Lessons learnt from the reorganization of maternity services

Recent experiences of working with maternity services in difficulty have highlighted the need for regular surveillance of clinical governance parameters, using a performance chart or 'dashboard' to monitor and assure quality and safety.

The Healthcare Commission responds to concerns from a variety of sources including patients, the public, NHS staff or trust boards. In looking at overall health services, about 1 in 10 requests to investigate such concerns have been related to maternity services. In 2004–2005, the Healthcare Commission investigated the maternity care at Northwick Park Hospital, London, part of North-West London Hospitals NHS Trust. Other investigations took place at Ashford and St. Peter's Hospital in Chertsey (Commission for Health Improvement, March 2003) and at Wolverhampton Hospitals NHS Trust (Healthcare Commission, June 2004).

There were ten maternal deaths at Northwick Park Hospital in the 3 years between 2002 and 2005 (10 per 15 000 compared with the national average of 1 per 13 000) (Healthcare Commission, 2006). The conclusion of the Northwick Park Hospital investigation was that poor managerial and clinical leadership were the root cause of unsatisfactory care and poor performance. The Healthcare Commission investigation also highlighted problems associated with the increased workload which had resulted following the amalgamation of maternity services on the Northwick Park Hospital site, after the merger with Central Middlesex Hospital.

Additional features highlighted in the Healthcare Commission report were:

- A lack of rigorous clinical governance systems within the Trust, namely weak risk management, poor dissemination of learning from incidents, and a poor complaints system
- Poor working relationships among consultants and within the multidisciplinary team
- Poor supervision, leading to unsafe and unsatisfactory clinical care
- A shortage of key clinical staff.

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An external maternity support team and the NHS Clinical Governance Support Team were appointed to work with the clinical teams delivering care in the maternity service, the Trust executive team and managers responsible for the delivery of women's services. Their appointment was critical to the success of the Trust in fully implementing the maternity action plan agreed with the Healthcare Commission.

Analysis of the problems

Many of the issues identified in the Healthcare Commission's investigation could be related to the absence of systematic clinical governance systems in the Trust. As a result of work undertaken at Northwick Park Hospital, a clinical governance framework (*Figure 1*) has been developed as an effective tool for defining and monitoring key indicators and providing parameters for raising concerns and taking action. The 'performance and governance chart' records information relating to activity, workforce and clinical indicators and sets goals and 'red flags' to indicate areas of concern. That framework is underpinned by an understanding of the elements of clinical governance which are required for high quality safe services. These are:

Capacity and workforce

The numbers of deliveries had increased from 4000 to 5000 per annum, following the amalgamation of maternity services on the Northwick Park Hospital site. The midwifery and consultant numbers providing maternity care were inadequate, given the increase in workload. For example, in London, hospitals had a midwifery complement of 1 whole time equivalent midwife for every 33 deliveries per annum, while Northwick Park Hospital had 1 midwife for 38 deliveries per annum.

Immediate action was taken to increase midwifery numbers by 20 in 2005. It was planned to increase the numbers by a further 20 posts in 2006, but by that stage, the local primary care trusts were only prepared to increase funding in line with the national tariff, although staff numbers were continually monitored in relation to workload and form part of the performance and governance chart (*Figure 1*). The additional numbers also allowed the Trust to introduce special care pathways for

pregnancies at risk medically or socially, such as teenage pregnancy, socially deprived mothers, diabetic pregnancy and mothers with human immunodeficiency virus infection. This was particularly important given the complex case mix of women attending Northwick Park Hospital.

Because capacity was an issue in April 2005, while the refurbishment of the maternity unit took place, and because of the shortage of staff, women booked in for an elective caesarean were asked whether they wished to remain booked at Northwick Park Hospital or whether they wished to transfer to another hospital. These special arrangements with St Mary's Hospital, London and the Portland Hospital helped to ease the burden of the workload on staff and bed capacity, and to improve the quality and safety of care that was provided until the refurbishment of the wards was completed. This arrangement was made possible through one-off additional funding received by the Trust to support the implementation of the maternity action plan.

The refurbishment continued and is now complete and provides adequate numbers of antenatal and postnatal beds, 11 labour beds, six recovery beds and four high dependency unit beds. The unit is therefore now able to book to the capacity levels agreed with the local primary care trusts.

Clinical leadership

The Healthcare Commission (2006) report undertook a detailed analysis of the clinical care received by the ten women who died between 2002 and 2005, and highlighted the problem of lack of consultant input in

Figure 1. Performance and governance chart.

			Goal	Red Flag	Measure	Comment	Data source	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	COMMENTS / ACTION THIS MONTH
	Organisation	Number ethnic group reps. on Labour Ward Forum	4 reps	<2	Minutes	Aim for 4 but not guaranteed reps available - review 1/4ly	DATEX	2	2	2	2	2	2	2	2	3		
Activity	**Births**	Benchmarked to 5000 per annum	5000 (420)	>450	Births	If >900 over 2 month period, bookings to be capped	DATEX	378	383	425	431	451	418	428	407	420		
Activity	**Scheduled Bookings**	Bookings (1st visit) scheduled	5405 (450)	>500	Bookings (1st visit)	Tolerance 15%	DATEX	381	378	422	427	447	491	516	408	422		Not all the booked patients are likely to deliver at SGH
Activity	**Instr. Vag Del**	Ventouse & Forceps	10–15%	<5% or >20%	Inst Vag D/Birth		DATEX	11.8	7.6	10.8	10.2	10.4	11.2	13.8	12.7	14.5		
Activity	**C- Section**	Total rate (planned & unscheduled)	<23%	>25%	C-section / Birth	If >30% then cap & refer to other provider	DATEX	25.5	23.3	24.4	23.3	23.3	19.3	21.7	20.14	23.6		Resident Consultant cover was increased to 60 hours per week from May, 2007
Workforce	**Staffing levels**	Weekly hours of consultant cover on labour ward	>60 hours	<44 hours	Hours	Per week	Labour Suite off-duty						48	56	46	54		
Workforce		Midwife/birth ratio	1.30	>1.40	WTE / Births		HOM	1.33	1.35	1.3	1.34	1.36	1.3	1.3	1.3			Under Review
Workforce		Supervisor to midwife ratio	<1.15	>1.20			HOM	1.17	1.19	1.18	1.19	1.14	1.18	1.18	1.17			Under Review
Workforce		Ed & training Prog - attendance	>90%	<90%		Review 6 monthly			90%								100%	100% New Staff attended Skills & Drills / CTG/STAN Training on Induction
Clinical Indicators		Eclampsia			No. of patients		DATEX	0	0	0	1	0	0	0	0	0		
Clinical Indicators		ICU admissions in Obstetrics			No. of patients		DATEX	0	0	0	1	0	0	0	1	1		
Clinical Indicators		Blood Transfusions (4 units of blood)			No. of patients		DATEX	0	1	0	1	0	1	0	0	0		
Clinical Indicators		Post partum hysterectomies			No. of patients		DATEX	0	0	0	0	0	0	0	0	0		Uterine Artery Embolisation in April
Clinical Indicators	**Neonatal morbidity**	Number of cases of meconium aspiration			No. of patients		DATEX						3	1	1	0		
Clinical Indicators	**Neonatal morbidity**	Number of cases of hypoxic encephalopathy (Grades 2&3)	<6 in any 2 month period	>6 cases in any 2 month period	No. of patients		DATEX	0	0	1	0	0	0	0	1	0		
Clinical Indicators	**Risk Management**	Number of SUIs				Investigations undertaken	Risk Dep	0	0	0	0	0	1	0	0	0		
Clinical Indicators	**Risk Management**	Failed Instrumental Delivery	<1%	>3%	Ins Del / Birth		Risk Dep	0.8	0.8	0.7	0.9	0.7	0.5	0.2	0.2	0.2		
Clinical Indicators	**Risk Management**	Massive PPH >2L	<10 / month	>15 / month			Risk Dep	3	2	1	3	3	6	4	3	6		
Clinical Indicators	**Risk Management**	Shoulder dystocia	<6 / month	>10 / month		0.5–1.5 % of Deliveries	Risk Dep	5	8	4	6	7	3	5	9	3		Possible overdiagnosis / Mandatory Training & Skills and Drills of Shoulder Dystocia arranged on 03/10/2007
Clinical Indicators	**Risk Management**	3rd degree tear	<6 / month	>10 / month		<5% of deliveries (RCOG)	Risk Dep	14	5	6	5	8	10	5	8	6		Individual training issues identified. Audit on 3rd Degree tear initiated. Ventouse Hands on One to One Training for SpRs carried out. Ventouse Hands on Workshop arranged in November, 2007
Clinical Indicators	**Complaints**	Number of complaints																
Clinical Indicators		No of times unit closed for admission in each month	<1 / month	>3 times / month														
Clinical Indicators		FMU/DAU											2	3	2			
Clinical Indicators		Gwillim											2	2	2			
Clinical Indicators		Delivery Suite																
Clinical Indicators		Total	<5 / month	>8 / month														

several of the ten cases. Important changes were made to the system by requesting more than one consultant to attend women with severe morbidity. A consultant postpartum haemorrhage management team was established so that two or three consultants would attend a case in order to help each other and provide the best care.

The consultant presence in the labour ward was less than 40 hours per week, which was below the recommendation of the Royal College of Obstetricians and Gynaecologists/Royal College of Midwives (1999). The timetable of existing consultants was reorganized and two additional consultants were recruited to provide 68 hours of consultant presence and improved quality and safety of care. The consultant in charge for the day provided care from 8.30 am to 8.30 pm during weekdays and till 1.00 pm at weekends and public holidays; an additional consultant performed the elective caesarean section list each morning during the weekdays. This increase was achieved incrementally. Until permanent staff were appointed, senior experienced locum consultants were appointed, who were familiar with dealing with high-risk pregnancies and undertook a high volume of work.

Risk management

Near-miss audits were carried out regularly from mid-2005, to make sure the unit was functioning safely. The results reassured the external maternity support team and allowed the team to withdraw some of its support in the autumn of 2005. The near-miss incidents investigated were massive postpartum haemorrhages, eclampsia, re-operation within 24 hours and admission to the intensive care unit. These indicators are included in the performance and governance chart (*Figure 1*).

Regular analysis of clinical incidents and complaints, identifying learning points and solutions proposed, formed the backbone of the new clinical governance arrangements within the Women's Services Directorate, and were disseminated to all staff in the maternity unit. The changes introduced were also used to design a new approach to clinical governance within the Trust as a whole. These new arrangements were agreed by the Trust board, which receives regular reports at its public board meetings.

Guidelines

The labour ward guidelines were revised and updated using as a comparator those from Queen Charlotte's Hospital and St. George's Hospital. They were signed off by external peer review. The guidelines were then printed in small booklets, given to every member of staff working in the maternity unit and were placed on the intranet for easy reference. Files were also placed in appropriate midwifery or nursing stations. Audit was introduced to look at practice and whether the guidelines were being strictly followed.

Multidisciplinary education and training

Multidisciplinary education sessions were introduced mainly to concentrate on obstetric emergencies and the management of high-risk pregnancies. These were undertaken with input from external consultants and midwives. A multidisciplinary study programme of 1 day every 2 months was introduced. This was in addition to a regular Friday afternoon postgraduate programme and a bimonthly clinical governance programme for all staff. These sessions increased knowledge, focused on risk issues and risk assessment and improved safety.

Maternity support and NHS Clinical Governance Support Team

Each member of the maternity support team, which consisted of a senior obstetrician and four senior midwifery staff, took the lead on one of the following areas: education and training, production of guidelines, recruitment of new staff, clinical governance, responding to complaints and risk management. The Clinical Governance Support Team worked with the service to develop clinical and managerial leaders and to improve multidisciplinary team working in a variety of ways including handover techniques and communication. They also supported the development of a revised clinical governance infrastructure across the Trust.

Upgrading support and allied services

To improve the quality of maternity services, the provision of support services needed to be enhanced. Care is dependant on consultants from other disciplines and ancillary staff. Consultant anaesthetic sessions were increased from 12 to 15. An operating theatre assistant was available to work in the obstetric theatre, and arrangements were made to call an additional operating theatre assistant should there be more than one caesarean section, or an emergency needing treatment or surgery in the obstetric theatre. To provide consistency of care, additional associate specialists were employed to help in anaesthesiology, rather than employing locum staff who were not familiar with colleagues or the settings.

Only one medical laboratory scientist was on duty every night, but often one more was called in to help with emergency requests. The number of scientists was increased to allow two to be on duty every night, as Northwick Park Hospital needs emergency blood, not only for obstetrics, but for surgery and trauma cases at the same time. The group and cross-matching machine was upgraded to a fully automated one, so blood could be made available within a very short period of time. Two pieces of thromboelastograph equipment were bought, one for the labour ward and one for intensive care, so that the distance of the blood bank from the wards ceased to be an issue. With these facilities, the anaesthetists are able to identify clotting problems and ask for blood products as required, providing prompt care and thereby reducing morbidity and mortality.

Table 1. Requirements for high quality safe services

Leadership – clinical staff, including medical staff, nurses, midwives and supporting staff, the Trust board, and managers responsible for delivering women's services
The bed capacity available to provide care, in the delivery unit, antenatal and postnatal settings
The number of clinical staff available, their competency and the quality of team working
Evidence-based guidelines and protocols for multidisciplinary team work
Multidisciplinary education and training to maintain standards
Audit and research – audit to monitor that guidelines are being followed. Near miss audits to identify steps required to improve safety
Clinical risk management – the structures in place, reporting mechanisms and dissemination
Patients' complaints – to identify common themes in order to rectify shortcomings and respond promptly

Conclusions

There are many lessons to be learnt from the events at Northwick Park Hospital, and the way in which clinicians and managers approached the renewal and reorganization of maternity services. Of particular interest in the context of this article is how to take these lessons forward, and provide an approach that can be used within other organizations and prevent the deterioration in services to women described in the Healthcare Commission reports.

Continued surveillance of the clinical governance parameters described in *Table 1* will help to maintain quality and safety. This could be achieved by maintaining a performance and governance chart (*Figure 1*), which sets goals and red flags to indicate areas of concern. The first section of the chart records activity, which consists of the total number of deliveries, total caesarean sections per month. Adequate staff availability is monitored by the number of consultant hours presence and the number of midwifery staff available for X number of deliveries. Immediate action is prompted if there is a shortage that may compromise safety. The number of supervisors of midwives has also been taken into account, as this is important to give adequate support to the front-line midwives.

Governance is monitored by reviewing, on a regular basis, near-miss cases like postpartum hysterectomies, massive postpartum haemorrhage cases, the number of women with eclampsia and admissions to intensive care unit. Neonatal morbidity is monitored by recording the cases of hypoxic ischaemic encephalopathy or meconium aspiration.

The chart records the number of risk incidents and complaints from different work areas of the maternity unit. This chart is like a dashboard in a car. It will indicate ongoing activity and will light the amber and red lights to warn when safety is likely to be compromised. This chart can be produced for any branch of medicine, and the authors recommend the wide adoption of this as a way of reviewing key clinical governance indicators at directorate and trust executive level and through trust-wide clinical governance meetings. Regular reports on red flag areas should be made to the trust board, with actions already taken, and any further actions required, particularly if they have resource implications, agreed with the board. This will give the trust board the opportunity to make informed decisions, and ensure clinicians, managers and the board work together to improve quality and safety. **BJHM**

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Healthcare Commission (2006) *Investigation into 10 maternal deaths at, or following delivery at Northwick Park Hospital, North West London Hospitals NHS Trust, between April 2002 and April 2005.* Healthcare Commission, London

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KEY POINTS

- Effective clinical governance requires attention to activity, workforce, clinical indicators and facilities as they are interdependent elements ensuring high-quality, safe patient care.
- The performance chart provides an effective lens through which to focus on these key issues.
- The chart enables the issues to be monitored and managed in an appropriate and timely way.
- It provides a succinct summary for reporting internally and externally.
- The chart has transferability across all clinical services.
- 'Red flag' areas should be reviewed through trust-wide clinical governance forums and appropriate remedial action taken.
- Red flag areas should also form part of the regular clinical governance reporting arrangements to the trust board.