IN THIS ISSUE . . .

Guest editorial
Standards for neonatal intensive care nursing education in Australia: Bring it on!
Victoria Kain

Maternal–infant synchrony: an integrated review of the literature
Brenda Baker and Jacqueline M McGrath

The trial and evaluation of a clinical pathway for parents with substance use issues
Robyn Penny and Jan Pratt

Don’t get lost in translation: nursing children as medical tourists
Ellen Ben-Sefer, Chaya Balik, Orna Friedman, and Linda Shields

Using the Delphi technique to develop standards for neonatal intensive care nursing education
Trudi Mannix
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The journal will endeavour to reflect this diversity by its content. Neonatal, paediatric and child health nursing have many different aspects that may be relevant to more than one sector of the membership. In addition to clinically oriented material, including research, the journal also provides a forum for articles on professional aspects of nursing that apply to all nurses and in particular to nurses working with babies, children and families.

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Guest editorial

Standards for neonatal intensive care nursing education in Australia: Bring it on!

Victoria Kain
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In this issue, Dr Trudi Mannix reports on the findings of a Delphi panel assembled to evaluate the first draft of national standards for neonatal intensive care nursing (NICN) in Australia. As a neonatal intensive care nurse, trained in the hospital certificate tradition of the early 1990s, and a former educator in this area, I applaud this approach to standardisation in this morally and technically demanding area of nursing and midwifery. The NICN environment boasts highly trained, highly skilled clinicians, yet this nursing specialty is not immune to the effects of the overall nursing shortage – the average age of a neonatal nurse is reported to be 47 years: it’s time to look to the future and how we prepare the next generation.

While I consider myself fortunate to have received the neonatal education that I did, as we move forward as a profession, the postgraduate tertiary model has become the unquestioned ‘vehicle’ by which to deliver an NICN curriculum. I’m going to leave that debate for the staff tea room, and argue instead why I believe that ‘standardising’ the NICN curriculum is critical. Mannix speaks of the need for a quality education and three-yearly major curriculum reviews. It can logically be argued that only by creating a ‘standard’ as the starting point can any continuous improvement cycle be implemented. Let us remember that the term ‘standardisation’ traverses many disciplines, and I use here a business model to deconstruct the term and apply it to the field of neonatal nursing curriculum. Let’s consider that the ‘end-user’ of the graduate-prepared neonatal intensive care nurse is the neonate and his/her family. The ‘end-user’ needs to have confidence in the person caring for them, knowing that an appropriate standard has been followed in producing the neonatal intensive care nurse. Further, the curriculum that prepared that clinician can demonstrate that it has gone through competent and independent assessment. Why would the ‘end-user’ expect anything less?

The most compelling argument for endorsing a standardised curriculum in neonatal nursing resides with the ethos of why we standardise in the first place. We need to consider that standards are sound statements by which the profession describes the responsibilities for which its practitioners are accountable. Standards reflect the values and priorities of the profession and provide direction for professional nursing and midwifery practice and a framework for the evaluation of this practice. They define the professions’ accountability to the public and the outcomes for which registered nurses and midwives are responsible. It is believed in medical trainee practices that a standardised approach to curriculum, particularly in skills training, can make a significant impact on patient safety. This, alone, is a compelling argument.

Mannix states that compliance with these standards cannot be made compulsory. This is realistic, but it is my hope that these standards become the central, cohesive source of rigour and quality in Australian NICN. In linking with the Australian Nursing and Midwifery Council competency standards, and the graduate attributes of existing and would-be tertiary education providers, it is entirely feasible that standardisation of NICN curriculum could impact favourably on the vulnerable patient population which it serves. I say, bring it on!

References
Maternal–infant synchrony: an integrated review of the literature

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Abstract

Background A critical review of the literature was conducted to identify current science related to maternal–infant synchrony including: (a) definitions; (b) contributing factors; (c) measurement, and (d) how maternal–infant synchrony contributes to the continuum of the mothering experience.

Methods Using the search terms maternal–infant synchrony, maternal–infant interaction and maternal–infant attachment, databases were searched including Medline, CINAHL, and PsychINFO. Only English language research and integrated reviews published after 1985 and applicable to maternal populations and infants less than one year of age were included. Studies specific to multiple gestations or infants with congenital anomalies were excluded. Research comparing term and preterm infants was included as prematurity provides a context to study the emergence of neurobehavioural development and effects of dysregulation on maternal–infant synchrony. Based on the inclusion criteria, 23 published articles were included in this review.

Results Numerous overlapping definitions of maternal–infant synchrony were found. Findings clearly identify several positive newborn outcomes related to maternal–infant synchrony, including development of attachment relationships, development of infant language skills and social-emotional competence. Most research on maternal–infant synchrony has been conducted within the context of the behavioural sciences and/or in laboratory settings employing videotaping, analysis and coding of behaviours. Tools to specifically measure maternal–infant synchrony are limited.

Conclusion Synchrony is a dynamic, timed relationship that benefits both mother and infant. Synchrony reflects an appropriate fit between maternal and infant behaviour that develops from responsive and sensitive mothering and fosters infant attachment and ultimately social, emotional and self-regulatory growth and trust.

Keywords: maternal–infant synchrony, maternal–infant interaction, maternal–infant attachment.

What is known about this topic?
- Maternal–infant synchrony is vital to the development of the maternal–infant relationship and development of maternal competence as well as the growth and development of the infant.

What this paper adds?
- Overlapping definitions of maternal–infant synchrony, measures of maternal–infant synchrony, outcomes of maternal–infant synchrony.

Background

Synchrony has been used to describe a reciprocal association that exists between a range of phenomena including micro-level cells, population growth, the weather and the relationship between a mother and her infant. Feldman described synchrony as the “... timed relationship, whether concurrent, sequential, or organised in an ongoing patterned format, between two or more events that cohere into a single process”2. Feldman goes on to describe maternal–infant synchrony as matched behaviour, affective states and biological rhythms between mother and child that form a single relational unit. Characteristics of synchrony between mother and infant occur in short, intense, playful interactions, building on familiarity with the partner’s behavioural repertoire and interaction rhythms1. Synchrony depicts underlying temporal structures of highly aroused moments of exchange between mother and infant that are separate from the day-to-day interactions1. Maternal behaviour and infant personality influence the experience of synchrony and ultimately social, emotional and self-regulatory growth of the infant1. Multiple other terms were found in the literature to define and describe maternal–infant synchrony, including active participation, reciprocal, dyadic interaction, appropriate fit, co-regulation and co-occurrences of infant and mother behaviours. De Wolff defined synchrony as “... the extent to which interaction appeared to be reciprocal and mutually rewarding and asynchrony as behaviours that are one-sided, unresponsive or intrusive exchanges2. De Wolff’s definition further clarifies the reciprocal nature of the synchronous relationship between mother and infant.
In the classic work by Rubin, the work of becoming a mother and developing a synchronous relationship that leads to attachment begins during pregnancy as the woman goes through a period of identity reformulation, reordering of interpersonal relationships and interpersonal space, and a period of personality maturation. During pregnancy, the mother has a heightened sense of awareness of the growing child within her. The mother is increasingly aware of the presence and behaviour of the foetus that leads to a “turning inward” or focusing on the growing child and possibly represents the earliest example of maternal–infant synchrony.

Due to the many overlapping definitions and differing terms used to describe the maternal–child relationship in the literature, a critical review of the literature was conducted to identify the current science related to maternal–infant synchrony including: (a) establish a working definition of maternal–infant synchrony; (b) factors that contribute to synchrony; (c) methods of measuring maternal–infant synchrony, and (d) the contribution maternal–infant synchrony makes to the continuum of the mothering experience. Increasing our understanding and coming to consensus on a definition of maternal–infant synchrony will help nurse researchers move the science forward, thereby enabling providers of care to better understand the complex relationship between mother and infant as well as facilitate development of the relationship.

Method
A search of the databases Medline, CINAHL and PsychINFO was conducted using the terms maternal–infant synchrony, maternal–infant attachment and maternal–infant interaction in English language publications. Although terms such as responsiveness and sensitivity were often found, only articles where the authors particularly used the term synchrony within the conceptual framework for the study or review were included. A manual search of references for terms related to synchrony within the chosen articles was also conducted. Significant conceptual framework development began in the 1980s, primarily in the behavioural sciences to understand the concepts related to synchrony. Many of the publications in this review used the seminal work of Bowlby (1969) on attachment and Ainsworth (1978), the first research to consider the link between parental behaviour and attachment, as the bases for more current research on maternal–infant synchrony. Bowlby suggested that sensitivity responding to the infant’s signals was key to the development of a secure relationship, while Ainsworth concluded the most important aspect of maternal behaviour in relation to security-anxiety was specifically related to the mother’s sensitivity and responsiveness to infant signals and communications.

Research articles were included in this review that used any methodology and focused on any of the search terms; however, maternal–infant synchrony had to be a focal point of the research. Both quantitative and qualitative research was included in this synthesis as this science is still growing and the results would be quite limited if all research findings at all levels of evidence were not examined. Articles involving specific populations such as multiple gestations, infants/children with developmental disabilities, or specific populations of mothers were excluded in order to establish baseline knowledge of maternal–infant synchrony before including variables that these different and diverse populations bring to the relationship. Twenty-three studies conducted since 1985 were selected for inclusion in this review. Articles excluded from this review were those where the infants were greater than one year of age, if the infants had disabilities, or if the article was published before 1985. Articles were also excluded if the authors did not identify their concept of measure or the importance of synchrony in their study.

Results
After reviewing published studies identified as appropriate for this review, the authors determined that four studies compared differences in the maternal relationship with preterm and term infants, three studies were specific to preterm infants and 12 were specific to term infants. The studies were then organised according to research methodology. Three were systematic reviews of literature that identified attributes, characteristics, physiological determinants of synchrony and the crucial role of synchrony in the development of attachment. Two conceptual analyses provided clarification between the related terms sensitivity, responsiveness and competency. It was important to include these papers to better delineate the definition of synchrony. Six studies used an observational and videotaped method of data collection with coding of variables for analysis following observation that further identified specific synchronous behaviours between mother and infant. A combination of semi-structured interview, observation, survey tools, and/or some type of physiological monitoring was used in five of the articles, again identifying behaviours and outcomes of synchronous relationships. Biobehavioural measures were used in two articles, providing a new direction for the science by demonstrating the effects of the synchronous relationship between mother and infant. Only one study validated an infant–adult synchrony tool that used observational videotape methods to establish reliability and validity of the tool. After categorising the articles, content analysis focused on meeting the research aims: to establish a working definition of maternal–infant synchrony; identify characteristics that contribute to synchrony; identify methods to measure maternal–infant synchrony; and understand how maternal–infant synchrony contributes to the continuum of the mothering experience.

Defining maternal–infant synchrony
Based on the literature reviewed, maternal–infant synchrony can be defined as a dynamic relationship that is mutually engaging, temporally coordinated and includes an element of contingency. Synchronous relationships include matching of behaviours and rhythms that form a single relational unit, sometimes referred to in the literature as “dyadic”. Maternal–infant synchrony goes beyond periods
of mutual attention and turn-taking, to include prolonged, co-constructed interactions that are the theoretical framework for attachment relationships and, later, the child’s ability to read the intentions of others, ability to engage in intimate relationships, language development, and capacity for empathy. Additionally, temporal coordination is demonstrated through a rhythm or pacing of interactions between mother and infant and includes body orientation, body movements, facial expressions and vocal rhythms. The third component of the synchronous relationship is contingency. Contingency occurs when one behaviour increases the likelihood of another behaviour and is related to the development of motivation and adaptation. An example of contingency would be when eye contact between infant and mother leads to vocalisation by the mother and a smile by the infant, motivating the mother to continue “talking” with her infant.

**Characteristics contributing to maternal–infant synchrony**

Characteristics that contribute to maternal–infant synchrony include maternal sensitivity, responsiveness, emotional state, including stress and depression, and support from significant others. The infant contributes to maternal–infant synchrony through temperament, wellbeing such as prematurity and maturation of biological rhythms such as sleep-wake cycles. Maternal sensitivity has been used in the literature inconsistently and interchangeably with maternal responsiveness. Each term refers to significantly different behaviours that contribute to maternal–infant synchrony. Maternal sensitivity is a broad concept that includes maternal qualities such as affect, timing, flexibility, acceptance, conflict negotiation and maternal awareness of infant cues and appropriate responsiveness. Sensitivity is the mother’s ability to accurately interpret her infant’s cues and respond appropriately in a timely manner. The ability of a mother to read her infant’s cues, interpret and respond is the actualisation of maternal sensitivity in the synchronous relationship between mother and her infant.

Responsiveness is the emotional and creative actualisation of maternal–infant synchrony. Maternal responsiveness is the ability to be warm and soothing when the infant is upset or distressed; the ability to provide interesting and creative ways to play and interact with the infant, and the quality of the interactions with the infant. Through the mother’s ability to respond appropriately and meet the infant’s needs, the infant develops a sense of trust and attachment. Mothers, in turn, develop a sense of competence as the infant is soothed, responds with positive behaviours, grows and develops. Factors that influence responsiveness include previous experience, support systems, feelings of confidence, perception of infant vulnerability and infant temperament. Sensitivity and responsiveness contribute to early infant attention skills, early vocal reactivity and infant perceptual sensitivity; these are all factors contributing to long-term growth and development.

Maternal wellbeing plays a significant role in the dynamic experience of maternal–infant synchrony. Women who experience stress, anxiety and depression often struggle with the ability to read infant cues and respond appropriately, ultimately affecting the developmental outcomes of the child. Younger maternal age, lower educational attainment and lower socioeconomic status are related to greater maternal use of negative control strategies, higher expectation for the behaviours of their infants and less interaction with their infant, all behaviours that are less reciprocal in nature and more controlling. Ultimately these relationships are often less synchronous.

Infant wellbeing is a significant factor in the synchronous relationship as demonstrated by premature infants, who are often more irritable and less responsive due to immature neurological development, behaviours that require mothers to “work harder” to elicit feedback. Feldman demonstrated a developmental “leap” in sleep-wake amplitudes that occurs at 31 weeks’ gestation, followed by a shift in vagal tone at approximately 34 weeks’ gestation when a group of term and preterm infants were compared while measuring maternal–infant synchrony. This research demonstrated the vital link between biological rhythms and prematurity and its impact on maternal–infant synchrony. In a study by Lester et al. to quantify social interaction rhythms, three- and five-month-old term and preterm infants and their mothers were observed and videotaped during unstructured free play. Coding and analysis of findings demonstrated higher coherence in term dyads than preterm dyads at both three and five months. This study was one of the first to demonstrate the more difficult relationship between premature infant and mother and suggested this as a possible explanation for delayed language development in the preterm group.

Infant temperament plays a vital role in the synchronous relationship. In a study of infants determined to have infantile colic that was characterised by persistent crying, being difficult to soothe and having disrupted sleep-wake states, mothers’ estimates of crying behaviour was significantly higher for irritable infants than non-irritable infants. Mothers of irritable infants described their infants as demanding, alert and active, whereas mothers of non-irritable infants described their infants as mellow, alert and content. Mothers of irritable infants reported higher levels of stress, frustration and inadequacy. These mothers also demonstrated fewer social and emotional growth fostering behaviours with their infants and the infants were overall less responsive to their mothers. Feldman documented the significant influence of temperament and its importance in the development of self-regulation. In this study, 36 mother–infant pairs were observed and videotaped, then mothers completed a series of self-report measures. Findings indicated that infant temperament moderated maternal–infant synchrony and was proposed as an important contributor to the emergence of self-regulation.
Measuring maternal–infant synchrony

The majority of research on maternal–infant synchrony has been conducted in the laboratory setting using videotaping to capture interactions between mother and infant which are then analysed and coded, based on the variables in the study. Survey tools including measures of maternal depression, maternal perception of temperament and attachment have been used in conjunction with methods of observation to further describe the effect of these variables on the synchronous relationship. Increasingly, measurement of biobehavioural markers and use of imaging technology are used in maternal–infant synchrony research.

Biobehavioural parameters are becoming more widely acceptable measures in the study of social-emotional mechanisms. Biobehavioural parameters provide an empirical measure of behaviours, relationships, interactions and physiological systems. Spangler demonstrated the relationship between maternal sensitivity and three- and six-month-old infants by measuring salivary cortisol before and after a period of maternal–infant interaction and care. Findings indicated that maternal behaviours, specifically insensitive behaviours, were related to a rise in salivary cortisol levels in the infant. Cortisol is secreted by the adrenocortical system in response to stress, uncertainty, and/or negative situations. Plasma oxytocin and salivary cortisol were measured in a study by Gordon et al., in relation to triadic synchrony, or synchrony between mother, father and infant. Both maternal and paternal oxytocin levels were predictive of triadic synchrony. Mothers in this study also demonstrated lower levels of salivary cortisol when triadic synchrony was present.

Technology to document the effect of maternal–infant interaction has included the use of functional magnetic resonance imaging (fMRI). fMRI was used to determine the response of maternal brains to pictures of their own infant, versus pictures of unknown infants. This study examined dopamine-associated regions of the brain responsible for emotional processing, cognition and motor/behavioural outputs. During fMRI scanning, mothers were shown pictures of their own infant and unknown infants, comparing happy, neutral and sad face affects. Areas of the maternal brain responsible for cognitive processing leading to motor/behavioural outputs responded to pictures of the mother’s own infant, but not to pictures of unknown infants. Research using technology to measure effects of synchrony is potentially the beginning of new ways to better understand the neural basis of mother–infant interactions.

Cardiac vagal tone during sleep was used to evaluate the relationship between biologic and interaction rhythms in both term and preterm infants. Feldman demonstrated that infant sleep-wake cyclcity, vagal tone, newborn orientation and arousal modulation were predictive of maternal–infant synchrony. This study also demonstrated a relationship between maturity of physiological parameters and the infant's ability to participate in temporally matched social dialogues.

Cardiac vagal tone was used to understand maternal–infant interactions by monitoring three-month-old infants’ physiological regulation in social interaction, in relation to coordination of affective behaviours. More specifically, infant heart rate and vagal tone were monitored during still-face experiences with their mother. Infants showed increased negative affect and heart rate and decreased vagal tone during maternal still-face experiences, indicating physiological regulation of distress. Infants who did not demonstrate suppressed vagal tone during still-face experiences, showed lower synchrony, less positive affect, higher reactivity in normal play and reunion with their mothers. The addition of biological and physiologic measures to the study of social-emotional behaviours provides empirical data to measure otherwise subjective, time-consuming, costly methods of research in the study of maternal–infant synchrony.

One instrument to measure infant–adult synchrony was identified during the review: the Dyadic Mini Code instrument. The tool includes six items that are important components of synchronous relationships. Items include measures of mutual attention, level of positive affect, timing of maternal pauses, turn taking, the importance of the infant’s clarity of cues and maternal sensitive responsiveness. Cohen's kappa indicated establishment of reliability was 0.86; inter-rater reliability for the six items were: mutual attention, 0.73; positive affect 0.75; turn taking 0.63; maternal pauses 0.73; infant clarity of cues 0.92; and maternal sensitive responsiveness 0.92. All scores except turn taking exceeded the criterion of 0.70. Concurrent validity was demonstrated by chi square =4.878, p<.05; construct validity chi square =4.071, p<.005. Even though items in this tool reflect the characteristics identified throughout the literature of maternal–infant synchrony, limited references to use of this tool were identified.

Maternal and infant outcomes related to synchrony

Mothers benefit from a synchronous relationship as they learn to read and interpret infant cues, provide sensitive and responsive care and ultimately develop competence in the role as mother. Research by Feldman, Holditch-Davis, and Nicolaou demonstrated the effects of asynchronous relationships on mothers. Mothers who struggle interpreting infant cues whether due to infant wellbeing, such as prematurity or infant temperament, were at greater risk of developing depression, anxiety caring for the infant and negative-control parenting styles.

Infant outcomes related to a synchronous relationship include development of language, self-regulation, attachment and the ability to develop future social relationships. In a study by Treyvaud of 152 preterm infants, parent–infant synchrony was the most predictive parenting domain associated with cognitive development. Greater parent–infant synchrony was also associated with greater social-emotional competence in this group of infants. This study also demonstrated that mothers whose parenting styles were high in levels of negative affect were more likely to rate their infant/child as withdrawn, anxious and/or inhibited.
### Table 1. Summary of articles included in the review.

<table>
<thead>
<tr>
<th>Study year</th>
<th>Objective</th>
<th>Participants</th>
<th>Study design</th>
<th>Significant findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent reviews of literature and concept analysis</td>
<td></td>
<td>N/A</td>
<td>Review of literature.</td>
<td>The structure and function of synchrony changes throughout early development. The ability to achieve synchrony may represent a crucial developmental achievement that facilitates social, emotional and cognitive growth for the child.</td>
</tr>
<tr>
<td>Harrist, Waugh (2002)</td>
<td>Examine empirical and theoretical work that describes the structure of dyadic synchrony between infant and care giver.</td>
<td>N/A</td>
<td>Review of literature.</td>
<td>Key points: virtually all infants become attached to care givers regardless of quality of care; attachment relationships evolve in phases over time; consequences for attachment disruptions depend on timing and circumstances; infant regulatory difficulties originate in care giving relationship; change in parent–child relationship disturbances is complex and requires time and effort to ameliorate.</td>
</tr>
<tr>
<td>Carlson, Sampson, Sroufe (2003)</td>
<td>Basic overview of attachment theory, concept and research.</td>
<td>N/A</td>
<td>Review of literature.</td>
<td>Specific patterns of synchrony are described in a range of child–parent and context-related behaviours in the emergence of patterns. Considers time a central parameter of emotion and communication systems that may be useful in the study of interpersonal intimacy across the lifespan.</td>
</tr>
<tr>
<td>Shin, Park, Ryu, Seomun (2008)</td>
<td>Concepts of maternal sensitivity, maternal responsiveness and maternal competency are basis of this concept analysis. These terms are often used interchangeably and inconsistently in the literature.</td>
<td>N/A</td>
<td>Concept analysis.</td>
<td>Identification of attachment is the theoretical framework of maternal–infant synchrony. Identifies maternal sensitivity as an antecedent to mother–infant attachment. Sensitivity promotes synchronous, reciprocal and jointly satisfying interactions between mother and infant. Multiple studies that have measured maternal–infant synchrony are reviewed, no valid tool is identified.</td>
</tr>
<tr>
<td>Reyna, Pickler (2009)</td>
<td>To develop an understanding of the dynamics of the mother–infant dyad and identify synchronous patterns important to promoting a healthy relationship between mother and infant.</td>
<td>N/A</td>
<td>Concept analysis.</td>
<td>Approaches to measurement of synchrony and challenges to model development are also described.</td>
</tr>
</tbody>
</table>

Studies of mothers and full-term infants.
Isabella, Blesky (1991) To replicate previous work testing the hypotheses that interactions of mother-infant dyads with secure attachments would be characterised by synchronous exchanges and dyads developing insecure relationships would be characterised by asynchronous exchanges. An a priori hypothesis was tested regarding expected differences in the interactional histories of dyads developing insecure-avoidant and insecure-resistant attachments.

153 mothers and their first-born infants participating in the second and third cohorts of the Pennsylvania Infant and Family Development Project.

Analysis of covariance between preterm and term infant groups at two points in time. Bivariate correlation analysis.

Findings replicated and supported previous work. Demonstrating that secure attachment relationships were fostered by interactions in which mothers were attentive and appropriately responsive to the infant’s signals; exchanges were well-timed, reciprocal and mutually rewarding. Insecure relationships were asynchronous, where mothers were minimally involved, unresponsive to infant’s signals, non-contingent in their behaviours relative to the infant’s activity or intrusive and over-stimulating. Finally, avoidant relationships develop as a result of insensitive, intrusive maternal behaviours, possibly as a protective behaviour; resistant relationships appear as the result of maternal under-involvement, possibly as a strategy to evoke maternal involvement.

Blank (1995) Sullivan’s theorem of tenderness was used in an exploratory qualitative study to understand mother’s descriptions of what was important in deciding responsiveness to their infants.

Convenient sample of 30 healthy mothers, over the age of 18 years old and who had prior experience with infants. Mothers were recruited for the study prior to discharge following childbirth.

* Infant behaviour questionnaire-revised.
* Parent stress inventory.
* Parent-infant interaction attributes, a two-minute videotaped session in a laboratory and coded focusing on 10 interactional attributes linked to maternal sensitivity and responsivity.

Three major categories were identified:
* infant tenderness needs
* maternal perception
* maternal needs.

Support persons were identified as very important. Mothers also believed infant needs were more important than the needs of others; that mothers were constantly faced with priorities and that maternal emotional state influenced maternal-infant interaction. At three months of age, stochastic-cyclic organisation of infant attention predicted general and verbal IQ. Mother-infant synchrony and maternal regulation predicted visual IQ. At nine months, organised but not cyclic infant play predicted general IQ.

Feldman, Greembaum, Yirmiya, Mayes (1996) To understand the development of interactions between mother and infant during the first year and the relation of first-year measures to later toddler cognitive competence.

Thirty-six full-term healthy mother-infant pairs. Infants weighed at least 2,700 gm and received an Apgar score of 8 or above at birth.

At three months of age, stochastic-cyclic organisation of infant attention predicted general and verbal IQ. Mother-infant synchrony and maternal regulation predicted visual IQ. At nine months, organised but not cyclic infant play predicted general IQ.

Mothers of irritable infants demonstrated fewer social and emotional growth fostering behaviours; Irritable infants were less responsive to mothers, with no difference by 16 weeks of age.

Interview data revealed that 60% of mothers of irritable infants had different expectations prenatally than their experience and in the non-irritable group only 19% of mothers indicated their expectations were different prenatally than their experience.

Mothers of irritable infants reported higher levels of distress, feelings of inadequacy, concern and frustration.

Keefe et al. (1996) To explore processes underlying persistent, recurrent irritability by investigating behavioural and interactional differences in irritable and non-irritable infants.

Forty full-term infants and their mothers.

Irritability was operationally defined using the Fussiness Rating Scale.

Twenty infants met criteria at one month of age as irritable; 20 infants were identified as non-irritable.
Feldman, Greenbaum, Yirmiya (1999)

To study how the relationships between mother and infant affect synchrony and the emergence of children’s self-control.

Thirty-six mothers and their healthy term newborns (birth weight greater than 2700 gm). Equal number of male and female newborns and equal number of first-born and second-born infants comprised the sample.

Mother–infant pairs were observed and videotaped at three, nine and 24 months in a laboratory setting for 10 minutes. At nine months of age, mothers completed a battery of self-report measures. The 24-month visit included a cognitive assessment of the infant, interactive tasks and mothers again completed a battery of self-report measures.

Significant effect was found on the overall total p=0.05, as well as the contingency scores related to sensitivity to cues p=0.05, and social-emotional growth-fostering behaviours p=0.05.

The use of videotaped educational information facilitates very early mother–infant interaction.

Leitch (1999)

To examine the effect of infant communication education provided prenatally to first-time mothers on the quality of interaction that occurs between mother and infant in the first 24 hours following birth.

Twenty-nine first-time mothers randomly assigned to either an intervention or control group.

Three-minute episode videotaped and evaluated using univariate scale to identify monadic phases.

Significant effect was found on the overall total p=0.05, as well as the contingency scores related to sensitivity to cues p=0.05, and social-emotional growth-fostering behaviours p=0.05.

The use of videotaped educational information facilitates very early mother–infant interaction.


To examine the co-regulation of positive affect during mother–infant and father–infant interactions.

First-born infants recruited from well-baby stations and their mothers and fathers.

Two different face-to-face interactions were videotaped and then affective states were coded in one-second frames. Synchrony was measured with time-series analysis. Parents were also interviewed and completed a battery of self-report measures.

Synchrony between same gender parent–infant dyads was more common with more frequent mutual synchrony, shorter lags to responsiveness and decreased lag to synchrony time.

Results also support a relationship between emotions and the affective sharing that infants co-construct with their mothers and fathers.

Moore, Calkins (2004)

Determine the relationship between maternal coordination and infant physiological responses.

Seventy-three mothers and their three-month-old infants.

Semi-structured interviews using the Sullivan theorem of tenderness as a guide for generating interview questions. Interviews were videotaped and analysed for clusters or groups found in Sullivan’s theorem of tenderness.
Evans, Porter (2008)

1. Examine stability and change in mother–infant co-regulation interaction over the later half of the first year of life.

2. Examine whether antecedent and concurrent patterns of mother–infant co-regulation are linked to attachment organisation.

3. Examine whether mother–infant co-regulation is linked to infants' cognitive and motor development.

One hundred and one mothers and their first-born infant recruited from advertising in a Mountain-West semi-urban community. Infants were healthy, term births with no major complications. Eighty-four mother–infant dyads completed the study.

At 24 months, corrected age, parents and children completed semi-structured interaction task to assess dyad synchrony and parenting behaviour. Cognitive and motor development were assessed using the Bayley Scales of Infant Development II and the Infant Toddler Social and Emotional Assessment used to assess socio-emotional development.

Securely attached infants engaged in higher levels of symmetrical co-regulation; symmetrical co-regulation at six months was positively linked to infants' mental development and psychomotor development at nine months; asymmetrical and unilateral patterns of co-regulation at six months was negatively linked to infants' mental development. Suggesting early patterns of dyadic co-regulation as important antecedents to later development and attachment.

Gartstein, Crawford, Robertson (2008)

To explore the contribution of attention skills to early language and the influence of early language markers on the development of attention, considering the impact of parent–child interaction factors (reciprocity/synchrony and sensitivity/responsivity) and their moderator effects.

Seventy-one children between the ages of six and 12 months and their primary carer. Infants and mothers were followed for the first four months of the infant's life, with visits beginning at four weeks of age and continuing every three weeks until infants were 16 weeks old.

Scales included:
- Fussiness Rating Scale.
- Nursing Child Assessment Satellite Training (NCAST).
- Infant Physiologic State Monitoring.
- Semi-structured interviews.

Parent–infant interaction contributed to the prediction of early attention skills, with synchronicity/reciprocity as a significant predictor of duration of orienting. Vocal reactivity and responsivity/sensitivity interaction were significant predictors of perceptual sensitivity.

Limitation small sample size.

Studies comparing mothers of full-term infants with mothers of preterm infants

Lester, Hoffman, Brazelton (1985)

To quantify social interaction rhythms in three- to five-month-old term and preterm infants and their mothers.

Twenty term and 20 preterm (born between 26 and 34 weeks' gestation).

Caucasian infants from comparable socioeconomic backgrounds.

Unstructured, 15-minute free play dyads at both three and five months. Increases from three to five months in behavioural periodicities were found for infants and mothers. Term infants more often led the interaction at both time points. Differences in synchrony between term and preterm infants may explain later reported differences in language development between the two groups.

Censullo, Bowler, Lester, Brazelton (1986)

Increase understanding of the psychometric properties of Dyadic Mini Code instrument used to measure levels of synchrony in early infant–adult face-to-face interactions.

Twenty term and 20 preterm infants and their mothers all of comparable socioeconomic status.

The instrument has six items measuring mutual attention, positive affect, turn taking, maternal pauses, infant clarity of cues and maternal sensitive responsiveness.

Cohen's kappa an estimate of reliability was 0.86; Inter-rater reliability for the six items are as follows: mutual attention 0.73; positive affect 0.75; turn taking 0.63; maternal pauses 0.73; infant clarity of cues 0.92; and maternal sensitive responsiveness 0.92. All scores except item 3 exceed the criterion of 0.70; Concurrent Validity, demonstrated by chi square =4.878, p<.05; Construct Validity chi square=4.071, p<.05.
Feldman (2006) Determine biological rhythms and emergence of interaction rhythms in three groups: high-risk preterm; low-risk preterm; and full-term infants. Seventy-one high-risk preterm with birthweight <1,000 gm and less than 30 weeks’ gestation. Twenty-five low-risk preterm infants with birthweight 1,700–1850 gm and between 34 and 35 weeks’ gestation. Twenty-nine full-term infants with birthweights >2,500 gm and >36 weeks’ gestation. Cardiac vagal tone was measured during a sleep-wake four-hour observation. At term age, infant orientation was tested with the Neonatal Behavior Assessment Scale. At three months of age arousal modulation and emotional regulation were assessed and mother–infant synchrony was computed from analysis of face-to-face interactions using time-series analysis. Sleep-wake amplitudes showed a developmental leap at 31 weeks’ gestation, followed by a shift in vagal tone at 34 weeks’ gestation. At term, group differences were observed for biological rhythms in a linear-decline pattern. Sleep-wake cyclicity, vagal tone, newborn orientation and arousal modulation were predictive of mother–infant synchrony. Organisation of physiological parameters appears to lay the foundation for the infant’s ability to participate in a temporally matched social dialogue.

Feldman, Eidelman (2007) Three research questions: 1) Determine if preterm neonates with higher autonomic maturity would elicit more maternal postpartum behaviour. 2) Examine the relation between autonomic maturity and mother’s touch during interactions. 3) Do maternal depressive symptoms and the home environment predict parent–infant synchrony in the preterm infant. Fifty-two full-term infants and their parents with no medical complications and 56 infants with birthweights between 1000 and 1500 gm and a gestational age between 29 and 33 weeks. Infants with IVH grades III or IV, perinatal asphyxia, metabolic, genetic disease or CNS infections were excluded. In the full-term group on day two post-partum and the day prior to discharge in the preterm group, cardiac vagal tone, mother–infant interactions were assessed, and maternal depressive symptoms were self-reported. At three months (corrected age for premature infants) home visits were conducted. Evaluated the home environment and infant–mother interactions. Premature birth was associated with higher incidence of maternal depression, fewer maternal behaviours, decreased infant alertness and lower coordination of maternal behaviour with infant alertness. At three months of age, premature infants and mothers were less synchronous. Premature infants with lower vagal tone received the lowest amount of maternal behaviour and the least maternal touch at three months of age. Infant–maternal synchrony was predicted by cardiac vagal tone; among preterm infants predictors of synchrony were maternal depression and the home environment.

Holditch-Davis, Schwartz, Black, Scher 2007 Examine the effect of child characteristics, infant illness, maternal characteristics, maternal psychological wellbeing and partner support on the development of the maternal–infant relationship. One hundred and eight infants and their mothers were enrolled in a larger study of biological and social risks of prematurity. Infants were less than 35 weeks’ gestation and had a birthweight <1,500 gm or required mechanical ventilation or CPAP. Infants with congenital conditions affecting development were excluded. Infants with neurological insults were eligible. One hundred and eight infants and their mothers were enrolled in a larger study of biological and social risks of prematurity. Infants were less than 35 weeks’ gestation and had a birthweight <1,500 gm or required mechanical ventilation or CPAP. Infants with congenital conditions affecting development were excluded. Infants with neurological insults were eligible. Mother–infant interactions were videotaped and scored using the Nursing Child Assessment Teaching Scale (NCATS). Scores were compared to determine the effect of the education on the interaction between mother and infant. Mothers with singletons or more infant illness stress showed more positive involvement; mothers with less infant illness stress, less education or less participation in care giving by father showed more negative control; first-time mothers and mothers of singletons provided more developmental stimulation. Infants of younger and Caucasian mothers showed more social behaviours. Less maternal education and a shorter period of mechanical ventilation were associated with greater developmental maturity. Greater maternal worry was related to more child irritability. Findings are consistent with previous findings that maternal premature relationships are a complex reciprocal process.

Infant–mother attachment was evaluated using the Ainsworth and Witting Strange Situation. After controlling for social risk, most parenting domains were associated with cognitive development, with parent–child synchrony emerging as the most predictive. Greater parent–child synchrony was associated with greater social-emotional competence, as was parenting that was positive, warm and sensitive. Parents who displayed higher levels of negative affect were more likely to rate their children as withdrawn, anxious and inhibited.

Biobehavioural measures of maternal–infant synchrony

<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strathearn, Li, Fonagy, Montague (2009)</td>
<td>Twenty-eight first-time mothers.</td>
</tr>
</tbody>
</table>

Observation and videotaping during play at three, six and nine months of age midway between two feeding times, either in the morning or afternoon. Salivary cortisol was collected prior each observation. At the end of the observation, mothers were instructed to perform a routine procedure with their infant and a second salivary cortisol was collected. Videotapes were analysed by trained observers for maternal sensitivity and infant negative affect.

The affect of maternal sensitivity on adrenocortical function was demonstrated at three and six months by an increase in cortisol associated with highly insensitive mothers. This study demonstrated the significance of maternal behaviour on the infant.

Strathearn, Li, Fonagy, Montague (2009) Determine how a mother’s brain responds to her own infant’s facial expressions, comparing happy, neutral and sad-face affect. Twenty-eight first-time mothers. Employing event-related functional MRI technology, mothers were shown images of their infant and matched unknown infants. Key dopamine-associated reward-processing regions of the brain were activated when mothers viewed their own infant’s face, compared to an unknown infant’s face. Regions activated affect emotional processing, cognition and motor/behavioural outputs.

Gordon, Zagoory-Sharon, Leckman, Feldman (2010) Examine the relation between maternal and paternal oxytocin levels and patterns of touch and contact. Thirty-seven parents and their first-born infant. At two and six months postpartum, plasma oxytocin and salivary cortisol were assessed with ELISA methods. At the six-month measurement, triadic mother–father–infant interactions were videotaped and micro-coded for patterns of proximity, touch and gaze behaviour.

Triadic synchrony, synchrony between mother, father and infant was predicted by both maternal and paternal oxytocin. In mothers, triadic synchrony was also independently related to lower levels of cortisol.
The significant role synchrony plays in cognitive and psychomotor development was described in a study by Evans. This study followed 84 mother–infant dyads throughout the first year of the infants’ lives. Securely attached infants engaged in higher levels of synchrony at six months of age and were positively linked to cognitive and psychomotor development at nine months of age. Asymmetrical and unilateral patterns of interacting at six months were negatively linked to the infants’ mental development. This study supports the role of secure attachment as an outcome of mutual responsiveness and its link to later development.

The work of Isabella supported previous work documenting the connection between synchrony and secure attachment. This work described the development of avoidant and anxious attachment styles and their associated characteristics. Maternal sensitivity, a key component of secure attachment, was found to positively influence the development of the infant.

References

Maternal–infant synchrony and the continuum of the mothering experience

Reyna and Pickler described the theoretical relationship between attachment and maternal–infant synchrony. Attachment is identified as the foundation for maternal–infant synchrony and is present at birth. Maternal sensitivity, an antecedent to mother–infant attachment promotes synchronous and reciprocal interactions that are satisfying to both mother and infant, thereby fostering a secure attachment relationship. To examine the effect infant communication has on the quality of maternal–infant interactions, Letch studied the effects of a videotaped educational programme provided prenatally to first-time mothers. The education programme included information on infant behavioural states and communication cues. Infants whose mothers participated in the intervention group demonstrated a significant difference on overall Nursing Child Assessment Teaching Scale (NCATS) scores, p=0.05 compared to the control group, with specific differences in sensitivity to cues and social-emotional growth-fostering behaviours.

Conclusions
The benefits of maternal–infant synchrony for mother and infant have been well-studied and documented. Maternal and infant characteristics that contribute to synchrony are also well-documented. This review demonstrated the impact maternal and infant characteristics have on mothers and infants and specifically how prematurity affects synchrony as well as long-term growth and development of the infant. A significant void in the literature is the lack of research linking maternal role attainment and maternal–infant synchrony. Based on this review of literature, maternal–infant synchrony can positively, or negatively, influence development of the maternal role. Future areas of research should consider how maternal–infant synchrony affects development of the maternal role.


Special Issue November 2012 –

Call for papers

Mental health for children and young people has an increasing profile in policy and practice and this special issue aims to explore this important topic in relation to early identification, management, service delivery and policy within the contexts of infants, children and young people. The special issue will be published in November 2012.

This special issue is being put together at a time of recognition of the needs of this vulnerable group and their families.

We welcome a broad spectrum of scholarly papers, based on research, systematic review or service evaluation, that extend the knowledge base and are relevant to nursing practice for this group. Topics may include the following, although this list is not exhaustive:

• Emerging paradigms in identifying mental health issues in the child and young person groups
• Clinical issues associated with acute illness and/or admission eg first episode psychosis
• Perinatal depression
• Infant mental health
• Service and organisational context and development
• Models/frameworks for mental health care for children and young people
• Outcomes of acute, or community care

All papers should be submitted through the Cambridge Manuscript Management System and the standard guidance for authors should be used: http://www.npchn.com/

We ask all authors to identify the paper as being for the mental health special issue by using the initials ‘MH’ in the title of their paper (e.g. “MH: The Role of the School-Based Counsellor in Early Identification of Mental Health Issues”).

The deadline for receipt of papers is 27 April 2012

All papers will be subjected to the journal’s usual double-blind peer-review process as set out in the guidance for authors. Should there be too many papers accepted following peer-review for the space available in the special issue, then these papers will be published in subsequent issues of Neonatal, Paediatric and Child Health Nursing.

Professor Eimear Muir-Cochrane, Guest Editor
Professor Linda Johnston, Editor

Online submission

Submit your paper to Neonatal, Paediatric and Child Health Nursing:
http://www.npchn.com/
The trial and evaluation of a clinical pathway for parents with substance use issues

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Community Child Health Service, Children’s Health Services, Brisbane, QLD

Abstract

Aim This study aimed to identify if a clinical pathway plan of care (SUPa) had the potential to improve outcomes for infants in families affected by substance use issues.

Background Internationally, approximately 10% of children live in homes where there is some form of alcohol or other drug abuse or dependence¹. This places children at increased risk of poorer health outcomes including abuse and/or neglect¹-⁴. Traditionally, services such as child health have had limited capacity and knowledge to work with families with drug use issues. While many studies have focused on supporting parents in drug treatment, little has been done to examine preventive work with families presenting to universal community child and family health services.

Design This prospective, quasi-experimental study was conducted in Queensland, Australia. Participants included women with substance use issues and child health service staff (child health nurses and early intervention parenting specialists). Data was collected by chart audit and focus groups.

Results SUPa is a useful tool to develop evidence-based practice, improving teamwork and staff knowledge and skills. Service engagement with parents and safety planning for parenting also improved. Further evaluation is needed to assess other child health outcomes.

Implications for practice Implementing clinical pathways in practice is a significant change that requires ongoing support. While structured care plans are an important evidence-based practice tool, they can be tailored to individual client need using sound clinical judgement. SUPa has the potential to improve outcomes for infants in families affected by substance use issues.

Keywords: substance use, SUPa, parenting, drug misuse, child health, home visiting, clinical pathway.

What is known about this topic?
- There is a firm body of evidence to suggest that the use of substances both licit and illicit can impact negatively upon the health and wellbeing of individuals and can result in an intergenerational shift of the problem. Drug use during pregnancy, and continued after the child is born, can seriously interfere with the health of the child and affect parenting capacities. This can also place the child at increased risk of harm or neglect. While many studies have focused on providing therapeutic services for parents in drug treatment, less work has been done with families presenting to universal family health services. Further, little is known about effective ways to support mainstream child health services to develop staff knowledge and skills to work effectively with parents affected by substance use issues.

What this paper adds
- A major part of the focus of this work has been the development of a clinical pathway for women, their children and families affected by substance use in a community child health setting. Clinical pathways promote consistency, continuity and coordination of care; the impetus to incorporate evidence into practice; and mechanisms to evaluate practice. This paper describes the evaluation of this clinical pathway, providing some important outcomes that may be useful to guide other child health services concerned with this issue.
Declarations

Guarantor and reprints Robyn Penny, Clinical Nurse Consultant, Community Child Health Service, PO Box 1507, Fortitude Valley, QLD 4006. robyn_penny@health.qld.gov.au

Disclaimer/competing interests There are no interests that would bias the publishing of this paper.

Contributorship Concept of study JP and RP; data collection RP; statistical support JP; written by RP and edited by JP.

Grants This study was made possible with funding from the Golden Casket fund.

Ethics This study was approved by the Royal Children's Hospital Human Research Ethics Committee, the Royal Brisbane and Women's Health Services District Human Research Ethics Committee and The Prince Charles Hospital and Health Services District Human Research Ethics Committee. Permission for specific data was also gained from the Research Ethics and Governance Unit Queensland Health.

Background

Child health services have been provided in Queensland communities for over 90 years. These services provide an opportunity to engage families who may have never accessed health services previously. This includes families where parents have substance use issues. International estimates suggest approximately 10% of children live in households where there is parental alcohol abuse, dependence and/or substance dependence. This parental substance misuse often occurs in family environments characterised by domestic violence, psychiatric problems, social isolation and extreme financial disadvantage. Children of parents and carers who use substances are at increased risk of neglect and abuse and spending time in out of home care. There is also a significant risk of the intergenerational flow of substance use and misuse. This issue is important because community child health services are increasingly coming into contact with families affected by substance use; however, not all services have the capacity to provide information and support to families specifically affected by substance use. The key issue is to develop the capacity of child health services to engage and work with families in a primary preventive framework.

A review of one community child health service identified that staff lacked knowledge and skills in engaging and working with families with substance use issues, resulting in considerable variation in practice. A working group of staff and service partners met over 12 months to respond to these findings. A clinical pathway design was chosen by this group as one potential means to develop practice and improve outcomes for families. Clinical pathways are designed to improve quality and coordination of care and to link evidence to practice for specific health conditions. Specifically, they aim to optimise patient outcomes and efficiency by clearly articulating multidisciplinary clinical interventions, time frames and expected outcomes. They promote patient-focused care, increasing participation in care. Initially this clinical pathway (SUPa) was implemented in a small pilot study within this service. However, a larger scale evaluation was needed. This paper discusses the results of this expanded evaluation of SUPa.

Methods

This prospective quasi-experimental study quantitatively and qualitatively evaluated the SUPa. Evaluation refers to collecting and analysing data to review new practices. Evaluation takes into account both process (how the change is being implemented) and outcome (how outcomes are achieved). The SUPa consisted of care items arranged in phases with expected outcomes. Outcomes were recorded on each of the four phases of SUPa that covered the immediate antenatal period until the infant was one year of age. Deviations from planned interventions were recorded as variances. The specific assessments and interventions included in SUPa centred on harm minimisation and substance use; parent–infant relationship development; community supports; mental health, wellbeing and stress management; and ongoing development of parenting safety plans. Women and their infants were assigned to a control or intervention group based on their location. The control group continued to receive standard care from a child health nurse (CHN) either home visiting or families attended a child health centre. Standard care may or may not have included consultation with an early intervention parenting specialist (EIPS) but did not include specific assessments and interventions included in SUPa. Data was recorded through chart audit. Focus groups were used to collect data about staff experiences of SUPa. The research was conducted from July 2008 until December 2009. Ethical approval was obtained from three Queensland Health Service Districts.

Chart audit

There were eight overall outcome measures for SUPa. These included the infant’s vaccination up to date; growth within normal limits; constant caregiver with the infant throughout the trial; length of engagement (months) with the child health service; absence of Department of Child Safety involvement with the family; evidence of safety plans in the chart; family connected with other services for support; and infant’s development within normal limits. Vaccination data was obtained from the Vaccination Information and Vaccination Administration System (VIVAS) database. Permission to access VIVAS data was obtained through the Research Ethics and Governance Unit Queensland Health. Data also included the outcomes of each phase, variances, assessment tools and completion of pathway interventions. Data from the chart audit was entered into SPSS Version 17 for analysis.

Focus groups

Focus groups are small groups of individuals brought together by a moderator to explore attitudes, perceptions, feelings and ideas about a specific topic. In this study, CHNs and EIPS participated in the focus groups. The EIPS are social workers...
and psychologists who have specialist training to work with families to support parenting. The CHNs have postgraduate education in child and family health. The principal researcher facilitated three focus groups. Group discussion was recorded and converted into a text document by a voice to text specialist. NVivo Version 8 was used to organise the data for thematic analysis.

Samples
A convenience sample of 31 women who met the inclusion criteria participated in this study. Eligibility was assessed following routine health assessments in the maternity and child health settings. Women or carers disclosing substance use within a dysfunctional, harmful or dependent range were recruited to SUPa. Guided by the World Health Organization ICD-10 classifications this range of use was considered to have the potential to negatively impact parental health and parenting capacities.

The intervention group allocated to SUPa care consisted of 14 women with infants in the metropolitan site whilst the control group consisted of 17 women and babies in a separate metropolitan area. Although intended to recruit women in the non-metropolitan site to SUPa care, no clients were able to be recruited. All but one client in the SUPa group received care by home visit. Four women withdrew consent for the study during the course of the research leaving 11 in the intervention group and 16 in the control group.

The focus groups consisted of a purposive sample of 21 staff members who had used the pathway over the course of the study period. Even though no women were recruited to the pathway in the non-metropolitan site, staff still participated in a focus group to contribute their experiences. Questions used to trigger focus group discussion are included in Appendix (i).

Descriptive statistics
The health history of women participants is outlined in Table 1. The only statistically significant difference between the two groups was a higher report of family history of postnatal depression (PND) in the SUPa group.

There was no statistically significant difference in the two groups of women on current substance use. Slightly more in the SUPa group (63.6%) reported current substance use. A greater proportion of women reported smoking tobacco during pregnancy (52%) than in Australian data (17.3%)13. A small proportion of women (18.5%) reported consuming alcohol in the pregnancy compared to national data (60%); however, there are differences in data collection parameters between this service data and national data, which may account for the difference. The most common drugs used by the women in this study (in order) were cannabis, amphetamines, heroin and methadone/subutex. Cocaine, ecstasy and endone were less frequently reported. Half of the women in the cohort reported using more than one substance concurrently.

There was no statistically significant difference between the groups of infants. Compared to national and state benchmarks there was a slightly higher proportion of Indigenous infants enrolled (11%) than in the general population of Indigenous children in Queensland (7.1%)14. Twenty-five per cent of the infants were low birthweight. The mean birthweight of the

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**Table 1. Health of women.**

<table>
<thead>
<tr>
<th></th>
<th>Intervention (n=11)</th>
<th>Control (n=16)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (%)</td>
<td>No</td>
<td>Missing data</td>
</tr>
<tr>
<td>Medical illness of mother</td>
<td>3 (27.3)</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Physical disability</td>
<td>*</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Intellectual disability</td>
<td>*</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>History of mental illness</td>
<td>7 (63.6)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>History of postnatal depression</td>
<td>3 (27.3)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>History of childhood abuse</td>
<td>*</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Current abuse in environment</td>
<td>0</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

* Denotes data less than 3.

**Table 2. Characteristics of infants.**

<table>
<thead>
<tr>
<th></th>
<th>Intervention (n=11)</th>
<th>Control (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6 (54.5)</td>
<td>12 (75)</td>
</tr>
<tr>
<td>Female</td>
<td>5 (45.5)</td>
<td>4 (25)</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Identified as Indigenous</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Birthweight &lt;2500 g</td>
<td>4 (36.4)</td>
<td>*</td>
</tr>
</tbody>
</table>

* Denotes data less than 3.
Table 3. Outcomes for infants and women

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention (n=11)</th>
<th>Control (n=16)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccination up to date</td>
<td>n (%): 9 (81.8)</td>
<td>11 (68.8)</td>
<td>.61</td>
</tr>
<tr>
<td>Child’s growth within normal limits</td>
<td>n (%): 9 (81.8)</td>
<td>15 (93.8)</td>
<td>.44</td>
</tr>
<tr>
<td>Constant carer throughout trial</td>
<td>n (%): 9 (81.8)</td>
<td>15 (93.8)</td>
<td>.44</td>
</tr>
<tr>
<td>Engagement with service</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Did not engage in community service</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>0–4 months</td>
<td>*</td>
<td>10 (62.5)</td>
<td></td>
</tr>
<tr>
<td>5–6 months</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7–9 months</td>
<td>5 (45.5)</td>
<td>3 (18.8)</td>
<td></td>
</tr>
<tr>
<td>12 Months</td>
<td>3 (27.3)</td>
<td>* (6.3)</td>
<td></td>
</tr>
<tr>
<td>Engaged at completion of SUPa trial</td>
<td>8 (72.7)</td>
<td>3 (18.8)</td>
<td>.005</td>
</tr>
<tr>
<td>Child safety report/cases</td>
<td>3 (27.3)</td>
<td>6 (37.5)</td>
<td>.18</td>
</tr>
<tr>
<td>Ongoing safety plan for parenting and substance use documented</td>
<td>9 (81.8)</td>
<td>6 (37.5)</td>
<td>.043</td>
</tr>
<tr>
<td>Connected with other services</td>
<td>3 (27.3)</td>
<td>*</td>
<td>.62</td>
</tr>
<tr>
<td>Child’s development within normal limits</td>
<td>10 (90.9)</td>
<td>14 (87.5)</td>
<td>.64</td>
</tr>
</tbody>
</table>

* Denotes data less than 3.

intervention group was 2862 grams and the control group 3197 grams. In Australia, 6.4% of infants are currently born below 2500 grams at birth\(^1\). Twenty per cent of the low birthweight infants were Indigenous. Babies born to women with a drug diagnosis are more likely to be of low birthweight and to have an admission to neonatal care units\(^1\). In this cohort over one-third (37%) of the infants spent time in the intensive or special care nursery after birth compared with the national data (15.5%)\(^1\).

Results

Statistics for the outcomes of SUPa are presented in Table 3. There were two statistically significant differences between the SUPa and control groups. Firstly, the SUPa group were significantly more likely than the control group to have an assessment and discussion of substance use and a documented safety plan for parenting throughout the trial. However, at the initial family assessment there was no statistically significant difference (p\(=.68\)) between the SUPa (91%) and control groups (87.5%) on this safety planning. This suggests that SUPa assisted staff to continue safety planning as an ongoing activity rather than a ‘one off’ at the first visit.

Secondly, SUPa clients remained engaged with the service significantly longer than the control clients. In this study three women (18.8%) in the control group and eight women (72.7%) in the SUPa group were still engaged at the end of the trial.

Focus groups

Data from the three focus groups were thematically analysed. The following themes emerged.

Practice change: “Structure with flexibility”
This was the first clinical pathway used in this setting and staff spent some time becoming accustomed to the documentation. Most of the discussion focused on a balance between a structured model of care and the need for flexibility. There was evidence that staff used their clinical judgement to tailor the pathway care with individual families.

Assessment tools: “Starting the conversation”
This discussion took up a large part of the group time. One nurse described it as, “Starting the conversation”. It focused on how the new assessment tools had facilitated conversations with families that had not previously routinely occurred (for example, assessment of maternal/paternal–infant attachment).

Knowledge: “Getting more comfortable”
SUPa facilitated the acquisition of knowledge and skills in working with families with substance use issues. This was described as, “a learning curve” A number of the staff had initiated ongoing education for themselves and their teams as a result of SUPa.

Teamwork: “A working together thing”
Nurses and EIPS described working better as a team to support each other as an important outcome. Even when the EIPS was unable to get in to see the family the CHNs still discussed cases with EIPS for support behind the scenes, something they appeared to value highly.

Engaging families: “Getting in – proceeding softly”
Staff talked about engaging clients and the need to gain trust and readiness to work together. This was described as a balance between the need to, “Get in” and proceeding, “Softly softly”. Staff identified significant variation in individual family situations and needs.

Discussion

Ongoing safety planning is a unique finding commonly not
discussed as a measure in other studies. In maternity settings, standard alcohol and drug assessments are being used, and domestic violence screening has been in place in Queensland for many years. However, the unique focus for SUPa is to apply these assessments in a parenting context by discussing with families parenting safety plans. Safety planning is important given the high correlation between family violence, child protection and substance use issues and children entering care.\textsuperscript{1,18-19} Safety planning in this practice context encourages a discussion of family violence in terms of children witnessing events, not just the potential for physical harm.

Engaging vulnerable population groups, including substance-using women, is well discussed in the literature\textsuperscript{20-25}. Findings of this study suggest that retention in programmes can be maintained with SUPa, while other authors have noted significant loss to follow-up\textsuperscript{24-25}. The uniqueness of SUPa is that it involves home visiting CHN and EIPS who have specific knowledge and skills in child health and parenting. Not all families accepted the EIPS for the home visits; however, there were significantly more engaged with SUPa families than with the control group. Standard care may or may not have included home visiting and if engaged with the EIPS, it is likely to have been short term. This suggests that SUPa care had a greater influence than the mode of service delivery (home visiting). Further, a particular strength of SUPa is that it specifically identifies what interventions occurred during home visits.

Engaging and remaining engaged with vulnerable families is complex. Attrition in this client group is high. In this study, SUPa families remained engaged longer with the service, which provides the opportunity for longer term benefits. For example, Olds demonstrated positive child and maternal outcomes remained two years after the end of a programme, suggesting this allowed families to make a difference for themselves and their children in the longer term\textsuperscript{26}. The short-term follow-up of SUPa did not allow for this evaluation. The need for longer term evaluations have been noted by other researchers\textsuperscript{27}.

This study adds to the body of evidence that accounts for the complex and skilled nature of engaging with families. A clinical pathway approach may be one active method to maintain engagement of families with a primary prevention service within the first year of life. SUPa appeared to facilitate the therapeutic alliance between the staff and families. Meier identified that an early therapeutic alliance appears to be an important predictor of engagement and retention in drug treatment\textsuperscript{27}. Overcoming fear, building trust and seeking mutuality are three important phases of engagement that mothers with at-risk children negotiate with nurses and family visitors\textsuperscript{28}. The experiences of the focus group participants suggest these are important factors in engaging and continuing to work with vulnerable families. It is feasible that women with substance use issues require more proactive approaches to engage and establish trust, since they often report family and relationship difficulties and may lack adequate templates for forming and sustaining supportive relationships. In addition, women frequently report previous negative experiences with services, resulting in distrust of health and welfare agencies\textsuperscript{29}. Staff in this study demonstrated their abilities and commitment in engaging and continuing to work with families, even though establishing the relationship was complex work. Maternal and child health nurses, midwives and alcohol and drug nurses are most associated with more positive therapeutic attitudes to working with patients who use illicit drugs\textsuperscript{30}. Ford and colleagues suggest this is attributable to the ‘enabling’ care culture that exists in these practice groups.

Engaging families with SUPa involved a partnership approach to address family priorities. Some of the interventions were delayed to meet more immediate family needs. This was demonstrated by the use of the ‘structure’ (knowing what to do) of the pathway and the need to be ‘flexible’ (knowing when the time was right to do it). Other studies have found care can be improved by focus and structure\textsuperscript{31,34}. Structure can be particularly useful for new staff\textsuperscript{30}. It is, therefore, likely that structure is also important when learning new practice skills. This study suggests that although SUPa was a structured care plan it was sufficiently flexibility for staff to use clinical judgement to engage with families. In other clinical areas where there is variability and complexity in clients, such as mental health settings, pathways can be adapted to local circumstances and client conditions\textsuperscript{36-37}.

Improved teamwork highlighted in this study was directly attributed to SUPa, a positive outcome of clinical pathway use in other studies\textsuperscript{33,35,38-39}. Similarly, improved consistency and continuity of care are also linked with clinical pathways\textsuperscript{30}. This study has shown that teamwork was important when working with complex clients. SUPa is a multidisciplinary care pathway. Nurses and EIPS engaged with families to achieve shared responsibilities, whilst having clearly articulated roles and responsibilities. This is a key aspect of clinical pathway ideology. However, in this study, even if EIPS were unable to engage with families, CHN described the support of the EIPS as invaluable. Other staff similarly discussed the importance of having alcohol and other drug service staff available for support. Role support, or the nurse’s belief that they could find someone to help with personal and clinical issues related to patient care, when working with patients who use illicit drugs is the strongest driver of therapeutic attitude to patients\textsuperscript{30}. Ford and colleagues suggest that education alone is unable to exert a positive effect upon this therapeutic attitude without role support\textsuperscript{30}.

Negative feedback from staff in this study included time pressures when using the assessment tools. This was balanced with the perception of improved dialogue with clients due to using the tools. Staff used the tools to open conversations with families regarding their goals, to assess readiness for change and to develop parenting capacities. Prochaska and DiClemente first described this process of change in 1982, with the Stages of Change Model\textsuperscript{41}. It is likely that the staff in this study were assessing readiness for change by developing insight and awareness with families so they could accept
ongoing support for their personal and parenting needs. Staff were acutely aware that while different women were at different stages of readiness, responsibility for change rested with the women themselves.

Most of the negative experiences of staff related to documentation and paperwork. This is a common finding with clinical pathways. In fact de Luc found that all of the unfavourable comments staff made in their study related to documentation issues, even though 81% of patients felt that the documentation had helped them better understand their care. Whilst the pathway design was new to this area of practice, staff continued to use some existing documentation systems. Some duplication may have been reduced with ongoing support and education around change. A significant amount of documentation was required for the assessment tools and this warrants some review.

The need for ongoing education discussed by the staff in this study is an issue often identified when implementing new models of care using pathways. Ongoing education is necessary to create change, support the change and assist staff to ‘fine-tune’ practices. One factor identified in the literature for ongoing clinical support for pathways is to have a facilitator who was readily available to staff. Staff in this study highlighted their need for ongoing education on drug and alcohol issues. This was an important opportunity for networking with local drug and alcohol service staff.

Limitations

There are a number of potential limitations of this evaluation that warrant further discussion. The small sample size limits the ability to generalise at a population level. However, the demographic characteristics of the intervention and control group samples were similar across many variables except for reporting a family history of PND. The sample was a convenience sample of women who met the inclusion criteria. Non-probability sampling may limit the findings if the sample is different to the general target population. Whilst a number of women had declined to participate in the research, no information is available on characteristics of this group. This makes participation bias a possibility. Recruiting vulnerable women can be difficult and disclosing substance use, particularly illicit drug use, comes with a degree of concern for parents. This can be a disincentive for women to be involved in programmes if they fear losing their children by disclosing illicit drug use.

The short duration of follow-up in this study is also a limitation. Although length of engagement and safety planning with parents were important findings in the short term, other child health outcomes in terms of parenting, child safety and family supports in the longer term are necessary. This is recommended for further work.

The attrition in this study is also a limitation. Of the 16 subjects and children enrolled in the control group, only three were still engaged at the end of the study, compared to eight of the 11 subjects in the intervention group. This reduced the ability to measure the outcomes to consistent timelines for all subjects. The only definitive measure that was possible at the end of the study for the subjects was vaccination status. Only one child in the study was unable to be located on the VIVAS database.

Conclusion

The findings of this evaluation indicate SUPa is an innovative way to embed evidence into practice for parents with substance use issues presenting to primary care services. It is difficult to make a definitive judgement on outcomes for the child due to the short-term follow-up and small sample size. However, there is promising evidence that SUPa improves engagement and safety planning with parents and that staff developed their skills in working with families. In the non-metropolitan site the perception of staff is that SUPa did not readily fit with the current model of care being provided, which suggests that services wishing to utilise this model will need to assess their ability within their current resources to implement such a model.

Implications for practice

Substance use in families is a common finding in the community. This has the potential to negatively affect infants and families in both the short and long term. For services seeking to develop capacities for working with parents affected in this way SUPa has demonstrated some important outcomes. Ongoing work from this research has further developed the tool which is currently being implemented across this service.

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References


Appendix (i)

Trigger questions for staff focus groups:

What did the pathway change if anything in your practice?

How did you find the assessment and screening tools?

Has use of this clinical pathway changed your knowledge and skills when working with families?
Don’t get lost in translation: nursing children as medical tourists

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Abstract
Medical tourism is a growing trend in health care as families seek more affordable options in medical care and treatment for their children. Children who require care outside their home country present special challenges, dilemmas and issues for nurses who must provide that care. Culture, language and social support must all be considered in a family-centred care approach. This paper explores the emergence of medical tourism as a health care phenomenon, and explores the essential skills of an experienced paediatric medical tourism nurse in Israel.

Keywords: medical tourism, culture, family, family-centred care.

Introduction
This article explores the impact of the growing trend of medical tourism on children and their nursing care. A fundamental issue related to medical tourism is the generally accepted requirement of all nurses to provide culturally safe care to all individuals. Culture, language and social support must all be considered in a family-centred care approach. This paper explores the emergence of medical tourism as a health care phenomenon, and explores the essential skills of an experienced paediatric medical tourism nurse in Israel.

What is known about this topic?
• Little nursing literature exists which explores the nurses’ role in medical tourism.
• Other health literature explains that medical tourism is a growing phenomenon in many countries.

What this paper adds
• Nurses are pivotal in the delivery of health care to children who are medical tourists.
• Highly specialised nursing care is needed to provide culturally safe care to medical tourist children and their families.
• Nursing roles in Israel are being set up to provide this type of care.
• Core to the role is highly specialised knowledge about family-centred care, management, cultural safety, a range of language skills and excellent communication ability.

Declarations
Competing interests Nil

Funding Nil

Ethical approval Helsinki Committee for Human Rights of Sourasky Medical Center Number 0534-09-TLV

Guarantor EBS

Contributorship EBS concept of paper, manuscript preparation and editing; CB ethics application, preparation and writing OF data collection; LS assistance with writing; all authors contributed to crafting and editing paper.

Declaration
Competing interests Nil

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Guarantor EBS

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and are unlikely to adopt different practices. Consequently, nursing staff need to be aware of the differing circumstances of such children and their families and find ways to provide a high level of care without compromising the family’s cultural and social requirements. This paper explores some of the problems, issues and potential approaches to nursing children as medical tourists.

**Medical tourism**

Medical tourism, a US$60 billion a year business, is travel outside one’s homeland for the purpose of receiving health care\(^2\), which has grown by 20% per year due to escalating treatment costs and access issues such as lengthy waiting times for many procedures. The fundamental rationale for seeking treatment outside one’s home country is that treatment is as good, if not better and affordable\(^3\) as that available at home. Furthermore, in some instances, a client may require anonymity that may not be feasible in a home country\(^4\).

While there are historical precedents for medical tourism, the acceleration in patient numbers began in the 1980s as consumers sought affordable options for health problems\(^5\). Widespread internet access enables potential patients to explore many possible locations for treatment and health care has become a marketable commodity in a global economy. The typical medical tourist is 50 years of age\(^6\); however, a number of children have also become medical tourists. Therefore, children do not fit the profile of the typical medical tourist and require different approaches than the average adult patient.

**Marketing medical tourism**

Many countries actively advertise their services and companies have developed that specialise in arranging overseas care, marketing packages that combine hospital care and tourist activities. The rationale for some countries is economic improvement, as overseas patients pay cash for procedures while their companions spend money on tourist pursuits. In light of the current global economic crisis, it is probable that the search for affordable medical care will increase the number of patients who become medical tourists. While it must be acknowledged that medical tourism will increase the number of patients who become medical tourists, it is probable that the search for affordable medical care will increase the number of patients who become medical tourists. While it must be acknowledged that medical tourism provides lifesaving care in many instances, it is fundamentally a business enterprise and, as such, raises ethical and legal issues concerning the commoditisation of health care.

Numerous countries actively market medical tourism, prominently, Thailand, India, Singapore, Argentina, Belgium, Israel, the United States and South Africa. Israel has become a centre for medical tourism for several reasons. Firstly, the country is easily accessible, with direct flights from Europe, North America, Asia and Africa. Secondly, health care standards are generally high, with high-level academic and clinical preparation of Israeli health care professionals. Reciprocal visits with centres known for their excellence in other countries are common and many Israelis are involved in internationally significant research. Thirdly, Israel has a large immigrant population with many multilingual, well-educated citizens who can assist arriving patients with their initial culture shock. Finally, medical tourism is viewed within Israel as a non-political path to promote peace; specifically, when patients arrive for treatment from Muslim countries, including Jordan, Iraq, Kuwait, Dubai, Gaza and the Palestinian Authority (West Bank)\(^6\).

**Medical tourism in Israel**

Approximately 15,000 medical tourists arrived in Israel in 2006 and 27,000 in 2009\(^7\).

Half of all patients arrive from Eastern Europe, with others primarily from Jordan, Cyprus and the Palestinian Authority or other neighbouring countries, Western Europe and the US\(^2\). In light of Israel’s development as a centre for medical tourism, it follows that it provides a basis to begin to explore nursing issues related to the care of children as medical tourists and has relevance to nurses in much of the world.

A number of Israeli hospitals are engaged in paediatric medical tourism\(^7\) including Dana Children’s Hospital, which was opened in 1991 as part of the general complex of Tel Aviv Sourasky Medical Center\(^8\), a tertiary 1100-bed facility established in 1899 in the heart of Tel Aviv. Out-patient clinics and a child development unit are part of the hospital services which include neurosurgery, general surgery, oncology-haematology, cardiac and many other tertiary-level specialised services for sick children. It has 120 beds, with 8564 admissions in 2010\(^9\). Many of the nurses have advanced qualifications in paediatrics; nursing unit managers often hold master’s degrees and, in general, only registered nurses are employed on wards. The Dana Children’s Hospital has a medical tourism department with a nurse coordinator with 12 years’ experience in her role; thereby providing a relevant environment to explore the significance of the paediatric medical tourism business, the role of the nurse coordinator, the impact on the nurses and the nursing care of this population of children.

Many of the children who arrive as medical tourists at Dana are from the Former Soviet Union (FSU), Gaza, Cyprus, Greece and the Balkan countries and have had previous treatment in another country which has not been successful, while others arrive because the necessary treatment is not available in their home country.

**Issues in care provision**

Paediatric medical tourists arrive through several means, but pre-planning the admission is crucial in anticipating particular needs and organisation of appropriate support. Children who arrive with their families via a broker appear to have the smoothest transition to hospitalisation. Brokers ensure that all documentation has been prepared, including previous medical records and visas; that the hospital is informed of the arrival time and the flight met by trained staff if necessary. A small hotel is adjacent to the hospital and the broker may reserve a room for the parents or lease
an apartment and assist the family in the bewildering but essential daily tasks in a foreign country, such as supermarket shopping. Working through a broker may be ideal, but not all children arrive with such meticulous preparation.

A number of children have relatives or family friends in Israel, often from the FSU or Gaza and treatment and support is arranged by these contacts. Others have no family members, friends or support system; these families face a number of difficulties and pose special challenges for the nurses. However, far more difficult are the children who arrive with no family or support; they are alone in a strange country.

**Nursing issues**

The issues and complexities surrounding the hospitalisation of children as medical tourists are primarily related to cultural safety and communication. While many issues may be similar for any child or family of foreign origin, a large majority of the children who arrive at Dana have already experienced hospitalisation and the decision to seek care at Dana is a last effort for seriously ill children. Undoubtedly, this stress, travel and financial strain compounds cultural issues involved in seeking treatment outside their home country.

A high percentage of the Israeli population are immigrants who speak languages other than Hebrew outside the work environment and are familiar with culturally grounded behaviours. It is generally believed in Israel that families with children who are medical tourists will have their needs anticipated and addressed and nursing staff will be particularly attentive to their requirements. However, unlike new immigrants who choose to integrate into Israeli society, medical tourists have no reason to adapt to local cultural practices, nor learn the language and, therefore, the issues that arise within any country that relate to cultural differences of medical tourists may apply.

Family-centred care is the underlying approach for all children and families; however, the children who arrive as medical tourists pose particular challenges that require patience, understanding and considerably extra time investment to ensure the highest quality of care is delivered. Bearing in the mind the critical importance of initial contact, rapport and trust, policy at Dana dictates an initial meeting with the medical tourism nurse as early as feasible. The major issues identified in general by the nurse coordinator are cultural safety and social problems. These include language, food support groups and systems, and political issues.

**Language and support systems**

The Dana nursing staff includes many nurses who are immigrants from the FSU and consequently fluent in Russian; while many staff are fluent in Arabic. The nurse coordinator is fluent in English as are many of the nurses on the wards, but if no ward staff member is fluent in the child’s native language, a professional hospital interpreter is provided. This is critical as nurses are committed to involving the child and family in the care plan.

Patient and family education is fundamental, especially as many of the children require complex procedures, are likely to be discharged for a period of time and return for ongoing care. Parents must be assisted to understand procedures, the effects of anaesthesia on their child if surgery is required and what to expect postoperatively. It is crucial to involve parents and children at the level that they wish to be involved in decision making and care provision, and all this must be done in a range of languages.

**Food**

Changes in diet and familiar food availability pose problems. While staff attempt to provide meals that are acceptable to all children and a small food court is attached to the hospital, often, it is the support systems outside hospital that provide the most appropriate assistance. Family members are often unfamiliar with local foods and bewildered in supermarkets with products labelled in Hebrew. One solution for children from Gaza and the Palestinian Authority is an Arab volunteer group from Jaffa that works with staff to provide meals that are familiar, nutritionally acceptable and culturally suitable for children and parents. These volunteers serve a second significant purpose as a social support network. This is critically important as some children from Gaza arrive without parents, who remain at home to care for other children.

**Religious observance**

Additional considerations for nursing staff are prayer and religious holidays of any denomination. Every effort is made to accommodate all religions and whatever level of religious observance is considered significant by the child and family. This not only includes the variations in level of observance for the Jewish population, but also Christians and Muslims. Parents are assisted to locate appropriate churches or mosques; prayers rugs are offered for Muslims and a rabbi is in attendance to support any child and family, irrespective of religious background.

**Political issues**

Political differences are never allowed to influence the care of any child or family at Dana, but their impact must be acknowledged. The nurse coordinator often needs special skills to identify and deal with any unspoken fears on the part of the child or family. An early meeting with the nurse coordinator to establish rapport and build trust are important foundations that enable the nurse, child and family to work together and an important part of this is to identify cultural needs that relate to language, food, social support and any political issues that may be of concern to the parent or child. While local variations may exist, it is likely that such issues may arise with any child and family who travel for the purpose of receiving medical care and nurses should be aware of their existence, assess the level of intervention required and provide solutions that are appropriate to the family.

**The nurse in children’s medical tourism**

Minimal nursing literature has described or analysed the
relatively new role of nurses in medical tourism. Many hospitals appoint a nurse coordinator, but, ultimately, staff nurses provide the ongoing care of any patient. Nevertheless, the resolution of issues that arise in the care of the child and family are the direct responsibility of the medical tourist nurse coordinator who must liaise with staff, work with the family and child, and utilise appropriate support services. Consequently, such a nurse must have excellent liaison and communication skills. Nurses who work in children’s medical tourism at Dana are required to have extensive experience in pediatrics and family nursing. Management experience is desirable and second and third language skills are essential. The role is challenging and patience and compassion for the children and parents is vital.

A medical tourism nurse serves as a conduit between children and families and the health service system; they answer questions and address issues and fears, which are not always articulated. The pervading philosophy is that the institution and staff must adapt to the children and their families in order to meet their needs. While planning and anticipating is crucial, flexibility is also necessary. The medical tourism nurse meets each family for at least an hour on admission and spends time on a daily basis with them, both during hospitalisation and the discharge period. Parents, children and staff can phone the nurse at any time and the nurse is effectively on call throughout the entire experience.

Each family is different and a nurse in medical tourism must be accommodating to individual circumstances and needs. Every child must be seen as special and never a routine procedure or admission. Therefore, the nurse cannot estimate the length of time for each meeting with a family, which depends on the specific needs of both child and family. Essentially, the family dictates the amount of time that they need support, that is to say, it is the parent and child as a family and their character that may dictate their needs, not the child’s illness.

One of the most challenging aspects of the role is preparing the child and family for major surgery. The nurse explains in detail what to expect pre- and postoperatively. At this point, it is common for parents to question their decision. No parent chooses for their child to become critically ill and it is important that the nurse reinforces that parents have done their best for their child. It is crucial that the trusting relationship is well established and the nurse appreciates that phone calls at all hours may require a return to the hospital to resolve an issue, assist parents in difficulty, or provide further support for the child. Parents and children are never completely alone; they have the full support of their nurse throughout the experience.

Conclusion

In light of the growing global trend in medical tourism, paediatric nurses in many countries may be involved in the care of medical tourists. Therefore, it is crucial to consider the context, planning and issues that invariably arise with children and families under such circumstances. Furthermore, while similar issues and problems may arise with any hospitalised child, the additional stress of overseas travel, financial strain and a foreign culture create additional stressors for the child and family. Unlike other families of foreign origin, for whom cultural safety issues may arise, children who are medical tourists are likely to present issues related to cultural and social expectations. Admission can be planned with this presumption in mind while still maintaining flexibility. Considering the predictions that medical tourism will continue to increase, there is a gap in current research and a need to examine the commoditising of children’s health care, the recent increase in paediatric medical tourism, and its impact in providing nursing care, and this gap should be addressed.

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Using the Delphi technique to develop standards for neonatal intensive care nursing education

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Abstract
The purpose of this study was to use the Delphi technique to determine the first draft of national standards for neonatal intensive care nursing (NICN) education. The Australian College of Neonatal Nurses (ACNN) endorsed the project and assisted in the selection of members for a panel of 13 NICN and education experts from all Australian states that conducted NICN education programmes. These experts were consulted over a period of seven months using the Delphi technique. The researcher initially developed a set of questions to guide the expert panel.

Over a series of three iterations and using a consensus level of 75% agreement, most standards were agreed to. Areas addressed were programme requirements, prerequisite requirements, programme leadership, theoretical programme structure and content, clinical education programme structure and content and educator support. Subsequent work will finalise the standards for publication and subsequent use by NICN educators and clinicians across Australia.

Throughout this paper, the terms ‘neonatal intensive care nursing’ and ‘neonatal nursing’ are used. The use of the word ‘nursing’ in these phrases refers to the provision of care to the infant in the neonatal intensive care unit (NICU). Both nurses and midwives provide this care.

Keywords: Delphi, standards, education, neonatal nursing.

Introduction
Nurses and midwives need quality education to equip them to enable them to practise in the highly technical and challenging environment of the neonatal intensive care unit (NICU), caring for critically ill infants and their families. Although neonatal intensive care nursing (NICN) as a speciality has developed significantly nationally and internationally over the last 40 years, there is no consistency to education of these nurses or midwives across Australia.

After an initial orientation programme, the pathway for most nurses and midwives who wish to make neonatal nursing a career is the completion of a formal NICN education course to equip them with the skills and knowledge to provide care for this vulnerable patient cohort. Around Australia, NICN education courses are offered as stand-alone Hospital Certificates in the tertiary sector as part of the requirements for a Graduate Diploma, Graduate Certificate and Master of Nursing, as well as Hospital Certificates offering credit towards a Graduate Certificate.

What is already known on the topic?
- NICN is a highly specialised field of nursing and requires exceptionally skilled and well-educated neonatal nurses who are appropriately prepared to care for their vulnerable patients and families. The use of nursing education standards ensures the quality of education programmes and their nursing graduates. In Australia, nursing education standards have been developed for undergraduate nursing programmes, but not for postgraduate programmes, such as neonatal intensive care nursing courses (NICNC). There is no consistency across Australia regarding NICNC curricula and the Australian College of Neonatal Nurses (ACNN) could play a lead role in the establishment of such guidelines.

What this paper adds?
- This research defines the first set of standards for NICN education in Australia, developed by an expert panel of neonatal clinicians and educators from all states. It demonstrates that the Delphi technique is well suited to this type of research, providing a means whereby busy professionals can contribute meaningfully to significant projects affecting their discipline.
Local programmes are subject to annual evaluations and three-yearly major curriculum reviews, with benchmarking being conducted against similar programmes nationally. Graduate outcomes have been largely dependent on local institutional requirements. Although locally determined graduate outcomes are met, there are no national guidelines that have set minimum standards for levels of award, integration of clinical and academic competence, prerequisite requirements, length, theoretical content, contact time and graduate outcomes in neonatal nursing education programmes. Consequently nurses or midwives completing NICN courses have varying knowledge and skills.

Anecdotally, neonatal nurses are subject to a review of their credentials and skills when they arrive in a new NICU and must undergo competency testing before their qualifications are fully recognised. National standards in NICN education would facilitate the transferability of qualifications across Australia. Without requesting information from each course coordinator individually across Australia, it is impossible to identify course content. This lack of transparency makes it difficult for prospective students to make informed decisions about providers.

Nationally consistent, high-quality education standards for NICN education would ensure that neonates, their families and the public’s expectations that nurses or midwives are appropriately qualified and experienced to care for sick and preterm neonates are met. A set of national NICN education standards would provide a benchmark for the ACNN to better promote excellence in practice, the professionalism of neonatal nurses and shape health policies and decision making in this area of expertise.

Study aims
This research study aimed to use the Delphi technique to develop the first draft of national NICN education standards to achieve consistency in the curriculum structure and implementation of NICN education programmes across Australia. Additionally, the study was intended as an exploration of the theoretical and methodological basis of the Delphi technique and its utility in establishing agreed educational standards.

Literature review
Current situation: standards of neonatal nursing education
Currently, there are no published standards for education of neonatal intensive care nurses internationally or nationally. Closely related, however, are the education standards for neonatal nurse practitioner (NNP) programmes developed by the National Association of Neonatal Nurses (NANN) in America, that define the minimum standards necessary for educating an NNP.

Many post-registration programmes in specialty areas of practice (such as critical care) are offered by universities and as such must meet the university’s requirements for a qualification within the Australian Qualifications Framework.

In addition, most courses take into account standards and competencies developed by the various nursing and midwifery colleges and speciality interest groups when framing their course outcomes. Professional associations are usually the first to recognise the need to standardise the provision of education to its members and they are generally the leaders in the process. Midwives have been leaders in the development of national standards for education and the Australian College of Midwives (ACM) has published national standards for accreditation of the three-year Bachelor of Midwifery programmes that lead to initial registration as a midwife in Australia. Pincombe, Thorogood and Kitschke believe that the standards provide a means for “…employers and clinicians to access a standardised and objective means to evaluate midwifery programmes”. The Australian College of Critical Care Nurses (ACCCN) published a position statement on the provision of critical care nursing education. Their recommendations included a focus on the level of programme that critical care nurses should undertake to prepare them for the role, the need for broad graduate outcomes, the support students need in the clinical setting, the need for recognition of prior learning, broad content areas of critical care education programmes and improving access to programmes. Although the ACCCN has now developed a role in reviewing curricula for resuscitation programmes, they have not developed specific standards for critical care education in Australia.

Methodology: the Delphi technique
Hasson, Keeney and McKenna describe the Delphi technique as a group facilitation technique: an iterative multi-stage process, designed to transform opinion into group consensus. The technique employs a panel of experts who answer a series of questionnaires, or respond to data sets without physically assembling. This facilitates the inclusion of individuals from a wide variety of locations.

Each round of questioning is followed with the feedback on the preceding round of replies, usually presented anonymously. As a result of receiving the group’s opinions, the experts are encouraged to revise their earlier answers in light of the replies of other members of the group. During this process the range of answers should decrease and the group should converge towards consensus.

Martino has conducted over 40 reviews of Delphi studies, and suggests that there are few hard rules for implementing the technique, but it typically has three distinguishing characteristics, the first of which is iteration with controlled feedback, where experts are surveyed multiple times. Iteration enables group learning and allows opinions to change with this learning. Rounds are reiterated as long as desired or necessary to achieve stability in the results. The second feature is anonymity. Participants remain anonymous to each other, avoiding influence by reputation, authority or affiliation and this enables them to change their opinions without losing face. The last feature is a statistical representation of the group’s response, where responses are summarised statistically. Often
panel members whose opinions fall in the bottom or top extremes (quartiles) are asked to give the group further justification, as in this study, where panel members whose responses were >75% variant from the mode scores of other panel members were given an opportunity to either revise them or explain their opinion further.

Whilst these three features are consistent with the Delphi approach, over the years modifications have occurred to the Delphi technique to suit the type of research being undertaken. In this study, an initial set of questions was developed by the researcher and circulated for comment to the panel as a starting point, rather than the panel writing the first draft of the standards. This modification has been utilised by many authors where the process begins with a set of carefully developed items. This modification typically improves the initial round response rate, provides a solid grounding in previously developed work, as well as reduces the number of rounds by one.

The questions in this study were used to elicit experts’ opinions about the content of future standards in NICN education. The questions were divided into categories, namely programme requirements including prerequisite requirements for student entry; programme leadership and support for learning; curriculum content; both theoretical and clinical; educational resources; graduate outcomes; clinical sites and learning opportunities.

Literature findings, the author’s experience as a neonatal nursing educator and the standards from other like professions were utilised as a starting point. The professional standards consulted were the:

- Australian College of Critical Care Nurses (2002) 2nd edn Competency Standards for Specialist Critical Care Nurses.
- Australian College of Critical Care Nurses (2006) ACCCN Position Statement on the Provision of Critical Care Nursing Education.
- Nurses Board of South Australia (2006) Standards For Approval of Education Courses.
- The Australian College of Midwives (2006) Standards for the Accreditation of Bachelor of Midwifery Education Programs Leading to Initial Registration as a Midwife in Australia.

The Likert scale was used in rounds two and three when participants were asked to make a choice regarding their agreement or disagreement with statements provided by panel members in response to the questions in round one, with responses varying from one for ‘strongly disagree’ through to five for ‘strongly agree’. The first round questionnaire was piloted with a group of four nurse educators who were not involved in the study and whose area of expertise was not neonatal (that is, midwifery and paediatric).

**Sampling method: selection of the expert panel**

The selection of the sample of ‘experts’ involves non-probability sampling methods; in this case, purposive sampling. In this study the researcher presented the research proposal to the ACNN Executive at their meeting in March 2007 and they agreed to support the study. Once ethics approval was obtained, the ACNN Executive members were asked to suggest panel members to invite to join the study. Sixteen panel members were sought in total – two educator representatives each from New South Wales, Western Australia and South Australia (that is, midwifery and paediatric). To guide the ACNN in choosing panel members, the following prerequisite criteria for panel members were utilised:

- possessed an NICN qualification
- had access to email on a regular basis (almost daily)
- was computer literate
- had at least five years’ experience teaching NICN in the case of the educators, or
- had at least five years’ experience at a senior level in a clinical role in an NICU in the case of the senior clinicians.

If invitees agreed to be involved, they were asked to contact the researcher. Fifteen of the 16 initial invitees contacted the researcher, and those 15 formed the expert panel. Of those 15, two did not return the consent form or respond to the first round of the study, so the panel eventually consisted of 13 representatives from the states that offered NICN education programmes; 10 educators and three senior clinicians, including one NPP. The educators were a mix of NICNC course coordinators (n=6) and clinical educators (n=4); some employed by universities and some by tertiary health centres (see acknowledgements).

**Conducting the study**

**Ethical considerations**

Ethical approval was obtained from the Social and Behavioural Research Ethics Committee of Flinders University, Adelaide, Australia. Once the nominees were approached by the ACNN Executive to ask if they were interested in being involved...
in the study, they contacted the researcher to confirm their participation. At this point, they were provided with an information sheet, which outlined the study procedures, research technique and references to further reading. They were then given an opportunity to ask any questions related to the study and invited to sign the consent form. The panel members understood that their voluntary participation in the study also included the ability to withdraw from the study at any time and, if requested, all information provided by them would be destroyed. Ongoing consent was assumed on the basis of the return of completed questionnaires. Participants were assured of the confidentiality of the information they provided and that their anonymity would be ensured during the study. The participants agreed that their personal information would be able to be revealed once the Delphi rounds were complete.

**Round one: the first questionnaire**
The round one questionnaire was emailed to the 13 participants as soon as the consent form was received. This questionnaire also requested demographic information. Participants were given one month to complete the first questionnaire. As soon as responses were returned, data analysis and preparation of the next round commenced.

**Round two: the second questionnaire**
The content of this questionnaire was formulated from the responses to the first. The participants' responses were all transcribed verbatim from round one into the single round two document and participants were then asked to score their agreement to each response using a Likert scale from one to five. The second questionnaire was then distributed to the 13 participants who had returned consent forms, even though three of these did not respond to round one. Their lack of response to round one could have been because it was time-consuming to complete (they were asked to indicate their level of agreement to 315 items), yet round two required only a score. With one month to complete the survey, the response to this round was 66%.

**Round three: the third and final questionnaire**
In this round the panel members whose scores were more than two quartiles variant from the mode of the rest of the panel received their score from the previous round in one column and, alongside it, the mode score of the rest of the panel. The percentage of agreement was also included. This provided each panel member with the opportunity to compare their responses with those of other members. They were invited to change their score or respond with further comments if they wished to, in light of their own personal further consideration, or the opinions of the panel. With one month to complete the survey, the response rate to this round was 86%. Table 1 is an example of one of the third round responses.

**Data analysis**
Responses from round one were collated into the round two questionnaire. The constant comparative method of data analysis was used to examine the data. Comments were transcribed initially verbatim into one document to keep the full meaning and intent of the argument intact, until eventually no new ideas appeared. At this point new content was summarised as long as the full meaning of the original statement was retained. This process leads to a level of data saturation that is said to add to the reliability of the data. Minority opinions and voices of dissent must be heard in the Delphi process so it is imperative that all comments are noted.

Ascertaining the level of collective opinion entailed the use of descriptive and non-parametric statistics. For example, round two required the data from the ratings of the items to be analysed by producing statistical summaries for each item. Central tendencies (means, medians and mode), levels of dispersion (standard deviation and the interquartile range) and the percentage of agreement were computed to provide information about collected opinion.

**Setting the level of consensus**
The level of consensus to be employed must be determined prior to commencing data collection. Unfortunately, a universally agreed consensus level does not exist for the Delphi, as the level used depends upon sample numbers, aim of the research and resources. McGaw, Browne and Rees considered the use of the mode score rather than the median score as a more appropriate measure of consensus. At the time this was considered a novel approach and since then the mode score has again been considered a more relevant measure of consensus. McCutcheon considered the use of the mode score as representing 75% of participant responses in her study of nurses' intuition. She argued that the mean score and the median score were not truly representative of the consensus model, whereas the mode score allowed the most frequently chosen response, however small or large, to be acknowledged and accepted. In this study the degree of consensus required was set at 75% in order to strengthen the outcomes of the study.

**Results**

**Overall participation and return rates**
Of the 16 expert panel members (11 nurse educators and four clinicians) originally invited by the ACNN Executive to participate in the study, 15 contacted the researcher and formed the expert panel. Thirteen panel members (10

Table 1. How often should the course curriculum be reviewed?

<table>
<thead>
<tr>
<th>Response</th>
<th>Your rating</th>
<th>Panel rating: mode</th>
<th>Panel percentage agreement</th>
<th>Your revised rating (if desired)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual review</td>
<td>1</td>
<td>4.5</td>
<td>66%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
educators and three senior clinicians) contributed to the study, and 11 (eight educators and three clinicians) completed all rounds. One educator (see * in Table 2) did not complete the questionnaire appropriately, giving only one answer for each bank of responses. Although the response was returned to her and an explanation given about the correct way to proceed and a phone call to follow up, she did not return the questionnaire at all after that point. Despite intense follow-up and contact made with another educator (designated with this symbol † in Table 2) who completed about one-third of the round two questionnaire, she was not able to respond further due to illness.

Round one consisted of eight main stem areas of questioning, with 65 questions in all. In round two there were 315 items for comment and/or score.

Table 3 summarises the agreement results of the Delphi rounds. It demonstrates that between rounds two and three, panel members increased their agreement rates from n=171 (12 + 126 + 33) to n=209 (14 + 161 + 34): a significant shift towards consensus.

Figure 1 depicts the number of questions sent back to the panel members in round three whose score was more than two quartiles from the panel mode, and the number of changes panel members made after viewing the results of the whole panel. The number of responses where panel members were given the chance to change their score ranged between participants from 12 to 72 items. On the whole, panel members were reluctant to change from their original score.

**Presentation of data: specific responses to the Delphi questions**

The purpose of the NICN education standards is to ensure that graduates of NICN education programmes are prepared for safe and effective neonatal nursing practice. Additionally the standards will provide criteria for the development, evaluation and improvement of new and established NICN education programmes. The panel reached agreement on most of the elements of the structure and content of the standards and these results are presented in Appendix 1. To summarise, the panel agreed to the following standards regarding:

- **Programme requirements** that is, that neonatal intensive care courses across Australia be offered over a 12-month period as a tertiary award with generic theoretical and clinical aims and outcomes. The curriculum should be reviewed every two to three years and the programme reviewed annually by a stakeholder group. Academic records should be kept for 10 years. The ACNN Competency Standards should be used to guide the clinical component of each course.

![Figure 1. Variations to round three responses.](image_url)

Table 2. Summary of participation rates and returns.

<table>
<thead>
<tr>
<th>Panel members</th>
<th>Invited</th>
<th>Agreed to participate</th>
<th>Subsequently withdrew</th>
<th>Delphi panel</th>
<th>Completed round one</th>
<th>Completed round two</th>
<th>Completed round three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse educators</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>9 *</td>
<td>8 W</td>
<td>8</td>
</tr>
<tr>
<td>Clinicians</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3. Summarised agreement results of the Delphi rounds.

<table>
<thead>
<tr>
<th>Round</th>
<th>Total items</th>
<th>Items with &lt;25% agreement</th>
<th>Items &gt;75% agreement</th>
<th>Items with 100% agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>315</td>
<td>12</td>
<td>126</td>
<td>33</td>
</tr>
<tr>
<td>Three</td>
<td>315</td>
<td>14</td>
<td>161</td>
<td>34</td>
</tr>
</tbody>
</table>
• Prerequisite requirements that is, that potential NICN course applicants should be registered as a nurse or midwife with a minimum of one year's post-registration experience, and experience in a NICU or special care baby unit (SCBU) in the previous 12 months prior to commencing the NICN course. Of those 12 months, ideally applicants should have 4–6 months’ pre-course experience in an NICU. During the programme of study, they should work in an NICU at least 0.5 FTE.

• Programme leadership that is, that the course coordinator must have a tertiary degree in nursing or midwifery and be working towards or have completed a Masters or PhD. He/she should have a Graduate Certificate or Diploma in Neonatal Intensive Care Nursing and a qualification in education, or be working towards one.

• The clinical education programme structure and content that is, that a clinical educator must be employed full-time to support the students during the programme. Specific clinical learning outcomes and specified skills must be attained to ensure the quality of graduates.

Limitations of the study
The participant selection process may have been affected by selection bias, as it was conducted by a small group of leaders in neonatal nursing who belonged to the ACNN Executive. By ensuring that each state had two representatives, it was hoped that this would be overcome. Given the criteria suggested for selection of the panel members, it is possible that their opinions may not reflect those of all neonatal nursing educators around the country. The findings may, therefore, be taken as the beginning of the development of a national consensus on the content of neonatal nursing education programmes, rather than the final prescription for the design of curricula. Providing an opportunity for all neonatal nurses or midwives to respond to the draft set of standards through the ACNN will ensure that the final set of standards is nationally representative of opinion.

Discussion
These responses will form the basis for the ACNN NICNC education standards and will set the minimum requirements for NICN education programmes in Australia. Once the standards are completed and published, they can be used to facilitate a nationally consistent approach to quality NICN education, and credits and experience accumulated during any NICNC in Australia will be able to be recognised, transferred and portable nationally. Additionally the standards will provide criteria for the development, evaluation and improvement of new and established NICN education programmes and allow the ACNN, as the professional body for neonatal nurses in Australia, to better promote excellence in practice and shape health policies in their area of expertise.

The Delphi method was well suited to this research study in that it facilitated the development of a consensus document by a group of experts who could not easily meet in person. NICN is a small sub-speciality in Australia and geographical and logistical issues create difficulties when seeking the expert advice from its members. Overall the Delphi technique provided a mechanism to capture, sort and distil diverse opinions of neonatal nursing and education experts across Australia to produce an important document that can ultimately impact positively on the outcomes of babies in NICUs.

The emergence of midwifery as a separate discipline from nursing and the feedback from midwives who are passionate about their profession has led the researcher to consider that the nomenclature of ‘NICN course’ warrants amendment. The title of the course does not acknowledge the midwives who may wish to undertake this programme and, in fact, direct-entry midwives with no nursing qualifications may feel excluded by the title. The researcher acknowledges this fact and, on resumption of the Delphi rounds, will ask for this issue to be considered.

Whilst panel members may agree in this study on the items to be included in the standards, implementation may not be straightforward. The reality of clinical practice may be far from the ideal, as local conditions impose barriers to execution of the standards. Each individual NICN programme will need to establish their own level of compliance according to their particular local conditions. Conformity with the standards cannot be compulsory, but may provide a lever for states to improve their programmes. The utilitarian nature of the framework for this study accepts this reality, as the end result of adoption of the standards has the capacity to improve the nursing care of thousands of vulnerable neonatal patients, the working lives of hundreds of neonatal nurses/midwives, and the job satisfaction of the 40 or so neonatal nursing or midwifery educators in Australia.

Recommendations
The following recommendations are made as a result of this study:

1. That the ACNN adopt the education standards for NICN education.

2. That providers of NICN education across Australia consider incorporation of the standards for NICN education into their NICN education programmes.

3. That the researcher and Delphi panel members work together over the next 12 months to establish graduate outcomes for NICNC graduates.

4. That the ACNN conduct a formal review of the use of the standards for NICN education in three to five years of their inception.
Acknowledgements
The researcher would like to acknowledge and thank the following members of the Delphi panel for their time, expertise and considerable work in the development of these standards. The table indicates the panel members’ roles and places of employment at the time of the study:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julie Bernardo</td>
<td>NNP</td>
<td>Flinders Medical Centre, SA</td>
</tr>
<tr>
<td>Sharon Downes</td>
<td>Neonatal Nursing Educator</td>
<td>Royal Children’s Hospital, Melbourne, VIC</td>
</tr>
<tr>
<td>Melissa Burnett</td>
<td>Neonatal Courses Coordinator</td>
<td>La Trobe University, Melbourne, VIC</td>
</tr>
<tr>
<td>Karen Hose</td>
<td>Clinical Nurse Consultant</td>
<td>Department of Neonatology, Royal Brisbane Women’s Hospital, QLD</td>
</tr>
<tr>
<td>Cheryl Norris</td>
<td>Neonatal Courses Coordinator</td>
<td>Royal Hobart Hospital, TAS</td>
</tr>
<tr>
<td>Kim Psaila</td>
<td>Clinical Educator</td>
<td>Liverpool Newborn Care, NSW</td>
</tr>
<tr>
<td>Meshall Curtis</td>
<td>Neonatal Nursing Educator</td>
<td>Nurse Educator, Neonatology Division, QLD</td>
</tr>
<tr>
<td>Rob Hull</td>
<td>Neonatal Courses Coordinator</td>
<td>Flinders Medical Centre, SA</td>
</tr>
<tr>
<td>Jane Davey</td>
<td>Neonatal Courses Coordinator</td>
<td>College of Nursing, NSW</td>
</tr>
<tr>
<td>Linda McKeen</td>
<td>Neonatal Courses Coordinator</td>
<td>King Edward Memorial Hospital, WA</td>
</tr>
<tr>
<td>Emma-Lee Anderton</td>
<td>Clinical Educator</td>
<td>King Edward Memorial Hospital, WA</td>
</tr>
<tr>
<td>Helen Patterson</td>
<td>Clinical Nurse Educator VET sector</td>
<td>Royal Women’s Hospital, Carlton, VIC</td>
</tr>
</tbody>
</table>

APPENDIX 1

Standard statements
The standards follow in bold type font and the rationale, background information and panel responses follow.

1. Programme requirements
A. NICN education courses should be offered as a tertiary award; i.e. graduate certificate.

In round two the panel had an 83% agreement level that the course should be offered as a tertiary award. By round three, the panel was in 100% agreement.

Arguments put forward by panel members that supported tertiary bases programmes included:
- Consistency across states would facilitate the transfer of qualifications from one institution to another, optimise the recruitment of neonatal nurses/midwives and rationalise the workforce.
- A hospital certificate may not have the same national and international credibility as a tertiary award.
- A hospital certificate is subject to local institutional variations in quality.

- Tertiary education offers the infrastructure of a large organisation whose speciality is education, enabling access to teaching and learning resources that may not be available at the hospital level, for example more extensive library and computer resources.
- Teaching staff may have broader expertise and be able to offer a wider curriculum.
- Even though a hospital certificate may have tertiary credit, this may not always guarantee the seamless granting of status into another award as a tertiary qualification would do.
- Tertiary centres might be seen to offer a higher level of academic rigor.
- Established links to masters programmes provide a career pathway for neonatal nurses/midwives to a Nurse Practitioner level.
- The Course Coordinator based in a tertiary setting may lack credibility if they do not have direct access to, and involvement in, the clinical environment.

Arguments put forward by panel members that supported hospital-based programmes included:
- One of the major advantages of the hospital programme compared to a tertiary award is its cost; hospital programmes can be offered at low or even no cost
- Entry procedures in hospital courses are often much simpler than the enrollment procedures in a tertiary award.
- Because the Nursing Unit Head of the NICU usually has to support each participant’s application in a hospital-based course to ensure staffing levels are maintained, the criteria used to judge students’ applications for the programme have more of an emphasis on clinical readiness that those used to accept students for a tertiary award, reducing the degree of student stress and subsequent attrition during the course.
- The hospital setting can lend clinical credibility to the course, whereas a tertiary-based programme may not have the capacity to ensure the same strong clinical links.
- A programme in a hospital stimulates others within the neonatal intensive care unit to continue their own learning and maintain their knowledge and skills, and provides role models for future recruits.
- Locally based programmes have more flexibility to manage workforce issues than tertiary-based courses. For example a study day organised in a hospital can be cancelled or reduced in hours when clinical demands are high. Students can attend lectures over the Christmas break rather than having to adhere to tertiary semester dates, which may not be suit the occupancy demands of the clinical unit.
• It may not be feasible for tertiary centres to run programmes such as NICN with such small numbers, yet the NICU can only release a small number of staff for a study day.

B. NICN education courses should be of 12 months duration.
The panel participants believed unanimously that the NICN course should be of 12 months duration. This opinion received 100% support throughout both rounds of the study.

C. NICN education courses curricula should be reviewed every two to three years.
By round three, 83% of panel members agreed that NICN education course curricula should be reviewed every two to three years by the stakeholder group, “…as NICU nursing care and even some of the basic understandings change frequently and rapidly” (Participant 4).

D. The following stakeholders should be involved in overall course implementation and planning:
• Neonatal nurse educators
• Expert neonatal nurse clinicians
• Nursing Unit Managers
• Tertiary representatives
• Heads of neonatal departments (nursing and medical)
• Industry partners i.e. hospitals with NICUs where students complete clinical experience.
• Student representative, and an
• Australian Nursing Federation (Union) representative.

Representatives from nurse licensing authorities and VET and Australian Quality Training Framework (AQTF) sectors were excluded by consensus from the course review process.

E. NICN education programmes should be evaluated annually.
Most panel members (91%; n=11) agreed that programmes should be evaluated annually. There was complete agreement that the course participants should evaluate each course, and the programme should be continually evaluated with regular peer and student review of all learning and teaching practices, with evaluation at the completion of each unit/module of the course and at the end of the course.

F. There should be a process of continuous quality review of NICN programmes.
All panel members (100%; n=12) agreed that with this statement.

G. The Code of Ethics for Nurses\textsuperscript{18} should be included in the curriculum documents.
All panel members (100%; n=12) agreed that with this statement.

H. Records of student demographic data, dates of the course, hours of experience in the varying clinical areas, lecture topics, assessment marks, competency achievement, course components, theoretical hours and performance appraisal should be recorded on an academic transcript and kept electronically for 10 years.
Most panel members (91.7%; n=11) agreed with this statement. The purpose of keeping this data would be to assess trends and to potentially provide government health departments with the information to enable an understanding of recruitment/retention/education issues. This reputable record of the student’s educational and clinical experiences can also be used as evidence of competence and achievement when applying for employment elsewhere, as well as a record to assist with the application of status for recognised prior learning.

I. Generic and broad aims and outcomes should be included in the course guidelines, reflecting the end point that needs to be achieved to be a competent NICNC graduate.
Most panel members (91.7%; n=11) agreed with this statement. The result would create a consistent understanding of the characteristics of a “…generically capable neonatal graduate who could assimilate into any neonatal unit (with appropriate orientation and support) and be capable of a higher level of neonatal nurse function. From these generic aims and outcomes each course would be able to adapt those aims and outcomes to meet specific facility needs” (Participant 4). This work is yet to be undertaken, and this aspect of the standards will require further exploration by the researcher and panel members.

J. The ACNN Competency Standards\textsuperscript{25} should be used to guide consistent educational outcomes.
The ACNN Competency Standards\textsuperscript{25} are nationally accepted as the neonatal nurse competencies expected of nurses/midwives working in that speciality, and most panel members (91.7%; n=11) agreed should be used nationally to guide consistent educational outcomes.

II. Prerequisite requirements
A. Potential NICN course applicants should be registered as a Nurse or Midwife with a minimum of one year’s post registration experience.
Whilst 91% (n=11) agreed with this statement, there was considerable variation in other opinions. Figure 2 summarises the options discussed in round two.

B. Students should have experience in a NICU or Special Care Baby Unit (SCBU) in the previous 12 months prior to commencing the NICN course. Of those 12 months, ideally applicants should have 4-6 months pre-course experience in a NICU.
Most participants agreed that students should have experience in a NICU (75%; n=10) or SCBU (91%; n=11) or either NICU or SCBU in the previous 12 months prior to commencing the NICN course. Five participants agreed that the students should have experience in a nursing or
midwifery area, but scored either NICUs or SCBUs highly as well. By the end of round three, 75% of panel members agreed that experience could be undertaken in a SCBU.

 Whilst most (83.3%; n=10) agreed that applicants should have four to six months experience in the NICU prior to commencing the course, there was a wide variation in responses, from “no experience necessary” (33.3%; n=4) to 12 months experience required (66.7%; n=8). Twelve months experience was thought to provide “a decent grounding into the nature of neonatal working environments and specific neonatal idiosyncrasies” (Participant 3) and allow recruits to familiarise themselves with the complex equipment in the NICU. Pragmatists considered the shortages of NIC trained nurses/midwives in recommending that prerequisite experience was unnecessary, and not mandatory.

 C. Full time employment in a NICU prior to entering the programme should be recommended, but not required.

 Few panel members [25% (n=3)] agreed or strongly agreed that potential students should work full time prior to starting the course; 66.7% (n=8) believed that three days a week would be adequate, and 83.3% (n=10) agreed that flexibility was important rather than a mandatory requirement to work full time. The participants recognised the requirement to strike a balance between the need for exposure to the clinical setting that builds confidence and competence, but also the need to provide a flexible family-friendly roster. In a stressful environment like a NICU, many nurses/midwives prefer to work part time. “With the current shortages of NIC trained nurses/midwives, facilitating flexible working hours encourages all age groups to the profession” (Participant 7).

 D. A student should be either sponsored to work or be employed within a tertiary neonatal unit for the duration of the course.

 There was 100% agreement from the panel with this statement.

 III. Programme leadership

 A. The Course Coordinator must have a tertiary degree in nursing or midwifery and be working towards or completed a Masters or PhD. He/she should have a Graduate Certificate or Diploma in Neonatal Intensive Care Nursing, and a qualification in education, or be working towards one.

 All panel members agreed with Participant 9, that as an educator, “fundamental educational knowledge concerned with micro-teaching skills, curriculum development, assessment, learning styles as well as how to develop and evaluate lessons plans and student learning was required”.

 B. The Course Coordinator should have five years post-registration experience to equip them appropriately for the role. He/she should have three-four years of experience as a qualified neonatal nurse before taking on the role. He/she should have previous experience in teaching in the clinical area, either as a clinical educator or in a mentoring role.

 In terms of experience, most respondents (91.7%; n=11) agreed with the first statement, and 100% of panel members agreed with the second part of the statement.

 C. The Course Coordinator should be clinically competent; however, whilst clinical competence is important, the role is one of course facilitation, not clinical education.

 All panel members strongly agreed (100%; n=11) with this statement. Issues of respect and credibility were cited as reasons, as well as the belief that “the clinically competent Course Coordinator with evidence of current skills and knowledge would gain the confidence of the participants and provide a role model for the students” (Participant 2). In addition, the NICU world was seen as constantly adapting to advances in technology, clinical practice and management and an evolving patient population, and the Course Coordinator needed to be up to date with these influences. All panel members agreed, however, that the emphasis on the role was course facilitation, not clinical education.
D. The Course Coordinator should undertake regular patient care shifts, facilitated by either clinical placement leave provided by the tertiary facility on a basis of a sabbatical period yearly/six-monthly or allow for a workload which supports a clinical shift once or twice a month.

Ten (83.3%) panel members agreed to this statement.

E. The students should have access to a full time clinical educator. The Clinical Educator should have a degree in nursing or midwifery, a NICN qualification, and two years post graduate experience. He/she should be working towards a postgraduate qualification such as a Masters in Nursing. He/she should have, or be pursuing, training in clinical education; this might be a Graduate Certificate in Adult Education, or a TAFE qualification such as a Certificate 4 in Workplace Training and Assessment.

All panel members agreed with the first statement. Nine respondents (75%) believed that he/she should be working towards a postgraduate qualification such as a Masters in Nursing or Midwifery. Most panel members (91.7%; n=11) agreed that he/she should have, or be pursuing, training in clinical education such as a Graduate Certificate in Adult Education, or a Department of Further Education, Employment, Science and Technology (TAFE) qualification such as a Certificate 4 in Workplace Training and Assessment.

F. The Clinical Educator should have five years or more post graduate nursing experience, with two years of neonatal nursing experience since obtaining a NICN qualification, and relevant experience in education/mentoring.

All (100%) of respondents (n=12) agreed with this statement.

NB At this point in the survey, one of the panel members failed to continue her response. Consequently the percentage of agreement shifted to account for 11 panel members rather than 12 from this point forward.

G. The Clinical Educator must be clinically competent. He/she should maintain their clinical expertise by working at the bedside with the students, participating in policy development and revision, providing in-service education to other staff on the ward, attendance at conferences and seminars, participation in relevant committees and groups and taking a “patient load” once or twice a month.

All panel members agreed with Participant 5, who responded that the Clinical Educator must be clinically competent:

“Most definitely yes! To teach or support learning in others, educators must be expert themselves. Clinical credibility is of the utmost importance or the worth of the information conveyed to students becomes devalued by them and others.”

Participant 5

H. Students should be supported by one to two mentors or preceptors who are able to dedicate time to each of them on a one-on-one basis. Preceptors/mentors must be allowed time to give and receive feedback with students, and time with tertiary academics to discuss student progress.

By the end of round three, 81% of the panel agreed that students should be supported by one to two mentors/preceptors who are able to dedicate time to each of them on a one-on-one basis.

IV. Theoretical programme structure and content

A. The NICN course should be conducted over a 12-month period, offering at least 200 hours of classroom teaching.

Nine panel members (81.8%) concurred that the NICN course should be conducted over a 12-month period, offering at least 200 hours of classroom teaching. A shift from 63.6% to 81.8% agreement occurred on this item between rounds two and three, as Table 4 shows.

B. A variety of educational resources should be utilised in teaching NICN. The principles of adult learning should be reflected in the teaching strategies used.

Everyone agreed with the first statement. Examples given by Participant 3 included face-to-face seminars and tutorials, learning packages, online and web-based material. Most (90.9%; n=10) agreed that the principles of adult learning should be reflected in the teaching strategies used.

C. A variety of assessment techniques should be used to assess the knowledge and competence of the student.

All panel members (100%; n=11) agreed and suggested written and oral examinations, written assignments, case reports and log books as examples.

D. The standards should specify graduate outcomes.

All panel members (100%; n=11) agreed that the standards should prescribe broad graduate outcomes, to enable course coordinators and students to be clear about the standards that they will be expected to achieve. In addition, graduate outcomes would facilitate recruitment and portability of graduate ability nationally and internationally. Most (90.9%; n=10) panel members agreed that the standards should not be absolutely prescriptive about theoretical content; however, as Participant 4 explained, “certain content and outcomes need to be agreed upon if the desired end result of a generically capable neonatal nurse is to be achieved – so perhaps an outline of expected content and minimum standards that must be obtained.”

Participant 1 clarified, “the individual institution should decide the exact content of the course. The course needs

Table 4: Response to Question 4a. The NICNC should have 200 hours of theory over 12 months.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Mode</th>
<th>% agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round two</td>
<td>3.8</td>
<td>1.5</td>
<td>5.0</td>
<td>5.0</td>
<td>63.6</td>
</tr>
<tr>
<td>Round three</td>
<td>4.3</td>
<td>1.2</td>
<td>5.0</td>
<td>5.0</td>
<td>81.8</td>
</tr>
</tbody>
</table>
flexibility to be able to provide the education suitable to that particular NICU. The Australian College of Critical Care Nurses in their position statement on the provision of critical care nursing education, provide a list of subject areas that should be included in critical care nursing programmes, and include broad areas such as anatomy and physiology, pathophysiology and pharmacology. This aspect of the standards will require further exploration by the researcher and panel members.

V. Clinical education programme structure and content

A. A Level 3 NICU site is the appropriate clinical venue to offer clinical experience for students in a NICN education programme.

All participants agreed with this statement. The Level 3 NICU should preferably provide the greatest potential for exposure to a large number of infants and a wide variety of conditions. Most (90.9%; n=10) panel members agreed that if the opportunity to practise at this level of care is not possible, as not all NICUs provide all ranges of care, aspects of advanced levels of care must still be covered in the curriculum. If opportunities exist for clinical placements in units (even observational only) that provide this type of care it would be useful. However, acceptance of this “observation” level of exposure contradicts the need for clinical competence in complex skills, and requires further exploration in the standards. This aspect of the standards will require further exploration by the researcher and panel members.

B. The standards should broadly prescribe clinical learning outcomes.

Ninety percent of panel members agreed that the standards should broadly prescribe skills in graduate outcomes if the desired end result of a generically capable neonatal nurse is to be achieved. Participant 4 gave the following statement as an example of a guide to content:

“At the end of the course the graduate will be able to safely and competently care for ventilated infants with a variety of complex conditions; requiring managements including:

- umbilical or peripheral arterial lines
- inotropic support
- total parenteral nutrition
- family support interventions
- broad areas such as anatomy and physiology, pathophysiology and pharmacology”.

This aspect of the standards will require further exploration by the researcher and panel members.

C. The students should work a minimum of 0.5 EFT in the NICU for the duration of the programme to facilitate the clinical learning experience.

The precedent for nursing standards of education to set theoretical hours has been set in other undergraduate and post-graduate nursing programmes. For example, the standards for NNP education developed by the National Association of Neonatal Nurses in the USA state that “there must be a minimum of 600 hours of supervised clinical practice in a level 2/3 NICU” to allow students to retain and develop needed skills. Most panel members (81.8%; n=9) agreed with this statement. The 0.5 FTE requisite would equate to about 500 hours of clinical experience if students worked at this level for one academic year.

D. Preceptors should have one to two years experience in the NICU since they graduated with a NICN qualification.

All panel members (100%; n=11) agreed that students should be supported by all the staff working in the NICU, both medical and nursing; however, their primary support people should be the clinical educators, senior staff and preceptors. Most agreed (81.8%; n=9) that preceptors needed one to two years of experience in the NICU since they graduated with a neonatal qualification. Students were seen to be best supported by preceptors with “experience/knowledge/ability and attitude” (Participant 4). All (100%; n=11) respondents agreed that “Preceptors need a neonatal qualification or equivalent, and a welcoming and supportive nature is also essential” (Participant 4).

E. There should be minimum requirements for assessment, both theoretical and clinical. The curriculum guidelines should recommend action to be taken when a student’s performance is not acceptable.

All but one respondent (90.9%; n=10) agreed that there should be a minimum requirement for theoretical and clinical assessment. Most panel members (81.8%; n=9) believed that the “standards should recommend a process for students who are failing in clinical practice” (Participant 5). This aspect of the standards will require further exploration by the researcher and panel members.

F. The curriculum should detail the successful competence of specified skills. This should include attendance at a minimum number of high-risk births (if in obstetric setting), a minimum number of resuscitations attended and managed, successful completion of a minimum number of newborn examinations and gestational age assessments.

In the Australian College of Midwives Standards for Accreditation of Bachelor of Midwifery Education programmes, specific clinical requirements are recommended, for example students must attend a certain number of antenatal visits and births, and have a placement in a special care baby unit etc. The panel participants were asked if they thought that this would be a useful addition for the ACNN standards i.e. number of resuscitations attended, minimum number of neonatal examinations conducted etc. There was a mixed reaction to this question with 72.7% of the panel (n=8) thinking that is was not necessary as neonatal nurses were not ‘accredited to practise’ as were midwives, yet 81.8% of members (n=9) agreeing that it would be helpful to have detailed documentation of some skills. This standard will require further work by the researcher and panel to develop the specific requirements.
G. Students should have access to up-to-date evidence-based electronic and hard copy resources and references. Web-based library access in the clinical area is also recommended.

All panel members (100%; n=11) believed that students should have the same access to electronic and hard copy resources as any other student in a higher education programme.

VI. Educator support (course coordinators and clinical educators)

A. Educators need access to an organised staff development programme which offers education resources as well as support services.

Nine respondents (81.8%) agreed with this statement.

B. Educators should have individualised job descriptions with specifications regarding their responsibilities, hours, payment, annual leave etc contained therein.

All panel members (100%; n=11) agreed that this requirement. Educators might be “part-time” to fit in with students or their own work/life balance, but when working in their “education” role, they must be allowed autonomy and scope to do so properly.

References


Welcome to our Cochrane Nursing Care column, where each issue of the journal will feature a summary of a Cochrane Review relevant to neonatal, paediatric or child health nursing. This is an initiative of the Cochrane Nursing Care Network (CNCN), which was established to improve health outcomes through:

- increasing the use of the Cochrane Library by nurses and others (such as formal and informal carers and other health professionals) involved in delivering, leading or researching nursing care
- engaging nurses and others involved in delivering, leading or researching nursing care with the Cochrane Collaboration
- supporting the Cochrane Collaboration and its role in providing an evidence base for nursing care.

More information on the CNCN and how you can be involved can be found at: http://joannabriggs.edu.au/cncn/index.php

What is a Cochrane Review?
Cochrane Reviews help us to ‘make sense’ of often large amounts of evidence for and against health care treatments and practices. They are specifically designed to help clinicians, patients and policy makers make choices regarding health care interventions. Most Cochrane Reviews are based on randomised controlled trials, but other types of study designs may also be taken into account.

Cochrane summaries are based on new and updated systematic reviews published in The Cochrane Library. The summary must be read in conjunction with the full review when making decisions. The authors’ conclusions are summarised but have not been reinterpreted.

How do I access the full review?
Complete reviews are published monthly by the Cochrane Library. The importance of Cochrane Reviews is recognised by both New Zealand and Australian governments who provide free access (http://www.thecochranelibrary.com/).

Cochrane Review summary: Oral rinses, mouthwashes and sprays for improving recovery following tonsillectomy
Cochrane summaries are based on new and updated systematic reviews published in The Cochrane Library. The summary must be read in conjunction with the full review when making decisions. The authors’ conclusions are summarised but have not been reinterpreted.

Clinical context
Tonsillitis (inflammation or enlargement of the tonsils) occurs mainly in children due to a variety of reasons including chronic illness due to recurrent infection and enlargement of the tonsils, with difficulties in swallowing and breathing, very large tonsils that obstruct breathing, and recurrent ear infections. Tonsillectomy is the surgical removal of the tonsils, two pads of lymphoid (glandrual) tissue located on each side at the back of the throat. There are side effects to the tonsillectomy procedure such as pain and bleeding, and various postoperative treatments have been used to minimise these symptoms from occurring.

The aim of this Cochrane Review was to assess the effects of oral rinses, mouthwashes and sprays in improving recovery following tonsillectomy. The search for this review was updated in April 2011.

Inclusion criteria
Studies
Although 70 studies were found in the initial search, only six double blinded randomised controlled trials using placebos were eligible for the final review in which oral rinses and mouthwashes were compared to placebo pre- and postoperatively, and topical sprays were compared to placebo postoperatively. Measured outcomes included pain and bleeding from the first 48 hours to 2 months after surgery.

Participants
The final sample consisted of 528 participants, 397 of whom were children. None of the participants had any other illnesses or conditions which may have adversely affected their outcomes (like a bleeding disorder or diabetes).

Intervention
Four of the 6 trials tested a mouth rinse of benzydamine hydrochloride; one tested lidocaine rinse, and one tested a hydrogen peroxide spray. The placebos used were normal saline spray, and rinses of either water or an unspecified material. Administration timing and frequency varied widely in all studies.

Outcomes
Various scales were used to measure postoperative pain, and the timing of the assessment was not consistent between studies. Three studies collected data on the use of analgesics but the data was not useful. Postoperative bleeding data was not reported.

Results
In one study use of the lidocaine spray was found to be more effective to reduce postoperative pain than the saline spray up to the third postoperative day (p<0.05). The other studies did not have reliable results on pain reduction. The one trial that reported bleeding six days after tonsillectomy found a relationship between bleeding and the use of hydrogen peroxide.

Risk of bias: the risk of bias was assessed as high, due to selective reporting, incomplete outcome data and selection bias.

Authors’ conclusions
Implications for practice
There is some evidence that pain can be relieved after tonsillectomy using topical analgesics, and that this effect can be augmented with concomitant systemic analgesics, but the evidence for both is not strong. The use of benzydamine spray was not proven to be conclusively effective.

Implications for research
The reduction of postoperative pain is a major goal for patients after tonsillectomy. This mandates a need for the use of internally and externally valid, reliable and consistent tools to measure pain and the effect of analgesics, not only in practice, but also in research studies. Indirect measures of pain (such as changes in vital signs) may not be as accurate as standardised visual analogue scales. If the primary effect of an intervention is not to reduce pain, but to reduce other side effects, then its value in providing data for the reduction of pain can be questioned.

Well-designed research studies with placebos, large sample sizes, multiple arms where doses and analgesic regimes are varied need to be undertaken in this area. They should then be reported using the CONSORT guidelines (Consolidated Standards of Reporting Trials).


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