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BRIEF REPORT

Hospitalists' Awareness of Patient Charges Associated With Inpatient Care

Jeremy D Graham, MA, DO[1]
Darryl Potyk, MD, FACP[1]
Elise Raimi, MSPH[2]

[1] Internal Medicine Residency Spokane, University of Washington School of Medicine, Spokane, Washington.
[2] Private Consultant, BioStatistics and Data Analysis.

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Hospitalists' specialized focus on inpatient care services has been conjectured to offer increased efficiency and reduce costs of inpatient care. Hospitalists' estimates of the unadjusted patient-charges generated by commonly-used services were measured. Hospitalists' agreement with one another, and accuracy relative to the actual patient-charges were both low. Hospitalists' awareness of inpatient charges appears subject to the same opacity of pricing known to limit patient knowledge, and at present hospitalists' cognizance of charges and costs is unlikely to facilitate decreased care expenditures.
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Hospitalists have been suggested to offer rational and efficient medical care through specialized knowledge about inpatient care services.[1] The goal that hospitalists will use care resources more efficiently presumes hospitalists' accurate knowledge about charges and costs.

Data regarding physicians' awareness of care charges and its impact upon care is limited. An international meta-analysis of clinicians' awareness of pharmaceutical prices demonstrated poor accuracy of physicians' estimates of charges, but effects of increasing their knowledge remained unexamined.[2] Continuous exposure to education and alerts about charges have been demonstrated to diminish physicians' unnecessary use of specific laboratory assays in a single teaching hospital, in a pediatric emergency department, and an outpatient primary care system; test use declined when physicians were alerted to test charges at the point-of-care without negative impact upon clinical outcomes; when the notices ceased, utilization climbed back towards baseline levels. Specific to inpatient care, a single-center study evaluated the impact of price-alerts upon laboratory and imaging use, but showed no effects.[3–6]

Applicability of these existing data for contemporary hospitalists are limited, and most data were collected before hospitalists developed as an organized focus of practice. A review of existing literature revealed no published data demonstrating hospitalists' higher expert awareness of charges generated by inpatient care. Published comparisons of the care expense generated by hospitalists' care versus that of general internists or academic teams have shown minimal and inconsistent effects.[7–9] Those data showing reduced costs from hospitalists were associated with small length-of-stay reductions, rather than more expert resource utilization.[7] We measured the accuracy and precision of hospitalist's estimates of charges associated with services commonly used in inpatient care.

Setting

Two community-based private, academic-affiliated hospitals operated by a not-for-profit health system in Washington State, comprising together 895 inpatient beds. The questionnaire instrument was approved by the governing Institutional Review Board (IRB).

Methods

A list of "true" charges for 14 services, procedures, tests, and physician charges commonly ordered by adult medicine hospitalists was acquired directly from the responsible departments of a multi-hospital system operated by a single non-profit entity using a unified chargemaster. Specifically, we acquired the charge that a hypothetical self-paying patient would receive for each service, excluding any adjustments exercised by other payer sources. The list of charges was reported to the organization's financial officers for affirmation. Physician charges were standardized to geographically-adjusted Medicare charges obtained directly from the American Medical Association's online Common Procedural Terminology tool.[10] A cross-section of hospitalists (n = 25) was surveyed from a private hospitalist group and an academically-affiliated hospitalist service. Hospitalists included US and international medical graduates, new-graduates from residency training and clinicians with a range of prior experiences in academic centers, government hospital systems, and private primary care. Respondents were asked to estimate to the nearest dollar the billing charge that a hypothetical self-pay patient would receive for each care item. Direct data collection was arranged through the groups' medical directors and occurred in the hospitalist groups' regular business meetings. The design gathered no data on individual characteristics of respondents such as domestic or international education, sex, age, or time in practice, nor

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from which practice-group a given respondent originated, to affirm to participants that their responses could not be used to imply performance measures or quality profiles.

Findings

Hospitalists tended to rank the expense of items in essentially the correct order, as reflected by the rough trend of rising estimates compared to true-charges (Figure 1). Of note, we did not ask hospitalists to discern the different charges of 2 appropriate competing clinical choices, but asked for estimated prices of diverse services. The range of respondents' estimates about each item was broad. The mean-value of hospitalists' estimates for each care item was less revealing than the range and diversity of estimates about each care item. Accuracy of hospitalists' estimates of charges was poor. Only 10.8% of hospitalists' estimates were within 10% of the actual unadjusted charge, 17.8% within 20% of that charge, and 24.8% were within a 30% margin of accuracy. Summary results are presented (Table 1). Pearson's r correlation value between the unadjusted charges and the estimates made by hospitalists was 0.548, a coefficient of determination equal to 0.300. Thus, the "true" charges list we obtained had only a low-grade association with hospitalists' estimates (Figure 1). Hospitalists' estimates about the charges of relatively-expensive items (abdominal computed tomography [CT]) overlapped with their estimates about the least-expensive items (such as a urine culture). Inter-hospitalist agreement about charges associated with each care item was also low; estimates for each care item charge varied over logarithmic orders of magnitude.

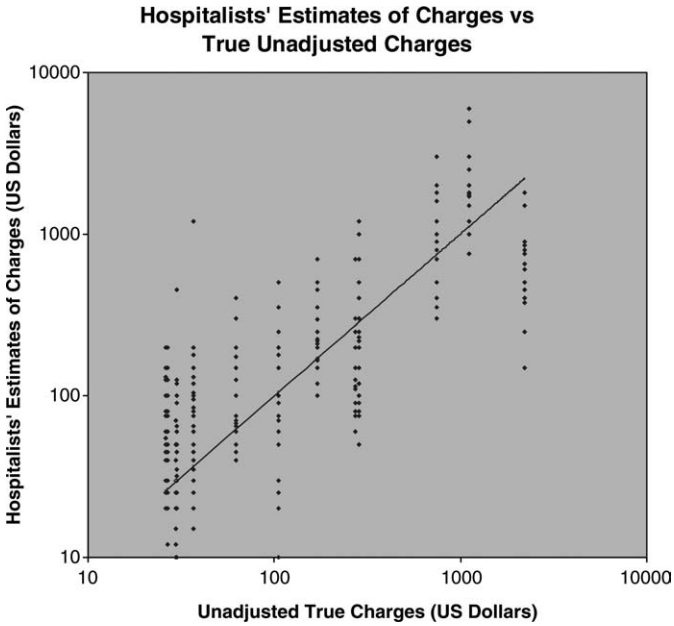

FIGURE 1. Hospitalists' estimates of care charges vs. unadjusted chargemaster prices (note: scale is logarithmic).

Discussion

To date, hospitalist programs have shown little impact upon care costs when compared with other inpatient care staffing models. One limiting factor may be the opacity of medical care pricing. Patients have been demonstrated to have little access to knowledge of what care will cost them and complex barriers prevent them from gaining pricing information.[11,12] Hospitalists may be conjectured to serve as expert sources on the costs and values of medical care services on behalf of inpatients, but our observations suggest that hospitalists' actual knowledge of patient-charges is lacking. The opacity of US medical prices to patients appears to extend to hospital-care physicians as well. We observe that no widespread mechanism exists by which hospitalists would

TABLE 1. Accuracy of Hospitalists' Estimates of Charges Associated With Inpatient Care

Care Service	Unadjusted Charge, USD$	Mean Estimate, USD$	Minimum Estimate, USD$	Maximum Estimate, USD$	% of Estimates Within 10% Accuracy	% of Estimates Within 20% Accuracy	% of Estimates Within 30% Accuracy
Complete blood count	30	73	10	440	16	20	20
Complete metabolic panel	37	135	15	1200	4	16	16
Urinalysis with microscopy	37	53	15	105	12	20	24
Urine culture	26	77	20	200	4	16	20
Ward bed, charge per night	744	998	300	3000	20	20	20
ICU Bed, charge per night	1107	2018	750	6000	8	12	12
Chest x-ray	271	169	60	700	12	16	24
CT scan, abdomen	2204	803	150	1800	0	4	4
Methylpredisolone 125 mg IV dose	26.63	63	3	200	4	20	24
Levofloxacin 500 mg IV dose	105.41	114	10	500	24	28	36
Levofloxacin 500 mg oral dose	29.78	25	4	70	12	12	20
Admission services (CPT code 99223)	169.56	225	100	700	8	36	52
Inpatient care services (CPT code 99232)	62.47	110	40	400	12	28	48
Central venous catheter placement (CPT 36569)	286.04	338	50	1200	8	16	28
Average % "correct"					10.8	17.8	24.8

Abbreviations: CPT, Current Procedural Terminology; CT, computed tomography; ICU, intensive care unit; IV, intravenous; USD, US dollar.

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be well-positioned to become informed about the actual charges their patients receive. Unadjusted chargemaster lists are generally restricted information, and would be difficult to access outside of participation in the charge-notifications used in the existing studies cited above.

The inquiry was specifically limited to how closely hospitalists' estimates of the unadjusted charges for some commonly-ordered items compare to the actual unadjusted chargemaster at their own institutions. We did not assess the hospitalists' perceptions about the accuracy of their estimates, nor the impact of specific hospitalist characteristics upon accuracy. Our sample's representation of the larger national population of hospital physicians is not established, but engenders no expectation that these clinicians' charge-awareness is substantively different from that of hospitalists in most other institutions. It is not known what specific clinician or practice-setting characteristics will direct charge-awareness, or will influence the impact of charge-awareness upon clinical practices.

The range of estimates different hospitalists made about the same care items in the same facilities was very broad, which argues that respondents did not estimate charges based upon a different knowledge base of which the investigators were unaware. This is important because our use of unadjusted charges to self-pay patients as "true prices" is necessarily somewhat arbitrary. Chargemaster price may not reflect the institution's cost of performing the service, the different prices paid for a single service by different payer sources, nor reflect services' "true value" based upon outcomes. However, recognizing that these "actual" prices are somewhat artificial, the use of these prices suffices for the current inquiry, and does not negate our findings of hospitalists' low accuracy and low agreement. Also noteworthy, an unadjusted chargemaster can often represent the charges received by those uninsured US patients for whom payer-source "adjustment" is inaccessible, and informs downstream accounting such as the value of unpaid care a hospital delivers annually.

The most immediate matter for examination among hospitalists is what effects increased charge-awareness may exert upon clinical decisions and practice processes. It appears that the premise that hospitalists' exercise expert knowledge of costs is likely not valid; but it is unknown whether accurate charge-awareness among hospitalists will improve cost-reductions by hospitalists. In some payer-arrangements, accurate charge-awareness might engender reduced care quantity, rather than increased efficiency or quality. The impact of upgrading hospitalists' knowledge about the charges and costs they generate, and the most effective method to do so, is worthy of investigation; based upon this initial data we encourage and are undertaking a larger-scale study and exploration of the effects of enhanced hospitalist charge-awareness.

Conclusion

Hospitalists have low awareness of the charges associated with inpatient care. The opacity of hospital care pricing to patient populations extends also to hospitalist physicians. Hospitalists likely do not improve cost-efficiency through expert knowledge of services' costs to patients. Education and reminder systems to apprise hospitalists of charges should be examined as possible tools to optimize the use of inpatient care resources.

Address for correspondence and reprint requests:
Jeremy D Graham, 101 W. 8th Avenue, Main Floor, Spokane, Washington 99204; Telephone: 509-474-3022; Fax: 509-474-5316; E-mail: grahamjd@intmedspokane.org Received 24 July 2009; revision received 24 November 2009; accepted 28 November 2009.

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