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Rising Use of Observation Care Among the Commercially
Insured May Lead to Total and Out-of-Pocket Cost Savings

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Abstract

Proponents of hospital-based observation care argue that it has the potential to reduce health care spending and length of stay as compared to short-stay inpatient hospitalization. However, critics have raised concerns around the out-of-pocket spending associated with observation care. Recent reports of high out-of-pocket spending among Medicare beneficiaries have received considerable media attention and have prompted direct policy changes. Despite the potential for these policies to indirectly affect non-Medicare patients, little is known about the utilization of, and spending associated with, observation care among commercially-insured populations. Using multi-payer commercial claims from 2009-2013, we evaluated utilization and spending among patients admitted for six conditions that are commonly managed with either observation care or short-stay hospitalizations. From 2009-

2013, use of observation care increased relative to short-stay hospitalization. Total and out-of-pocket spending were substantially lower for observation care, though both grew rapidly over the study period, and at rates much higher than in inpatient settings. Despite this growth, spending on observation care is unlikely to exceed spending for short-stay hospitalizations. As observation care garners greater attention, policymakers should be aware that Medicare policies that disincentivize observation may have unintended financial impacts on non-Medicare populations where observation care may be cost-saving.

Introduction

Decisions around whether to admit a patient to the hospital are complex and depend on physicians' judgment of factors such as symptom severity, expected prognosis, and medical history. Observation care has become an increasingly common alternative to short-stay hospitalization among patients with ambiguous prognoses, particularly those who present to emergency departments. The Centers for Medicare and Medicaid Services defines observation care as a "set of specific, clinically appropriate services, which include ongoing short term treatment, assessment and reassessment."¹ Proponents argue that observation is a more efficient way for hospitals to care for patients as compared to short-stay inpatient admission. Supporting these claims, prior research has suggested that dedicated observation units within hospitals can reduce length of stay and may result in billions of dollars in health system savings annually.^{2,3}

In contrast, patient and consumer advocacy groups have raised concerns around the out-of-pocket spending burden associated with observation care.⁴ These concerns largely stem from Medicare coverage policies, which treat observation stays as outpatient rather than inpatient services. Medicare payments for inpatient care depend on

condition and severity as opposed to the volume of care provided; beneficiaries are responsible for paying a fixed inpatient deductible per 60-day benefit period (\$1,316 in 2017).⁵ For most outpatient services, however, Medicare payments are directly related to the number of services provided, with beneficiaries responsible for 20 percent of the cost of each service.⁶ While the majority of beneficiaries have supplemental insurance coverage that may alleviate some of this out-of-pocket spending, the cost sharing associated with outpatient services is of particular concern for the 15 percent of Medicare beneficiaries who lack supplemental coverage.^{7,1} Moreover, any subsequent skilled nursing facility care a beneficiary may receive is covered by Medicare only following an inpatient admission, which can result in additional out-of-pocket spending implications for those receiving observation care.⁶ Adding to this controversy, observation and inpatient care in some hospital settings may appear identical, and patients may not know which category of care they are receiving. Indeed, for patients with ambiguous prognoses, the type of care that is delivered in these two settings may be nearly identical as well.

Perhaps in response to this controversy, the Centers for Medicare and Medicaid Services has enacted new policies requiring formal patient notification of the cost sharing implications associated with observation status.^{8,9} However, the issue of observation care may be more nuanced than the current policy conversation acknowledges. Much of the conversation has been driven more by anecdotal evidence than population-level data; a 2012 study conducted by the Office of the Inspector General (OIG) found that Medicare beneficiaries typically pay less out-of-pocket for observation care than for short-stay hospitalizations for many conditions.¹⁰

In addition, little is known about how observation care is treated outside of the Medicare program.¹¹ The OIG report focused exclusively on Medicare beneficiaries. The only study that has looked specifically at observation care among the commercially insured did not address total or out-of-pocket spending.¹² This is important because Medicare policies relating to observation care may have an impact on privately insured populations, potentially influencing physician decision-making around treatment setting, as well as the reimbursement of observation care by private insurers.

In this context, we examine utilization and spending associated with observation care relative to analogous short-stay inpatient hospitalizations among non-elderly, commercially insured adults.

Methods

Data

Data for this study has been drawn from a large commercial health insurance claims database compiled by the Health Care Cost Institute (HCCI).¹³ The HCCI database compiles inpatient, outpatient, physician, and pharmaceutical claims data from major national insurers Aetna, UnitedHealthcare, and Humana, and includes over 50 million members from all 50 states. It has been used in a number of previous studies examining health care utilization, prices and total and out-of-pocket spending.¹⁴⁻¹⁶ For this study, we used outpatient and inpatient claims and associated member enrollment data to assess rates of, and spending associated with, observation care and analogous short-stay inpatient hospitalizations among non-elderly (aged 18 to 64 years) commercially insured adults from 2009 to 2013. Short-stay hospitalizations are defined as inpatient admissions of two days or fewer, from which patients are discharged to

home/self care. Observation status was derived within outpatient claims data from a combination of revenue center codes, Current Procedure Terminology (CPT) codes, and a detailed service category designation developed by HCCI.¹⁷

Our primary outcomes were rates of observation care and short-stay hospitalizations, operationalized as the ratio of observation care stays to short-stay hospitalizations by condition. Additional outcomes include total spending, defined here as the insurer allowed amount, i.e. the insurer-negotiated rates for health care services, and patient out-of-pocket spending, which includes copayments, coinsurance, and any payments towards a deductible associated with both admission types.

Our analyses focus on six clinical conditions commonly managed in either the observation or inpatient setting: nonspecific chest pain; abdominal pain; syncope; headache, including migraine; cardiac dysrhythmias; and skin and subcutaneous tissue infections. These six conditions are highly prevalent conditions for which patients may receive care in either observation or short-stay inpatient settings. Many of these conditions overlap with those identified through similar work in this area.^{10-11,18-19} ICD-9-

CM codes were used to identify these conditions, which were then classified into broader clinical categories using the Agency for Healthcare Research and Quality's Clinical Classification Software (CCS).²⁰ While use of CCS is fairly common in related literature, we acknowledge that there are limitations to its use, including occasionally imprecise or clinically irrelevant categorization of conditions. Outside of these six conditions, some differences exist in the diagnoses seen in each setting, which may limit comparability of groups. However, additional sensitivity analyses examining trends in utilization among all conditions were conducted (Appendix).²¹

Analysis

We used generalized linear regression models (GLM) to estimate adjusted total spending and adjusted out-of-pocket spending while controlling for age group (18 to 34 years, or 35 to 64 years), gender, principal diagnosis, length of stay, and Charlson Comorbidity Index score.²² To account for differences in severity across admission types, we restricted the sample to visits with a length of stay of two days or fewer. We also adjusted for procedure counts, a proxy for service intensity, in all models. All costs were inflation-adjusted to 2013 dollars. Huber-White Sandwich

estimators were used to calculate standard errors. All analyses were performed using Stata version 14 (StataCorp, College Station, TX).

Results

Our final analytic sample included 815,798 observation care stays and 291,668 short-stay hospitalizations over the study period, 2009 to 2013 (Exhibit 1). The unadjusted mean length of stay for observation care was 1.3 days (standard deviation [SD] 0.5), slightly lower than the unadjusted mean among short-stay hospitalizations of 1.8 days (SD 0.4). Mean Charlson Comorbidity Index scores were similar for the two groups: 0.2 for observation care (SD 0.5) versus 0.3 for short-stay hospitalizations (SD 0.7). On average, short-stay hospitalizations involved a greater intensity of services, with a mean procedure count of 6.6 procedures per admission (SD 6.5) versus 2.2 procedures per admission for observation care (SD 3.8).

Between 2009 and 2013, the use of observation care stays increased relative to short-stay inpatient hospitalizations for each of the six conditions we examined (Exhibit 2). The largest growth in the ratio of observation care stays to

short-stay inpatient hospitalizations was seen among stays associated with a primary diagnosis of nonspecific chest pain. In 2009, observation care for nonspecific chest pain was 3.7 times more common than short-stay inpatient hospitalizations for the same condition (92,954 observation care stays, versus 25,228 short-stay inpatient hospitalizations in 2009), but observation care grew to be 8.4 times more common for this condition by 2013 (104,119 observation care stays, versus 12,351 short-stay inpatient hospitalizations). In 2013, headache was the only remaining condition for which short-stay hospitalizations were more common than observation care.

Exhibit 3 shows the adjusted total spending (insurer allowed amount) of observation stays versus short-stay hospitalizations by diagnosis across the study period, 2009 to 2013. Adjusted total spending was substantially higher for patients treated in an inpatient setting than in observation for all six conditions across the entire five-year study period, even after accounting for service intensity and patient comorbidities. In 2013, short-stay hospitalizations for cardiac dysrhythmias were associated with adjusted total spending of \$7,948 (95% CI \$7,830-\$8,065). Although this was the costliest of the six

conditions among observation care stays, total spending for cardiac dysrhythmias was less than a third as high as short-stay hospitalization, with associated adjusted total spending of \$2,641 (95% CI \$2,520-\$2,762) among observation care stays in 2013.

Total spending grew over the study period for all six conditions in both observation and short-stay inpatient settings. Notably, although total spending was lower overall among observation care stays, spending for observation care rose far more rapidly over time. Among short-stay hospitalizations, total spending associated with skin and soft tissue infections grew at an annual rate of 2.3 percent over the study period, after controlling for inflation and adjusting for age, gender, comorbidities, length of stay and care intensity. Among observation care stays, however, total spending associated with skin and soft tissue infections grew much faster - at an annual rate of 17.0 percent over the study period. Similarly, total spending associated with headaches grew at an annual rate of 1.4 percent over the study period among short-stay hospitalizations, but grew at an annual rate of 7.0 percent over the study period among observation care stays.

From 2009 to 2013, out-of-pocket spending was substantially higher for short-stay hospitalizations compared to observation care for each of the six conditions examined (Exhibit 4). In 2013, mean out-of-pocket spending was 4.5 times higher for short-stay hospitalizations for skin and soft tissue infections, with adjusted out-of-pocket spending of \$135 (95% CI \$124-\$145) for observation care versus \$611 (95% CI \$601-\$622) for short-stay hospitalizations. Mean out-of-pocket spending was 3.9 times higher for short-stay hospitalizations for cardiac dysrhythmias, with adjusted out-of-pocket spending of \$174 for observation care (95% CI \$165-\$183) versus \$674 for short-stay hospitalization (95% CI \$663-\$686).

As with total spending, adjusted out-of-pocket spending grew notably faster for observation care as compared to short-stay hospitalization for all conditions over the study period. Observation care for skin and soft tissue infections had the highest rate of increase, with adjusted out-of-pocket spending growing at an annual rate of 20.1 percent over the study period, after adjusting for inflation and other factors. In contrast, adjusted out-of-pocket spending for short-stay hospitalizations for skin

and soft tissue infections grew at an annual rate of just 2.9 percent over the study period.

Limitations

Our study has some important limitations. Though our analyses adjusted for service intensity and comorbidity burden, unobservable differences between patients receiving observation versus inpatient care likely persist. However, additional sensitivity analyses with more restricted samples, as well as analyses of average treatment effects utilizing augmented inverse probability weighting methodology, supported our findings that total and patient out-of-pocket spending among non-elderly commercially insured adults were considerably lower for observation care relative to short-stay hospitalizations over the study period [Appendix].²¹ Moreover, we would argue that any unobservable differences that may persist are unlikely to explain the two- to more than four-fold differences in total spending and patient out-of-pocket spending between the two groups.

There are also limits to the generalizability of the findings related to the data source. First, while the HCCI database includes data for three major national insurers

covering over 50 million members in all 50 states, plan penetration is not uniform across states, nor is it possible to know whether our findings are representative of commercial insurance plans beyond those included in the database. In addition, HCCI data, like all administrative claims sources, cannot distinguish between type and location of observation care, which may range from protocolized care delivered within dedicated observation units to care that is delivered in standard emergency department or hospital inpatient units but billed as observation. This is worth noting, as there may be important differences in total and out-of-pocket spending across this range of observation settings. We were also unable to distinguish between in-network and out-of-network care, which may substantially affect both total and out-of-pocket spending for patients. Finally, our study did not examine differences in quality between observation care and short-stay hospitalizations. This is an important area for future study.

Discussion

Commercial insurers have substantial latitude with respect to negotiating payment rates with providers, as well as in structuring cost sharing in the plans that they offer.

However, the rates of observation care use among commercially insured populations have not been well documented, nor has it been known whether privately insured patients may be exposed to higher out-of-pocket spending for observation care versus short-stay hospitalization.

In the Medicare program, utilization of observation care has been growing over time, with the ratio of observation stays to short-stay inpatient hospitalizations reportedly growing an estimated 34% between 2007 and 2009.²³ However, it was unclear if these patterns seen around observation care use in the Medicare population were occurring among privately insured populations. These are critical points, particularly because the Medicare policies surrounding observation status could have an impact on privately insured patients, affecting both physicians' willingness to place patients in observation care, as well as the reimbursement of observation stays by private insurers.

Our findings indicate increased use of observation care relative to short-stay hospitalization for six common conditions among commercially insured nonelderly adults between 2009 and 2013. These broad trends are similar to those found in the one previous study of observation care

use among commercially insured populations, and echo the increased use of observation care seen among Medicare beneficiaries.^{12,23}

Although all six conditions experienced increases in use of observation care as compared to short-stay hospitalizations, there was variable growth across conditions. Nonspecific chest pain was subject to the greatest increases. This trend likely stemmed from a number of factors, including the condition's large prevalence in an emergency department population, its relationship to potential diagnoses such as acute myocardial infarction that often require time and testing to differentiate, and the strong evidence supporting use of observation strategies for it.¹⁸

Looking beyond the Medicare program, a 2015 study of Veteran's Health Administration (VHA) hospitals found that rates of observation care use doubled between 2005 and 2013, despite the fact that VHA patients are subject to very different cost sharing requirements than Medicare beneficiaries (many VHA patients have no cost sharing requirements, and those that do are subject to copayments as opposed to deductibles or coinsurance).¹¹ Our study adds

to this literature by examining whether these trends are similarly reflected in the rates of observation care among commercially insured non-elderly adults. This is of particular importance as the wide variations in the payment and benefit structures of commercial health insurance plans stand in sharp contrast to the relatively standardized nature of provider payments and patient cost sharing within both the VHA and the traditional Medicare program.

One of the primary concerns around the use of observation care relates to the potential out-of-pocket spending burden for patients. For six conditions commonly managed in both settings, we found total spending and patient out-of-pocket spending among non-elderly commercially insured adults to be considerably lower for observation care relative to short-stay hospitalizations between 2009 and 2013. This finding indicates that there may be substantial financial benefit to observation care for commercial insurers and patients alike. However, despite the overall lower costs for observation care, total spending and out-of-pocket spending grew rapidly - with total spending growing by as much as 17 percent per year, and out-of-pocket spending growing by as much as 20 percent per year - for certain conditions over the study period. By contrast, total

spending and out-of-pocket spending for short-stay hospitalizations remained relatively stable over the study period.

It seems likely that these observed trends in total and out-of-pocket spending for observation care will continue over time due to the current policy climate and hospital and provider practice patterns.^{18,24} While it appears unlikely that spending for observation care will soon exceed that associated with short-stay hospitalization given the large differences between the two, the rapid growth in total and out-of-pocket spending for observation care is important as it may suggest shifting reimbursement of observation care by private insurers over time.

Increasing reimbursement rates for observation care may reflect efforts by providers to negotiate greater parity in reimbursement between the two care settings, or may reflect changes over time in how observation care is delivered, with hospitals moving toward more sophisticated, stand-alone observation units, and thus a higher cost model of care for these patients.

Another potential explanation for the rapid growth in health care spending associated with observation care may be shifts in the population of patients that are being held in observation versus inpatient settings over time. However, an examination of service intensity and patient comorbidities found that service intensity decreased slightly over the study period (from an unadjusted mean of 2.6 procedures in 2009 (SD 4.1) to 2.4 procedures in 2013 (SD 3.7)), and Charlson Comorbidity Index scores remained relatively stable over the study period among the observation care population (from an unadjusted mean score of 0.18 in 2009 (SD 0.5) to 0.19 in 2013 (SD 0.5)). This suggests that there was not a shift towards sicker patients being held under observation over the study period.

Policy implications

Our results have important implications for policy. We found that rates of observation care relative to short-stay hospitalization have increased rapidly over time among the commercially insured population, possibly in response to Medicare policy changes. Our findings around total spending and out-of-pocket spending suggest that observation care for many conditions may be financially advantageous for

commercially insured patients and private insurers alike. However, we also found that total spending and out-of-pocket spending for observation care for the commercially insured has increased rapidly over time and at rates much higher than was seen among short-stay hospitalizations. A deeper understanding of whether, and to what extent, Medicare policies may impact physicians' decisions around whether to observe or admit non-elderly patients, as well as their impact on private insurers' reimbursement rates for care, is critical to appropriate policymaking.

Conclusion

As the out-of-pocket spending associated with observation care among the Medicare population garners greater attention, policymakers may begin to contemplate regulations directed at decreasing observation care. However, any Medicare policies that disincentivize observation care may have the unintended consequence of increasing cost-sharing among the non-Medicare population in the short term. In the longer term, there remains considerable uncertainty regarding the financial implications of increased observation care use for commercially insured patients.

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²¹ To access the Appendix, click on the Appendix link to the right of the article online.

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Exhibit 1. Characteristics of Commercially Insured Patients Treated in Observation versus Short-Stay Hospitalization Settings¹

	Observation ³		Short-Stay Hospitalization	
	<i>n</i>	% ⁶	<i>n</i>	% ^{7,8}
Age 18-34	100,196	12.3%	38,449	13.2%
Age 35-64	715,602	87.7%	253,219	86.8%
Female	460,526	56.5%	138,492	47.5%
Male	355,272	43.6%	153,176	52.5%
Nonspecific chest pain ²	514,999	49.5%	92,523	19.8%
Abdominal pain ²	75,521	7.3%	23,385	5.0%
Syncope ²	52,671	5.1%	17,694	3.8%
Headache, including migraine ²	72,787	7.0%	89,586	19.2%
Cardiac dysrhythmias ²	53,113	5.1%	23,041	4.9%
Skin and subcutaneous tissue infections ²	46,707	4.5%	45,439	9.7%
	<i>n</i>	Mean (SD) ⁵	<i>n</i>	Mean (SD) ⁹
Length of stay (days)	815,798	1.3 (0.5)	291,668	1.8 (0.4)
Procedure count	815,798	2.2 (3.8)	291,668	6.6 (6.5)
Charlson Comorbidity Index ⁴	815,798	0.2 (0.5)	291,668	0.3 (0.7)

Note: Values may not sum to totals due to rounding.

¹ Sample restricted to non-elderly adults aged 18-64 with individual market or employer-sponsored health insurance plans through Aetna, Humana or UnitedHealthcare from 2009 to 2013. Sample includes patient visits for any one of six conditions commonly associated with observation status: nonspecific chest pain; abdominal pain; syncope; headache, including migraine; cardiac dysrhythmias; skin and subcutaneous tissue infections. To account for differences in severity across admission types, we restricted the sample to only those visits with a length of stay of 2 days or fewer.

² Clinical categories were compiled from ICD-9-CM codes using the Agency for Healthcare Research and Quality's Clinical Classification Software. Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project Clinical Classification Software (CCS) for ICD-9-CM. <https://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>. Updated May 2016. Accessed September 18, 2015.

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Procedure Terminology codes and a detailed service category designation developed by the Health Care Cost Institute.

⁴ Charlson Comorbidity Index scores based on secondary and tertiary diagnoses.

⁵ SD = Standard deviation

⁶ Percent of total observation sample, which includes observation stays of two days or fewer among nonelderly commercially insured adults diagnosed with one of six common conditions between 2009-2013.

⁷ Percent of total short-stay inpatient sample, which includes short-stay inpatient hospitalizations of two days or fewer among nonelderly commercially insured adults diagnosed with one of six common conditions between 2009-2013.

⁸ Chi-square tests indicate statistically significant relationships ($p < .001$) between location of care (observation versus short-stay hospitalization) and all categorical variables for age, gender, and diagnosis.

⁹ Wilcoxon rank-sum tests of equality of rank distributions of means indicate statistically significant differences ($p < .001$) in rank distributions for length of stay, procedure count and Charlson Comorbidity Index score.

Exhibit 2. Ratio of Observation Care to Short-Stay Hospitalization by Diagnosis, 2009-2013

Ratio of Observation Care to Short-Stay Hospitalization by Diagnosis, 2009-2013

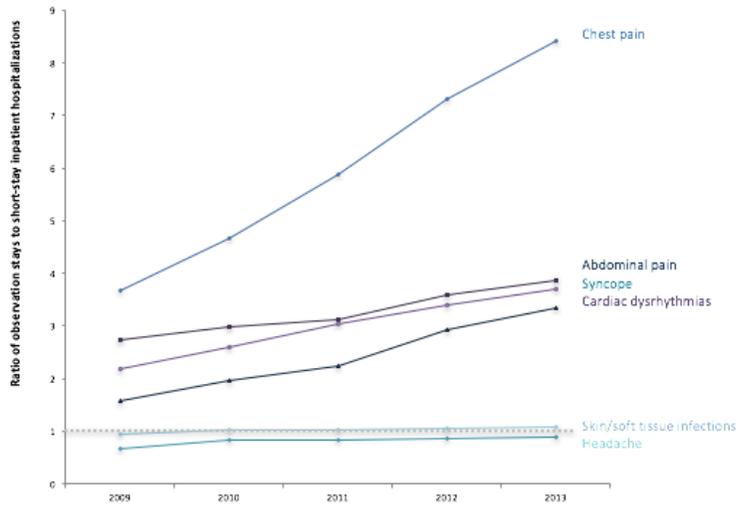
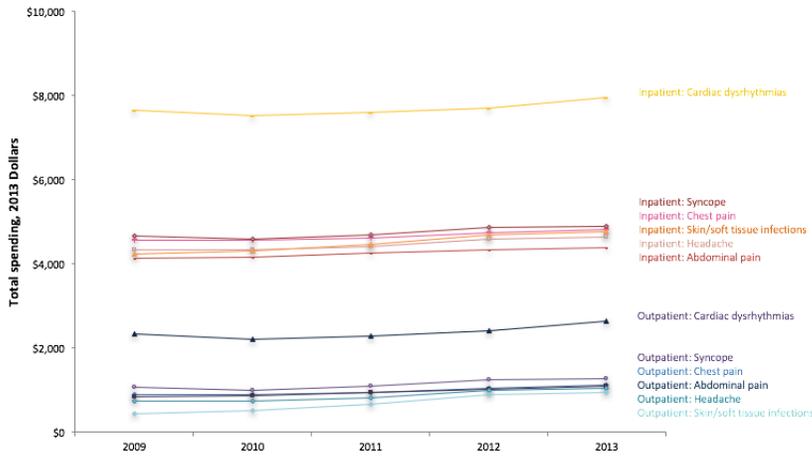


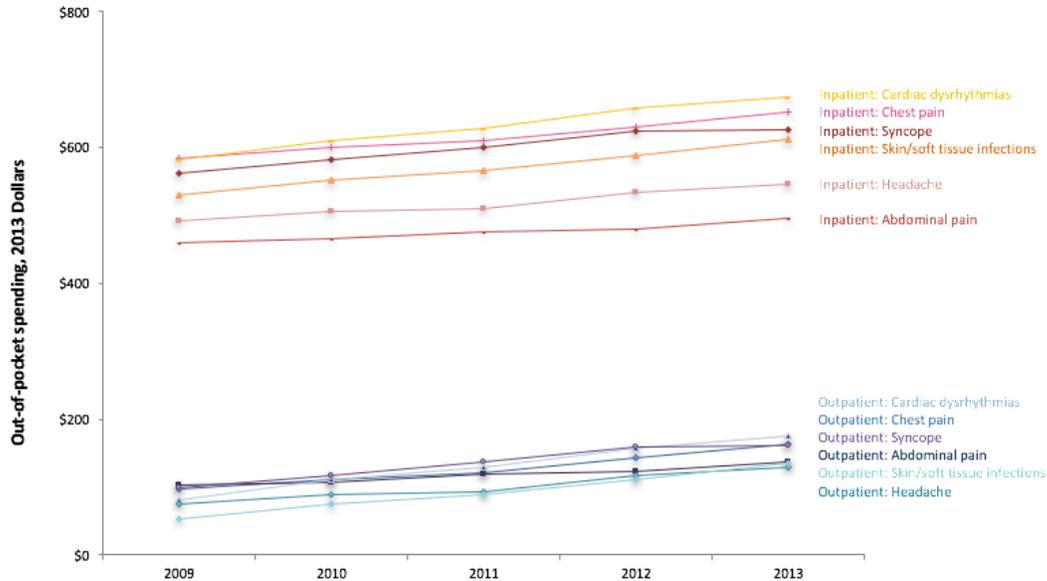
Exhibit 3. Adjusted Total Spending Associated with Observation Stays versus Short-Stay Hospitalizations by Diagnosis, 2009-2013



2009-2013	Cardiac dysrhythmias	Syncope	Chest pain	Abdominal pain	Headache	Skin/Soft tissue infections
Annualized Growth Rate, Observation Care	2.4%	3.5%	4.9%	5.6%	7.0%	17.0%
Annualized Growth Rate, Short-Stay Hospitalization	0.7%	0.9%	1.0%	1.2%	1.4%	2.3%

Note: Adjusted total spending calculations based on generalized linear regression models controlling for procedure count, Charlson Comorbidity Index score, age, gender, year, length of stay, and observation status. Dollar amounts have been inflation-adjusted to 2013 dollars. Total spending defined as the insurer allowed amount.

Exhibit 4. Adjusted Out-of-Pocket Spending Associated with Observation Care versus Short-Stay Hospitalization by Diagnosis, 2009-2013



2009-2013	Cardiac dysrhythmias	Syncope	Chest pain	Abdominal pain	Headache	Skin/Soft tissue infections
Annualized Growth Rate, Observation Care	16.3%	10.4%	11.2%	6.0%	11.4%	20.1%
Annualized Growth Rate, Short-Stay Hospitalization	3.0%	2.1%	2.2%	1.5%	2.1%	2.9%

Note: Adjusted mean out-of-pocket spending calculations based on generalized linear regression models controlling for procedure count, Charlson Comorbidity Index score, age, gender, year, length of stay, and observation status. Dollar amounts have been inflation-adjusted to 2013 dollars.