Physician Density and Location of Physician Training: The Impact on Avoidable Hospitalizations

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ABSTRACT

Purpose of the Study
The purpose of the study is to understand how physician availability and the percent of foreign born and foreign trained physicians (IMGs) potentially impact on the rate of avoidable hospitalizations.

Methods
Using Primary Care Service Areas, rates of adult avoidable hospitalizations were compared to the rate of primary care physicians. Multiway interactions were initially used to understand the data, and ultimately the PCAs were categorized into 4 geographic areas:
- New York City (Percent poverty and percent racial/ethnic minorities less than 20%)
- New York City (all other)
- Upstate Urban
- Upstate Rural

The study population for the research was New York State adults, ages 18 years and older, with at least one avoidable hospitalization discharge between 2009 and 2011.

Findings
Results indicated that the community characteristics of poverty, underrepresented minorities, and age had more of an impact on the rate of avoidable hospitalizations than physician density or the percentage of IMGs. Higher percentages of IMGs were associated with higher rates of avoidable hospitalizations in upstate urban areas and in more affluent PCAs of New York City. Only the least physician dense areas in New York City were associated with higher rates of avoidable hospitalizations.

Conclusion
It is evident that predisposing (race/ethnicity and age) and personal enabling (poverty) factors had a much more substantial impact on the rate of avoidable hospitalizations than enabling community (physician density and physician characteristics) factors.

INTRODUCTION

Poor access to primary care and/or poor quality of care may increase the number of unnecessary hospitalizations; as such, avoidable hospitalizations serve as a proxy for poor care. These hospitalizations could be avoided if a sufficient number of primary care providers were available within a defined community or neighborhood.

The existing literature suggests a number of factors are associated with avoidable hospitalization admissions and readmissions, including:
- Individual factors (age, gender, comorbidities, race/ethnicity, and socioeconomic status)
- Hospital factors (location, academic affiliation, and size)

Very little research has been conducted, however, on the impact of primary care physician density on avoidable hospital admissions and readmissions.

One model for assessing access to care is Andersen’s Behavioral Model of Health Service Use. This construct considers both individual and community factors in understanding potential facilitators or impediments to utilizing health care services and is organized by predisposing, enabling, and need factors.

METHODS

The purpose of this research was to determine if there are statistically significant associations between the rate of avoidable hospitalizations within New York State and both physician density and the location of physician training, as defined by location of medical schools. We also account selected predisposing, need, and enabling factors as identified in Andersen’s Behavioral Model of Health Services Use.

PCAs were used as the units of geography for this analysis. Given the complexity of the data, multi-way interactions were assessed and New York City was accordingly segregated into two analyses, those with both the percentage of poverty and the percentage of racial/ethnic minorities less than 20% (n=18); and those with poverty or racial/ethnic minorities less than 20% (n=18).

RESULTS

There were 158.2 unadjusted avoidable hospitalizations per 10,000 for the population 18 years of age or older statewide, including 168.9 per 10,000 population 18 years of age and older in NYC, 147.0 per 10,000 in Upstate urban areas, and 161.7 per 10,000 in Upstate rural areas.

NYC: Poverty and Underrepresented Minorities ≤ 20%
The percentage of IMGs was associated with the rate of avoidable hospitalizations in NYC in PCAs where poverty and underrepresented minorities were less than 20%, with the rate of avoidable hospitalizations 62% higher in PCAs where IMGs were less than 20% of total physicians, compared to PCAs were IMGs were 20% of total physicians.

Upstate Rural
The association between the percentage of IMGs and the rate of avoidable hospitalizations in rural PCAs was significant. The rate of avoidable hospitalizations was 18% higher for PCAs with 20% or more of IMGs to total physicians, compared to PCAs with less than 20% of IMGs to total physicians. In rural areas of NYS, areas with greater poverty had higher rates of avoidable hospitalizations.

DISCUSSION

If social determinants of health truly are the major contributor to the rate of avoidable hospitalizations, then any response to addressing avoidable hospitalizations must address those social determinants. Appropriate levels of social programs must be available within each community, targeting the most vulnerable populations, and within reach of those populations.

Effective delivery of primary care must also consider the people and their community. To close gaps in coverage, interventions to improve health care delivery should include the coordination of care both within, across, and outside traditional health care settings, such as with social service organizations. Finally, while IMGs are an integral part of the health care system in New York State and are placed in many underserved areas, through various federal and state programs, to increase access to care, their presence may have unintended consequences with respect to hospitalizations.