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**Understanding evidence-based thermal care in the low birth weight  
neonate: PART 2: Family Centred Thermal Care**

Article reference number: **NCYP140**

PART 2

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**SUMMARY**

This is the second of a two part paper focusing on the issue of neonatal thermoregulation using a case study involving a low birth weight (LBW) neonate to raise issues for discussion. Part 1 focused on the principles of clinical practice with regard to thermal care of the neonate and the presenting physical needs. This paper now turns to the psycho-social elements of the neonate and family focusing on thermal care in the light of a family centred philosophy. The discussion examines parental experiences and needs along with the effects of thermoregulation interventions on families in a neonatal unit. The paper will then explore how health professionals can deliver family centred thermal care including the facilitation of skin to skin contact, the importance of sound communication and ensuring the effects of separation in the early days of life are minimised for both neonate and family.

## **INTRODUCTION**

When holistically considering temperature control in premature or sick neonates it is important to recognise the impact that the care we provide can have on the neonates' family. Through a case study presentation this paper aims to highlight the importance of family centered care within a neonatal unit and how thermal care practices can impact on the psycho-social needs of parents. How parents of sick and/or preterm neonates are cared for in line with the key issues of thermal care for their neonate will be discussed in line with the current and relevant literature in this area.

## **DESCRIPTION; CASE STUDY**

To re-iterate in brief from Part 1, Jack (pseudonym) was a 27+6 week gestation, male infant, born via spontaneous vaginal delivery. He was born in poor condition requiring resuscitation and full ventilation support. Jack was placed into a plastic bag to prevent trans-epidermal heat loss, his head dried and had a hat applied prior to be transferred to the neonatal unit once stable.

Throughout the stabilisation, he remained under a radiant warmer inside the plastic bag and following transfer was placed immediately into a pre-warmed humidified double walled incubator (Figure 1), set at 33°C for an optimum neutral thermal environment. He continued to be mechanically ventilated inside the incubator with high humidity.

Four to six hourly measurements of axilla temperature and skin probe monitoring continued during the time he remained within the closed incubator. During this time, Jack's parents visited daily and were encouraged to provide gentle touch to Jack inside the incubator and to participate in his care as much as tolerated and appropriate.



Figure 1: Image source; Julia Petty; with permission

## **FAMILY NEEDS IN THE NEONATAL UNIT**

Research conducted has consistently concluded that there can be a significant negative impact on families following their baby's admission to a neonatal unit (Nyström and Axelsson, 2002). A literature review conducted by Cleveland (2008) on the topic of admission and separation highlighted that early contact with their baby was a major need for parents following admission.

A number of themes have emerged from the literature including mothers feeling a loss of control, distress from their baby's appearance and inability to take on a mothering role (Fenwick et al, 2001). Wigert et al (2006) discuss how feelings of exclusion can dominate mothers separated from their baby and implies that it is the nurse's role to promote feelings of inclusion. Within the literature fathers' experiences are explored to a lesser extent; however Blomqvist et al (2011) highlighted that for fathers, involvement in care and skin to skin contact were important in promoting positive feelings of participation. These authors highlight the needs of parents and the importance of promoting inclusion and participation. Mundy (2010) in a qualitative study of sixty sets of parents found overall they had a wide range of needs in relation to assurance, support, comfort, information and proximity to their baby.

In the case of Jack, he was immediately taken away from his mother due to his clinical condition which meant his parents had initially only caught a brief glimpse of him. Missing out on early contact with their baby and separation immediately after birth can be extremely stressful and upsetting for parents which can often be overlooked or not fully appreciated (Brethauer and Carey, 2010, POPPY Steering group, 2010).

## **ADMISSION AND SEPARATION**

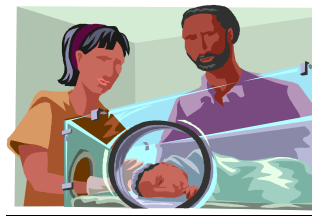
Clearly, there are cases such as this, when separation due to illness and hospitalisation cannot be avoided but it is important to recognise the potential effects on the neonate so that steps can be made to reduce the impact.

Feldman (2004) concluded from a longitudinal study that close contact at birth has a positive effect on babies across infancy. Bystrova et al (2009) also studied this area focusing on mother baby interactions at one year old comparing 176 mother baby pairs that were separated within the first day of life and those that had early suckling and skin to skin; and found that early contact had a positive influence on bonding and promoted positive interactions.

Long term effects of early separation on adult psychological outcome have also been explored. Veijola et al (2004) conducted a cohort study of 3020 subjects separated from their parents in the early weeks of life due to tuberculosis and found an increased risk of hospital treated depression in those individuals who had been separated from their parents in the early days of life. With any longitudinal study, it is important to consider the potential confounding influences on measured outcomes. However, such evidence as discussed above consistently concludes that separation of neonate from mother at birth should be avoided wherever possible.

## **FAMILY CENTRED THERMAL CARE**

So far, the potential effect of NNU admission is clear and so we now turn to this case in the light of family centred care, a philosophy based upon the theory of promoting reciprocal relationships that encourage parental involvement in care (Beck et al, 2009). Heermann et al (2005) state that working in partnership with parents is an essential part of early care for both family and neonate highlighting the need for empathetic, prioritised family centred care.



It is widely acknowledged that nursing neonates in incubators creates a physical barrier which potentially negatively influences bonding between parents and neonate. Jackson et al (2003) explored parents experiences and found that when the baby could be out of the incubator for increasing periods followed by transfer from an incubator into a cot, these were poignant moments which promoted positive feelings and attachment. This highlights the importance of encouraging skin to skin contact, comfort holding, and positive touch when it is appropriate in line with the neonate's condition along with encouraging parental involvement in care.



This involvement and communicating effectively with parents promotes the underlying theory of family centered care, which is well documented as being imperative within the field of children's and neonatal care (Nyström & Axelsson, 2002; Wigert et al, 2006).

As an alternative to incubator care, Gray and Flenady (2011) investigated whether cot-nursing using a heated water-filled mattress had similar effects to incubator care in relation to temperature control and weight gain in preterm neonates concluding that both had similar effects. Careful assessment would need to be undertaken as to the gestation and readiness of the neonate to be nursed in an open cot but it seems that heated mattresses could offer a viable alternative to the barriers imposed by incubators for stable neonates. The studies analysed however were undertaken in Turkey and Africa in the main but this does point to a potential more suitable and cheaper option for the more resource limited countries than the more costly incubators discussed in part 1.

Some studies have investigated the effect of models of family care interventions on outcomes. Saunders et al (2003) reports on an internal evaluation review with benchmarking in eleven centres, to develop a set of potentially better practices to promote family centred care. They recognise the issue of the neonatal unit environment making the "technological care efficient for staff" which "may not be optimal for nurturing the growth and development of sick neonates or for

their families (p e437). A similar quality improvement process was reported on by Dunn et al (2006) in 3 centres with the development of vital resources for families which they believe can affect positively the quality of neonatal intensive care leading to improved outcomes long-term. In line with this, McCormick et al (2008) believe that a vital element in implementing quality of health care is a family centred philosophy with outcome, as found in their study, being the most important predictor of positive feelings in parents. They focused on and measured parent satisfaction concluding that positive satisfaction ratings should be an integral aim of family centred care. More recently, Ostenstrand et al (2010) implemented a new model of family care involving live-in facilities, improved communication and resources for parents. Comparing this model with the standard approach, it was concluded that providing facilities for parents to remain in the neonatal unit until discharge may reduce the length of stay overall. Unfortunately this was not possible in Jacks's case due to available facilities meaning that parents travelled to and from the unit each day. Therefore, supporting parental participation during the time parents were visiting was even more vital.

Overall, the impact of having a neonate admitted to hospital is important to recognise; strategies such as parental involvement in basic care including feeding and nappy changes, noticing neonatal cues, forming a normal routine

and socialising and interacting with their other family members should be promoted. Another key area of care that can be affected is breast feeding. Support for breast feeding, or in the case of Jack's mother, milk expression during the time she was unable to feed, was essential within such a stressful clinical setting. Latto (2004) acknowledges and discusses the potential negative impact of the environment, particularly a busy neonatal unit, on a mothers' ability to breast feed or express their milk. Expressing milk can aid feelings of attachment when a neonate is hospitalised or separated from the mother; therefore support with this is imperative.

## **SKIN TO SKIN**

Skin-to-skin care between parent and neonate is one possible method for reducing the separation-dependent stress (Ferber and Makhoul, 2008).

Intermittent skin to skin or kangaroo care (Figure 2) is where neonates come out for periods of time on their parent's skin before being returned into an incubator. The intervention assumes that the mother or father maintains the neonate's body temperature in a neutral thermal environment and is a key opportunity for the neonate and his/her parents to engage in close mutual proximity and comfort.

The benefits of this practice are well documented in healthy *term* newborns (Fransson et al; 2005) as well as preterm neonates (McCall et al, 2010).

Nyqvist et al (2010) explored kangaroo care in the LBW neonate and concluded that it enhances attachment and can even repair the bonding process that may have been disrupted by the delivery of a preterm or ill neonate.

Morelius et al. (2005) reported that during skin contact, mothers' salivary cortisol levels decreased and neonates's heart rates and pain scores decreased giving support to the value of skin-to-skin care in neonatal intensive care in relation to minimising stress responses. Bergman et al (2004) conducted a prospective randomised controlled trial of 34 LBW neonates and found improved cardiovascular stability from early skin to skin contact compared to those nursed within a closed incubator. They conclude that instability seen in the group separated for first six hours of life is consistent with the mammalian distress response and that neonates should ideally not be separated from their mothers. This stresses the vital role skin to skin care plays for both parents and neonate.



Figure 2: Skin to skin contact  
Image source: © Hansenn | Dreamstime.com

Conde-Agudelo et al (2011) in an extensive systematic review of sixteen studies concluded that skin to skin care offers a safe and effective alternative to conventional care in resource limited countries. Indeed, in those countries who do not have the availability of resources such as the latest incubators or mattresses, skin-to-skin is an essential practice and is therefore widely practiced in such places.

Jack was receiving intensive care; he was intubated and ventilated for 4 days requiring inotropic support; during which time his parents were not given the opportunity to hold him as he was unstable. When appropriate and all parties were ready however, comfort holding techniques and positive touch was supported and the parents expressed these helped relieve some of their anxieties. Following ventilation, Jack was placed onto continuous positive airway pressure (CPAP) for a subsequent period during his stay on the neonatal unit. During this time his mother had skin to skin contact, whilst Jack wore a hat and was covered in blankets so that his temperature was maintained. As time off CPAP was extended, Jack spent longer periods having skin to skin with both parents. This was also seen to be a very positive action which was beneficial for both parents and baby, and encompassed a holistic and family centered approach to care.

## **COMMUNICATION AND INFORMATION GIVING**

Some of the research discussed so far has highlighted the need for health professionals to bridge the gap by effective communication to meet the needs of parents. Sometimes the requirements of mothers are not met and it seems the needs of the family can be overlooked or not given the priority and time needed (POPPY Steering group, 2010; Brethauer and Carey, 2010). The need for honest, consistent, and regular information by parents has been well documented in the neonatal literature (BLISS, 2009, Blunt, 2009, Hall and Brinchmann, 2009). A recent review by Lanlehin (2012) identifies the many factors associated with information satisfaction in parents within the neonatal unit recognising the vital need for involvement in decision making and appropriate information giving.

This highlights the significance of explaining the care provided for a neonate to parents. The Department of Health (2009) recommends that parents should be encouraged, supported and involved in all areas of care. Within the context of thermal care, health care professionals have knowledge and understanding of the rationale for practices such as nursing neonates in incubators, humidity and placing premature/LBW neonates in plastic bags at birth. However from the perspective of parents, these practices can be confusing, stressful and upsetting. By supporting parents and explaining the rationale in terms parents can understand, a lot of the stress can be alleviated (BLISS, 2009).

In the case of Jack, it had been explained to the parents prior to delivery that their baby would be immediately placed into the plastic bag and transferred to the resuscitator and following this that he would be nursed in an incubator. Although it would still be upsetting to see this the parents were expecting it and it did not come as an additional shock at an already traumatic time.

## **PRACTICE RECOMMENDATIONS**

Overall, analysing the care for Jack has raised some important practice points.

- Parents should be considered in the care and decision making of their neonate, their needs must be recognised and strategies employed to minimise the negative effects of an admission to the neonatal unit. The need for consistent information is therefore paramount. Health professionals working with sick neonates must recognise the effect on parents if this is not achieved (Petty, 2010).
- Provision of adequate facilities and integration of family inclusion are essential as strategies to assist parents at this emotionally unsettling time (Tran et al, 2009; Redshaw and Hamilton, 2012; Mundy, 2010; Ostenstrand et al, 2010). Such facilities are rooms / space and available equipment for expressing breast milk, flexible 24hr visiting for parents, psychological support services and promoting opportunities for parents to be both

involved in care and to provide positive, gentle touch as appropriate (Figure 3).

- Family centred care should be taken seriously, recognised and delivered in its true form and so that parents' needs are the starting point to plan psycho-social care most effectively (Petty, 2011). These needs can then be incorporated into family centred care plans to promote more positive experiences for parents of sick neonates in the NNU.
- The importance of promoting the practice of skin to skin contact should be recognised and encouraged as the benefits for parents and neonates are widely acknowledged. (Ferber and Makhoul, 2008, Bergman et al, 2004)
- Acknowledging the effects of separation and hospitalisation of a neonate is important to appreciate and understand as it can have long term effects for parent baby relationships, and where possible separation needs to be avoided.





Figure 3: Image source; Julia Petty; with permission

## CONCLUSION

Utilising a family centred care approach is important when caring for neonates in any context and is essential when considering holistic and best practice.

There are numerous issues which arise surrounding family centred thermal care as demonstrated in the case of Jack. Such examples are; minimising the potential negative effects of separation due to hospitalisation and incubator care and the promotion of family centred strategies such as parental participation and skin to skin contact. By using a case study approach, important aspects of care can be highlighted for further discussion and learning. Establishing sound evidence based family centred care should be the aim resulting in optimum outcomes for the neonate and family.

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