What have the networks ever done for us? A paediatric view

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Key content
• Managed clinical networks for neonatal care allow concentration of resources and expertise into specialist units and facilitate collaborative research and audit.
• Effective communication between senior clinical staff and efficient perinatal transfer services are key to their success.
• Further development of this model is likely to be required as funding and staffing issues influence the number of sites where high-risk perinatal care can be undertaken.
• Perinatal care would be improved by developing the interface between neonatal and maternity networks.

Learning objectives
• To learn about the reasons for developing neonatal clinical networks.
• To be aware of international, as well as UK, networks.

Ethical issues
• How far can the costs of neonatal intensive care be justified at a time when the National Health Service faces financial difficulties?
• Can the use of clinical networks ensure that care is fairly distributed throughout the UK?

Keywords data collection / managed clinical network / National Health Service / neonatal intensive care / neonate / workload

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Background
Neonatal care has developed rapidly over the last 30–40 years. Evolution of the package of perinatal care available to preterm and sick infants has resulted in improved survival both at increasingly early gestations and for infants with complex congenital and perinatal problems. One consequence of this improved survival has been a parallel increase in the demand for neonatal services as extremely preterm and sick infants are admitted. In turn this has had a major knock-on effect on neonatal cot availability in individual neonatal units.

Neonatal intensive care is a high-cost, low-volume specialty. Both of these factors preclude the setting up of units able to provide the full range of treatment modalities in every hospital where infants are delivered. Indeed, the ad hoc way in which neonatal units developed, initially confined to a few specialist maternity hospitals, set the pattern for a tiered approach to the provision of neonatal services.

Early work, particularly in North America, suggested improved outcomes for infants receiving care in specialist centres and, where possible, antenatal transfer was recommended. Postnatal transfer was developed as a way of bringing the facilities of the intensive care unit to a less specialised one for infants where antenatal transfer was not possible. As a result of this approach, informal referral pathways for perinatal care were established in many areas of the UK, often with strategic health authority boundaries. The limiting factor for this approach has always been the availability of neonatal intensive care cots: as a result, many moderately-sized local hospitals provided intensive care services for all but those infants requiring specialist services such as surgery. This development in local intensive care provision was also driven in part by the early days of National Health Service (NHS) contracting in the 1990s, as intensive care generated income.

Neonatal networks in the UK
There has been considerable debate around the centralisation of small-volume services, such as neonatal intensive care, which may be done for the following reasons:

• to develop and maintain clinical expertise
• to increase absorption of peaks and troughs in workload
• (more recently) financial efficiency.

An interesting consequence of this approach is that examining outcomes by place of delivery within a single network is rendered impractical, since pregnant women or infants with problems are, de facto, transferred to a centre providing a higher level of care: thus populations within individual units in a network are not directly comparable.

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The former Northern Health region in the UK developed a partially decentralised approach to the provision of specialised neonatal services over 20 years ago. This originated in 1984 from a collaboration between the two neonatal units in Newcastle Upon Tyne, where each was responsible for neonatal referrals on alternate weeks. Coordination of referrals was via a central telephone hot line. Three more units in the region subsequently developed specialist neonatal services over the following 5 years and the two Newcastle units merged. The region’s widely spaced population lent itself to this approach rather than to a fully centralised one. Using a nursing dependency scale validated by work study it was demonstrated that this collaborative approach could be used to manage the demand for intensive care services with an efficiency similar to that of a single centralised unit. Both approaches required considerably fewer intensive care cots than when the units worked independently.2

This informal collaboration was subsequently formalised with a regionalised contract which used activity as its currency. The goals of this process were to ensure equality of access to the service for patients and fairness to each unit providing neonatal intensive care. The centralised telephone hot line remained key to the organisation of both maternal and infant transfers, with the latter being key to maximising the appropriate use of cots. A common electronic database was developed to collect clinical information on infants in addition to unit workload data. It is worth noting that this collaborative way of working was contrary to the prevailing direction in which the NHS was moving in the early 1990s, when individual hospitals competed for as much work (and hence income) as possible.

By way of contrast there was little other national structure for neonatal intensive care. The NHS reforms of the early 1990s resulted in some dissemination of neonatal intensive care and there was no further consideration of imposing a structure until 2001. This was prompted by concern over cot availability (and consequent transfer of sick infants and pregnant women over inappropriately long distances), standards, mortality statistics and staffing. The Department of Health recommended that neonatal services be organised into managed clinical networks.3 Neonatal intensive care was to be subject to regional purchasing, planning for future services would be on a regional basis and national standards and levels of service were to be developed. This commissioning process was important to prioritise network goals over those of individual NHS Trusts. The networks were reviewed by the National Audit Office in 2007:4 despite the creation of networks, capacity and staffing issues persisted and as a result the Neonatal Taskforce was established to produce recommendations for the development of several major areas within neonatal services.5

International neonatal networks

Neonatal networks exist in a variety of guises internationally and are not all based on the managed clinical network model. The Vermont Oxford Network (see Websites section), for example, is a voluntary collaboration of over 800 neonatal units which contribute clinical data; users can compare their own local outcomes with comparable units which in turn may guide local quality improvement. It also acts as a coordination centre for collaborative research between member units. The Australian and New Zealand Neonatal Network covers all tertiary neonatal units in those countries. It undertakes collaborative research in addition to auditing care and publishing annual aggregated results.

Networks and wider neonatal care

One important offshoot of network development has been a wider national recognition that neonatal transfer services are key to the efficient use of limited resources (neonatal intensive care cots and medical and nursing expertise). Sick infants need prompt relocation to an available intensive care cot and infants convalescing after intensive care require prompt transfer back to their hospital of booking to free up space in units providing intensive care. There has been considerable investment in neonatal transfer services with the aim of achieving dedicated 24-hour cover across the UK. Despite this, a recent survey funded by the National Patient Safety Agency found that even in regions where a 24/7 transfer service was in place, local units often had to undertake transfers if the regional team were unavailable. Further refinement of transfer services at network level is clearly needed.

The quality of care that infants receive can be addressed by network clinical governance frameworks, as marked variation in practice still occurs despite good evidence for specific interventions. Workload and outcome data are mandatory requirements for benchmarking, service development and inter-regional comparison. The adoption of national solutions to neonatal data collection (over 80% of UK neonatal units use a common web-based platform for workload, demographics, morbidity and mortality data collection) is a huge step towards regional and national standards of care and has clearly helped initiatives such as the National Neonatal Audit Programme (see Websites section). Collection of workload data based on British Association of Perinatal Medicine categories of care give a clear indication of the amount and type of care infants receive and may in future be used to inform tariffs for neonatal care.

Another major achievement of the network approach has been in making clinical staff see beyond the boundaries of their own unit when faced with a local problem in either their own or another network unit. Key to this success has been interdisciplinary communication between appropriately
experienced, senior staff who are able to see local problems within a wider, network setting. It is important to recognise, however, that this shift of boundaries within which patients can be moved can represent a success for the network, since a patient’s care remains within the network, but that the resultant social dislocation can have major consequences for individual patients and their families. At a national level there is still work to be done to improve inter-network communication and problem solving (in instances where an individual network’s resources are fully used) and this may be facilitated by proposals such as developing a national mechanism for the identification of maternity beds and neonatal cots. This issue is likely to be exacerbated by reductions in trainee numbers, which, combined with the drive to increase consultant presence, may render some local services unsustainable. An important part of this process should be the integration of neonatal and maternity networks, primarily for the coordinated management of the small number of women and their fetuses/babies who need specialist care. Networks should not be seen as a threat to the delivery of local perinatal care, which is entirely appropriate in the vast majority of cases.

The future

Clearly, neonatal networks still have some way to go if we are to achieve our goals of delivering and continuously improving a high-quality service that is equally accessible by all and which can be audited and benchmarked at a national level. Experience to date in the UK has clearly demonstrated that there is not a ‘one size fits all’ solution for every network. Service provision for a widely scattered population requires a different approach to that needed when dealing with issues relating to services, for example, in and around London. Issues regarding capacity and communication are, however, common to most if not all networks and the forthcoming tightening of the NHS budget mandates the most efficient use of the resources that networks offer: reconfiguration for delivery of high-risk perinatal care is inevitable. For this to succeed clinicians and managers in individual Trusts will need to take a broader, network-based view of how the service they provide suits their patient population. Further evolution of the network concept will undoubtedly be required.

Websites


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