COST SAVINGS AND COST BENEFIT ANALYSES

Justifying the higher cost of comprehensive school health

RUTH AND NORMAN RALES
Rales Center for the Integration of Health and Education

JOHNS HOPKINS CHILDREN'S CENTER

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COST SAVINGS AND COST BENEFIT ANALYSES

What did we do?

We tracked averted ambulance transports from school and emergency department (ED) visits as a result of the Rales Health Center's (RHC's) clinical services to evaluate cost savings. We also conducted a cost/benefit analysis to understand whether the higher costs of the RHC's comprehensive model could be offset by its benefits. We are currently conducting an analysis of potential cost savings to Medicaid, which insures the majority of KIPP students, using healthcare claims data.

Every dollar invested in the Rales Health Center returns $4.20 of net social benefit.

Rationale

The U.S. Community Health Services Task Force found strong evidence for the impact of school-based health centers (SBHCs) on school performance, asthma outcomes, vaccination rates, health risk behaviors, ED visits, and hospitalizations [1]. The Task Force also found that SBHCs result in net savings to Medicaid [2]. The most comprehensive SBHC models, particularly those with intensive, proactive chronic disease management components like the RHC, may be the most effective. However, they are also more expensive than traditional SBHCs and often serve students with higher healthcare costs. For example, chronic disease rates are higher in the RHC's population of 80% Medicaid-insured patients than in the general population. Specifically, 36.5% of students have asthma (vs. 8% among US children [3]) and 38.8% have overweight or obesity (vs. 35.1% among school-aged children nationwide [4]).

A traditional SBHC in Baltimore City that serves 1,500 students but does not offer the RHC's comprehensive population health and chronic disease management approach has estimated personnel costs of $332,000/year. The costs include a full-time nurse, medical assistant, and nurse practitioner, and a fraction of a medical director and nurse supervisor who are shared across the school district. The RHC, given its additional nurse, part-time family advocate, and greater pediatrician time, has staffing costs of approximately $445,100/year, a difference of $113,100 per year that needs to be accounted for in savings to payers and other stakeholders to justify scaling.

Summary of Implementation and Results

Costs Savings from Avoiding ED Visits

We have carefully tracked the number of RHC patients for whom an ambulance transport/emergency department (ED) visit would have been mandated by Maryland school nursing protocols in the absence of the RHC's SBHC services. According to the Maryland Health Services Cost Review Commission, the cost of an ED visit in Baltimore is $1,600/event [5]. From 2015-2019, 263 ED visits were avoided at the RHC, saving the healthcare system an estimated $420,800, in addition to hospital admissions savings [6].

Costs Effectiveness of the Rales Model

In a study published in the *American Journal of Preventive Medicine,* we found a net social benefit from the U.S. societal perspective of $4.20 for every dollar invested in the RHC [7]. The societal net social benefit approach allowed us to account for factors such as parent work productivity, school absenteeism (which is costly to schools and school districts), as well as healthcare costs. Total monetized incremental benefits of the RHC were estimated to be $993,414, and the expected net social benefit for the RHC was $756,937 (Figure 1).

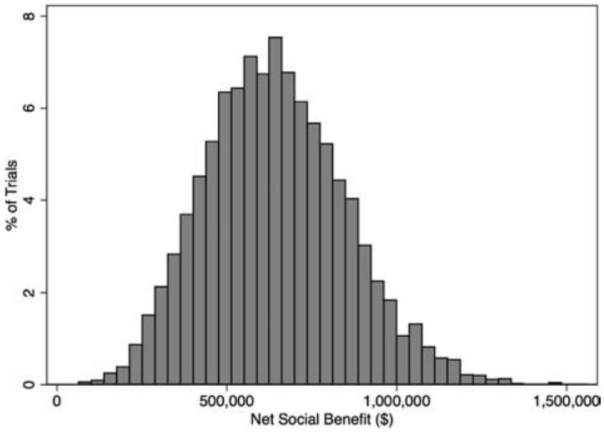

Figure 1: Net social benefit of the RHC in 10,000 Monte Carlo Simulations [7].

These findings suggest that despite the greater cost associated with the RHC, providing comprehensive, high-quality pediatric care in schools with a large proportion of underserved students is cost-effective. However, ED visit and hospitalization rates and costs were estimated using state averages rather than patient-specific costs, which were not available at the time, and the analysis did not focus on costs to payers (e.g., Medicaid). This analysis also focused primarily on costs related to asthma, the primary reason for pediatric ED visits [8] rather than all conditions.

Costs Analysis using Health Care Expenditure Data

The RHC's comprehensive approach also provides an opportunity to contain healthcare costs at the population level. Medicaid is paying for an increasing share of ED visits for all children (from 45% in 2006 to 62% in 2015 [9]) and 80% of RHC SBHC patients are enrolled in Medicaid. Thus, cost-saving solutions to prevent unnecessary visits are timely and urgently needed [9]. Building on prior modeling of cost-benefit analyses [7], the Rales Center team is undertaking an evaluation of the cost-effectiveness of the Rales Model based on Medicaid claims data.

The Medicaid utilization analysis is examining students' ED use, hospitalizations, and healthcare costs compared to 1) their own utilization and costs three years prior to enrollment in the RHC, and 2) compared to a control sample of children not enrolled in the RHC. We hypothesize that students' healthcare costs will be lower after RHC enrollment due to improved care of chronic diseases and therefore, lower numbers of high cost ED and hospitalization encounters. We obtained claims data for students enrolled in both Medicaid and the Rales Center during the 2015-2019 school years, and we have requested a control sample of children not enrolled in the center. The data include all information on outpatient, inpatient, and pharmacy encounters, and healthcare costs. Data on healthcare costs include total capitation payments made yearly from Medicaid to managed care organizations, estimated payments from managed care organizations to individual providers and institutions for billed direct services, and pharmacy charges for filled prescriptions.

Some example questions to be answered include, "How many times were children with asthma seen in the emergency department before and after enrollment in the RHC?" and "What was the total cost of care, paid for by an insurance group, for students diagnosed with asthma before and after enrollment in the RHC?" The answers to these questions will shed additional light on potential cost savings associated with a comprehensive program that delivers accessible, quality care to a student population with high prevalence of chronic disease.

Avoiding 263 emergency department visits saved the health system $420,800.

Dissemination

- Padula WV, Connor K, Mueller J, Calderon G, Johnson SB. Cost benefit of comprehensive primary and preventive school-based health care. American Journal of Preventive Medicine. 2018; 54(1),80-86.
- Student Thesis: Josiah Mueller RN, The Johns Hopkins University. Degree: MHS (Health Economics). Determining the Value of a Comprehensive Primary and Preventive Care Model for School-Based Health Centers: A Cost-Benefit Analysis.
- Determining the Value of a Comprehensive Primary and Preventive Care Model for School-Based Health Centers: A Cost-Benefit Analysis; Poster presented at the International Society for Pharmaeconomics and Outcomes Research. ISPOR 21st Annual International Meeting, Washington, DC, USA. 2016.

Impact

- Being able to treat common reasons that children seek care in the emergency department, particularly asthma, helps reduce ambulance transports, ED visits, and associated health care costs.
- Despite higher costs, the RHC appears to generate substantial social benefit; additional analyses to confirm savings to payers are ongoing.

LESSONS LEARNED

- *Benefits of comprehensive school-based health care are likely to accrue to a variety of sectors beyond health care including lost time from school absences and lost work time for parents and caregivers.*
- *Because economic benefits accrue to sectors that are not traditional stakeholders in school-based health care cost-savings discussions (i.e., healthcare and education) it will be important to engage new partners in discussions about the benefits of providing comprehensive care in school for medically underserved students.*

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To Our Loyal Supporters

We are grateful to all those who have joined us in our mission to create models of school health that help every child to achieve their full health and academic potential. Special thanks to the Norman and Ruth Rales Foundation and our partners at KIPP Baltimore; without them this work would not be possible.

To learn more, please visit https://ralescenter.hopkinschildrens.org

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