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Evaluation of the introduction of a Postnatal Ward Liaison Neonatal Nurse

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## Evaluation of the introduction of a Postnatal Ward Liaison Neonatal Nurse

### Abstract

**Aim:** To describe the introduction, implementation and evaluation of the post of postnatal ward liaison neonatal nurse.

**Method:** In the Coombe Women and Infants University Hospital in Ireland there were 1075 short-term admissions to the Neonatal Centre in 2009, for observation, evaluation or antibiotic therapy, and the practice of separating mother and baby was identified as a factor in increasing maternal anxiety. The post of postnatal ward liaison neonatal nurse was introduced for a two-month pilot period to provide care for babies at the mother's bedside.

**Findings:** In the pilot phase the postnatal ward liaison neonatal nurse was involved in the care of 369 infants, reviewing each infant between 1 and 6 occasions. This resulted in a reduction of 66 cot days per year, saving €31,416, for a cost of approximately €7,815 in salaries.

**Conclusion:** The introduction of a postnatal ward liaison neonatal nurse is recommended as a means of providing safe, cost-effective and high quality care, while enabling more effective use of cots for infants requiring high-dependency care.

### Keywords

liaison neonatal nurse; cost-effective care; neonatal intensive care; cot days; mother-baby separation; high dependency care

## INTRODUCTION

### Background

The first 6 to 12 hours after birth are a critical time of physiologic adaptation for all new-born infants. Whilst this is a normal process completed by the majority of infants without any problems some may experience a delay due to inadequate respiratory, cardio-vascular or thermoregulatory transitioning. Maintaining the safety of the infant during the transition period is of upmost importance therefore nursing care on the delivery suite and postnatal ward during this period requires careful assessment to ensure that infants experiencing difficulties are recognised and treated appropriately (Askin, 2009). Often infants who experience a delay in normal transitioning or demonstrate symptoms of underlying disease or illness require admission to the Neonatal Centre (NNC) in the hours or days following birth. These admissions, sometimes only for a few hours, can be for observation, clinical investigations, administration of medications, or to initiate management plans for those at risk of developing hypothermia or hypoglycaemia. To prevent separation of mother and baby while providing appropriate and optimum neonatal care for these babies in the delivery suite and postnatal wards requires specialised knowledge and clinical expertise to support midwifery/nursing staff.

The demand for neonatal cots has increased and, as with many centres around Ireland and other countries (Parmanum et al., 2000, Gale et al., 2012, News.com.au, 2012, British Medical Association, 2013), this often outstrips availability. A report submitted to the Nuffield Council on Bioethics by the Royal

College of Obstetricians and Gynaecologists described extremely premature babies as “bed blockers” who prevent other babies being admitted for the care they need (Iggulden, 2006). Whilst it is true that these babies do take up a tremendous amount of resources, one large maternity hospital in Dublin showed that 54% of admissions over a two-year period were of babies weighing 2.5 kg or greater (Rohininath et al., 2005). This study also highlighted that 16% of admissions of babies at 2.5 kg or greater were due to maternal or social reasons. It could be argued that this might not be the best use of intensive or special care facilities, and keeping mother and baby together might be more appropriate.

The Coombe Women and Infants University Hospital in Dublin, Ireland, found similar results, as babies less than 1.5 kg constituted 11% of admissions to the NNC in 2009 (Coombe Women and Infants University Hospital Annual Clinical Report, 2009). In analysis of the above data, a number of babies admitted to the NNC were found to require more treatment, or observation, than would usually be available in the postnatal ward, but did not need the full services of the NNC. The need to admit babies to the NNC on a short-term basis (defined as a period of less than 6 hours) was also reviewed. In 2009 there were 1075 short-term admissions, and the practice of separating mother and baby was identified as a factor in increasing maternal anxiety.

Mother and baby are essentially an interdependent unit and research supports the fact that, unless a medical reason exists, healthy mothers and babies should not be separated after birth or during the early days following birth

(Hubbard and Meeks, 2004). From a risk management perspective, a number of concerns related to the short-term admission of babies were identified. The risk associated with taking a baby away from its mother, performing procedures and administering medication in her absence, was noted. For example, medication error rates of 24 per 1000 neonatal activity days have been noted in one United Kingdom neonatal intensive care unit (Simpson et al., 2004).

The provision of transitional care in dedicated units has been implemented in many United Kingdom (UK) hospitals (De Rooy and Johns, 2010), with the Leicester Royal Infirmary recommending the provision of a postnatal ward liaison post following an audit of their neonatal services in 2006 (Hubbard, 2006). Caring for the baby alongside the mother has many advantages; it can assist infection prevention and control as overcrowding in NNC is associated with an increase in infection rates (Saiman, 2002). It is viewed positively by mothers (Erlandsson and Fagerberg, 2005) and promotes the developing mother/baby relationship (White, 2004). Similar schemes that encourage 24-hour contact between mother and baby aid bonding and breastfeeding, develop maternal confidence (Wataker et al., 2012) and result in earlier discharge (Ortenstrand et al., 2010).

Importantly, the provision of transitional care in dedicated units reduces admission rates to the NNC, where cots may be required for infants with higher dependency levels born within the hospital or referred there for tertiary care. Neonatal units in large tertiary hospitals have difficulty in catering for requests to admit ill babies from secondary level or primary care units. For example, in the

Coombe Women and Infants University Hospital (CWIUH) in 2009, over a 2 month period, 12 requests for a tertiary bed, out of 15 (80%), had to be turned down due to lack of space.

Following a review of the literature, the CWIUH sought the introduction of a Postnatal Ward Liaison Nurse (PWLN) as part of their team. This role encapsulates and promotes the philosophy of family centred care by allowing some babies to remain with their mothers while receiving specialised neonatal care. This paper reports on the assessment of need, preparation for, and introduction, implementation and evaluation of, this post.

### Aim

The aim of this service (introduction of a PWLN) was to promote an holistic approach to care by reintegrating the care of low dependency neonates within the postnatal ward setting. The outcomes anticipated were that safe, high quality care would be provided to mothers and babies at a lower cost base whilst at the same time enabling more effective use of Neonatal Intensive Care Unit (NICU) cots. The aim of this evaluation was to prepare for, introduce, implement and evaluate the post of postnatal ward liaison neonatal nurse over a two-month pilot period. Ethical approval was not required for the evaluation as only aggregated, anonymised data were used.

## METHODS

### Population

In the years 2005-2009, 41,837 babies of gestations greater than 24 weeks were born alive in the CWIUH. Of these, 5,772 (13.8%) were admitted to NNC. From this population, we identified our target group of infants eligible for neonatal care on the postnatal ward.

### Preparation

In preparation for the introduction of the Postnatal Ward Liaison Neonatal Nurse role, information on the rationale for the post and anticipated benefits was circulated to all staff. In conjunction with the multidisciplinary team, guidelines for management of infants eligible to receive neonatal care on the postnatal wards were drawn up. Following detailed discussions regarding the role and job description, a Clinical Manager was identified as the project lead. This role involved coordinating rotas, developing records for care provided and communicating with staff on the postnatal wards regarding the implementation of the role. Education sessions were provided to clarify the role and reassure staff on the wards that they would be fully supported in the provision of neonatal care by the liaison service.

### Implementation

A pilot study was undertaken over a two-month period in 2010. The target group included infants who would usually have been admitted to the NNC on a short-term basis, to have a procedure performed or receive medication. An

experienced neonatal nurse was allocated to the role on every shift. During this time, the following treatments were given on the postnatal ward.

### *Antibiotic therapy*

Prior to this initiative babies on the postnatal ward were brought to the NNC twice a day to receive antibiotic therapy and the visit lasted a minimum of thirty minutes but could extend to over an hour if blood sampling for drug levels was required. During this project, 32 babies received antibiotics at the mother's bedside and did not attend the NNC (Table 1), saving a total of 142 visits. Based on the average visit of 30 minutes this results in a total saving of 71 hours of NNC staff's time. During this period there were no documented medication management incidents.

**Table 1. Medication administered on the postnatal ward**

	<b>No. of Babies</b>	<b>Medication</b>	<b>Duration of therapy (hours)</b>	<b>Visits (per baby) by PNW Liaison Staff</b>	<b>Total Visits</b>
	29	Benzympenicillin/ Gentamicin	48	4	116
	2	Benzympenicillin/ Gentamicin	120	10	20
	1	Vancomycin/ Gentamicin	72	6	6
<b>Total</b>	<b>32</b>		<b>240</b>	<b>20</b>	<b>142</b>

### *Procedures performed*

Septic and cardiac evaluation could mean a baby is separated from his/her mother for periods of up to 2 hours. During the pilot scheme, 124 babies had



septic evaluations (n=118) or cardiac evaluations (n=6) performed either in the delivery suite or postnatal ward. The support of the Postnatal Ward Liaison Nurse helped ensure that the procedures were carried out in a timely and efficient manner with adherence to aseptic non-touch technique.

#### *Babies needing extra care on the postnatal wards*

The provision of an experienced neonatal nurse allowed for assessment, evaluation and implementation of individualised care plans for babies identified by the midwifery staff on the postnatal ward as needing extra care. A total of 68 babies were monitored and required a minimum of one visit and a maximum of 6 visits each. Whilst most situations required support and education only, the identified needs of 8 babies required detailed input and monitoring, thus ensuring the baby was able to stay with its mother (Table 2).

**Table 2. Babies needing extra care**

<b>No. of babies</b>	<b>Needs</b>
4	Gestations ranging from 35 to 37 weeks requiring support with management of temperature and blood sugar levels
2	Cleft lip and palate and feeding issues
2	Trisomy 21 and feeding issues

#### *Paediatric Emergency Room*

During the pilot period, 24 babies were assessed in the emergency room by the PWLN, examined by the neonatologist on call and either discharged or admitted

for further treatment. Prior to the appointment of a PWLN, staff in NNC had to leave their allocated caseload to attend to these infants. This practice of depleting staff in NNC to cover the ER posed not only a challenge for the staff but also clinical risk for the infants. Dedicated nursing/midwifery support for this area not only enhances the care received but also reduces the possibility of adverse incidents occurring in both the ER and NNC.

### *Breastfeeding Support*

The provision of breastfeeding support was instrumental in obtaining expressed breast milk for babies in the NNC as early as possible, in keeping with best practice guidelines. All PWLNs were qualified midwives, and/or had undertaken a breastfeeding course, and were well placed to advise and educate mothers. Eleven mothers received help and support regarding expressing of breast milk for extremely low birth weight infants in the NNC. Care plans were instigated for a number of other babies experiencing difficulty maintaining temperature and blood sugar, thus facilitating the continuation of breastfeeding. In total, the PWLN made 369 visits to mothers and babies in the two-month pilot (Table 3).

**Table 3. Visits to mothers and babies**

<b>Procedures</b>	<b>Number of Visits</b>	<b>Estimated Hours</b>
Antibiotics	142	71
Septic Evaluation	118	118
Cardiac Evaluation	6	6
Babies requiring extra care	68	34
Emergency Room	24	12
Breast feeding Support	11	22
<b>TOTAL</b>	<b>369</b>	<b>263</b>

## RESULTS

The provision of neonatal services at ward level was coordinated by the introduction of individual nursing care plans. The PWLN was involved in the care of 369 infants, reviewing each infant between 1 and 6 occasions during their stay.

The developing mother/baby relationship was promoted, through education and support at the bedside for issues such as weight loss or feeding difficulties. The successful management of these issues on the postnatal ward appeared to increase maternal confidence, resulting in earlier and more effective discharge. None of the infants reviewed required readmission to the hospital following discharge.

The number of admissions to the NNC from the postnatal wards was reduced. Medications were administered at the bedside and procedures were undertaken on the postnatal ward and delivery suite, thus preventing 263 hours whereby mothers and babies would otherwise have been separated. No medication management incidents occurred.

This post was evaluated in terms of NNC cot days saved, cost and ability of the NNC to cater for outside admissions. It was estimated that 11 cot days were saved over the course of the pilot, equivalent to 66 cot days per year. This not only allows for the more efficient use of the NCC cot space but also allows for

effective case mix and efficient use of the intensive care spaces. A recent estimation of the cost of a special care neonatal cot day in the UK was £292-£370 (Mistry et al., 2009), based on salary figures for 2005-06. Taking into account the 33% increase in comparable salaries in Ireland, plus an estimated annual increase of 2%, gives an average estimate of 476 euro per cot day in Ireland. Thus, €5,236 was saved in total during the pilot period, or a saving of €31,416 per year. This “cost” only the total of 263 hours that all neonatal nurses taking on the PWLN role expended, equivalent to a monetary cost of approximately €7,815 euro, based on average salaries in 2010.

Effective utilisation of NNC cots enabled the hospital to accept 91% of referrals for tertiary care from the network hospitals and other units around the country. This was a significant change from the position the hospital was in in 2009, when only 20% were accepted (Yates' chi-square =10.09, d.f.=1, p<0.002) (Table 4).

**Table 4. Requests for Tertiary Care**

<b>Month/Year</b>	<b>Requests</b>	<b>Accepted</b>	<b>Refused</b>
Oct 09	7	1	6 (86%)
Nov 09	8	2	6 (75%)
Oct 10 (PWLN in place)	5	4	1 (20%)
Nov 10 (PWLN in place)	6	6	0 (0%)

## DISCUSSION

By providing the services of a PWLN 24 hours per day, every day, we have demonstrated a reduction of 66 cot days per year, saving €31,416 for a cost of approximately €7,815 in salaries. Aside from the financial impact, the “soft” benefits set out above appear to lead to safer, higher quality care with increased satisfaction of both mothers and staff.

Freeing up this resource enables the hospital to meet the increasing demand for tertiary care. It has long been established that there is improved survival in neonates cared for in tertiary centres (Field et al., 1990, The International Neonatal Network, 1993, Phibbs et al., 1996). Sidhu et al. (1989) also demonstrated in a retrospective Northern Irish study that babies refused admission to intensive care cots in tertiary hospitals had higher mortality. Other research has also shown that mortality rates rise when intensive care workload is increased (Tucker et al., 2002).

A decade ago, a review of neonatal costs in the United States failed to note the possibility of appointing a postnatal ward liaison neonatal nurse as a cost-cutting mechanism (Richardson et al., 2001). This idea was suggested previously by Hubbard et al. (2006) but appears not to have been implemented widely. The introduction of a postnatal ward liaison neonatal nurse is now recommended as a means of providing safe, cost-effective and high quality care to mothers and infants, while at the same time enabling more effective use of cots for infants requiring high dependency care.

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