

ORIGINAL RESEARCH

Hospitalist and Primary Care Physician Perspectives on Medication Management of Chronic Conditions for Hospitalized Patients

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BACKGROUND: Little is currently known regarding physicians' opinions on the relative appropriateness of inpatient management of medical conditions unrelated to the reason for admission.

OBJECTIVE: Investigate physician attitudes on the appropriateness of inpatient medication interventions, based on the interventions' relatedness to the reason for admission.

DESIGN, SETTING, AND PARTICIPANTS: Case-based survey of hospitalists and hospital-based primary care physicians at 3 academic medical centers in Boston, Massachusetts.

METHODS: Physicians were emailed a survey consisting of 6 pairs of clinical cases. Each pair included 1 case with an inpatient management decision related to the reason for admission, followed by a case involving the same management decision but unrelated to the reason for admission. Respondents rated the appropriateness of the interventions, and results were compared based on the relatedness

to the reason for admission and based on the respondents' primary role.

RESULTS: Overall, 162 out of 295 providers (55%) responded to the survey. Physicians were significantly more likely to rate inpatient interventions as appropriate when they were related, compared to unrelated, to the reason for admission (78.9% vs 38.8%; $P < 0.001$). Primary care physicians were significantly more likely than hospitalists to feel that inpatient interventions were appropriate. (64.1% vs 52.1%, $P < 0.001$; relative risk: 1.3, 95% confidence interval: 1.1–1.4).

CONCLUSION: Physicians are more likely to rate inpatient medication changes as appropriate when they are related to the reason for admission. Our results suggest that opportunities for meaningful medical interventions may be underutilized in current systems that adhere to a strict dichotomy of inpatient and outpatient roles. *Journal of Hospital Medicine* 2014;9:303–309. © 2014 Society of Hospital Medicine

Over the past 2 decades, the care of the hospitalized patient has changed dramatically. Hospitalists now account for the care of more than one-third of general medicine inpatients, and this number is likely to grow.¹ The emergence of hospital medicine has resulted in a partnership between primary care physicians (PCPs) and hospitalists wherein hospitalists focus on acute medical issues requiring hospitalization, whereas more chronic issues unrelated to the reason for hospitalization remain largely the domain of the PCP.^{2,3}

However, several evolving financial and quality incentives have already begun to blur the distinction between inpatient and outpatient care. First, as private and public payers increasingly scrutinize readmission rates, it has become clear that the responsibility for

patient outcomes extends beyond the day of discharge.⁴ The birth of Accountable Care Organizations and patient-centered medical homes may further blur distinctions between what has traditionally constituted inpatient and outpatient care.⁵ Bundled payments may force providers to ensure that each visit, whether hospital- or clinic-based, is taken as an opportunity to enact meaningful change.⁶ The Centers for Medicare and Medicaid Services (CMS) are already tracking hospital performance on institution of medical therapy for certain conditions regardless of their relatedness to the reason for hospitalization.⁷

No published literature has yet examined the attitudes of inpatient and outpatient providers regarding this issue. Through a case-based survey conducted at 3 large urban academic medical centers, we aimed to assess opinions among hospitalists and PCPs regarding the role of hospitalists in the management of conditions unrelated to the reason for admission. Our study had 2 main objectives: (1) to determine whether surveyed physicians were more likely to rate an inpatient intervention as appropriate when it related to the reason for admission as compared to interventions unrelated to the reason for admission; and (2) to determine whether these attitudes differed between PCPs and hospitalists.

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METHODS

Setting and Subjects

We surveyed hospitalists and hospital-based PCPs at Beth Israel Deaconess Medical Center (BIDMC), Brigham and Women's Hospital, and Massachusetts General Hospital, 3 large academic medical centers in Boston, Massachusetts. Each hospitalist group includes both teaching and nonteaching services and admits patients from both the surveyed hospital-based PCP groups and other non-hospital-based PCP groups. All 3 study sites use electronic medical records with patient information for each hospital-based PCP available to treating hospitalists.

Survey Design

Using a commercially available online product (SurveyMonkey, Palo Alto, CA), we created a 3-part case-

based survey instrument. The first section included demographic questions regarding age, sex, primary clinical role (hospitalist or PCP), prior experience as a PCP (for hospitalists only) or a hospitalist (for PCPs only; defined as a position with >30% of clinical time as the attending of record in the inpatient setting), years of clinical experience, and hospital affiliation.

The second section aimed to indirectly assess physician opinions on the appropriateness of inpatient management of conditions unrelated to the reason for admission. It consisted of 6 paired case scenarios, each with an inpatient management decision for a hypothetical hospitalist (Table 1). For each pair, 1 case dealt with management of the condition prompting admission (eg, starting aspirin in a patient admitted with acute non-ST-elevation myocardial infarction). The partner case involved the same intervention (eg, starting

TABLE 1. Cases Descriptions

Starting aspirin (related to the reason for admission)	A 60-year-old patient is admitted with a non-ST-elevation MI, medically managed without cardiac catheterization or percutaneous coronary intervention. Knowing that aspirin reduces mortality as part of secondary prevention in cardiovascular disease, how appropriate is it for the hospitalist to start the patient on this medication without discussing it with the primary care physician?
Starting aspirin (unrelated to the reason for admission)	A 60-year-old patient with a past medical history of a prior non-ST-elevation MI that was medically managed is admitted to the hospital for treatment of cellulitis. The hospitalist notes the patient is not on aspirin at home. Knowing that aspirin reduces mortality as part of secondary prevention in cardiovascular disease, how appropriate is it for the hospitalist to start the patient on this medication without discussing it with the primary care physician?
Starting spironolactone (related to the reason for admission)	A 70-year-old patient with a past medical history significant for NYHA class II congestive heart failure (LVEF of 20%) is admitted for acute on chronic, left-sided systolic congestive heart failure. The patient has been maintained on furosemide, metoprolol, and lisinopril. Admission serum potassium and creatinine are both normal. Knowing that spironolactone decreases mortality in heart failure, how appropriate is it for the hospitalist to start this medication without discussing it with the primary care physician?
Starting spironolactone (unrelated to the reason for admission)	A 70-year-old patient with a past history of NYHA class II congestive heart failure (LVEF of 20%) on furosemide, metoprolol, and lisinopril is admitted with pneumonia. Serum potassium and creatinine are both normal. Knowing that spironolactone decreases mortality in heart failure, how appropriate is it for the hospitalist to start this medication without discussing it with the primary care physician?
Starting warfarin (related to the reason for admission)	A 75-year-old patient with a past medical history of hypertension and diabetes is admitted with new atrial fibrillation. Given the patient's CHADS2 score of 3, the hospitalist calculates that the patient has a significant risk of thromboembolic stroke. Knowing that warfarin will decrease the risk of thromboembolic stroke, how appropriate is it for the hospitalist to start the patient on this medication without discussing it with the primary care physician (assume that an outpatient anticoagulation clinic is able to see the patient within 3 days of discharge)?
Starting warfarin (unrelated to the reason for admission)	A 75-year-old patient with a past medical history of hypertension, diabetes, and atrial fibrillation is admitted with pneumonia. The patient is not anticoagulation therapy. Given the patient's CHADS2 score of 3, the hospitalist calculates that the patient has a significant risk of thromboembolic stroke. Knowing that warfarin will decrease the risk of thromboembolic stroke, how appropriate is it for the hospitalist to start the patient on this medication without discussing it with the primary care physician (assume that an outpatient anticoagulation clinic is able to see the patient within 3 days of discharge)?
Stopping proton pump inhibitor (related to the reason for admission)	A 65-year-old patient with a past medical history of GERD maintained on a proton pump inhibitor is admitted for treatment of <i>Clostridium difficile</i> colitis. The patient denies having any GERD-like symptoms for several years. Knowing that proton pump inhibitors can increase the risk of <i>C difficile</i> colitis and recurrence (as well as pneumonia and osteoporosis), how appropriate is it for the hospitalist to initiate a taper of this medication without discussing it with the primary care physician?
Stopping proton pump inhibitor (unrelated to the reason for admission)	A 65-year-old patient with a past medical history of GERD maintained on a proton pump inhibitor is admitted for treatment of a urinary tract infection. The patient denies having any GERD-like symptoms for several years. Knowing that proton pump inhibitors can increase the risk of <i>C difficile</i> colitis and recurrence (as well as pneumonia and osteoporosis), how appropriate is it for the hospitalist to initiate a taper of this medication without discussing it with the primary care physician?
Stopping statin or fibrate (related to the reason for admission)	A 60-year-old patient with a history of hyperlipidemia is admitted with an elevated creatine kinase to 5000. The hospitalist notes that the patient is on both simvastatin and gemfibrozil. The patient's most recent serum LDL was at goal. Knowing that coadministration of simvastatin and gemfibrozil can increase the risk of rhabdomyolysis, how appropriate is it for the hospitalist to stop one of these medications without discussing it with the primary care physician?
Stopping statin or fibrate (unrelated to the reason for admission)	A 60-year-old patient is admitted with an acute diarrheal illness. The hospitalist notes that the patient is on both simvastatin and gemfibrozil. The patient's most recent LDL was at goal. Knowing that coadministration of simvastatin and gemfibrozil can increase the risk of rhabdomyolysis, how appropriate is it for the hospitalist to stop one of these medications without discussing it with the primary care physician?
Changing statin (related to the reason for admission)	A 65-year-old patient with a past medical history of hyperlipidemia on maximum-dose simvastatin is admitted with a non-ST-elevation MI. The patient's cholesterol is noted to be above goal. Knowing that improving lipid management reduces mortality in cardiovascular disease, how appropriate is it for the hospitalist to replace simvastatin with atorvastatin without discussing it with the primary care physician?
Changing statin (unrelated to the reason for admission)	A 65-year-old patient with a past medical history of a prior non-ST-elevation MI that was medically managed and hyperlipidemia on maximum-dose simvastatin is admitted with pneumonia. Incidentally, the hospitalist notes that the patient's cholesterol has been above goal for the last 2 years. Knowing that improving lipid management reduces mortality in cardiovascular disease, how appropriate is it for the hospitalist to replace simvastatin with atorvastatin without discussing it with the primary care physician?

NOTE: Abbreviations: CHADS2, congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, stroke/transient ischemic attack/thromboembolism; GERD, gastroesophageal reflux disease; LDL, low-density lipoprotein; LVEF, left ventricular ejection fraction; NYHA, New York Heart Association; MI, myocardial infarction.

aspirin) but for a patient with a chronic condition (eg, history of prior myocardial infarction) and an alternate admitting diagnosis (eg, cellulitis). In an attempt to mitigate concerns regarding the flow of information and communication between providers, the survey asked respondents to “assume that the hospitalist has access to the patient’s outpatient electronic medical record, and that the hospitalist communicates the details of any hospitalizations at the time of discharge.” For each case, the physician was asked to rate the appropriateness of enacting the intervention “without discussing it with the PCP” on a 5-point scale from “very inappropriate” to “very appropriate.” When a physician answered that an intervention was “inappropriate” or “very inappropriate,” an additional question soliciting reasons for inappropriateness was included, with multiple predefined answer choices, as well as the option of a free-text reply under the “other” designation.

The third section aimed to directly assess physicians’ opinions. It consisted of questions regarding the appropriateness of inpatient management of conditions related to and unrelated to a patient’s reason for admission.

Prior to administration, we conducted focus groups of hospitalists and PCPs to help hypothesize current physician perceptions on inpatient management, assess physician understanding of survey cases and questions, and to evaluate survey length.

Survey Administration

Between October 23, 2012 and November 10, 2012, 3 emails containing a link to the online survey were sent to all hospitalist and hospital-based PCPs at the 3 study institutions. The BIDMC Committee on Clinical Investigations, to whom authority was ceded by the remaining 2 study institutions, certified this research protocol as exempt.

Statistical Analysis

We hypothesized that respondents as a whole would be more likely to rate an intervention as “appropriate” or “very appropriate” if it was related to the reason for admission, compared to unrelated, and that there would be no difference between PCPs and hospitalists.

We used χ^2 and Fisher exact tests (where applicable) to compare categorical variables, and a nonparametric median test for continuous variables. We used the Fisher exact test to compare the percent of respondents rating each intervention as “appropriate” or “very appropriate” by relatedness or unrelatedness to the reason for admission, and by PCP vs hospitalist. To derive the relative risk (RR) of rating each intervention as “appropriate” or “very appropriate” by PCPs compared to hospitalists, adjusting for potential confounders including years out of residency and sex, we used multivariable generalized estimating equation models, each with a Poisson distribution error term, a log link, and an exchangeable working correlation structure to account for dependency of observations arising from clustering at either the hospital or

participant level, depending on the comparison: for comparisons within a given case, we controlled for clustering at the hospital level; for comparisons of cases in aggregate, owing to multiple responses from each participant, we controlled for clustering at the individual level.

Assuming a 50% response rate from both PCPs and hospitalists, and that 50% of PCPs would rate a given intervention as appropriate, we calculated that we would have 90% power to detect a 50% increase in the proportion of hospitalists rating an intervention as appropriate as compared to PCPs, using an α of .05.

RESULTS

Demographics

One hundred sixty-two out of 295 providers (55%) responded to the survey (Table 2). The response rate did not differ between hospitalists (70 out of 128; 55%) and PCPs (92 out of 167; 55%). Female respondents made up 58.7% of the PCP and 50.0% of the hospitalist groups ($P = 0.34$). On average, PCPs were older ($P < 0.001$) with a greater median number of years since graduation from residency ($P < 0.001$). A greater percentage of hospitalists spent more than three-quarters of their time clinically (42.9% vs 19.6%, $P = 0.009$).

Appropriateness of Inpatient Management Based on Admitting Diagnosis

For each of the 6 case pairings individually and in aggregate, respondents were significantly more likely to deem the intervention “appropriate” or “very appropriate” if it was related to the reason for admission, compared to those interventions unrelated to the reason for admission (in aggregate, 78.9% vs 38.8% respectively, $P < 0.001$). For example, whereas 96.9% felt that the addition of aspirin in a patient admitted with acute myocardial infarction (MI) was appropriate, only 54.3% felt it appropriate to start aspirin in a patient with a prior history of MI admitted with cellulitis ($P < 0.001$). Significant differences (all P values < 0.001) were seen for all case pairs: starting spironolactone (68.1% when related to the reason for admission vs 43.1% when unrelated to reason for admission); starting warfarin (62.3% vs 23.3%), stopping proton pump inhibitor (72.3% vs 42.8%), stopping statin or fibrate (90.6% vs 28.3%), and changing statin (83.0% vs 40.5%).

Appropriateness of Inpatient Management based on Primary Role

Table 3 compares the percent of PCPs and hospitalists rating each intervention as “appropriate” or “very appropriate,” by relatedness of the intervention to the reason for admission. In both unadjusted and adjusted comparisons for all cases in aggregate, PCPs were significantly more likely than hospitalists to rate the inpatient interventions as “appropriate” or “very appropriate” when the intervention was related to the reason for admission (83.4% of PCP responses vs 73.0% of hospitalist responses, $P < 0.001$; RR: 1.2, 95% confidence interval [CI]: 1.1–1.3), unrelated to the

TABLE 2. Demographics

	Total, n = 162 (100.0%)	PCP, n = 92 (6.8%)	Hospitalist, n = 70 (43.2%)	P Value*
Hospital, n (%)				
BIDMC	79 (48.8)	48 (60.8)	31 (39.2)	0.115
BWH	36 (22.2)	15 (41.7)	21 (58.3)	
MGH	47 (29.0)	29 (61.7)	18 (38.3)	
Sex, n (%)				
Male	73 (45.1)	38 (41.3)	35 (50.0)	0.339
Female	89 (54.9)	54 (58.7)	35 (50.0)	
Age interval, y, n (%)				
25–34	36 (22.2)	9 (9.8)	27 (38.6)	<0.001
35–44	67 (41.4)	34 (37.0)	33 (47.1)	
45–54	35 (21.6)	29 (31.5)	6 (8.6)	
55–64	19 (11.7)	16 (17.4)	3 (4.3)	
65–74	5 (3.1)	4 (4.4)	1 (1.4)	
Years out of residency, median (IQR)	10 (4–17)	15 (7–4)	5 (2–11)	<0.001
Clinical FTE, n (%)				
≤0.25	30 (18.6)	22 (23.9)	8 (11.4)	0.009
0.26–0.50	41 (25.3)	25 (27.2)	16 (22.9)	
0.51–0.75	43 (26.5)	27 (29.4)	16 (22.9)	
>0.75	48 (29.6)	18 (19.6)	30 (42.9)	
Worked as PCP?†				
Yes			6 (8.6)	
No			64 (91.4)	
Worked as hospitalist?				
Yes		11 (12.0)		
No		81 (88.0)		
AOR for admitted patients				
Always		16 (17.4)		
Mostly		8 (8.7)		
Rarely		7 (7.6)		
Never		60 (65.2)		

NOTE: Abbreviations: AOR, attending of record; BIDMC, Beth Israel Deaconess Medical Center; BWH, Brigham and Women’s Hospital; FTE, full-time equivalent; IQR, interquartile range; MGH, Massachusetts General Hospital; PCP, primary care physician.

*Comparing hospitalists to PCPs.

†Excluding residency.

TABLE 3. Percent of PCP and Hospitalist Respondents Who Answered “Very Appropriate” or “Appropriate” by Relatedness of the Intervention to the Reason for Admission and Overall

Relationship to Admission Diagnosis	PCP, n (%)	Hospitalist, n (%)	P Value	Adjusted RR	95% CI
Related	453 (83.4)	303 (73.0)	<0.001	1.2*	1.1–1.3
Unrelated	242 (44.7)	129 (31.1)	<0.001	1.5*	1.1–1.9
Overall	695 (64.1)	432 (52.1)	<0.001	1.3†	1.1–1.4

NOTE: Abbreviations: CI, confidence interval; PCP, primary care physician; RR, relative risk.

*PCP versus hospitalist, adjusted for years out of residency, sex, clinical full-time equivalent, and clustering by individual.

†PCP vs hospitalist, adjusted for years out of residency, sex, clinical full-time equivalent, relatedness of the intervention to the condition prompting admission, and clustering by individual.

reason for admission (44.7% vs 31.1%, $P < 0.001$; RR: 1.5, 95% CI: 1.1–1.9), and overall (64.1% vs 52.1%, $P < 0.001$; RR: 1.3, 95% CI: 1.1–1.4).

Reasons for Inappropriate Designation

Among those respondents rating an intervention as “inappropriate” or “very inappropriate,” the 3 most common reasons selected as explanation for perceived inappropriateness from our predefined answer choices were: “This medication will necessitate follow-up testing/monitoring, for which the PCP will be responsible”

(chosen by physicians in 49.4% of instances); “I am not confident that the hospitalist will have access to all of the medical history necessary to make this decision” (35.7%); and “Even if the hospitalist has all of the medical history and reviews it, the PCP should be involved in all decisions surrounding new medications” (34.6%). The least common explanation chosen was “I do not believe this is an appropriate pharmacologic intervention for this particular medical problem” (6.5%). See Table 4 for a complete list of explanations, overall and stratified by PCP/hospitalist.

TABLE 4. Percent of Respondents Who Selected Each Predefined Reason for Inappropriateness

Predefined Reason for Inappropriateness	Total, n = 583 (%)	PCP, n = 318 (%)	Hospitalist, n = 265 (%)	P Value
This medication will necessitate follow-up testing/monitoring, for which the PCP will be responsible.	288 (49.4)	151 (47.5)	137 (51.7)	0.32
I am not confident that the hospitalist will have access to all of the medical history necessary to make this decision.	208 (35.7)	98 (30.8)	110 (41.5)	0.009
Even if the hospitalist has all of the medical history and reviews it, the PCP should be involved in all decisions surrounding new medications.	201 (34.5)	125 (39.3)	76 (28.7)	0.009
I am not confident that the hospitalist will adequately review the medical history necessary to make this decision.	184 (31.6)	130 (40.9)	54 (20.4)	<0.001
Even if the hospitalist has all of the medical history, I do not believe hospitalization is the right time to start this new medication	106 (21.4)	69 (21.7)	56 (21.1)	0.92
I am not confident that the hospitalist will appropriately discuss the risks and benefits of this new medication with the patient.	106 (18.2)	85 (26.7)	21 (7.9)	<0.001
The benefit of this medication will be too remote to justify starting it in the acute setting.	66 (11.3)	40 (12.6)	26 (9.8)	0.36
I do not believe this is an appropriate pharmacologic intervention for this particular medical problem.	38 (6.5)	27 (8.5)	11 (4.2)	0.04

NOTE: Abbreviations: PCP, primary care physician.

There were significant differences in the proportion of PCPs and hospitalists choosing several of the pre-specified reasons for inappropriateness. Although hospitalists were more likely than PCPs to select “I am not confident that the hospitalist will have access to all of the medical history necessary to make this decision” (chosen by 41.5% of hospitalists vs 30.8% of PCPs, $P = 0.009$), PCPs were more likely than hospitalists to select, “I am not confident that the hospitalist will adequately review the medical history necessary to make this decision” (chosen by 40.9% of PCPs vs 20.4% of hospitalists, $P < 0.001$) and “I am not confident that the hospitalist will appropriately discuss the risks and benefits of this new medication with the patient” (26.7% of PCPs vs 9.8% of hospitalists, $P < 0.001$).

Opinions on Current Management of Conditions Related and Unrelated to Admission

A minority of PCPs and hospitalists “agreed” or “strongly agreed” that hospitalists should play a larger role in the management of medical conditions unrelated to the reason for admission (28.1% of PCPs vs 34.8% of hospitalists; $P = 0.39$).

DISCUSSION

In this survey-based study of PCPs and hospitalists across 3 Boston-area academic medical centers, we found that: (1) physicians were more likely to see inpatient interventions as appropriate when those interventions dealt with the reason for admission as compared to interventions unrelated to the reason for admission; and (2) PCPs were more likely than hospitalists to feel that inpatient interventions were appropriate, even when they targeted chronic conditions unrelated to the reason for admission. To our knowledge, this study represents the first investigation into the attitudes of PCPs and hospitalists regarding the inpatient management of conditions unrelated to the reason for admission.

That surveyed physicians, regardless of role, were less likely to report an intervention unrelated to the

reason for hospitalization as appropriate—even those with likely mortality benefit—suggests that opportunities to affect meaningful change may be missed in a healthcare system that adheres to strict “inpatient” and “outpatient” roles. For several of the cases, a change in therapy could lead to benefit soon after implementation. For example, aldosterone antagonists reduce mortality as early as 1 month after initiation in select patients.⁸ If a major goal of inpatient care is to reduce 30-day mortality, it could be argued that hospitalists should more actively adjust congestive heart failure therapy in appropriate inpatients, even when this is not their admitting diagnosis.

For some conditions, CMS is already tracking hospital performance. Since 2003, hospitals have been required to document whether a patient with congestive heart failure (either acute or chronic and regardless of the relationship to admission) was prescribed an angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) at the time of discharge.⁷ CMS has determined that the proven benefits of ACE inhibitors and ARBs confer hospital accountability for their inclusion in appropriate patients, independent of the acuity of heart failure. There are many potential therapeutic maneuvers on which health systems (and their physicians) may be graded, and accepting the view that a hospitalization provides a window of opportunity for medical optimization may allow for more fruitful interventions and more patient-centered care.

Despite the potential benefits of addressing chronic medical issues during hospitalization, there are important limitations on what can and/or should be done in the hospital setting. Hospitalizations are a time of fluctuating clinical status, which continues beyond discharge and is often accompanied by several medication changes.⁹ In our study, more than 20% of those who believed that a medication intervention was inappropriate selected “I do not believe hospitalization is the right time to start this new medication” as one of their explanations. Although some medication interventions have been shown in randomized controlled

trials to reduce short-term mortality, the ability to generalize these findings to the average hospitalized patient with multiple comorbidities, concurrent medication changes, and rapidly fluctuating clinical status is limited. Furthermore, there are interventions most would agree should not be dealt with in the hospital (eg, screening colonoscopy) and encounters that may be too short to allow for change (eg, 24-hour observation). These issues notwithstanding, the average 4-day hospitalization likely provides an opportunity for monitored change that may currently be underutilized.

Our study suggests several additional explanations for physicians' current practice and opinions. Only 6.5% of respondents who answered that an intervention was inappropriate indicated as a justification that "I do not believe this is an appropriate pharmacologic intervention for this particular medical problem." This suggests that the hesitancy has little to do with a lack of benefit but instead relates to systems issues (eg, access to all pertinent records and concerns regarding follow-up testing) and perceived limitations to what a hospitalist should and should not do without actively involving the PCP. There are likely additional concerns that the medical record and/or patient histories do not fully outline the rationale for exclusion or inclusion of particular medications. Advances in information technology that enhance information exchange and enable streamlined communication may help to address these perceived barriers. However, an additional barrier may be trust, as PCPs appear more concerned that hospitalists will not review all the pertinent records or discuss risks and benefits before enacting important medication changes. Increased attempts at communication between hospitalists and outpatient providers may help to build trust and alleviate concerns regarding the loss of information that often occurs both on admission and at discharge.

We also noted that PCPs were more likely than hospitalists to feel that inpatient interventions were appropriate, even when targeting chronic conditions unrelated to the reason for admission. It may be that PCPs, with an increasing number of problems to address per outpatient visit,^{10,11} are more open to hospitalists managing any medical problems during their patients' admissions. At the same time, with increased acuity¹²⁻¹⁴ and shortened length of stays,^{15,16} hospitalists have only a finite amount of time to ensure acute issues are managed, leaving potentially modifiable chronic conditions to the outpatient setting. These differences aside, a minority of both PCPs and hospitalists in our study were ready to embrace the idea of hospitalists playing a larger role in the management of conditions unrelated to the reason for hospitalization.

Even though our study benefits from its multisite design, there are a number of limitations. First, although we crafted our survey with input from general medicine focus groups, our survey instrument has not been validated. In addition, the cases are necessar-

ily contrived and do not take into account the complexities of inpatient medicine. Furthermore, though our goal was to create paired cases that isolate a management decision as being simply based on whether it was related or unrelated to the reason for admission, it is possible that other factors, not captured by our survey, influenced the responses. For example, the benefits of aspirin as part of secondary prevention are not equal to the benefits in an acute MI.¹⁷

In an attempt to isolate the hospitalists' role in these management decisions, respondents were instructed to assume that the decisions were being made "without discussing it with the primary care physician," but that the hospitalist would communicate the details of any hospitalization at the time of discharge. They were also instructed to assume "that the hospitalist has access to the patient's outpatient electronic medical record." These assumptions were made to address concerns regarding the flow of information and communication, and to simulate the ideal system from a communication and information accessibility standpoint. Had these assumptions not been placed, the responses may have differed. It is likely that PCPs and hospitalists practicing in systems without shared, accessible inpatient/outpatient medical records would be even more reluctant to enact medication changes unrelated to the reason for admission.

Along the same lines, our physician cohort consisted of several metropolitan academic physician groups, in which hospitalists have had a presence for almost 20 years. As a result, our findings may not be generalizable to other academic hospitals, community-based hospitalist programs, or non-hospital-based PCP practices. Finally, we do not know whether survey nonresponders differed from responders in ways that could have meaningfully affected our results.

In conclusion, our findings suggest that both PCPs and hospitalists see the management of conditions unrelated to the reason for admission as less appropriate than the management of conditions related to the reason for admission. Our findings also suggest that PCPs may be more open to this practice when compared to hospitalists. Failure to capitalize on opportunities for meaningful medical interventions, independent of patient location, suggests a possible lack of patient centeredness in the current partnership between PCPs and hospitalists. Further studies should examine existing barriers and investigate interventions designed to address those barriers, in an effort to improve both quality of care and the degree of patient-centeredness in our current healthcare system.

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