



**AADE Thought Leader Summit:
Diabetes and Oral Health**

INTRODUCTION

According to the World Health Organization, diabetes affects nearly 346 million people worldwide. The number of affected individuals is expected to increase to 439 million by 2030.¹ As such, diabetes represents a major health burden in terms of patient morbidity and health care costs. On April 5, 2016, the American Association of Diabetes Educators hosted a thought leader summit to highlight the relationship between diabetes and oral health. The meeting was facilitated by Gary Scheiner MS, CDE and Ira B. Lamster DDS, MMSc and was attended by a panel of Certified Diabetes Educators® (CDE®) and oral health care professionals that included dentists and dental hygienists. Colgate provided sponsorship for the two-day summit.

The panelists sought to address the following major objectives:

1. Expand diabetes educators' involvement in screening for oral problems, teaching about oral health, and facilitating referrals to oral health care professionals.
2. Increase oral health care professionals' skills and involvement with diabetes care, including referral to diabetes care professionals.
3. Define the interaction between diabetes educators and oral health care professionals, and identify how both groups can work with each other and with primary care physicians to improve oral health and health outcomes.

I. PRESENTING THE CHALLENGE

The detrimental effects of diabetes on oral health have been well documented. People with diabetes have a marked increase in risk for periodontal disease, and experience almost 3 times more periodontal

pathology than their non-diabetic counterparts. In fact, diabetes is the only recognized systemic risk factor for periodontal disease. In turn, periodontal disease has been proposed as a sixth clinical complication of diabetes.² Additionally, tooth loss is up to 2 times more frequent in people with diabetes than people who do not have diabetes.³

Periodontal disease is related to an increased inflammatory response secondary to infection of the gingival margin and subgingival space. It is characterized by alveolar bone loss, abscess formation, tooth mobility, and eventual tooth loss. People with diabetes demonstrate a number of diabetes-related oral manifestations. In addition to a greater prevalence of periodontitis, oral findings include dental caries, specifically root caries, which is related to gingival recession and root exposure. Other oral manifestations include altered taste and neurosensory disorders, xerostomia, and benign parotid hypertrophy. Patients can present with burning mouth syndrome, either related to neuropathy or *Candida* infection.⁴ Pediatric patients have been noted to have altered tooth eruption. Finally, poor glycemic control can increase complication rates associated with dental implants.⁵

The relationship between diabetes and oral health is felt to be bi-directional. Studies have shown a correlation between periodontal disease and poor metabolic control.⁶ Further, clinical trials have demonstrated a decrease in hemoglobin A1c after mechanical periodontal therapy.⁷ Additional systemic complications of diabetes that are associated with periodontitis include kidney disease⁸, cardiovascular disease, and death from cardiorenal causes.⁹

Because diabetes and periodontitis are chronic illnesses that can detrimentally affect the other, appropriate patient screening, education, and management are vital.

II. CARE OF PEOPLE WITH DIABETES IN THE US

Diabetes is a chronic and progressive systemic disease with the potential for significant morbidity and mortality. People with diabetes often encounter numerous health care providers including, but not limited to, primary care physicians or endocrinologists, nephrologists, dentists, podiatrists, ophthalmologists or optometrists, nurses, and dietitians. Diabetes educators are an integral part of the diabetes care team.

The complexity and broad reaching effects of the disease often leave patients feeling overwhelmed. Additionally, in contrast to people with Type 1 diabetes, individuals with Type 2 diabetes often do not recognize the progressive nature of their disease, which can lead to feelings of guilt and failure when the disease advances despite attempted lifestyle and medical interventions.

Management of diabetes involves collaboration between a variety of health care professionals. It is important for health care providers to be alert to the broad range of symptoms through which diabetes manifests itself. For instance, an oral health care professional may be the first health care professional to alert the patient to findings that may suggest undiagnosed or poorly controlled diabetes.

III. THE DIABETES EDUCATOR'S ROLE IN MANAGING ORAL HEALTH IN PEOPLE WITH DIABETES

Diabetes educators can provide a variety of resources, education, and support to people with diabetes. Often playing a central role in diabetes care, diabetes educators act as the liaison between their patients and other health care providers.

Training

Diabetes educators are health care professionals – primarily nurses, dietitians, and pharmacists. Though not every diabetes educator is certified, approximately 86% of professionals in this group have earned the designation of Certified Diabetes Educator® (CDE®). Earning a CDE® requires at least 2 years of professional experience, a minimum of 1000 hours in direct diabetes teaching experience, and successful completion of an exam administered by the National Certification Board for Diabetes Educators.

Though less frequently achieved, individuals with a master's level or higher degree can earn board certification in Advanced Diabetes Management (BC-ADM) through AADE.

Patient Screening and Assessment

Diabetes educators seek to assess the patient's understanding of diabetes as well as identify risk factors for poor control or complications. Educators may review blood glucose logs and attendance at scheduled provider visits, screen for lipodystrophies, or perform basic foot exams. Assessing the patient is a critical first step in providing appropriate patient education and management. In the case of oral

health, inquiring whether the patient has had a dental exam within the last six months or has a history of periodontal disease can begin the process.¹⁰ Additional information can be gleaned by simply observing the patient and assessing for missing teeth or inflamed gingival tissue. Educators can also inquire about available insurance as many patients may not be aware of their insurance-provided dental benefits. Of those patients with dental benefits, patients may have limited coverage or may not appropriately utilize their covered services.

Patient Education

The focus of diabetes educators is to provide patients with tools and resources to better understand and manage their disease. Valuable education given in this setting may not be readily available in the primary health care provider setting due to time constraints and the unique expertise required. Patients are frequently unaware of the various manifestations of their disease. Educators have the ability to tailor education to the patient's specific needs and coach them in the skills needed to be able to self-manage their diabetes and its comorbidities. Examples may include instruction regarding administration of insulin injections, how to use an insulin pump to manage diabetes, or setting individualized nutrition and lifestyle goals. Educators can also determine a patient's barriers to successful diabetes management and provide solutions that enhance successful patient outcomes. For instance, educators may inquire about economic hardship that impairs a patient's access to quality nutrition or they may assess for vision challenges that result in difficulty administering the appropriate insulin dose. Educators can help patients move beyond feelings of guilt or associated depression to allow them to take ownership of their disease and become part of the decision-making process.

Another vital role of diabetes educators is alerting patients to the possibility of comorbidities the patient may have not considered to be related to their diabetes. People with diabetes are often aware of the importance of podiatric and ophthalmic screening, but many do not realize the bi-directional relationship of oral health and diabetes. Patients may be unaware of the role of diet in the prevention of tooth loss.¹¹ The role of educators is not only to increase patients' self-management and knowledge, but to facilitate appropriate referrals and, in some cases, suggest treatment plans to maximize the patient's health.

Health care providers (including primary care physicians and endocrinologists) may not be aware of or appreciate the value of diabetes educators. Statistics indicate the utilization of the diabetes self-

management training benefit is only 5% for patients covered by Medicare and 7% for patients covered by private insurers.¹²

Treatment Options and Limitations

Diabetes educators can facilitate positive outcomes in the care of their patients by actively engaging them regarding their oral health and providing recommendations for oral self-care. Patients can be questioned regarding their oral health history, including when they were last seen by an oral health care professional and whether they are experiencing any mouth discomfort or signs of periodontal disease, such as bleeding following tooth brushing. Educators can instruct patients on oral hygiene practices and reinforce the importance of regular professional care. When appropriate, educators can initiate referrals for professional dental care.

Importantly, diabetes educators have the opportunity to motivate patients to adopt lifestyle interventions and other self-care strategies that decrease the risk of morbidity and help them reach their personal and health goals.

Current limitations may include educators' lack of knowledge regarding the bi-directional relationship between diabetes and oral health, uncertainty about preferred oral health practices, lack of training to identify signs of oral disease (including periodontal disease), or difficulty initiating appropriate referrals.

Challenges to Addressing Oral Health

Many people with diabetes are simply not aware of the impact diabetes can have on their oral health and vice versa. Further, data indicates that people with diabetes do not see their dentist as often as people who do not have diabetes. Awareness is the first challenge to addressing oral health in this patient population. As with many medical conditions, cost is a major consideration, especially for those patients who may not have dental benefits or who may not have access to a provider that accepts their insurance. For those patients who do have insurance coverage, the benefits may not be enough to provide for an individual's treatment or to allow the necessary follow-up needed in the setting of chronic disease. In many locations, travel to and from dental offices can present a barrier, regardless of age.

Diabetes educators need to be provided with more training regarding oral health and diabetes. Finally, educators are tasked to address many facets of diabetes care and often do not feel they have adequate time to address oral health. This issue is compounded by the need for more diabetes educators, especially as the educator population ages, to serve the rapidly growing number of people who have diabetes.

Summary

Diabetes educators can play a central role in diabetes care when appropriate referrals and access exist. Processes need to be developed to expand educators' involvement in oral health care. To begin expanding educators' oral health knowledge, additional instruction and resources need to be made readily available. Adding oral health to the core curriculum and exam for certification encourages educators to address this very important issue. Finally, parameters need to be defined outlining expectations for educators' role in oral health.

IV. THE ORAL HEALTH CARE PROFESSIONAL'S ROLE IN DIABETES CARE

In regard to diabetes, dentists, dental hygienists, and dental assistants can play an important role in identifying risk factors and managing this chronic disease. It is important that the patient's oral health not be isolated from his or her systemic disease. In children and adolescents, periodontal changes have been identified in the absence of retinal or renal pathology¹³, presenting the oral health care provider with a unique opportunity to identify patients who may not have been previously diagnosed or who have not adequately managed their diabetes.

Training

For dentists, scope of practice varies by state and may or may not include reference to evaluation, diagnosis, prevention, and treatment of pathology in the context of systemic conditions.

A unique pathway exists for dentists who want to become Certified Diabetes Educators®. Dentists must have 2000 hours of direct diabetes education before they can take the National Certification Board for Diabetes Educators examination. For oral health care professionals who do not wish to be certified, but who are interested in further training, alternative pathways are available through the AADE Career Path

Certificate Program for Diabetes Self-Management Education. The certificate program is available to health care providers and educators who seek additional diabetes training to meet the needs of their patients.

Patient Screening and Assessment

Dental exams are frequently performed in clinical settings that are isolated from where patients receive their medical care. Though oral health care providers regularly inquire about the patient's health history and medications, additional screening may improve the patient's overall health care. A new practice paradigm for oral health may involve assessing risk for diabetes (including asking the patient about family diabetes history) and, in the case of people with diabetes, metabolic control. Assessing the patient's overall appearance and being alert for signs and symptoms of hypoglycemia are important when caring for people with diabetes. A number of studies have confirmed the effectiveness of screening for dysglycemia in the dental office.^{14,15} Determining whether a patient is already seeing a diabetes educator can provide added value to their care.

Patient Education

Dentists spearhead the oral health care team and should stress the importance of a comprehensive oral evaluation when caring for people with diabetes. Dental hygienists and assistants can educate patients about the interrelationship of diabetes and oral health. In particular, dental hygienists focus on disease prevention and can alert patients at the earliest signs of disease. Additionally, dental hygienists have extended contact with patients and can take advantage of this time to provide important education.

Treatment Options and Limitations

Oral health care professionals provide prevention, examination, and treatment services. As part of a comprehensive oral exam, patients receive a complete inspection of the intraoral tissues as well as those of the head and neck. The provider evaluates for periodontal complications, dental caries, dry mouth, and *Candida* infection. Diagnostic studies, such as radiographs, may be used to facilitate the assessment. Treatment can include mechanical periodontal therapy and, in the setting of tooth loss, dental implants. In patients with periodontitis who meet certain criteria, it has been proposed that providers may perform a chairside evaluation of hemoglobin A1c.¹⁶ People with diabetes may require more frequent dental visits with emphasis on self-care and removal of biofilm.

Limitations to this new practice paradigm include provider hesitation to perform chairside testing due to regulatory, reimbursement, or medicolegal concerns. Additionally, treatment for patients requiring dental implants may need to be delayed in the event of poor glycemic control.

Challenges to Addressing Diabetes Management

An important part of diabetes management is evaluation and treatment, as necessary, by an oral health care professional. Unfortunately, a major hurdle to overcome is simply getting the patient to visit the oral health care professional. In the general population, only 35 to 45% of people 18 years or older see their dentist yearly, with older patients seeking dental care more frequently.¹⁷ More alarming are findings that people with diabetes tend to visit their dentist less frequently than people who don't have diabetes.¹⁸ Patients may be fearful or overwhelmed by the requirements of their diabetes management. A patient may not be aware of the important role their oral health plays in diabetes care, but statistics show that receiving dental care reduces average medical costs (\$2800 per year in one study).¹⁹ A minimum of twice yearly dental visits are recommended for most people. While approximately 80% of persons with dental insurance see their dentist twice per year, only one-third of persons without dental insurance have two preventive visits per year.¹⁷

From the oral health care professional's perspective, the first challenge in caring for patients with diabetes is establishing a sound knowledge base that allows meaningful assessment and modification, if any, of subsequent therapy. Though oral health care professionals may be motivated to provide the appropriate care, time constraints, medicolegal concerns, and reimbursement issues may limit their willingness to treat patients with diabetes. Finally, oral health care providers may not fully understand their role in the management of people with diabetes and may not fully understand the potential benefits of this intervention.

Summary

Oral health care does not exist in a vacuum. Oral health must be considered in the context of the patient's general health. First, oral health providers must be educated regarding the pathophysiology, morbidity, and treatment of diabetes. They must also be knowledgeable regarding the relationship of diabetes to oral pathology. Empowering providers with additional training in oral care for people with diabetes would not only improve knowledge, but could also be a source of new patients as the oral

health care provider establishes community expertise in treating patients with diabetes. Lastly, developing an assessment tool to aid oral health care providers in stratifying a patient's diabetes-related risks can allow for timely treatment and lead to better patient outcomes.

V. COLLABORATION OPPORTUNITIES

When considering diabetes and oral health, the goal is to create synergy between the diabetes education community and the oral health care community. Both groups can effectively work together as part of the health care team to benefit patients' long-term outcomes. Chronic disease management occurs over decades and is best accomplished when multiple health care providers work together. The likelihood of patients understanding and adhering to treatment suggestions increases when a consistent message is delivered by all health care providers.

Referral Mechanisms

To facilitate maximum utilization of resources for people with diabetes, appropriate pathways for referral must exist. Oral health care providers need to be made aware of the availability of diabetes educators and how they work with primary care providers and endocrinologists who encourage collaboration with educators. Diabetes educators benefit from knowing which oral health care providers have the additional knowledge and willingness to care for people with diabetes. Finally, primary care providers need to be aware of the value of working with diabetes educators as well as the importance of enlisting the help of oral health care providers to maximize patient outcomes.

Most referrals to diabetes educators will originate from the patient's primary care physician (PCP) or endocrinologist. Such a referral pattern allows the PCP to better facilitate the patient's multifactorial care. It is essential that oral health care providers communicate with PCPs about their oral exam findings and make management suggestions based on those findings. For example, an oral health care provider may suggest that the PCP consult a diabetes educator if exam findings suggest that metabolic control is not adequate due to poor self-care. Finally, by having a central provider from whom all care is initiated, the referral process can be streamlined, thereby decreasing obstacles to delivery of ideal patient care.

Cross Education

Due to the complexity and multifactorial nature of diabetes, information sharing is essential. Diabetes educators must take steps to ensure primary care providers and oral health care providers are aware of

the services educators provide. Additionally, educators must strive to gain the appropriate knowledge to adequately assess and educate their patients regarding oral health and diabetes and generate appropriate referrals.

Oral health care providers, in turn, should be knowledgeable of the pathophysiology and management of diabetes. Performing comprehensive exams and communicating the significance of diabetes-related findings to educators and other health care providers are paramount.

Potential Roadblocks

Certain challenges need to be addressed to allow effective collaboration between people with diabetes, diabetes educators, and oral health care providers. From a patient perspective, barriers may exist due to geography, cost, and psychosocial issues. Educators face difficulty in obtaining appropriate training, teaching resources, referrals, and compensation. Oral health care professionals often find themselves isolated from the rest of the health care community and may have concerns regarding their role in diabetes management. Primary care providers may be unsure where to refer patients for diabetes education or dental care. Lastly, insurance payers often limit access by dictating which services are to be covered. Each of these issues needs to be addressed to allow effective collaboration.

Summary

Caring for people with diabetes requires blurring the lines of delineation between health care professionals to facilitate coordination of care that will best serve the patient. To achieve this, professionals involved in diabetes care need to commit to collaborative education across disciplines and establishment of formalized standards of care. Finally, algorithms need to be put in place to create simple and effective referral processes between disciplines, thus increasing the potential for adherence to recommendations and maximizing patient outcomes.

VI. CONSUMER AND PATIENT AWARENESS

Once the appropriate education and referral patterns are in place, it is essential to make not only people with diabetes, but also the general public, aware of the available resources. Patients or family members may not know where to go for advice regarding diabetes, and they risk being misinformed. Quality patient education must be easy to access. Public service announcements, the Internet, social media, and

provider education all offer opportunities to reach patients. In areas of geographic isolation, telemedicine provides the ability to increase patients' access to information and care.

A uniform and consistent message across all diabetes and oral health organizations can provide the repeated exposure needed to engrain accurate and fundamental knowledge in the public mind. Companies in the oral health care industry can also contribute to wide-reaching communications with people who have diabetes. Finally, enlisting the collaboration of insurance companies can help ensure that benefits are consistent with the message being delivered, which may ultimately prove cost effective.

CONCLUSION

Regardless of type, diabetes is a chronic, progressive disease. To best serve people with diabetes, all members of the health care team must unite to inform not only their patients, but colleagues, about the important interplay between diabetes and oral health. Working as a team, oral health care professionals and diabetes educators, alongside primary care providers and endocrinologists, can deliver services that result in better oral health care and, ultimately, better health outcomes.

AADE Thought Leader Summit:

Diabetes and Oral Health

Major Objectives	Strategies for Success
<ul style="list-style-type: none">● Expand diabetes educators' involvement in teaching about oral health ● Increase oral health care professionals' skills and involvement with diabetes care ● Define the interaction between diabetes educators and oral health care professionals	<ul style="list-style-type: none">● Increase available education and resources by developing basic tools for assessing patient oral health and teaching proper oral health care● Add oral health to core curriculum and exams for certification● Define expectations for oral health education ● Increase education regarding diabetes● Provide recognition for additional training and services● Create a standardized patient assessment tool ● Commit to collaborative education across disciplines● Formalize standards of care with recognition for compliance● Develop effective referral algorithms

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