

Dental Practice-Based Research Networks

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There is a need for high quality empirical data to be available to dental practitioners for assistance with clinical decision making. In the absence of systematically obtained evidence, dental practitioners often must rely on clinical experience alone in making clinical decisions.^{1,2}

Practice Based Research Networks (PBRNs) are organizations that coordinate the research activities of private practitioners. Using a “bottom-up” approach, in the US for example, study proposals originate with practitioners, and are reviewed by independent protocol review committees and institutional review boards prior to being submitted to the National Institutes of Health (NIH) for approval.³ The centralized coordination of PBRNs by an academic center serves to ensure consistency in research standards.³

It is hoped that by conducting research in real world clinical practice settings, PBRNs will fill the current “evidence gap” and provide dental practitioners with the information they need to improve patient care. Examples of clinical studies that could be conducted in a general dentistry-focused PBRN include effectiveness of different methods for restoring fractured teeth, comparative studies of implant versus fixed or removable replacement of lost teeth, and prevalence estimates of rare conditions.⁴

Until recently, dental PBRNs were not very common and were located primarily in England, Scotland, and Cleveland.³ In the US in 2005, the National Institute of Dental and Craniofacial Research (NIDCR) committed \$75 million over seven years to establish dental PBRNs.^{2,3} Three networks were established (Table 1): Practitioners Engaged in Applied Research and Learning (PEARL) Network, Dental PBRN, and Northwest Practice-based Research Collaborative in Evidence-based Dentistry (PRECEDENT).¹ It is planned that each network will conduct 15 to 20 short-term clinical studies over the seven-year tenure of the grant.²

PEARL Network, Dental PBRN, and Northwest PRECEDENT

The PEARL Network is based in the Bluestone Center for Clinical Research at New York University College of Dentistry. The network is organized into three tiers to conduct clinical research. The first tier consists of practitioners located within 40 miles of the center who will receive the most extensive training in clinical research, and conduct the most sophisticated

studies. The second tier of 100 to 200 practitioners will be located within 200 miles of New York City; they will conduct the majority of studies undertaken over the course of the grant. The third tier will consist of practitioners from across the US to help conduct survey studies to identify practice trends, prevalence rates, and emerging conditions.¹

The Dental PBRN is a partnership between the University of Alabama at Birmingham and the University of Florida. It has staff located in Alabama, Florida, Minnesota, and Oregon, and works with approximately 40 dentists in Norway, Sweden, and Denmark.^{1,3,5} In addition to an orientation session presented in continuing education format, the degree of training required for practitioners will depend on the study protocol. Studies will range in design from chart review studies to randomized, controlled clinical trials. For example, one study recently surveyed dental professionals in the PBRN about the methods they employ to diagnose, prevent, and treat dental caries. The aim was to quantify percentages of those who reported using certain methods for caries diagnosis, reported using any type of caries-risk assessment protocol, reported intervening surgically at particular carious states (*i.e.*, E1, E2, D1, D2, or D3), and to test whether those reporting the use of a caries-risk assessment protocol were more likely to report the use of a preventive program. The results of this investigation also set the stage for two further studies aimed at assessing actual treatment delivered to prevent and treat caries.⁶

The University of Washington and Oregon Health and Science University are the academic centers for the Northwest PRECEDENT PBRN.³ The network is recruiting practitioners from Oregon, Washington, Idaho, Montana, and Utah. Initially, a 12-hour continuing dental education course will be offered on generic clinical research methodology, followed by specific training for each protocol.

The resources of these three networks can be leveraged to carry out common studies. For example, all three dental PBRNs have embarked on a coordinated study of the incidence and risk factors for osteonecrosis of the jaw.³

Dental and Medical PBRNs—Integration of Information

In addition to the benefits derived from the merging of data from multiple PBRNs (*e.g.*, increasing the statistical power of research studies), further benefits can be realized by integrating dental and medical PBRN data.^{3,7} Medical PBRNs have existed for more than 25 years,³ and have provided research results with direct value to patients. Clinical practice guidelines for the treatment of otitis media, for example, were developed with clinical research data obtained by

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medical PBRNs.³ By collaborating with medical PBRNs, oral health PBRNs will benefit from additional patient data, broader professional expertise, and the availability of additional resources for conducting research studies.⁷

Further, there is evidence that oral disease may affect various organ systems throughout the body.⁸ Because overall patient health and oral health are interrelated,

combining data from the various networks will benefit the patient by helping to promote an integrated team approach to patient care.

Conclusions

Traditional dental care research is slow to produce results that impact patients. It is estimated that 17 years are needed to translate 14% of original research findings into practice changes which can benefit patients.¹ Because dental practitioners are responsible for effecting change in clinical practice, PBRNs can accelerate change by directly involving practitioners in the research process. It is thought that PBRNs will ameliorate the situation by engaging practitioners to identify real world clinical issues, connecting practitioners with experienced clinical investigators, engaging practitioners to conduct short-term clinical studies in clinical practice settings, and accelerating the transfer of clinical findings to clinical practice, resulting in improved patient care.⁸

Because as many as 70 percent of dentists in the US are in solo practice, PBRNs provide a mechanism to integrate individual offices into a larger organization that can benefit from the diverse clinical experiences of its members. A measure of the effectiveness of dental PBRNs will be the ability of the networks to stimulate evidence-based change in clinical procedures. 

References

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