Invited Editorial

Don't Know, Can't Do, Won't Change: Barriers to Moving Knowledge to Action in Managing the Carious Lesion

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In this special issue of *Advances in Dental Research*, we present the International Caries Consensus Collaboration (ICCC) recommendations for carious lesion management (Schwendicke et al. 2016) and related terminology (Innes et al. 2016), developed from evidence-led consensus. During a lecture 130 years ago, G.V. Black stated that "the day is surely coming and perhaps within the lifetime of you young men before me when we will be engaged in practicing preventive rather than reparative dentistry" (Joseph 2005). This aspiration has been reinforced by consistent and growing evidence supporting less invasive management strategies for dental caries. However, creating evidence is only the beginning of the story; the next challenge is to translate that evidence into clinical practice (Elouafkaoui et al. 2015). One clear example of our failure to meet this challenge can be seen in the treatment patterns for carious lesions confined to enamel. The invasive (operative) management of enamel lesions is not supported by evidence (Ricketts et al. 2013; Schwendicke et al. 2013a; Schwendicke et al. 2014; Dorri et al. 2015). It is considered too invasive and is no longer recommended (Tyas et al. 2000; Kidd and Fejerskov 2013). Despite this, 40% to 80% of dentists worldwide would still choose to lift a rotary instrument, remove tooth tissue, and restore these lesions instead of managing them preventively or microinvasively (Gordan et al. 2009; Baraba et al. 2010; Kakudate et al. 2014; Doméjean et al. 2015). A similar story can be told for the management of cavitated carious lesions. Although there is increasing evidence supporting less invasive carious tissue removal strategies, especially in deep carious lesions (Ricketts et al. 2013; Schwendicke et al. 2013a), they are still treated overinvasively, with complete removal of carious tissue compromising tooth structure and the health of the dental pulp (Oen et al. 2007; Weber et al. 2011; Schwendicke et al. 2013b). This failure to follow new evidence is not limited to dentists who are "out of touch," do not undertake continuing professional development, or have been practicing for many years; in some countries and some schools, new dentists are still taught to remove all infected carious tissue, and it is actually not possible to pass professional examinations without demonstrating this. The reasons underlying this failure to translate evidence into clinical practice are many and complex.

It cannot be assumed that newly generated evidence, however compelling, will immediately produce a significant change in clinical practice. The transition of new, evidence-based treatments from the scientific literature into general clinical practice can be slow and sporadic (Schwendicke et al. 2015). Translational research has shown that this process is complex, with the majority of problems falling into 1 or more of 3 areas, loosely summarized as "don't know," "can't do," or "won't change." These individual areas are also, in turn, multifaceted (Grol and Grimshaw 2003), involving a complex interplay of human-, organizational-, and policy/system-level influencing factors. Our 2 consensus documents aim to reduce the "don't knows." The "don't know" could be due to general ignorance (perhaps remedied with an appropriate educational intervention) or the more problematic willful ignorance, where the subject chooses not to learn more about a topic (perhaps because it challenges his or her current beliefs). So, although changing clinicians' behaviors is not a straightforward process, it is accepted that an essential starting point of managing the problem of "don't know" is the availability of high-quality, evidence-based guidance on best clinical practice. The guidance should synthesize the best evidence from the literature into clear, unambiguous recommendations (Schünemann et al. 2014). It is essential that these recommendations use a clear and widely agreed terminology to allow transparent discussion and debate without breakdown due to misunderstanding.

Can such recommendations around less invasive and more contemporaneous management of carious lesions be drawn up, and could these be applicable to all types of patients, countries, health care remuneration settings, dental care professionals, and dental education systems? We think yes, and the ICCC's recommendations and terminology publications in the special issue of *Advances in Dental Research* (Innes et al. 2016; Schwendicke et al. 2016) address the lack of international

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guidance on caries lesion management. This was the first goal of the collaboration. The consensus achieved has been built on a foundation of evidence assimilation. However, it only acts as a starting point for accessible, formal evidence to recommendation production. Beyond "don't know," further barriers to implementing that knowledge base ("can't do" or "won't change") will be addressed as part of the next steps.

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