Understanding parenting occupations in neonatal intensive care: application of the Person-Environment-Occupation Model

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Neonatology, parenting, occupation.

The adoption of family-centred care principles within neonatal intensive care, including support for the development of the parental role, has been increasing in profile over the past decade. During this period, occupational therapy has also had an emerging role in the provision of services within neonatal intensive care. However, there has been limited exploration of the concept of parenting as an

the specific role attributes of occupational therapists working within NICUs often differ between facilities and also differ between countries. These geographical and facility-based inconsistencies in service delivery make this an area of practice within which the occupational therapy role and unique contributions are difficult to articulate to other professions in this highly complex setting.

Over the past decade, occupational therapy services within NICUs in the United States and parts of the United Kingdom have become increasingly established, with clearly defined roles and competencies forming part of the professional literature (Vergara et al 2006). The specific occupational therapy role attributes within NICUs vary, but service provision may include:

- Guidance on positioning of infants to support neurobehavioural regulation (for example, habituation to external stimuli, motor responses and consolidation of and transition between sleep/wake states) and prevent postural sequelae. Supportive positioning helps to promote infants' self-regulation of their autonomic and motor systems and reduces the risk of muscle imbalance leading to, for example, shoulder retraction and hip external rotation.
- Assessment and guidance regarding the infant's neurobehavioural state – this includes key working with parents in understanding their infant's neurobehavioural cues and preparing parents for interaction with their infant
- Early identification and implementation of supportive practice and/or intervention for infants identified as at risk of significant neurodevelopmental sequelae (for example, intraventricular haemorrhage and periventricular leukomalacia, which may lead to motor, sensory and cognitive dysfunction)
- Assessment and support of feeding development (within North America)
- Follow-up assessment and/or intervention for infants born below 1000 grams birth weight, before 29 weeks' gestation or the presence of other risk factors for neurodevelopmental sequelae.

The type and frequency of services provided is often dependent on the multidisciplinary team structure within individual NICUs and on historical role delineation for individual professions within the team.

During this period, there has also been ongoing discussion in the literature regarding the skills and competencies required by therapists working in this area (AOTA 1993, Hyde and Jonkey 1994, Dewire et al 1996, Hunter 1996, Gorga et al 2000, Vergara et al 2006), resulting in the publication of position papers detailing the knowledge and skills requirements for occupational therapists in neonatal intensive care (Vergara et al 2006). For occupational therapists providing services in an NICU, this suggests the need to establish a balance between acquiring detailed knowledge and skills regarding specific assessment and intervention practices, gaining an understanding of neonatal health issues and their required management, and consideration of the underlying occupational issues for these infants and their families. This period has also seen an increasing focus on understanding the implications for parents of preterm infants during the intensive care admission (Lawhon 2002, Browne 2003, Gavey 2007, Howland 2007, Thomas 2008), which has served to give more prominence to the consideration of parental role and support requirements. Therefore, in addition to knowledge of application and theory regarding infant neurodevelopment, there is also an opportunity to consider occupational performance as a means of identifying how both parents' and infants' occupational efforts can be supported.

To date, there has been limited exploration of the concept of parenting as an occupation as a means of supporting parental role development within the NICU. Although the birth of a preterm infant that requires admission to an NICU represents a major crisis for parents that may influence the acquisition of their parental role and engagement in parenting occupations, only one study from within the field of occupational therapy has specifically investigated parental stress within the NICU and the potential influence on parent and infant characteristics (Dudek-Shriber 2004). With the study results indicating that the most stressful aspect of having an infant in an NICU is related to altered parental role and relationship with their infant, recommendations were made for an ongoing focus of the occupational therapy profession in facilitating a positive parent-infant relationship and providing intervention that focuses on supporting the parents' occupational role (Dudek-Shriber 2004). Although this research highlights the contribution that supporting parental occupational role performance may have in reducing stress, and facilitating engagement in their infant's care, there is still limited understanding and research on how the concept of occupation may be used to explore and understand parental experiences in the NICU and what implications this may have for occupational therapy practice in this setting.

Family-centred care

In recognition of the importance of parent-infant attachment, there has been increasing advocacy for the adoption of principles of family-centred care in the NICU environment (Harrison 1993, McGrath and Conliffe-Torres 1996, Sweeney 1997, Hurst 2001, Moore et al 2003). Many neonatal units have adopted a family-centred approach to caregiving, in which promotion of the parent-infant relationship and family involvement in the infant's care are of central importance (Franck and Spencer 2003). Johnson et al (1992) have defined family-centred care as a philosophy of care, which:

- Recognises and respects the crucial role of the family in relation to the infant's care
- Supports families by building on their strengths and encouraging them to make the best choices
- Promotes normal patterns of living during a child's illness and recovery.

The philosophy of family-centred care provides a contextual base to the increasing focus within the NICU on supporting the acquisition of parental occupations.

To facilitate the implementation of family-centred care within the NICU, a number of principles have been identified (Harrison 1993, Hurst 2001). First, family-centred care promotes the encouragement of families to participate as fully as possible in caring for and making decisions about their hospitalised infants. Second, it ensures respect for the diversity of families and their values and beliefs. This aims to facilitate the development of supportive care partnerships in the NICU and beyond (Hurst 2001, Malusky 2003, Griffin 2003).

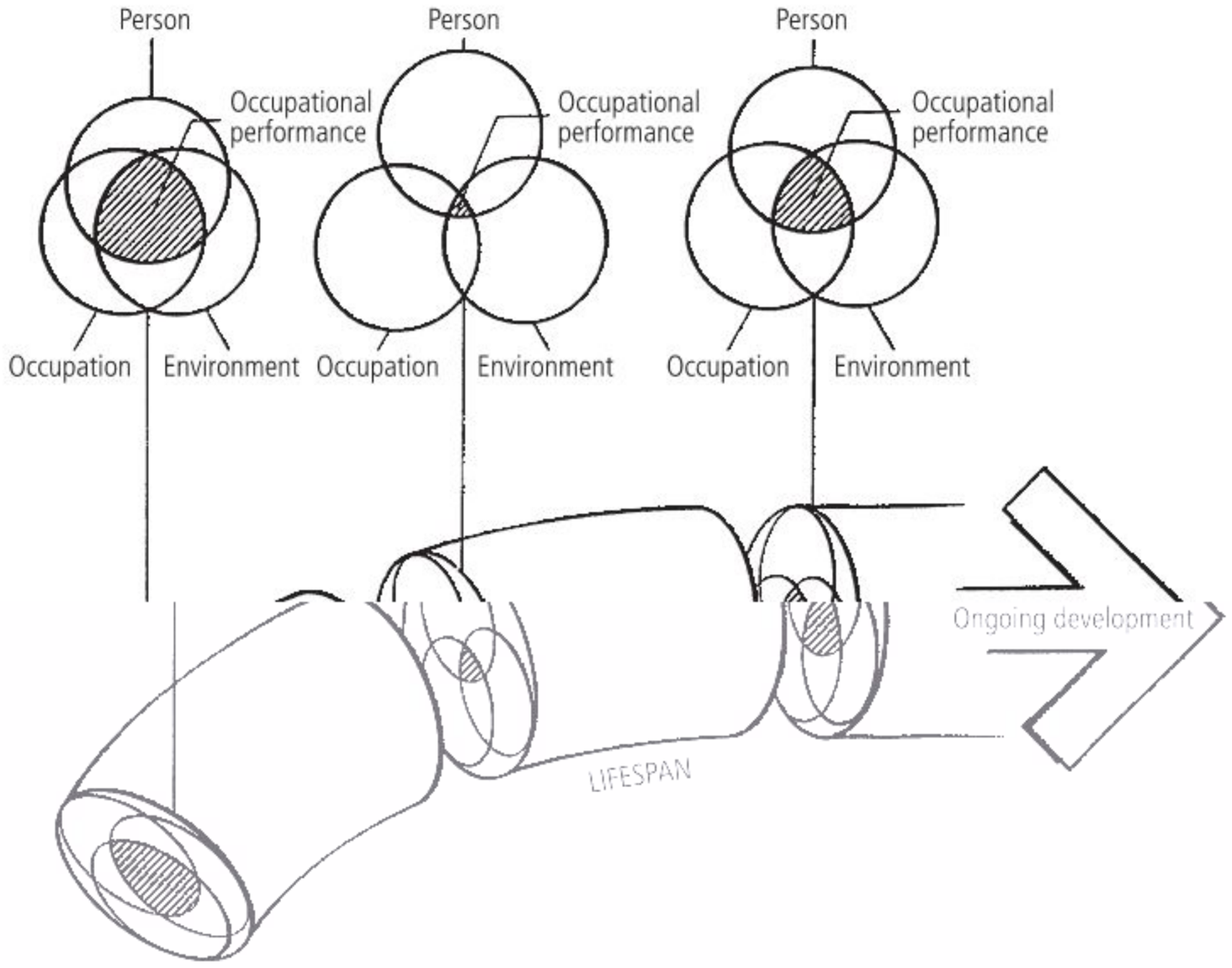
Despite the adoption of care philosophies that recommend the use of family-centred care within the NICU, however, there are still barriers that limit its uptake. Peterson et al (2004), in a survey of nurses working in NICUs and paediatric intensive care units (PICUs), identified a discrepancy between the elements of family-centred care that have been acknowledged as essential and the reality of what is executed in practice. The respondents to this survey employed in PICUs rated the importance and implementation of elements of family-centred care more highly than those working in NICUs. However, it was also acknowledged that this response is influenced by the education and PICU experience, identified factors through which the presence or absence of a family-centred care approach had a significant impact on the family experience. Issues such as involvement in decision making, the provision of information to orient families to new environments, experiences or available supports, the necessity of a two-way information exchange, consistency of caregiving (both caregivers and care plans) and basic courtesy were experienced as either enabling or constraining, based on the attitudes and actions of the health professionals involved (Sweeney 1997).

There has been significant research on and industry acknowledgement of the barriers to the implementation of family-centred care, and subsequently the support of the acquisition of the parental role. However, it remains a multifaceted problem that needs to be addressed in order to ensure greater consistency in the implementation of family-centred care principles in the provision of neonatal care. While the barriers to family-centred care provision exist, it remains difficult for all NICU-based staff to support parents adequately in the acquisition of the role of parenting. Consideration of this issue through a means that allows the multifactorial components to be considered in relation to each other is required given the complexity of the factors, which may constitute or inhibit the provision of family-centred care. Occupational therapists, with their understanding of core philosophies regarding occupational performance, are in a key position to explore these multifactorial barriers and consider how parental occupational performance can be maximised within this setting.

The consideration of parenting as an occupational role within the environment. Strong et al (1999) described the PEO Model as providing therapists with a practical, analytical tool to assist in the analysis of problems in occupational performance, to guide intervention planning and evaluation and to communicate clearly occupational therapy practice.

The PEO Model (Law et al 1996) considers human functioning and learning as a product of complex person, environment and occupation interactions. The model is conceptualised as the person and his or her environments and occupations interacting dynamically over time (Fig. 1, Law et al 1996). Law et al (1996) defined occupations as clusters of activities in which individuals engage in order to meet their intrinsic needs for self-maintenance, expression and fulfilment. Occupations are then carried out within the context of individual roles and capacities, and multiple environments (Law et al 1996). Occupational

*Fig. 1. Person-Environment-Occupation (PEO) Model.**



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performance is the outcome of the transaction between the person, the environment and the occupation. The extent of the congruence of this transaction is represented by the degree of overlap between the three spheres of the model (Strong et al 1999).

The PEO Model can therefore provide a framework within which to consider the acquisition of parenting occupations in the NICU by understanding the person-environment congruence (Law et al 1996). There are a number of interrelated barriers identified in the literature that can influence the uptake of family-centred care within the NICU. From these it can be determined that varying factors within an NICU admission may have a constraining effect on occupational performance, resulting instead in a person-environment incongruence.

Occupational analysis of parenting occupations

From a review of the literature that has explored the uptake of family-centred care in NICU, it is apparent that the issues identified within the current body of knowledge can be attributed to either a person, environment or occupation factor.

Person

The grounding of the PEO Model in the tenets of client-centred care (Strong et al 1999) supports its applicability when considering the parents of preterm infants experiencing care in an NICU. *Person* in this context may relate to both the infant and the family caregivers, which can include the mother and father of the preterm infant, both individually and as a dyad, in addition to wider extended family contexts (for example, the involvement of siblings or grandparents).

In general terms, preterm infants have limited capabilities to tolerate stressful or overstimulating environments and they typically respond in a disorganised manner (McGrath and Conliffe-Torres 1996). In infancy, Whitfield (2003) described preterm infants as being generally more difficult to settle, more irritable, and having less predictable sleep patterns and poorer emotional regulation. They have difficulty in focusing attention selectively and are less likely to orient to or spend time exploring novel stimuli, habituate less efficiently to visual stimuli, and encode information less efficiently when compared with term-born infants (Whitfield 2003). Therefore, the NICU experience may be a significant factor disrupting the development of the infant's ability to self-regulate his or her autonomic, motor and state systems. For example, preterm infants may exhibit physiological disorganisation (for example, colour change, increased respiratory effort, poor temperature regulation and disturbed visceral and digestive functioning), difficulties with sustaining relaxed tone and posture, and difficulties in habituating to their environment (Brazelton and Nugent 1995). The disruption of self-regulation may result in subsequent difficulties for parents when trying to establish opportunities for engaging with their infant.

Previous studies have also indicated that an infant's admission to an NICU can be a period of intense stress for parents arising from the premature birth and medical sequelae. Hughes et al (1994), in a phenomenological study, identified common stressors for parents of preterm infants, including infant appearance, health and course of hospitalisation, separation from their infant and not feeling like a parent, and communication with staff. A qualitative study by Wereszczak et al (1997) enabled further identification that stress experienced by parents during an NICU admission is attributed to varying sources. These included environmental stressors such as the infant's appearance and behaviour, staff behaviour and communication, the sights and sounds of the environment and alteration in parental role. Situational stressors such as uncertainty, the perception of severity of

their infant's illness and prenatal events also contributed to parent-identified stress within the NICU.

Dudek-Shriber (2004), in a quantitative study using a parental self-report instrument with 162 parents, confirmed that the stress experienced by parents during their infant's NICU admission may often be diffuse, with a range of factors contributing to it. However, the results also indicated that the subscale in which they reported the greatest stress was related to an altered parental role and relationship with

Beginning shortly after conception and continuing into childhood, the brain and nervous system experiences a period of rapid growth and maturation between 25 and 40 weeks' gestation. For preterm infants, this period of development coincides with a time when the infant is likely to be exposed to various environmental stressors that are developmentally inappropriate and potentially harmful to the infant's sensory systems (McGrath and Genliffe Torres 1996).

Environment

The PEO Model considers the environment as the context within which the occupational performance of an individual takes place. Environmental contexts are not static and can have an enabling or constraining effect on occupational performance (Law et al 1996). Therefore, the addition of an unanticipated technological environment such as the NICU, in which occupational role development occurs may have a significant influence on how the occupation of parenting is acquired and performed. In this context, the environment may include not only the physical aspects of

for them to be with their infants in a meaningful way, such as through participation in routine caregiving and opportunities for holding their infant; however, staff who were perceived as inhibitive displayed behaviours that restricted maternal efforts to achieve a sense of physical closeness with their infants (Penwick et al 2001). Conflict between parents and staff can result in a variety of parental behaviours as they attempt to regain some control over parenting their infant. These may include vigilance in watching over their baby, safeguarding him or her from harm, feelings of disaffection as a result of the communi-

ce (Whitfield 2003). Prematurity disrupts the normal wth and development of the brain and nervous system.

(1998), in a survey of 298 neonatal nurses, determined that 90% of respondents did not believe that any of the care

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practices or policies/procedures of the NICU contributed to the barriers that confronted parents in the acquisition of parenting roles and skills. This indicates that there is potential for limitations in understanding the implications physical environment, the mismatch between parents and their infant in terms of readiness for interaction, the inability to provide all of their infant's caregiving, and the support of staff regarding parental competence in caregiving (Gale and Franck 1998).

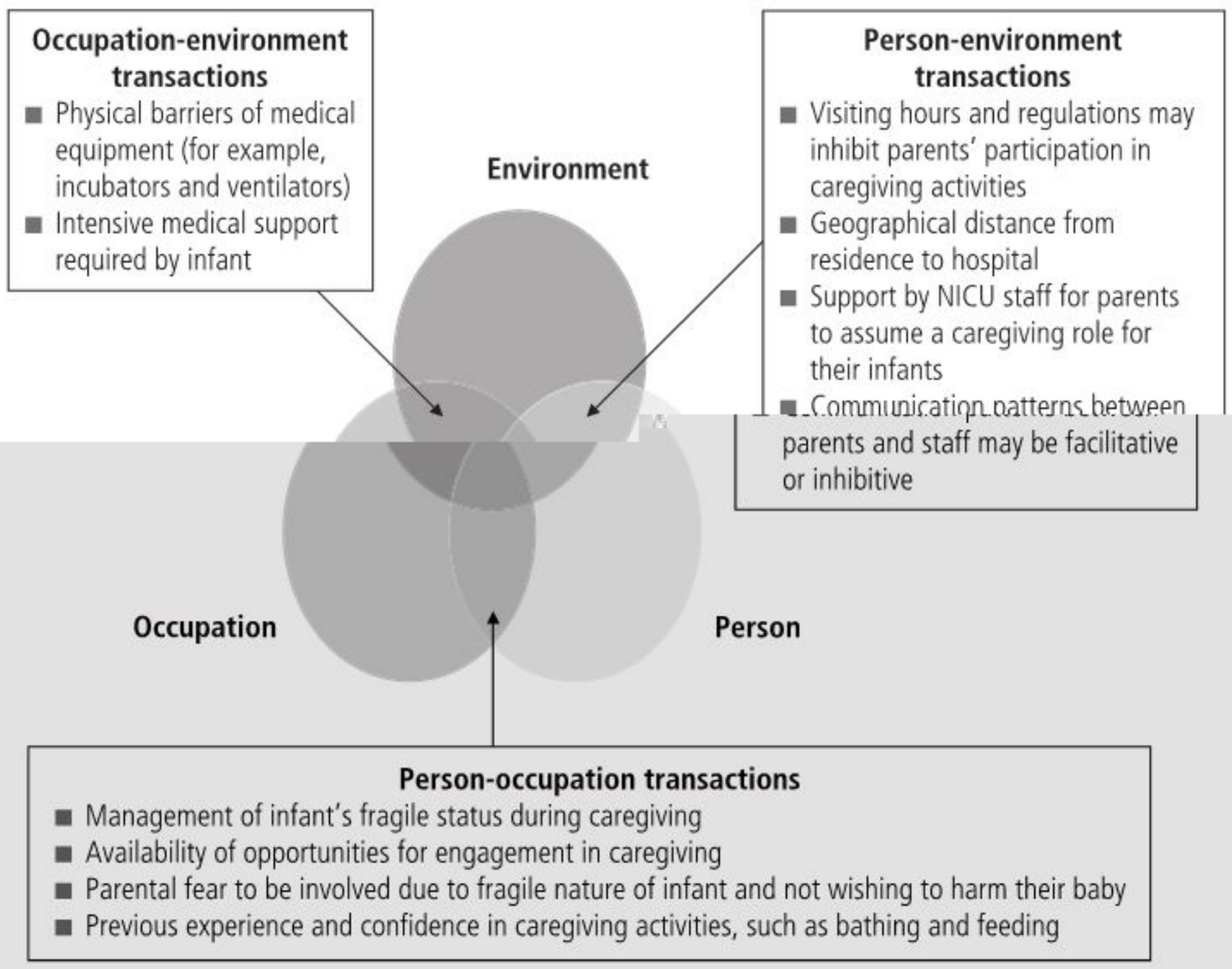
Miles and Holditch-Davis (1997), in their development of a conceptual framework relating to the needs of parents in an NICU, identified that the loss of the anticipated parental or caregiving role can leave parents with feelings of helplessness, struggling for opportunities in which to exert their parental role. This framework was confirmed in a subsequent study, in which 25 of 31 mothers who participated in the study reported that their loss of the anticipated role contributed to difficulties in developing positions as advocates and decision makers on behalf of their children (Holditch-Davis and Miles 2000).

Christiansen (1999) supported the facilitatory influence of occupation on the person, with the suggestion that the performance of occupations is a means of creating and optimal occupational performance when working with individual families.

Occupational therapy as a profession is concerned with assisting individuals to participate in the chosen occupations that are necessary for health, development and quality of life (Parham and Primeau 1997). In the critical care context of an NICU, this perspective can be diminished in importance owing to the primary focus on components of infant functioning and survival. Opportunities exist to determine how both the infants' and parents' occupational efforts can be enabled and supported (Holloway 1998). The areas of PEO transactions would serve as a starting point for exploring how parental occupational performance within the NICU context may be enabled.

The application of the PEO Model in relation to the context of parenting in the NICU is illustrated in Fig. 2.

*Fig. 2. Analysis of the potential person-environment-occupation transactions in NICU.**



NICU = neonatal intensive care unit.

***Source:** Adapted from: Strong S, Rigby P, Stewart D, Law M, Letts L, Cooper B (1999) Application of the Person-Environment-Occupation Model: a practical tool. *Canadian Journal of Occupational Therapy, 66(3),* 122-33. Adapted and reprinted with kind permission from CAOT Publications ACE.

Occupation-environment transactions

Within the NICU, occupation-environment transactions are clearly evident. As a result of the intensive medical support required by the infant, occupational engagement will be limited by the physical barriers of medical equipment in the unit, such as the infant being ventilated or nursed in an incubator. As outlined earlier, the social environment of the NICU may also have an impact on the fluency of occupation-environment transactions.

Person-environment transactions

Person-environment transactions can also be present. These can include the local visiting hours and regulations for the unit that may inhibit parents' participation in caregiving activities. Owing to the tertiary nature of NICUs, many infants are admitted to units that are geographically distant to their parents' home, making regular visiting difficult. Within the social environment, consideration needs to be given to the support provided by NICU staff for parents to assume a caregiving role for their infants. This includes the communication style undertaken by health care providers and whether this is perceived by parents as facilitative or inhibitive.

Person-occupation transactions

Within the person-occupation transactional area, the management of the infant's fragile medical status during caregiving can be a significant barrier to occupational engagement. When planning care, consideration also needs to be given to:

- The availability of opportunities for parents to be engaged in caregiving activities
- Parents' fear about being involved in the care of their infant and not wishing to harm their baby
- Parents' previous experience and confidence in the performance of caregiving activities, such as bathing and feeding, and how these can be best enabled.

Supporting parental occupational adaptation

Within each of the elements of person, environment and occupation, barriers exist that are difficult to remediate. For example, depending on the structure and operational functioning of an NICU, the moderation of some environment factors, such as unit design and lighting policies, may be limited. However, bedside factors, such as the management of incubator covers, alarms and voice level, are able to be moderated through collaborative staff efforts. Similarly, the types of medical and technological intervention required to support the infant are beyond the control of the occupational therapist. However, what can be considered is how best to support parents' occupational adaptation to this environment. Providing an intervention approach that includes consistent and understandable explanations regarding equipment function, clearly identifying and making available opportunities for parents to participate in safe but meaningful contact with their infants, and equipping parents to interpret their infants' state regulation in relation to timeliness of interaction can all have a positive effect on the person-environment transaction and, ultimately, the parents' occupational role development.

The development of evidence-based neonatal care approaches, such as the Newborn Individualised Developmental Care and Assessment Programme (NIDCAP) (Lawhon 2002, Als 2008), has been key in supporting multidisciplinary NICU-based staff in the provision of a highly individualised developmentally supportive care approach for preterm infants. The aim of individualised developmentally supportive care models, such as NIDCAP, is to alter the focus of neonatal care from the traditional task-oriented or procedure-oriented approach to a focus on processes and relationships, including the increased involvement of families (Westrup 2007). The NIDCAP approach is based

on the premise that infants' own behaviour provides the necessary information in order to determine their current capabilities. It is a comprehensive programme, involving structured behavioural observation of the infant and the provision of individualised caregiving support of the infant's developmental goals (VandenBerg 2007). The ongoing process of NIDCAP supports continual adjustment of the environment and caregiving practices in light of the infant's and parents' developmental needs (VandenBerg 2007).

NICUs that have adopted a NIDCAP approach are more able not only to be truly responsive to the needs of infants with a resulting impact on developmental outcome but also to centralise the role of an infant's family and address the PEO transactions inherent in the NICU admission. Successful implementation of individualised developmental care requires the full commitment of NICU staff at all levels and provides a significant shift in how health services address the needs of this client group (VandenBerg 2007, Westrup 2007). However, like family-centred care, the uptake of NIDCAP and other developmental care approaches has remained inconsistent.

The PEO Model provides a structure through which an understanding of how each infant and his or her family accommodates to the NICU experience can be achieved and, more specifically, can be used to direct occupational therapy practice in focusing on family-centred care and the development of occupational performance. Therefore, although the types of occupational therapy intervention outlined at the beginning of this paper are a key element of neonatal service provision, the use of an occupation-based approach can provide a means through which practice can be enhanced by ensuring that both the infant's and the family's needs are recognised and addressed.

Conclusion

The consideration of parenting as an occupational role for the parents of preterm infants within an NICU would appear to allow the emergence of an understanding of the person-environment influences on occupational performance. By improving understanding of the parental occupations in the NICU, the provision of facilitatory or enabling service frameworks may be considered. As outlined, the PEO Model may therefore provide a new and systematic means of addressing an ongoing issue in the care of preterm infants and their families. Through the use of this approach, occupational therapists working within NICU environments have the potential both to support significantly the use of family-centred care approaches and to promote occupational

Key findings

- The PEO Model provides a structure for considering parenting occupations in the NICU.
- The use of an occupation-focused approach in the NICU ensures that both the preterm infant and his or her family's needs are recognised and addressed.

What the study has added

This review provides an understanding of parental occupations in NICUs and supports occupational therapists in their promotion of family-centred care in this setting.

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