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What is This?
The Role of “Research non-intensive” Institutions within the Global Framework

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There are many opinions regarding the future of dental research and the role of research/scholarship in dental education (American Dental Association, 2000; Haden et al., 2000; Bertolami, 2001, 2002; Haden and Valachovic, 2002; Stashenko et al., 2002). Many researchers and academicians contend that current funding and research training approaches maintain an adequate amount of research/research quality and provide opportunities to develop highly skilled faculty. However, most would also admit that some potentially serious problems have developed, including: (1) numbers of current research/academic faculty and qualified future faculty in the pipeline; (2) integration of dental research into the larger world of science; (3) application of research to clinical practice; and (4) acceptance/ownership of research by the entire dental community (American Dental Association, 2000; Haden et al., 2000; Bertolami, 2001, 2002; Haden and Valachovic, 2002; Stashenko et al., 2002). These issues are international, affecting dental schools worldwide. There are no data available from which one can determine whether current systems have contributed to these problems. However, traditional approaches have maintained narrowly focused definitions of research/scholarly activity, the purpose of research, strategies for increasing the number of future dental researchers/educators, and methods of producing dental graduates who incorporate evidence-based philosophies into their practices (Bertolami, 2002; Stashenko et al., 2002).

Until recently, like many other funding sources worldwide, the approach of the National Institute of Dental and Craniofacial Research (NIDCR) has been to provide resources and support for elite researchers and established research institutions to produce the “best science”. Funding for advanced degree and research training programs tends to favor “research-intensive” dental schools with large cores of funded investigators (Bertolami, 2002; Haden and Valachovic, 2002; Stashenko et al., 2002). Other dental schools are designated as “research non-intensive” and are largely ignored. However, “research non-intensive” dental schools may be able to contribute to the national research/training agenda by operating educational programs that produce highly motivated students and function as significant “feeder sources” for advanced education/training programs located at research-intensive institutions or the NIDCR (Stashenko et al., 2002). To produce a dental school environment and culture in which new information is applied to patient care, support for science and discovery must be linked to the educational processes necessary to integrate new advances into clinical education.

The environment surrounding dental education has changed dramatically during the past 20 years (Hendricson and Cohen, 1999, 2001; American Dental Association, 2000). Contrary to many clinical specialty programs, current advanced degree and research training programs no longer attract adequate numbers of students (Bertolami, 2002; Stashenko et al., 2002). To make these education/training programs more accessible and increase the numbers of interested students, the culture of dental schools and dental education must change. The present system of dental education severely limits the appeal of these programs due to overcrowded curricula, lack of integration of biomedical and clinical sciences, and a clinical component that operates in an environment completely removed from the academic/research enterprise (Bertolami, 2002; Stashenko et al., 2002). Within this context, research and scholarship become an afterthought or something that is reserved for “warriors” who are willing to sacrifice their nights and weekends. There is no time for thoughtful reflection or application of science to practice (Boyd, 2002). This is not an effective way to introduce students to the world of research/scholarship and does not foster an appreciation of or desire for academic careers. Most successful researchers and academicians work long hours making many personal sacrifices; however, their primary motivation comes from a respect and desire for knowledge and/or discovery. This respect and desire must be nurtured in students before they will consider making any commitments regarding research and academic careers. Thus, the environment surrounding the career development and training system needs to be changed, not to improve the science, but to improve access, acceptance, and applicability of the science. This is arguably the most important international issue facing dental education/research.

The current NIDCR R25 Oral Health Research Curriculum grant mechanism represents an incentive for us to think differently, providing new opportunities for “research non-intensive” schools to contribute to the scientific future of the profession. Schools without large research infrastructures may be able to make significant contributions to the national agenda by establishing specific curricular elements that change the

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culture of dental education in such schools. This new model of dental education must incorporate research into the daily routine, integrate dental research into the larger university environment, encourage faculty/students to monitor and embrace the latest science, provide students with “hands-on” training and appreciation for research, and produce graduates likely to apply evidence-based strategies to their practices (Bertolami, 2002; Haden and Valachovic, 2002; Stashenko et al., 2002). The goal is to create an environment that facilitates entry into academic and research careers by providing time for meaningful research training as well as integration of basic/clinical sciences and evidence-based approaches into the dental curriculum. This represents a national strategic advantage, because it provides a very defined and important role for “research non-intensive” institutions (Haden and Valachovic, 2002). Every dental school should play a part in establishing a national infrastructure that attaches value to research, evidence-based practice, and career development/training programs (Stashenko et al., 2002).

The Marquette University School of Dentistry (MUSoD) represents a recent example of this approach. In August of 2001, MUSoD initiated a comprehensive new curriculum with a dedicated research/scholarly track consisting of didactic information and mentored experiences over the entire four-year program. Didactic topics include careers in dental research/academia, post-graduate education/training opportunities, and a comprehensive exposure to topics that support research activity. Mentored student research/scholarly experiences are available to interested students maintaining satisfactory academic and clinical progress. These experiences range in duration from one to three months and are chosen from a menu of local and national mentors. Students design a customized schedule that re-arranges their participation in other curriculum tracks such that 100% effort can be dedicated to the research/scholarly experience. Time for the research/scholarly track has been carved out of the curriculum to accommodate didactic content and mentored student experiences. Students may participate in multiple mentored experiences without increasing the length of the four-year educational program.

Continued development of the research/scholarly track is being supported by an NIDCR R25 grant. To maximize the effectiveness of the new curriculum emphasis with regard to “feeding the pipeline”, MUSoD has partnered with the T32 programs at the University of Minnesota School of Dentistry (for short- and long-term student research training) and the University of Rochester (for access to existing PhD areas and development of a unique inter-institutional DDS/PhD). Additionally, MUSoD has established affiliations with several research-intensive dental schools and the NIDCR intramural research program, enabling students to access mentors and facilities that support significant research experiences. The MUSoD experience may produce a model for the role of “research non-intensive” institutions in the national agenda.

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