

APPLICATION FOR FUNDING OF SUPRA-DISTRICT AUDIT

All applications must be typewritten

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Signatures of lead clinicians in participating trusts

On going project-see details in table under section 3

Signatures of trust audit chair in participating trusts

On going project-see details in table under section 3

1. Project Title

A supra-district audit of antenatal and postnatal transfers for Neonatal Intensive Care across the Greater Manchester area.

2. Aims and Objectives of Project

The aims of this project are to examine the frequency and appropriateness of interhospital transfers of women antenatally and babies postnatally across the Greater Manchester, East Cheshire and High Peak Neonatal and Maternity MCN. Previous work undertaken in 2000 detailed the extent of postnatal transfers, and more recently in 2004-2005 has examined the extent of both postnatal and antenatal transfer activity. There is anecdotal evidence of increasing pressures on Neonatal intensive care cot capacity, with increasing numbers of infants being refused admission to tertiary centres. The aim of this audit is to examine the totality of Perinatal transfer activity as follows:

- The frequency of antenatal and neonatal transfers
- The clinical appropriateness of individual transfers
- The outcome, quality and safety of such transfers
- Reasons for failure to achieve a transfer
- Ease of access to intensive care cots and ease of the referral process
- Impact on ambulance services, Transport service dispatch times
- The social acceptability of transfers for families involved

In the near future there are likely to be major changes in the provision of Maternity and Neonatal Intensive Care services, with some units becoming designated as Level 3 (being able to provide a full range of NIC) whilst other units may change to Level 1 or 2 (short term or lower levels of NIC). It is difficult to predict what the impact of this will be and thus it is critical to audit transfer activity before and during the implementation phase of the new Neonatal and Obstetric networks to gauge its effects.

Whilst it is important to continue collecting and analysing activity and logistical data relating to Perinatal transfer activity across the Greater Manchester area it is also necessary examine more detailed information relating to the quality of patient care. The Greater Manchester Strategic Health Authority is at present considering the outcome of the "Making it Better" consultation for children, young people, parents and babies, with the final recommendations expected in December 2006. One of the main aims of the reconfiguration is to look at quality and safety of care for mothers, children and babies. The audit proposal will therefore look in greater detail at the quality of neonatal and maternity care provided throughout the transport process and the social impact of the transfer on the family itself.

3. Which specialties/professions are involved? Please give details of the audit steering group.

Obstetric and Maternity services
 Neonatal and Paediatric services
 Ambulance services

The steering group function will be undertaken as a subgroup of the Greater Manchester Neonatal Transport Clinical Governance Forum. Obstetric representation will be from Dr P Bullen (St Mary's Hospital), Dr J Tomlinson (Bolton) and Dr D Polson (Hope Hospital) and midwifery and neonatal nurse representatives will also be invited.

4. What areas are covered?

Organisation	Area covered	Audit Lead	Profession
St Mary's Hospital	Central Manchester	Dr. Edi-Osagie	Consultant Neonatologist
Hope Hospital	Salford	Dr. Moise	Consultant Neonatologist
North Manchester General Hospital	North Manchester	Dr. Bone	Consultant Paediatrician
Rochdale Infirmary	Rochdale	Dr. Smith	Consultant Paediatrician
Royal Oldham Hospital	Oldham	Dr. Odeka	Consultant Paediatrician
Stepping Hill Hospital	Stockport	Dr. Heal	Consultant Paediatrician
Tameside General Hospital	Tameside	Dr. Levy	Consultant Paediatrician
Trafford General Hospital	Trafford	Dr. Turya	Consultant Paediatrician
Wythenshawe Hospital	South Manchester	Dr. Bowden	Consultant Paediatrician
Wigan Infirmary	Wigan	Dr. Bhadoria	Consultant Paediatrician
Fairfield General Hospital	Bury	Dr. Wakefield	Consultant Paediatrician
Royal Bolton Hospital	Bolton	Dr. Power	Consultant Paediatrician
Macclesfield General Hospital	Macclesfield	Dr. Losa	Consultant Paediatrician
North West Ambulance Service	Greater Manchester	Mr D Cartwright	Ambulance Service

5. Brief description of project including methodology to be used.

The audit will build on the successful methodology developed for the North West Neonatal Transport Survey 2000 and more recently the supra-district audit of antenatal and postnatal transfers for Neonatal Intensive Care across the North West region 2004-2006.

The methodology proposed is for a prospective audit over a further 1 year period by all maternity, neonatal and paediatric units within the region. Each neonatal and maternity completes a brief pro-forma when making a referral for the transfer of an inpatient pregnant woman or neonate. The entry criteria for antenatal transfers is women who are inpatients transferred by ambulance from one maternity unit to another. The inclusion criteria for postnatal transfers include all neonates transferred to, from or by a neonatal unit, incorporating babies transferred for paediatric care, outpatient appointments and day cases.

A lead nurse or clinician has been identified within each neonatal and maternity unit who facilitates data collection. The data is then entered into a secure, customised database by the staff in the perinatal cot bureau and audit coordinator. At the end of each month the audit coordinator sends a statement to each lead nurse/clinician to confirm accuracy of the data and a visit to each department will be undertaken every 3 months to validate and cross check the information. This visit will also enable further information to be gathered regarding the outcome of the transfer.

All Paediatricians, Obstetricians and audit departments have previously given their permission and support for the participation in the original Perinatal Transport Audit. Due to time constraints it has not been possible to gain consent for the additional audit items across the whole network and a sample of 3 neonatal and obstetric units have been approached and agreed. If the bid for audit monies is successful all provider units within the Greater Manchester network will be contacted prior to implementation of the study.

In order to assess and analyse levels of parent satisfaction relating to antenatal and neonatal transfers a parent satisfaction questionnaire will be developed. For antenatal transfers this will be given to families at the point of transfer by the referring midwife. For postnatal transfers this will be included in the transport information pack, which is given to parents prior to the transfer of their baby by the transport team. Parents will complete the satisfaction questionnaire between 24 and 48 hours after transfer, which will be posted to the audit coordinator. This data will then be entered into a secure, customised database.

6a. What is the evidence base for this proposal

The BAPM census of Neonatal Transfers undertaken over a 3 month period in 1999 was an attempt to estimate nationally the numbers of inappropriate antenatal and neonatal transfers. However, resources precluded the examination of all transfers, and instead focused on transfers out of tertiary level units.

In 2003 CEMACH published the report for the 27/28 project, a national study of the outcomes and care of pregnancies finishing at 27 or 28 weeks gestation. Inadequate resources and organisation of care were common reasons for transfers being initiated. They also found that amongst many aspects of clinical management, the decisions regarding transfer were unsatisfactory in 7% of antenatal transfers and that the process was unsatisfactory in 21%. For neonatal transfers there was a statistically significant difference in the process being deemed unsatisfactory for babies who died (51%) compared to survivors (20%). In most cases this was related to inadequate stabilisation prior to transfer and the care during the transfer. There is also evidence to suggest that specialist transport teams for neonatal retrievals are able to improve the short term outcomes (Leslie and Stephenson 1997).

There is a consensus that where babies have been stabilised to a high standard, the frequency of unpredictable, adverse events during transfer is reduced. In this audit we will continue to assess the quality of clinical care provided by the transport team (BAPM Transport Minimum Dataset) but also wish to examine the quality of pre-transport stabilisation undertaken by the referring staff and the degree of compliance with telephone advice given by the transport team.

The Bliss study of Neonatal Care in the UK published in July 2006 (“Weigh less, Worth less?”) undertook a survey of Neonatal Units, Neonatal Networks and Parents who had experienced an admission to a neonatal unit. The section addressing transfers detailed wide variation in the organisation and ease of transfers around the UK. Significant numbers of infants were transferred out of networks, mainly due to reasons of neonatal intensive care capacity and contrary to the Department of Health recommendation that 95% of infants should be cared for within their own network. The parent survey documented the heavy psychosocial and financial burden resulting from transfer to a geographically remote hospital. There was also frequent reports of poor communication between hospital staff and families around the time of transfer.

The effect, both emotionally and socially, of neonatal transport on parents has been well documented in recent years. It is widely recognised that ensuring effective communication with parents, along with the provision pertinent information, was vital prior to transfer in order to help counter parental apprehension. A study relating to maternal satisfaction with information-giving during and after transfer found that while 89% of mothers interviewed felt they had received an adequate explanation of the condition of their baby by the unit, only 35% felt they received an adequate explanation by the transport doctor. Only 18% felt they received an adequate explanation from the transport nurse (Cross, Townsend & Leslie, 1995). There is little data available regarding the satisfaction of parents with the process of antenatal transfer.

The previous perinatal transfer audit undertaken in 2005/6 also revealed that a surprising number of antenatal transfers did not result in the baby’s delivery within a few days of transfer and approximately half of these mothers were transferred home or returned to their local unit undelivered. Only 2% of mothers transferred antenatally delivered within 4 hours of arrival. A significant minority of antenatal transfers were to a geographically distant unit or outside the neonatal network. Furthermore it also appears that the ratio of antenatal to acute postnatal transfers had reduced between 2000 and 2005. Given that antenatal transfer is generally safer than postnatal transfer, further audit is required to identify if appropriate efforts are being made to achieve this and to prevent unnecessary transfer of women who are unlikely to need early delivery. This extension to the previous audit will enable greater detail about the clinical circumstances to be studied to answer these audit questions.

In addition, further work will be undertaken to audit the efforts made to complete a course of antenatal steroids, prior to antenatal transfer for preterm labour and pre-eclamptic toxemia (PET). An updated Cochrane review was published in 2006 which again emphasized the benefits of antenatal steroids for both these conditions in preventing both mortality and morbidity in preterm infants (Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth).

Our previous survey data suggested that a significant number of women with actual or threatened preterm labour and PET had not completed a course of antenatal steroids at the point of referral for antenatal transfer. Furthermore many of these women in early preterm labour who had not completed a steroid course were also not prescribed tocolytics. The RCOG have also published national guidance that whilst tocolysis cannot be advised for all cases of preterm labour, it should be seriously considered in order to delay delivery until the course of steroids has been completed and to facilitate antenatal transfer. The extension to the audit would provide greater details of when and why steroids and tocolysis were not considered and the impact of tocolysis in facilitating antenatal rather than postnatal transfer.

6b. What are the standards and criteria against which the audit will be assessed

Primary Standards

- Mothers and infants should not be transferred beyond their nearest tertiary referral centre (CSAG 1993)
Tertiary centres should not transfer out their own high risk mothers and infants (Parmanum 2000).
- 95% of admissions to a neonatal unit in the Greater Manchester Neonatal MCN should not require transfer outside of the network (Department of Health, Review of Neonatal Intensive Care 2003)
- There should be compliance with the Royal College of Gynaecologists and Cochrane guidelines for the use of Antenatal Steroids, Tocolysis in preterm labour and treatment of maternal hypertension during transfer, including the following aspects:
 - Antenatal steroids should be administered at the earliest opportunity where antenatal transfer is requested for threatened preterm birth before 34 weeks gestation
 - If a woman is transferred in early preterm labour and has not completed a course of antenatal steroids, tocolysis should be considered to delay delivery
 - If tocolytic agents are used, Nifedipine or Atosiban should be used in preference to reduce the risk of maternal adverse effects
 - Tocolysis should also be considered where an antenatal transfer is in jeopardy due to the mother being in established preterm labour
- The transfer of sick newborn infants should be performed by staff with documented competency at transport of the sick neonate, usually by a dedicated and experienced retrieval team if one exists (Project 27/28 CEMACH 2003)

The transfer of a mother in labour should be undertaken by a paramedic ambulance accompanied by a midwife with training in transfer arrangements (Project 27/28 CEMACH 2003)

- Effective communication is an essential element of high quality care during neonatal transfer when there is a geographical separation of mother and baby (Ng, 1992). Parents should understand the reasons for antenatal and postnatal transfer and have the opportunity for discussion with the staff undertaking the transfer.
- The resuscitation and stabilisation of newborn preterm infants who are anticipated to undergo transfer should be of a high standard (Guidelines for good practice in the Management of neonatal respiratory distress by British Association of Perinatal Medicine, 1999) (For detailed clinical standards see Appendix 2)
- The quality of Neonatal Transportation should be assessed by measuring the physiological stability of 3 variables, Temperature, Acidosis, Oxygenation. (BAPM Transport Minimum Dataset, June 2005-Draft).
- No Neonatal deaths or episodes of major clinical deterioration should occur during transportation

Secondary Standards

- Mothers should not be subject to more than one antenatal transfer prior to the birth of their child.

Unnecessary antenatal transfers should be avoided, with appropriate case selection such that at least 50% of women have delivered within 2 weeks of transfer.

The ratio of antenatal to acute postnatal transfers should be at least 1.5 : 1.

- All referrals for women in labour and neonatal transfers should take no longer than 1 hour or more than 2 phone calls to arrange.
- Obstetric decisions regarding antenatal transfer should be undertaken between the referring registrar or consultant and accepting consultant.
- Transfer to a level 3 unit before or after birth should be undertaken where infants are <28 weeks gestation or 1000g birth weight.
- A woman undergoing antenatal transfer should not deliver within the ambulance or within 1 hour of arrival.
- Where a multiple birth occurs, the siblings should be cared for in the same hospital.
- The neonatal retrieval team should attend within 4 hours or less for an emergency transfer.
- The transfer should be to a unit no more than ½ an hours travelling time off- peak from the place of residence.

7. What is the estimated timetable over which the audit will take place?

Stage	Items to be completed	Timescale in weeks/months
1- April 2007- May 2007	-Finalising methodology for new audit items. -Piloting new forms to ensure effectiveness in collecting new audit data -Arrange for the translation of the parent satisfaction questionnaire to be translated into the 5 most common languages- -Develop new database to incorporate parental satisfaction data	2 months
2- April 2007-March 2008	-Audit data collection -Audit data analysis on a monthly basis -Site visits by audit midwife to validate data and outcomes	12 months
3-April 2007- July 2008	-Final cumulative analysis -Write and produce final report	4 months

8. Outline the expected outcomes and confirm that systems for the introduction of any changes that will be needed have been agreed with each participating organisation/group.

The audit has already highlighted areas of difficulty relating to staffing, intensive care cot capacity, clinical practices and resources, in both antenatal and neonatal services. Information obtained from the audit may inform local changes regarding the reorganisation of neonatal and maternity services, and as such the chair of Greater Manchester Neonatal Managed Clinical Network has agreed that this information will assist this process. It is felt that the audit data will provide more comprehensive information, outlining difficulties in various areas of care, from which a series of standard guidelines and protocols will be developed to be used by all hospitals within the network, in order to achieve better levels of care that are more standardised across all trusts within the area. The transport information will also assist in future service reviews by the ambulance services for planning and resource purposes.

9. How will commissioners be advised of the results of this work, including the changes that have been introduced (e.g annual reports, presentation events)?

All information from this audit will be channelled through the Neonatal and Maternity MCN boards, Strategic Health Authority, the Neonatal Transport Clinical Governance Forum and Unit roadshows. Copies of the final audit report will also be sent to each neonatal and maternity unit and also to the audit departments at each of the units.

10. In what way does this work meet Health Service priorities?

The National review of Neonatal care stressed the importance of the formation of managed networks and designation of units for differing level of intensive care as key changes for the future. This audit will assess the effects of an emerging managed clinical network on the quality, safety, accessibility and social acceptability of antenatal and neonatal transfers which are an essential part of this process.

The need for specialist Neonatal transport teams has also been widely recognised and this audit will assist in the modification of their and function as the networks evolve. This audit will also assess more detailed information regarding the quality of care and stabilisation before, during and after neonatal transfers, which is an essential part of the new “Making it Better” strategy being established by the Greater Manchester Strategic Health Authority for Children, Young People, Parents and babies.

11. Costs:

As now, audit undertaken within a trust is a call on that trusts audit funding. This applies to regional specialities as well because the trust audit income reflects the regional specialty contract values. Proposals, therefore, should clearly indicate what the additional funds required are for. Computing hardware is not provided.

a) What is the total cost of this proposal (including on costs)?

£31,203

b) Show the financial schedule for drawing on costs within the timescale defined in 7 (above)

April 2007 – July 2008

The costs of the audit would be recharged on a quarterly basis to the supradistrict audit group

c) What are the costs of co-ordination, which is the subject of this bid?

£31,203 (for 0.5WTE band 6 audit midwife for 18 months)

d) From what other sources of funding are you seeking support?

None

e) Please give a full breakdown of costs

	Cost 2007/8	2008/9
Salary	12909	6454
On Costs	3227	1613
Presentation Event Costs	1000	0
Travel	3000	1500
Stationary	1000	500
Total	21,136	10,067

12. Please detail your exit strategy from the project:

The establishment of a dedicated cot bureau for the North West region has meant that the collection of data regarding transfer activity and demographics can be undertaken by staff who manage the cot bureau following training in the use of the specialised databases at the end of the current project. It is intended that the aspects relating to postnatal transfer activity will be audited through the audit forms and also routine data collection systems by the Neonatal Transport Team. However the items relating to antenatal transfer activity will require specialist input from an audit midwife as an 18 month part time secondment. This will be required to initiate the antenatal parental satisfaction survey and validate the obstetric details by undertaking site visits every quarter. At the end of the project a decision will be made either to apply for a further extension of funding to support the continued audit of antenatal transfers or to integrate a minimum dataset into routine data collection systems.

Appendix 1

The parent satisfaction questionnaire would look at the following points relating to postnatal transfers:

- Do parents know the reasons for transfer?
- Have they had the chance to discuss information with the staff on the unit?
- Did they agree with the transfer? (appropriateness and social acceptability)
- Mode of transport to new unit- How will they get to the accepting unit? How long does it take? Does it involve changing buses?
- Were parents given information?
 - a) Did they receive introductions by the transport team?
 - b) Did the team explain their role?
 - c) Did they explain the reasons for transfer?
 - d) Were they given information leaflets regarding the accepting unit?
 - e) Were they given maps and directions for the accepting unit?
 - f) Did they receive a phone call on arrival at the accepting unit to inform of safe travel and current condition?
 - g) Did they receive explanations from staff on the accepting unit regarding babies condition, procedures?
- Did they feel happy and reassured about the safety of transfers?
- Transfer of Mum-if postnatally-
 - a) How quickly did it occur?
 - b) Were there any delays?
 - c) If so what were the reasons? (transfer time of within 4-6 hours of infant being transferred in acceptable)
 - d) Was mother's milk and personal belongings taken at the time of transfer?
 - e) Did they feel happy about confidentiality?

Appendix 2

The audit form relating to quality of stabilisation and care will use the following standards to measure the data collected against:

Standards relating to the pre-transport stabilisation of babies requiring intensive care:

Delivery and resuscitation

All babies < 32 weeks should be attended by a neonatal nurse, SHO or ANNP and middle grade doctor

All babies < or = 28 weeks should be electively intubated and given prophylactic surfactant within 20 minutes of birth.

Babies who require ongoing respiratory support are intubated for transfer to the neonatal unit and if <32 weeks are given prophylactic surfactant within 15 minutes of intubation.

Admission to the Neonatal Unit

All babies have the following measurements and investigations undertaken within 30 minutes of admission to the neonatal unit:

SaO₂

HR

NIBP

Blood gas (arterial, venous or capillary)

Blood glucose

Axillary or core temperature

All babies admitted from the delivery unit should have an axillary / core temperature >36

All babies <32 weeks should have attempts made to gain venous access within 60 minutes of admission

Arterial access should normally be attempted within 4 hours of admission in the following babies:

All babies <26 weeks

All ventilated babies needing >60% following surfactant therapy

Ongoing management

Babies <26 weeks who subsequently require respiratory support should be intubated immediately, and maintained on ventilation prior to transfer

Babies <32 weeks who subsequently require >40% FiO₂ (including those on CPAP) should be intubated prior to transfer, given surfactant and maintained on ventilation

All babies needing > 60% Oxygen should be intubated and maintained on ventilation prior to transfer

A second dose of surfactant should be given after 12 hours if the baby remains intubated with an FiO₂ >40% or earlier according to clinical need

Arterial access should be attempted within 4 hours of:

All babies <32 weeks developing hypotension

All babies needing inotropic support

All arterial lines should have the invasive BP transducer connected

Mean Blood pressure should be maintained to at least equivalent of GA in weeks

Inotropic support is commenced if hypotension persists despite 20ml/kg fluids

Babies <26 weeks should have central venous access (UVC or long line) attempted within 24 hours of admission

The core or axillary temperature should be >36.5

An x ray must be available to confirm placement of any intra-vascular lines and ET tube

Prior to transfer

The transport team / cot bureau should fax the completed stabilisation and advice sheet to the referring and receiving units following discussion of the case by the referring clinicians and transport SPR, Consultant or ANNP

The clinical lead for the transport service* should be involved in the discussions for:

All babies <26 weeks

Babies who are in a critical condition (see below)**

Those for whom a cot cannot be located within Greater Manchester

Recommended changes in management agreed between the transport SPR, ANNP or Consultant and the referring clinicians (as noted on the stabilisation and advice sheet) should be undertaken prior to arrival of the transport team or a reason documented within the case notes as to why this was not undertaken.

Copies of the following documentation should be available to the transport team:

Maternal obstetric notes

Medical and nursing notes and observation charts

Blood gas and investigation charts

Drug and fluid prescriptions

Discharge summary or transfer letter including transfer summary front sheet

A formal handover should be provided by referring medical and nursing team to the transport team, who should provide a further handover to the receiving unit medical and nursing staff.

