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Insurance Expansion In Massachusetts Did Not Reduce Access Among Previously Insured Medicare Patients

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Abstract

Critics of Massachusetts's health reform, a model for the Affordable Care Act, have argued that insurance expansion probably had a negative spillover effect leading to worse outcomes among already insured patients, such as vulnerable Medicare patients. Using Medicare data from 2004 to 2009, we examined trends in preventable hospitalizations for conditions such as uncontrolled hypertension and diabetes—markers of access to effective primary care—in Massachusetts compared to control states. We found that after Massachusetts's health reform, preventable hospitalization rates for Medicare patients actually decreased more in Massachusetts than in control states (a reduction of 101 admissions per 100,000 patients per quarter compared to a reduction of 83 admissions). Therefore, we found no evidence that Massachusetts's insurance expansion had a deleterious spillover effect on preventable hospitalizations among the previously insured. Our findings should offer some reassurance that it is possible to expand access to uninsured Americans without negatively affecting important clinical outcomes for those who are already insured.

Introduction

In April 2006, Massachusetts passed health reform legislation with the goal of achieving near-universal health insurance coverage. This legislation is widely considered to be a model for the national Affordable Care Act of 2010. While there is broad consensus that the Massachusetts bill effectively expanded coverage to the previously uninsured,[1] we know almost nothing about its spillover effects on those who already had insurance. Indeed, the influx of large numbers of newly insured patients into the healthcare system has the potential to affect timely access to high quality care for previously insured patients, especially without a commensurate increase in physician supply. This could worsen clinical

outcomes for vulnerable populations; importantly, these effects may be particularly pronounced for the Medicare population, who are older and often chronically ill.

There are data to support these concerns: the Massachusetts Medical Society's annual Physician Workforce Study has demonstrated worsening shortages in the primary care workforce since the implementation of health reform, and a commensurate increase in the proportion of Massachusetts residents facing long waits to access care.[2, 3] From 2006 to 2007, during initial implementation of state health reform, average wait times to see an internist in Massachusetts increased by more than 50%, from 33 days to 52 days.[2] The potential "negative spillover" issue has also gotten significant attention in the national press: National Public Radio, The New York Times, The Washington Post, and USA Today, among others, have featured stories raising these concerns.[4–8] This issue was prominent during the Republican primary race when several candidates criticized the Massachusetts reform effort as leading to long wait times and worsening access to primary care.[9] However, there has been no empirical work examining whether these reported access issues have had measurable consequences for the previously insured, and given the salience of the Massachusetts experience to the broader national health reform debate, these data are critically needed.

Therefore, in this study, we sought to empirically examine the widespread concern that insurance expansion under Massachusetts Health Reform negatively affected Medicare enrollees. We chose to determine whether insurance expansion reduced access to care for the previously insured by examining rates of ambulatory care-sensitive hospitalizations, a well-validated set of clinical conditions for which appropriate ambulatory care prevents or reduces the need for admission to the hospital. [10–13] If the Massachusetts policy impacted Medicare patients in a clinically meaningful way, one would expect that their rates of these preventable hospitalizations would increase. Our specific research questions were as follows: first, was there an increase in rates of preventable hospitalizations for elderly Medicare enrollees in Massachusetts, compared to control states, after Massachusetts Health Reform was implemented? Second, were the negative effects of Massachusetts Health Reform, if any, particularly pronounced among the most vulnerable Medicare patients, such as minority patients or those over the age of 80? Finally, in the counties in which there was the highest new uptake of insurance, and therefore the greatest opportunity for negative spillover, were the effects of Massachusetts Health Reform on the previously insured particularly evident?

Methods

Data

We used the 100 percent Medicare Provider Analysis and Review (MedPAR) files from 2004 through 2009, which provide information on all acute-care hospitalizations for Medicare patients enrolled in the fee-for-service program. We excluded patients under 65 years of age as well as those enrolled in Medicare HMO plans for any portion of the year. Patient race was categorized in the Medicare data according to self-report. We used non-Massachusetts states in New England (Maine, New Hampshire, Vermont, Rhode Island, and Connecticut) as controls. We obtained data on physician supply from the Area Resource

Files. For a within-Massachusetts analysis in which we examined changes in insurance rates within counties, we used Small Area Health Insurance Estimates (SAHIE) provided by the US Census Bureau. We classified counties with pre-reform insured rates below the median as “high potential effect” counties, as shown in Appendix Exhibit 1[14]. We then calculated the change in insured rates from 2005–2006 to 2007–2009, and divided the counties into two groups based on whether their insurance take-up was above or below the median. The seven counties with take-up above the median were also the seven “high potential effect” counties, and thus we proceeded with analyses based on this group.

Outcomes

We defined preventable hospitalizations according to criteria outlined by the Agency for Healthcare Research and Quality (AHRQ) in their Prevention Quality Indicators.[13] These are a set of conditions for which access to high-quality outpatient care should reduce the risk of hospitalization. We identified patients hospitalized during each quarter, from first quarter 2004 through fourth quarter 2009, for these conditions. We focused on three composite measures: acute (dehydration, urinary tract infection, bacterial pneumonia), chronic (diabetes and its complications, chronic obstructive pulmonary disease, hypertension, heart failure, and angina), and overall (a composite measure combining the acute and chronic conditions). Please see Appendix Exhibit 2 for a complete list of the preventable hospitalization diagnoses [14]. Additional information about the AHRQ methodology can be accessed online.[15] We also examined non-ambulatory-care-sensitive conditions, which should have less of a relationship, if any, with access to ambulatory care. Based on prior research, we chose four “marker conditions” – hip fracture, acute myocardial infarction, stroke, and gastrointestinal bleeding[16–19] – and also examined an overall composite of these four. We excluded visits to Critical Access Hospitals, federal hospitals, or non-acute-care hospitals.

Analysis

We first plotted raw and seasonally adjusted preventable hospitalization rates for Massachusetts and the other states in New England, both before and after the implementation of Massachusetts Health Reform, defining the start of the reform as the fourth quarter of 2006. We report rates per 100,000 patients, as is customary for research reporting preventable hospitalizations.

We constructed patient-level linear regression models with hospitalization as the dependent variable for the three preventable hospitalization composites, four marker conditions, and a marker composite. We chose to use a linear probability model rather than a logistic model because it allowed us to calculate rates of change, which are more intuitive for presentation. However, we also constructed logistic regressions for all our models and confirmed that predictions for all time periods, states, and populations were essentially indistinguishable from our linear models.

Our primary approach was a difference-in-differences model that focused on changes in absolute preventable hospitalization rates between Massachusetts and control states. Each of these models adjusted for patient demographics by including age and race as covariates, and

for seasonality by including indicators for each quarter of the year. We used this model to calculate preventable admission rates for the pre-reform period and the post-reform period for Massachusetts and control states. Next, we compared effects after reform in the counties in Massachusetts with greater-than-median rates of new insurance take-up with the counties in Massachusetts in which new insurance take-up was less than the median. Here again, we built a similar regression model, but instead of comparing Massachusetts to control states, we compared patients in high take-up counties to patients in low take-up counties. We repeated our analyses for the three composite preventable hospitalization measures, limiting our sample to two pre-specified vulnerable populations. We examined black patients, who have previously been reported to have higher rates of preventable hospitalizations,[20] and separately, patients at least 80 years of age, who tend to be more frail and suffer from a higher burden of comorbidities.

Finally, we repeated our main analyses using three alternative model specifications. First, we repeated this analysis after excluding the fourth quarter of 2006 and all of 2007, the year in which the policy was implemented, to be sure that our analyses were not simply capturing an implementation effect. Second, we repeated the difference-in-difference in level analysis controlling for trends in preventable admission rates over time. Finally, we conducted a difference-in-differences in trend analysis, testing whether the change in trend from the pre-reform period to the post-reform period differed between Massachusetts and control states. These analyses yielded similar results and are available in the Appendix [14]. A two-sided p -value less than 0.05 was considered statistically significant. The study was approved by the Office of Human Research Administration at the Harvard School of Public Health.

Limitations

Because this study focuses on preventable hospitalizations and not on intermediate process measures such as wait times to see primary care providers, we are unable to directly examine whether Massachusetts Health Reform had a negative impact on access to primary care. Increased wait times may have important effects on patients, including inconvenience, worry, and stress; we were unable to measure these effects. We thus can only report that if significant delays did occur, they did not result in an increase in preventable hospitalizations for Medicare enrollees.

Another limitation is that some of the “preventable” admissions may be less preventable than others. Although these are widely accepted and validated metrics, the more acute conditions (e.g. urinary tract infections or pneumonia) may not be as sensitive to effective primary care. However, even when we examined each individual type of preventable hospitalization, including those that would seem more likely to be sensitive to access to primary care (e.g. uncontrolled diabetes or hypertension)[12, 21], we found no negative impact of Massachusetts health reform. Although other metrics of access to care would be potentially important, our findings are useful because preventable hospitalizations are an important clinical outcome for patients; further, because they are associated with substantially higher costs, preventable hospitalizations are a policy outcome of interest for access to care.

Another limitation is that the experience in Massachusetts may be unique, although one could argue that every state is unique. Rates of insurance in Massachusetts were somewhat higher than the median among all states even prior to health reform, and therefore one would expect a somewhat smaller effect in this context. Additionally, Massachusetts has a relatively good supply of physicians, although it has a higher proportion of specialist physicians than many other states. Given that our study had substantial power, our failure to find even a small effect is reassuring. However, other states with very large rates of uninsured and fewer primary care physicians, such as Texas, may not have the same experience; our study may generalize only to states with insurance and physician landscape more similar to those in Massachusetts.

Finally, as with any negative study, power to find a difference is a concern. However, we were examining a large population across many years, and thus, our findings suggest that if there was an increase in the preventable hospitalization rate in Massachusetts, it was less than 1.1 per 100,000 patients per quarter. This number is less than 0.3 percent of the seasonal variation in preventable hospitalizations between winter and summer (approximately 384 per 100,000 patients per quarter) or about 0.3 percent of the initial difference between Massachusetts and other states in New England (314 per 100,000 patients per quarter).

Results

Patient Sample

Our analytic sample consisted of 38,388,487 patient-quarter observations in Massachusetts and other states in New England. These observations were based on 3,214,521 unique patients, 1,323,851 in Massachusetts and 1,890,670 in other New England states. The Medicare patient population in Massachusetts was similar to the rest of New England in age, gender, and other characteristics, although Massachusetts had a slightly higher proportion of beneficiaries who were black or Hispanic (Exhibit 1).

Preventable Hospitalization Rates in Massachusetts and New England

When we plotted raw and seasonally-adjusted preventable hospitalization rates, we found that Massachusetts had higher baseline rates of preventable hospitalizations, but that trends in hospitalization rates were roughly parallel for both Massachusetts and the rest of New England over the time period before the reform (Exhibit 2, Appendix Exhibit 1).[14] After reform went into effect, we saw no obvious change in the relative rates between Massachusetts and the rest of New England.

When we modeled overall preventable hospitalization rates in Massachusetts versus controls in the pre-reform period, the quarterly preventable hospitalization rate in Massachusetts (1,548 hospitalizations per 100,000 patients) was higher than in control states (1,226 per 100,000 patients, Exhibit 3. During the post-reform period, quarterly preventable hospitalization rates were lower in both Massachusetts (1,447 per 100,000 patients) and control states (1,142 per 100,000 patients), and the drop was slightly greater in Massachusetts (-101 per 100,000 patients versus -83 per 100,000 patients, difference -17,

95% confidence interval (CI) -3 to -32, $p=0.020$). To put the size of this finding in perspective, this estimate is roughly one percent of the preventable hospitalization rate in Massachusetts prior to reform.

These results were similar when we examined the acute composite preventable hospitalization measure and the chronic composite measure Exhibit 3), as well as each of the individual measures (data not shown). When we examined rates of hospitalization for marker conditions (non-ambulatory-care-sensitive conditions), we also found a slightly greater decrease in Massachusetts compared with control states (Appendix Exhibit 4)[14].

When we repeated these analyses under our three alternative model specifications — first omitting the first 5 quarters of implementation, second controlling for time trends, and third conducting a difference in differences in trends analysis — we still found no significant deleterious relationship between implementation of health reform in Massachusetts and rates of preventable hospitalizations (Appendix Exhibits 5, 6, and 7).[14]

Preventable Hospitalization Rates in Massachusetts and New England for High-Risk Patients

When we examined our pre-specified high-risk groups (black patients and patients at least 80 years old), we also failed to find any negative impact of Massachusetts Health Reform on preventable hospitalizations. As expected, both black and elderly patients generally had higher preventable hospitalization rates than their counterparts, both in Massachusetts and control states. However, rates fell similarly in Massachusetts and controls for both patient subgroups from the pre-reform to the post-reform period (Exhibit 3).

Preventable Hospitalization Rates within Massachusetts

We performed within-Massachusetts analyses comparing counties that had a low baseline insurance rate (and thus a high potential negative spillover effect) to those with lower potential effect. In the pre-reform period, “high potential effect” counties had slightly higher preventable hospitalization rates (by 29 hospitalizations per 100,000 patients) than low potential effect counties. In the post-reform period, both groups’ rates of preventable hospitalizations decreased to a similar degree (-92 hospitalizations versus -109 hospitalizations per 100,000, $p=0.16$). However, we did identify a slightly greater decrease in the acute composite measure among low potential effect counties in Massachusetts compared to high potential effect counties (Exhibit 4).

Discussion

We found no evidence that Massachusetts healthcare reform, with its resulting insurance expansion and consequent threat of negative spillover on the previously insured, led to an increase in preventable hospitalizations among Medicare patients. In fact, there seemed to be a slight drop in preventable hospitalizations among Medicare patients in Massachusetts, though whether it was of a clinically significant magnitude is unclear. Despite substantial concerns in policy and political circles about the potential detrimental effects of insurance expansion on access to care for the elderly, we found no group of patients who seemed to be negatively affected based on the metrics examined. Finally, when we looked just within

Massachusetts at Medicare patients living in counties where there was a particularly large increase in the newly insured, we found no effect.

Given that our study had substantial power to detect even small differences, our findings should offer assurance to those who have worried that insurance expansion will have negative effects on health outcomes for Americans who are already insured. Even among the highest risk patients, namely older black patients, who have been widely documented to suffer from poorer access to care and higher rates of preventable hospitalizations,[20] and the oldest segments of the population, we found no increase in hospitalizations after health reform. As the Affordable Care Act is implemented, in many ways mirroring the implementation of reform in Massachusetts, one concern is that increasing the pool of patients may worsen access to care for those who need it the most, particularly older patients. While increased waiting times in and of themselves are certainly undesirable, and may cause concern or inconvenience for patients, our evidence suggests that the clinical impact of these spillovers may be small.

The lack of any effect of insurance expansion on access to care for the previously-insured elderly may be surprising. Given that insurance expansion brings more people into the primary care system, and given that, at least in Massachusetts, there was no commensurate increase in the number of primary care providers, one might have expected negative spillover on the previously insured. However, there are at least two possible explanations, either alone or in combination, which may explain why this risk of decreased access did not lead to an increase in preventable hospitalizations among Medicare enrollees in Massachusetts after healthcare reform. First, although there have been widespread reports of dramatic increases in waiting times in Massachusetts after health reform, actual hard data on whether patients experienced worse access are limited.[2, 3] It is possible that the effects on waiting times were not as substantial as reported.[2, 3] Second, even if average waiting times increased significantly, it is possible that ambulatory care providers were able to triage care so that those patients who needed to be seen the most were prioritized, and did not in fact have to wait any longer to access important medical care.

Another possibility is that we found no relationship between insurance expansion and preventable hospitalizations for the previously insured in Massachusetts because Massachusetts is atypical. Massachusetts had high levels of insurance coverage and a relatively high supply of primary care physicians prior to healthcare reform.[22, 23] Prior to the reform, 88.2 percent of its nonelderly population had insurance, compared to a median insured rate of 86.5 percent for the remaining states.[1] Therefore, some might argue that in states with lower starting levels of insurance or with less robust primary care physician supply, there may be bigger spillovers. However, even in communities within Massachusetts with the lowest baseline insurance rates, there was no overall negative impact of coverage expansion. Our findings thus suggest a degree of resiliency in the healthcare system's capacity to absorb newly insured patients. Whether these trends will hold up as the national ACA is implemented is unclear, however, and needs to be watched closely.

Others have examined the impact of insurance reform on access to care and patient outcomes. The effect of providing insurance to those who were previously uninsured has

been studied by several authors,[24–26] and indeed the Massachusetts reform has been recently studied by Jonathan Kolstad and Amanda Kowalski.[1] These studies generally highlight positive effects on access and outcomes, including hospitalizations for ambulatory-care-sensitive conditions. However, to our knowledge, there have been no studies examining the potential spillover impact of insurance expansion on those who already have insurance. Further, while there has been evidence suggesting that better access to primary care is associated with lower levels of preventable admissions,[12, 27] there have been no studies that we are aware of looking at changes in access to care among the previously insured as a result of healthcare reform, and its potential downstream effects.

Conclusions

We examined the impact of insurance expansion under Massachusetts healthcare reform, the model for national healthcare reform, on preventable hospitalizations for the previously-insured elderly. Despite widespread concern that insurance expansion can lead to substantial decreases in access to care, we found no evidence that it had a deleterious effect on preventable hospitalizations even within this vulnerable population. Although the national implementation of the Affordable Care Act will surely have a heterogeneous effect in terms of how states fare in ensuring adequate access to care, our findings should offer some comfort that it is possible to expand access to uninsured Americans without negatively impacting important clinical outcomes for those who are already insured.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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