

Infant Behavior, Reflexes and Cues

Infant behavior is influenced by state, temperament and the ability of the infant to self-regulate. The manner in which infants respond to internal and external stimuli and to their caregivers depends upon the infants' state of consciousness. For example, an infant's response to being held (cuddliness) varies with the infant's state. An infant in quiet sleep may be very passive. In a crying state, the same infant may resist being held. In a quiet-alert state, this same infant might respond in a passive manner, resist holding, or relax and nestle

into the caregiver's arms. Table 7 describes specific infant behaviors.

Behaviors are often cues, activities that signal an infant's status or needs. Engagement cues are a type of behavior that signals the infant's readiness to interact with caregivers. Disengagement cues are a type of behavior that signals the infant's need for time-out or a reduction in stimuli. (Nursing Child Assessment Training, 1978)

Table 7. Infant Behaviors

Alertness: Widening and brightening of the infant's eyes and face as the infant focuses attention on stimuli (such as visual or auditory stimuli or objects to be sucked)

Visual response: The newborn's ability to react to objects or people with whom she or he makes contact

Auditory response: The newborn's ability to react to voices and other sounds in the environment

Habituation: The ability of infants to lessen their response to repeated stimuli

Cuddliness: The degree to which the newborn molds and nestles into the contours of the caregiver's body

Consolability: The ability of infants to bring themselves or to be brought by others to a lower state

Motor behavior: Spontaneous body activity and activity in response to stimuli

Adapted from Brazelton & Nugent, 1996.

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Figure 9. Alertness (or Alerting Behavior)



During the quiet-alert state, infants are most attentive to their environment, interacting socially and responding to their caregivers. Periods of alertness provide a way for infants to make contact with their environment and learn about the people around them.

Description of Behavior

The eyes widen and brighten. Infants focus attention on stimuli (visual, auditory, or objects to be sucked).

During waking states, when infants first hear a sound such as a voice or rattle, or see a bright object or face, their initial response is often “What’s that?” Ongoing behavior freezes (Brazelton & Nugent, 1996).

Infants, if sucking, stop sucking and widen their eyes, attempting to locate the source of the sound or to keep track of the face or object as it moves.

Infant State

Quiet alert

Implications for Caregiving

Infant state and timing are important. To help an infant achieve alertness, the caregiver may:

- Unwrap the infant (arms out at least)
- Place the infant in an upright position.
- Talk to the infant, varying the pitch and tempo of his or her voice
- Show his or her face to infants.
- Elicit the rooting, sucking, or grasp reflexes. (see page 13).

Being able to alert infants is important for caregivers as alert infants offer increased feedback to adults. Newborn alertness can be utilized in order to provide increased positive feedback from infants to caregivers.

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Figure 10. Visual Responses



Visual response is the newborn's ability to react to objects or people with whom she or he makes contact.

Description of Behavior

Newborns have pupillary responses to differences in brightness.

They can focus on objects or faces up to at least 2 ½ feet away, but attend best at 8-12 inches away.

Newborns prefer complex patterns, moving objects, and especially human faces.

They can follow moving objects with their eyes within a few hours of delivery or sometimes even sooner.

By 2-3 days of age, newborns can follow an object with their eyes and by turning their heads.

Newborns vary in their visual abilities. Most newborns alert, focus on an object, and follow it with their eyes. A few newborns have no response to a face or bright object.

Often infants will turn their heads to follow the object. They may lose the object, but find it again, and continue to follow it.

A few newborns will follow an object with their eyes and heads both horizontally and vertically.

Infant State

Quiet alert

Implications for Caregiving

Visual alertness provides opportunities for eye-to-eye contact with caregivers, an important source of interaction, pleasure, and recognition. Eye-to-eye contact establishes communication that enhances rapport and provides positive feedback between caregivers and infants.

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Figure 10 continued

Infants must be in a quiet alert state if the caregiver is to make a reliable observation of visual ability.

If an infant in a quiet-alert state does not at least brighten when presented with a bright object or face, this assessment should be repeated at another time. If the infant still does not respond, this observation should be discussed with the primary health care provider for further evaluation and appropriate referral.

Providing drowsy or active-alert infants with something to see will often bring them to a quiet-alert state.

Shading infants' eyes from overhead light will also help them alert so they can focus on a person or object in their environment.

Visual responses often are observed most easily when infants are held in a semi-upright position in someone's arms or held on someone's shoulder.

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Figure 11. Auditory Responses



Auditory response is the newborn's ability to react to voices and other sounds in the environment. Newborns use auditory stimuli to alert from drowsy or crying states.

Description of Behavior

Newborns react to a variety of sounds, especially in the human voice range.

They can hear sound and locate the general direction of sound, if the source is constant and continues coming from the same direction (such as continuous talking).

Neonates differentiate sounds and can distinguish their mother's voice.

They will pay attention to sounds of interest, particularly high-pitched and rhythmic, singsong vocalizations.

Most newborns brighten and widen their eyes, "freeze" their body activity, and shift their eyes in the direction of the sound.

Many newborns also turn their heads toward the sound.

A few newborns will consistently turn toward the sound and even move their eyes back and forth as they search for the exact location of the sound (Brazelton & Nugent, 1996).

Infant State

Drowsy, quiet alert, active alert.

Implications for Caregiving

Auditory stimuli can enhance communication between infants and caregivers. The fact that crying infants can often be consoled by voice demonstrates the value this stimulus has to infants (see page 8).

A few newborns do not respond to sound, but this is rare. These newborns should be reassessed. If the infant still does not respond, this observation should be discussed with the primary health care provider for further evaluation and appropriate referral.

It is an exciting experience for parents to see their newborn respond to the sound of their voices!

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Figure 12. Habituation



After birth, newborns must learn to respond appropriately to stimuli in the environment.

Newborns must not only be very responsive to significant stimuli, but also must learn to make minimal responses to extraneous stimuli around them. Habituation is the ability of infants to lessen their response to repeated stimuli.

If newborns constantly reacted to everything, they would have little time to learn about their world.

Description of Behavior

If a sound or stimulus is continually repeated, newborns will no longer respond to it in most cases.

Infant State

Quiet sleep, active sleep, also seen in drowsy.

Implications for Caregiving

Ability to habituate allows families to carry out normal activities without disturbing newborns.

Newborns can shut out most stimuli, similar to adults not hearing a dripping faucet after a period of time.

Habituation to repeated stimuli is an early form of learning (Brazelton & Nugent, 1996). For example, if the caregiver tries to elicit the Moro reflex (see page 13) several times in a row, newborns respond initially, but after several trials, the intensity of the reflex decreases, often becoming barely visible.

Habituation also can be seen in the lack of reaction by a number of infants to many of the noises that regularly occur in the hospital and home environments.

Some newborns have more difficulty than others learning to habituate and seem to react to everything that goes on around them. These infants may have difficulty sleeping in an active or noisy environment. Therefore, the caregiver may need to modify the environment to reduce light and sound stimuli or find a place for the infant to sleep in a quiet room away from other family activities.

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Figure 13. Cuddliness



Cuddliness is the degree to which the newborn molds and nestles into the contours of the caregiver's body. It is the infant's response to being held.

Description of Behavior

Most of the time, infants nestle and work themselves into the contours of the caregiver's body. Sometimes an infant may actively resist holding by stiffening, pushing away, or thrashing. Other times the infant may be passive, not resisting, but not participating either.

Infant State

Primarily in awake states.

Implications for Caregiving

Cuddliness is usually rewarding behavior for caregivers. It seems to convey a message of affection.

If infants consistently do not nestle and mold, it is wise to talk with the parents about their perception of the infant's behavior and to address any of their concerns. The nurse might explain that some infants like to hold themselves away from the caregiver's body so they can look around. If an infant does not cuddle, the parent might see if there are times when the baby does like to cuddle, such as during feeding or while falling asleep. The nurse should emphasize that just because a baby does not seem to like to cuddle doesn't mean that the baby does not like the parent, just that this baby has his or her own unique preferences.

Helping parents to understand cuddliness facilitates their feelings of competence. By accurately interpreting newborns' responses to being held, caregivers can adapt their approaches to newborns' individual needs.

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Figure 14. Consolability



Newborns vary considerably in the ease or difficulty with which they can console themselves or can be soothed by others.

Description of Behavior

Newborns who are fussing or crying can bring themselves or be brought by others to a lower state (see Tables 8 and 9 on page 10).

Infant State

The infant progresses from crying to active alert, quiet alert, drowsy, or sleep states.

Implications for Caregiving

Some newborns make few or very brief attempts to console themselves and always need outside intervention. Others try to console themselves, and their attempts may or may not succeed. These newborns can calm themselves at times, at least briefly, while at other times they need outside help.

A few consistently console themselves and need only minimal or occasional intervention. Most, however, need periodic help from others in consoling themselves.

Different consoling mechanisms may be necessary at different times. Caregivers need to try all methods of soothing to see what works best for an individual infant (see Table 9).

Crying presents the greatest challenge to caregivers. Often a parent's initial reaction is to pick up or feed a crying infant. But other actions can be just as effective. Some infants become quiet when they are talked to for a few minutes. Not all, however, become quiet at the sound of a voice.

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Figure 14 continued

Some parents fear spoiling their infants and may refrain from consoling them when infants need help to regain control. Culture may also influence parental expectations and caregiving; therefore, parenting practices and beliefs must also be assessed.

Success or failure in consoling significantly affects a parent's feeling of competence. Nurses should assist and encourage parents to observe how their newborns attempt to console themselves. Parents can also be helped to find additional ways to console their newborns (see Table 9).

Irritable infants are those who respond to external and internal stimuli with a great deal of fussing and/or crying (Brazelton & Nugent, 1996). These infants need more frequent consoling than placid infants.

Infants who are difficult to console require rigorous efforts. Caregivers may need to use a greater variety of methods to console these infants.

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Consoling Maneuvers Used by Infants

When fussing or crying, most newborns initiate any of several maneuvers (Brazelton & Nugent, 1996) to regain control of themselves (self-consoling) and move to a lower state (Table 8). These activities are important in newborn self-regulation and state regulation.

Hand-to-mouth activity is an inborn response that can be triggered by stroking the newborn's cheek. This activity also occurs spontaneously as a comforting maneuver when the infant is upset.

Hand-to-mouth movements and sometimes sucking on fingers or hands are natural responses seen in

almost all newborns. Unfortunately, these movements may be upsetting to parents who disapprove of infants sucking on their fingers.

If caregivers are aware of self-consoling behaviors, they may allow infants the opportunity to gain control of themselves instead of immediately responding to their cues. This does not imply that newborns should be left to cry, but caregivers can assess if infants can quickly console themselves or if they need caregiver assistance.

When newborns are crying and do not initiate self-consoling activities, they need attention from caregivers (Table 9).

Table 8. Maneuvers Used by Infants to Console Themselves

- Moving the hands to the mouth
- Sucking on fingers, fist, or tongue
- Paying attention to voices or faces around them
- Changing position

Table 9. Consoling Maneuvers Used by Caregivers

When an infant cries, the caregiver may:

- Talk to the infant in a steady, soft voice
- Hold both of the infant's arms close to the body
- Swaddle the infant
- Pick up the infant
- Rock the infant
- Feed the infant
- Change a wet or dirty diaper

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Figure 15. Motor Behavior



Motor behavior is spontaneous body activity and activity in response to stimuli. The stimuli may be internal (hunger, pain, temperature changes) or external (handling, noise in the environment).

Description of Behavior

Most term newborns have smooth, rhythmical, spontaneous movements of the arms and legs, similar to the movements made when riding a bicycle, especially when in a quiet-alert state. Movements in response to stimuli (such as caregiving activities or noises) may be less symmetrical and jerky, depending on the infant's state and the intensity of the stimuli. Table 10 (see page 13) describes how a newborn responds when a caregiver elicits specific reflexes.

Infant State

The quality of motor behavior changes with infants' states (e.g., infants may have smooth, coordinated movements during alert periods, but may exhibit some jerky movements as they become more active).

Implications for Caregiving

When crying or awakening from a sleep state, infants may develop quivering of the chin or brief fine tremors of the extremities, or they may have occasional startles.

Some infants have occasional jerky movements or startles even during the awake states. These startles and jerky movements are due to the immaturity of the motor system. Parents sometimes need reassurance as they see these jerky movements and startles as responses to their caregiving; they may feel that they are frightening or hurting the infant. If an infant has consistent asymmetrical or jerky movements, the infant needs further evaluation by the primary care provider.

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Reflexes

As they vary in behavior, newborns also vary in the intensity of their reflexes (Table 10 on the next page) and the ease with which these reflexes are elicited. Reflexes such as rooting, sucking, and grasping tend to bring in-fants into closer contact with their environment.

Self-Regulation, Readability, and Infant Cues

Self-regulation is the “capacity to adapt to one’s surroundings in a healthy and predictable way” (Barnard, 1999, page 10). Some infants are able to regulate themselves well from birth and are easily readable; others need more time and may require more assistance.

Readability is the clarity of cues infants give through motor behavior, looking, listening, and behavior patterns during all states. Predictability is the extent to which caregivers can reliably anticipate behaviors that will occur from the immediately preceding behaviors. (Stratton, 1982)

Infants differ in the clarity with which they make known their needs and in the consistency of their sleeping, waking, and eating cycles. Some respond predictably in all areas, others only in some areas; still others are constantly unpredictable. Regardless of how predictable infants are, most parents need help in learning to understand their infant’s cues.

Infant cues are behaviors that signal an infant’s status or needs. Infants provide cues for their caregivers in a variety of ways.

Infant state and behavioral abilities are cues. Infant behaviors that indicate readiness for interaction are called engagement cues (Table 11 on page 14). Behaviors that indicate a need for some time out are called dis-engagement cues (Table 12 on page 14). (Nursing Child Assessment Training, 1978)

Several engagement or disengagement cues occurring together is more important than an isolated cue.

Assessing Infant Behavior

Learning to identify and interpret infant behaviors is a skill that most nurses find relatively easy to acquire with a little practice. It is something nurses can practice with infants in the delivery, nursery, or postpartum areas. Initially, nurses will need to make a conscious effort to assess infant behaviors. They will need to ask themselves the following:

- How does this infant respond to visual (face) and auditory stimuli (talking to the infant)?
- Can the infant habituate to repetitive stimuli?
- How cuddly is this infant?
- How does the infant soothe herself or himself when upset? What caregiver actions help to soothe the infant?
- What cues does the infant demonstrate to indicate readiness for interaction?
- What cues does the infant demonstrate to indicate need for time-out or decreased stimuli?

With a little experience, identification of infant behaviors and cues becomes an automatic response, so whenever the nurse works with an infant, she or he can anticipate the way the infant may respond and what activities may be most appropriate with the infant at that time.

Video Clips, Activities and Cases

Return to the online module “Understanding the Behavior of Term Infants” to view videos, activities and cases related to this reading.

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Table 10. Newborn Reflexes

Rooting reflex: Stroking the infant's cheek or corner of the mouth will cause the infant to turn the head toward the side stroked and open the mouth. This reflex is less prominent after one month of age.

Sucking reflex: Touching the infant's mouth will cause the infant to respond by opening the mouth and making sucking movements.

Moro reflex: This reflex is elicited by placing the infant in a semi-upright position, allowing the head to momentarily fall backward, with immediate resupport by the examiner's hand. The infant symmetrically extends and abducts the arms and opens the hands, then adducts and partially flexes the arms as if in an embrace. The fingers extend except for the index finger and thumb, which are often semiflexed forming a characteristic "C" position. Following the return of the arms toward the body, the infant may relax or cry.

Grasp reflex

Palmar: Stroking the infant's palm with a finger will cause the infant to grasp the finger. The infant will tighten the grasp when his/her arm is drawn upwards. When the palmar grasp is tested in both hands, the term infant can be briefly lifted.

Plantar: Applying fingertip pressure to the ball of the foot will cause the infant to curl the toes and attempt to grasp the finger.

Stepping/Walking: Holding the infant upright so that the soles of the feet touch a flat surface will cause the infant to make alternate stepping movements. This reflex becomes more active 72 hours after birth.

Placing reflex: Holding the infant upright and touching the top of the foot to the underside of a horizontal surface will cause the infant to flex, then extend the leg and place the foot flat.

Truncal incurvation (Galant) reflex: This reflex is stimulated by suspending the infant ventrally, supporting the anterior chest wall in the palm of the hand. Firm pressure is applied along the spine in the thoracic area with thumb or cotton swab. The infant flexes the trunk and swings the pelvis toward the stimulus.

Babkin reflex: This reflex is elicited by gently holding the infant's hands between the thumb and index/middle fingers. Pressure is applied simultaneously to the palm and dorsum of both hands. The infant will open his mouth and drop his tongue to the floor of his mouth.

Adapted from Carey, 1993; Haslam, 2000.

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Table 11. Engagement Cues

- Eyes becoming wide open and bright as the infant focuses on the caregiver.
- Alert face or an animated face with wide open, bright eyes, often accompanied by gently pursed lips as if the infant were saying “ooh.”
- Grasping or holding onto the caregiver or objects in the environment.
- Hand-to-mouth activity, often accompanied by rooting and sucking movements. The infant may also suck on his or her fingers.
- Smiling.
- Turning eyes, head, or body toward someone who is talking.
- Smooth motor movements.

Adapted from Nursing Child Assessment Training, 1978.

Table 12. Disengagement Cues

- Crying or fussing
- Hiccoughing
- Spitting up or gagging
- Jittery or jerky movements
- Frowning or grimacing
- Becoming red or pale
- Agitated or thrashing movements
- Falling asleep
- Averting the gaze (the infant moves her eyes or head away from the caregiver)

Adapted from Nursing Child Assessment Training, 1978.