adaptable to other small-group settings, and thus has many potential applications for further observational research. Finally, it may also prove to be a useful faculty development tool for providing observational data as direct feedback to teachers.

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Educational video created in a medical simulation facility

Peter Yorgin & Kim Yaeger

Context and setting Although health care professionals frequently struggle with communicating technically challenging information to an increasingly video- and computer-savvy audience, video media remain under-utilised. There may be advantages to using simulation environments for videotaping. Several medical centres have developed programmes and facilities for simulation-based education, which faithfully replicate the dynamic nature of critical care medicine.

Why the idea was necessary Health care professionals require on-demand education to learn or review a treatment modality prior to providing patient care. Although written and web-based text plays a central role in education, many people are visual learners and are able to assimilate information better by observing images.

The technique of concurrent continuous renal replacement therapy and therapeutic plasma exchange (CCRRT + TPE), which has been described in the treatment of fulminant hepatic failure, is not intuitive to most health care professionals. The technique is difficult to describe using words, but may be demonstrated in a straightforward fashion by video. It was postulated that a medical simulation facility could be of value in creating a CCRRT + TPE video.

What was done Prior to filming, a storyboard was developed to outline the scenes and filming sequence. Prisma CRRT and Cobe centrifugation plasmapheresis machines (Gambro BCT, Lakewood, CO, USA) were run by dialysis and apheresis nurses familiar with the procedure. Fluids representing blood and 5% albumin were formulated using normal saline and dye powders. An infant mankin (Rescusciti-Baby Laerdal NRB 1000; Laerdal Medical, Wappingers Falls, NY, USA) was selected to represent the patient.

Numerous pan-tilt, remote-control cameras and highly sensitive microphones located in the ceiling allowed multiple camera angles and clear recording of verbal interactions and machine alarms. All activity was captured on a digital recording deck before it was transferred to a CD-ROM disk in Windows Movie File (WMV) format. A total of 35 minutes of video was needed to demonstrate the storyboard sequences. The final video was created using Microsoft Movie Maker (Microsoft Inc., Redmond, WA, USA).

Evaluation of results and impact A 6-minute video was produced for a plenary presentation at a national conference. The video was subsequently placed on an institution intranet website, where it was reviewed by dialysis nurses and doctors. The video was uploaded to YouTube (http://www.youtube.com/watch?v=ARI61nIcJQ) and has induced several inquiries. Gambro representatives also use the video to teach the technique.

This project demonstrates that videotaping a novel, infrequently used technique in a medical simulation facility is possible, given current technologies. The advantages of videotaping in a medical simulation facility include a video-friendly environment, the elimination of competition between filming and patient care goals, the ability to schedule videotaping at a convenient time, and the fact that consent and ethical approval are not necessary. The costs associated with videotaping include costs for the simulation room (typically $50 per hour) and simulation staff who perform the filming and set up the manikins, and costs for disposables. Additional costs include those incurred by moving machines and hourly nursing costs. Compared with didactic lectures, a web-based video provides worldwide viewers with a low-cost, on-demand educational experience that affords the opportunity to review scenes that are of particular interest.

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Facilitated web-based case discussions in surgery

Melanie Ann Dance, Ramin Jamshidi & Patricia O’Sullivan

Context and setting Medical school curricula increasingly use case-based and problem-based learning models, which benefit students in clinical

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settings because they can be generalised to actual patients. Despite this benefit, time constraints, lack of appropriate fora, and the presence of multi-level learners hinder the widespread implementation of case-based instruction during the clinical years.

**Why the idea was necessary** Students rotating on clerkships often find that patients represent a more attractive learning experience than lecture-style didactics. Student learning during rounds may be limited by both clinical time constraints and student concern about constant evaluation. Meanwhile, attending physicians and house staff are often pulled away from didactics by competing responsibilities. Ideally, forum time should be flexible and free from the pressures of direct evaluation.

**What was done** We developed an online, case-based learning forum where students engaged in discussion with a senior resident. Students discussed specific cases and general clinical issues. They had access to a dedicated resident teacher who provided feedback on clinical learning and decision making. The responsible resident played no other role in the students' clerkship and did not grade the students on their performance.

We piloted this approach with 28 students rotating through their Year 3 core surgical clerkship, who were split into 3 online discussion groups, each consisting of 9 students and 2 facilitators. The same 2 resident facilitators led each of the 3 independent groups. Cases developed by the Association of Surgical Educators were used in delayed-release format over the course of 2 weeks. The facilitators posed thoughtful questions and interlaced clinical scenarios extracted from current inpatients with relevance to the standardised cases. Students completed a post-discussion satisfaction survey with items rated on a Likert scale and a qualitative comments section. Likert responses of ‘strongly agree’ and ‘agree’ were combined to report the percentage of favourable responses.

**Evaluation of results and impact** According to their responses to the following 5 statements, students viewed the discussion favourably:

- ‘Online discussion was beneficial to my learning’ (50.0% favourable, 21.4% neutral);
- ‘Online facilitators provided comments beneficial to my learning’ (71.4% favourable, 28.6% neutral);
- ‘Online content was relevant to this rotation’ (92.9% favourable, 3.6% neutral);
- ‘Online discussion was at the correct level of difficulty’ (89.2% favourable, 10.7% neutral), and
- ‘Online discussion was easy to use’ (78.6% favourable, 7.1% neutral).

Students were divided about whether or not the online discussion ‘took too much time away from other learning opportunities’ (45.7% agreed, 10.7% neutral, 42.9% disagreed). Nevertheless, students generally felt that the online discussion should be continued despite the time investment (46.4% agreed, 28.6% were neutral, 25.0% disagreed).

Facilitators felt that the group discussion generated rich and thoughtful responses. Facilitators believed that the quality of discussion was enhanced by the absence of time constraints, which permitted students time to ponder cases without being put ‘on the spot’, as often happens during rounds. Having a facilitator who was experienced, but not involved with student evaluation, may have encouraged student participation. This feature may enhance the use of the case-based format.

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**Developing Internet research skills in prospective medical students**

Matthew Barton, Rebecca Medlock, Katharine Warburton & David Wetherell

**Context and setting** Many medical schools in the UK have adopted ‘Widening Participation’ (WP) schemes in an attempt to diversify the range of students applying for medicine. These schemes target under-represented groups who are disadvantaged by limited opportunities and resources. Four Year 3 medical students designed an online activity to be used at a WP summer school for 15–16-year-olds from under-represented groups who were considering a medical career.

**Why the idea was necessary** Students require many key skills if they are to study medicine efficiently. The use of information technology (IT) and the Internet is increasingly important: the current transition of medical journals from paper to electronic forms means that the Internet is now established as the primary resource for medical research. Another key skill concerns developing the capacity to become an independent learner. This involves 2 types of skill,