



J Educ Perioper Med. 2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

PMCID: PMC4803424

EEL Abstracts 2001 Meeting

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Integrating Internet Learning with the Core Curriculum

[E. S. Steinberg](#), MD, [J. Dilger](#), PhD, [P. Glass](#), MB, ChB, and [I. Rampil](#), MD

Department of Anesthesiology, University Medical Center at Stony Brook, Stony Brook, NY

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: Although educational materials related to anesthesia are available over the Internet in many forms, they are not yet organized into a curriculum. One step in this direction is The Answer Age/Anesthesiology Web Site 1 authored and peer-reviewed by the Harvard Medical School faculty and sponsored by Vital Signs, Inc. Several recent publications discuss the use of the Internet and some of the information about anesthesiology that can be obtained in this manner .2-4 The goal of our proposal is to create an intranet-based curriculum for our anesthesiology residents to supplement our didactic teaching schedule.

Methods: The centerpiece of this curriculum is our Topic of the Day (TOD) page. Our curriculum is based upon a designated monthly topic; all of our teaching within a given month is related to this topic. The monthly resident exam, consisting of board-type questions, is also based upon this topic. The TOD consists of questions designed to help the residents prepare for the Board exam. They are usually based on topics covered in standard textbooks such as Miller RD (Ed) *Anesthesia*. Occasionally, the questions refer to recently published papers. These questions are posted twice per week, on Tuesdays and Thursdays *via* e-mail, and departmental intranet and are also distributed on paper to each operating room. They are intended to stimulate intraoperative discussion between faculty and residents. Residents are encouraged to submit their answers *via* e-mail. The answers are posted the following week on e-mail, in the OR and in interactive form with web links on the departmental intranet site.

Discussion: The TOD is distributed in a variety of different forms so almost everyone in the department will read them at some point. Currently, approximately one third of our residents regularly submit their answers. Others discuss the questions with their attending, but do not submit written answers. Now that the Topic of the Day is an established component of our teaching program, our next step will be to encourage the residents to primarily use the intranet to access the TOD. Advantages of this approach include the availability of links to online journals and textbooks and a keyword index directly referenced to the TOD

questions. Finally, we will determine whether regular use of the departmental intranet TOD site will result in improved scores on our monthly exams.

References

1. <http://www.theanswerpage.com>.
2. Rampil IJ.: Medical information on the Internet. *Anesthesiology* 1998;89:1233-45. [PubMed: 9822013]
3. Ruskin KJ.: The Internet. A practical guide for anesthesiologists. *Anesthesiology*. 1998;89:1003-14. [PubMed: 9778017]
4. Zura A., Smith M.: Medical resources for the anesthesiologist on the Internet. *Reg Anesth Pain Med* 2000; 25:99-102. [PubMed: 10660249]

2001 Jan-Jun; 3(1): E016.

Published online 2001 Jan 1.

Comparison Between Medical Student's Experience, Confidence, and Competence

[P. J. Morgan](#), MD, CCFP, FRCPC and [D. Cleave-Hogg](#), BA, MA, PhD

Department of Anesthesia, Sunnybrook & Women's College HSC, Toronto, Ontario, Canada M5S 1B2 University of Toronto, Toronto, Canada

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: This study was undertaken to determine whether or not breadth of clinical experience and student level of confidence were indicators of competency on standardized simulator performance-based evaluations.

Methods: After institutional ethics board approval, all students (n = 144) attending an educational session were asked to complete a 25-point questionnaire regarding specific clinical experiences and level of confidence in their ability to manage patient problems. For enumeration of clinical experiences, students were asked to estimate the number of times a situation had been encountered or a skill had been performed. For level of confidence, each response was based on a 5-point Likert scale with 1 = novice and 5 = expert. Students then participated in a standardized simulated performance test. Median and range were calculated and data analyzed using Spearman rank correlations, with a *p*-value [It] 0.05 considered significant. Level of confidence data were compared to performance in the clinical rotation and to marks in the anesthesia final examination.

Results: One hundred and forty-four students participated. There were wide ranges of experience (median 1-10) and confidence (median 1-5) in the 25 listed items. Analysis of data showed high correlation between clinical experience and level of confidence. There was no correlation between clinical experience, level of confidence and performance in a standardized simulation test (*Table 1*). Neither was there any correlation between level of confidence and clinical grades or written examination marks (level of confidence: clinical grade, $r = 0.078$, $p = 0.37$, level of confidence; written examination, $r = 0.013$, $p = 0.88$).

Discussion: This study indicates that students have wide ranges of clinical experience and that this experience highly correlates with confidence in the performance and management of clinical problems. However, it was found that clinical experience and level of confidence have no predictive value in performance evaluations when using standardized anesthesia simulation scenarios.

This study was supported in part by a grant from the Physicians' Services Incorporated Foundation (PSI).

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

QuickStart Anesthesiology CD-ROM: A Student's Introduction to Anesthesia Theory, Practice and Procedures

[Cleveland Waterman](#), MD,[†] [Armin Schubert](#), MD,[‡] [Michael Smith](#), MD,[‡] and [Randall Cork](#), PhD, MD[†]

Department of Anesthesiology, Louisiana State University Health Sciences Center, Shreveport, LA, and Department of Anesthesiology, The Cleveland Clinic Foundation, Cleveland, OH

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

This educational CD-ROM is being designed as a guide for third- and fourth-year medical students who are on their initial Anesthesiology rotations. Discussion: s were held with medical students about what computer-based learning formats they find useful. A consistent finding was that reading text material from a computer monitor is difficult and tiring. Therefore, this CD-ROM will use a minimum of text in its presentations and rely heavily on photographic images, audio, and video. The students also expressed a desire to master basic procedures while on their rotations. The CD-ROM will be heavily oriented to presentation of procedures such as peripheral IV insertion, endotracheal intubation, central venous catheterization, and interpretation of peripheral nerve stimulation for neuromuscular blockade monitoring. As an aid to educators, there will be easily verifiable written behavioral goals against which the learner and the teacher can gauge mastery of the techniques.

Methods: Procedures normally performed in the course of an anesthetic were documented with a combination of cameras, including a Nikon 950 digital still camera and Sony DCR-PC7 and DCR-PC100 digital video cameras. These images were edited with a variety of software, including Adobe Premiere and Photoshop. Audio narrations were created and digitized with SoundForge 4.5. The images and narrations were matched using the Macromedia Director 8.0 multimedia production platform.

Results: The CD-ROM is still in production. Distribution of the material will be managed by the Society for Education in Anesthesia. Corporate sponsorship of CD-ROM replication expenses will allow for unit costs to be kept to a minimum.

Discussion: The QuickStart Anesthesiology CD-ROM is being developed in conjunction with the Society for Education in Anesthesiology. The goal is to produce a visual Introduction: to anesthesiology targeted for students.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

A Curriculum for Resident Competence in Communication and Teaching

[Michael G. Richardson](#), MD

Associate Professor, Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Changes in Anesthesiology Residency Program Requirements reflect increased emphasis on competencies beyond medical knowledge and clinical care [1,2](#) These include practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice [1,2](#) Additionally, completion of a scholarly work by all graduates is now an Anesthesiology program requirement [1](#) Although our program has required a formal presentation of scholarly work by its graduates since 1998-1999, implementation of a structured 9-month skills-based curriculum is new. In addition to maximizing long-term benefits of the senior presentation experience, the Curriculum satisfies several of the new program requirements.

Methods: Course dates were Aug 2000 to Apr 2001. Participants were eight CA3 residents and five course faculty. The goal of the course was: “The resident will acquire the skills necessary to prepare a written abstract and an oral presentation of a scholarly work, including slides and a poster.” Specific objectives included acquisition of skills necessary to a) define an appropriate scholarly topic, b) gather relevant information (Medline search), c) write an abstract, d) create effective slides and posters for presentation, e) deliver an effective oral presentation (departmental Grand Rounds), and f) submit and present the work at the Midwest Anesthesia Residents’ Conference (MARC) in March. The primary instructional method consisted of half-hour, small-group, faculty-facilitated morning seminars every 1 to 2 weeks. Residents were given specific tasks and deadlines. Resident peer critique of proposals, abstracts, oral presentations, and slides was used extensively. Noncourse faculty served as individual project advisors. Residents were assigned 20-minute slots for department presentations in Feb/Mar 2001. Faculty and support staff assisted residents in submitting MARC abstracts and making travel arrangements. Course completion was required for graduation. Residents were graded pass/fail, the grade assigned by the course director with input from course faculty. Course evaluation was obtained from all participants *via* written questionnaires and a final focus group discussion session.

Results: All CA3 residents completed the course and valued the experience highly. The four residents who presented abstracts at MARC in 2000 felt this course provided superior preparation. Reported strengths included explicit objectives, feedback, adequate preparation time, faculty support, abstract writing/oral presentation experience, and awareness of real improvement over the 9-month period. Weaknesses were identified and modifications suggested. All participants (faculty and residents) felt very strongly that the course be repeated next year.

Discussion: Through emphasis of communication and teaching skills, the Curriculum strengthened the experience already provided by the program’s CA3 project requirement. Additionally, the curriculum is consistent with increased recognition of the importance of resident competency in communications skills, medical informatics, scholarly medical practice, self-improvement, and peer-critique/-teaching skills [1,2](#) as reflected in new Anesthesiology education program requirements [1](#)

References

1. <http://www.acgme.org> (A CGME Outcomes Project; Program Requirements for Residency Education in Anesthesiology).
2. AAMC Core Curriculum Working Group: Graduate medical education core curriculum. AAMC, 2000. 2001 Jan-Jun; 3(1): E016. Published online 2001 Jan 1.

A Model for Anesthesiology Resident Performance Assessment Incorporating the ACGME Outcome Project

[S. L. Goelzer](#), MD and [P. W. Kranner](#), MD

Department of Anesthesiology, University of Wisconsin, 600 Highland Avenue, B6/319CSC, Madison, WI

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: The ACGME Outcomes Project is aimed at enhancing residency education through an emphasis on educational outcome assessment and the promotion of six core competencies - patient care, medical knowledge, interpersonal skills and communication, practice-based learning and improvement, professionalism, and systems-based practice. Programs will be expected to provide a curriculum consistent with these goals, measure its effectiveness, and use the measurement to continuously assess program improvement. Toward this goal the ACGME, in a joint initiative with the American Board of Medical Specialties (ABMS), has proposed a “toolbox” of assessment Methods: to assist programs in the development of dependable measures in the required areas. We wish to report our preliminary work in the specific application of these “tools” to anesthesiology resident assessment at the University of Wisconsin.

Methods: We reviewed the ACGME/ABMS “toolbox”, along with our current resident evaluation Methods: and expectations, and developed a new assessment and reporting tool specific to the Core Competencies. Medical knowledge will be evaluated by utilization of the Anesthesia Knowledge Test, the ABA In-Training Examination, and mock oral board exams with clearly defined expectations of resident performance on each component. Our traditional methods are well suited to the evaluation of patient care, with daily and end-of-rotation evaluations specifically addressing residents’ communication skills, perioperative assessment, decision-making and clinical skills. The breadth of each resident’s clinical experience is tracked electronically. Competency in interpersonal skills and communication is directly addressed in daily evaluations, supplemented by performance on oral exams and scholarly presentations. Practice-based improvement skills are to be demonstrated in sequential simulation sessions during the residency. Professionalism is assessed through observed interactions with patients and the health care team as well as resident participation in local and regional academic presentations. In addition, residents are expected to develop semiannual personal performance improvement plans that are reviewed in formal meetings with the Chair and Residency Director. An approach to systems-based practice is addressed as part of a seminar series (from both an institutional and departmental perspective) with resident participation in quality management and peer review committees and projects.

Discussion: Resident performance assessment based on the ACGME core competencies will require a

novel incorporation of both traditional and new evaluation methodologies. It is in our interest, as anesthesiology program directors, to develop a “toolbox” of best practices pertinent to our own specialty. The UW Department of Anesthesiology has developed a preliminary program, along with a new system of record keeping to track resident progress. This system should improve the focus of resident feedback and represent a step forward in our goal of training excellent consultants in anesthesiology in a changing health care environment.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

A Level Specific Core Curriculum for Anesthesiology Resident Education

[PW Kranner](#), MD, [DB Ockert](#), MD, and [SL Goelzer](#), MD

Department of Anesthesiology, University of Wisconsin, 600 Highland Avenue, B6/319CSC, Madison, WI, 53792 to 3272

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: The Core Curriculum is a key educational element in the CA-1 yr of many anesthesiology departments. This intensive didactic series, often based on an introductory textbook, provides beginning residents with a broad overview of the principles of safe anesthetic practice over a two to three month period. The educational opportunities offered to senior residents during this period have historically been limited. While the Core Curriculum may serve as a basic review for advanced residents, it was our assessment that these residents would benefit from an advanced curriculum tailored to their specific level of training. Toward this goal, we have implemented three distinct Core lecture series that run concurrently during the first three months of each academic year.

Methods: The content of the three-part UW Core didactic series stemmed from a consideration of subject matter that we felt was critical to residents beginning their CA-2 or CA-3 yr, but that may be less essential earlier in their training. CA-1 residents continue to participate in a fairly traditional basic Core didactic series focusing on the pharmacologic principles of anesthetic care, preoperative assessment, intraoperative monitoring and management, fundamental anesthetic techniques and postoperative care. CA-2 residents, meanwhile, are exposed to a vigorous course in cardiovascular and respiratory physiology, and in-depth study of the structure and function of the anesthesia machine, and an exploration of the anatomic considerations in regional anesthesia and pain management in the cadaver lab. Finally, CA-3 residents spend the time studying transesophageal echocardiography, physics, and practice management including scheduling, contracting, compliance, accreditation, quality improvement and financial management.

Discussion: The introduction of three simultaneous Core lecture series, while resource and faculty intensive has proven to be a valuable addition to our curriculum and has increased our ability to establish a defined continuum of education throughout the clinical years. Incorporating advanced topics into the previously underutilized July-September period has made time available later in the year for a senior resident Grand Rounds series, presentation of pertinent topics from other disciplines, and an increased number of visiting professor opportunities. Smaller group instruction has increased our ability to incorporate hands-on elements such as the cadaver anatomy labs, transesophageal echocardiography

workshops, and simulator sessions. Upper level resident participation in the series has been excellent, whereas their repeat attendance at the traditional introductory Core had historically been low.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Recruitment of American Medical Graduates, Possible Impact of an Early Mandatory Anesthesia Rotation

[M.C. Lewis](#), MD, [J.L. Steadman](#), MD, [J.C. Restrepo](#), MD, [K.A. Candiotti](#), MD, and [G.J. Desouza](#), MD

University of Miami, School of Medicine, Department of Anesthesiology (R370), P.O Box 016370 Miami, FL33101

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: In a previous abstract we proposed that the introduction of a mandatory rotation in anesthesiology might increase the number of American medical graduates (AMG) entering anesthesiology-training programs. In this study we look at whether the timing of such a rotation may be important.

Methods: One hundred and six consecutive University of Miami senior medical students taking the required two-week anesthesia rotation were surveyed. They were provided with the statement “ If you were exposed to this rotation in your third year do you think it may have changed your mind concerning decisions of choice of residency?” This statement could be graded: 3 = definite, yes, 2 = maybe, yes and 1 = definite, no. There was a place provided for students’ comments. This survey was given as part of an exit interview, at the end of the rotation, and the evaluator was not aware of the students’ identity.

Results: 76/106 students answered this question on the survey. This represented a 72% completion rate. Of those answering the question 47 (62% of respondents) answered with a definite yes, 28 (37% respondents) gave a maybe, yes as their answer. Only one student (1% of respondents) gave a definite, no answer. If we combine the definite and maybe, yes groups, and compare it to the definite, no group then we see a very significant difference in the students perception of the influence of timing of rotation and career choice.

Discussion: Most students thought that an early anesthesia rotation would have some influence on career choice. The fact that the anesthesia rotations may occur late in medical school training, may contribute to the fact that so few AMGs choose anesthesia as career. What is encouraging is the fact that 62% of respondents gave a strong affirmative answer concerning their perception of the importance of an early exposure to the discipline. Next year we move to a new integrated curriculum, in which students will be taking the mandatory rotation at different times during their training. It will be interesting to see what the impact of an early exposure to anesthesiology will have on career choice.

References

1. Anesthesiology: 1999;91:A1142.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Web-Based Resident/Faculty/and Rotation Evaluation System: A Two-Year Experience

[Michael E. Mahla](#), M.D.,¹ [Johannes J. van der Aa](#), Ph.D.,² and [Nikolaus Gravenstein](#), MD³

Associate Professor,² Director, Medical/Health Administration Health Science Center IT Center,³ Professor and Chairman, Dept of Anesthesiology,¹ University of Florida College of Medicine, Gainesville, FL 32610 to 0254

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: Timely, accurate, and complete evaluation of physician performance is one of the most important functions of a residency training program. These evaluations are becoming even more important as hospital credentialing committees and even State Medical Licensing Agencies are requiring detailed, objective evaluative data regarding physician performance.

Methods: The Web-based Resident Evaluation System (WRES) has been in use since July 1999. Each week, all resident-faculty contact information is automatically uploaded from the hospital OR scheduling system in the resident evaluation database. An e-mail is automatically sent to the faculty informing them that they have evaluations to complete and directs them to the appropriate web site. The faculty open the secure, password protected web page and are presented with a list of residents who need evaluation. On the same page, the faculty may look at the specific cases involved and a picture of the resident. They then select the resident to evaluate and complete the evaluation form that is presented. There are specific numeric evaluations in multiple categories and a comments section. The faculty member also indicates whether the evaluation was discussed with the resident. If a resident receives an unacceptable evaluation in any category, an e-mail is automatically sent to the resident. If the resident does not understand what the problem is, he or she may contact the program director who has access to all evaluation information. Residents may at all times compare their numeric evaluation averages with those of the department as a whole. At the end of each month, each resident receives an e-mail stating that he or she has faculty member and rotation evaluations to complete. In a similar fashion, the resident completes evaluations on each faculty member with whom he or she has worked as well as an overall rotation evaluation. Unlike resident evaluations by faculty, these evaluations are anonymous. Feedback is provided to faculty on their performance evaluations quarterly, and rotation evaluation information is provided to rotation directors every six months.

Results: Since July 1999, 9205 evaluations have been entered into the system. Each resident in the program received an average of over 35 evaluations for each quarterly clinical competence committee meeting. Faculty and residents found the system easy to use. Faculty completed 73% of all possible evaluations. Compliance data under the old system are not available. Resident compliance is substantially lower with residents completing only 729 of 3001 possible faculty evaluations. Since resident evaluations are anonymous, we cannot determine the number of residents actually completing evaluations. Nonetheless, this represents a completion rate of 24% with each faculty member receiving an average of just over 15 evaluations annually. This represents a nearly 100% increase in number of evaluations each faculty received as compared to the old paper-based system.

Discussion: The WRES provides an easy-to-use input system for resident and faculty evaluation. Since the web-based system inputs directly into an Access database, the data are readily available for generation of

reports for the program director, rotation directors, clinical competency committee, and ultimately hospitals and state licensing agencies.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Teaching Complex Decision Making in a High Fidelity Environment Using a Full Human Simulator

[J.D. Orledge](#), M.D., [M. Kurtz](#), [W.B. Murray](#), M.D., [J. Henry](#), B.S., and [K. Underberg](#), R.N.

Simulation Development and Cognitive Science Laboratory, Penn State University College of Medicine, 500 University Drive, Hershey, PA 17033

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: Training sessions with a full human simulator typically focus on a single pathology. Extraneous and potentially confusing facts are usually avoided to minimize dilution of the message. We report on a session where the main objective was specifically to teach “complexity” (i.e., how to function in a complex environment while rescuing and treating a “patient” with multiple simultaneous and competing medical problems in an environment which is also imposing limitations on potential therapies).

Methods: A full human simulator (M.E.T.I., Sarasota, FL) was used in a high fidelity lab to train FEMA (Federal Emergency Management Agency) volunteers (who respond to urban disasters such as earthquakes and the Oklahoma City bombing). The volunteers participated in 3 sequential scenarios of increasing complexity to build up their experience, knowledge, and understanding of the simulator and simulated environment as well as their self-confidence. The sessions lasted 8 h, with a debriefing session after each scenario. For added realism, the scenarios were presented in the context of an actual deployment. a. Introductory scenario: the patient presents with a sprained ankle and chest pain and has a rapid atrial fibrillation. Advanced Cardiac Life Support (ACLS) skills and patient assessment skills are practiced and reviewed. b. In a more complex scenario, the patient is a rescuer who fell 20 feet and presents as a multi-trauma. Pre-Hospital Trauma Life Support (PHTLS) and Advanced Trauma Life Support (ATLS) assessments and skills are tested. c. The final scenario involves a “victim” trapped under rubble for 26 h following a bombing. The rescuers could only reach a hand and a foot and were not allowed to remove any rubble until the stability of the building had been assured. This scenario tests all the specialized medical and rescue skills needed of an urban, search and rescue team.

Results: There were 6 trainees. They uniformly gave high scores (8--10 on a IO-point Likert scale) to the sessions (“met expectations,” “real to life,” “able to use skills”) and requested further similar sessions. They would also recommend (9--10) such sessions to others and believed (9--10) that all FEMA teams should attend similar sessions.

Discussion: We believe that the success of the sessions hinged on presenting multiple sequential sessions of increasing complexity, where each new session highlights further capabilities of the simulator and requires the use of different skills sets by the trainees. The extremely complex multiple traumatized patient in the final scenario could then be used to focus on (and train) decision-making skills and higher level cognitive competencies such as understanding, application, analysis, synthesis, and evaluation.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Understanding Pharmacokinetics and Pharmacodynamics Using Offline Simulation

[S.L. Remchuk](#), MS IV, [W.B. Murray](#), M.D., [G. Schuler](#), M.A, and [H. Logginidou](#), M.D.

Simulation Development and Cognitive Science Laboratory, Penn State University College of Medicine, 500 University Drive, Hershey, PA 170331

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: The present generation of extra-corporeal shock-wave lithotripsy (ESWL) machines enables conscious sedation to be used as the “anesthesia” technique. Several Methods: of total IV anesthesia (TIVA) (remifentanil as sole agent, remifentanil or fentanyl with propofol infusions, etc.) are routinely used in clinical practice with varying success rates. Occasional patients require general anesthesia.

The purpose of the study was firstly to use a population-based pharmacokinetic simulation program to calculate the plasma and effect-site concentrations of drugs used for a conscious sedation anesthesia technique on patients during Extra-corporeal Shock-Wave Lithotripsy (ESWL). Secondly, studying (or visualization of) the effect-site concentrations would hopefully lead to a better understanding of the relationship between rates of infusion and efficacy (effectivity).

Methods: Following institutional approval, two groups of patients were studied: remifentanil as sole agent, and remifentanil combined with propofol. Prospective data collection included; demographics, timing and rate of infusion of medications, adequacy of sedation, etc. A pharmacokinetic simulation program, (Stanpump, Stanford, CA) was used to calculate the concentrations of remifentanil and propofol in each patient.

Results: The simulated plasma concentrations of the remifentanil-alone group allowed the identification of a subgroup of patients which required higher concentrations of remifentanil, leading to unwanted side effects (apnea, desaturation, etc.). Even although a constant infusion rate was used, the remifentanil plasma concentration continued to increase throughout the period of lithotripsy (30--60 min).

Discussion: The use of the pharmacokinetic simulation program enabled: (1) New insights into drug infusion rates required for adequate analgesia and sedation. (2) Clear visualization of the longer than expected time required for the “short-acting” remifentanil to reach constant simulated plasma concentrations. As the minimum plasma half-life of remifentanil is given as 3 min, practitioners expect remifentanil to reach relatively constant plasma levels in 4 to 5 half-lives (i.e., in 12--15 min). The actual plasma half-life of remifentanil is 3 to 10 min. The simulation program demonstrated this longer half-life, with the blood concentrations still rising after 30 to 40 min, which is the typical duration of a lithotripsy procedure. (3) A better understanding of the differences in pharmacokinetics and pharmacodynamics of remifentanil, fentanyl, and propofol.

2001 Jan-Jun; 3(1): E016.
Published online 2001 Jan 1.

Important Factors In Selecting A Residency Program

[DT Goulson](#), MD1 and [EA Bowe](#), MD2

Assistant Professor, 2Professor and Chairman, University of Kentucky, Department of Anesthesiology, N-263 UKMC, 800 Rose Street, Lexington, Kentucky 40536 to 0293

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: In the mid-1990s, there was a precipitous decline in the numbers of AMGs recruited into anesthesiology residencies. Although it appears that this trend is reversing, there is still competition among residency programs for strong medical students to enter their residencies. We constructed a survey to identify factors important to the applicant when seeking residency programs.

Methods: All applicants to the University of Kentucky anesthesiology residency program (APPLICANTS) were asked to complete a 20-item survey. Each item consisted of a selection factor and respondents were asked rate each on a 5-point scale from “1” (not important) to “5” (extremely important). The same survey was also given to the entire fourth-year medical school class at the University of Kentucky (STUDENTS). Two factor were eliminated from that version since they pertained only to anesthesiology training.

Results: Five hundred and one surveys were distributed: to APPLICANTS and 110 surveys were distributed to STUDENTS. One hundred seventy-nine were returned from the APPLICANTS, for a response rate of 36%. Ninety-three were returned by: the STUDENTS, for a response rate of 85%. The three factors perceived as most important by APPLICANTS (in order of decreasing importance) were Quality of Clinical Teaching, Strength of the Faculty, and Opinions of Current Residents. The three factors perceived as most important by STUDENTS (in order of decreasing importance) were Opinions of Current Residents, Quality of Clinical Teaching, and Strength of the Faculty (last two tied). The three factors perceived as least important by APPLICANTS (in order of increasing importance) were Salary, Internal Moonlighting Opportunities, and Size of the City. The three factors perceived as least important by STUDENTS (in order of increasing importance) were Research Program, Region of the Country, and Salary (last two tied).

Discussion: When many medical students are interested in anesthesiology residencies, programs have the luxury of enrolling high-quality residents irrespective of the effort put into recruiting. For the past several years, the situation has been quite the opposite, and there has been keen competition between programs for the few good residents. In this environment, success in recruiting may reflect the degree to which programs emphasize factors perceived as most important by applicants. Although the results may reflect a selection bias for students of and applicants to this institution, this survey suggests that those factors relate to good teachers, good teaching, and satisfied residents.

2001 Jan-Jun; 3(1): E016.

Published online 2001 Jan 1.

A Curriculum for Resident Competence in Critical Reading Skills

[Michael G. Richardson](#), MD

Associate Professor, Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY, USA

Copyright © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: The ability of physicians to analyze primary medical literature effectively and efficiently is considered an essential skill [1,2](#) Furthermore, ensuring competency in critical reading skills is now a requirement of all residency education programs, including Anesthesiology [1](#) This curriculum was developed and implemented to address these needs.

Methods: Course dates were Aug '00 - May '01. All anesthesiology residents and 2 course faculty participated. The stated Goal was “After completion of this course, residents will have a systematic, thorough, and efficient framework for analyzing and critiquing medical journal articles. They will have acquired critical reading skills that are essential for success as a lifelong learner. Objectives included “development of the ability to read any medical journal article using a systematic uniform framework, with the ability to a) describe the study question/intent of the investigators; b) characterize the study design and its appropriateness in answering the study question; c) discuss the strengths and weaknesses of alternative study designs; d) discuss the appropriateness of the study population, including inclusion and exclusion criteria; e) evaluate the appropriateness of the statistics used; f) evaluate the conclusions of the authors.” The primary instructional method consisted of 30 min, small-group morning seminars every 2 weeks. Residents were given assignments 1 week- in advance, including required course text 3 readings, illustrative excerpts from the anesthesiology literature, and questions for discussion Faculty-facilitated group discussion during seminars was used exclusively. A pretest was administered in Aug '00, and a posttest is scheduled for May '01. Course evaluation will be obtained from all participants via written questionnaires and a final focus group discussion session in May 01.

Results: Course attendance was consistently high and participation active, by residents with little and with significant prior education in this area. Feedback was used to modify the course throughout the year. Final course evaluation, pre-/post data, and curriculum details will be presented.

Discussion: Our experience has been that not all physicians enter anesthesiology residency training with effective critical medical literature reading skills. The Curriculum for Resident Competence in Critical Reading Skills was designed to develop and improve these important skills. Including subspecialty-specific application (examples from anesthesiology literature) with critical reading skills theory³ promoted strong motivation for learning. This Curriculum addresses a specific competency that is valued by this program and that is now an anesthesiology residency program requirement [1](#)

References

1. www.acgme.org (AOGME Outcomes Project; Program Requirements for Residency Education in Anesthesiology)
2. AAMC Core Curriculum Working Group: Graduate Medical Education Core Curriculum AAMC, 2000.
3. Riegelman RK.: Studying a study, testing a test, 4th ed. Philadelphia: Lippincoti, 2000.

2001 Jan-Jun; 3(1): E016.

Published online 2001 Jan 1.

A Case-Based Approach To Third Year Medical Student Education In Anesthesiology and Preoperative Medicine

[PW Kranner](#), MD, [AE Ruscher](#), MD, and [SL Goelzer](#), MD

Department of Anesthesiology, University of Wisconsin, 600 Highland Avenue, B6/319CSC, Madison, WI, 53792 to 3272

Copyright © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Introduction: The University of Wisconsin Department of Anesthesiology provides a two-week clerkship to all third year medical students designed as an introduction to anesthesiology and the emerging field of perioperative medicine. Our goal is to provide knowledge and experience applicable to all areas of medical practice through an approach that highlights key concepts and focuses reading while maintaining an emphasis on clinical experience and direct interaction with faculty. A case-based approach has fulfilled these goals.

Methods: Students receive a set of four hypothetical cases designed to address key points in the perioperative management of adult patients with cardiopulmonary disease, special considerations in pediatric anesthesia, indications for regional anesthesia, and anesthetic management of the trauma patient. The cases create a clinical scenario and use a series of integrated questions to guide students to key points. Answers come primarily from informal discussion of the cases with faculty and resident, supplemented by limited assigned reading. Students and faculty are given material for meaningful interaction, and residents receive valuable teaching experience.

Additional essential topics including conscious sedation, acute pain management, opiate and local anesthetic pharmacology, and hemodynamic monitoring are covered using Web-based cases with integrated self-assessment questions and answers/explanations accessible via pop-up windows. At the conclusion of the rotation teams of students discuss and manage a complex case scenario played out on the METI Human Patient Simulator. Core knowledge is evaluated with a multiple-choice examination based on information presented in the various case formats.

Results:

Discussion: This case-based approach utilizing multiple teaching modalities has been an effective means of focusing student learning toward core concepts in anesthesiology and perioperative medicine. Student interest and acceptance has been high.

2001 Jan-Jun; 3(1): E016.

Published online 2001 Jan 1.

The CA-1 Introductory Program: An Experiment in Problem-Based Learning

[Joyce Phillips](#), MD, [Nivine Doran](#), MD, [David Wilks](#), MD, and [Stephen Abram](#), MD

Department of Anesthesiology, University of New Mexico School of Medicine, Albuquerque, NM 87131

Background: The University of New Mexico School of Medicine is known for its innovative approach toward medical education. Since 1980, the university has had in place a problem-based program for the education of undergraduate medical students. This method of education has been shown to enhance reasoning skills and increase learning retention. It also encourages students to learn and read independently. Until July 2000, our CA-1 residents received a lecture format introductory course during their first month of clinical anesthesia. Our goal in the Department of Anesthesiology is to produce competent anesthesiologists who are reflective practitioners, critical thinkers and life long learners prepared to adapt to the changes in medicine in the 21st century. To that end, a problem-based introductory program was developed to teach CA-1 residents in their first month of clinical anesthesia. The purpose of this study was to determine if a problem-based introductory program is effective in teaching CA-1 residents and to determine if this approach will promote more critical thinking and self-motivation in our residents.

Methods: The CA-1 Introductory Course consisted of three cases for Discussion: . Before the case development, learning topics addressed in the AKT 1 and 2 exams are identified. The cases were constructed around these learning topics. Each case was discussed in segments over a weeks time. Each discussion was facilitated by faculty members (tutors) who had completed a tutor training course given in the School of Medicine. The faculty members received the case, the reading assignment and the expected learning issues before the session. The 7 CA-1 residents met with tutors for three 2 h sessions each week. The case was distributed to the residents on Monday and used throughout the week. Reading assignments pertaining to the discussion were given before the session. Clinical Anesthesiology, by Morgan and Mikhail was used at the basic introductory text. Before the start of tutorials, the residents received a set of ground rules outlining the expectations for the participants. The USMLE Step 1 scores for the 1999 and 2000 CA-1 classes were compared to determine the similarity between the 2 classes in test taking ability. The effectiveness of the program was evaluated by comparing the AKT-1, 2 and 6 scores of the 2000n CA-1 class to the scores of the 1999 CA-1 class. The program was also evaluated by a questionnaire given to the 2000 CA-1 residents. The questionnaire focused on learner satisfaction and basic study habits.

Results: There was no statistical difference in the USMLE Step 1 scores for the two groups.

Although there was a slight decrease in both classes in average percentile rank score from the AKT-1 to the AKT-2 and the 2000 class scored slightly lower overall, the difference was not statistically significant using the paired T-Test.

In the questionnaire distributed to the 2000 CA-1 residents, the learners rated highly the benefit of the CA-1 Intro Course. The majority felt that the problem based format was helpful. Three of the 7 CA-1 residents would have preferred more lectures. The majority of the residents did not feel that the problem based format added to the stress of the month even although they had no prior experience with problem based learning. Most residents read or studied between 1 and 3 h per night.

Conclusion: It is important to keep in mind that the sample size is small so it will be difficult to draw any broad conclusions. Using the AKT scores as a measure of knowledge acquisition there was no statistical difference between the two groups. In a sense, this is reassuring. Using a new approach to learning, we can

conclude that at least we did no harm to the learners since there was no significant change in the AKT scores. In another sense, the results are disappointing; the problem-based learning program did not show increased knowledge retention at the end of one month. Perhaps with refinement of the cases, more experience, and larger sample size, the problem-based course will result in improved AKT scores. We look forward to the analysis of the AKT scores. Overall, there was learner satisfaction with this approach. The question regarding improved reasoning skills and independent study is not addressed by assessment using the AKT, a knowledge based exam. We plan to survey this resident class again regarding hours spent in reading or study each night. The clinical performance of this resident class appears to be consistent with that of other classes. Although, this small study shows no immediate benefit to this approach to learning, I would encourage others to try it. If nothing else, it is a more interesting and stimulating way to teach and learn.

2001 Jan-Jun; 3(1): E016.

Published online 2001 Jan 1.

Simulation Technology: A Global Survey of Education, Evaluation and Research Applications

[P.J. Morgan](#), MD, CCFP, FRCPC and [D. Cleave-Hogg](#), BA, MA, PhD

Dept. of Anesthesia, Sunnybrook & Women's College HSC, 76 Grenville, St. Toronto, Ontario, Canada M5S 1B2 University of Toronto, Toronto, Canada

[Copyright](#) © 2001 Journal of Education in Perioperative Medicine (JEPM). Published by the Society for Education in Anesthesia.

Purpose To gather information regarding the multiple uses of simulation technology and operational support for educational programs and research projects.

Methods: The world-wide web was searched using <http://www.google.com> using key words "patient simulator", "simulation", "anesthesia", and "centre or center". Located sites (n = 158) with simulation centers were mailed a 67-item questionnaire requesting information regarding demographics, personnel, education use and research involvement. Comments were solicited regarding benefits and problems of simulation education and evaluation. Two months later, all centers that had not responded and had available e-mail addresses were e-mailed reminder notices and an attached survey. Data were collected and tabulated in an anonymous fashion. Medical school data only are reported here.

Results: Two web sites were used to generate the list of simulation centers: <http://www.bristol.ac.uk> and <http://www.anes.rochester.edu>. Fifty-four responses were received for a return rate of questionnaires of 34%. Of the 36 medical school simulators, 24 (67%) acquired the simulator in the previous five years with MedSim and METI being the most commonly used simulator. Thirty-two have dedicated personnel for day to day operations. Table 1 outlines the number of centers participating in education, evaluation and research and their sources of support. Faculty were involved in all centers but only 12 indicated that faculty were reimbursed for their time. The most commonly taught areas in undergraduate education were 1) crisis management 2) rare events 3) induction and 4) airway management. Seventeen respondents indicated that the simulator should be used for maintenance of certification.

Conclusion: Our survey indicates that departmental based funding largely supports simulation technology

used in medical schools. The simulators are used primarily for undergraduate and postgraduate education and research. Few centers are involved in evaluation and/or competency assessments. The opportunities for the simulator to be used for the assessment of performance appear to be under-utilized. This fact may be due to the lack of research in this area, lack of standardized, valid and reliable tests and the fact that most centers have only recently acquired this technology.

Articles from The Journal of Education in Perioperative Medicine : JEPM are provided here courtesy of
Society for Education in Anesthesia