

ORIGINAL RESEARCH

How Do Attendings Perceive Housestaff Autonomy? Attending Experience, Hospitalists, and Trends Over Time

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BACKGROUND: Graduated supervision is necessary for residents to progress to independence, but it is unclear what factors influence attendings' perception of housestaff autonomy.

OBJECTIVE: To determine if attending characteristics and secular trends are associated with variation in attendings' perception of housestaff autonomy.

DESIGN: Secondary data analysis of monthly survey data collected from 2001 to 2008.

SETTING/PARTICIPANTS: Attending hospitalists and non-hospitalists on teaching internal medicine services at an academic tertiary care center.

MEASUREMENTS: Attendings' perception of intern decision making and resident autonomy.

RESULTS: Response rate was 70% (514/738). Compared with early-career attendings, experienced attendings perceived more intern involvement in decision making (odds ratio [OR]: 2.16, 95% confidence interval [CI]: 1.17-3.97, $P=0.013$). Hospitalists perceived less intern involvement in

decision making (OR: 0.19, 95% CI: 0.06-0.58, $P=0.004$) and resident autonomy (OR: 0.27, 95% CI: 0.11-0.66, $P=0.004$) compared with nonhospitalists. A significant interaction existed between hospitalists and experience; experienced hospitalists perceived more intern decision making (OR: 7.36, 95% CI: 1.86-29.1, $P=0.004$) and resident autonomy (OR: 5.85, 95% CI: 1.75-19.6, $P=0.004$) compared with early-career hospitalists. With respect to secular trends, spring season of the academic year was associated with greater perception of intern decision making compared with other seasons (OR: 1.94, 95% CI: 1.18-3.19, $P=0.009$). The 2003 resident duty-hours restrictions were associated with decreased perception of intern decision making (OR: 0.51, 95% CI: 0.29-0.87, $P=0.014$) and resident autonomy (OR: 0.49, 95% CI: 0.28-0.86, $P=0.012$).

CONCLUSIONS: Perception of housestaff autonomy varies with attending characteristics and time trends. Hospitalists perceive autonomy and clinical decision making differently, depending on their attending experience. *Journal of Hospital Medicine* 2013;8:292-297. © 2013 Society of Hospital Medicine

Clinical supervision in graduate medical education (GME) emphasizes patient safety while promoting development of clinical expertise by allowing trainees progressive independence.¹⁻³ The importance of the balance between supervision and autonomy has been recognized by accreditation organizations, namely the Institute of Medicine and the Accreditation Council for Graduate Medical Education (ACGME).^{4,5} However, little is known of best practices in supervision, and the model of progressive independence in clinical training lacks empirical support.³ Limited evidence suggests that enhanced clinical supervision may have positive effects on patient and education-related outcomes.⁶⁻¹⁵ However, a more nuanced understanding of potential effects of enhanced supervision on resident autonomy and decision making is still required,

particularly as preliminary work on increased on-site hospitalist supervision has yielded mixed results.¹⁶⁻¹⁹

Understanding how trainees are entrusted with autonomy will be integral to the ACGME's Next Accreditation System.²⁰ Entrustable Professional Activities are benchmarks by which resident readiness to progress through training will be judged.²¹ The extent to which trainees are entrusted with autonomy is largely determined by the subjective assessment of immediate supervisors, as autonomy is rarely measured or quantified.^{3,22,23} This judgment of autonomy, most frequently performed by ward attendings, may be subject to significant variation and influenced by factors other than the resident's competence and clinical abilities.

To that end, it is worth considering what factors may affect attending perception of housestaff autonomy and decision making. Recent changes in the GME environment and policy implementation have altered the landscape of the attending workforce considerably. The growth of the hospitalist movement in teaching hospitals, in part due to duty hours, has led to more residents being supervised by hospitalists, who may perceive trainee autonomy differently than other attendings do.²⁴ This study aims to examine whether factors such as attending demographics and short-term and long-term secular trends influence

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attending perception of housestaff autonomy and participation in decision making.

METHODS

Study Design

From 2001 to 2008, attending physicians at a single academic institution were surveyed at the end of inpatient general medicine teaching rotations.²⁵ The University of Chicago general medicine service consists of ward teams of an attending physician (internists, hospitalists, or subspecialists), 1 senior resident, and 1 or 2 interns. Attendings serve for 2- or 4-week rotations. Attendings were consented for participation and received a 40-item, paper-based survey at the rotation's end. The institutional review board approved this study.

Data Collection

From the 40 survey items, 2 statements were selected for analysis: "The intern(s) were truly involved in decision making about their patients" and "My resident felt that s/he had sufficient autonomy this month." These items have been used in previous work studying attending-resident dynamics.^{19,26} Attendings also reported demographic and professional information as well as self-identified hospitalist status, ascertained by the question "Do you consider yourself to be a hospitalist?" Survey month and year were also recorded. We conducted a secondary data analysis of an inclusive sample of responses to the questions of interest.

Statistical Analysis

Descriptive statistics were used to summarize survey responses and demographics. Survey questions consisted of Likert-type items. Because the distribution of responses was skewed toward strong agreement for both questions, we collapsed scores into 2 categories (Strongly Agree and Do Not Strongly Agree).¹⁹ Perception of sufficient trainee autonomy was defined as a response of "Strongly Agree." The Pearson χ^2 test was used to compare proportions, and *t* tests were used to compare mean years since completion of residency and weeks on service between different groups.

Multivariate logistic regression with stepwise forward regression was used to model the relationship between attending sex, institutional hospitalist designation, years of experience, implementation of duty-hours restrictions, and academic season, and perception of trainee autonomy and decision making. Academic seasons were defined as summer (July–September), fall (October–December), winter (January–March) and spring (April–June).²⁶ Years of experience were divided into tertiles of years since residency: 0–4 years, 5–11 years, and >11 years. To account for the possibility that the effect of hospitalist specialty varied by experience, interaction terms were constructed. The interaction term hospitalist*early-career was used as the reference group.

TABLE 1. Attending Physician Demographic Characteristics^a

Characteristics	Value
Female, n (%)	275 (47)
Hospitalist, n (%)	125 (23)
Years since completion of residency	
Mean, median, SD	9.3, 7, 7.6
IQR	3–14
0–4, n (%)	167 (36)
5–11, n (%)	146 (32)
>11, n (%)	149 (32)
Weeks on service per year ^b	
Mean, median, SD	8.1, 6, 5.8
IQR	4–12

NOTE: Abbreviations: IQR, interquartile range; SD, standard deviation.

^aBecause of missing data, numbers may not correspond to exact percentages.

^bData only available beyond academic year 2003–2004.

RESULTS

Seven hundred thirty-eight surveys were distributed to attendings on inpatient general medicine teaching services from 2001 to 2008; 70% (n=514) were included in the analysis. Table 1 provides demographic characteristics of the respondents. Roughly half (47%) were female, and 23% were hospitalists. Experience ranged from 0 to 35 years, with a median of 7 years. Weeks on service per year ranged from 1 to 27, with a median of 6 weeks. Hospitalists represented a less-experienced group of attendings, as their mean experience was 4.5 years (standard deviation [SD] 4.5) compared with 11.2 years (SD 7.7) for non-hospitalists ($P<0.001$). Hospitalists attended more frequently, with a mean 14.2 weeks on service (SD 6.5) compared with 5.8 weeks (SD 3.4) for nonhospitalists ($P<0.001$). Nineteen percent (n=98) of surveys were completed prior to the first ACGME duty-hours restriction in 2003. Responses were distributed fairly equally across the academic year, with 29% completed in summer, 26% in fall, 24% in winter, and 21% in spring.

Forty-four percent (n=212) of attendings perceived adequate intern involvement in decision making, and 50% (n=238) perceived sufficient resident autonomy. The correlation coefficient between these 2 measures was 0.66.

Attending Factors Associated With Perception of Trainee Autonomy

In univariate analysis, hospitalists perceived sufficient trainee autonomy less frequently than nonhospitalists; 33% perceived adequate intern involvement in decision making compared with 48% of nonhospitalists ($\chi^2_1=6.7$, $P=0.01$), and 42% perceived sufficient resident autonomy compared with 54% of nonhospitalists ($\chi^2_1=3.9$, $P=0.048$) (Table 2).

Perception of trainee autonomy increased with experience (Table 2). About 30% of early-career attendings

TABLE 2. Attending Characteristics and Time Trends Associated With Perception of Intern Involvement in Decision Making and Resident Autonomy^a

Attending Characteristics, n (%)	Agree With Intern Involvement in Decision Making	Agree With Sufficient Resident Autonomy
Designation		
Hospitalist	29 (33)	37 (42)
Nonhospitalist	163 (48)	180 (54)
Years since completion of residency		
0–4	37 (27)	49 (36)
5–11	77 (53)	88 (61)
>11	77 (53)	81 (56)
Sex		
F	98 (46)	100 (47)
M	113 (43)	138 (53)
Secular factors, n (%)		
Pre-2003 duty-hours restrictions	56 (57)	62 (65)
Post-2003 duty-hours restrictions	156 (41)	176 (46)
Season of survey		
Summer (July–September)	61 (45)	69 (51)
Fall (October–December)	53 (42)	59 (48)
Winter (January–March)	42 (37)	52 (46)
Spring (April–June)	56 (54)	58 (57)

NOTE: Abbreviations: F, female; M, male.

^aBecause of missing data, numbers may not correspond to exact percentages.

(0–4 years experience) perceived sufficient autonomy and involvement in decision making compared with >50% agreement in the later-career tertiles (intern decision making: $\chi^2_2=25.1$, $P<0.001$; resident autonomy: $\chi^2_2=18.9$, $P<0.001$). Attendings perceiving more intern decision making involvement had a mean 11 years of experience (SD 7.1), whereas those perceiving less had a mean of 8.8 years (SD 7.8; $P=0.003$). Mean years of experience were similar for perception of resident autonomy (10.6 years [SD 7.2] vs 8.9 years [SD 7.8], $P=0.021$).

Sex was not associated with differences in perception of intern decision making ($\chi^2_1=0.39$, $P=0.53$) or resident autonomy ($\chi^2_1=1.4$, $P=0.236$) (Table 2).

Secular Factors Associated With Perception of Trainee Autonomy

The implementation of duty-hour restrictions in 2003 was associated with decreased attending perception of autonomy. Only 41% of attendings perceived adequate intern involvement in decision making following the restrictions, compared with 57% before the restrictions were instituted ($\chi^2_1=8.2$, $P=0.004$). Similarly, 46% of attendings agreed with sufficient resident autonomy post-duty hours, compared with 65% prior ($\chi^2_1=10.1$, $P=0.001$) (Table 2).

Academic season was also associated with differences in perception of autonomy (Table 2). In spring, 54% of attendings perceived adequate intern involvement in decision making, compared with 42% in the other seasons combined ($\chi^2_1=5.34$, $P=0.021$). Percep-

tion of resident autonomy was also higher in spring, though this was not statistically significant (57% in spring vs 48% in the other seasons; $\chi^2_1=2.37$, $P=0.123$).

Multivariate Analyses

Variation in attending perception of housestaff autonomy by attending characteristics persisted in multivariate analysis. Table 3 shows ORs for perception of adequate intern involvement in decision making and sufficient resident autonomy. Sex was not a significant predictor of agreement with either statement. The odds that an attending would perceive adequate intern involvement in decision making were higher for later-career attendings compared with early-career attendings (ie, 0–4 years); attendings who completed residency 5–11 years ago were 2.16× more likely to perceive adequate involvement (OR: 2.16, 95% CI: 1.17-3.97, $P=0.013$), and those >11 years from residency were 2.05× more likely (OR: 2.05, 95% CI: 1.16-3.63, $P=0.014$). Later-career attendings also had nonsignificant higher odds of perceiving sufficient resident autonomy compared with early-career attendings (5–11 years, OR: 1.73, 95% CI: 0.96–3.14, $P=0.07$; >11 years, OR: 1.50, 95% CI: 0.86–2.62, $P=0.154$).

TABLE 3. Association Between Agreement With Housestaff Autonomy and Attending Characteristics and Secular Factors

Covariate	Interns Involved With Decision Making		Resident Had Sufficient Autonomy	
	OR (95% CI)	PValue	OR (95% CI)	PValue
Attending characteristics				
0–4 years of experience	—	—	—	—
5–11 years of experience	2.16 (1.17-3.97)	0.013	1.73 (0.96-3.14)	0.07
>11 years of experience	2.05 (1.16-3.63)	0.014	1.50 (0.86-2.62)	0.154
Hospitalist	0.19 (0.06-0.58)	0.004	0.27 (0.11-0.66)	0.004
Hospitalist* 0–4 years of experience	—	—	—	—
Hospitalist* 5–11 years of experience	7.36 (1.86-29.1)	0.004	5.85 (1.75-19.6)	0.004
Hospitalist* >11 years of experience	21.2 (1.73-260)	0.017	14.4 (1.31-159)	0.029
Female sex	1.41 (0.92-2.17)	0.115	0.92 (0.60-1.40)	0.69
Secular factors				
Post-2003 duty hours	0.51 (0.29-0.87)	0.014	0.49 (0.28-0.86)	0.012
Spring academic season	1.94 (1.18-3.19)	0.009	1.59 (0.97-2.60)	0.064

NOTE: Abbreviations: CI, confidence interval; OR, odds ratio.

*Multivariate logistic regression model to determine association between sex, years of experience, hospitalist specialty, duty hours, academic season, and the interaction between hospitalist specialty and experience with attending physician agreement with intern involvement in decision making. Similarly, the second model was to determine the association between the above-listed factors and attending agreement with sufficient resident autonomy. Male sex was used as the reference group in the analysis. Experience was divided into tertiles of years since completion of residency: first tertile (0–4 years), second tertile (5–11 years) and third tertile (>11 years). First tertile of years of experience was used as the reference group in the analysis. Similarly, hospitalist*0–4 years of experience was the reference group when determining the effects of the interaction between hospitalist specialty and experience. The duty-hours covariate is the responses after implementation of the 2003 duty-hours restriction. Academic year was studied as spring season (March–June) compared with the other seasons.

Hospitalists were associated with 81% lower odds of perceiving adequate intern involvement in decision making (OR: 0.19, 95% CI: 0.06–0.58, $P=0.004$) and 73% lower odds of perceiving sufficient resident autonomy compared with nonhospitalists (OR: 0.27, 95% CI: 0.11–0.66, $P=0.004$). However, there was a significant interaction between hospitalists and experience; compared with early-career hospitalists, experienced hospitalists had higher odds of perceiving both adequate intern involvement in decision making (5–11 years, OR: 7.36, 95% CI: 1.86–29.1, $P=0.004$; >11 years, OR: 21.2, 95% CI: 1.73–260, $P=0.017$) and sufficient resident autonomy (5–11 years, OR: 5.85, 95% CI: 1.75–19.6, $P=0.004$; >11 years, OR: 14.4, 95% CI: 1.3–159, $P=0.029$) (Table 3).

Secular trends also remained associated with differences in perception of housestaff autonomy (Table 3). Attendings had 49% lower odds of perceiving adequate intern involvement in decision making in the years following duty-hour limits compared with the years prior (OR: 0.51, 95% CI: 0.29–0.87, $P=0.014$). Similarly, odds of perceiving sufficient resident autonomy were 51% lower post-duty hours (OR: 0.49, 95% CI: 0.28–0.86, $P=0.012$). Spring season was associated with 94% higher odds of perceiving adequate intern involvement in decision making compared with other seasons (OR: 1.94, 95% CI: 1.18–3.19, $P=0.009$). There were also nonsignificant higher odds of perception of sufficient resident autonomy in spring (OR: 1.59, 95% CI: 0.97–2.60, $P=0.064$). To address the possibility of associations due to secular trends resulting from repeated measures of attendings, models using attending fixed effects were also used. Clustering by attending, the associations between duty hours and perceiving sufficient resident autonomy and intern decision making both remained significant, but the association of spring season did not.

DISCUSSION

This study highlights that attendings' perception of housestaff autonomy varies by attending characteristics and secular trends. Specifically, early-career attendings and hospitalists were less likely to perceive sufficient housestaff autonomy and involvement in decision making. However, there was a significant hospitalist-experience interaction, such that more-experienced hospitalists were associated with higher odds of perceiving sufficient autonomy than would be expected from the effect of experience alone. With respect to secular trends, attendings perceived more trainee autonomy in the last quarter of the academic year, and less autonomy after implementation of resident duty-hour restrictions in 2003.

As Entrustable Professional Activities unveil a new emphasis on the notion of entrustment, it will be critical to ensure that attending assessment of resident performance is uniform and a valid judge of when to entrust autonomy.^{27,28} If, as suggested by these find-

ings, perception of autonomy varies based on attending characteristics, all faculty may benefit from strategies to standardize assessment and evaluation skills to ensure trainees are appropriately progressing through various milestones to achieve competence. Our results suggest that faculty development may be particularly important for early-career attendings and especially hospitalists.

Early-career attendings may perceive less housestaff autonomy due to a reluctance to relinquish control over patient-care duties and decision making when the attending is only a few years from residency. Hospitalists are relatively junior in most institutions and may be similar to early-career attendings in that regard. It is noteworthy, however, that experienced hospitalists are associated with even greater perception of autonomy than would be predicted by years of experience alone. Hospitalists may gain experience at a rate faster than nonhospitalists, which could affect how they perceive autonomy and decision making in trainees and may make them more comfortable entrusting autonomy to housestaff. Early-career hospitalists likely represent a heterogeneous group of physicians, in both 1-year clinical hospitalists as well as academic-career hospitalists, who may have different approaches to managing housestaff teams. Residents are less likely to fear hospitalists limiting their autonomy after exposure to working with hospitalists as teaching attendings, and our findings may suggest a corollary in that hospitalists may be more likely to perceive sufficient autonomy with more exposure to working with housestaff.¹⁹

Attendings perceived less housestaff autonomy following the 2003 duty-hour limits. This may be due to attendings assuming more responsibilities that were traditionally performed by residents.^{26,29} This shifting of responsibility may lead to perception of less-active housestaff decision making and less-evident autonomy. These findings suggest autonomy may become even more restricted after implementation of the 2011 duty-hour restrictions, which included 16-hour shifts for interns.⁵ Further studies are warranted in examining the effect of these new limits. Entrustment of autonomy and allowance for decision making is an essential part of any learning environment that allows residents to develop clinical reasoning skills, and it will be critical to adopt new strategies to encourage professional growth of housestaff in this new era.³⁰

Attendings also perceived autonomy differently by academic season. Spring represents the season by which housestaff are most experienced and by which attendings may be most familiar with individual team members. Additionally, there may be a stronger emphasis on supervision and adherence to traditional hierarchy earlier in the academic year as interns and junior residents are learning their new roles.³⁰ These findings may have implications for system changes to

support development of more functional educational dyads between attendings and trainees, especially early in the academic year.³¹

There are several limitations to our findings. This is a single-institution study restricted to the general-medicine service; thus generalizability is limited. Our outcome measures, the survey items of interest, question perception of housestaff autonomy but do not query the appropriateness of that autonomy, an important construct in entrustment. Additionally, self-reported answers could be subject to recall bias. Although data were collected over 8 years, the most recent trends of residency training are not reflected. Although there was a significant interaction involving experienced hospitalists, wide confidence intervals and large standard errors likely reflect the relatively few individuals in this category. Though there was a large number of overall respondents, our interaction terms included few advanced-career hospitalists, likely secondary to hospital medicine's relative youth as a specialty.

As this study focuses only on perception of autonomy, future work must investigate autonomy from a practical standpoint. It is conceivable that if factors such as attending characteristics and secular trends influence perception, they may also be associated with variation in how attendings entrust autonomy and provide supervision. To what extent perception and practice are linked remains to be studied, but it will be important to determine if variation due to these factors may also be associated with inconsistent and uneven supervisory practices that would adversely affect resident education and patient safety.

Finally, future work must include the viewpoint of the recipients of autonomy: the residents and interns. A significant limitation of the current study is the lack of the resident perspective, as our survey was only administered to attendings. Autonomy is clearly a 2-way relationship, and attending perception must be corroborated by the resident's experience. It is possible attendings may perceive that their housestaff have "sufficient" autonomy, but residents may view this autonomy as inappropriate or unavoidable due an "absentee" attending who does not adequately supervise.³² Future work must examine how resident and attending perceptions of autonomy correlate, and whether discordance or concordance in these perceptions influence satisfaction with attending-resident relationships, education, and patient care.

In conclusion, significant variation existed among attending physicians with respect to perception of housestaff autonomy, an important aspect of entrustment and clinical supervision. This variation was present for hospitalists, among different levels of attending experience, and a significant interaction was found between these 2 factors. Additionally, secular trends were associated with differences in perception of autonomy. As entrustment of residents with pro-

gressive levels of autonomy becomes more integrated within the requirements for advancement in residency, a greater understanding of factors affecting entrustment will be critical in helping faculty develop skills to appropriately assess trainee professional growth and development.

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