

## Practice-based research

To enhance oral health and the provision of oral healthcare, research findings must be capable of being translated into clinical practice. Laboratory-based research and clinical studies in environments other than general practice, which investigate the potential of new materials and techniques, are important and help to advance knowledge and understanding; however, the findings of such research do not tend to be sufficient to justify changes to the everyday clinical practice of dentistry. At best, such findings take many years to be translated into clinical practice.<sup>[1]</sup> In contrast, findings from practice-based research (PBR) may have an immediate, possibly profound impact on clinical practice.

Practice-based research and PBR networks (PBRNs) have existed in medicine for many years.<sup>[2]</sup> Based on the knowledge that PBRNs are “as essential to advancing the scientific understanding of medical care as bench laboratories are to advancing knowledge in the basic sciences,”<sup>[3]</sup> and increasing acceptance in dentistry that the correlation between, for example, the findings of laboratory-based dental biomaterials science and the performance of materials in clinical service was at best scant,<sup>[4]</sup> the National Institute of Dental and Craniofacial Research (NIDCR) in the USA funded three regional dental PBRNs in 2005 for a 7 years period. By 2012, the US PBRNs had conducted numerous studies of different design, involving thousands of patients and hundreds of practitioners, on a broad range of topics of immediate relevance to “real world” dentistry.<sup>[5]</sup> The success of the US regional PBRNs demonstrated that dental practitioners with no formal training in research can effectively contribute to research which may result in fundamental, beneficial changes in various aspects of the clinical practice of dentistry. Based on the success of the US PBRNs, NIDCR funded the PBRN for an additional 7-year period, as a unified national network – The National Dental PBRN, which became operational in April 2012. Dental PBRNs exist elsewhere in the world, for example, the Practitioner Research and Evaluation Panel in the UK;<sup>[6]</sup> however, these networks are smaller and not underpinned by long-term national

funding. Notwithstanding, these limitations, dental PBRNs internationally must be considered to have been a long overdue innovation, with a huge amount to offer in the future.

Given the importance and success of PBRNs, why are not more established? The principal barriers are considered to be funding and the priority and recognition given to PBR, in particular PBR in dentistry, in many countries. While many dental practitioners would welcome the opportunity to be involved in a PBRN, and would accept and adhere to the rigor of research methodologies, it would be difficult for them to participate in a PBRN over prolonged periods, unless the research activity is suitably funded. It is unrealistic to expect busy dental practitioners, with high practice overheads, to undertake time-consuming research on an on-going basis at personal expense. Regarding the priority and recognition given to PBR, the ranking and rating are often much lower than it should be, given that in many research environments recognition and priority is largely determined by the academic rather than the clinical impact of research outcomes. This, it is suggested is false logic in clinical disciplines, such as dentistry, in which research outcomes, with the exception of outcomes of some essential basic research, should principally benefit patients. Academic research rarely includes patient-based outcomes and fails to address clinical choices that practitioners face on a day to day basis.

Practice-based research networks involve the providers and consumers of healthcare services in research. This involvement, let alone a collection of data in “real world” settings, makes PBRN research of immediate clinical relevance. PBRN research cannot replace, or be an alternative to basic research; however, it should be seen and recognized to be of at least equal importance, and critical to investigating “front line” efficacy of procedures and techniques and the application of drugs, materials, and devices derived from basic research.

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