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**Editorial**

## Innovative Forward Thinking for Dentists that want to make a Difference

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The approach in treating patients has shifted to a more personalized approach not only in the medical ecosystem, but becoming more evident in dental medicine. The name of the game in dentistry is “prevention”, and most patients that visit the dental office, generally have issues related to their dentition, whether it be caries, a root canal, missing teeth and restorations (which can all be prevented), but a portion, presents with oral diseases that range from periodontal issues to more severe problems, such as oral cancer (also preventable, if detected early). However, the mouth also presents with oral manifestations of a larger systemic problem, including the likes of diabetes, heart and lung complications. The dentist is the second most visited health professional other than your primary care physician, which indicates our role as a healthcare professional should be more engaging to the well-being of an individual as it is related to the person’s overall health. Of course, there are obvious limitations in what a dentist can perform on a patient is versus a medical doctor; but a common procedure when visiting our primary care provider is drawing of blood and at times urine, collected for measuring a variety of analytes to indicate whether we are healthy or something requiring further workup. On the other hand, we as dentists do not routinely collect saliva for any purpose, a sample that is non-invasive and easy to collect.

The purpose of this editorial is to note a paradigm shift from general dentistry to a more personalized approach to dentistry. As stated earlier, “prevention” is the key to most dental complications and that we are the second most visited healthcare professional, which makes us a key player, not only the oral health of a person, but perhaps the outlook of other health ailments. We are humans and we can’t always prevent, but detecting early is the next best approach and hence the forward thinking of how we see each patient. If we can diagnose an issue at any point prior to a more progressive ailment, the better it is for everyone, from the patient to the family to the society.

This brings me to the point of “diagnostics”, which is a method for early screening to diagnosing a disease early and/or the ability to monitor whether the treatment (companion diagnostics) is effective or not [1]. A diagnostic test can be something that is easy to implement and disposable at the chair or as simple as collecting a sample of saliva and sending off to a laboratory to measure those biomarkers (indicators) for a specific disease. Diagnostics has become mainstream in the clinical community and more so in the biomedical

research community as techniques for identifying and detecting biomarkers for a variety of diseases from a variety of biofluids, including saliva are improving as it pertains their sensitivity and specificity [2].

Saliva in itself, is a challenging biofluid as it more viscous and the presence of large amounts of mucins (large proteins) and microbial contaminations as compared to both blood (serum and plasma) and urine. Notwithstanding, saliva has proven to be a useful biofluids in the detection of many diseases including diabetes, oral, gastric and ovarian cancer. Tools for isolating and detecting biomarkers in other biofluids have come a long way, which makes working with saliva more attractive, but still non-trivial. As the NIH has placed more emphasis and funding in personalized or precision medicine research and commercialization, dentists should take advantage of this opportunity for their role as healthcare providers. I realized the dental profession is more fragmented and less integrated into the community as compared to our counterparts, but we are a community and should start working together at the local, regional, state-wide and national levels. Setting up local and regional biorepositories for salivary collection in conjunction with academic centers and/or local hospitals would be a worthwhile opportunity to consider. Obviously, there are issues in reference to leadership, funding, sustainability, logistics, regulatory, standardization and others. However, one strategy is to explore and perhaps to engage with existing biorepositories and/or initiate new ones and identify stakeholders that will be willing to partner including biotechnology and pharmaceutical companies.

The ability to utilize diagnostics that can be in the form of point of care diagnostics (POC) to screen and quantify biomarkers associated with disease prognosis and predictive therapeutic response would assist dentists/physicians in their treatment selection is underway. The evolution of POC diagnostic technologies for example, demonstrates that technology development is at a point in which it can address clinical needs. Routine chemical and colorimetric methods can be developed into dipstick type format that have been used by physicians at the first stage of patient assessment; an example of this is the urine analysis in a clinical setting. Saliva samples are easily obtained non-invasively without requiring technical or a highly-trained person, which makes saliva an ideal biofluid for oral diagnostics.

There are advantages to this approach, since many diagnostic analytes in serum have been correlated in saliva, the potential for use is in therapeutic drug monitoring, as one is currently being developed for epilepsy, and in the diagnosis of systemic disorders such as impaired cardiovascular function, renal disease, cancer,



and viral and bacterial infections [3]. Early detection of any disease has many benefits, some are critical to improving the outcome of treatment, survival rate, quality of life and the overall cost of care. It would be a game changer if there were salivary diagnostic screening tests for common oral diseases such as caries, periodontitis and oral cancer, so preventing many late- and end-stage diagnoses. Let's discuss periodontitis, a common disease. Researchers have reported biomarkers, IL-1B, MMP-8, and ICTP associated with the progression of periodontitis [4]. To be able to detect periodontitis early using a POC diagnostic test has many benefits to the patients, it will make them connected with their dentist virtually, they will be more educated, as they will be more conscious about how to have a healthy mouth and make informed daily decisions of good oral hygiene. This approach can make life easier for the dentist as all this information can be obtained using a cell phone or tablet and loaded up to the cloud-based servers where the dentist is able to monitor and communicate with the patient anywhere.

So in conclusion, I would like express that we, as dentists are primed for an opportunity to make a difference and great contribution to the community. The idea of creating a salivary national/global biorepository will help close the gap between the medical and dental community, as we all share the same interests in making impact to our patients by maintaining their ability to live healthy.

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