Impact of Hospital Medical Homes on Potentially Preventable Readmissions in New York State

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PURPOSE

This research examines the association between potentially preventable readmission rates in New York State hospitals who participated in the Hospital Medical Home demonstration compared to those that did not. This research also examines the association between potentially preventable readmission rates and other hospital characteristics.

BACKGROUND

The Hospital Medical Home demonstration (HMH) was a two-year quality and safety improvement project, which was carried out from 2013 to 2014 and overseen by the New York State (NYS) Department of Health. The Centers for Medicare and Medicaid Services provided funding of up to $250 million to 60 teaching hospitals for this demonstration. The goal of the HMH demonstration was to improve the quality of care for NYS Medicaid members at residency training sites. The objectives of the demonstration were to transform outpatient department sites into Level 2 or 3 2011 National Committee for Quality Assurance Patient-Centered Medical Homes (PCMH) and teach PCMH concepts to residents in order to improve care coordination, continuity and quality. It is hypothesized that improved care coordination will decrease potentially preventable readmission (PPR) rates.

METHODS

PPR rates (observed PPR chains per 100 at risk inpatient events as defined by 3M™) for 2011 through 2013 at hospitals in NYS (adjusted for patient age group, mental health status, severity of illness, and All Patient Refined Diagnosis Related Group) were obtained from the Health Data NY website. Hospital characteristics were extracted from the NYS Health Facilities Information System and teaching hospitals were identified using NYS Department of Health Medicaid Graduate Medical Education funding rosters. Metropolitan and nonmetropolitan hospitals were categorized using the 2013 National Center for Health Statistics classification scheme based on the United States Department of Agriculture rural/urban continuum codes. This metropolitan and nonmetropolitan designation is used as a proxy definition for urban and rural classification. The classification system of the Healthcare Cost and Utilization Project from the Agency for Health Research and Quality was used to define hospital size based on number of beds.

The changes in risk-adjusted PPR rates over time were assessed between HMH and non-HMH hospitals using linear regression, controlling for metropolitan/nonmetropolitan designation. Other variables such as teaching status and hospital size did not enhance the model. Additionally, mean comparison analyses were used to determine associations between PPR rates and HMH participation, teaching hospital designation, location in NYC or other metropolitan area, and hospital size. Outliers and influential observations were removed prior to analysis.

RESULTS

Risk-adjusted PPR rates decreased from 2011 to 2013 by 0.498 in HMH hospitals (p=0.001) and by 0.574 in non-HMH hospitals (p=0.013). Separate t-test analyses on hospital characteristics (Table 2) showed that metropolitan hospitals had a greater decrease in PPR rates than nonmetropolitan hospitals from 2011 to 2013 at the 90% confidence level (p=0.086). In the linear regression model (RSME=0.844), the metropolitan/nonmetropolitan designation is a statistically significant predictive factor (p<0.001) for the variations in PPR rates over time while HMH participation is not a statistically significant predictive factor (p=0.106) as shown in Table 3.

Table 1.

	Mean	90% Confidence Level	P-value	Variances
HMH (n=59)	-0.498	(-0.661, -0.334)	0.293	Unequal
Non-HMH (n=97)	-0.574	(-0.740, -0.408)		

Table 2.

	Mean	90% Confidence Level	P-value	Variances
Metropolitan (n=116)	-0.642	(-0.765, -0.518)	0.086	Unequal
Nonmetropolitan (n=27)	-0.310	(-0.695, 0.075)		

Table 3.

	Parameter Estimate	P-value	Variance Inflation Factor
HMH	0.258	0.106	1.170
2013 NCHS Metro/Nonmetro	0.205	<0.001	1.170

LIMITATIONS

There are some limitations to this analysis of the HMH demonstration. First, this analysis evaluates only the first year of the two-year HMH demonstration. The transformation of outpatient department sites into functioning medical homes may not have been completed at this time. An analysis through 2014 would provide better insight into the impact of HMH participation on PPR rates over time. Second, although outliers and influential observations were removed from the analysis, it is difficult to know whether these values were valid observations or true outliers resulting from an error. Third, other initiatives to reduce readmissions, including the Partnerships for Patients initiative and Performance Improvement Projects conducted by NYS Medicaid managed care plans, occurred during this time and may confound the results. Finally, not all hospitals participating in HMH took part in the Care Transitions program, which may have a greater association with reduced PPR rates.

Contact Eva Thomas at eva.thomas@health.ny.gov with any questions about this analysis.

DISCUSSION

While there was a decrease in PPR rates for both HMH and non-HMH hospitals from 2011 to 2013, there was no statistically significant difference between HMH participation and changes in PPR rates in NYS during this time period. Alternatively, there was a statistically significant difference in the decrease in PPR rates between rural and urban hospitals, and metropolitan/nonmetropolitan designation was a statistically significant predictor of the change in PPR rates from 2011 to 2013. The difference between urban and rural areas over time may be due to lack of access to health care and health care programs in rural areas. The results of the linear regression (adjusted R²=0.076) show that there is opportunity for future research in explaining variations in PPR rates over time in NYS. Health information technology, care coordination, ownership type, and services offered are other factors that may explain the variations in PPR rates over time.

CONCLUSIONS AND FUTURE RESEARCH

While there may not be an association between HMH participation and changes in PPR rates over time, there is an association between urban/rural classification and changes in PPR rates from 2011 to 2013 in NYS.

When PPR rates for 2014 become available, a more complete evaluation of the impact of HMH participation on PPR rates, taking into account other potential confounders, can be performed. Further, an evaluation of participation specifically in the Care Transitions program may better explain the changes in PPR rates over time.

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