

Estimating need for emergency obstetric care

The estimated need for EmONC in all populations, the denominator for EmONC Indicator 9, is 15% of expected births. This estimate was developed based on the best evidence available in 1997.^(1,2) When the indicators and accompanying guidance were revised in 2009, the technical consultation reviewed the evidence and decided to maintain 15% as a global estimate of the number of women who develop direct obstetric complications.^(3,4,5,6,7,8) Since 2009, there has been considerable discussion about the expected number of complications and whether 15% is too low, too high, if it varies in different parts of the world, or if it has changed over the years. One reason for renewed debate is the wider use of certain clinical management practices that can prevent some direct obstetric complications (e.g., active management of the 3rd stage of labor, depending on clinical components used and route of oxytocin, has been shown to reduce the risk of postpartum hemorrhage by 66-76%⁽⁹⁾). However, the incidence of complications is still likely to be no less than 15%, and in fact, several recent studies purport to show a higher prevalence of obstetric complications (Box 1).^(10,11) Therefore, in the absence of more high-quality population-based studies on the prevalence of direct obstetric complications, we recommend keeping 15% as an estimate of expected obstetric complications in the population.

Box 1. Evidence of incidence of obstetric complications

- Few population-based studies look at the prevalence of direct obstetric complications; however, one recent study by Aftab et al (2021)⁽¹⁰⁾ estimated that 32.7% of pregnancies (n=114,050 pregnant women in eight countries in South Asia and sub-Saharan Africa) had at least one major direct maternal morbidity. However, their study excluded complications occurring in the first and second trimesters (i.e., complications of abortion, ectopic pregnancies), relied in part on women's self-report of complications (e.g., infections), included all cases of hypertension and late third trimester antepartum infections, and relied on reports of surgical procedures (e.g., cesarean section) conducted as a proxy for obstetric complications.
- Danilack et al (2015)⁽¹¹⁾ studied 10 million birth certificate records from 2011 through 2013 in the United States and found that 46% of pregnancies developed at least one unexpected complication: 29% of low-risk women and 57% among high-risk women. Those complications (or procedures in response to complications) included eclampsia, uterine rupture, forceps delivery, vacuum delivery, cesarean delivery, maternal transfusion, unplanned hysterectomy, unplanned other maternal operation, admission to adult ICU, mother transfer, chorioamnionitis, meconium staining, assisted ventilation for the newborn, birthweight <2500 g, 5-minute Apgar score 0-3, admission to neonatal ICU, and newborn antibiotic use. Authors classified pregnancies as low and high-risk based on: maternal age, gestational age at delivery, pre-pregnancy body mass index, time that prenatal care was initiated, and whether it was a singleton pregnancy in cephalic presentation. They also looked at whether women had evidence of health conditions including: pre-pregnancy diabetes, gestational diabetes, pre-pregnancy hypertension, history of preterm birth, history of cesarean delivery, syphilis, and hepatitis B and C.
- An older global study conducted by AbouZahr (2003)⁽¹²⁾ estimated that 37.5% of live births resulted in a complication (i.e., severe postpartum hemorrhage, sepsis, pre-eclampsia/eclampsia, obstructed labor, abortion).
- Many studies on the prevalence of specific obstetric complications, near misses, or severe maternal morbidity are hospital-based rather than population-based and are difficult to interpret especially if a substantial proportion of births take place at home or at lower-level facilities.
- A multi-country WHO global survey by Souza et al (2013) found that out of 314,623 women who attended 357 health facilities (offering surgical services) in 29 countries, 7.3% had potentially life-threatening disorders (i.e., hemorrhage, infection, hypertensive disorders and other indirect complications or diseases; women with abortions and ectopic pregnancies that were classified as a severe maternal

outcome would have been included, but this study found no cases; women with prolonged or obstructed labor were not included).⁽¹³⁾

- A recent umbrella review by Boychuk et. al. (unpublished, 2021)⁽¹⁴⁾ looked at 43 systematic reviews and meta-analyses to estimate prevalence of major direct obstetric complications. The authors found that due to variations in study design and a lack of standardized, high-quality data, it was difficult to combine estimates and therefore concluded that there is insufficient evidence to change the 15% estimate.

References

- (1) Hartfield VJ. Maternal Mortality in Nigeria Compared with Earlier International Experience. *Int J Gynecol Obstet.* 1980;18(1):70-75. doi:<https://doi.org/10.1002/j.1879-3479.1980.tb00246.x>
- (2) Hibbard LT. Complications of pregnancy and delivery. In: Lange, ed. *Current Obstetric and Gynecological Diagnosis and Treatment.* Los Altos, CA: R.C. Benson; 1978:664-686.
- (3) Say L, Pattinson RC, Gülmezoglu AM. WHO systematic review of maternal morbidity and mortality: the prevalence of severe acute maternal morbidity (near miss). *Reprod Health.* 2004;1(1):3. doi:10.1186/1742-4755-1-3
- (4) Prual A, Bouvier-Colle M, Bernis L de, Breart G. Severe maternal morbidity from direct obstetric causes in West Africa: incidence and case fatality rates. *Bull World Health Organ.* 2000;78(5):593-602.
- (5) McCord C, Premkumar R, Arole S, Arole R. Efficient and effective emergency obstetric care in a rural Indian community where most deliveries are at home. *Int J Gynecol Obstet.* 2001;75(3):297-307. doi:[https://doi.org/10.1016/S0020-7292\(01\)00526-4](https://doi.org/10.1016/S0020-7292(01)00526-4)
- (6) Bennett TA, Kotelchuck M, Cox CE, Tucker MJ, Nadeau DA. Pregnancy-associated hospitalizations in the United States in 1991 and 1992: A comprehensive view of maternal morbidity. *Am J Obstet Gynecol.* 1998;178(2):346-354. doi:10.1016/S0002-9378(98)80024-0
- (7) The Prevention of Maternal Mortality Network. Situation analyses of emergency obstetric care: examples from eleven operations research projects in west Africa. *Soc Sci Med.* 1995;40(5):657-667.
- (8) Bang RA, Bang AT, Reddy MH, Deshmukh MD, Baitule SB, Filippi V. Maternal morbidity during labour and the puerperium in rural homes and the need for medical attention: A prospective observational study in Gadchiroli, India. *BJOG An Int J Obstet Gynaecol.* 2004;111(3):231-238. doi:<https://doi.org/10.1111/j.1471-0528.2004.00063.x>
- (9) Sheldon WR, Durocher J, Winikoff B, Blum J, Trussell J. How effective are the components of active management of the third stage of labor? *BMC Pregnancy Childbirth.* 2013;13(1):46. doi:10.1186/1471-2393-13-46
- (10) Aftab F, Ahmed I, Ahmed S, et al. Direct maternal morbidity and the risk of pregnancy-related deaths, stillbirths, and neonatal deaths in South Asia and sub-Saharan Africa: A population-based prospective cohort study in 8 countries. *PLOS Med.* 2021;18(6):e1003644. <https://doi.org/10.1371/journal.pmed.1003644>.
- (11) Danilack VA, Nunes AP, Phipps MG. Unexpected complications of low-risk pregnancies in the United States. *Am J Obstet Gynecol.* 2015;212(6):809.e1-809.e6. doi:10.1016/j.ajog.2015.03.038
- (12) AbouZahr C. Global burden of maternal death and disability. *Br Med Bull.* 2003;67(1):1-11. doi:10.1093/bmb/ldg015
- (13) Souza JP, Gülmezoglu AM, Vogel J, et al. Moving beyond essential interventions for reduction of maternal mortality (the WHO Multicountry Survey on Maternal and Newborn Health): a cross-sectional study. *Lancet.* 2013;381(9879):1747-1755. doi:10.1016/S0140-6736(13)60686-8
- (14) Boychuk N, Bamforth E, Sarakki A. Synthesizing and translating evidence on the “need” in “met need”: An umbrella review. 2021.