From the Students’ Corner

The Art and Science of Swedish Dentistry: From Brånemark Implants to Problem-Based Learning

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Supported generously by the Alumni Association, I was one of four students from the University of Washington (UW) School of Dentistry who had an opportunity to visit the Malmö University Center for Oral Health Sciences in Sweden in September 2002. Dr. Lars Hollender, professor and director of oral radiology at UW, served as liaison officer. Fellow dental students Garin Liu, Lindsay Posner, Megan Shields, and I were treated to two weeks of presentations, in-class observations, and a variety of cultural experiences, thanks to the cooperation of the Malmö University administration, faculty, and staff. We returned with renewed excitement in dental education and a greater appreciation for the art and science of dentistry.

Swedish dental scientists have long been recognized for their many important research developments, especially in cariology and temporomandibular joint (TMJ) disorders. Perhaps more significant is the Brånemark dental implant system, which has reset the standard of care in replacement of missing teeth. To gain a better perspective on the use of dental implants, my classmates and I visited the Malmö Dental Clinic, Brånemarkcenter, beautifully situated by Malmö harbor. We observed a full-arch maxillary alveolar reconstruction surgery using six implant fixtures. Dr. Jan Håkansson, the performing dentist, graciously walked us through his forty-five-minute procedure explaining each step and the rationale behind it during the surgery. It was an eye-opening experience. Because of the impressive quantity and quality of implants placed in the clinic, Brånemarkcenter recently received credentials to train graduate students in periodontics and implantology. It became the first private dental clinic in Sweden to be so enfranchised.

Within the walls of Malmö University, we were introduced to a special presentation on a caries risk assessment/patient education-oriented computer program called the Cariogram. Dr. Douglas Bratthall, professor and chairman of cariology, and his associates are in the final phase of developing it. This program uses complex algorithms to compute the caries risk of an individual based on eleven variables, such as diet patterns, oral hygiene practices, bacterial culture counts, and salivary rates. A clinician can input variables, based on a patient’s report and lab tests, and show the patient his or her risk in developing decay via a pie chart. By varying the parameters, a dentist can immediately demonstrate the impact that simple behavior changes can have on the patient’s oral health. The Cariogram promises to be an excellent caries assessment and patient motivation tool. Properly used, it will greatly enhance the practice of preventive and intervention dentistry.

An important aspect of our trip to Sweden was seeing problem-based learning (PBL) in action. Malmö University began the practice of PBL in the...
3) Information is better understood and more easily recalled when the student elaborates on the information by discussing and explaining concepts with colleagues and by making schematic drawings.

The mechanism of PBL practiced at Malmö includes seven cyclic steps. Students begin the process by 1) clarifying unknown terms and concepts, 2) defining the problem(s) that the case presents, 3) brainstorming various solutions to the problem, 4) developing hypotheses for the solution, 5) formulating learning goals, 6) collecting information related to the learning goals, and 7) testing the hypotheses and consolidating information through group discussion and information exchange.

Students are introduced to the PBL process at the beginning of their dental education. Having been raised under the traditional lecture-based system of education, the students relied heavily on their tutor during class discussions in the first weeks of the PBL program. However, once all the students understand how PBL works, they prefer that the tutor stays out of their conversations and intervenes only when necessary. The role of the tutor diminishes as an instructor, but he or she becomes a guide who ensures that the students cover enough material, yet remain focused on the scope of their research. The students then go to recommended texts and journals, the Internet, and other potentially valid sources for information. Utilizing a variety of sources, the students not only gain a comprehensive understanding of the problem at hand, but also learn how to evaluate a resource for validity. This participation encourages the process of “peer review.” Such involvement in solving problems via research eliminates the fear of participating in formalized research training and fosters an environment that encourages the students to affiliate themselves with academic institutions and participate in furthering the science of dentistry.

The PBL system is an excellent one for helping students retain the material they sought. They take ownership of that knowledge; it becomes a part of them. In addition to the material learned, they acquire a tool that will help them “own” knowledge for years to come. They become life-long learners and researchers.

However, PBL is not without shortcomings. The students have to be self-motivated and capable of learning on their own. Students who are accustomed to having boundaries set for them (criteria, page numbers, chapters in texts, being told what will and won’t be on the test) will not enjoy PBL because evaluation of learning is not done with bubble-sheet exams. The evaluation process is more intensive, requiring instructors to comment on each student and the students to evaluate each other, the tutor(s), and ultimately themselves. Compared to one or several bubble-sheets of examinations, this system is much more intricate and time-consuming. PBL also requires a tremendous amount of faculty support in the form of material development and interdepartmental coordination, particularly in the constant training and calibration of tutors. A PBL program such as we observed at Malmö is difficult to implement in schools where teachers’ workloads are already near maximum because of faculty shortages. Students require time to make their research meaningful, and many schools have heavy curricula and little free time for independent learning. Such seems to be the situation in most U.S. dental schools.

In Sweden, the dental school curriculum is comprised of five years of training. Students pay no tuition and are admitted typically at age eighteen after completion of Transition School, which is similar to the high school system in the United States. They do not receive a doctoral-level degree upon graduation, but such is attainable if the student wishes to take on additional coursework. Although this may give the impression that Swedish dentistry resembles a vocation rather than a profession, a careful look at how dentists are educated at the Malmö University Center for Oral Health Sciences reveals that Swedish dentistry is an ever-learning, ever-progressing academic profession.

At the University of Washington, we are very fortunate to have Dr. Hollender as the driving force behind this visitation program. Our visit was made
possible as a result of his extensive prior involvement and connections in dental education circles in Sweden. Four more students from UW will go to Malmö in September 2003. Dental faculty members and administrators who have foreign connections are a wonderful resource to the dental schools. They can contribute in many ways other than teaching students in the classroom. It is my hope that the pioneering effort of Dr. Hollender will encourage other foreign-trained faculty members across the nation to actively develop visitation programs of their own and thus open additional opportunities of learning for their students.