CAN CONTINUING EDUCATION EVER BE HARMFUL?

As true professionals, dentists are supposed to be life-long learners. Our educational experiences in dental school and in a residency program, if attended, provide us with a solid foundation of basic knowledge and clinical skills upon which to build and develop into even better, mature, and experienced practitioners after years of practice. Dental students are taught to a level of familiarity in some areas of dentistry and to competency in others, whereas residents attain a level of competency in additional areas and even proficiency in a few. With additional experience after completion of their formal education, all dentists can increase their number of areas of clinical competency, defined as a level of knowledge, skills, and values required to perform independently an aspect of dental practice after completing the program. They can also increase their number of areas of clinical proficiency, defined as a level of knowledge, skills, and values attained when a particular activity is accomplished in more complex situations, with repeated quality, and with more efficient utilization of time.

However, new information, drugs, equipment, and techniques are developed and need to be taught not only to current students and residents, but also to practicing dentists who wish to keep current. To fill this educational need, continuing education courses have been designed to help practitioners learn about these new developments. Traditionally, dentists have taken these courses as the method of choice to advance their skills as lifelong learners. They scrutinize the qualifications of the speakers to be certain that the information they are to receive is of the highest quality and relevance to their practice and within the accepted standard of care. However, there are potential hazards in obtaining continuing education information when clinical application of the new information requires an educational background beyond that of the learner, or when the information presented is incorrect or even dangerous and below the standard of care.

One difficulty with teaching continuing education courses is that the speaker often has an audience of practitioners with a wide variety of education, training, and experiences. For our field of anesthesiology, in touting the virtues of techniques that are very popular among dentist anesthesiologists, such as using an infusion pump for general anesthetic drugs like propofol and remifentanyl for deep sedation or intramuscular injection of a dissociative anesthetic dose of ketamine prior to placement of an intravenous infusion, a highly

qualified speaker has an obligation to explain to those in the audience who do not have general anesthesia training that the drugs and techniques discussed in this portion of the lecture do not meet the definition of the American Dental Association for moderate sedation. They do not have a margin of safety wide enough to render unintended loss of consciousness unlikely, and therefore their use should not be attempted by dentists without general anesthesia training and licensure. Similarly, although adenosine is a marvelous drug that dentist anesthesiologists and oral surgeons are trained and equipped to use for a patient under anesthesia who experiences a life-threatening episode of paroxysmal supraventricular tachycardia (PSVT), the moderate sedation-trained dentist without an electrocardiograph monitor who detects a rapid pulse rate on the pulse oximeter should not consider blindly giving adenosine despite its recommendation for PSVT in the Advanced Cardiac Life Support continuing education course. As a final example, when airway difficulties occur in a patient under general anesthesia, intravenous administration of succinylcholine is recommended when laryngospasm is thought to be the culprit. However, succinylcholine is not a drug that moderate sedationists should administer to an overdosed unconscious sedation patient, because the sedationist lacks significant live-patient experience and confidence to treat electively induced apnea from succinylcholine with positive-pressure ventilation. Rather, the moderate sedationist should attempt to provide positive-pressure ventilation and to immediately pharmacologically reverse the effects of benzodiazepine or narcotics with intravenous flumazenil or naloxone, respectively, to awaken the patient, who then could cough and take a deep breath. Most quality continuing education speakers are cautious when teaching courses in which dentists with mixed levels of training are present, to be certain that they have made clear which techniques are basic to everyone and which are specific to only some in the audience.

Unfortunately, some dentists learn new information from speakers who are far from experts in the field, but who are perhaps very good entertainers. They sometimes disseminate incorrect information as a result of their lack of true expertise. Other speakers knowingly misrepresent information in their lectures, perhaps because of financial agreements with companies to promote their product at any cost. Still other dentists learn new information from Internet discussion groups. Some of this Internet information is excellent, but some is not scientifically based and some is totally wrong, dangerous, and far below the standard of care. For instance, we know from the science

of physiology that ingesting an acidic drink such as coffee or orange juice will not change the pH of the extracellular fluid surrounding nerve cells because of the body's huge buffering capacity and the intricate function of the kidneys in maintaining a homeostatic pH by retaining or excreting hydrogen ions in the urine. Yet there is significant discussion on the Internet by naïve or ill-informed dentists about having patients limit their intake of acidic drinks and raising the body pH by administering oral calcium carbonate (Tums) to make local anesthetic drugs work better. There are dentists who advocate the oral administration of sports drinks such as Gatorade to sedated patients to "reverse" the effects of large total doses of orally administered sedatives. Obviously, if the peak effect of the large total sedative dose given is reached after the oral drink has been consumed, and if that peak sedative effect results in unconsciousness, having a stomach full of fluid could result in life-threatening aspiration if the unconscious patient vomits. Clearly that Internet recommendation is both dangerous and below the standard of care.

A final example of dangerous continuing education information comes from those who recommend that all sedation patients should be pharmacologically

reversed at the end of the procedure to minimize recovery time in the office. Although that thought might seem reasonable to the uninformed, this approach can be dangerous if the patient has an untoward reaction to the reversal agent, such as immediate onset of life-threatening pulmonary edema, narcotic abstinence syndrome, seizures, or resedation in an unmonitored environment, when the effects of the short-acting reversal drugs dissipate and the remaining sedative drugs in the body are able to regain access to their receptors.

The bottom line is that dentists must carefully evaluate the quality and scientific merit of what they learn from all sources of continuing education information. Some of it is good, but some of it can be harmful. In the long run, the old adage of "Buyer be aware" applies not only to used cars and mended parachutes, but also to continuing education information.

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