

# PeriRx Investigates Salivary Tests for Diabetes

01 Feb 2016 [Richard Gawel](#)

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There is a cyclical relationship between diabetes and poor oral health, as the presence of one can make the other worse. For example, diabetes can inflame the gums, while gum disease can lead to difficulties in glycemic control. With those kinds of stakes, dentists can play a greater role in diagnosing and treating diabetes.

PeriRx is working on a tool that can help dentists in those efforts. Known for its diagnostic tools for oral cancer, the company has been researching salivary biomarkers that can identify diabetes. Recent work conducted at the University of Puerto Rico that collected saliva from patients at risk of the disease has shown promising results.

“In our preliminary work, we were able to come up with a panel of biomarkers of message RNAs that are upregulated in pre-diabetes and diabetes relative to normal samples,” said Jack L. Martin, BA, MD, chief medical officer at PeriRx. “Now it’s a matter of finding which markers perform the best.”

The tests revealed 4 markers that indicate pre-diabetes. These markers were abnormal in patients who had normal blood sugars but who still had early pre-diabetes as determined by glucose tolerance tests. And since these patients had not been diagnosed with full diabetes yet, they weren’t on any treatment that could have influenced the results.

“It’s a very rigorous scientific methodology to collect saliva in a group of patients who are at risk before you know which ones have diabetes and which ones don’t,” said Martin. “They were not on compounding medications that might have affected their biomarkers.”

Considering the association between it and periodontal disease, Martin said, dentists can play a vital role in diagnosing diabetes since they are most familiar with its oral pathology. Also, many patients see their dentists on a much more regular basis than they see their doctor, so there are simply more opportunities for diagnoses to happen.

“Delta Dental of New Jersey actually has a pilot program where they’re giving dentists hemoglobin A1c machines for free, just to encourage behavior change and get dentists to screen,” Martin said, before noting a couple of potential issues with this approach to diagnosis. For instance, many dentists might not be comfortable with that kind of blood work.

“Doing a random blood sugar or a hemoglobin A1c is not necessarily the holy grail of early pre-diabetes detection,” he added, questioning the accuracy of such tests. “People can be pre-diabetics and have a normal fasting blood sugar, or near normal.”

According to Martin, one recent study reported that a little more than 40% of dental patients had abnormal hemoglobin A1cs. Yet when these patients were referred to further evaluation, about 60% of them didn’t have anything that was diagnosed in terms of abnormal glucose metabolism.

“Hemoglobin A1c is a test that was initially developed to monitor the effectiveness of the treatment of known diabetes, not necessarily to detect diabetes early,” Martin said. “If you measure hemoglobin A1cs and use the American Diabetes Association criteria for pre-diabetes, you’re only picking up a small percentage of pre-diabetics.”

Other research has suggested that dentists can analyze the blood taken from the periodontal pockets during probing for blood sugar with a strong correlation with blood analyzed from venal punctures in the arm. Yet Martin cautioned again that random blood sugars are not necessarily the most accurate standard for detection.

“We are very hopeful that salivary expression assays of message RNAs from our initial data we have from the Puerto Rico study could potentially be very effective in diagnosing the early disease,” Martin said. “You can do that test, painlessly and noninvasively in the dentist’s office, to identify people who should have more advanced testing such as a glucose tolerance test, which most people aren’t getting done.”

Diagnosis is the first step, though. Once patients know they have diabetes, they must monitor their blood sugar each day, typically through painful pinpricks, test strips, and portable glucometers. According to Martin, salivary tests may someday replace the needle, with the right development.

“In collaboration with UCLA, we have a very novel point of care device that can measure different proteins and genetic sequences that would be suitable to be used certainly in a dentist’s office,” Martin said. “With advancement of technology, potentially we could make it cheap enough for patients to have such a device in their own home.”

For now, PeriRx is focused on developing the technology for professional use. The company already offers a diagnostic tool for oral cancer, which can be caused by smoking, and is working on a test for lung cancer. Those tests naturally would go together. Yet there is an opportunity for the diabetes test here as well.

“A lot of diabetics have periodontal disease. A lot of smokers have periodontal disease. So, there’s an overlap of these conditions,” Martin said. “So if you had a smoker with bad oral pathology, instead of just assuming it’s all from the smoking, diabetes may be contributing to the pathology too. You might want to test them for diabetes.”

Martin also is optimistic that insurance would cover diabetes tests for dental offices. If these tests are launched, he anticipates codes to be available for submission to insurance companies. And while developing the optimal reimbursement from third-party payers would take time, he expects the test to prove its value in the marketplace. But until then, research continues.

“We hope that by early 2016 we will have completed the further work that needs to be done in the laboratory to develop the most robust markers to then go forward with a similar prospective trial in a multiethnic United States population to further validate those markers for clinical use,” Martin said. “So I would say we hope to be in a new clinical trial in diabetes early this year.”

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