

## ORIGINAL RESEARCH

## Resident and Hospitalist Perspectives on the “Great Teaching Case”: Correlation With Actual Patient Assignment Decisions

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**BACKGROUND:** With the advent of limits to resident duty hours and the size of teaching services, many academic institutions have introduced nonteaching services, often triaging perceived better teaching cases to the resident services.

**OBJECTIVE:** To compare resident versus faculty perceptions of ideal cases for teaching services and compare these perceptions with actual triage decisions made by faculty who assigned patients to either teaching or nonteaching services.

**DESIGN:** Residents and hospitalist faculty were surveyed about their perceptions of ideal and actual teaching admissions, first with qualitative, open-ended questions and then with quantitative, specific questions generated from responses to the first survey. Characteristics of patients admitted to teaching and nonteaching services were analyzed retrospectively and compared with resident and faculty perceptions.

**RESULTS:** Residents and faculty agreed that rare cases, patients with unique physical findings, and a variety of pathology were ideal for teaching services and that social admissions, benefactors, and patients with chronic or functional pain were not. Residents believed that traditional (“bread and butter”) medicine cases were underrepresented on the teaching services. Although residents perceived that they received a disproportionate number of older patients, outside transfers, patients with chronic pain, and patients with cancer, the only statistically significant difference was in patient age, with the teaching service actually receiving younger patients (66.7 vs 69.3 years;  $P = 0.008$ ).

**CONCLUSIONS:** Residents and faculty have similar views about ideal teaching cases, but a triage system based on perceived educational merit creates the possibility of resident misperceptions about their case mix, even if patients are distributed relatively equitably. *Journal of Hospital Medicine* 2014;9:508–514. © 2014 Society of Hospital Medicine

The advent of work-hour restrictions and admission limits for teaching services has led many academic hospitals to implement hospitalist-run staff (ie, nonteaching) services.<sup>1</sup> Although this practice is not new,<sup>2</sup> it is growing in popularity<sup>3</sup> and has been endorsed as a way to protect resident teaching and prevent excessive workload.<sup>4</sup> One potential benefit is the assignment of more educational cases to teaching services, whereas the nonteaching services receive more patients whose care is presumably relatively mundane or routine.<sup>5</sup>

Despite the rapid growth of this system of educational triage,<sup>6</sup> little is known about the factors considered when teaching versus nonteaching decisions are made. Studies of clinical outcomes for patients assigned to teaching versus nonteaching services have understandably used random assignment,<sup>7,8</sup> whereas a study

finding that patients with “unhealthy substance use” were more likely to be on teaching services than nonteaching services relied on patient assignment based on the identity of the patient’s primary care provider or insurer.<sup>9</sup> In 2009, O’Connor et al. reported that implementation of nonteaching services at 2 hospitals had led to unequal distribution of patients in terms of demographics, diagnosis, and illness severity.<sup>10</sup> Triage decisions were made by either a nurse coordinator or a medical chief resident, and sicker patients (and occasionally “good teaching cases”) were preferentially placed on the teaching services, reportedly out of respect for the comfort level of the midlevel providers who staffed the nonteaching services.

Our institution has used a system of hospitalist educational triage since 1998. Over that time, residents have often expressed concerns about the assignment of patients to the teaching services, reporting in particular that they receive a disproportionate number of complex cases and outside transfers. In 2006, the hospitalist group attempted to address these concerns by collecting real-time admission data, but the application of the data was limited by suspicion on both sides of a Hawthorne effect (data not published).

If trainee and hospitalist expectations for what constitutes a “great teaching case” differ substantially, that difference can have significant implications for

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resident and medical student teaching, self-perceived roles, and satisfaction. More significantly, an understanding of what faculty perceive as ideal teaching cases would provide valuable information about the strengths and weaknesses of the teaching–nonteaching model, which may prove useful to other academic institutions considering such a system. In this study, we endeavored to understand what residents and hospitalists consider an educational admission and to compare these expectations to the actual triage decisions of hospitalists.

## METHODS

Mayo Clinic Hospital (Phoenix, Arizona) has used separate teaching and nonteaching services since opening in 1998. At our institution, like many others,<sup>11</sup> a hospitalist is assigned to take all calls for emergency department (ED) admissions, admissions from outpatient clinics, and transfer requests; this physician directs patients to the teaching or nonteaching service. At the time of our study, the 2 teaching services alternated days in which they admitted up to 7 patients, and the 5 nonteaching services admitted all other patients and provided medicine consultative services for the hospital. Teaching services consisted of 1 hospitalist, 2 senior residents, 2 or 3 first-year residents, and sometimes 1 third- or fourth-year medical student. Nonteaching services consisted of a hospitalist with intermittent assistance from a physician assistant or nurse practitioner.

Although there are no formal guidelines for the hospitalist triage role, hospitalists are encouraged to assign more educational cases to the teaching services and to allow the residents enough time to address the acute needs of the prior admission before receiving the next admission. Residents are not assigned any patients between 4:00 AM and 7:00 AM. The goals and objectives for the resident rotation on the medicine teaching service include a list of diagnoses with which residents are expected to become familiar during their residency; triage hospitalists have on-line access to these goals and objectives.

To assess resident and hospitalist opinions about what types of patients should or should not be admitted to teaching services and to compare those characteristics with those of the patients actually admitted to teaching services, we began by administering a simple, open-ended survey and asked both groups: (1) “In an ideal world, what kinds of patients should be admitted to the internal medicine teaching services at Mayo Clinic Hospital?” (2) “In the real world, what kinds of patients are admitted to the internal medicine teaching services at Mayo Clinic Hospital?”

Ample space was provided for free-text entries. Residents were additionally asked their postgraduate year level. The survey was administered in April 2011, at which time all residents would have rotated on the

medicine teaching services several times. Survey responses were anonymous and were compiled and retyped by someone unfamiliar with the subjects’ handwriting.

Two authors (D.L.R. and H.R.L.) reviewed the results of the first survey and used conventional content analysis to group responses into categories and tally them.<sup>12</sup> Responses from hospitalists and residents were used to determine the content for a second, quantitative survey that asked respondents to rate specific possible factors that affected triage decisions on a Likert scale from 1 (“Argues against teaching admission”) to 5 (“Argues for teaching admission”). The second survey, administered to the same residents and hospitalists in May 2011, asked: (1) “In an ideal world, how do these factors contribute to the decision about which patients should be admitted to the internal medicine teaching services at Mayo Clinic Hospital?” (2) “In the real world, how do these factors contribute to the decision about which patients are admitted to the internal medicine teaching services at Mayo Clinic Hospital?”

Assuming a 3:1 ratio of nonteaching to teaching admissions, we calculated that we would need to analyze 1028 admissions to detect a 10% difference in the proportion of a specific trait present in 50% of patients admitted to the nonteaching service, with the use of a 2-sided test with 80% statistical power and a significance level of 0.05.

We collected data on patient assignment via retrospective chart review to avoid the possibility of a Hawthorne effect. We studied all admissions to the internal medicine services for a 3-month period before the administration of the first survey (January 1, 2011 through March 31, 2011). The following patient data were collected: service assignment (teaching vs nonteaching), age, sex, source of admission (ED, direct from clinic, outside transfer, internal transfer from another hospital service), first visit to our institution, prior hematology or oncology visit at our institution (as a surrogate for cancer), prior psychiatry visit at our institution (as a surrogate for psychiatric disease), transplantation history, human immunodeficiency virus (HIV) or acquired immune deficiency syndrome (AIDS) history, chronic or functional pain mentioned in ED or admission note, need for translator, and benefactor status. Additionally, an online calculator was used to determine the Charlson Comorbidity Index score for each patient.<sup>13</sup> We collected actual patient data corresponding to factors reported by survey respondents whenever possible and practical, but not every factor reported by survey respondents was amenable to rigorous analysis; for example, no unbiased method could be devised to rigorously categorize “patients whose admissions are likely to take more time” or “difficult patients and families.”

Responses to the second (quantitative) survey and patient data were compared using the Pearson  $\chi^2$  and

**TABLE 1.** Most Frequent Resident and Faculty Responses to an Open-Ended Survey About Types of Patients Admitted (Ideal vs Actual)\*

Question	Residents (n = 29)		Faculty (n = 20)	
	Characteristic	No. (%)	Characteristic	No. (%)
In an ideal world, what kinds of patients should be admitted to the internal medicine teaching services at Mayo Clinic Hospital?	"Bread-and butter" admissions <sup>†</sup>	14 (44.8)	Rare cases	9 (45.0)
	Rare cases	9 (31.0)	Variety of pathology	7 (35.0)
	No social admissions	7 (24.1)	Complex cases	5 (25.0)
	New diagnoses instead of chronic management	4 (13.8)	Variety of complexity	5 (25.0)
	Variety of complexity	4 (13.8)	Patients with HIV/AIDS	3 (15.0)
In the real world, what kinds of patients are admitted to the internal medicine teaching services at Mayo Clinic Hospital?	Patients with cancer	11 (37.9)	Diagnostic dilemmas	3 (15.0)
	Complex patients	10 (34.5)	New diagnoses instead of chronic management	3 (15.0)
	Social admissions	9 (31.0)	Complex patients	6 (30.0)
	Acutely ill patients	6 (20.7)	Difficult patients	5 (25.0)
	Variety of pathology	6 (20.7)	Patients whose admissions are expected to be time consuming	5 (25.0)
			Rare cases	3 (15.0)
			Cases determined by the time of day	3 (15.0)

NOTE: Abbreviations: AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus.

\*Similar responses were grouped via content analysis.

<sup>†</sup>Specific examples cited include chronic obstructive pulmonary disease, pneumonia, diabetic ketoacidosis, congestive heart failure, chest pain, and gastrointestinal tract bleeding.

Fisher exact test for categorical variables and the Student *t* test or Wilcoxon rank sum test for continuous variables. Categorical variables that achieved statistical significance for overall difference were analyzed on a post hoc basis using the Bonferroni method to control for the overall type I error rate. We also examined the differences between actual and ideal triage decisions using the Wilcoxon signed rank test. Data were analyzed using SAS 9.3 (SAS Institute, Inc., Cary, NC). Statistical significance was defined as  $P < 0.05$ .

The project was deemed exempt by the Mayo Clinic institutional review board.

## RESULTS

We surveyed all categorical internal medicine residents ( $n = 30$ , 10 each from postgraduate year [PGY]-1, PGY-2, and PGY-3) and hospitalists except the authors ( $n = 21$ ; average years since completing training = 13.3; range, 1–29 years). For both surveys, responses were collected from 29 (96.7%) residents. The nonresponding resident was a PGY-2. The response rate for hospitalists was 20/21 (95.2%) for the first survey and 16/21 (76.2%) for the second survey.

### First Survey

Table 1 compares the most frequent resident and faculty responses to the initial, open-ended survey about what types of patients should or should not be admitted to teaching services. Residents most commonly indicated that ideal patients were traditional medicine cases (ie, "bread-and-butter admissions," with 13 residents using that exact phrase), and others supplied

specific examples of such cases, including chronic obstructive pulmonary disease, pneumonia, diabetic ketoacidosis, congestive heart failure, chest pain, and gastrointestinal tract bleeding. Only 1 faculty member mentioned bread-and-butter admissions, although several listed examples like chest pain and pneumonia. A smaller number of residents pointed to the importance of rare cases, whereas faculty considered rare cases to be ideal for teaching services, followed by variety of pathology and complexity.

With regard to actual admissions, residents and faculty agreed that they often were complex, but residents were more likely to suggest high rates of patients with cancer (11 residents vs 2 hospitalists) and social admissions (9 residents vs 2 hospitalists). Four residents each believed that they preferentially received elderly patients, outside transfers, and patients with functional pain, and 2 perceived a disproportionate number of patients making their first visit to Mayo Clinic. One hospitalist believed that residents were more likely to receive non-English speakers.

### Second Survey

Table 2 compares the resident and faculty responses to the second, numerical survey regarding ideal admissions to the teaching services. In contrast to the first survey, residents prioritized rare cases as the feature they most associated with ideal teaching admissions. They also placed a premium on variety of pathology, patients with unique findings, and patients likely to be written up or presented. The patients they believed were least appropriate for a teaching service were social admissions or those with placement issues,

**TABLE 2.** Resident and Faculty Survey Responses Regarding Ideal Admissions to Teaching Services

Factor	Resident, n = 29	Faculty, n = 16	P Value
Rare diseases			0.22
Mean (SD)	4.8 (0.5)	4.9 (0.3)	
Median	5	5	
Variety of pathology			0.22
Mean (SD)	4.7 (0.5)	4.5 (0.5)	
Median	5	5	
Cases that might be written up or presented			0.35
Mean (SD)	4.7 (0.5)	4.8 (0.6)	
Median	5	5	
Bread-and-butter cases			0.001
Mean (SD)	4.6 (0.7)	3.7 (0.9)	
Median	5	4	
Unique physical findings			0.67
Mean (SD)	4.6 (0.6)	4.7 (0.5)	
Median	5	5	
Variety of complexity			0.21
Mean (SD)	4.3 (0.7)	4.1 (0.6)	
Median	4	4	
Variety of acuity			0.40
Mean (SD)	4.2 (0.7)	4.1 (0.7)	
Median	4	4	
Spectrum of ages			0.046
Mean (SD)	4.1 (0.8)	3.6 (0.8)	
Median	4	3	
HIV or AIDS			0.39
Mean (SD)	4.1 (0.9)	4.4 (0.5)	
Median	4	4	
Acutely ill or unstable			0.54
Mean (SD)	4.0 (0.9)	3.9 (0.6)	
Median	4	4	
Complex patients			0.94
Mean (SD)	4.0 (0.8)	3.9 (0.6)	
Median	4	4	
Patients at end of life			0.16
Mean (SD)	3.5 (0.8)	3.1 (0.6)	
Median	3	3	
First-time Mayo patients			0.45
Mean (SD)	3.5 (0.7)	3.3 (0.5)	
Median	3	3	
Younger patients			0.50
Mean (SD)	3.5 (0.9)	3.3 (0.6)	
Median	3	3	
Stable patients			0.21
Mean (SD)	3.3 (0.8)	3.1 (0.3)	
Median	3	3	
Patients with cancer			0.67
Mean (SD)	3.3 (0.8)	3.1 (0.4)	
Median	3	3	
Straightforward patients			0.64
Mean (SD)	3.2 (0.8)	3.1 (0.8)	
Median	3	3	
Older patients			0.73
Mean (SD)	3.2 (0.7)	3.1 (0.3)	
Median	3	3	
Patients with a history of transplantation			0.67
Mean (SD)	3.1 (1.1)	3.3 (0.6)	
Median	3	3	
Time of day of admission			0.71
Mean (SD)	3.1 (1.0)	3.1 (0.5)	
Median	3	3	
Patients with a history of psychiatric illness			0.59
Mean (SD)	3.1 (1.0)	3.1 (0.6)	
Median	3	3	

**TABLE 2.** Continued

Factor	Resident, n = 29	Faculty, n = 16	P Value
Patients who require a translator			0.49
Mean (SD)	3.0 (0.9)	3.1 (0.5)	
Median	3	3	
Patients whose admissions are expected to take more time			0.13
Mean (SD)	2.9 (0.8)	3.2 (0.6)	
Median	3	3	
Difficult patients and families			0.55
Mean (SD)	2.8 (1.0)	2.6 (0.8)	
Median	3	3	
Transfers from other hospitals			0.11
Mean (SD)	2.7 (1.1)	3.1 (0.3)	
Median	3	3	
Benefactors and public figures			0.49
Mean (SD)	2.7 (1.0)	2.5 (0.7)	
Median	3	3	
Patients with functional or chronic pain			0.87
Mean (SD)	2.4 (1.1)	2.4 (1.0)	
Median	2	3	
Social admissions or placement issues			0.99
Mean (SD)	2.1 (1.1)	2.0 (1.0)	
Median	2	2	

NOTE: Participants rated each factor on a Likert scale from 1 ("Argues against teaching admission") to 5 ("Argues for teaching admission"), with 3 representing "No impact on admission decision." Abbreviations: AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus; SD, standard deviation.

patients with functional or chronic pain, and benefactors or public figures.

Faculty prioritized many of the same features for ideal teaching cases as residents; 4 of their 5 highest-scoring factors were the same (rare diseases, patients whose cases might be written up or presented, patients with unique physical findings, and variety of pathology). They also agreed on the least ideal features (social admissions or placement issues, patients with functional or chronic pain, and benefactors or public figures). The only significant differences between resident and faculty ratings for ideal teaching cases were for bread-and-butter cases and a spectrum of ages.

Discordance between resident and faculty survey responses on actual admission decisions (Table 3) was starker; residents rated several features significantly higher than faculty as features contributing to triage decisions including older patients; patients with functional or chronic pain, social admissions, or placement issues; patients with cancer; transfers from other hospitals; and difficult patients and families. Relative to residents, faculty reported that patients with HIV or AIDS, and patients whose cases were likely to be written up or presented, were more likely to be admitted to teaching services.

Comparing resident survey ratings for ideal versus actual triage decisions gave some insight into the features that they thought were inappropriately emphasized or ignored when triage decisions were made.

**TABLE 3.** Resident and Faculty Survey Responses Regarding Actual Admissions to Teaching Services

Factor	Resident, n = 29	Faculty, n = 16	P Value
Rare diseases			0.14
Mean (SD)	4.4 (0.6)	4.7 (0.6)	
Median	4	5	
Complex patients			0.83
Mean (SD)	4.3 (0.6)	4.3 (0.6)	
Median	4	4	
Acutely ill or unstable			0.18
Mean (SD)	4.3 (0.7)	3.9 (0.9)	
Median	4	4	
Unique physical findings			0.18
Mean (SD)	4.1 (0.8)	4.5 (0.6)	
Median	4	5	
Transfers from other hospitals			0.003
Mean (SD)	4.1 (1.0)	3.5 (0.5)	
Median	4	3	
Cases that might be written up or presented			0.03
Mean (SD)	4.1 (0.7)	4.6 (0.6)	
Median	4	5	
Older patients			<0.001
Mean (SD)	3.9 (0.8)	3.0 (0.7)	
Median	4	3	
Time of day of admission			0.50
Mean (SD)	3.9 (1.1)	3.7 (0.9)	
Median	4	4	
Patients with cancer			0.01
Mean (SD)	3.9 (0.9)	3.3 (0.5)	
Median	4	3	
Variety of pathology			0.21
Mean (SD)	3.9 (0.8)	4.2 (0.7)	
Median	4	4	
Patients whose admissions are expected to take more time			0.13
Mean (SD)	3.9 (1.0)	3.4 (0.9)	
Median	4	3	
HIV or AIDS			0.008
Mean (SD)	3.8 (0.9)	4.5 (0.5)	
Median	4	4.5	
Variety of complexity			0.31
Mean (SD)	3.7 (0.9)	3.9 (0.6)	
Median	3.5	4	
Bread-and-butter cases			0.07
Mean (SD)	3.6 (1.0)	2.9 (1.2)	
Median	3	3	
First-time Mayo patients			0.82
Mean (SD)	3.6 (0.9)	3.5 (0.7)	
Median	3	3	
Patients with functional or chronic pain			0.004
Mean (SD)	3.6 (1.0)	2.8 (0.7)	
Median	4	3	
Social admissions or placement issues			0.03
Mean (SD)	3.5 (1.2)	2.7 (0.9)	
Median	4	3	
Variety of acuity			0.25
Mean (SD)	3.5 (0.8)	3.7 (0.6)	
Median	3	4	
Difficult patients and families			0.03
Mean (SD)	3.4 (0.9)	2.8 (0.7)	
Median	3	3	
Patients at end of life			0.10
Mean (SD)	3.4 (0.8)	3.0 (0.5)	
Median	3	3	
Spectrum of ages			0.80
Mean (SD)	3.3 (0.7)	3.3 (0.6)	
Median	3	3	

**TABLE 3.** Continued

Factor	Resident, n = 29	Faculty, n = 16	P Value
Patients with a history of psychiatric illness			0.81
Mean (SD)	3.3 (0.9)	3.1 (0.6)	
Median	3	3	
Patients with a history of transplantation			0.25
Mean (SD)	3.2 (0.9)	3.5 (0.5)	
Median	3	3	
Patients who require a translator			0.60
Mean (SD)	3.2 (0.7)	3.2 (0.6)	
Median	3	3	
Younger patients			0.42
Mean (SD)	3.0 (0.9)	3.1 (0.4)	
Median	3	3	
Benefactors and public figures			0.09
Mean (SD)	2.9 (1.0)	2.3 (0.7)	
Median	3	2	
Straightforward patients			0.18
Mean (SD)	2.8 (1.0)	2.4 (1.0)	
Median	2.5	2	
Stable patients			0.53
Mean (SD)	2.7 (1.0)	2.8 (0.7)	
Median	3	3	

NOTE: Participants rated each factor on a Likert scale from 1 ("Argues against teaching admission") to 5 ("Argues for teaching admission"), with 3 representing "No impact on admission decision." Abbreviations: AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus; SD, standard deviation.

Differences in resident scores for ideal versus actual admissions were significantly different for 16 of 28 items (data available upon request), suggesting a degree of perceived discordance. The largest positive differences (ie, features they valued in teaching admissions but thought were less represented in actual admissions) were for bread-and-butter admissions, variety of pathology, a spectrum of ages, and variety of acuity. The largest negative differences (ie, features they thought were well represented in actual admissions but were less valuable) were for social admissions or placement issues, transfers from other hospitals, patients with functional or chronic pain, and patients whose admissions were expected to take more time.

In terms of ideal versus actual triage decisions, faculty reported less discordance than residents; ideal and actual triage behavior differed significantly only for 4 of 28 items (data available upon request). They did agree with residents about the relative lack of bread-and-butter admissions and the overrepresentation of social admissions or placement issues and transfers from other hospitals. They additionally noted a lack of straightforward cases.

We reviewed records of the 1426 patients admitted to the internal medicine services during the study period. Of these, 359 (25.2%) were assigned to the teaching services. Patient characteristics are summarized in Table 4.

**TABLE 4.** Characteristics of Patients Admitted to the Internal Medicine Services (N = 1,426)

Characteristic	Teaching Service, n = 359	Nonteaching Service, n = 1,067	P Value
Age, y, mean (SD)	66.7 (16.5)	69.3 (15.7)	0.008
Admission type, No. (%)			0.049
Admission from the emergency department	315 (87.7)	915 (85.8)	0.34
Direct admission from Mayo outpatient clinic	27 (7.5)	114 (10.7)	0.08
Transfer from another institution	16 (4.5)	27 (2.5)	0.06
Internal transfer from a different hospital service	1 (0.3)	11 (1.0)	0.31
First-time Mayo patient, No. (%)	61 (17.0)	175 (16.4)	0.79
Prior hematology or oncology visit, No. (%)	86 (24.0)	235 (22.0)	0.45
History of transplantation, No. (%)	20 (5.6)	52 (4.9)	0.60
Prior psychiatry visit, No. (%)	53 (14.8)	122 (11.4)	0.10
History of chronic or functional pain, No. (%)	122 (34.0)	330 (30.9)	0.28
Required translator, No. (%)	5 (1.4)	14 (1.3)	0.91
Benefactor, No. (%)	5 (1.4)	24 (2.2)	0.32
Charlson comorbidity score, mean (SD)	2.7 (2.5)	2.6 (2.5)	0.49

NOTE: Abbreviations: SD, standard deviation.

## DISCUSSION

The results of our qualitative and quantitative surveys showed significant differences between resident and staff perceptions of the faculty triage role. Although both groups similarly valued many features, residents expressed a clear preference for more bread-and-butter admissions, whereas the staff prioritized selecting the most complex, challenging, and rare cases from among the day's admissions to give to the residents. (Residents were also very interested in rare cases, suggesting that they saw benefit to admitting patients with a variety of degrees of rarity and complexity.) Residents and faculty seemed to agree that the number of social admissions and outside transfers admitted to teaching services was not ideal.

These perceptions have substantial implications. If the current triage process is to continue, there may be benefit to designing a faculty development project focused on the triage process, which previously has been largely unexamined. Efforts to remove or limit time barriers that prevent perceived educational cases from being admitted to teaching services is also a worthy endeavor (eg, structuring the 2 teams to admit simultaneously so that teaching teams can admit patients back to back without exceeding capacity). In addition, residents may benefit from teaching hospitalists who concentrate educational efforts on the learning that can be extracted from the care of any patient, including admissions that initially seem mundane or purely social.<sup>14</sup> A concerted effort to divert more traditional medicine admissions and fewer unusual cases to the teaching service might improve resident perceptions of the triage process. Further, although the care of any patient can have education benefit, the fact that both groups perceived excessive social admissions in the teaching service suggests that a potential benefit

of a nonteaching service (ie, absorbing the most mundane admissions) may not yet be fully realized.

Despite the perceived differences noted on the surveys, we found remarkably few differences between patients admitted to the teaching and nonteaching services. Although both groups rated complexity; outside transfers; being seen at the institution for the first time; and histories of transplantation, cancer, chronic or functional pain, and psychiatric disease as increasing the likelihood of admission to a teaching service, no differences were observed for these factors or their quantifiable surrogates. (Although the overall test for admission type achieved marginal statistical significance, none of the individual admission types were significantly different in post hoc analysis.) Residents, but not faculty, thought that older patients were overrepresented on the teaching service, but their assigned patients were significantly younger than those on the nonteaching service.

These findings have several possible explanations. First, although most hospitalists spend time on teaching and nonteaching services (and therefore are familiar with the patient composition of each), residents get very little exposure to the nonteaching services (until they are senior residents with a rotation on a consulting service). Their impression of inequity may be due to misunderstanding the patient composition of the nonteaching services. Second, the mere existence of a triage role may create false expectations about patient composition; that is, simply by knowing that every admission was chosen for its educational merit, residents may have disproportionate perceptions about those cases judged to have less educational value, even if—as our data suggest—assignments to teaching versus nonteaching services are occurring fairly equitably.

## Study Limitations

We acknowledge several limitations of our study. First, many factors that were reported as important in the qualitative survey did not lend themselves to objective abstraction from patient records. For example, providers did not specifically document when an admission is purely social, nor was there an objective way to identify difficult patients or families or admissions that were expected to take more time. We attempted to limit the analysis to objective patient metrics that were (1) not influenced by the teaching or nonteaching assignment itself (eg, we avoided discharge diagnoses, which might be entered differently by residents and staff hospitalists) and (2) easily available to triage hospitalists. For the latter reason, we used a prior appointment in the hematology or oncology clinic as a surrogate for cancer patients and a prior psychiatry visit as a surrogate for patients with a history of psychiatric disease. These are naturally inexact surrogates, but they reflect the information a

busy hospitalist is likely to access when making patient assignment decisions.

Second, it may well be that assigning patients equitably according to a certain trait is not the same as assigning patients ideally for the educational needs of residents. The patients admitted to our medicine services (teaching and nonteaching) were generally older than 60 years, had complex diagnoses, and had substantial pain. Residents on the teaching services potentially would benefit from an intentionally unbalanced admission policy that shunted patients to the teaching services on the basis of features other than individual perceived educational merit. It must also be borne in mind that resident, and for that matter faculty, perceptions of ideal teaching cases are likely inexact correlates of educational best practices; the ideal role of the triage hospitalist is to admit to the teaching services those patients that will best advance the education of the learners, including a consideration of the goals and objectives of the rotation. Future studies correlating different triage practices to actual educational outcomes would be very helpful.

Third, the analysis could not reliably eliminate patients whose admissions did not represent genuine triage decisions (eg, those assigned to the hospitalist service after the teaching service had reached its capacity or immediately after they had received a complex case). Studying admission decisions prospectively could eliminate this variability, but it could introduce a Hawthorne effect, the negative effects of which likely would outweigh this benefit.

## CONCLUSION

Triage hospitalists distributed patients fairly evenly between teaching and nonteaching services, but residents and faculty alike perceived that residents would benefit from more bread-and-butter cases. Hospitals considering the addition of a nonteaching service may want to incorporate a faculty development project focused on the triage process to ensure that these tra-

ditional medicine cases are assigned to resident services and to ensure that the “great teaching case” is not considered such because of complexity and acuity alone.

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