Dental professionals on front line in fight against diabetes

An interview with Dr Maria Emanuel Ryan, periodontist and Professor of Oral Biology and Pathology at Stony Brook University, USA

_An as-yet unceasing increase in the number of people with diabetes or prediabetes in the USA and across the globe makes it not so much a question of if, but when more dental professionals will need to become highly skilled in treating such patients. There are 26 million people with diabetes in the USA, and 95 per cent of them have a form of periodontal disease, compared with 50 per cent of the general population.

Of those 26 million, more than 7 million are unaware of their diabetes.

Just as significant, 79 million people are estimated to have prediabetes, with as many as half unaware of it. A growing body of research suggests that the association between oral health and diabetes is bidirectional, placing dental professionals in the position of not just being able to help patients with diabetes control the illness, but also perhaps being able to help those with prediabetes avoid full onset.

In recognition of this link between oral health and diabetes, Colgate Total is donating US$100,000 and joining forces with the American Diabetes Association's campaign to *Stop Diabetes* by encouraging people to learn more about oral health care and *Raise Their Hand to Stop Diabetes*.

Central to the campaign's focus is educating people on the importance of dental visits, as well as helping dental professionals, who are seeing growing numbers of patients with diabetes. Colgate's involvement also stems from its interest in promoting the use of antibacterial toothpastes such as Colgate Total to support gum health.

Also helping with the effort is Dr Maria Emanuel Ryan, a periodontist and Professor of Oral Biology and Pathology at Stony Brook University, New York. Ryan, a globally known expert on the link between oral health and diabetes, recently spoke with roots.

_roots: *What size patient base are we talking about in terms of the need for achieving greater awareness?*

Dr Maria Emanuel Ryan: Some of the talks I have given have been at the Centers for Disease Control and Prevention (CDC). They have an interest in this

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area because to them diabetes is an epidemic. Each year, we have 1.9 million new cases diagnosed in people 20 years of age and older. If the population of people with diabetes keeps growing at this rate, in the very near future it will be about one in three, which is a very significant number.

_What can dental professionals do to help identify patients who have diabetes or prediabetes but have not been diagnosed?

Certainly we can screen for diabetes. And this is being recommended by the CDC. One way is by risk assessment: knowing a patient's family history, looking at obesity as a risk factor, looking to determine whether the patient is in one of the populations in which risk factors may be higher (African-Americans, Pacific Islanders, Native Americans, Latinos and Hispanics), asking about gestational diabetes. Most patients with diabetes are type II patients, who tend to be older than 45 years of age. Risk factors such as hypertension and dyslipidaemia are also important to consider. Of course, there are the classic signs and symptoms: thirst, frequent urination, infections, numbness in extremities, leg cramps, vision problems. Unfortunately, with type II diabetes, there are many people who are unaware they have it. That's why the CDC is looking to oral health-care professionals for help. If a person has any of the risk factors, signs or symptoms, dental professionals can refer to the physician for additional screening, or obtain a random blood glucose level or even a fasting blood glucose level and then refer appropriate patients to the physician for diagnosis.

_What do dentists need to be aware of with their patients who have diabetes or prediabetes?

If patients are poorly controlled, then you may need to be very cautious in what procedures you might be doing because the patients' wound healing may be affected. You need to know whether they have any other long-term complications of diabetes. You need to work closely with the patients' physician and other health-care professionals. Many patients with diabetes, especially those who have a physician working very hard to tightly control their diabetes and whose blood glucose levels tend to run low, may have a higher risk for hypoglycaemic events. Ask patients whether that is common for them because the more hypoglycaemic events patients have had, the more likely they are to have more—and the more likely they are to develop hypoglycaemia unawareness. That's when they don't get any of the classic signs: getting dizzy, feeling like they are going to pass out or getting confused. Some patients don't get those signs and symptoms; they can just suddenly become unconscious or have seizures.

_What can the dental professional do to confirm whether patients with diabetes have well-controlled blood sugar prior to treatment?

You can actively take the blood glucose level by doing either a random screening for blood glucose or even a fasting for blood glucose. If the level is greater than 126, the patient can be referred to a physician for further treatment. Another way to screen is the haemoglobin A1C test, a long-term marker of control that lets you know how well controlled someone with diabetes has been over the past two to three months. It used to be that only a centralised laboratory could do this, but now there are point-of-care tests. The only way you can help predict a hypoglycaemic event in your patient is to check blood glucose levels. Patients on insulin are at the highest risk of having a hypoglycaemic event at the time of peak activity of the insulin that has been administered, which is not when you want to be treating them. You also need to know what oral medications they may be taking because some may have a higher risk than others of causing hypoglycaemia.

_Research indicates that serious periodontal disease may affect blood glucose control and contribute to the progression of diabetes. Why is this?

In fact, the impact of periodontal disease may even be evident before someone develops diabetes. Recent research suggests that patients who have untreated periodontal disease, when followed for over 20 years, may be twice as likely to develop diabetes. Periodontitis is driven by infection and inflammation; and infection and inflammation can drive insulin resistance. Insulin resistance can lead to the development of diabetes and prevent good control of diabetes. By reducing infection and inflammation, you may actually prevent development of diabetes, and certainly you can make it easier to control diabetes. Some recent papers have suggested that if you don't treat the periodontal disease, not only is it more difficult to control diabetes, but people with diabetes are then

also at higher risk for long-term complications such as cardiovascular disease and kidney disease, thereby increasing the risk for mortality.

_Are people with diabetes and prediabetes at risk for other dental problems?

If patients are not well controlled, they also tend to get more cavities or caries. They have a higher risk of developing oral yeast infections such as candidiasis. They may have enlarged parotid glands, which can lead to dry mouth. And because of the yeast infections in a dry mouth, they could report burning mouth or dry tongue. Dry mouth due to salivary gland dysfunction will drive periodontal disease and caries formation. Poorly controlled patients are also at greater risk for abscess formation. Gingival crevicular fluid is a serum transudate, so if your blood sugar levels are high, you have more glucose coming out of those pockets around the teeth. Your mouth has more glucose in it, so your teeth are bathing in glucose, increasing the risk for developing cavities. Working to improve home care with patients is of great help because such patients need to keep levels of bacteria as low as possible in the mouth. They can use antibacterial toothpaste or rinses. One of the toothpastes that's very effective at reducing the levels of bacteria for 12 hours is Colgate Total. I recommend that to many of my patients with diabetes. And, of course, we need to provide adequate care in the office. The treatment of infection and inflammation, providing periodontal therapy whether it's surgical or non-surgical, absolutely needs to be provided and should never be considered an optional or elective procedure.

_Are insurance organisations responding to the growing evidence of the connection between oral health and diabetes?

Some dental insurance companies are reimbursing dentists for screening, not only for diabetes but also for hypertension by checking blood pressure and for obesity by determining body mass index. Some dental insurance companies have begun to create expanded plans that begin to better address the oral health-care needs of patients with diabetes. This may help with access. Some patients—especially those without dental insurance—complain that if they go to the podiatrist, it's covered by their medical insurance, but if they're going to the dentist, it isn't covered by medical in most cases. This may be changing.

_Are there dental professionals specialising in the treatment of people with diabetes? If so, how does one develop such a specialty?

When your comfort level goes up, you will see more and more of these patients (by referral). Patients say, "You know, Dr Ryan asks me questions that other dentists never asked me about my diabetes. And she seems to base her treatment plan around the answer to those questions." If you're comfortable talking to physicians about this, you begin to get more referrals from physicians who are treating and educating these patients. I often speak on panels with other health-care providers at local meetings organised by the American Diabetes Association, initiators of the *Stop Diabetes* campaign. And because the folks from Colgate recognised the importance of oral health in this, they have supported this campaign, which I think is very important. When I speak as part of a diabetes-education health-care team, patients are already aware of what the podiatrist has to say, of what the ophthalmologist may be saying about their eyes and the cardiologist about cardiovascular disease. But when I start talking about the dental considerations, so many of them say to me, "I have never heard this before. No one's ever discussed this with me." It's important for all of us in the profession to share this knowledge not only with our patients but also with each other.

_Are there established, approved protocols for dental professionals to follow when treating patients who have diabetes or prediabetes?

No, but maybe we will be going in that direction. There has been a substantial effort by the American Dental Association to improve on continuing education in this area. There are efforts throughout the profession to improve on the transfer of knowledge from the published research to the practising clinician. In the future, there may be programmes through which people may become certified to manage higher-risk patients, such as those with diabetes or cardiovascular disease. There has been great interest by all members of the profession. Not just dentists, but hygienists and dental assistants are interested in how to better manage these patients. You're beginning to see practices develop protocols that are tailored to the provision of care to people with diabetes._

Editorial note: This interview was prepared by Robert Selleck, Dental Tribune America.

_about the interviewee

roots

Dr Maria Emanuel Ryan is a tenured full professor in the Department of Oral Biology and Pathology at Stony Brook University's School of Dental Medicine and a member of the medical staff at University Hospital at the Stony Brook University Medical Center. She has published more than 75 scholarly works and speaks frequently on emerging therapies, connections between oral and systemic health and the need for early detection of periodontal disease and oral cancer.