

FACULTY PERSPECTIVE

VIEWS ON DENTAL TOPICS & TRENDS

Applying Our Basic Science Knowledge to Clinical Care

To appreciate my faculty perspective, I need to briefly tell you about myself. I've always been fascinated by the basic sciences — the biological sciences in particular — leading me to pursue a PhD in immunology and a career in academic dentistry. I earned my PhD here at Penn (1991) after my DMD at Penn Dental Medicine (1985) and went on to complete postdoctoral training in periodontics here as well in 1992. Since then, I have been a full-time faculty member at our school and the bulk of my didactic teaching has been in the areas of immunology and oral microbiology. I'm also a periodontist and have been teaching and practicing the discipline for over 25 years.

I routinely find myself applying my scientific knowledge to clinical scenarios I encounter in my practice. Often times, this involves addressing a question I'm asked by a patient or explaining the rationale for proposed treatment to one of them. This being said, one of my frustrations as an educator is the resistance of some students and alumni to appreciating the relevance of the basic science component of our education to clinical practice.

In recent years, we ran a mini-course during the orientation for first-year dental students, during which I had the opportunity to discuss the applications of basic science to various aspects of clinical dentistry. One example I discussed relates to the impact of oral disease on systemic health. This concept, to a certain extent, dates back to the focal infection theory. Taken to an extreme, dental proponents of this argued that bacteria from dental caries could spread from the teeth to other parts of the body and subsequently cause secondary infections with distinct signs and symptoms from

caries. These individuals advised that pulp-involved teeth be extracted rather than performing endodontic therapy, which they perceived as ineffective at eliminating bacteria. Of course this has been shown not to be the case.

Starting in the late 1980's, a large body of literature started to develop suggesting an association between severe chronic periodontitis and cardiovascular disease. Many of you might have had patients calling you out of fear, as I did, because they read about this in the lay press and were convinced that their periodontal problems were inevitably going to result in myocardial infarctions. This was followed by other studies indicating a potential role for periodontitis in the pathogenesis of other conditions, including diabetes and pre-term low-birthweight pregnancy outcomes.

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— DR. JONATHAN KOROSTOFF

Appreciating these relationships, the periodontal community came up with a "subspecialty" known as periodontal medicine. In more recent years, severe periodontitis has been associated with a diverse array of diseases such as rheumatoid arthritis and Alzheimer's disease, among others.



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To date, none of the relationships have been shown to be causal in nature. This being said, it is becoming increasingly clear that localized inflammation anywhere in the body can have systemic implications. Basic and translational research are revealing potential mechanisms to explain how oral inflammation can function as a risk factor for numerous systemic diseases. We as health care professionals must have a reasonable understanding of this information. It will allow us to quell the fears of anxious patients, but more important, enables us to explain to patients why treatment will not only help maintain their dentition but also potentially improve their overall health.

Needless to say, there are many more examples that illustrate my point. I'm not advocating that everyone go back to their textbooks and notes from dental school. What I do hope is that those of you who have finished dental school keep informed about the science behind what we do. For those of you still in school, please appreciate that the purpose of your basic science courses is not simply to prepare you to pass board exams, but to enable you to become a well-rounded member of the medical community. ■