Promoting Positive Mother-Child Interactions*

Ellen Aronson Kaplan, M.S., PT

Things to Remember— Newborn through Three Months Old

Babies can adjust to their surroundings and the people who care for them. Infants who are withdrawing from substances have trouble adjusting to many activities that happen as part of their regular care. You will be able to help your baby adjust to these new situations.

Babies are very sensitive to stimulation—the sights, sounds, noises, smells, taste, and movement around them. You can control the surroundings so that your baby has a chance to adjust to any change. Introduce activities *one thing at a time.* First hold your baby, then look at your baby, and then talk softly to your baby. If the baby starts to cry or becomes stiff or jittery, slowly decrease the stimulation until the baby is comfortable. It is often helpful to "swaddle" the baby. Wrap a small blanket around your baby's body, arms, and legs. Tucking babies in by "swaddling" helps them adjust to the different stimulation around them.

If the baby starts to cry, gets stiff, or falls asleep quickly, there is too much stimulation for the baby to handle. A baby who is awake, active, and alert is ready to play quietly. Play games that allow the baby to spend time looking at you or at toys. Start by letting the baby look at your face and explore it. Next, find a favorite toy, and let the baby look and play with it until the baby loses interest in it.

*From *Generations—Guidelines for Handling Infants and Toddlers.*

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Newborn to One Month

Typical Baby	Recovering Baby*	Handling Suggestions
The baby's movements are random and reflexive.**	Once in a while the baby shows tremors (shaking or trembling) of the lips or chin. Sometimes the baby's movements are jerky, or the baby may feel stiff.	Swaddling helps to quiet movements and makes your baby feel secure.
The baby's body can easily adjust to handling by an adult.	It takes a long time to find a comfortable position for the baby. The baby cries when held, and seems to resist attempts to cuddle.	Handle your baby *slowly.* Give the baby a chance to adjust to movements. Babies often prefer gentle up-and-down motion to rocking.
At the sound of a voice, the baby responds with some alertness. For example, the baby's eyes widen, or the baby quiets to the sound.	At the sound of a voice, the baby shows signs of stress. For example, the baby cries, stiffens, or hiccups when held and talked to at the same time. The baby "shuts down" by going into a deep sleep if there is too much noise in the room.	Wait until your baby has calmed down before you talk. You may need to do things one at a time. For example: 1. Swaddle the baby. 2. Hold the baby. 3. Talk in a soft voice. 4. Slowly look at the baby, face to face.
The baby stops sucking from a bottle to look at something and then continues to suck from the bottle.	Sometimes the baby falls asleep while drinking from a bottle, and may not get enough to eat. The baby may spit up frequently during a feeding. Your baby may require frequent bottle feedings.	*Bottle-feed your baby. Do not breast-feed.**** Feed your baby in a quiet area. Before you start feeding, be sure the baby is clean, dry, and comfortable. Hold the baby so the child feels secure. Swaddle the baby during bottle feedings.

*The babies for whom these guidelines apply are recovering from prenatal exposure to substances.

**Reflexive movements are actions that your baby always uses when reacting to a particular kind of stimulation. For example, stroking the bottom of the baby's foot causes the baby to pull back the foot.

***For discussion, see Chasnoff, I. J., E. L. Douglas, and L. Squires. 1986. Cocaine intoxication in a breast-fed infant. *Pediatrics* 80(6):836-838. This article is a case study of a two-week-old infant who developed irritability, vomiting, diarrhea, dilated pupils, loss of focusing, tremulousness, and other atypical neurological signs following breast-feeding from a mother who had used approximately 0.5 grams of cocaine prior to and during breast-feeding this infant. The authors concluded that education concerning the potential hazards of cocaine intoxication of infants should be provided to women who breast-feed their children.

One to Two Months

Typical Baby	Recovering Baby*	Handling Suggestions
When awake, your baby is active. For example, the baby kicks when lying on its back.	The baby's movements feel stiff and jerky. The baby is most stiff when placed on its back. The baby's arms or legs seldom move.	Move your baby slowly when you change the baby's position. Calm the baby by swaddling, and see if the baby will stay awake, alert, and quiet. When the baby is asleep, hold the baby, or place the baby on one side or on the belly. Avoid placing the baby on its back.
The baby starts to focus on a face. The baby may move its head in order to keep a face in view. The baby starts to smile when feeling comfortable.	The baby avoids too much stimulation. (For example, the baby's eyes close or the baby looks away from fast-moving objects, and cries or falls asleep if there is a lot of noise.) The baby is seldom quiet and alert, and is often fussy, asleep, or crying.	Swaddle and hold the baby facing you. Do not talk. Look at your baby, and wait for the baby to look at you. When the baby is quiet and looking at you, start to move your head and coo softly. Wait for the baby to respond by smiling or following the movement of your face and voice.
When sucking from a bottle, the baby may look at your face, stop drinking to look, then continue to drink.	The baby may be panicky before feedings. The baby may frequently spit up during and after a bottle. The baby may require frequent feedings.	Keep feeding time as quiet as possible. Use this time to encourage your baby to look at your face or toys. Talk softly with your baby.

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Two to Three Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby works to bring the head toward the middle when back-lying.	When placed on the back, the baby shows infrequent, stiff, uncoordinated movements. The baby feels stiff and may arch the back.	Use an infant seat instead of laying your baby on the back. This helps to support the baby in a comfortable position for resting and watching.
When you bring the baby toward a sitting position, the baby tries to help by tightening the muscles of the neck and trying to hold up the head. In a supported sitting position, the baby seems comfortable and does not resist.	The baby seems to resist going into a sitting position. It is difficult to get the baby to bend into a sitting position. The baby needs help to stay in this position.	Support your baby behind the shoulders and in front of the chest. This helps the baby to relax into a sitting position and become comfortable.
The baby will turn its head in the direction of a sound.	When hearing a noise, the baby often cries, startles, or becomes very fussy (for example, panic-cries), or the baby may fall asleep.	Be very patient and calm to get the child to settle down, and then introduce sound slowly and softly. Avoid loud and sudden sounds.
The baby likes to be watching and observing. The baby is able to watch a slowly moving toy.	It takes a long time for the child's eyes to open, and often the eyes close quickly when you look at the baby.	Swaddle and hold your baby facing you. Wait for the baby to start to look at your face. Change the position of your face as the baby watches you.
The baby cries with more rhythm and begins to laugh.	The baby makes few sounds other than crying. The baby does not play with sounds.	Talk softly with your baby. Imitate any sounds the baby makes. Be sure that you and your baby are looking at each other during this time.

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Three to Four Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby is getting better head control. When placed on the belly, the baby is able to lift up the head and rest on the elbows.	When placed on the belly, the arms are held back and the baby is unable to lift up the head to look around.	Place a small towel roll under your baby's chest. This will move the baby's arms in a position to provide support and enable the baby to hold up the head and look around. Encourage the baby to look at toys in this position.
There is less evidence of a Moro reflex** and startle reaction.***	Moro reflex and startle reaction are still evident.	Handle your baby slowly. Avoid sudden loud noises and quick movement. Give support around the back and chest when you change the baby's position.
The baby puts two hands together and plays with them. The baby holds toys that are placed in the hands. Babies may start to reach out for toys.	The baby's hands are held stiffly at the sides. The baby has trouble putting two hands together or bringing hands to mouth.	Cradle your baby in your arms, or position the baby comfortably in an infant seat. Hand the baby rattles, squeak toys, and other things to explore with both hands at the same time and put in the mouth.
The baby is beginning to make more sounds and sound combinations.	The baby makes few sounds between silence and crying.	Talk with your baby. Imitate any sounds the baby makes, and wait for the baby to repeat the sound.

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**When the baby's head is allowed to drop backward suddenly, the baby's arms and legs immediately move out to the sides of the body. This is called the Moro reflex.

***When the baby reacts to an unexpected noise, movement, or touch by suddenly jumping or crying, it is called a startle reaction.

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Things to Remember—Four through Six Months Old

During this time, babies are becoming very visually alert, spending lots of time looking at things. When your baby is comfortable and alert, encourage the baby to look at your face or at toys. However, remain sensitive to the baby's ability to be alert and quiet or alert and active.

The baby will still need your help to adjust if there is too much stimulation. Be aware of signs of stress. For example, the baby might cry, stiffen, show tremors or jerkiness, or have difficulty settling down. Swaddle and hold the baby on your shoulder until the baby is calm and ready to play.

By this time, babies start to touch objects and explore toys and people that are in view. Encourage your baby to play with toys with both hands and to start holding the bottle independently. Gently touch and stroke the child's hands. Place toys in the baby's hands. The baby will touch and explore them. Soon the baby will begin to reach in the direction of the toys. Talk softly to your baby about the things that are happening. Wait for the baby to coo back, and then imitate the baby's sounds.

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Four to Five Months

Typical Baby	Recovering Baby*	Handling Suggestions
When back-lying, the baby plays with both hands and feet together. The baby is able to reach up in order to get a toy.	The baby still has difficulty bringing hands and feet together. Often the baby's legs are stiff. The baby may have tremors (shaking or trembling) of the arms.	Place your baby in an infant seat. Avoid letting the baby spend lots of time lying on the back. Play games that allow the baby's hands to touch each other. Encourage the baby to reach toward the feet.
When placed on the belly, the baby can hold the head up and will try to reach for toys.	The baby has difficulty with lying on the belly. In this position, the baby's legs are stiff and the baby falls over while trying to reach for a toy.	Encourage playing in a belly-lying position. A small towel roll under the chest sometimes helps the baby to feel more secure.
When held in standing, the baby will bounce up and down on bent legs.	When held in standing, the baby will stand on stiff legs and has difficulty bending the legs. The baby usually stands on tiptoe.	Avoid holding the baby in a standing position. Encourage the baby to play while lying on its belly. *Do not use an infant walker or baby bouncer.***
The baby can hold a bottle independently.	The baby does not attempt to hold the bottle. Arms are down at the sides, and the baby seems to be fighting the bottle.	When the baby is held in a sitting position, the baby's arms and hands can hold the bottle more comfortably. Use a sit-up straw in the bottle. Sit-up straws are plastic drinking straws that can be pushed into the nipple of the baby's bottle. Then the liquid may be sucked up into the straw while the bottle is held upright. The baby can sit up and drink from a bottle even while the head is down. Sit-up straws are sold in the children's section of department stores.
The baby is beginning to watch and play with toys placed in each hand and change the toy from hand to hand. The baby likes to look in the mirror.	The baby makes few attempts to reach for toys. There are brief periods of looking, but the baby is often distracted by other things.	First have your baby look at a toy, then place a toy in the baby's hand. Let the baby play with one toy at a time.

*The babies for whom these guidelines apply are recovering from prenatal exposure to substances.

**For discussion, see Rieder, M.J., C. Schwartz, and J. Newman. 1986. Patterns of walker use and walker injury. *Pediatrics*, 78(3):448-493. This article is a study of the pattern of injuries related to infant walker use during the first year in 139 infants. The most severe injuries were related to falls down stairs (n=123). Injuries included skull fractures (n=19), forearm fractures (n=3), clavicular fractures (n=2), nasal fractures (n=1), closed head injury (n=93), burn (n=3), dental injury (n=7), laceration (n=6), abrasion (n=3), soft tissue injury (n=1), nasal injury, no fracture (n=1). The authors concluded that use of baby walkers represents a significant cause for injury in the infant population.

Five to Six Months

Typical Baby	Recovering Baby*	Handling Suggestions
When back-lying, the baby is able to bring hands and feet together. The baby tries to play by bringing the feet up to the mouth.	When placed on the back, the baby has difficulty lifting the legs or reaching toward the feet.	Hold the baby in a supported sitting position, and play games that encourage the baby to bring hands and feet together.
When placed in a sitting position, the baby tries to stay sitting.	It is difficult to get the baby to bend into a sitting position. The baby often pushes backward and falls. The baby's back is very stiff and straight, rather than curved.	Use your hands to support the child on both the front and back of the chest. Encourage your baby to play with both hands in front.
The baby is beginning to roll from belly to back.	The baby usually falls into a roll when moving from belly to back. The baby often stiffens and arches the back just before rolling over.	Help your baby to practice rolling. Place the baby on one side, put a toy within reach, and encourage the baby to roll over and get the toy.
The baby is able to reach for and play with a toy that is placed close by.	The baby needs encouragement to hold a toy and play with it.	Encourage hand play by using toys that require both hands.
The baby is able to look at things without becoming distracted.	The baby is easily distracted while looking at things.	Encourage your baby to look at toys during quiet times with little noise and few objects. Keep the baby's attention on one toy until the child shows signs of losing interest.

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Six to Seven Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby is working on sitting (with the hands placed in front for support). If falling, the baby usually falls forward.	The baby still requires your help and support in sitting. If falling, the baby falls backward. The baby's hands are usually down to the sides, rather than in front.	Support the baby in sitting. Place toys in front of your baby. Encourage the baby to place hands down and in front for support.
The baby is able to lift the head and upper body off the mat when playing on the belly. The baby is able to reach for a toy while lying on the belly.	The baby has difficulty staying on the belly or lifting up onto straight arms. Often, the baby extends too much and rolls onto the back.	A small towel roll placed under the baby's arms will help the baby to maintain a position on straight arms. This provides support so the child does not roll over unexpectedly. Encourage your baby to look down while playing.
The baby is able to sit and play with toys, transferring toys from hand to hand. The baby is able to reach for and grasp toys that are slightly out of reach.	The baby will not attempt to get toys that are out of reach or search for toys that roll away.	At first, place toys in your baby's hands, and then place the toy within reach. Encourage the baby to reach for the toy. Use toys the child can shake and bang.
The baby is beginning to imitate sounds.	The baby rarely makes sounds, but may appear interested in watching someone make sounds.	Imitate any sounds your baby makes. Make simple sounds, and see whether the baby enjoys hearing your sounds and words.

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Things to Remember—Seven through Nine Months Old

Babies use different types of play (grasping, shaking, and waving) to learn about things. This is important for learning. Allow your baby to touch and explore toys and people. Toys that the baby could use for exploring and learning include things that make noise (pots and pans). Babies also like to play with things placed in containers, such as blocks in a cup. This is a good time to start playing peek-a-boo and to hide toys for the baby to find. Encourage your baby to use both hands to play with balls, stuffed animals, and other toys.

By this time, your baby will begin to indicate some feelings and wants by making different sounds in cooing and fussing. This is a time when the child will spend a lot of time practicing sounds. Encourage your baby to make sounds by imitating the coos your baby makes. This shows your baby that you are interested.

Your baby is now on the move, so it is important to "childproof" areas where the baby is playing. The baby enjoys moving around but is not fully able to balance. Be careful! This is a time when frequent falls can happen.

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Seven to Eight Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby is starting to move out from a sitting position into crawling and is able to go from crawling back into sitting.	If beginning to crawl, the baby appears to go slowly (shows hesitancy) in going from sitting to crawling and back. Often it looks as if the baby gets stuck in the middle of doing this.	Play with your baby on the floor between your legs. Let the baby reach for toys on the other side of your legs.
The baby is beginning to try to pull up into standing by holding onto furniture.	The baby is able to pull up into standing, but then gets stuck and is unable to get down. When standing, the baby usually stands on tiptoe.	Encourage your baby to go from sitting to standing, so that the feet remain on the ground. Avoid placing or bouncing the baby in standing.
The baby can indicate pleasure, comfort, anger, and other things by using gestures (for example, kicking and waving). The baby is able to tell mother from other people by smiling and gestures, and indicates a desire to be with mother.	The baby cries when frustrated in not getting things desired. It is very difficult to calm the crying baby. The baby may get stiff and arch the body backward.	Pay close attention to your child in order to understand and interpret cues and avoid frustrating the baby.

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Eight to Nine Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby is able to go from sitting to crawling and back to sitting with ease. The baby enjoys moving and exploring, crawling very quickly.	The baby is hesitant to move into a crawl. The baby has difficulty going from crawling into sitting independently. Crawling is slow and seems to be hard to do.	Play with your baby on the floor or on a large surface. Encourage the baby to reach from side to side to get toys in sitting. This will help the baby to change positions from sitting.
When held in a standing position, the baby will rock and sway. The baby can bend down from standing to get a toy and return to standing with ease.	When held in standing, the baby's legs are stiff, and often the baby stands on tiptoe. The baby has trouble bending down to get a toy, and often falls from standing.	Encourage the baby to go from squatting to standing, so that the feet are flat on the floor. Do not put the baby on the floor feet first. Do not use a baby bouncer.
The baby is able to eat crackers or cookies independently. The baby can hold a bottle, and tries to help when drinking from a cup. The baby can pick up things between the thumb and fingers.	The baby shows little interest in self-feeding cookies, crackers, and other finger foods. If able to feed self, the baby may try to eat things other than food.	When feeding, give your baby something to hold that is also safe to put in the mouth.
The baby starts to understand words. The baby indicates wants and needs by changes of tone of voice and body language.	The baby may not show preference for one toy or another. The baby is either quiet or will cry.	Be sensitive to things your baby enjoys, and encourage smiles and happy sounds.

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Nine to Ten Months

Typical Baby	Recovering Baby*	Handling Suggestions
From sitting, the baby can go in any direction easily in crawling. Often the baby will crawl onto steps and other low objects.	The baby may get stuck in places and not be able to get out. For example, the baby may crawl under a piece of furniture and not be able to back up in order to get out.	Make an obstacle course for your baby with pillows. Encourage the baby to crawl over, under, around, and between the pillows in order to get a toy.
The baby may begin to walk while holding onto furniture or when you hold the baby's hands.	The baby pulls up to standing while holding onto furniture, but then may become stuck. The baby will not be able to get down into crawling. When standing, the baby is up on tiptoe.	Try to get the baby to stand with both feet flat on the floor. Rather than encouraging walking by holding the baby's hands, try to interest the baby in standing while you hold the baby's hips.
The baby will look for toys that are out of sight.	The baby will not show interest in finding a toy that is placed out of sight even after showing interest in that toy.	This is a good time to play hide-and-seek games with your baby. For example, hide the baby's bottle under a towel, or hide a toy under a blanket.
The baby will imitate what you do.	The baby appears more interested in watching than in doing.	This is a good time to play pat-a-cake and "so big" types of games.
The baby knows his or her name, is able to says single words, and will babble a string of sounds.	The baby does not say any words, and uses only simple sounds rather than a string of babbling.	Sing familiar songs, repeat nursery rhymes, and encourage your baby to try to join in with some of the sounds.

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Things to Remember—Ten through Twelve Months

By this age, babies are able to indicate their wants, and they can communicate those wants to people. Talk to your baby. Let the baby know you are trying to understand those wants. For example, you might say, "You want a bottle. I will get you your bottle." The baby enjoys playing turn-taking games, such as "Give me" and "Find the toy."

Ten- through twelve-month babies are able to move around quickly. They can go from sitting to crawling to standing, and they may try to walk. Be alert to what your baby is doing, and provide a safe place for the baby to explore. Have toys on hand that your baby can play with safely. Put away items that are dangerous, such as medications, cleaning supplies, and breakable objects.

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Ten through Eleven Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby is able to walk with one hand held. However, for speed, usually the baby will crawl. The baby has strong protective reactions. (For example, the baby will put hands out in front for protection in a fall.)	The baby is wobbly when starting to walk, still needs two hands held when walking, and usually walks on tiptoe. The baby tends to fall backward, or falls forward and hurts the head or face (possibly because of delayed or immature protective reactions).	Be very careful as your baby tries to walk. Frequent falls are common. Stay near your baby, and be ready to catch if the baby falls. Playing games like "wheelbarrow," with the baby's hands on the ground while you hold up the legs, will help to develop protective reactions.
The baby is able to follow a simple direction (for example, "Give me").	The baby does not respond to a simple command.	Play games that involve taking turns. When the baby is holding a toy, gesture with your palm up and say, "Give me." Praise any attempt the baby makes toward giving you the toy.
The baby shows interest in music and rhythm, and begins to move to music. The baby is able to imitate games. (For example, the baby will imitate your hand movements.)	If there is a lot of noise, or if music is too loud; the baby may "shut down" by crying or going into a deep sleep.	This is a good time to start singing simple songs and playing games that include hand movements (for example, "Open-shut-them" and "Itsy-bitsy-spider").

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Eleven through Twelve Months

Typical Baby	Recovering Baby*	Handling Suggestions
The baby may stand alone for a moment. When starting to walk, the baby stands with a wide base, feet flat on the floor, and holds hands up in the air.	The baby stands on tiptoe and may appear very stiff. If falling, the baby may not put arms out (protective reaction) and may injure the face or head.	When your baby is standing, provide support by standing in back of your baby and holding the baby's hips. Let the baby push things around the room (for example, a play shopping cart or a chair).
The baby is able to self-feed dry cereal, cookies, crackers, and other finger foods.	The baby does not show much interest in eating or assisting in eating. However, the baby may still put other things into the mouth besides food.	Meal time is still a slow process. When feeding, give your baby some food to hold. Take turns feeding the baby and showing the baby how to put some food into the mouth. Be careful to prevent the baby from putting things into the mouth that are not food.
The baby will make new sounds (for example, vroom, beep-beep).	The baby may coo or say familiar sounds, such as "da-da."	Play games that encourage the baby to use new sounds. For example, you might say, "The car goes vroom-vroom"; "The bell goes ding-dong"; "The dog says 'bow-wow.' "

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References and Notes

Aylward, G. P. 1990. Environmental influences on the developmental outcomes of children at risk. *Infants and Young Children* 2(4):1-9.

This article reviews various environmental and biological risk factors that influence child development. Environmental risks may be inherent in the mother-child dyad, the physical environment, availability of support systems, and/or they may be a reflection of family needs. These environmental risk factors have a strong influence on the cognitive development of the child. Biological risk factors are those which affect the child in utero, perinatally or during earliest childhood.

Conclusion: Multirisk families present several areas of concern to practitioners in the field of early intervention. Defining the type of service that will best meet the developmental needs of the child from a multirisk family is one area of concern. This area is made more complex because of multiple environmental and biological risk factors.

Bignol, N., M. Fuchs, V. Diaz, R. K. Stone, and D. S. Gromisch. 1987. Teratogenicity of cocaine in humans. *Journal of Pediatrics* 110:93-96.

A study of 50 women and their children who were exposed to cocaine, 110 woman and their children who were polydrug exposed, and 340 women and children who were drug free, describing outcomes for their newborn infants. The method of cocaine self-administration affected the consequences for the infant, with the highest rate of abnormalities noted with the groups of mothers who smoked or injected cocaine.

Conclusion: Cocaine abuse in humans significantly reduces the weight of the fetus, increases the stillbirth rate related to abruptio placentae, and is associated with a higher malformation rate.

Brazelton, T. B. 1973. Neonatal behavioral assessment scale. *Clinics in developmental medicine* 50. Philadelphia: J. B. Lippincott.

A standardized assessment of newborn behavior and neuromotor status, consisting of 28 behavioral items, 20 reflex and passive movement items, and nine additional items that include alertness, attention, persistence, irritability, endurance, regulatory capacity, state regulation, balance of motor tone, and reinforcement value of the infant's behavior. Observation of the states of arousal include deep sleep, light sleep, drowsy, alert, active alert, and fussing/crying.

_____. 1984. *Neonatal behavioral assessment scale* 2d ed. Philadelphia: J. B. Lippincott.

Chandler, L. S., M. S. Andrews, M. W. Swanson. 1980. *Movement assessment of infants.* Infant Movement Research, P.O. Box 4631, Rolling Bay, WA 98061.

A standardized criterion-referenced assessment of the quality of motor skills for children ranging in age from 1.5 to 12.5 months. Components of movement which are assessed include: muscle tone, primitive reflexes, automatic reactions, and volitional movement.

Chasnoff, I. J., D. R. Griffith, C. Freier, and J. Murray. 1992. Cocaine/polydrug use in pregnancy: Two-year follow-up. *Pediatrics* 89(2):284-89.

A longitudinal study of three groups of infants who were followed from birth through age two years. Group 1 consisted of 106 infants exposed to cocaine and other substances (marijuana and alcohol), group 2 consisted of 45 infants exposed to marijuana and alcohol (without cocaine), and group 3 consisted of 81 infants who were not exposed to drugs prenatally.

Conclusion: Group 1 infants demonstrated decreased birth weight, length, and head circumference. They had caught up in length and weight by one year of age, yet were smaller than group 3 infants at age two years. Group 2 infants demonstrated smaller head size at birth. Head size in the two groups of exposed infants remained smaller than those of the control group. A significant number of the children who had been exposed to drugs scored more than one standard deviation below the mean on the Bayley Scales of Infant Development PDI at 6, 12, and 24 months of age. Head size was significantly correlated with developmental outcomes for each group of children.

Davidson, D. A., and M. A. Short. 1982. Developmental effects of perinatal heroin and methadone addiction. *Physical and Occupational Therapy in Pediatrics* 2(4):1-10.

A review of the history of narcotic use and the effects of heroin and methadone on both the adult and child. Findings from the various studies outlined indicate concerns for these children across multiple domains of behavior.

Conclusion: These authors advocate the use of an intervention philosophy that includes improving prenatal health care and providing educational efforts directed at teaching parents appropriate handling skills (meaningful stimulation), thus enhancing positive parent-child interactions.

Dixon, S. D., K. Bresnahan, and B. Zuckerman. 1990. Cocaine babies: Meeting the challenge of management. *Contemporary Pediatrics* 7(6):70-92.

An integration of clinical evidence and research findings concerning environmental and biological risks associated with substance exposure for the infant. This article offers guidelines for the general pediatric management of children exposed to substances.

Conclusion: Developmental issues are of concern for infants and children exposed to substances in utero. Continued research is needed to support the clinical impressions of this population of children. Assessment and intervention for the developmental and health needs of these children need to be addressed as the children mature.

Frank, D. A., B. Zuckerman, H. Amaro, K. Aboagye, H. Bauchner, H. Cabral, L. Fried, R. Hingson, H. Kayne, S. M. Levenson, S. Parker, H. Reece, and R.Vinci. 1988. Cocaine use during pregnancy: Prevalence and correlates. *Pediatrics* 82(6):888-895.

A study of 679 pregnant women who were being seen for prenatal care who were also evaluated for cocaine use by interviews and urine toxicology analysis.

Conclusion: Of the 679 pregnant women, 17% were found to use cocaine during pregnancy following urine assay. However, 24% of the women identified for cocaine use had denied it during interview alone. In addition to describing prevalence, this report suggests using both interview and urine assays of pregnant women in order to identify the numbers of infants at risk for in-uterine exposure to substances. Relationships between cocaine use and pregnancy outcome may be biased by inadequate identification of cocaine users and failure to control for confounding variables.

Greenspan, S. 1987. *Infants in multirisk families: Case studies in preventative intervention.* Clinical infant reports. Series of the National Center for Clinical Infant Programs. Number 3. Madison, CT: International University Press.

Various case studies are presented relating the flexible outreach design of this program toward multirisk families. A supportive and proactive approach is detailed along with a description of the various interventions provided to each of the families portrayed in the case studies.