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Developmentally Supportive Care in the Neonatal Intensive Care Unit

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Over the past 15 years, neonatal intensive care units have been involved in a transformation of care which has been described as the most profound change that has occurred in neonatal nursing practice (Gilkerson & Als, 1995). These nurseries are moving toward a new model of family-centered, developmentally supportive care—a professional and family alliance which supports the parent's engrossment with their child and the child's neurobiologically-based expectations for nurturance (Als, 1993).

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Brain development in the full-term infant occurs in the intrauterine environment, an environment mediated by maternal protection from environmental perturbations, with an ongoing supply of nutrients, continuous temperature control, and regulating chronobiological rhythms. In contrast, premature infants are cared for in the NICU at the time when their brains are growing more rapidly than any other period in their life (McLennan, Gilles, & Neff, 1983). The preterm infant's nervous system is being shaped in a setting characterized by sensory overload and, therefore, by a stark sensory mismatch to the developing nervous system's expectation for environmental inputs (Als et al, 1979; Freud, 1991; Gottfried & Gaiter, 1985; Wolke, 1987). From an evolutionary perspective as members of the human species, preterm infants are neurobiologically social (Als, 1977; Als et al, 1979; Als & Duffy, 1982) and expect the security of three inherited environments to support their development: their mother's womb, their parents' bodies, and their family's social group (Hofer, 1987). Thus, safeguarding the parent's role as the infant's primary nurturers is fundamental to the survival and growth of the premature infant (Als, 1992; Als, in press). How does one estimate the potential effects on the infant's nervous system of moving too early from the relative equilibrium of the intrauterine aquatic econiche of the mother, to the extrauterine terrestrial environment of the NICU (Alberts & Cramer, 1988) by-passing the on-parent body phase of early nurturance? What impact does this disruption have on the infant's and family's development? How can the life-saving intensive care nursery become a supportive, nurturing environment that enhances the development of all involved?

Developmentally supportive care

The developmental approach views the infant as an active collaborator in his own care, determinedly striving to continue his developmental trajectory (Als, in press). This approach postulates that the infant's behavior provides the best information base from which to design care (Als, 1982). Collaborating with the infant, then, involves inferring from the infant's own behavior what he seeks to accomplish and what strategies he is using, and estimating what supports might be useful to facilitate the infant's overall development and neurobehavioral organization in the face of necessary medical and nursing interventions. The questions become: What is the infant's developmental agenda? (Als, 1978) and How can caregiving be implemented in a way that respects and furthers the infant's development while at the same time accomplishes the caregiving goals?

The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) model was developed as a framework for the implementation of developmental care (Als & Gibes, 1986). The NIDCAP approach includes a systematic method for the detailed observation of infant behavior and for the use of each infant's unique repertoire of strategies as a guide for caregiving. Typically, a developmentally trained professional works in partnership with a developmentally trained nurse to support the primary care team and the family. The developmental professionals conduct the observations, prepare detailed reports with suggestions for ways to support the infant's physiological stability, behavioral organization, and developmental progression, and share this information with the caregiving teams and the family.

Behavioral observation

The detailed behavioral observation documents the language of the infant's behavior in three channels of communication: the autonomic system, motor system, and the state system (Als, 1982). As described elsewhere (Als, in press), the autonomic nervous system's functioning can be observed in the infant's breathing patterns, color fluctuation, visceral stability or instability, and autonomic behaviors such as tremors and startles. Is this an infant who breathes smoothly and regularly? Or does he quickly show, even when challenged with only the slightest touch, movement, or sound, irregular respiration, pauses or tachypneic bursts? Is this an infant who maintains his color well throughout face and body or does he quickly become pale, and cyanotic? Does this infant maintain a steady visceral system even when interacted with vigorously or does he quickly begin to hiccough, gag, spit up, or defecate in response to mild input?

Simultaneously, motor system functioning can be observed in the infant's body tone, postural repertoire and movement patterns. Does the infant maintain tone well, showing animated facial expression and well-toned limbs throughout? Or does he quickly become flaccid, lose tone in the face, trunk, and extremities? When still, does the infant maintain soft flexion or does he quickly become overly flexed, appearing to use hyperflexion for self-protection? Or, the opposite, does the infant overly extend arms, legs, fingers, and toes in full extension, face retracted, head, neck, and back arched and extended? When the infant moves, are the movements smooth and well controlled or are they quickly disorganized, with poor flexor/extensor balance?

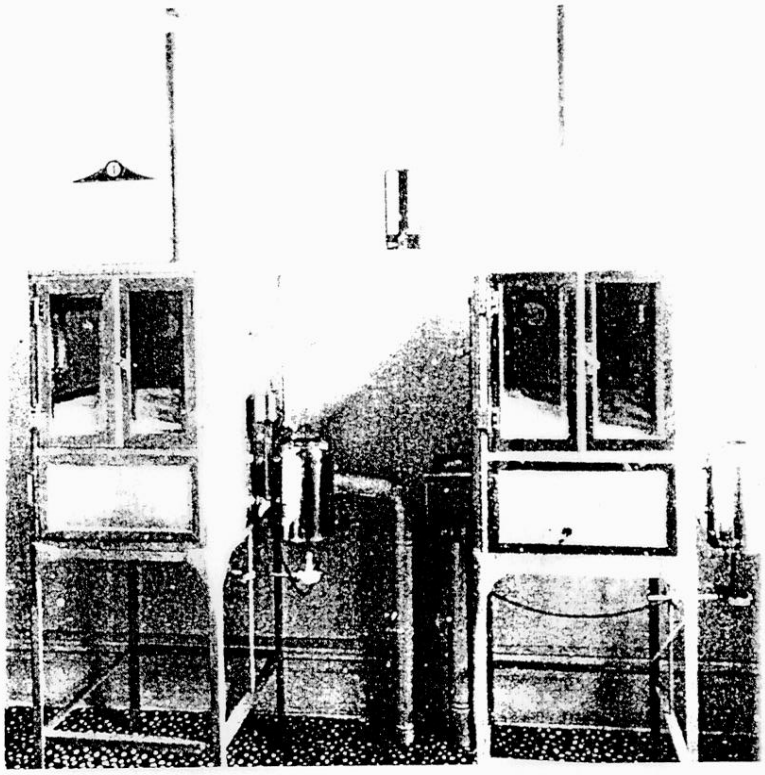
The infant's state organization (Brazelton, 1984) can be observed in terms of the infant's range of states, the robustness and modulation of the available states, and the patterns of transition from state to state. Is this an

infant who shows the full continuum of states moving from deep sleep to light sleep, to a drowsy state, to quiet alertness, to an active aroused state to upset and crying behavior? Or does the infant typically move from sleep to aroused states and immediately back down to sleep again, skipping the alert state? When the infant is sleeping, is the sleep robust, or does the infant never quite settle, showing facial movements, vocal discharges, and general restlessness? What is the quality of the infant's alert state? Is his expression animated, with shiny-eyed alertness and gently forward-shaped mouth, available for engagement and interaction? Does the infant quickly move to panicked, wide-eyedness or does he barely seem to muster the energy to interact through lidded, glassy-eyed, strained appearance?

The observations may be conducted weekly or as clinically deemed necessary by a developmental specialist and take place at a mutually agreed upon time when the nurse or other caregiver is interacting with the infant (e.g., taking vital signs, diapering, or suctioning). The observer does not interact with the infant, but stands close by watching and recording at two-minute intervals on a NIDCAP check sheet. In order to arrive at a sufficient sample of behavior, the infant is observed for at least 20 minutes before interaction with the caregiver, throughout the caregiver interaction, and for 20 minutes after. In addition to recording the details of behavior, the observer notes physiologic data (e.g., heart rate, respiration rate, and oxygenation), light and sound levels, and environmental activity around the bedside. Caregiving interactions are also described.

Behavioral interpretation

All observations are seen in the context of the infant's efforts at self-regulation through approach and avoidance behaviors (Als, in press). This framework assumes that the infant has strategies available to move toward and take in stimuli, if the input is appropriate in timing, complexity, and intensity in relation to the infant's thresholds of functioning and, conversely, that the infant has strategies to move away from or avoid inputs which are too complex or intense or are inappropriately timed. Such behaviors are thought of as stress behaviors. Of course approach and self-regulatory behaviors can shift and become stress behaviors; the same behaviors, when successful in reducing stress, can serve as self-regulatory strategies. For example, for the very young infant, a hand on the face and mouthing may represent stability, yet if overly frequent, these behaviors may indicate stress, or possibly seizure activity. As a general rule, extension behaviors are thought to reflect stress, and flexion behaviors are thought to reflect self-regulatory competence. Diffuse behaviors are thought to reflect stress, and well-defined behaviors are thought to reflect regulatory balance. Self-regulatory balance is reflected by the presence of regular respirations, pink color, a stable visceral system, smooth movements, modulated tone and softly flexed posture, and steady sleep and awake states.



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Full length view of two incubators at the Chicago Lying-In Hospital, circa 1901.

The developmental professional prepares a descriptive narrative based on the observed behavioral dialogue between the infant and the caregiver. The narrative begins with a description of the environment surrounding the bedspace. Next, the behavioral picture of the infant before active caregiving is described in relationship to physiological measures. Then the caregiving interaction with detailed focus on the infant is documented, including the infant's efforts, initiations, and responses as well as the caregiver's efforts to aid the infant. Repeated observations reveal much information about the infant's strengths and robustness and the goodness-of-fit between the infant and the care provided. The infant's behavior is interpreted as to the infant's apparent current developmental goals. The narrative concludes with caregiving suggestions and environmental modifications to consider in order to more finely attune care to the infant's behavioral thresholds and to support the infant's developmental trajectory. The narrative is shared with the infant's professional caregivers and with the family, and, depending on the nursery's stage in developmental care integration, included in the infant's medical chart (Als et al, 1986; Als et al, 1994).

NIDCAP guidelines for care

In order to effectively implement developmentally supportive care within the NIDCAP framework, Holmes, Sheldon, & Als (in preparation) and Vento & Fineberg (in press) have outlined guidelines for care. Following is a description of a developmental care environment based on their recommendations.

- **Consistency of caregiving:** Within 24 hours after admission, a primary team is identified for each infant. The team includes the family and specific representatives from medicine, nursing, respiratory therapy, and social work as well as a specially trained developmental professional. The team works collaboratively with the family to develop an individualized plan of care which should be reviewed daily on rounds and discussed in regularly scheduled team meetings with the family.
- **Structuring the infant's 24-hour day:** In order to provide the infant with sufficient rest and to support growth, interventions are organized into individually appropriate clusters timed in accordance with the infant's sleep-wake cycles, states of alertness, medical needs, and feeding competence. All caregiving interactions are evaluated regarding their necessity and appropriateness, e.g., does an infant in need of ventilation have to be suctioned on a fixed schedule or as clinically indicated? Taxing procedures such as suctioning are performed by two-person teams.
- **Pacing of caregiving:** During the delivery of care, caregivers approach the infant and family in a calm manner, explaining to the family the goal and sequence of care. The care provider organizes the environment, gathers needed materials, and prepares herself to be attentionally and emotionally available to the infant and family. The infant is observed before hands-on interaction. The caregiver then introduces herself to the infant with a soft voice and gentle containing touch. During care, the infant is offered periods of rest and recovery between caregiving actions and containment through gentle holding or handswaddling, finger-holding, or sucking on a pacifier or finger. Parents are nurtured in supporting their infant during caregiving as the infant needs the comfort and security of this family's care. Since the infant comes to recognize the familiarity of the parents' hands, bodies, and voices, he is comforted by their presence and often shows increased physiologic stability when they are present. The care provider stays with the infant and family by the bedside after care to assure that the infant is settling comfortably.
- **Support during transitions:** Increased support is typically needed around transitions, particularly between caregiving activities (e.g., ventilator care, position changes, feeding, diapering) and around the beginnings and endings of care. Extra support is needed as the infant awakens or when the infant makes efforts to sleep. Caregiver interactions are guided by the infant's behavioral cues with special attention given to the facilitation of restful sleep at the end of the alert state.
- **Appropriate positioning:** Infants are supported into softly flexed, comfortable aligned positions during sleep, feeding, bathing, and necessary procedures. Positioning can be supported with aids such as blanket rolls, nesting, gentle swaddling, special buntings, and hands-on containment. Sidelying or prone positioning, if the infant has sufficient strength, is typically more desirable that supine positioning for comfort and for physiological stability. Supports are used in an effort to enhance the infant's own competence and gradually decreased as the infant's autonomous regulation increases.
- **Individualized feeding support:** Feeding method and schedule are determined by the infant's individual needs and competencies. Feeding should be a pleasurable experience for the infant, one over which the infant takes increased initiation and control. Caregivers hold the infant in a secure and comfortable position. Often semi-upright with soft flexion cradled in the caregiver's arms is quite supportive. Attention to the infant's autonomic, motor, and state systems guide the pace of the feeding.
- **Opportunities for skin-to-skin holding:** Opportunities for mothers and fathers to hold their infants, including ventilated infants, skin-to-skin (Kangaroo Care) are available at all times. Infants have been found to experience increased respiratory stability and more restful sleep when held by the parents, while parents report that they experience a sense of calm and fulfillment. Staff receive support and education so that they are comfortable facilitating skin-to-skin holding and providing caregiving while the infant is being held by the parents.
- **Collaborative care:** All special examination and assessment procedures, including physical exams, ultrasounds, chest films, and neurology examinations are performed collaboratively by the respective specialist assisted by the infant's nurse and, if possible, facilitated by the parent to support the infant's comfort and well-being. This allows infants to be cared for during procedures by persons who know them and how they respond to stress and to comforting.
- **Quiet, soothing environment:** Nurseries should be quiet, soothing places where thoughtful consideration is given to the lighting, sound, and physical arrangement. The lighting plan should include individualized bedside lighting with dimmer capacity and indirect, readily adjustable general lighting. A variety of sound containing procedures are used, including separate spaces away from the infant's beds for admissions and rounds, elimination of radios and overhead pagers, and sound dampening strategies for commonly used equipment (e.g., vibrating rather than sound beepers, sound shielding blankets for incubator covers, and a flashing light which is triggered when the sound rises above agreed upon levels).
- **Family comfort:** A useful way to sensitize staff to the messages conveyed to parents by the environment is for

staff to walk the path from the hospital's parking lot to the infant's bedside (Als, in press). What does the layout say to parents about the importance of their role in their child's care? Parents are exquisitely attuned to the emotional ambiance of the setting. What is conveyed by the behavior of those with whom the family comes into contact with, from the parking lot attendant to the attending physician? To increase family comfort in the unit it is recommended that home-like, individualized spaces for families be provided. Recliner chairs big enough for two persons are available at each bedside. Parents should be encouraged to view the space around their infant's bedside as theirs, to be arranged to their liking; to bring clothing, blankets, toys, pictures and other items from home to personalize their infant's bedspace. Twins are cared for by the same team together in the same area, if not in the same incubator or crib. Readily available, trained, child care support is provided for siblings.

• **Developmental support:** Specially trained developmental professionals should be on staff full-time. These professionals should be knowledgeable about infant and family development, support the primary care teams, and serve as resources and catalysts in the implementation of developmental care. Developmental professionals should be linked with their counterparts in other units and have opportunities to participate in relevant local, regional, and national conferences. Nursery-wide implementation should be supported by a multi-disciplinary developmental team. The team should have access to unit-specific training and consultation opportunities, including an opportunity to develop a process for monitoring and reflecting upon the process of change (Gilkerson & Als, 1995). A Parent Council with multicultural representation should also be formed. Families and staff should have ready access to psychosocial support. Formal arrangements to use the expertise of a licensed clinical social worker, psychiatric nurse, or psychology/psychiatry consultant should be in place.

Fundamental principles of infant caregiving

While developmental practices may at first glance seem foreign within the context of newborn intensive care, they are based on fundamental principles of infant caregiving that transcend settings. Winnicott is quoted with saying: "A baby is always contending with being done to." Regardless of the setting, three features should characterize infant caregiving: individualization, responsiveness, and respectfulness (Gerber, 1979). Gonzalez-Mena & Eyer (1980) offer 10 principles of relating to an infant with respect. Among these are: involve infants in things that concern them, invest in time when you are totally available, learn the infants' unique ways of communicating and give them the opportunity to experience yours, respect infants as individuals, build security by teaching trust, and be concerned about the quality of development in each stage (p. 9-10).

Developmental care ensures that infants are thought about individually in the NICU environment, and conceived of as competent to collaborate in their own care. The developmental approach asks NICU caregivers to watch closely for the infant's own efforts, to notice in what context the infant is most well-regulated and competent, and to offer just enough assistance to support the infant's own developing capacities and next steps. The guidelines for feeding stress the importance of the infant's increasing initiative and competence. In this way, caregivers promote the development of effectance, effectance motivation, and the experiences of mastery outside of the womb.

In the day care literature, considerable attention is paid to the activities of physical caregiving: diapering, feeding, sleeping, comforting. Caregiving is defined as not just the activity, but the entire sequence and ambiance of care: what happens before, during, and after. This approach is illustrated in the following description of diapering in an infant care program:

> *First prepare the environment and get the materials ready. Next go to the child, but first, let her be. Watch and wait until she notices you. Let her know what will happen and tell her about each step along the way. After care, stay with her until she has settled with an activity and is re-engaged* (Abel, personal communication, 1995).

The developmental approach brings this same attention to the process of caregiving to the NICU. Because infants are forming their perceptions of the world, they absorb not only what is done in physical caregiving, but the manner in which it is done. Gonzalez-Mena and Eyer (1980) point out that certain basic needs of the infant are met through physical care; other higher level needs are met in the way the physical care is delivered. The pacing of care, so central to the developmental approach, allows for a thoughtful, unhurried, finely attuned dialogue between infant and caregiver. This kind of early experience communicates to the infant important messages about the human environment.

Lally and Phelps (1994) stress that settings for infants should offer security, protection, and intimacy. Primary caregiving arrangements and continuity of providers are central to creating a sense of security and trust for the infant and for the family. When caregivers are continually changing, infants have to work harder to get their message across (Lally & Phelps, 1994); but also have no opportunity to develop expectancies and therewith trust. This has been shown to lead to depression, failure to thrive, and hospitalism syndromes. For infants who are premature and medically fragile, this is of even greater seriousness since the resources to rally in the face of stress are more limited.

The presence of parents is the most fundamental basic security that an infant can have; it is imperative

that staff be supported and educated about the primacy of parenting and about their role in supporting the realignment of parental and fetal infant co-regulatory energies. The professional caregiver's own direct interaction with an infant in the NICU needs to model the attunement to the personhood of that infant at all times. This assures the parent of the appropriateness of the affective value with which they imbue each of the child's movements and actions, no matter how small. This co-regulatory nurturance of attunement through modeling and through respectful preparation of appropriate settingss for the parent/infant co-regulation is the professional caregiver's most far reaching responsibility in the service of the infant's well-being. This is of particular importance because of the very intensivist setting which the infant requires. The developmental model not only seeks to protect the infant from inappropriate and overstimulation and from unnecessary procedures but seeks to assure that each infant is cared for by persons who know the infant intimately, that is, who know the infant's ways of initiating and of showing competence and distress. These are caregivers who define their own competence by their co-regulatory responsibility and effectiveness, that is, who have an appropriately educated emotional investment in the infant and parents' increasingly autonomous co-regulatory competence.

Support for the effectiveness of developmental care

Increasingly, research is documenting the role of developmental care as an important framework for newborn intensive care delivery resulting, for the most high-risk group of very low birthweight ventilated infants, in improved medical outcomes such as decreased intraventricular hemorrhage, reduced severity of chronic lung disease, improved growth, earlier discharge, and significantly reduced hospital costs (Als et al, 1986; Becker et al. 1991; 1993; Als et al, 1994; Fleisher et al, in press). Increased protection of and support to the developing nervous system by adapting the environment to the individual capacities of the infants appears to result in improved patterns of brain functioning (Als et al, 1994). This has also been demonstrated for healthy preterm infants receiving developmental care. Their brain functioning patterns were found to be significantly more similar to full-term infants, and very different from those of preterm infants not receiving developmental care (Buehler et al, in press). It appears that developmental care may differentially protect the frontal lobe, a finding of interest, given that the neuronal organization of this region occurs relatively late in the developmental sequence (Huttenlocher, 1984). These findings are particularly encouraging since the frontal lobe is implicated in organizing executive functions of the brain—attention, state regulation, planning, prioritizing, and monitoring. These are the functions which have previously been found to be particularly vulnerable in the preterm infant (Als et al, 1989; Hack et al, 1994).

Challenges of implementing developmental care nursery-wide

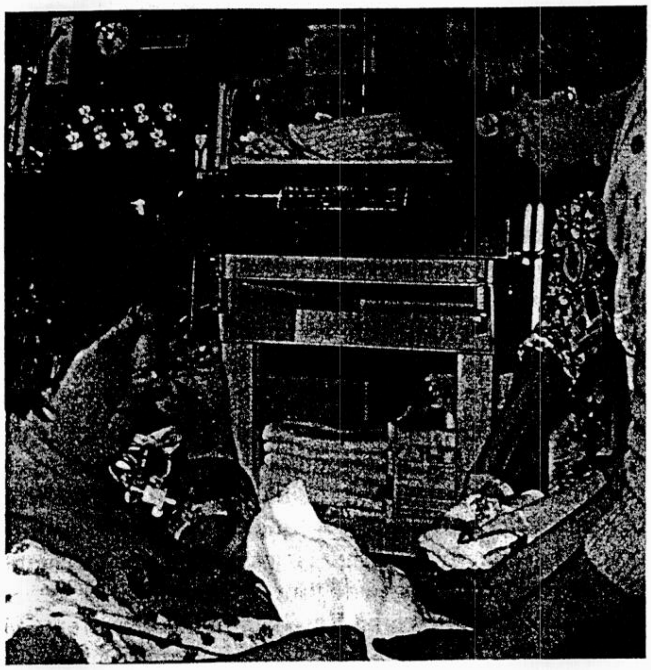
Over the past five years, we have collaborated with colleagues from five hospitals on the National Collaborative Research Institute for Early Childhood Intervention (NCRI-ECI), a multi-site study funded by the US Department of Education, to examine the effectiveness of the developmental approach (Als et al in preparation). In addition to an experimental investigation, this study provided the opportunity to examine questions of implementation—to explore the reasons that clinical insight of the individual practitioner about the importance of developmental care is not easily translated into larger scale, nursery-wide implementation. A senior neonatologist anticipated the dilemma 25 years ago as he recalled his first awareness of developmental care:

Let me tell you about the first developmental nurse. She seemed to do better at gavage feeding than the others. I watched how she fed the babies. She put the tube in and then she'd stroke around the baby's belly, just like she was calming him. We noticed the babies fed a lot better, didn't spit up as much, and gained weight better. So we noticed that, and our thought was, why doesn't everybody do it?
(Gilkerson & Als, 1995, p. 20)

This nurse's caregiving demonstrates her intuitive association between infant behavior and her caregiving practices, a link which resulted in improved outcome. Parents often ask: Why does developmental care need to be proven? Isn't it obvious that this care is what the infant and the family need? Nurses and physicians have commented that it is just common sense to make the baby and family as comfortable as possible. What makes developmental care so challenging? Why is it not practiced by everyone? And how can nursery staff be supported to move toward this new framework for care?

As part of the NCRI-ECI study, interviews were conducted with over 160 NICU professionals and family members to explore issues in implementation. It appears that many of the challenges are tied to the nature of the developmental approach itself—the fact that it is theory-guided, relationship-based, and systems-oriented (Gilkerson & Als, 1995).

The key concept of the developmental care framework is the concept of co-regulation, based in an evolutionary, theoretical framework of a neurobiological basis for the social nature of humans. The concept of co-regulation is central to the understanding and support of the relationship between the infant and family in the NICU. Implementing a theory-guided rather than a procedurally-driven approach is challenging in any setting; it is especially challenging in acute care environments



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which are, by tradition and necessity, oriented to standards, protocols, and caregiving routines (Gilkerson, 1990). A co-regulatory framework to care requires that the caregivers be mindful of others and, therefore, be reflective about their own actions and ways of being. Reflection as a framework for practice is not typically articulated in action-oriented, intensivist care work. Yet, with the move toward developmental care, reflective practice, by necessity, becomes a focus.

The role of reflection in the implementation of developmental care has been spelled out recently in more detail (Gilkerson & Als, 1995). The ZERO TO THREE Work Group on Supervision and Mentorship defines reflection as "the continuing conceptualization of what one is observing and doing" (Fenichel, 1992, p. 10). Reflection provides a framework for "knowing-in-action" (Schön, 1983; 1987) and shifts focus to include self-knowledge as a necessary professional competency (Bowman, 1989). Since the core of developmental care is the observation of infant behavior and the formulation of caregiving plans based on that observation, Schön's (1983) conceptualization of "reflection-in-action" is particularly apt. Developmental care implementation requires "the processes of 'feeling,' 'seeing,' and 'noticing' what it is you are doing; then learning from what you feel, see, and notice; and, finally, intelligently, even intuitively adjusting your practice" (Tremmel, 1993, p.438). Tremmel (1993) points out that to be open to reflection one has to change the way one's mind works, a challenge for any trained professional caregiver. An experienced nurse described how difficult, yet rewarding, it was to let go of familiar formulas that have shaped practice: "So much of nursing is doing routine things in a routine way. I used to suction every 3 hours, regardless. Now I think, 'Who am I suctioning for—me or the baby?'...I knew what to do before, now I know why." (Gilkerson & Als, 1995). Developmental care requires the encouragement of flexible minds, comfortable with "doing, learning, and coming to know" (Tremmel, 1993, p.438).

Relationships imply connections. Nurses who embrace a developmental approach acknowledge the connections between themselves and the infants and families for whom they care.

I used to think "I'm going to go in, put a suction catheter down the endotrachial tube. I'm going to change a diaper, I'm going to flip him, I'm going to close the door, and I'm going on to my next job and I'm not going to look in again until I have more tasks to do to him." I knew what I had to do that day but I really didn't have a sense of who the little person was I was relating to.

My mindset is different now. Now I think when I go into the isolette, it's almost like a visit. I'm coming in to communicate with you [baby] and the baby's going to communicate back with me. I'm going to observe and assess the infant and there are some things I have to do but I'm going to watch what he's telling me and adjust what I have to do given the cues that he's giving me . . . I feel connected, so much more in tune. (Gilkerson & Als, 1995, p.24)

This new connection with the infant strengthens the capacity to nurture relatedness between parent and infant.

Before I learned about the developmental approach,...[in talking with parents], I focused on fixed traits like he has blue eyes . . . I didn't talk about . . . his humanness. Now I think I facilitate parents seeing their infant like a family would, knowing their baby at home. (Gilkerson & Als, 1995, p.24)

Yet work with relationships is demanding. The responsibility of connectedness can be threatening, especially to caregivers whose identity is tied to competence with technology and science. A basic tenet within the mental health disciplines is that work with relationships requires ongoing supervision, a component which is typically absent in traditional NICU settings, as it is in many other infant care settings. The ZERO TO THREE Work Group on Supervision and Mentorship (Fenichel, 1992) has defined three essential elements of supervision: regularity, collaboration, and reflection. In this framework, supervision is a relationship for learning where time is set aside on a regular basis, with an experienced and trusted professional, to explore the "imperfect processes" of professional practice (Belenkey et al, 1986) and one's own responses to the work. Shanok (1992) describes supervision as a place where "strengths are emphasized and vulnerabilities are partnered" (p.40). In the NICU the professional is continually called upon to make decisions and to act. In supervision, Shanok explains, learning is by reflection which then translates back into more thoughtful, mindful action. All NICU professionals should have access to opportunities for reflective supervision; at a minimum, members of the core developmental team should have the opportunity for individual supervision to strengthen

their self-awareness and their capacity to engage in and support relationships.

The relational nature of developmental care is also evident in the process of implementation. Because of the nature of intensivist care and interdependence among the caregivers, changing patterns of NICU care is a complex endeavor which often requires considerable skill in social negotiation and collaboration. For example, allowing an infant to complete a full sleep-wake cycle without interruption may affect the timing of the physical examination by the attending physician and residents, medical procedures carried out by the fellows, specialty consultations, laboratory work, respiratory or other therapies, or even the services of the housekeeping staff. The developmental team must design a process which considers multiple perspectives and includes all involved. This is particularly important when changes affect what Scheinfeld (Personal communication, 1993) has called the "flow of activities." In a study of staff emotions in a psychiatric hospital setting, Scheinfeld found that the way a staff person typically does a routine or procedure has psychological meaning to him. The "flow of activity" gives comfort, a sense of control, a sense of being able to effect outcome. When this flow is interrupted, there can be a chain of emotional responses—anxiety, loss, anger. Because the developmental approach seeks to provide care with rather than to infants, the developmental model must be implemented in a parallel fashion, that is, with rather than to staff. For implementation to succeed, an experienced nurse manager explained, the unit must work simultaneously towards two goals: "We must integrate developmental care into practice and build collaborative relationships at the same time." Therefore, one of the most important capacities for the developmentalist in the intensive care setting is the ability to stay engaged with others despite apparent differences. Bettelheim (Bettelheim & Rosenfeld, 1993) states that when we don't know how to perceive another's behavior we "start with the assumption that the reasons or motives that lie behind his actions...seem good to him" (p. 107). "We must always proceed on the assumption that the other person's thoughts and actions are worthy of being considered in the most positive way possible" (p.119). Staying connected in this way requires a high degree of intrapersonal and interpersonal knowledge and skill, another reason why the provision of ongoing reflective supervision is essential.

In the beginning days of implementing the developmental approach in one nursery, a staff nurse remarked that she often felt torn between the needs of the baby and the needs of the staff. The polarization which this nurse experienced results in part from the press of clinical work and the lack of time to consider the needs and perspectives of all involved. In the NCRI-ECI study, we found that it was essential for the developmental team and the nursery leadership to set aside regular opportunities to reflect upon the process of implementation to slow down the process and to consider all aspects of the evolution toward developmentally supportive care. A model for this process is described elsewhere (Gilkerson & Als, 1995).

The relational nature of developmental care, by definition, makes it systems-oriented. As noted above, a change in any one part of the system has effects for the entirety of the system. Changes in the larger system, in turn, affect the dynamics within the smaller unit. As part of the periodic review of the implementation process, it is important to step back and take the pulse of the larger nursery system (Gilkerson, 1993) in order to understand the unit culture, particularly patterns of communication and conflict management (Shortell et al, 1991); critical events affecting the unit; and, most importantly, the unit's identity and sense of distinctive competence (Cooperrider & Srivastva, 1987). Fostering of change and growth, therefore, must always keep in mind the two interrelated and mutually catalyzing components of the system's growth and of the growth of individuals within the system.

Summary

The biggest change in NICU care, the move from protocol and procedure-driven to relationship-based developmental care is gaining momentum. A methodology for teaching about the observation of the infant's behavior is now available. Research documenting the efficacy of the approach is increasing; insights into individual and systems supports needed to ensure success and effectiveness of the approach are becoming increasingly understood and articulated. As the NICU begins to define itself not only as a physical care setting, but also one that supports emotional well-being, the infants and families in its care will gain. Moreover the sense of effectiveness and satisfaction of the professionals in the setting will also increase.

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