Newborn networks: The golden age for neonatology or just another expensive re-organisation?

This article describes the history and development of newborn networks. It lists the advantages and areas where service improvements can and should be made. Those working in the service have a responsibility to support their local network in order to reap the benefits for mothers and babies. Changes to commissioning arrangements in the form of 'payment by results' and Foundation Trusts threaten to undermine the fledgling networks and these issues need to be managed by commissioners.

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Key points

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1. The current configuration of neonatal services with intensive care undertaken on numerous sites is not sustainable.
2. Newborn networks (NN) have been mandated to improve the quality and accessibility of NIC through service re-design.
3. Significant additional funding will be required to meet the objectives of the DH neonatal review.
4. NN offer staff working in the service a unique opportunity to be involved in improving care for the future.
5. Infra-structure costs for NN are sub-stantial, so they will need to prove their worth in terms of improved outcomes.

History of networks

Amidst the turmoil of reorganisation after re-organisation of healthcare provision in the UK, a model to make clinical services work across organisational boundaries has emerged in the form of clinical networks. The idea first became apparent from a review of acute services in Scotland[1] and the term "Managed Clinical Network" was adopted. This has been defined[2] as:

> "A linked group of health professionals and organisations from primary secondary and tertiary care working in a co-ordinated way that is not constrained by existing organisational or professional boundaries to ensure equitable provision of high quality clinically effective care."

The attraction of this model is that it shifts the focus from buildings and organisations towards services and patients. In the UK, cancer services were rationalised using this model[3], but with a strong emphasis on a hierarchical structure consisting of cancer centres, cancer units and other non specialist providers. These networks attracted a high level of new resource, but success was not always evident and appeared to depend on strong leadership, clear management arrangements, widespread clinical involvement and formalisation of agreed arrangements for care.

The Children's National Service Framework (NSF) recommends a new way of delivering specialised services which requires 'joined up' planning and management. Standards for Hospital Services[4] refers to the need to develop logical networks of services so that tertiary centres work closely with local service providers, but care is delivered near to home, whenever possible, by appropriately trained staff. Thus, the NSF promotes the idea of 'managed clinical networks'.

Background to newborn networks

A review of neonatal services in England was undertaken in 2001 and published as a consultation document by the Department of Health (DH) in April 2003[5]. This review was a response to regular media reports of women and babies travelling the length of the country as a result of a lack of neonatal intensive care (NIC) facilities[6] and concerns expressed by professional and charitable groups involved in neonatal care.

The review concluded that the current service configuration was not sustainable. It recommended concentrating intensive care in fewer units, whilst supporting local units in delivering care which is less intensive, close to the patients' homes. In order to ensure that hospitals providing different types of neonatal care worked closely together it recommended the formation of managed clinical networks. These would ensure that mothers and babies would receive their care as close to home as possible, and that the smallest and sickest babies would get the level of expertise required to obtain the best possible outcomes. In these instances the parents would know, in advance of the problem, where their baby would be provided with intensive or specialist care, should the need arise.

The DH aims for managed clinical network are outlined in **TABLE 1**.

- Reduce the inequality in infant mortality rates between manual groups and the rest of the population by at least 10%
- Reduce the number of deaths in low birthweight babies by 200-300 through restructuring NIC services to enable the concentration of skills and expertise required for care of babies receiving longer and more complex care.
- Provide standardised quality care across the network with agreed protocols, care pathways and clinical governance arrangements.
- Offer families the greatest opportunity for local birth and minimise tranfers for intensive care to those which are necessary.
- Maximise the overall capacity within the system.
- Maintain skills, expertise and paediatric training in intensive care in all neonatal units.

TABLE 1 Department of Health[5] aims for newborn networks.

Progress

During the past two years managed neonatal networks have been developing across England in response to the recommen-dations in the consultation report. There are currently approximately 25 neonatal networks at various stages of development across England (BAPM website[7]/ BLISS survey[8]).

The structure of each network varies slightly but all have a network manager, appointed on a permanent basis to take forward the development of the network and a lead clinician in a coordinating and advisory role. Many networks also have a lead nurse post, which may be stand alone or incorporated into the network managers' role. Each network should have a network board, with clear terms of reference[9], populated by key stakeholders in the provision of neonatal care. This will include provider trusts, commissioners and parent representatives. In addition to the network board there are likely to be a variety of working groups to address the priorities identified within each network. Examples could include transport across the network and work force planning.

What can newborn networks achieve?

Newborn networks have been set up primarily to achieve service rationalisation and improvement. However there are many other benefits which are easier to achieve and can help to gain clinical engagement at a very early stage. Getting the lines of communication open between professionals is an important first step which is greatly facilitated by the setting up of small working groups. In the Staffordshire, Shropshire and Black Country (SSBC) neonatal network an equipment group was empowered to make decisions about the use of non recurring revenue available at the year end. A decision was taken to concentrate on sorting out one equipment modality across the network. As a consequence, four identical new scanning machines were purchased at a very competitive price (**FIGURE 1**). A coming together to review and decide on the preferred model proved to be a very constructive exercise. The outcome has huge potential for training, sharing images, obtaining expert review of scans and audit. This degree of cooperation across units would not have been possible before the development of the network.

Another important project for SSBC is the development of a common set of cot side management guidelines, a difficult project made possible by collaboration with the Bedside Management Group (formerly West Mercia Guidelines Group)[10]. The guidelines are evidence-based where evidence exists, but do require clinicians to cooperate on agreeing good practice to fill the gaps. There is also a strong editorial process to ensure clarity and a pharmacy review of all embedded drug recommendations and protocols. This project will have clear benefits for training of junior doctors, clinical governance and audit. Research and Development is another area that benefits hugely from pooled expertise and clinical resources and is the remit of another working group.

With many projects running in parallel the early development of a website[11] is essential, so that all documents/decisions from the board, the working groups and the designation process, can be made available very quickly online. It also provides a means of disseminating network news and forthcoming events and a focus for receiving comment.

Unit designation is the first step towards service rationalisation and improvement. It is necessary to concentrate the manpower and skills required to care for the most vulnerable infants into a much smaller number of centres, mainly because the working time directive (WTD) mandates the need for a large team to provide 24 hour, seven day a week cover. Conseque-ntly the current pattern of care is neither affordable nor achievable in relation to the

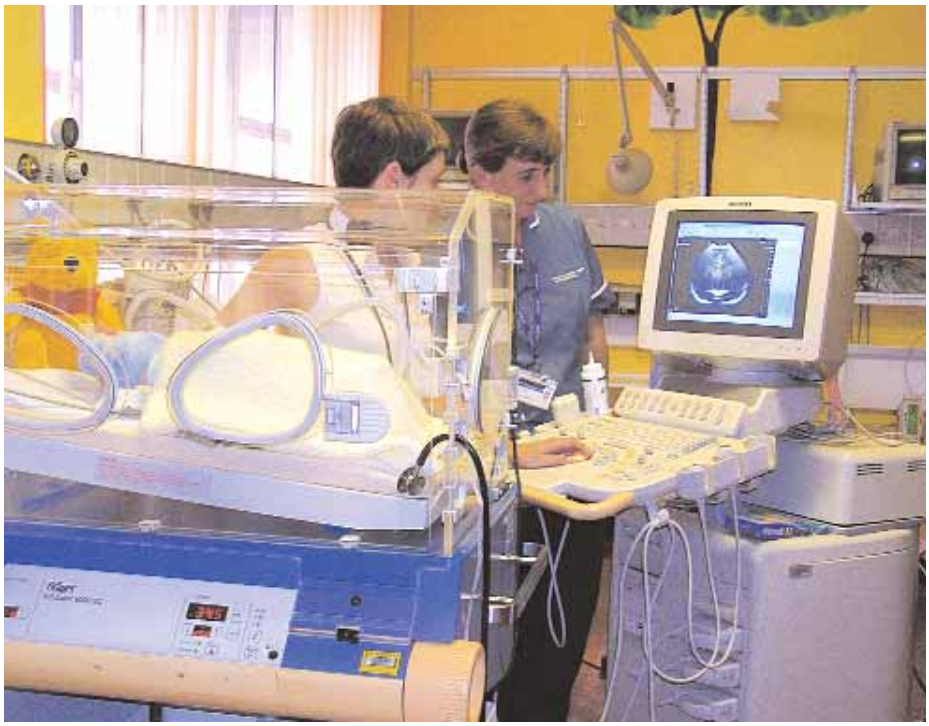

FIGURE 1 Staff at the UHNS using one of the new Philips scanning machines.

November 2004	Network board agree to undertake a process to decide unit designation
December and January 2004/5	Collection of individual unit information on; capacity, activity and proximity to other services
February 2005	Stakeholder event To agree criteria for designation, types of units and staffing required and the process and timescale for designation of units
March 2005	Report from event circulated for comments
April 2005	Report from the event, designation process and 9 options to be analysed agreed by network board.
April and May 2005	Collection of further individual unit information on criteria identified at stakeholder event
May 2005	Capacity planning analysis
May 2005	Options appraisal Network team, obstetrician, parent/patient representatives, external neonatologist, neonatal nurse and network manager
June 2005	Stakeholder event To discuss option appraisal process and outcome
August 2005	Report with recommended designation of units presented to network board
September 2005	Network board recommendations presented to specialised services commissioners

TABLE 2. An example of a unit designation process by SSBC.

numbers of trained doctors and nurses available to man all the current units to the required levels. Furthermore, with such large teams, a much higher workload is required for training to take place and for skills to be maintained.

There is no nationally agreed process for unit designation decisions. Most networks will want to take into consideration, activity, capacity, location and quality of service provided by existing providers and also use the DH Neonatal Capacity Planning Tool[12]. This provides an analysis of staff costs, numbers of transfers and cots blocks that would result from designation and capacity decisions. As an example, the unit designation process followed by the SSBC neonatal network is given in **TABLE 2**.

Following unit designation, networks will need to assess the resources required by each unit to meet the quality standards and expertise appropriate for the level of designation allocated. Capacity planning is also required to reduce the need for inappropriate transfers so that infants can be cared for as close to home as possible. The initial funding released for the development of neonatal networks will not be sufficient to implement the unit designation decisions and ensure all units have appropriate capacity and staffing levels. Networks will need to develop long term plans and work with local commissioners to secure the additional funding required.

As the networks mature, the majority of transfers both within and to adjacent networks will be planned on the basis of agreed protocols and care pathways. Although it is intended that most care should be provided within a network, there will be planned referrals outside of network for highly specialised services (eg cardiac surgery) or in some instances, the nearest level 3 unit to the patient's home will be in an adjacent network.

Currently neonatal transfers often deplete staffing levels in the transferring unit to a suboptimal level. Therefore a transport service using staff that are supernumerary to provider units is required. It is not possible for such a service to be set up by an individual unit and it may require several networks working together to achieve this.

Finally it is important that networks give staff a sense of identity. Opportunities for staff sharing, joint appointments, moving between units and novel roles can be seen by staff as either a threat or as an opportunity. It is the latter attitude that networks need to foster in an ambience of a partnership of equals, albeit with differing roles. This should lead to a culture where staff are willing to get involved (**TABLE 3**).

Engagement of maternity services

It is obvious that maternity and neonatal services are closely linked. On the one hand obstetrics require appropriate neonatal backup for the type of cases they are dealing with. On the other hand a level 3 unit will require maternity capacity to accept high risk *in-utero* transfers. Consequently the majority of network boards have maternity services representatives and some may even fund a session of a consultant perinatologist. These arrangements will provide advice, but clearly engagement of the two services needs to extend to service planning and re-design. In the SSBC the maternity providers have decided to develop a parallel network so that they can fully engage in this process. Rationalisation of maternity services will be required to meet working time directive targets, but it is essential that the maternity and neonatal components work together to ensure a meaningful outcome.

Join a working group
Attend network meetings
Read network newsletters
Access and contribute to the network website
Know your representative on the network board
Provide feedback to the network team
Get to know your colleagues in other units across the network
Engage in any change process
Be prepared to work flexibly or differently in the future

TABLE 3 Ways to support your local network.

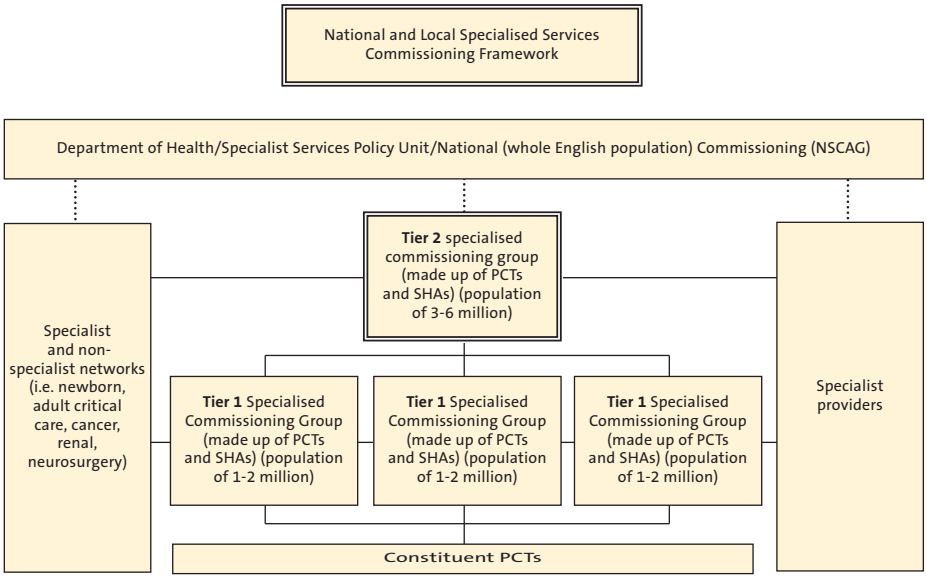

FIGURE 2 Three levels of commissioning of specialised services.

Commissioning arrangements

Commissioning of newborn services is opaque and complex at best, and incoherent or absent at worst. Most commissioning (approximately 80%) is undertaken by Primary Care Trusts (PCTs) who have statutory responsibility for commissioning all health services for their population, based on local needs. PCT populations range between 100,000 and 500,000. Specialist Services, which are normally high-cost, low volume, such as NIC, are commissioned on a broader population than that of the PCT (**FIGURE 2**).

As a result of these arrangements, newborn services, fall across the commissioning structures. A typical example may be that within a region of 5-6 million:

- 8 tertiary NIC centres are commissioned regionally, as well as fetal medicine and perinatal pathology at a single provider
- neonatal surgery is commissioned by one of the 4 LSCGs for the whole region
- All general maternity services and the remaining 10 SCBUs are commissioned by PCTs
- Additional capacity outside of the region, required to manage existing demand, is commissioned regionally, locally, and by PCTs, depending on the nature of the service.

It is inevitable that detailed specialist knowledge of the nature of these services may differ between commissioners, with some services being better commissioned than others, or effectively "not commissioned" as they fall within much larger, whole-hospital, arrangements.

Newborn networks are therefore the ideal organisations to deliver a consistent approach for a discrete population. They offer the opportunity of defining agreed care pathways for mothers and babies and coordinated commissioning and provision. However planned changes to commissioning arrangements and to the status of Trusts has the potential to undermine the work undertaken by networks.

Payment by results

The DH is introducing a new financial system with the aim of providing a transparent, rules-based system for paying Trusts[13]. In payment by results (PbR) a standard cost for each episode of care, known as a tariff, is identified. Provider Trusts are paid the appropriate tariff for all activity undertaken. The tariff is determined from the average of all agreed related costs within the NHS. It is essential to understand that the PbR price will not necessarily be the "right" price for the service. It may not provide sufficient funds to enable providers to meet standards such as BAPM nursing levels, or parental accommodation requirements for newborn services. It is simply an average price. This may lead to further entrenchment of funding difficulties for historically under-funded services. Services currently well funded will have their funding reduced to the tariff, whilst those below the tariff will be supported to reach the tariff.

The DH describes PbR as follows:

"The aim of the new financial system is to provide a transparent, rules-based system for paying trusts. It will reward efficiency, support patient choice and diversity and encourage activity for sustainable waiting time reductions. Payment will be linked to activity and adjusted for casemix. Importantly, this system will ensure a fair and consistent basis for hospital funding rather than being reliant principally on historic budgets and the negotiating skills of individual managers"[13]

The intention is that PbR will be implemented for all services, including newborn, by 2008/9. During this time, there is a fund to enable "smoothing" for organisations, as they move down the process, and balance their costs against their income. The intention is that the whole process will eventually be revenue-neutral, as it is a redistributive process, rather than one providing net additional resources.

Specialist services such as NIC do not fit easily with these principles for a number of reasons. Firstly, networks will need critical care capacity to be available, rather than for units to be full all of the time, in order to prevent inappropriate transfers. Secondly, PbR is about average tariffs, not achieving quality standards. Thirdly, PbR allows Trusts to provide and get paid for the services they choose. This has the potential to disrupt the careful planning around unit designation and re-configuration.

Foundation trusts

Foundation Trusts[14] add a further dimension to these complexities, with significant financial autonomies, as well as separation from local NHS structures, such as PCTs and Strategic Health Authorities. Their relationship with commissioners and networks is not yet clear. Foundation status offers an opportunity for providers to work outside of traditional NHS constraints, but may present considerable challenges in the integration of their services into health-economy wide strategies including newborn networks.

Assessment

Newborn networks add an additional layer of management cost, and therefore they will need to prove their worth. The first test will be whether the networks succeed in re-configuring the service with units functioning effectively at different levels. In this assessment could be included the network's ability to train, recruit and retain

staff and a measure of the numbers of inappropriate transfers, especially those that end up with patients cared for at units which are long distances from home. Improved quality of care and patient safety could also be measured by reviewing the number of untoward incidents/ clinical errors and complaints received from parents.

Outcomes are more important than service re-design or process: so how can these be evaluated? Firstly, such evaluation is dependent on good quality data, both before and after change has been implemented. Fortunately many regions have already developed and implemented neonatal data collection programmes, e.g. MANNERS[15]. However they have been set up independently and do not collect identical data sets. The HealthCare Commission have funded a National NIC Audit project[16] to establish a national programme of audit of neonatal care standards.

Armed with good quality data, it should be possible to evaluate network performance in terms of reductions in mortality and early markers of morbidity, such as abnormal cranial ultrasound scans and prolonged requirements for added oxygen. At a later stage, networks will need to organise robust long term follow-up arrangements so that levels of neuro-developmental disability can also be monitored.

Finally networks will need to demonstrate that they represent good value for money. The Charity BLISS has conducted the first independent national survey[8] of the use of the additional £72 million provided by the Department of Health for these developments. In the summary BLISS concluded that networks have led to improvements in neonatal care, but that their implementation has been slow. Once money had been allocated to networks BLISS judged that the money was well used.

Conclusion

The DH released £72 million of new funding over three years for neonatal services. This was made available to develop networks and commence the work required to change the service. Unfortunately this funding is not sufficient to herald a "golden age". Newborn network infrastructure is expensive and will need time to prove its worth. However, there is much that networks can and are doing to improve neonatal services for the benefit of mothers and babies. As agents of change they have great potential, but they must be supported strongly from within. It is our belief that they do represent a tremendous opportunity for those working within the service to create a better future. Already they are under threat from without and they must be protected from the potentially undermining effects of PbR and Foundation Trusts.

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