





#### UNIVERSITY OF BERGEN Global Health Priorities



# A Cost-Effectiveness Analysis of Maternal and Neonatal Health Interventions in Ethiopia

# Summary

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Ethiopia has one of the highest rates of maternal and neonatal deaths in sub-Saharan Africa. As Ethiopia works towards achieving improved population health commensurate with the average in lower middle-income countries, more evidence on the most cost-effective interventions will be necessary to maximize health benefits for available resources.

## Background

Despite notable improvements in maternal and child health outcomes, in 2016, neonatal deaths accounted for 43% of underfive mortality in Ethiopia.<sup>1</sup> An estimated 11,000 women died during pregnancy or childbirth in 2015 in Ethiopia.<sup>2</sup> This can be attributed both to risks related to pregnancy and childbirth, but also to low coverage and poor quality health services.<sup>1,3</sup> In 2015, coverage of skilled birth attendants and antenatal visits were 28 and 13% respectively.<sup>1</sup>

Cost-effectiveness analyses (CEA) have become increasingly used within health policy and planning. However, such evidence is lacking for health policy decisions in low-income settings such as Ethiopia.

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#### **Disease Control Priorities-Ethiopia (DCP-E)**

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			Healthy life-years gained (millions)		per healthy
		Total cost US\$			life-year
No.	Intervention	(millions)	Discounted	Undiscounted	gained)
1	Kangaroo mother care	0.29	0.037	0.074	8
2	Neonatal resuscitation (institutional)	0.36	0.055	0.110	7
3	Induction of labor (beyond 41 weeks)	0.39	0.003	0.005	152
4	Management of pre-eclampsia and eclampsia	0.52	0.005	0.008	108
5	Antibiotics for preterm pre-labour rupture of membrane (pPRoM)	0.59	0.009	0.017	69
6	Safe abortion	0.74	0.007	0.011	108
7	Antenatal corticosteroids for preterm labor	0.84	0.009	0.017	98
8	Newborn sepsis - Injectable antibiotics	0.91	0.052	0.105	17
9	Maternal sepsis case management	1.15	0.005	0.009	220
10	Syphilis detection and treatment (pregnant women)	1.52	0.007	0.014	224
11	Active management of the 3rd stage of labor	1.62	0.007	0.011	245
12	Tetanus toxoid (pregnant women)	2.69	0.016	0.032	168
13	Calcium supplementation	4.95	0.002	0.003	3081

**Table 1**. Cost, health impact, and cost-effectiveness for a 20-percentage-point-increase in coverage of maternal and neonatal interventions in Ethiopia in 2018. Source: Memirie et al. (2019)<sup>4</sup>.

# **Methods**

In a recent article by Memirie et al<sup>4</sup>, the authors analyzed the cost-effectiveness of 13 maternal and neonatal health (MNH) interventions in Ethiopia (see list in Table 1). The interventions were selected based on recommendations and evidence of their benefits to maternal and neonatal survival.

## Analysis

The authors set target coverage at a 20 percent increase from the baseline of all interventions. The Lives Saved Tool<sup>5</sup> was used to determine cause-specific neonatal and maternal deaths associated with diseases/conditions for baseline coverage levels. Disability-adjusted life years (DALYs) averted by each intervention were calculated as the sum of deaths preventable at each age, multiplied by healthy-adjusted life expectancy at that age, and discounted at 3% per year. Costs were estimated from the perspective of the provider and only for direct medical costs borne by the provider upon service delivery.

#### Results

Implementation of the 12 interventions (except calcium supplements) would avert 8000 neonatal deaths and more than 1000 maternal deaths at a cost of nearly US\$12 million annually (20-percentage-point coverage increase). All interventions except calcium supplements were found to be very costeffective with incremental cost-effectiveness below US\$300 per healthy life year gained (Table 1). Most of these interventions could be delivered at the primary health care (PHC) level. With the recent expansion of PHC in Ethiopia, it becomes timely to scale up MNH interventions at the community level.

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Even though these interventions would be cost-effective and life saving, improving the quality of care delivery and social mobilization to enhance service demand will require additional efforts.

## Next steps

The annual budget required to implement a 20% coverage increase for the interventions would be of \$0.11 per capita or 0.5% of Ethiopia's total health expenditure. It is recommended that given the substantial health dividend from investing in the interventions outlined, policymakers should scale up MNH interventions which should be included in the Essential Health Services Package revision.

#### References

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