for feedings.
influences, improving the mealtime environment and promoting appetite. In addition, proper positioning needs to be identified and used, and specific interventions for oral motor and sensory processing concerns included. Tables 23-4 and 23-5 offer some specific ideas on sensory sensitivities and oral motor interventions.

There is much more to learn about feeding and eating; entire books have been written about the subject. That level of detail is beyond the scope of this chapter; however, you have been given the tools you need to understand the typical feeding process and features of feeding difficulties. For assessment of feeding and eating difficulties, consider both the sensory and physical aspects of the environment, the social interactions that take place around feeding, and the sensory and motor strengths and needs of the child. The background presented here prepares you for these tasks. Intervention for feeding difficulties will follow from evaluation results and may involve specific techniques for preparation for the feeding process, positioning during feeding, caregiver–child interaction interventions, and addressing the sensory and motor disorders that have made feeding a challenge. As the therapist, you will need to make sure you consider feeding issues with many of the other pediatric conditions addressed in this section. While they may not be explicitly addressed, their inclusion is implicit.

**TABLE 23-4  Sensory Interventions for Oral Sensitivity**

<table>
<thead>
<tr>
<th>INTERVENTION</th>
<th>BEFORE/ DURING A MEAL</th>
<th>OTHER TIMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use finger brushes, such as finger tip massagers, “toothettes,” “Brush Ups” (recommended for children ages 8 and older), if the child can tolerate the taste; rub the gums, lips, tongue, inside cheeks, and teeth.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Use vibrating toothbrush or oral massagers on lips, insides of cheeks, palate, tongue, and gums. (Some children will respond very positively to the vibration, others will not; do not force) (e.g., Z-Vibe, NUK toothbrush/oral massager).</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Offer “chewy tubes” or theratubing to chew on at various times during the day. Use as is, or dip in flavored juices or anything with a palatable flavor.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Offer snack foods that require work for the oral muscles (heavy chewing) (e.g., pretzel rods, jerky, gum if appropriate)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Massage the child’s face, lips, and cheeks with cloths of various textures and fabrics to gradually decrease sensitivity. Begin with smooth materials (e.g., satin-like texture) and gradually move to washcloth textures.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Offer age-appropriate foods of different textures frequently; attend to the child’s preferences for foods not to touch each other.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Offer beverages of different temperature and “fizz.”</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Give the child control over the process whenever possible. Offer positive reinforcement during eating attempts.</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**Here’s the Point**

➤ Assessment and intervention with feeding disorders will involve a multidisciplinary team.
➤ Assessment will include a medical exam, potentially using videofluoroscopy to assess for swallowing concerns, along with observation of the caregiver and child during a mealtime experience. The role of the occupational therapist will include consideration of not just the motor and sensory aspects of feeding disorders, but the context in which feeding occurs, and the caregiver–child interaction during the eating process.
➤ The caregiver will be the intervention “team leader” when a feeding disorder has been identified. Intervention may include medical treatment and will address issues ranging from caregiver–child interaction to positioning and oral motor sensitivities.
### TABLE 23-5 • Interventions to Consider for Specific Oral-Motor Difficulties

<table>
<thead>
<tr>
<th>ORAL DIFFICULTY</th>
<th>INTERVENTIONS TO CONSIDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulties with suck</td>
<td>Consider nipple qualities and perhaps try a different type of nipple; make sure nipple hole is open; if liquid seems uncontrollable, make sure nipple hole is not too large; prefeeding oral stimulation to elicit rooting, nonnutritive suck; use nipple to rhythmically stroke infant’s tongue down and forward; pull gently on nipple to improve oral grasp; provide external support on jaw and cheeks for greater stability.</td>
</tr>
<tr>
<td>Poor modulation of jaw movement</td>
<td>Provide external support on jaw and cheeks for greater stability; try a prone position on a stander or wedge; be certain to check for hypersensitivity; incorporate oral play and oral sensory input at times other than during feeding.</td>
</tr>
<tr>
<td>Tongue retraction</td>
<td>Be sure to have the chin slightly tucked and the neck elongated during feeding; stroke down and forward on the tongue with firm pressure; tap under the chin near the root of the tongue; try prone positioning.</td>
</tr>
<tr>
<td>Tongue thrust</td>
<td>Try different textures of food that do not promote thrusting; develop tongue lateralization skills; work on sucking patterns initiated from the lips, not the tongue; press down and inward on the tongue with firm pressure; if the child tolerates it, add vibration.</td>
</tr>
<tr>
<td>Low tone in the face</td>
<td>Be sure to work first on trunk tone and stability; tapping to the lips, tongue, and under the chin.</td>
</tr>
<tr>
<td>Difficulty swallowing</td>
<td>Try prone positioning; use externally applied jaw stability techniques; stroke the lips in a circular movement with a wet cotton swab; use of chilled or frozen liquids during a feeding session may improve initiation of swallow.</td>
</tr>
<tr>
<td>Tonic bite reflex</td>
<td>Relax the child prior to feeding; use a coated spoon to decrease the hypersensitivity; include oral play at times other than feeding.</td>
</tr>
</tbody>
</table>


### Prenatal Substance Exposure

According to Shankaran et al. (2007), over 170,000 births were associated with prenatal use of illicit substances in the 2002–2003 U.S. National Survey on Drug Use and Health. In the most current national survey on Drug Abuse (Substance Abuse and Mental Health Services Administration, 2008), 5.1% of pregnant women reported using illicit drugs in 2007–2008. Further, the incidence of alcohol use by pregnant women was reported to be 10.6%, with 4.5% of respondents reporting binge drinking and 0.8% reporting heavy drinking. Often licit and illicit substance abuse occurs together, complicating the outcomes for both mother and child.

This “disorder” differs in many ways from other medical disorders. Prenatal substance exposure comes in multiple shapes and forms; the causes vary as much as the outcomes. Pregnant women may abuse alcohol and/or illicit drugs, prescription medications, and any number of other substances (i.e., tobacco) known to impact fetal development. Substance exposure may be pervasive, with exposure throughout pregnancy, or limited in temporal scope. Further, dosage can vary widely. This makes understanding this medical issue and its ramifications a bit like hitting a moving target. It is difficult, if not impossible, to distinctly provide an overview or definition. Nonetheless, it presents a challenge for the child, and the outcomes of exposure are likely to be seen across many pediatric clinical environments.

### Context of Prenatal Substance Exposure

Chemical dependency is itself considered by some health-care professionals to be a disease. For instance, it is well accepted that alcoholism is a chronic disease resulting from a combination of genetic, psychological, social, and environmental factors. This same “disease” status has not been granted to dependence on such substances as cocaine or heroin, but there is reason to put them all into the same category. The chronic nature of this disorder for the primary caregiver puts the child at risk long after the prenatal effects of substance exposure resolve.

According to the National Household Survey on Drug Abuse, Substance Abuse and Mental Health Services Administration (2008), as many as 8 million children live in households in which one parent is dependent on alcohol or illicit drugs, and more than half of this number live with a parent in need of treatment for illicit...
drug use. Of those, about 5.4 million live with a father who met the criteria for past year substance abuse or dependence, and 3.4 million live with a mother who met the criteria.

The home environment, coupled with prenatal substance exposure, can result in an accumulation of risk, thought by some to be “both additive and interactive ... dramatically increasing total vulnerability to developmental problems” (Conners et al., 2004, p. 86). Prenatal substance exposure has a very high tendency to be confounded by such things as poverty, poor prenatal care, substance exposure following birth, unstable home life, inadequate caregiving, and unhealthy risk-taking behavior, all of which put development at risk. Interesting findings by Carta, Atwater, Greenwood, McConnell, McEvoy, and Williams (2001) indicated that environmental risk put children at the greatest risk, overshadowing developmental threats posed by prenatal substance exposure.

What is it about context that puts these children at such risk? Substance-dependent primary caregivers, often the mothers, are challenged to meet the physical and emotional needs of their children when their own needs are not being met. Many of the caregivers are chronic substance users, typically unemployed and poorly educated, and there is a high incidence of homelessness. Further, caregivers may have been in legal trouble, and many have histories of abuse. These risk factors make the caregivers unavailable to the child for emotional, social, and physical support. Additionally, children of substance abusers experience high rates of child abuse and neglect and other threats to safety (e.g., physical injuries and deaths related to motor vehicle accidents). And, these children are themselves at higher risk for drug and alcohol addiction (Kumpfer, 1999).

Thus, not only are these children prenatally challenged by exposure to substances known to be detrimental to growth and development, but the environments in which they develop do not support the formation of emotional self-regulation, social interaction, and cognitive skills. According to Conners et al. (2004), these children do not have the environment they need in order to overcome the unhealthy risks posed by prenatal exposure.

The “take home message” here can be grounded in ecocultural theory: children develop within the constraints and affordances of the various environments in which they live throughout the developmental process. Not all children prenatally exposed to substances will have developmental difficulties; not all children living in household with parental substance abusers will themselves become addicts. Determining how the prenatal, antenatal, and postnatal environments influence developmental outcome is, at best, a challenge. And, eventually it comes down to the nature/nurture debate; there is no single answer.

### Outcomes for Children with Prenatal Substance Exposure

Outcomes and impact data on substance abuse during pregnancy have been somewhat inconsistent. This should be expected since there are a myriad of variables associated with prenatal exposure, including drug or drugs of choice, timing, and dosage. However, the following outcomes following prenatal substance exposure are notable:

- Infants exposed to “heavy” prenatal cocaine use have an increased incidence of cranial hemorrhage (Frank et al., 1999) and smaller head circumference in relationship to body size (Bateman and Chiriboga, 2000) when factors such as gender, gestational age, and birth weight are taken into account.
- Exposure to cocaine in the first trimester is linked with shorter gestation, reduced birth weight, and lower birth weights after controlling for multiple other variables (Richardson et al., 1999).
- Cocaine use during the second and third trimesters is associated with reduced birth length and head circumference (Eyler et al., 1998).
- Cocaine-linked birth weight reduction and shorter stature appear to resolve within the first 6 years of life.
- Cocaine-linked head circumference differences are present through 1 year of age, and subsequently resolve (Bada et al., 2005).
- No major motor developmental delays have been consistently identified in infants over the first year to 2 years of life following prenatal cocaine exposure (Miller et al., 2005).
- After controlling for potentially confounding variables, prenatal cocaine exposure was associated with increased incidence of internalizing, externalizing, and total behavior problem scores (Bada et al., 2005) that continued through the age of 7.
- While attachment issues were not noted to be linked to prenatal cocaine exposure at 12 months of age (Beeghley et al., 2003), insecure attachment and a relationship between attachment status at 18 months of age and child temperament at 36 months of age have been identified in children born exposed to cocaine and opiates, although effect sizes were small (Seifer et al., 2004).
- There is an increased incidence of cognitive and behavioral organization delays and negative affect in toddlers following prenatal “polydrug” exposure (maternal use of a combination of substances including heroin, methadone, crack cocaine, marijuana, alcohol, cigarettes) (Metosky and Vondra, 1995).
- Play in toddlers prenatally exposed to cocaine, and possibly marijuana, is different from that of nonexposed children and may involve both delays in play skill development and less persistence in pretend play (Hurt et al., 1996).
School-aged children prenatally exposed to cocaine were more likely to be referred for special education services and had IQ scores below their counterparts up through 7 years of age (Lester et al., 2003). At 3 years of age, children prenatally exposed to opiates had lower motor scores, although this finding resolved as children grew older (Shankaran et al., 2007). Prenatal cocaine exposure has been linked with deficits with attention and behavioral regulation at age 6 (Ackerman, Riggins, and Black, 2010).

Assessment and Intervention for Children With Prenatal Substance Exposure

Assessment for children prenatally exposed to illicit substances must be driven by caregiver concerns and presenting problems. The therapist should then employ assessments of behavior, cognition and perception, play, and motor performance. The therapist must also be ready to examine caregiver–child interaction and home environment, as these can have a profound impact on the expression of risk to development. Evaluation must be conducted by a multidisciplinary team, such that other developmental risks (e.g., growth retardation, language delays) are also addressed.

At birth, infants are often assessed for regulatory ability using tools such as the Brazelton Neonatal Behavioral Assessment Scale ([NBAS], Brazelton, 1973), or the NICU Network Neurobehavioral Scale ([NNNS], Lester and Tronick, 2004), developed based on the NBAS. These tools are designed to evaluate the manner in which stressors, such as in utero substance exposure, affect infant self-organizing neurobehavioral capacities, and have been widely applied (Law et al., 1993; Lester et al., 2002; Napierkowski et al., 1996; Soule, Standley, Copans, and Davis, 1974; Velex and Jansson, 2008). Both require training on the part of the evaluator.
The behavioral assessment tool most commonly used in studies of children prenatally exposed to substances of abuse is the Child Behavior Checklist (CBCL; Achenbach and Rescorla, 2001; Achenbach, 1991; Kurtz, Chin, Rush, and Dixon, 2008). Although this is not a tool specific to occupational therapy, it is available to occupational therapists and is well validated. The CBCL has both parent and teacher forms, allowing the therapist to obtain information on behaviors across more than one environment.

Play assessment tools available look at play skills (i.e., Knox Preschool Play Scale) and playfulness (Test of Playfulness [ToP]; Bundy). The strength of the ToP is that it is not skill based but looks at the process aspects of play. As noted in Chapter 18: Assessment, the Pediatric Interest Profiles (Henry, 2000) are another means of looking at play by gathering information about play interests through a self-report checklist.

The ToP has a companion, the Test of Environmental Supportiveness (Bundy, 2007), which guides the examiner to look at the affordances available in the environment to support playfulness. This quick tool can assist in looking at the environment. The Home Observation for Measurement of the Environment (Caldwell and Bradley, 1984), although not a new tool, is widely used to assess home environment. It involves a home visit and both observation and interview, and there are versions for infants, preschool-aged children, and school-aged children (Fig. 23-7).

Assessment of parent–child interaction is not unique to occupational therapy, and as such the tools used for this assessment are not specific to our field. According to Hans (2002), the most commonly used mechanism for examining parent–child interaction is coding of videotaped mother–child interaction.

Intervention for the child prenatally exposed to substances of abuse will follow the needs identified in the multidisciplinary evaluation and be dictated by the child’s strengths, needs, and occupational contexts.

**Active Learning**

Think about Raymond, his family context, and the strength and needs of him and his family when he was discharged from the hospital. Make a list of what you know about him. Look at Chapter 4: Early Intervention. Does Raymond qualify for these services? Would he also need one-on-one occupational therapy? Take a look at Chapters 20 through 22 addressing intervention; what would you recommend?

The ecocultural framework can be instrumental in guiding first assessment and then intervention planning and implementation for this group of children. First and foremost, the therapist will need to consider the home environment and caregiver–child interactions; the ecoculture in which the child functions must guide intervention plans. Caregiver–child interactions are potentially very fragile and will have a profound effect on the success of an intervention program. This certainly applies to Raymond; his mother would like to be able to provide proper care for him, but the facts that she continues to deal with her addiction, and there is a 2-year-old sibling in the environment, present substantial challenges. As a therapist for Raymond, you might want to work with Mom to develop a home program to address his feeding difficulties. However, consideration must be given to the strengths and needs of the primary caregiver; if the caregiver is working to overcome a drug habit, conducting any home program with the child may not be realistic.

Early intervention for the infant working to overcome prenatal substance exposure often focuses on development of neurobehavioral regulation skills for the infant; intervention must also be directed toward the mother, who may be experiencing a myriad of mental health challenges (depression, anxiety, guilt) (Velez et al., 2009).

Later, intervention for deficits in participation and play may be incorporated into treatment sessions designed for addressing behavior, perceptual, and/or motor concerns. Best practice in occupational therapy for children is embedded in play, because play is a primary occupation of childhood. Specific intervention ideas for deficits in higher level processing (cognitive and perceptual deficits), motor skill development, and other areas of concern can be found in other chapters in this section.

**Here’s the Point**

> Environmental context influences child development in all cases; when the child is placed at risk by something like prenatal substance exposure, the effects of context can be profound.
Assessment and intervention for children prenatally exposed to substances of abuse are not unique to this group of children. Instead, they will depend on the individual skills and needs of the child, the family, and the interaction between. The ecocultural framework is crucial in consideration of assessment and evaluation.

**Summary**

Medical conditions facing children referred to occupational therapy are varied, and not all can be addressed in this text. It is crucial that you understand the medical issues that children seen in occupational therapy face, and as such this will become part of your lifelong learning process. In this chapter you have been introduced to two issues: feeding/eating disorders and prenatal substance exposure. These conditions overlap with others in this section of the textbook but warrant specific attention. While some assessment and intervention ideas have been presented in this chapter, you are encouraged to consider the ramifications of these medical conditions as you read the remaining chapters in this section because you will find much to apply to these three conditions.

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**What Else Is in the Toybox?**

**Disorders of Feeding and Eating**


An interesting website is available from Latrobe University that offers a brief overview of pediatric feeding disorders, assessment, and intervention. This site also includes some feeding resources.


Lippincott, Williams & Wilkins also offers a site called 'Lippincott's Nursing Center.com' at which there is a four part overview of the approach to assessment of a child for feeding disorders.

**Prenatal Substance Exposure**


Eleven essays exploring important topics related to ethics, outcomes, and assessment of infants and young children exposed prenatally to cocaine and other illicit drugs.


Describes characteristics of children affected by prenatal drug/alcohol exposure and explores strategies to circumvent the resulting damage and maximize the child's strengths.


Award winning story of what it's like to have fetal alcohol syndrome told from the perspective of a child.


The journey of a family who unknowingly adopted a child with fetal alcohol syndrome.

**References**


