

# Conditions triggering local incident reviews in UK hospital maternity units: A national survey

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## Summary

**Objectives:** In countries, such as the UK, where maternal deaths are rare, reviews of other severe complications of pregnancy and the puerperium can provide an additional perspective to help learn lessons to improve future care. The objective of this survey was to identify the types of incidents which triggered local reviews in the UK, in order to inform national safety reporting guidance.

**Design:** A national descriptive survey.

**Setting:** UK.

**Participants:** Consultant-led maternity units.

**Main outcome measure:** Seventy-one per cent of maternity units provided an incident review trigger list. The conditions included were classified by two assessors. Incidents that were listed by at least 5% of maternity units were reported and compared with incidents recommended for review by the Royal College of Obstetricians and Gynaecologists (RCOG).

**Results:** The conditions covered were highly variable, although those recommended by the RCOG were most highly represented. The most commonly listed conditions that had not been recommended for review by the RCOG included inadequate staffing levels (70%), cardiac arrest (69%) and maternal sepsis (64%).

**Conclusions:** Substantial variation exists in the types of incident listed for review by maternity units in the UK. Importantly, some units are not reviewing cases of severe infective complications even though this is a current major concern. Future guidance concerning local serious incident review processes should include how the list of conditions triggering a review should be managed in the light of changing clinical and safety priorities.

## Keywords

maternity, incident, review, UK

and review. However, although clinical incident reporting is well recognised as a method of highlighting deficiencies in care, little guidance exists on specific methodology for reviewing maternity incidents.

The National Reporting and Learning System plays an integral role in monitoring commonly occurring errors and disseminating feedback nationwide. However, it is recognised that the number of cases of specific incidents reported to this service are considerably fewer than the number of events occurring in practice.<sup>5,6</sup> This may represent a mismatch between the incidents viewed locally as important to review, and those recommended at a national level.

The aim of this survey, therefore, was to identify the types of incidents which triggered local reviews in the UK, compare these to national (Royal College of Obstetricians and Gynaecologists; RCOG) recommendations, and identify which additional incidents were reviewed locally, in order to inform national safety reporting guidance.

## Methods

All consultant-led maternity units in the UK were contacted up to three times and asked to supply a copy of the list of incidents which triggered a local review. Definitions for each type of incident were documented a priori (data not shown). Conditions including massive obstetric haemorrhage, abruption, major antepartum or postpartum haemorrhage were grouped within a 'severe blood loss' category. Varying thresholds were accepted for several categories, including 'severe blood loss', 'low Apgar score', 'low cord pH', 'prolonged inpatient stay' and 'prolonged second/third stage'. Maternal collapse, resuscitation and cardiac arrest were included in a single category, labelled as 'cardiac arrest' for brevity, and severe or significant infections were included in 'sepsis'. The conditions included were classified by two assessors.

Incidents that were listed by at least 5% of maternity units were reported under the following

## Background

In countries, such as the UK, where maternal deaths are rare, reviews of other severe complications of pregnancy and the puerperium can provide an additional perspective to help learn lessons to improve future care.<sup>1</sup> Guidance exists from both professional organisations,<sup>2</sup> and national bodies<sup>3,4</sup> concerning types of incidents for individual units to report

**Table 1.** Frequency of maternity, neonatal and organisational incidents listed for local review by maternity units in the UK, 2012.

Maternal incidents			Neonatal incidents			Organisational incidents		
	No.	%		No.	%		No.	%
Severe blood loss*	148	99	Stillbirth*	144	96	Unplanned home birth including born before arrival and delivery outside ward*	138	92
Maternal death*	147	98	Term baby admitted to neonatal unit*	142	95	Medication error*	124	83
ICU admission*	145	97	Neonatal death*	140	93	Retained swab or instrument*	124	83
Shoulder dystocia*	143	95	Low Apgar score*	138	92	Unavailability or malfunctioning of equipment, facilities or cots*	124	83
Third/fourth degree tears*	141	94	Low cord pH*	134	89	Hospital-acquired infection*	112	75
Eclampsia*	139	93	Undiagnosed fetal anomaly*	134	89	Unavailability of health record*	105	70
Return to theatre*	129	86	Birth trauma*	128	85	Inadequate staffing levels	105	70
Undiagnosed breech*	127	85	Neonatal seizures or encephalopathy*	100	67	Delay in response to call for assistance*	101	67
Uterine rupture*	127	85	Fetal laceration at C-section*	95	63	Delay in access to theatre or >30 mins for category I caesarean section	91	61
Readmission of mother*	127	85	EUROCAT*	27	18	Delayed/missed diagnosis incl. cardiotocography (CTG)	67	45
Unsuccessful forceps/ventouse*	118	79	Meconium aspiration	21	14	Antenatal misdiagnosis incl. undiagnosed small for gestational age (SGA)	67	45
Cord accident	115	77	Hypothermia on admission	14	9	Violation of local protocol*	65	43
Hysterectomy/laparotomy*	112	75	Incidents relating to anti-D	10	7	Transfers (in- or ex-utero transfer, in from community)	65	43
Anaesthetic complications*	106	71				Potential service user complaint*	55	37
Cardiac arrest	103	69				Conflict over case management*	55	37
Sepsis	96	64				Child protection incident	48	32
Trauma to bladder or other organs	95	63				Closure of unit or suspension of services	39	26

(continued)

**Table 1.** Continued.

Maternal incidents	Neonatal incidents		Organisational incidents	
	No.	%	No.	%
Pulmonary embolism*	91	61	Transfusion error	29 19
Venous thromboembolism*	83	55	Consent issues	24 16
Prolonged 2nd/3rd stage	71	47	“Near-miss”	22 15
Perineal breakdown	30	20	Confidentiality issues	21 14
Pressure sore	29	19	Identification error incl. incorrect labelling of specimens or baby	19 13
Significant retention of urine	22	15		
Placental abruption	17	11		
Late booking or concealed pregnancy	13	9		
Anaphylaxis	12	8		
Prolonged inpatient stay	11	7		
Untreated Group B strep	10	7		
Amniotic fluid embolism	9	6		
HELLP syndrome	8	5		

\*Conditions recommended for review by the Royal College of Obstetricians and Gynaecologists.

categories: maternal, neonatal or organisational incidents. The lists of incidents have been compared with incidents recommended for review by the RCOG.

## Results

Among the 211 consultant-led maternity units in the UK, 71% provided an incident review trigger list. The incidents listed were highly variable, although those recommended by the RCOG were most frequently represented (Table 1). No single incident or condition was recommended for review by every maternity unit. Over 90% of units which responded included maternal and neonatal deaths, stillbirths, intensive care admissions, severe blood loss,

shoulder dystocia, third or fourth degree tears, eclampsia, low Apgar scores and an unplanned home birth.

The most commonly listed maternal conditions that had not been recommended for review by the RCOG included cord accidents (77%), cardiac arrest (69%), sepsis (64%) and trauma to bladder or other organs (63%). Meconium aspiration (14%) and hypothermia on admission (9%) were often listed in addition to the other neonatal conditions recommended for review by the RCOG. A variety of organisational incidents featured on the trigger checklists including inadequate staffing levels (70%) and delay in access to theatre or more than 30 min for a category 1 caesarean section (61%).<sup>7</sup>

## Discussion

Trigger lists used by maternity units in the UK include a broad spectrum of incidents, with significant variation in the definition and scope of conditions reviewed. Incidents recommended for review by the RCOG were most commonly cited on the lists, but many other types of incidents were reported. Some variation was based on size of unit, for example detailing lack of availability of neonatal cots or requirement for transfers to tertiary centres, or demographics of the population, such as lack of an interpreter or admission of a woman with a high body mass index. Some units focussed on incidents arising from iatrogenic or negligent practice, such as untreated group B streptococcus infection, while others further categorised severity of incidents as 'serious untoward incidents' and 'never events' as per national guidance.<sup>8</sup>

By virtue of the length of the review cycle, national guidance can never be instantly responsive to incidents of emerging concern. Local approaches have the advantage that they may be able to be more rapidly adapted. Rates of maternal death due to sepsis are known to be rising in the UK.<sup>9</sup> In reflection of this, almost two-thirds of units specifically reviewed cases of severe infective complications, despite sepsis not being listed amongst the conditions on the RCOG guidance. Nevertheless, in order for such responsive adaptations to be made to the incidents reviewed at an individual hospital or unit level, processes must exist for on-going review and revision of the incident review trigger list, and it is perhaps concerning that over one-third of units were not reviewing cases of severe sepsis in spite of current priorities to reduce and manage cases of severe sepsis.<sup>10</sup> The World Health Organisation highlights local clinical audit as one of the key techniques to ensure continuing improvement in the quality of maternity care.<sup>11</sup> Development of local guidance for audit processes should include methods, timetable and responsibilities for review of the types of incidents investigated to maintain responsiveness to emerging patient safety and public health issues. Maternal deaths were also not always listed for triggering a local review, which is of concern. It may, however, indicate that units adopt a flexible and cause-specific approach to review of maternal deaths which are regarded as expected, for example in cases of terminal cancer.

A large proportion of maternity units in the UK participated in the survey; however, a limitation is that 29% did not supply a trigger list. An additional

strength is that incident types were tabulated and checked independently by two researchers to increase the accuracy of the frequencies reported.

Review of significant incidents can highlight deficiencies in practice and potential areas for improved service provision. This survey shows that substantial variation exists in the types of incident listed for review by maternity units in the UK, and, importantly, that some units are not reviewing incidents known to be of emerging priority. There is a need to ensure that any future guidance concerning local serious incident review processes in maternity care includes details not only of how cases should be reviewed, but how the list of conditions triggering a review should be maintained and adapted in the light of changing clinical and safety priorities.

## Declarations

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**Guarantor:** MK

**Contributorship:** AS and OMA conducted the survey and drafted the paper, CM assisted with conducting the survey and commented on the paper, MK designed the survey, supervised the analysis and revised the paper.

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## References

1. Knight M and Lindquist A. The UK Obstetric Surveillance System: impact on patient safety. *Best Practice Res Clin Obstet Gynaecol* 2013; 27: 621–630.
2. Royal College of Obstetricians and Gynaecologists. *Improving patient safety: risk management for maternity and gynaecology* (Clinical Governance Advice No. 2). London: RCOG, 2009.
3. Hutchinson A, Young TA, Cooper KL, et al. Trends in healthcare incident reporting and relationship to safety and quality data in acute hospitals: results from the National Reporting and Learning System. *Quality Saf Health Care* 2009; 18: 5–10.

4. Smith AF and Mahajan RP. National critical incident reporting: improving patient safety. *British J Anaesthes* 2009; 103: 623–625.
5. Knight M. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. *BJOG* 2007; 114: 1380–1387.
6. Agency NPS. Patient safety bulletin. In: Walker J (ed.) *Increase in incidents of postpartum haemorrhage*. London: NSPA, 2007, p.3.
7. Gynaecologists RCoOa. *Classification of urgency of caesarean section – a continuum of risk* (Good Practice No. 11). London: RCOG, 2010.
8. Department of Health. *The “never events” list 2012–2013*. London: Department of Health, 2012.
9. Nelson-Piercy C. Cardiac disease. In: Cantwell R, Clutton-Brock T, Cooper G, et al. (eds) *Saving mothers’ lives: reviewing maternal deaths to make motherhood safer: 2006–2008. The eighth report of the confidential enquiries into maternal deaths in the United Kingdom*. *BJOG*; 2011(03/05):109–115.
10. Dellinger RP, Levy MM, Rhodes A, et al. Surviving sepsis campaign: international guidelines for management of severe sepsis and septic shock: 2012. *Crit Care Med* 2013; 41: 580–637.
11. World Health Organisation. *Beyond the numbers: reviewing maternal deaths and complications to make pregnancy safer*. Geneva: World Health Organisation, 2004.