

In developing world, economic benefits trump expense of C-sections

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Surgery, often thought to be too expensive for wholesale global health delivery, can be a highly cost-effective means of improving health in the developing world.

According to [World Health Organization](#) estimates, a significant number of nations are insufficiently providing Caesarean deliveries to meet demand, resulting in the death of thousands of mothers each year. In addition to saving lives, investing in the training and infrastructure needed to provide simple surgery such as Caesarean delivery can provide significant net economic benefits, a new study says. The median [economic benefit](#) of the death and disability prevented outweighs the cost of the procedures 6 to 1 for the 49 developing countries included in the study. On average, for every \$1 invested in providing the surgery, \$6 of [economic value](#) are earned by preventing deaths and disabilities.

The study, led by John Meara, director of Harvard Medical School's Program in Global Surgery and Social Change and chief of the Department of Plastic and Oral Surgery at Children's Hospital Boston, calculated the benefit-cost ratio for providing Caesarean delivery in cases of obstructed labor in the 49 countries identified and found that the treatment was highly cost effective in 48 of 49, according to international standards of cost effectiveness. What's more, in 46 out of 49 countries, the procedures cost less to perform than they earn; they create a net positive economic benefit.

The results will be published in [PLoS One](#) on April 25.

"The conclusion is straightforward: surgery, or more specifically in this case, Caesarean delivery, is not a luxury that should be reserved for the developed world," said Blake Alkire, first author of the paper and a clinical fellow in surgery at Brigham and Women's Hospital.

"Although one might arrive at this position solely based on human rights theory, our study suggests that surgery can also be highly cost-effective and a good economic proposition," Meara said.

Co-author Paul Farmer has pointed out that, although surgical disease remains a ranking killer of the world's poor, surgery is "the neglected stepchild of global health." Farmer is Kolokotronis University Professor at Harvard University, chair of the Department of Global Health and Social Medicine at HMS and a co-founder of Partners In Health.

"Of course, those of us whose patients have died for want of this basic surgical intervention have long known of the terrible cost—not just to the women and their families, but to the communities and whole countries which bear the greatest burden of preventable death and illness," said Farmer, who is also chief of the Division of Global Health Equity at Brigham and Women's Hospital. "As this study makes clear, these are not only 'stupid deaths,' as is said in Haiti (which has the highest maternal mortality rate in our hemisphere), not just tragedies, but tragic misallocations of resources."

Up to 273,000 women die each year from complications of pregnancy. In a 2010 report, the WHO identified nations in the developing world where potentially life-saving C-sections were being underutilized: by performing 2.8 million additional Caesarean deliveries for obstructed labor in 49 of these countries, Meara's study projected that 16,800 mother's lives would be saved. Many other women would be spared lives with chronic disabilities such as obstetric fistula, an abnormal communication between the vagina and the rectum following difficult

labor.

"When people ask 'is there money to do this?' I say that the return on investment is so high that we can't afford not to do this," said Ian Metzler, co-author and fourth-year medical student at HMS, currently studying health systems change at Children's Hospital Boston. Other co-authors include Christy Turlington Burns, founder of Every Mother Counts, and Jeffrey Vincent, Clarence F. Korstian Professor of Forest Economics and Management at Duke University, Durham, NC.

The researchers used two common statistical tools: The Disability-Adjusted Life Year (DALY), which is a measure of overall health impact, and the Value of a Statistical Life (VSL), which measures economic cost of phenomena that endanger and degrade health on a broad scale. They calculated the economic cost of the lives that are lost and diminished due to the lack of Caesarean delivery. The researchers say that their estimates were conservative.

For the countries studied, the median cost of each surgery was \$141, and the median cost to avert the loss of a healthy year of life was \$304.

"This research shows that surgical interventions are within the same realm of cost effectiveness as very common interventions, like measles vaccination or antiretrovirals for HIV, and should be considered as part of the basic tool kit for global health delivery," Meara said.

"Research is one of the most critical steps to combating maternal mortality," said co-author Burns, who is also a member of the HMS [Global Health](#) Advisory Council. "It is imperative that ministers of health, donors and NGOs have updated information and recommended solutions for the allocation of scarce resources as they relate to maternal health."

More information: Alkire BC, Vincent JR, Burns CT, Metzler IS, Farmer PE, et al. (2012) Obstructed Labor and Caesarean Delivery: The Cost and Benefit of Surgical Intervention. PLoS ONE 7(4): e34595. [doi:10.1371/journal.pone.0034595](https://doi.org/10.1371/journal.pone.0034595)

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