

Optimal Staffing in Community Health Centers to Improve Quality of Care

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Objective: To examine the effects of health workforce on quality of care delivered in CHCs, measured by percent of patients with diabetes and hypertension who have their chronic conditions under control.

Methods: Using 2014-2016 data from the Uniform Data System (UDS) combined with IRS Form 990 Nonprofit Organization Tax Return data and BLS Occupational Employment Statistics, we conducted multivariate regression analysis to understand the impact of medical workforce configuration on quality of care measured by percent of patients with diabetes or hypertension who have the conditions under control. The analysis sample consists of 3,149 center-year observations from 1,182 grantees. We employed a generalized production function approach, using six input factors: primary care physicians (PCPs), APC, other medical support staff, administrative staff, enabling staff, and capital. We then conducted a simulation-based cost-effectiveness analysis using parameters estimated from the regression analysis. A latent profile analysis was conducted to categorize CHCs' best investment strategies (i.e. combination of factors) in terms of maximizing quality. A multinomial logit model was used to explore non-workforce CHC characteristics and county characteristics associated with the simulated best strategy.

Findings: Over the study period, among the sampled CHCs, the average quality measure was 63.9% of patients with diabetes or hypertension with their conditions under control. The direct quality effects of an additional PCP (0.241 % pts) and APC (0.244 % pts) were nearly identical. Their indirect and total quality effects were also very similar. The \$1 million investment for each center would on average improve the quality measure by 5.1 percentage points. The latent profile analysis of simulation results found four types of investment combinations: hiring mostly APC (65% of CHCs); hiring APCs and nurses (8%); hiring nurses and administrative staff and investing in capital (12%); hiring PCPs and nurses (15%). The multinomial logit model showed that CHCs that serve smaller patient population, deal with less complex patients, are in non-metropolitan area, and are in expansion states are more likely to have a best strategy to hire "mostly APCs" or "APCs and nurses."

Conclusion: This study provides evidence that health workforce is an important factor in promoting quality of care. PCPs and APCs are most important contributors to quality of care and they are similarly effective in improving quality of care, measured as chronic condition management examined in this analysis. While a majority of CHCs would be best served by hiring APCs to improve quality of care, no single strategy would be best for all centers.

Key Words: quality of care, staffing