

COMMENTARY

Measuring the need for life-saving obstetric surgery in developing countries

It has long been recognised that some women need specialist obstetric care to prevent maternal death, and access to essential obstetric care, particularly caesarean sections, is now seen as vital to the success of safe motherhood programmes. Knowledge of the precise nature and the magnitude of the need for essential obstetric care is now required, not only to inform programme development, but also as a yardstick for monitoring programme success.

The recognition of the importance of measuring access to life-saving care has led to the development of indicators of 'met' or 'unmet' need for obstetric care.^{1–3} In general, such indicators measure the number of women who receive life-saving obstetric care for a life-threatening maternal complication, and compare this number to what might be expected at the population level. If the minimum incidence of life-saving interventions among all births can be determined at the population level, then the shortfall between the minimum and the observed incidence of life-saving interventions represents the unmet need for obstetric care. There is no agreement to date, however, on the definition of life-threatening maternal complications, or the magnitude of the need for essential obstetric care.¹

Caesarean sections are the simplest way of measuring need for essential obstetric care, and population-based caesarean section rates have been widely promoted as indicators of access to life-saving obstetric care.² Caesarean section rates of no less than 5% and no more than 15% have been suggested as optimal,² although both these minimum and maximum values have been called into question.^{1,3,4} All-cause caesarean section rates much lower than 5% may be sufficient to achieve low maternal mortality, as exemplified by experiences in industrialised countries.^{3,5} In addition, as caesarean section rates rise, there is a broadening of the indications to include fetal and other, non-medical indications, and the magnitude of the all-cause caesarean section rate may ultimately bear little relationship to the met need for life-saving essential obstetric care, even in developing countries.

In settings where the main concern has been the rising trends in caesarean section rates, the debate on met need for essential obstetric care has largely and appropriately focussed on determining the most optimal caesarean section rate.⁵ In such a context, caesarean sections are deemed optimal when they are performed because there is an immediate threat to the mother's life but also when the

fetus is compromised or labour fails to progress. In developing countries with high levels of maternal mortality and poor access to essential obstetric care, however, there is a need to define minimum as well as optimum caesarean section rates. Minimum caesarean section rates, focussing primarily on indications to save the mother's life, are necessary to be of use as a yardstick against which to measure progress in reductions in maternal mortality. The narrow focus on maternal indications is critical to assess the extent to which existing services are meeting the need of those women who would have died were it not for access to life-saving obstetric care.

The Unmet Obstetric Need (UON) Network, a multi-centre collaboration with its headquarters at the Institute of Tropical Medicine in Antwerp, has developed an approach using an indicator of the met need for life-saving care which tries to define obstetric interventions and conditions for which a minimum level can be set.^{3,6} Because caesarean sections are not the only interventions with life-saving potential, the authors propose calculating population-based rates for all major obstetric interventions, including caesarean sections, laparotomy, hysterectomy, symphysiotomy, craniotomy and internal version (even though internal versions are not surgical interventions, they are generally retained in the numerator). Maternal indications are selected only if they are 'absolute', that is, for conditions that are thought to have a high probability of dying if the woman fails to obtain a major surgical intervention. Absolute maternal indications include severe antepartum haemorrhage due to placenta praevia or placental abruption, unremitting postpartum haemorrhage, major cephalopelvic disproportion (including pre-rupture and rupture of the uterus), transverse lie and brow presentation. The met need for life-saving obstetric surgery is expressed as the number of successful 'major obstetric interventions for absolute maternal indications' in a defined target population divided by the expected number of births in the same population. Numerator data are collected from facilities performing major obstetric interventions, including the type and indication of the intervention and the woman's residence. Denominator data are obtained from population statistical offices.

An indicator of met need for life-saving care is only useful if absolute targets can be set so that performance can be measured against the attainment of these targets. For the indicator using the frequency of major obstetric

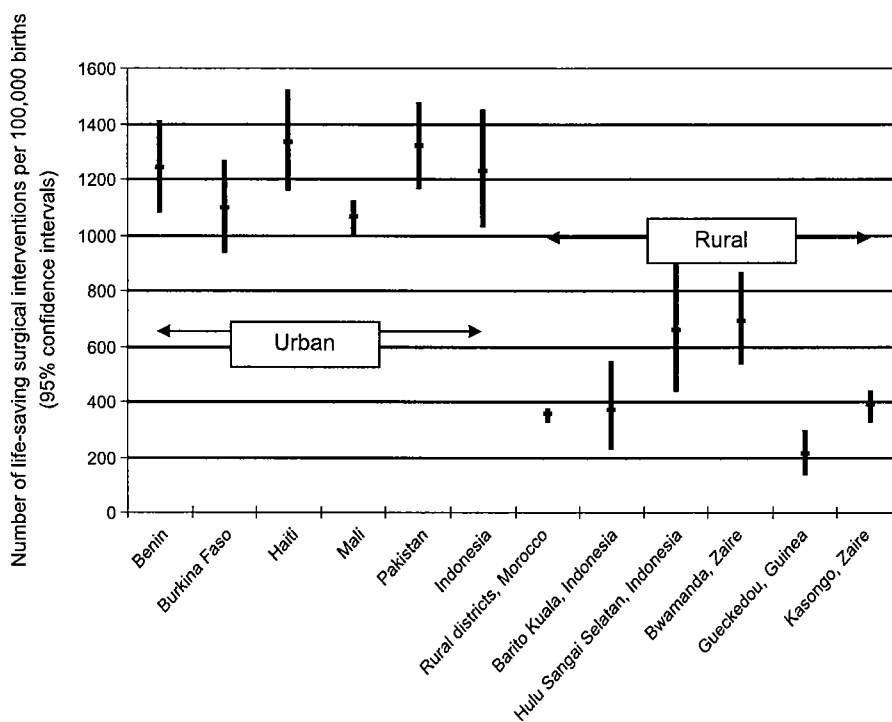


Fig. 1. Met need for life-saving obstetric surgery in urban areas with good access to care and in rural areas in selected developing countries.

interventions for absolute maternal indications among all births, it is possible to estimate a minimum level, either by measuring the numerator in urban areas with good access to essential obstetric care (and dividing it by the expected number of births to obtain a minimum rate), or by measuring the numerators and denominators in population-based cohorts with concurrent maternal mortality measurement. A number of studies have now estimated the minimum need for life-saving obstetric surgery in urban areas with good access to essential obstetric care,^{4,6,7} and the population-based incidence for the conditions suggested above ranges between 1000 and 2000 per 100,000 births per year (Fig. 1). Given that the lower-bound estimates of the confidence intervals for urban rates all exceed the 1000 mark (except for urban Burkina Faso), estimates falling below 1000 per 100,000 are thought to reflect a real deficit in access to life-saving essential obstetric care.

The met need for life-saving obstetric surgery is a powerful indicator of inequalities in access to care, as illustrated in Figs 1 and 2. Estimates in Fig. 1 were obtained from published studies and include data from rural districts in Morocco,³ one urban and two rural districts in Indonesia,⁷ two rural districts in the Democratic Republic of Congo,^{8,9} a rural district in Guinea¹⁰ and urban areas in Benin, Burkina Faso, Haiti, Mali and Pakistan.⁴ The urban-rural contrasts are striking. The rural rates range from 209 per 100,000 births in Guinea to 687 per 100,000 in an uninsured population in Bwamanda district, Demo-

cratic Republic of Congo. None of the upper-bound confidence limits exceed 1000 per 100,000 births. Even within countries, huge inequalities may exist, as illustrated for Morocco in 1989 (Fig. 2).³ In Morocco at that time, the median value of met need for life-saving obstetric surgery across all provinces were 820 and 180 per 100,000 in urban and rural areas, respectively. Even in urban areas, 31 out of 45 provinces did not exceed the 1000 mark (Fig. 2).

The indicator of met need for life-saving obstetric surgery gives useful insights into regional variation in the performance of the health system relative to what it should be able to achieve, but some caution in its measurement and interpretation is warranted. What constitutes an absolute maternal indication may be open for discussion. For example, eclampsia, a major cause of maternal death, has been considered for inclusion, but many women survive without surgical intervention and the risks relate to the degree of hypertension rather than the eclamptic fits themselves. Perhaps a more critical issue is the equivocal nature of the diagnosis of major cephalopelvic disproportion. Both the use of caesarean sections for cephalopelvic disproportion and the diagnostic label of cephalopelvic disproportion may vary,⁵ and efforts to arrive at a highly specific definition of cephalopelvic disproportion ought to be made, particularly in settings with rising caesarean section rates. Ownership of the definition by the providers may be important to increase the acceptability of the proposed definitions. The benchmark of 1000 has also been called into question,¹¹ although most

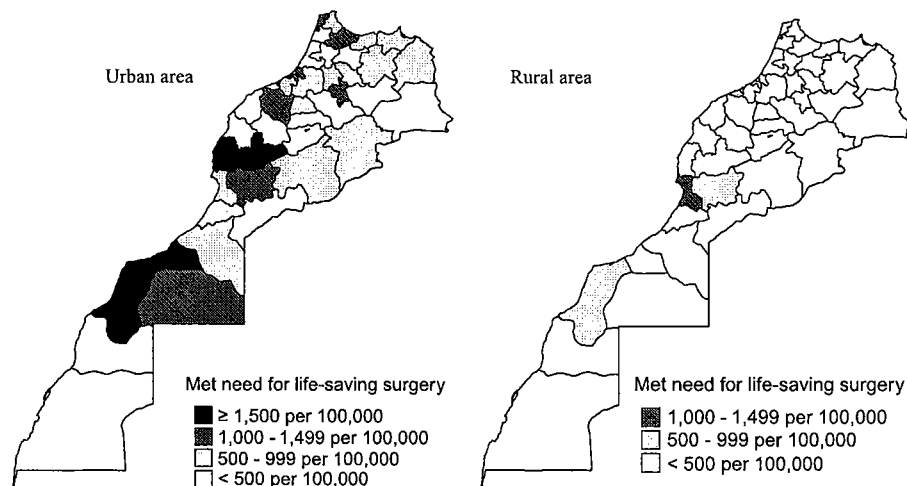


Fig. 2. Met need for life-saving obstetric surgery in urban and rural Morocco, by province (adapted from De Brouwere and Van Lerberghe, 1998).

criticism centres around the optimum rather than the minimum caesarean section rate. Given the extremely low rates observed in most rural areas in poor countries targets as low as 1000 per 100,000 remain useful. They are also less likely to discourage decision-makers from the substantial efforts required when faced with a huge gap in systems performance. Validation of the reference rate is ongoing in a number of countries, and further empirical measurement of minimum reference rates should be encouraged wherever possible.

The indicator of met need for life-saving obstetric surgery does not just provide descriptive information. It has been used, for example, to assess the repercussions of a hospital insurance scheme on access to essential obstetric care in the Democratic Republic of Congo,⁸ the effect of a refugee-assistance programme on the host population in Guinea¹⁰ or to evaluate the success of a safe motherhood programme in Indonesia.⁷ The aim of the indicator is to encourage administrative authorities and medical providers at district, province and national levels to act upon the findings. One indicator is of course not sufficient to guide policy decisions, and other measures of access to and quality of obstetric services, including an inventory of available resources, need to be obtained. In so doing, countries obtain a national map that can guide them in planning interventions or in monitoring the success of interventions. This map becomes a tool for advocating for increased allocation of funds to areas where the situation appears to be worst and might, by making policymakers aware of the burden of unmet need, push donors and politicians to shift national policies and resources towards facilitating access to essential obstetric care. Measurement of attainment of the need for life-saving obstetric surgery should be seen as a way for health systems to achieve more and make better use of scarce resources.

The UON concept was created in, and for, developing countries. In developed countries, audits into rising trends

in caesarean section rates do not always separate maternal and fetal indications.¹² Whether the UON concept can be adapted to map potentially unnecessary caesarean sections needs to be explored.

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References

- Ronsmans C, Campbell OMR, McDermott J, Koblinsky M. Questioning indicators of need for obstetric care. *Bull World Health Organ* 2002;**80**:317–324.
- UNICEF/WHO/UNFPA. *Guidelines for Monitoring the Availability and Use of Obstetric Services*. New York: United Nations Population Fund, 1997.
- De Brouwere V, Van Lerberghe W. *Les Besoins Obstétricaux Non Couverts*. Paris: L'Harmattan, 1998.
- De Brouwere V, Dubourg D, Richard F, Van Lerberghe W. Need for caesarean sections in West Africa. *Lancet* 2002;**359**:974–975.
- Lomas J, Enkin M. Variations in operative delivery rates. In: Chalmers I, Enkin M, Keirse MJNC, editors. *Effective Care in Pregnancy and Childbirth*, 2. Oxford: Oxford University Press, 1989:1182–1195.
- Dubourg D, Derveeuw M, Litt V, De Brouwere V, Van Lerberghe W. The UON network. Tackling unmet need for major obstetric interventions. Available: <http://www.uonn.org> (Accessed 22 October 2003).
- Ronsmans C, Achadi E, Supratikto G, et al. Evaluation of a comprehensive home-based midwifery programme in South Kalimantan, Indonesia. *Trop Med Int Health* 2001;**6**:1–12.
- Criel B, Van der Stuyft P, Van Lerberghe W. The Bwamanda hospital insurance scheme: effective for whom? A study of its impact on hospital utilisation patterns. *Soc Sci Med* 1999;**48**:897–911.

9. Van den Broek N, Van Lerberghe W, Pangu K. Caesarean sections for maternal indications in Kasongo (Zaire). *Int J Gynaecol Obstet* 1989; **28**:337–342.
10. Van Damme W, De Brouwere V, Boelaert M, Van Lerberghe W. The host population can benefit from a refugee assistance programme. *Lancet* 1998;**351**:1609–1613.
11. Dumont A, de Bernis L, Bouvier-Colle MH, Breart G, for the MOMA study group. Caesarean section rate for maternal indication in sub-Saharan Africa: a systematic review. *Lancet* 2001;**358**:1328–1333.
12. Kabir AA, Steinmann WC, Myers L, et al. Unnecessary caesarean delivery in Louisiana: an analysis of birth certificate data. *Am J Obstet Gynecol* 2004;**190**:10–19.