



Health Care Professional Shortages and Skill-Mix Options Using Community Health Workers: New Estimates for 2015

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This paper estimates the need, supply, and shortage of doctors, nurses, and midwives in 84 low- and middle-income non-African countries in 2015, the target date of the United Nations Millennium Development Goals (MDG). The wage bill required to eliminate the shortages was calculated based on simulating different skill mixes of workers, including community health workers.

Based on *World Health Organization, Working Together for Health* 2006 report, we assume each country needs 2.28 doctors, nurses, and midwives per 1,000 population. The need is comprised of 0.55 doctors, based on Scheffler et al. (2008)'s arcsine-log regression model, resulting in 1.73 nurses and midwives. Supply estimates were based on Scheffler et al.'s growth model, and each country's nurse-plus-midwife-to-doctor ratio. Workforce shortage estimates were calculated based on the difference between the estimated need and supply, and the wage bill to required to eliminate the shortages was calculated based on each cadre's wage and simulating different skill mixes. Data on the number of doctors, nurses, and midwives by country are from the WHO Global Atlas of the Health Workforce. Doctor and nurse wage data are from the Occupational Wages around the World database.

We forecast that 12 of the 84 countries analyzed will experience needs-based shortages of doctors, nurses and midwives in 2015, totalling approximately 581,000 health care professionals. We estimate the additional annual wage bill required to eliminate the shortages to be approximately \$1.8 billion (2007 U.S. dollars), or 80 percent of the current wage bill projections for these countries in 2015. We use simulations to illustrate how workforce mix changes, including the introduction of community health workers, can reduce this wage bill shortfall.

The 12 countries identified with workforce shortages need to scale up their cadres of health workers. However, it will be difficult to obtain the required financing, so productivity improvements need to be considered. Identifying the optimal skill mix of workers is important, given the vast training and cost differences among workers. This effort will help these countries achieve the MDGs.

Keywords: Health Workforce; Low - and Middle -Income Countries; Health Spending; Doctors; Nurses; Community Health Workers; Health Worker Skill Mix.