VIDEO

Virtual Meetings: Improving Impact and Accessibility of CME

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INTRODUCTION

Historically, continuing medical education (CME) has been the primary way for medical health professionals to gain up-to-date knowledge and skills to improve health care and patient outcomes [1]. CME educational credits are required for physician certification in most states. In California, the annual requirement is approximately 25 hours of credit [2]. The typical format of CME has been attendance at an in-person meeting, where experts give didactic lectures on a focused topic. Recent educational research has questioned whether this method of physician education improves medical care. Criticisms of the traditional didactic model include concerns that there is little opportunity for audience interaction or discussion, which improves retention [3-5]; little formal assessment of the impact on participant knowledge and actual practice [5]; and a lack of audit and feedback tools to characterize optimal versus actual care provided, shown to be an effective educational intervention [4,5].

An online CME format was chosen for the University of California San Francisco (UCSF) Virtual Symposium on Radiation Safety in Computed Tomography because it was widely accessible and offered customization, adaptability, several interactive features, and the ability to host speakers from diverse backgrounds, providing an array of concrete strategies for lowering the radiation used in everyday practice. Our speakers came from a broad range of background and industries, and included academic leaders in radiology, community hospital physicians, professional organizations, researchers, and educators. By creating an online meeting that required no travel, we were able to maintain low overhead costs while bringing together diverse stakeholders who would have otherwise been difficult to bring together.

INTERACTIVE EDUCATION

We chose an online format that simulated a conference at the UCSF Mission Bay campus using detailed graphic customization. We hired a photographer to take custom images to simulate a walkable campus, like an in-person meeting, including a main lobby, a help desk, an auditorium, and quality improvement, vendor, and partner halls. The meeting was launched over 3 live days in May 2013, when speakers were available for several interactive question and answer (Q&A) periods. During live days, there were 35 hours of prerecorded lectures and 6.5 hours of highly interactive chat conversations. For example, during the Q&A session after Session 2, entitled "Key Concepts in Reducing Dose for CT," 10 symposium speakers fielded questions from 42 attendees during the 15-minute Q&A period. Both speakers and attendees had high rates of participation in these small group conversations, making the symposium a more interactive learning experience than typical didactic courses.

We were able to offer a large number of CME credits through the AMA, the American Society of Radiologic Technologists, and the Commission on Accreditation of Medical Physics Educational Programs. For durable materials, we developed separate posttest exams based on relevant course content and carefully selected questions and answers for each posttest that highlighted the most important concepts for radiation safety in CT. These posttests were developed to make the meeting more interactive and to ensure that participants gained a thorough understanding of the course material.

The symposium also hosts a highly interactive CT simulation (CTSim), where participants can adjust scan parameters in a variety of clinical cases and observe changes in patient radiation exposure in real time. CTSim allows participants to apply what they learned from the symposium's patient safety technique lectures to clinical cases with an immediate audit of performance, providing a unique and engaging format for learning. As part of our ongoing development of the symposium, we are creating an opportunity for participants to assess the educational impact of CTSim.

The symposium also provides guidance on how to participate in a practice quality improvement project (PQI) through the ABR. As outlined in the symposium, the steps of a PQI project are to collect baseline data, review and analyze the data, create and implement an improvement plan, remeasure and track progress, and report participation to the ABR [6,7]. For radiologists and medical physicists, PQI projects are a way to improve the quality and safety of health care on an ongoing basis [7]. By encouraging these ongoing quality improvement projects, the symposium offers concrete guidance for improving patient outcomes.

In an effort to encourage the clinical implementation of dose optimization strategies, Session 8, entitled "Low Dose in Everyday Practice," highlights implementation strategies from varying perspectives, including small community hospitals, large academic hospitals, and national health care delivery systems. These lectures offer practical advice for implementing concepts of dose optimization through

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quality improvement activities for participants to effectively change practice.

SYMPOSIUM DEVELOPMENT

We began organizing the UCSF symposium by developing a course outline, including session topics, sample lecture titles, and featured speakers. With an idea of the scope and breadth of features we wanted to offer, we partnered with 6Connex, a leader in virtual event spaces, because they offered visual customization, unlimited hosting of large video files, and interactive chat features for 1 year. Additional years of hosting are far less expensive than the cost of the initial website build, making long-term hosting and regular updates of this course financially viable.

The development of each lecture was done electronically using e-mail and file transfer tools, so speakers were invited without requiring their commitment to travel. Speaker communication was more involved than for an in-person meeting and included formal invitation and acceptance; conflict of interest documentation; collection of slides, audio, and video; and the delivering of speaker honoraria. Speakers were given straightforward instructions for filming themselves, which they did while delivering their lecture into a microphone or audio headset. Alternatively, some of our speakers had access to professional videography at their institutions and they provided high-quality videos.

The final editing of the symposium lectures, using Adobe Captivate software, allowed us to combine audio, video, and slides into complete video presentations. Video editing was time intensive, but it added a cohesive appearance to the course content. Over 100 educational video lectures were compiled and uploaded into the virtual environment for hosting. During the initial live days of the symposium in May 2013, several staff members at UCSF and the 6Connex technical support staff were available to answer questions and to keep Q&A sessions working smoothly. During the live days, the symposium had over 300 participants in attendance, with high activity in the live Q&As. Now in the on-demand period, all lectures, Q&A chat transcripts, and the CTSim tool are available at any time for both new and returning attendees.

SYMPOSIUM PROMOTION AND REGISTRATION

To encourage medical professionals to attend our symposium, we created a separate website for promotion, offered CME credits through 3 accrediting bodies, kept the cost of registration competitively low, and offered prizes for participation during the live days. The website created for the symposium serves the 2 main functions of hosting our registration system and providing a navigational tool for participants, featuring individual speaker pages, lecture topics, and detailed instructions for earning CME credits.

We priced the meeting affordably for each type of participant, with registration ranging from $100 to $275 for unlimited access to lectures and interactive tools. To keep registration affordable, we had financial support from several vendors interested in radiation safety in CT, including the 4 major manufacturers of CT machines. In the vendor hall, each vendor hosts a booth populated with educational videos and tutorials for how to improve patient safety using their software or machines. Partnership with industry has dual benefits of including manufacturer-specific dose reduction strategies and keeping the registration costs competitive. Compared with in-person CME meetings that have much higher registration costs and require the cost of travel, the symposium has the potential to reach a larger audience at a more affordable rate.

CONCLUSION

Online CME is a rapidly growing educational tool, and although it still requires a great deal of effort to organize and run a virtual meeting, it allowed us to recruit a broad range of speakers and host an incredibly diverse audience. Overall, the symposium reviews were excellent and only a small fraction of participants experienced technical problems. The processes of development, organization, video editing, and promotion required an enormous staff effort and should not be underestimated. However, now that the course material is available on-demand, the symposium requires very little administrative effort to maintain. Future symposiums could be scaled up or down, depending on the topic, audience, and administrative support.

The 2009 Institute of Medicine report focused on CME recommended that courses should bring professionals from various disciplines together in carefully tailored learning environments [8]. Through an array of educational credits, targeted lectures, flexible viewing, and broad promotion, the UCSF Virtual Symposium is an educational tool that brings radiologists, physicists, ordering physicians, technologists, and medical administrators together around the common goal of improving radiation safety in everyday practice.

SUPPLEMENTARY DATA

Supplementary data can be found online at: http://dx.doi.org/10.1016/j.jacr.2013.12.012.

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