



## Saliva Diagnostics Integrate Dentistry into General and Preventive Health Care

In most industrialized countries, continuously rising health care costs have limited improvements in access to health and preventive care. In the United States, for example, annual physical exams account for 8% of all physicians' office visits and only involve approximately 21% of the adult population.<sup>1</sup> Despite this underutilization of preventive care, the total cost for the service still amounts to \$8 billion per year. This tension between high costs and the need for more preventive care has ignited many discussions on the need for annual physical examinations, and further, forced the health care community to develop alternative methods such as saliva diagnostics to monitor health status. The method has attracted much interest because of its simplicity, noninvasiveness, cost and time efficiency, and portability.

Since the early 1990s, saliva diagnostics has been studied for the detection of various diseases, such as cystic fibrosis, celiac disease, Sjogren syndrome, *Helicobacter pylori* infection, diabetes mellitus, breast cancer, oral cancer, and human immunodeficiency virus (HIV), as well as for drug and hormone level monitoring.<sup>2-5</sup> High sensitivities and specificities have recently been reported for a variety of oral cancer mRNA markers.<sup>6,7</sup> The utility of saliva diagnostics has been further advanced by the development of a portable-sized saliva diagnostic unit. However, the disease-specific reliability of salivary biomarkers needs to be further established because of varying protein or RNA levels in saliva.

In 2008, David Wong established the Salivaomics Knowledge Base, a computer-based saliva proteome atlas intended for popularizing and facilitating the global use of salivary diagnostics.<sup>4,5,7,8</sup> The database is expanding and will soon include information on various cancers (pancreatic, breast, lung, and ovarian) as well as Alzheimer disease.

Despite the growing interest and popularity of saliva diagnostics, broad implementation throughout the health care system has yet to be instituted. Discussions on the research needed to address the scientific validity of saliva diagnostics have been initiated by many clinicians and scientists. However, mature regulatory policies and successful commercialization, as well as key foundational scientific data, are all needed to gain acceptance by clinicians and

patients before saliva diagnostics can be widely implemented. Clinicians may assist with implementation by understanding and measuring patient preference and perception on saliva diagnostics through demographic analyses. This is essential in increasing our understanding of the culture of health care so that we will be able to effectively promote and integrate "culturally competent" saliva diagnostics into health care for diverse populations. In addition, educators should prepare their students to implement saliva diagnostics into their future practice.

By integrating saliva diagnostics as a routine part of health screening in dental offices, we as dentists can offer better access to preventive care. The population of the United States visits dentists 1.5 times more frequently than physicians.<sup>9</sup> These efforts will facilitate the inclusion of oral health care within the overall health care system. It will also broadly involve dentistry in future health care policies.

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