

Direct Versus Indirect Supervision of Fellows Covering Football Events: A Survey of Fellows and Program Directors

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Abstract

Background The Accreditation Council for Graduate Medical Education (ACGME) program requirements mandate “adequate supervision,” of residents, but there is little guidance for sports medicine fellowship directors regarding the transition from direct to indirect supervision of fellows covering football games.

Objective We sought to gather evidence of current supervision practices in the context of injury outcomes.

Methods Fellows and program directors of ACGME-accredited sports medicine fellowship programs were invited to complete an online survey regarding their experience and current supervision practice at football games. Criteria for transition to autonomy and desired changes in supervision practice were elicited. Player safety was quantified by noting the number of field-side emergencies, whether an attending was present, and

whether better outcomes might have resulted from the presence of an attending.

Results A total of 80 fellows and 50 program directors completed the online survey. Direct supervision was lacking in about 50% of high school games and 20% of college games. A resulting cost in terms of player safety was estimated to apply to 5% of serious injuries by fellows’ report but less than 0.5% by directors’ report. Written criteria for transitioning from direct supervision to autonomy were the exception rather than the rule. The majority of fellows and directors expressed satisfaction with the current level of supervision, but 20% of fellows would prefer more supervision through postgame review.

Conclusions Football games covered by fellows are often not directly supervised. Absence of an attending affected the outcomes of 5% or less of serious injuries. Transition to autonomy does not usually require meeting written criteria. Fellows might benefit from additional off-site supervision.

Editor’s Note: The online version of this article contains the 2 survey instruments used in this study.

Background

The Accreditation Council for Graduate Medical Education (ACGME) mandates the supervision of residents and fellows, but offers only general guidelines for supervision: “All educational activities must be adequately supervised, while allowing the resident to assume progressive responsibility for patient care.”¹ Adequacy of supervision is not further defined but is needed to maximize patient

outcomes and the fellow’s education. The Association of American Medical Colleges provides the following policy guidance: “resident physicians must have opportunities to exercise ... graded, progressive responsibility...so that they can learn how to practice...and recognize when, and under what circumstances, they should seek assistance.”² With the exception of circumstances requiring urgent judgments by experienced physicians, the guidance states that “attending physicians can provide adequate supervision off site as long as their physical presence within a reasonable time (eg, 30 minutes) can be assured in case of need.”²

Supervision of residents covering athletic games is required. On-site attendings would likely increase patient/player safety and provide mentoring; the primary barriers to on-site faculty supervision are the supervising attending’s time and funding from the institution.³ A benefit of off-site supervision is that it conserves limited resources and expands fellows’ opportunities to gain autonomy.

The literature on supervision is inconclusive regarding the ideal level and progression of supervision. In a survey of residents reporting their opinions about a proposed increase in training requirements before independent call,⁴ respondents indicated that independent call represented an

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important learning experience. However, in other studies,^{5,6} trainees reported that they benefitted from a higher degree of supervision, although it is not clear whether this is from additional education provided by supervision or from a higher comfort level. The ACGME has proposed changes to the Common Program Requirements that classify supervision into levels of direct, indirect, and oversight, with progressive responsibility assigned on the basis of evaluation of specific criteria.⁷

Evidence-based guidelines need to be developed to establish when to grant clinical independence to trainees. In the absence of such evidence, justification for greater levels of direct supervision may be based on the observation that residents become more competent in direct relationship to length of training.⁸ We sought to gather evidence of current supervision practices (ie, the extent to which supervision at games is direct or indirect, criteria for transition to autonomy, supervision preferences) in the context of injury outcomes during football games because they are commonly covered by most fellowships and result in relatively more injuries than other sports.

Methods

We developed 2 online surveys: a fellow survey, based on sports medicine fellows' experience of the fellowship during the academic year 2008–2009, and a sports medicine fellowship program director survey during the academic year 2008–2009 based on the experience in all their years as a program director.

Subjects

The website of the American Medical Society for Sports Medicine (AMSSM) provided e-mail addresses for 116 sports medicine fellowship program directors. The e-mail addresses for 128 of 170 fellows were derived from a list of those attending the AMSSM 2008 Fellow Research Conference or by calling or e-mailing program faculty or coordinators. Brief information about this study was sent via e-mail to all qualified participants with an invitation to participate. Because of the initial poor response rate, we posted the survey link in the AMSSM listserv. No reimbursement or incentive was provided. The institutional review boards of Via Christi Health and the University of Kansas School of Medicine-Wichita approved the study.

Survey

The online survey tool Zoomerang (MarketTools Inc., San Francisco, CA) was used to compose survey items, e-mail them to qualifying participants, track returns, facilitate second and third e-mailings, and summarize results. The survey was returned by 74 program directors (64%) and 86 fellows (67%). The responses were similar for those who responded to the e-mail and those who responded through the AMSSM listserv, and the responses were combined.

Descriptive information was collected regarding experience and current supervision practice at high school and college games. Supervision was classified as “direct” (on-site), “indirect” (available by phone or pager), or postgame review (off-site). Criteria for transition to autonomy (ie, lacking on-site supervision) were determined. Desired changes in supervision practice (more or less direct supervision; more structured postgame supervision; no changes) were elicited. Player safety was addressed by noting the number of field-side emergencies encountered, whether an attending was present, and whether better outcomes might have resulted from the presence of an attending. For field-side emergencies, we included immediate life-threatening injuries (respiratory and cardiac emergencies) and potential life-threatening/disabling injuries (severe head and neck injuries, heat-related emergencies, and serious musculoskeletal injuries such as fractures and dislocations).

Statistical Analysis

Descriptive analyses were conducted to describe the football experience and supervision levels of directors and fellows. In order to assess the potential cost to player safety we identified fellows and directors reporting 1 or more serious injuries for which the attending was not present (ie, the fellow was not receiving direct supervision). Conceptually, this situation has implications for *direct* patient safety.⁹ For these unattended injuries, Mann-Whitney tests were used to compare fellows and directors who did and did not report the potential for improved outcomes if the attending had been present.

Results

Fellows' Responses

Five responding fellows did not complete their surveys and 1 did not cover football. Of the remaining 80 fellows (TABLE 1) most had completed 9 months of their fellowship and had covered 15 football games. Over half the games (56%) were at the high school level and 41% were at the college level. Eleven fellows reported covering between 1 and 6 professional games.

High school game coverage was most commonly supervised only indirectly (55% of fellows) (TABLE 2); college game coverage was typically supervised directly (75% of fellows). No respondent indicated postgame review as the typical form of supervision.

Twelve fellows reported that direct supervision at all their games was institutionally mandated, although for 8 the mandate was specific for college games. Eleven fellows (14%) were aware of written criteria for transition from direct to indirect supervision. Seven of the 11 (64%) indicated that those criteria included completion of didactics, 7 (64%) direct observation of the fellow at a game, 6 (55%) institutional requirements, 4 (36%)

TABLE 1	CHARACTERISTICS OF SURVEY RESPONDENTS ^a			
	Fellows (n = 80)		Directors (n = 50)	
	Median	IQR	Median	IQR
Experience	9 mo	7–9	6 y	4–10
Game coverage, n (%)	15	12–20	93	47–164
High school	10 (56)	6–12	60 (67)	30–100
College	7 (41)	4–9	25 (32)	10–57
Professional	0 (0)	0–0	0 (0)	0–5

^a Responses were sought regarding experiences of fellows “during your fellowship” and of directors “during all your years as a program director.” IQR, interquartile range; 25th to 75th percentile. Experience represents months of fellowship completed or years as program director. Game coverage reflects games covered by fellows over the appropriate time interval.

attending the AMSSM sideline preparedness course, and 1 (9%) passing a formal oral or written examination. Of the 53 fellows who reported unwritten criteria, 42 (79%) reported that transition to autonomy happens “when the fellow thinks they’re ready,” 8 (15%) “after a standard number of games,” and 3 (6%) “when the supervisor thinks they’re ready.”

A majority of fellows (61%) were satisfied with their current supervision (FIGURE, a). Equal numbers (10% each) recommended reduction and increased direct game-side supervision. An additional 19% asked for more off-site supervision through regular postgame review of player care and incidents. Nearly 3 times as many fellows would like more rather than less supervision, although not necessarily at the game site.

Fellows encountered a median of 6 serious injuries (0.35 per game), most commonly fractures (32%) and joint dislocation/reduction (22%) (TABLE 3). The attending was present for slightly over half the serious injuries (54%). Sixty-six percent (53 of 80) of the fellows reported facing

serious injuries in the absence of the attending, and 6 (11%) reported facing injuries that might have had better outcomes had the attending been present. Mann-Whitney comparisons revealed no differences (all $P > .13$) between those who did and did not see the potential for improved outcomes had the attending been present (TABLE 4).

Directors’ Responses

Of the 74 directors responding, 2 did not cover football and 22 did not finish the survey, leaving 50 survey completers for analysis. Noncompleters who provided demographic information were less likely than completers to have been trained in a sports medicine fellowship (57% vs 76%), and they reported a smaller number of games covered by fellows (median 36 vs 93). Directors had a median of 6 years of experience (TABLE 1). Two-thirds of the 6513 games covered by fellows were at the high school level and nearly one-third were at the college level. One-third of directors had asked fellows to cover professional games.

At the high school level, most directors (63%) reported a mix of direct supervision and indirect supervision (TABLE 2). Supervision was more intense at the college level, with 84% of the directors reporting direct supervision as the norm. No director indicated post-game review as the typical form of supervision.

Ten percent of the directors reported that their institutions mandated 100% direct supervision at games. Thirty-three percent (16 of 49) of responding directors reported that there were written criteria for transition from direct to indirect supervision. Thirteen of the 16 (81%) reported that those criteria included completion of didactics, 12 (75%) reported direct observation of the fellow at a game, 6 (38%) reported institutional requirements, and 5 (31%) reported attending the AMSSM Sideline Preparedness course. Twenty-nine directors reported that transition from direct to indirect supervision happens “when the supervisor thinks the fellow is ready” and 4 directors did not report what criteria were used for advancing a fellow to independent coverage.

TABLE 2	SUPERVISION PRACTICES AT FOOTBALL GAMES COVERED BY FELLOWS (% RESPONDENTS)			
	Fellows		Directors	
	High School (n = 76)	College (n = 71)	High School (n = 48)	College (n = 43)
100% direct supervision	9	75	13	84
100% direct or indirect supervision	32	16	63	16
100% indirect supervision	55	10	21	0
Some games unsupervised	4	0	4	0

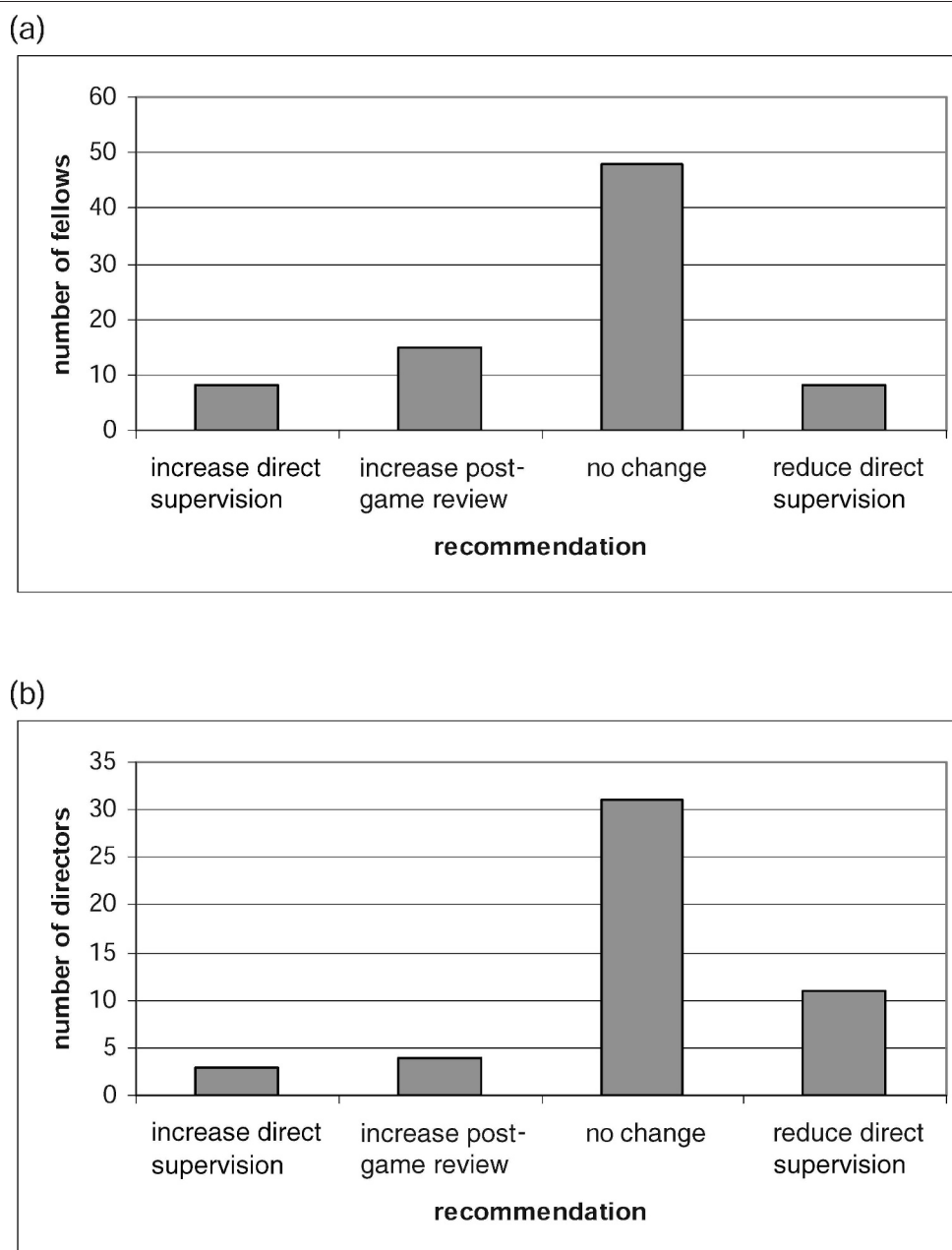


FIGURE | **DISTRIBUTION OF (a) FELLOWS' AND (b) DIRECTORS' RECOMMENDED CHANGES TO CURRENT PRACTICE OF SUPERVISION**

A majority of directors (65%) would prefer no change in their supervisory practices (FIGURE, b). Eleven (23%) would decrease and 3 (6%) would increase the amount of direct supervision. More regular reviews of games and incidents were desired by 4 (8%).

Three directors did not provide quantitative injury data. For the remaining, fellows under their direction encountered a median of 20 serious injuries (0.23 serious injuries per game). Most common were fractures (29%), followed by

joint dislocation (24%) (TABLE 3). Of evaluable directors ($n = 34$) who reported injuries in the context of the presence or absence of an attending, all reported at least 1 serious injury in the absence of their direct supervision but no more than 2 injuries over the course of their career that might have had better outcomes with the attending present. Mann-Whitney comparisons revealed no differences (all $P > .36$) between those who did and did not see the potential for improved outcomes had they been present (TABLE 4).

TABLE 3 SERIOUS INJURIES AT FOOTBALL GAMES COVERED BY FELLOWS ^a		
	No. of Injuries	% of Total
Reported by fellows (n = 590) ^b		
Serious injuries		
Cardiac emergencies	6	1
Heat-related emergencies	79	13
Severe head injury	83	14
Severe neck injury	44	7
Joint dislocation/reduction	127	22
Respiratory emergencies	19	3
Fractures	186	32
Other serious incidents	46	8
Attending		
Present	298	54
Not present	258	46
Might have had improved outcomes with attending present ^d	13	5
Injury rates (median, IQR)		
Per fellow	6	3–9
Per game	0.35	0.21–0.60
Reported by directors (n = 2217) ^c		
Serious injuries		
Cardiac emergencies	39	2
Heat-related emergencies	432	19
Severe head injury	283	13
Severe neck injury	138	6
Joint dislocation/reduction	523	24
Respiratory emergencies	102	5
Fractures	651	29
Other serious incidents	49	2
Attending		
Present	1364	71
Not present	561	29
Might have had improved outcomes with attending present ^d	9	0.5
Injury rates (median, IQR)		
Per director	20	8–43
Per game	0.23	0.11–0.46

Unstructured Comments From Fellows and Directors

Eleven fellows and 19 directors provided optional comments regarding supervision. Five of each noted that autonomy was important, rationalizing that a board-certified physician should be prepared to deal with any kind of emergency and therefore does not need direct supervision. At the other extreme, the case for supervision was supported by 1 fellow who cited legal concerns, and by 1 program director whose fellows had asked for more direct supervision early in the season. The majority of respondents cited a graded transition to autonomy, marked by completion of a preseason program, or by direct supervision and debriefing for 1 to 2 games, or supervision of fall sports (football) to prepare for solo coverage of winter and spring sports. Other issues mentioned by directors were the important role of the presence of certified athletic trainers, the low risk of injuries during football game coverage, and the distinction between lower-stress high school and higher-stress college games. One program director “would not recruit a fellow who did not already have experience” at high school football games.

Discussion

We sought to describe current practice regarding supervision of trainees covering football games to assess how programs address the potentially conflicting needs of maximizing player outcomes and fellows’ education. A good response rate was achieved from both fellows and directors, and responding directors appeared to be those with more experience. According to the survey data, direct supervision was lacking in approximately 50% of high school games and 20% of college games. A resulting cost in terms of player safety was estimated to apply to 5% of serious injuries by fellows’ report but less than 0.5% by directors’ report. Criteria for transitioning from direct supervision to autonomy were the exception rather than the rule; both fellows and directors believed that the decision was based on their own assessment of readiness.

The majority of fellows and directors expressed satisfaction with the current level of supervision. Three times as many fellows desired more supervision than desired less. However, most of those fellows did not want the additional supervision at the expense of autonomy, but rather in the form of off-site game reviews. A desire for more supervision is consistent with a previous report that

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Abbreviation: IQR, interquartile range.
^a Responses were sought regarding experiences of fellows “during your fellowship” and of directors “during all your years as a program director.”
^b Current year of fellowship.
^c Career total.
^d Some injuries were missing information on presence of attending.

TABLE 4 CHARACTERISTICS OF FELLOWS AND DIRECTORS REPORTING ON SERIOUS INJURIES THAT MIGHT HAVE HAD IMPROVED OUTCOMES WITH ATTENDING PRESENT (MEDIAN, INTERQUARTILE RANGE)

	Fellows		Directors	
	Reported Injuries That Might Have Had Improved Outcomes With Attending Present (n = 6)	Reported No Injuries That Might Have Had Improved Outcomes With Attending Present (n = 47)	Reported Injuries That Might Have Had Improved Outcomes With Attending Present (n = 5)	Reported No Injuries That Might Have Had Improved Outcomes With Attending Present (n = 29)
Experience ^a	8.5 (7.8–9.0)	9 (8.0–9.0)	6 (3–16)	7 (4–9)
Number of football games	16.5 (14.0–21.0)	17 (12.0–21.3)	150 (53–473)	95 (49–180)
% at high school level	55 (50–75)	58 (41–71)	75 (56–87)	67 (50–74)
% games with direct supervision	40 (20–50)	50 (10–62)	Not collected	
Number of serious injuries ^b	9 (4–21)	6 (4–11)	28 (9–219)	20 (10–44)
With attending present	2 (0–9)	1 (0–6)	4 (2–141)	12 (2–32)
With attending absent	6 (4–13)	4 (1–7)	8 (5–88)	8 (4–14)

^a Fellows, months of fellowship; directors, years as director.

^b Fellows, during fellowship; directors, while director.

nearly 1 in 5 nonsurgical sports medicine trainees found supervision on the field or in the training room to be only poor or fair,¹⁰ and directors were more likely to prefer less direct supervision.⁹ This preference is likely related to a perception that too much direct supervision results in insufficient meaningful responsibility for fellows. Insufficient autonomy in turn can lead to inadequately trained clinicians entering the unsupervised practice of medicine, thereby impacting “indirect” patient safety.⁹

One potential cost of indirect supervision on player safety is the number of serious injuries (0.5% directors’ report vs 5% by fellows’ report) that might have had better outcomes in the presence of the attending. In the absence of direct supervision, would 5% be an acceptable rate of improvable injuries? Competitive football injuries that required medical attention and restricted participation for 1 or more days had a rate of 11.3 per 1000 athlete-exposures in the National High School Sports-Related Injury Surveillance Study (RIO)¹¹ reporting on the 2008–2009 season. Fellows in our survey reported (for high school, college, and professional football) a rate of 0.35 serious injuries per game, which is comparable to the RIO figures given 31 athlete-exposures per game. Thus, the base rate of football injuries that our respondents reported is roughly comparable to national norms. That 5% of those injuries might have had better outcomes with direct supervision may be related to the difference in training and experience between fellows and directors. Quality of patient care is affected by the physician’s training and experience. The legal standard of care is that physicians “must have and use the knowledge, skill and care ordinarily possessed and

employed by members of the medical profession in good standing,”¹² members who span a range of training from general practitioners to board-certified fellows, and a range of experience from new graduates to seasoned professionals. It is reasonable to suppose that more experienced and well-trained physicians have better outcomes 5% of the time. Further, what is lost in decreased player safety with less direct supervision has a corresponding but delayed benefit with increased player safety that can result from fellowship graduates who had sufficient autonomy during training.

In our survey, fellows and program directors differed in their reports of injuries with potentially improvable outcomes (5% fellows vs 0.5% program directors). This might be explained by the different time frames questioned in the survey: the current year for fellows and career total for program directors. It is possible that improvable injury rate has increased with changes in practice over time (eg, less direct supervision). A second possibility is that directors may not be aware of serious injuries or potential modification by their on-site presence, in which case supervision through postgame review could diminish this difference. Finally, fellows may lack confidence in their own skills and overestimate the faculty’s ability to improve outcomes. This is consistent with fellows’ desire to have more supervision, while program directors encourage less. Only a minority of programs had written criteria for the transition from direct supervision to autonomy. Programs would likely benefit from basing independence on supervisors’ documented assessment of trainees’ competence,⁸ which would be achieved and supported by teaching, testing, and monitoring.⁴

Reported supervision practices at the high school level revealed a discrepancy between fellows (who said most games were indirectly supervised) and program directors (who said most were directly or indirectly supervised) (TABLE 2). This difference might be another result of the differing time frames of the 2 surveys. To the extent that the reports reflect current practice, faculty are either not supervising as much as they say they are or fellows are unaware of supervision. It is possible that fellows do not perceive the supervision in the same way as program directors, especially with high school game coverage, when fellows are more likely to be practicing autonomously. This underestimate may lead fellows to request more off-site supervision.

There were several limitations to our study. Although we obtained all the program directors e-mail addresses, we were able to find only 75% of fellows' e-mail addresses. We made no mention of staff other than attendings, ignoring the potentially very important role of certified athletic trainers. We were unable to address the discrepancy between fellows and faculty regarding cases that might have had improved outcomes, and we collected no information regarding lawsuits or final outcomes. Strengths of the study include attention to the dimensions of football game supervision balancing fellow supervision, fellow autonomy, fellow education, and player safety.

Conclusion

Many high school and college football games were covered by fellows without direct supervision, but absence of the attending was deemed to have affected no more than 5% of outcomes of serious injuries. Autonomy was considered desirable by both fellows and directors, although less than 25% of programs have written criteria for making the

transition to autonomy. Fellows deemed the educational aspect of supervision to be better served by more supervision in the form of off-site review of games. Further study is needed to better elucidate the "best practice model" of balancing supervision, autonomy, and player safety.

References

- 1 Accreditation Council for Graduate Medical Education. Sports medicine program requirements, effective 6/2000, minor revision 4/12/2008. Available at: http://www.acgme.org/acWebsite/downloads/RRR_progReq/127_sports_medicine_o6012000_1-YR_u_o4122008.pdf. Accessed July 15, 2009.
- 2 AAMC policy guidance on graduate medical education: assuring quality patient care and quality education. *Acad Med*. 2003;78(1):111–116.
- 3 Hillman B. It's all over but the shouting. *J Am Coll Radiol*. 2007;4(9):590–594.
- 4 Gunderman RB, Delaney LR. Should 12 months of training be required before diagnostic radiology residents take independent call? A survey of the Association of Program Directors in Radiology. *J Am Coll Radiol*. 2007;4(9):590–594.
- 5 Kennedy TJT, Lingard L, Baker GR, Kitchen L, Regehr G. Clinical oversight: conceptualizing the relationship between supervision and safety [published online ahead of print June 8, 2007]. *J Gen Int Med*. 2007;22(8):1080–1085. doi: 10.1007/s11606-007-0179-3.
- 6 Kennedy TJT, Regehr G, Baker GR, Lingard LA. Progressive independence in clinical training: a tradition worth defending? *Acad Med*. 2005; 80(Suppl 10):S106–S111.
- 7 Accreditation Council for Graduate Medical Education proposed common program requirements. Available at: http://acgme-2010standards.org/pdf/Proposed_Standards.pdf. Accessed July 26, 2010.
- 8 Berger WG, Gibson SW, Krupinski EA, Morais JD. Proposed ACGME change in length of radiology residency training before independent call: results of a survey of program directors and chief residents. *J Am Coll Radiol*. 2007;4(9):595–601.
- 9 Nasca T. Open letter to the GME community, 10/28/09. Available at: http://www.acgme.org/acWebsite/home/NascaLetterCommunity10_27_09.pdf. Accessed March 1, 2010.
- 10 Henahan M, Shiple B, Coppola G. Nonsurgical sports medicine training in the United States: a survey of sports medicine fellowship graduates. *Clin J Sport Med*. 2003;13(5):285–291.
- 11 National High School Sports-Related Injury Surveillance Study. Summary report for 2008–09. Available at: <http://injuryresearch.net/highschoolrio.aspx>. Accessed May 6, 2010.
- 12 Keeton WP, Dobbs DB, Keeton RE, Owens DG. *Prosser and Keeton on the Law of Torts*. 5th ed. St. Paul, MN: West Publishing Co; 1984.