

ONLINE FIRST

Training Future Surgeons for Management Roles

The Resident-Surgeon-Manager Conference

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Objective: To demonstrate that senior surgical residents would benefit from focused training by professionals with management expertise. Although managerial skills are recognized as necessary for the successful establishment of a surgical practice, they are not often emphasized in traditional surgical residency curricula.

Design: Senior residents from all surgical subspecialties at McGill University were invited to participate in a 1-day management seminar. Precourse questionnaires aimed at evaluating the residents' perceptions of their own managerial knowledge and preparedness were circulated. The seminar was then given in the form of interactive lectures and case-based discussions. The questionnaires were re-administered at the end of the course, along with an evaluation form. Precourse and postcourse data were compared using the Freeman-Halton extension of the Fisher exact test to determine statistical significance ($P < .05$).

Setting: McGill University Health Centre in Montreal, Quebec, Canada.

Participants: A total of 43 senior residents.

Results: Before the course, the majority of residents (27 of 43 [63%]) thought that management instruction only

happened "from time to time" in their respective programs. After the course, 15 residents (35%) felt that management topics were "well addressed," and 19 (44%) felt that management topics have been "very well addressed" ($P < .01$). Residents noted a significant improvement in their ability to perform the following skills after the course: giving feedback, delegating duties, coping with stress, effective learning, and effective teaching. On the ensemble of all managerial skills combined, 26 residents (60%) rated their performance as "good" or "excellent" after the course vs only 21 (49%) before the course ($P = .02$). Residents also noted a statistically significant improvement in their ability to perform the managerial duties necessary for the establishment of a surgical practice.

Conclusions: Surgical residency programs have the responsibility of preparing their residents for leadership and managerial roles in their future careers. An annual seminar serves as a starting point that could be built on for incorporating formal management training in surgical residency curricula.

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LEADERSHIP AND MANAGERIAL skills are required for establishing a successful surgical practice after residency.^{1,2} There is also growing evidence that learning management tools can be used to enhance a trainee's experience during the senior years of surgical residency.³ Despite this, managerial training has traditionally been absent from formal surgical education, largely owing to its non-clinical nature.⁴⁻⁶ With the recent reduction in resident work hours, there is even less time devoted to developing leadership and managerial skills. Program directors in surgery have acknowledged that their residents are not well prepared for future management roles and are in need of a formal business education.⁴ The aim of our study is to demonstrate that surgical residents will benefit from a focused management edu-

cation in the form of an annual seminar given by expert professionals.

*See Invited Critique
at end of article*

METHODS

PARTICIPANTS AND PRECOURSE QUESTIONNAIRES

Surgical residents from all subspecialties at McGill University in Montreal, Quebec, Canada, were invited to participate in a 1-day management seminar entitled "The Resident-Surgeon-Manager Conference." After institutional review board approval, 3 precourse questionnaires were circulated. The first aimed at assessing the residents' perceptions of how well topics of management were covered in their formal residency education. The answers were scaled on a

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Table 1. Methods of Instruction for Each Seminar Topic^a

Topic	Objective	Method of Instruction
Giving feedback	Defining constructive feedback and demonstrating techniques of delivery	Live feedback simulation role-play
Delegating duties	Illustrating proper methods of prioritization and effective delegation	Case-based discussion
Building teamwork	Defining healthy work relationships and goal-oriented team efforts	Case-based discussion
Managing time	Defining the concepts of value-creating activities and efficiency at the workplace	Interactive lecture and real-life cases
Making rounds	Illustrating the value of collecting information to create immediate goal-oriented action plans	Live feedback simulation role-play
Coping with stress	Defining work-related stress and devising methods to cope with it	Interactive lecture and real-life cases
Effective learning while on service	Defining and creating a balanced service to education ratio	Live feedback simulation role-play
Teaching at bedside and in the OR	Defining and performing the role of the resident-teacher	Live feedback simulation role-play
Managing conflicts	Illustrating objectives and balanced approaches to solve work-related conflicts	Case-based discussion
Negotiating employment	Defining and illustrating the skills required for effective negotiation	Revision and critique of real employment contracts
Hedging risk	Defining and avoiding malpractice risk	Interactive lecture
Managing finances	Defining basic financial and accounting concepts	Interactive lecture
Managing a private practice	Brief introduction to management of human resources, equipment, and finances in a private medical practice	Case-based discussion

Abbreviation: OR, operating room.

^aThis list of the topics (along with their corresponding methods of instruction) was presented during the conference.

5-point Likert scale ranging from “not addressed at all” to “very well addressed.” The second questionnaire aimed to assess the residents’ self-rating of their ability to perform the 9 managerial skills required for efficient management. The answers were scaled on a 5-point Likert scale ranging from “poor” to “excellent.” The third questionnaire aimed to assess the residents’ self-rating of their preparedness to perform 4 managerial duties of early practice. The answers were scaled on a 5-point Likert scale ranging from “not prepared at all” to “very well prepared.”

THE CURRICULUM

The seminar was then given to the residents by surgeons, lawyers, tax specialists, and risk analysts with managerial expertise relevant to surgical practice. The material was delivered in the form of interactive lectures and case-based discussions. The methods of instruction used to cover the various topics included role-play, scenario simulation models, small-group problem-solving sessions, and live feedback sessions. **Table 1** illustrates the objectives behind the discussion of each of the managerial skills and duties and how they were addressed during the seminar.

POSTCOURSE QUESTIONNAIRES AND DATA ANALYSIS

The 3 questionnaires were readministered at the end of the course along with an evaluation form. Precourse and postcourse data were compared using the Freeman-Halton extension of the Fisher exact test to determine statistical significance ($P < .05$).

RESULTS

DEMOGRAPHICS

A total of 43 senior residents from across surgical specialties participated in the seminar, and all 43 (100%) answered the precourse and postcourse questionnaires. Of the 43 senior residents, 32 (74%) were men and 11 (26%) were

women. Thirty-two residents (74%) were between the ages of 25 and 30 years, 10 (23%) were between the ages of 30 and 35 years, and 1 (2%) was older than 35 years. The different senior postgraduate levels were represented, with 15 of 43 participants (35%) at the postgraduate year 3 (PGY-3) level, 12 (28%) at the PGY-4 level, and 13 (30%) at the PGY-5 level. Fellows at the PGY-6 level and higher constituted 3 of 43 participants (7%).

FIRST QUESTIONNAIRE: COVERAGE OF MANAGEMENT TOPICS IN RESIDENCY CURRICULUM

The first questionnaire aimed to elucidate the degree to which residents felt that management topics were covered in their curriculum of instruction. Before the course, the majority of residents (27 of 43 [63%]) thought that management instruction only happened “from time to time” in their respective programs, whereas 6 residents (14%) thought they had “no exposure” to management topics. Only 2 of the 43 residents (5%) thought that management topics were “well addressed” in their programs, and none (0%) felt that they were “very well addressed.” After the course, 15 residents (35%) felt that management topics were “well addressed” during their seminars, and 19 (44%) felt that they have been “very well addressed” ($P < .01$) **Figure 1**.

SECOND QUESTIONNAIRE: THE 9 MANAGERIAL SKILLS

The second questionnaire asked the residents to rate themselves on a 5-point Likert scale from “poor” to “excellent” on their perceived ability to perform the 9 managerial skills required for efficient management of a surgical team (**Table 2**). Different exercises were used to introduce and build on each of those skills.

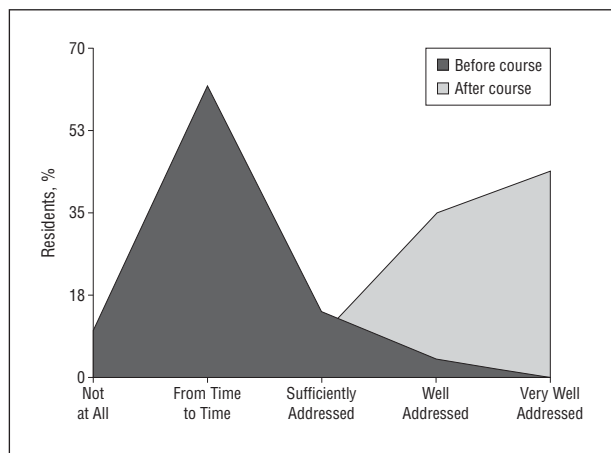


Figure 1. Data on 43 residents' opinions of the quality of management skills instruction at their respective programs. The area under the curve represents the percentage of residents who held 1 of the 5 opinions before the course (black curve) and after the course (gray curve). A clear shift in opinions is seen, indicating that the residents felt the need for and benefited from such a management seminar.

Table 2. The 9 Managerial Skills Required for Efficient Management of a Surgical Service or Practice^a

Skill	Residents Who Rated Themselves "Good" or "Excellent," No. (%)		P Value
	Before the Course	After the Course	
Giving feedback ^b	15 (35)	23 (53)	.02
Delegating duties ^b	23 (53)	28 (65)	.05
Building teamwork	31 (72)	28 (65)	.12
Managing time	22 (51)	27 (63)	.07
Making rounds	28 (65)	29 (67)	.20
Coping with stress ^b	21 (49)	26 (60)	.05
Effective learning while on service ^b	14 (33)	22 (51)	.01
Teaching at bedside and in the OR ^b	18 (42)	30 (70)	.03
Managing conflicts ^b	21 (49)	26 (60)	.05

Abbreviation: OR, operating room.

^aAddressed during The Resident-Surgeon-Manager Conference; a total of 43 senior residents participated in the seminar.

^bSignificant improvement in the number of residents who rated themselves "good" or "excellent" was noted after the course.

Residents noted significant improvement in their ability to perform the following skills after the course: giving feedback, delegating duties, coping with stress, effective learning, and effective teaching ($P < .05$) (**Figure 2**). Managing time had a trend to improvement ($P = .07$). On the ensemble of the 9 managerial skills combined, 26 residents (60%) rated their performance as "good" or "excellent" after the course vs only 21 (49%) before the course ($P = .02$) (Figure 2).

THIRD QUESTIONNAIRE: THE 4 MANAGERIAL DUTIES

The third questionnaire asked the residents to rate their preparedness to face the 4 managerial duties of independent practice on a 5-point Likert scale from "not prepared" to "ready." There was a statistically significant improvement on all 4 duties (negotiating employment,

managing personal finances, hedging malpractice risk, and managing a private practice) after the course compared with before the course ($P < .05$) (**Figure 3**).

COMMENT

Preparedness for independent practice is not a new topic in clinical research. In an article that surveyed 2626 residents from different specialties across the United States, Blumenthal et al⁷ concluded that residents were well prepared for independent practice. However, their surveys did not include any questions about managerial skills, financial knowledge, or the business aspects of medical practice. In another study, Cantor et al⁶ conducted telephone interviews with 6053 young physicians who had recently graduated from residency and were established in practice between 2 and 9 years, and they⁶ found that only 3% were prepared to face the business aspects of their practice. Residents' preparedness for managerial tasks, either during their senior years or during early independent practice, remains a topic that is not well studied in the surgical literature.⁴

Residency programs in pediatrics, psychiatry, and internal medicine have recognized the need for managerial training and have initiated educational initiatives to enhance the quality of their curricula.⁸⁻¹² Sockalingam et al¹⁰ reported not only a deficiency in management knowledge among trainees but also considerable gaps between the trainees' real level of knowledge and their desired level of knowledge of management topics. Our data reveal that surgical programs at our university provide very limited management education. Residents may acquire certain managerial skills such as building teamwork and making rounds by virtue of the nature of surgical training, but we have shown that they are still deficient in other skills that are essential to being an effective manager, such as delegating duties and giving feedback. We have also shown that, before attending a management seminar, the majority of graduating residents were not prepared to perform the basic managerial duties of independent practice.

Most importantly, our research demonstrates that providing them with managerial concepts serves as an important starting point to kindle interest in learning about management. In the business literature, management education has been shown to be predictive of better managerial performance and is closely tied to an increased competitive advantage.^{13,14} Although formal management curricula have been successfully designed and implemented in the corporate world, they are still under exploration in the surgical community.^{15,16} At our institution, we will undertake the design and application of a longitudinal management program that can be integrated in the formal residency curriculum. In concert with various departments at our university, we are developing a pilot project that will allow residents to have first-hand exposure to the concepts of quality improvement, patient flow management, medical cost analysis, and evaluation of guidelines. We are also collaborating with national partners to enhance management training of surgical residents and to promote further research on this important topic.

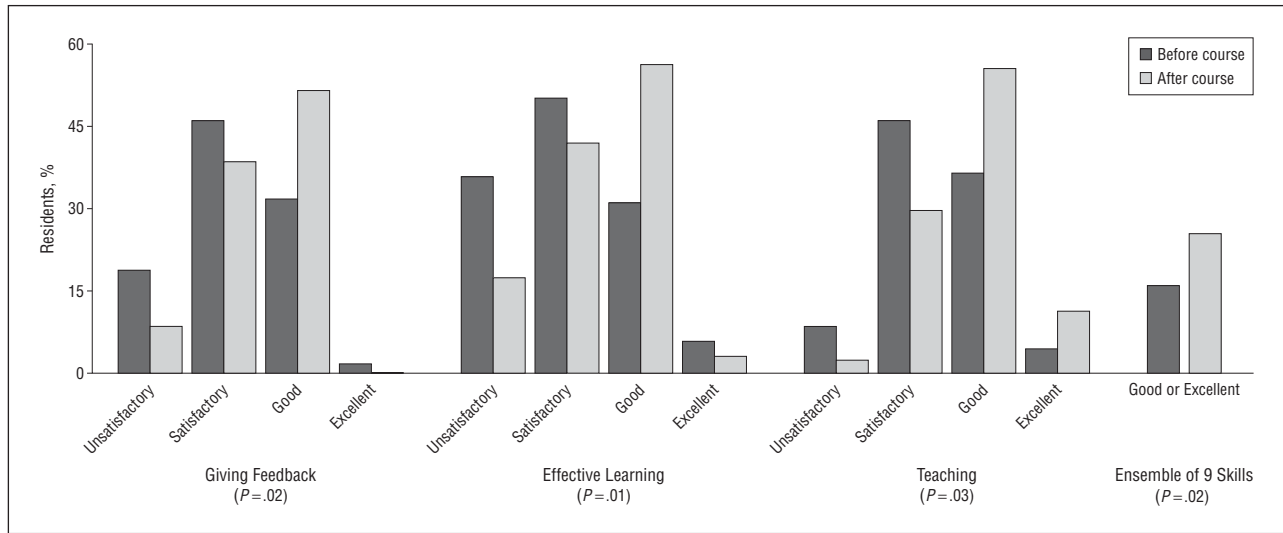


Figure 2. Data on 43 residents' self-assessments of their knowledge of managerial skills before and after the conference. These graphs highlight the significant improvement in the percentage of residents who rated themselves "good" or "excellent" after the course (gray bars) vs before the course (black bars).

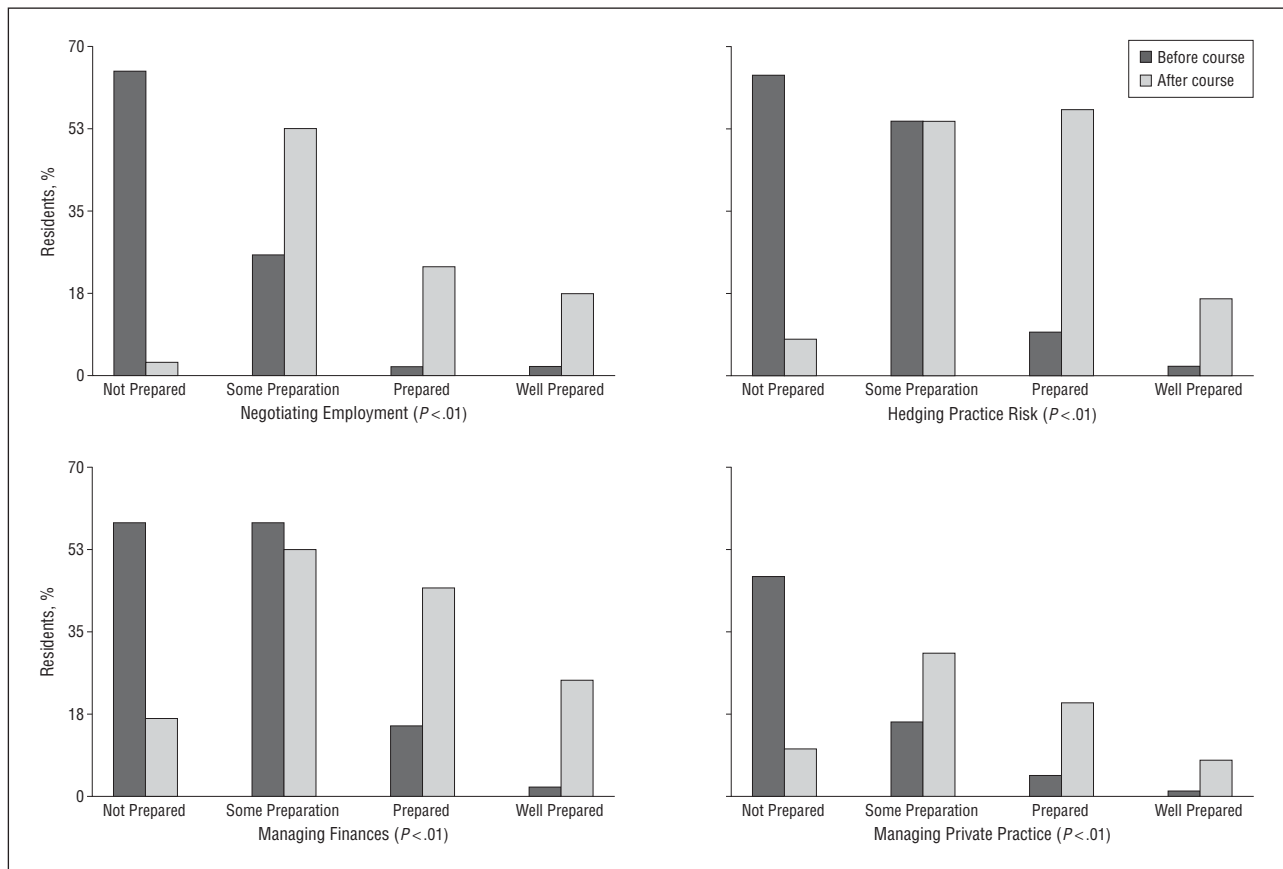


Figure 3. Data on 43 residents' self-assessments of their preparedness to perform managerial duties before and after the conference. These graphs highlight the significant improvement in the preparedness of residents to perform managerial duties after the course (gray bars) vs before the course (black bars).

Our study is limited by its small sample size and the subjective nature of self-assessment. The change noted in the residents' own perceptions of management knowledge after the course serves to highlight their need for a formal management curriculum, but it is not an indicator of whether they will actually turn out to be better managers. For that end, objective tools to mea-

sure management proficiency for surgeons should be developed and validated. Until then, a formal management curriculum should be instituted and assessed, before determining whether it can produce better surgeon-managers.

Surgeons are at the forefront of hospital administration, health policy, quality-control measures, and global

health initiatives. Surgical residency programs are starting to recognize their responsibility to prepare their residents for leadership roles in their future careers. An annual 1-day seminar is a starting point that could be built on for incorporating formal management training in surgical residency curricula.

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INVITED CRITIQUE

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Developing Leaders in Surgery

Leadership training is lacking in current residency training programs. We all have high expectations for our residents, both during and after training, but we do very little in the way of formal education to help them prepare for leadership roles.¹ In this issue of *Archives*, Hanna and colleagues² describe the results of a precourse-postcourse survey evaluating a 1-day seminar on management topics for surgical residents. The curriculum included topics related to self-management, team building, and business acumen. Not surprisingly, Hanna et al² found that the senior residents who participated felt that these topics were better addressed after the conference. Hanna et al² should be commended for their initial efforts to incorporate these neglected topics into residency training. However, we agree with them that a 1-day didactic course is only a start.

The transition to chief residency is a case study in this lack of preparation. Each year, a new class of trainees become chief residents who are responsible for managing complex teams that include multiple faculty, junior residents, medical students, and physician assis-

tants; the members of the extended teams are even more diverse, including nurses, pharmacists, and other direct caregivers. Although many surgeons would view daily surgical work rounds as excellent training in leading teams, including Hanna et al² (and the residents they surveyed), this may not be true when viewed from other perspectives. Evaluations of resident interpersonal skills from nonsurgeon members of the team may be quite different from peer and self-assessments.³ Recent focus groups at our own institution found that some nonsurgeon caregivers viewed surgical work rounds as exclusive, not patient-centered, and inefficient. This is just one example of the many blind spots that could be targeted to help our surgical residents become better leaders.

What is the best way to incorporate leadership training into residency? Although didactic lectures (such as the seminar in the study by Hanna et al²) may be the easiest way to implement a program, it may not be the most effective.⁴ Numerous studies indicate that didactics needs to be accompanied by action-based learning projects. To