and lower to pathology than expected from the general increase in the hospital specialties.

This cohort was surveyed for the first time several years into the qualifiers' medical careers. We are cautious about interpreting recalled career choices because they may be influenced by the passage of time. None the less, the decline in choice of general practice as a first career between 1983 and 1988 and between 1988 and 1993 suggests that interest in general practice among newly qualified doctors has fallen gradually.

We showed that, by 1995, the number of 1988 qualifiers who had left the NHS was no higher than that of 1983 qualifiers by 1990. However, there was a small but significant increase in the percentage of male doctors who were not in medical practice.

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Contributors: Both authors designed the survey. TWL coordinated the conduct of the study, analysed the data, wrote the first draft of the manuscript, and contributed to further drafts. MJG suggested the use of capture-recapture methods and contributed to further drafts of the manuscript. Both authors will act as guarantors for the paper.

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Appendix

Capture-recapture estimates of numbers of 1988 qualifiers working in NHS in Great Britain in 1995 were calculated, as shown in the table (above right), from numbers of doctors known to the Medical Careers Research Group and to the Department of Health.

Confidence intervals for the number of doctors in the NHS were obtained by calculating the standard error of d using the formula

$$SE = \sqrt{\frac{bc\,(a+b+1)(a+c+1)}{(a+1)^2(a+2)}}$$

Capture-recapture estimates of numbers of 1988 qualifiers working in NHS in Great Britain in 1995

Group	Denoted by	Men	Women	Total
Known to MCRG and DoH	a	990	815	1805
Known to MCRG but not to DoH	b	228	314	542
Known to DoH but not to MCRG	c	322	169	491
Estimated additional doctors in NHS*	$d = bc/(a+1)$	74	65	147
Estimated total	$T = a + b + c + d$	1614	1363	2985
Known total population (cohort size)	P	1961	1632	3593
Participation rate (%)	$R = 100\ T/P$	82.3	83.5	83.1
Loss (%)†	$L = 100 - R$	17.7	16.5	16.9

MCRG=Medical Careers Research Group; DoH=Department of Health.
*Unrecorded by both MCRG and DoH. The total estimated additional doctors (n=147) does not exactly equal the sum of separate estimates for men (n=74) and women (n=65). This is a consequence of the higher response rate to our surveys from women than from men. Estimates for subpopulations in capture-recapture methods do not total to estimates for pooled populations, if individuals in each subpopulation differ in their likelihood of being observed.[6] The effect on estimated loss rates is small.
†Estimated using known cohort size of qualifiers in Great Britain.

and multiplying by 1.96 to give the half width of a 95% confidence interval.

For example, the half width of the confidence interval for the total of 1988 qualifiers in the NHS in 1995 is 31 doctors; the 95% confidence interval for the total is therefore 2985±31—that is, 2954 to 3016, or 82.2% to 83.9% of the 1988 cohort of 3593 doctors.

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Reducing maternal mortality: reaudit of recommendations in reports of confidential inquiries into maternal deaths

Angie Benbow, Michael Maresh

The development of clinical audit over the past 10 years has led to questioning of the role of the triennial reports of the confidential inquiries into maternal deaths. Recently, the maternal death rate has been 6-7 per 100 000 maternities, with the proportion of deaths attributed to substandard care remaining around 40%. To investigate the uptake of the recommendations of the confidential inquiries into maternal deaths Hibbard and Milner audited the facilities in consultant maternity units in the United Kingdom in 1993, including the availability of clinical guidelines for two major maternal complications, eclampsia and haemorrhage.[1] This audit followed the publication of *Maternal Mortality—the Way Forward*[2] and was published around the time the Royal College of Obstetricians and Gynaecologists produced *Deriving Standards from the Maternal Mortality Report*[3] and the Department of Health the *Report on Confidential Enquiries into Maternal Deaths in the United Kingdom 1988-1990*.[4] We investigated whether these national initiatives had had any effect on the implementation of the recommendations.

Subjects, methods, and results

A questionnaire was circulated during November 1996 to the heads of midwifery at all 325 hospitals listed on the unit's database. The response rate was 100% after one postal reminder and one telephone call to

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Facilities by region in 1997 and 1993.[1] Values are numbers (percentages) of maternity units

		Northern and Yorkshire	West Midlands	North West	Trent	Anglia and Oxford	South and West*	North Thames	South Thames	Wales	Northern Ireland	Scotland	United Kingdom
Total No of maternity units	1993	36	21	28	16	18	21	30	32	17	17	24	260
	1997	29	19	31	18	20	23	31	32	16	14	26	259
Participating maternity units	1993	36 (100)	20 (95)	26 (93)	15 (94)	18 (100)	19 (90)	27 (90)	29 (91)	17 (100)	17 (100)	24 (100)	248 (95)
	1997	29 (100)	19 (100)	31 (100)	18 (100)	20 (100)	23 (100)	31 (100)	32 (100)	16 (100)	14 (100)	26 (100)	259 (100)
Acute hospital on site	1993	31 (86)	20 (100)	23 (88)	14 (93)	16 (89)	17 (89)	21 (78)	26 (90)	14 (82)	16 (94)	15 (63)	213 (86)
	1997	25 (86)	18 (95)	26 (84)	17 (94)	20 (100)	23 (100)	29 (94)	30 (94)	16 (100)	12 (86)	19 (73)	235 (91)
Intensive care unit on site	1993	29 (81)	17 (85)	19 (73)	11 (73)	16 (89)	14 (74)	21 (78)	24 (83)	13 (76)	11 (65)	13 (54)	188 (76)
	1997	23 (79)	16 (84)	23 (74)	16 (89)	18 (90)	21 (91)	26 (84)	27 (84)	13 (81)	10 (71)	13 (50)	206 (80)
Blood bank on site	1993	31 (86)	20 (100)	22 (85)	13 (87)	16 (89)	16 (84)	23 (85)	26 (90)	15 (88)	15 (88)	19 (79)	216 (87)
	1997	28 (97)	19 (100)	29 (94)	18 (100)	19 (95)	23 (100)	29 (94)	32 (100)	16 (100)	12 (86)	24 (92)	249 (96)
Eclampsia protocol available	1993	33 (92)	19 (95)	26 (100)	13 (87)	17 (94)	18 (95)	27 (100)	26 (90)	17 (100)	11 (65)	18 (75)	225 (91)
	1997	28 (97)	17 (89)	29 (94)	17 (94)	20 (100)	23 (100)	28 (90)	30 (94)	16 (100)	12 (86)	23 (88)	243 (94)
Haemorrhage protocol available	1993	32 (89)	17 (85)	25 (96)	11 (73)	15 (83)	18 (95)	25 (93)	27 (93)	15 (88)	4 (24)	15 (63)	204 (82)
	1997	29 (100)	17 (89)	29 (94)	16 (89)	20 (100)	21 (91)	26 (84)	28 (88)	16 (100)	13 (93)	25 (96)	240 (93)
Cochrane Library available†	1997	27 (93)	18 (95)	27 (87)	18 (100)	18 (90)	23 (100)	28 (90)	31 (97)	14 (88)	10 (71)	25 (96)	239 (92)

*Includes Channel Islands. †Not audited in 1993.

non-respondents during March 1997. We identified 259 consultant maternity units among these 325 hospitals. We excluded data from units that were not led by consultants because they were incomplete, mainly owing to changes occurring as units closed or were redesignated.

Early in 1997, 235 of the 259 units (91%) were on the site of an acute general hospital, compared with 213 out of 248 (86%) in 1993 (table). Overall, 150 maternity units had between 2000 and 4000 deliveries per annum, with 63 having fewer than 2000 and 46 more than 4000. There was an intensive therapy unit on site in 206 of the units (80%) in 1997 compared with 188 (76%) in 1993. In addition, 249 (96%) had blood transfusion services on site compared with 216 (87%) in 1993. The nearest blood transfusion service for the other 10 units was 2-35 km away, with five services being more than 8 km away. Clinical guidelines were available for the management of major haemorrhage in 240 (93%) units and for eclampsia in 243 (94%) units in 1997 compared with 204 (82%) and 225 (91%) respectively in 1993.

In 1997, 239 units had easy access to the Cochrane Library, with 133 having the library available in the clinical area. A total of 244 units had a copy of the confidential inquiry into maternal deaths, with 241 finding it useful for developing guidelines.

Comment

This audit has shown that the availability of services planned to minimise maternal risk are improving. These changes are likely to have at least in part resulted from the audit cycle and the publication and wide distribution of the various recommendations.[1–4] These efforts will, we hope, result in a further reduction in maternal deaths, and we believe that continuation of the confidential inquiries is justified. Audit of maternal morbidity is currently being evaluated in several exercises.[5]

The recommendation to have all consultant maternity units in acute hospitals has now been achieved in Wales and in two English regions, and it has almost been achieved throughout the rest of the United Kingdom apart from Scotland. The availability of blood transfusion services has improved. The availability of guidelines on eclampsia and major haemorrhage has increased, but some units did not have them. Some heads of midwifery did not have access to the reports on confidential inquiries into maternal deaths despite every trust being sent one.

Contributors: AB helped design the study, conducted the survey and follow up of non-respondents, conducted the analysis, and jointly wrote the paper. MM helped in the design of the study, advised on the survey, helped interpret the data, jointly wrote the paper, and is the guarantor for the content of the paper. Dr Gwyneth Lewis, principal medical officer for women's health services at the Department of Health, advised on the undertaking and design of this study.

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Endpiece

A little bit of luck

What need has medicine of luck? If there are drugs clearly appropriate for illnesses, I think that drugs do not depend on luck to turn the illnesses to health, if there are indeed drugs. But if there is any use in prescribing with mere luck, drugs no more than non-drugs with luck will make the patient well, when applied to illnesses.

Hippocrates, *Places in Man*, edited and translated by Elizabeth M Craik, 1998

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