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Maternal mortality in Afghanistan: setting achievable targets

In 2002, soon after the NATO-led overthrow of the Taliban regime, a survey of maternal mortality in Afghanistan was done, commissioned by the Afghan Ministry of Public Health, the US Centers for Disease Control and Prevention, and UNICEF. The results were published in *The Lancet* in 2005 and estimated the maternal mortality ratio (MMR) to be 1600 deaths per 100 000 livebirths (95% CI 1100–2000),[1,2] among the highest in the world and consistent with the UN estimates.[1] In the most remote rural district, Ragh, in mountainous Badakhshan Province, the estimate was 6507 per 100 000 livebirths,[1] among the highest MMRs recorded globally. There, the most common cause of maternal deaths (30%) was obstructed labour and most women who died were young.[1] In the two most remote rural sites, Maywand and Ragh, no woman who died was assisted by a skilled birth attendant.[1] The survey provided a benchmark and pointer to a national priority.

8 years later, the USAID-funded Afghanistan Mortality Survey 2010 (AMS) estimated MMR of 327 deaths per 100 000 livebirths.[3] UN agencies initially rejected the AMS figure, which I have been told resulted in a year-long discussion involving the Afghan Ministry of Public Health, UN organisations, and other agencies, before agreement and publication of the survey's findings in 2011, bearing the logos of WHO, UNICEF, and UNFPA.

If both primary surveys were approximately accurate, Afghanistan would have achieved Millennium Development Goal (MDG) 5a, a 75% reduction in MMR from 1990 to 2015, 5 years early. Could it have been achieved so fast? Some have asked if this decline in MMR was "too good to be true?"[4,5] In 2010, two-thirds of deliveries in Afghanistan took place at home without a skilled birth attendant and fertility was estimated at 5·1 livebirths per woman,[6] the highest outside sub-Saharan Africa.

The health service in Afghanistan, among the poorest in the world, has been donor funded in full at a rate of US$4·55 to $5 per person per annum.[4] Since maternal

mortality is a key indicator of the effectiveness of health services, any overemphasis of progress could affect donor funding to the detriment of the whole health service. MMR is hard to estimate in a war-torn, low-income country. Other estimations, based on proxy indicators such as fertility and attendance of births by a skilled birth attendant, have been just as varied. 14 such estimations, commonly covering periods of 3–7 years between 2000 and 2008, either by UN organisations or published in peer-reviewed journals, have estimated MMR of between 584 and 1957 per 100 000 livebirths, commonly with wide confidence intervals.[5]

In January, 2017, the Demographic and Health Survey 2015 published an estimate of MMR for Afghanistan of 1291 per 100 000 livebirths and that figure will be used for planning by the Government of Afghanistan.[7] In 2015, 3545 civilians were killed in escalating conflict,[8] but if the Demographic and Health Survey MMR figure is correct, maternal mortality was almost five times greater than that number.

Much progress has been made since 2002 in building the health service in Afghanistan, with emphasis on building and staffing health centres for the population—a population that was 73% rural in 2015.[9] At the Brussels Conference on Afghanistan in October, 2016, donor countries pledged funds for the next 4 years,[10] but they can be expected to reduce funding for health care in the coming decade.

Training midwives is a national priority. But recruiting them to work in remote rural health centres after training in cities is difficult. Many health centres have no midwives. Under "Results Based Financing", midwives are paid a bonus for each birth they attend. But Afghanistan is the eighth most corrupt country in the world on Transparency International's Corruption Index[11] and midwives reportedly inflate numbers, which are seldom subject to verification. Almost all Afghans know that numbers are inflated, but nobody says. In recent years, trainee midwives have been recruited from villages with agreement that they will return and provide services for the surrounding group of seven or eight villages.[12] Some return to their villages, some don't.

More than improved health care is required. If a woman starts out with her husband on a 3 h journey by donkey to the health centre, she risks giving birth on the way. Lack of transport also prevents midwives

Mohammad Ismail/Reuters

from reaching women with complications of labour and from providing antenatal care and birth planning in villages. Until village earth roads are improved and emergency transport is affordable and available, maternal mortality will only fall to a certain level. But despite worldwide recognition that many maternal deaths are due to delays in deciding to make the journey to a health facility and in finding transport,[13,14] maternal mortality is seen overwhelmingly as the responsibility of the health services alone. The Government of Afghanistan aims to achieve intersectoral cooperation,[15] and it is hoped that this will enlist other ministries and provincial directorates in reducing maternal mortality. This approach mirrors the aim of the Sustainable Development Goals (SDGs) to work across sectors.

Has the WHO prescription for all births to be attended by a skilled birth attendant[16] set the standard too high for Afghanistan? Village community health workers there are not trained to assist at births and can only watch as women die.

The 2015 Demographic and Health Survey MMR estimate sets a realistic baseline against which achievements of the SDGs can be measured. The recently published RAMOS II study estimates significant decrease of MMR between 2002 and 2011 in both its study sites, Kabul (by 71%) and Ragh (by 84%), and postulates that the increase in MMR reported by the 2015 Demographic and Health Survey occurred in the context of increasing insecurity since 2010.[17]

Setting high targets can be a spur to achievement. Setting them too high can encourage shortcuts and

falsification, and so can be counterproductive to our collective goal of improving maternal health worldwide.

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Computer-assisted diagnosis for skin cancer: have we been outsmarted?

Skin cancer is the most common malignancy in fair-skinned populations, with melanoma incidence the highest in New Zealand and Australia (50 and 48 per 100 000 population, respectively) and projected to increase in the UK (from 17 to 36 per 100 000 population) and in the USA (from 29 to 32 per 100 000 population) between 2007–11 and 2022–26.[1] Non-melanoma skin cancer is up to 20 times more common than melanoma worldwide.[2] For every melanoma diagnosed, there are from three to 40 benign lesions biopsied; the proportion of biopsied lesions that are benign is generally greater in primary care than in specialist settings.[3] The annual cost of skin cancer treatment has been estimated at US$8·1 billion in the USA[4] and continues to rise. To improve diagnostic accuracy, reduce health-care costs from unnecessary procedures, and improve outcomes for patients, there has been enormous interest and investment in the development of computer-assisted diagnosis of skin cancer, particularly for melanoma.

Skin cancer clinical assessment has improved considerably over recent decades, particularly with the use of dermoscopy.[5] However, pattern recognition is operator dependent. Therefore, automated pattern recognition systems have been developed to assist in clinical decision making.[6] Although some automated systems may improve sensitivity, the trade-offs have been poor specificity and high cost, which therefore limit their use for screening.[6] However, Esteva and colleagues[7] recently reported on new technology using deep convolutional neural networks (CNN). This computational model was trained on a large dataset of 129 450 dermatologist-labelled (including 1942 biopsy-labelled) clinical images, and was found to have similar diagnostic sensitivity and specificity to dermatologists.[7]

These findings are of considerable interest because of the potential of CNN to improve diagnostic accuracy of skin cancer. However, CNN-based classification of skin