

# Linking Research to Clinical Practice

## Medical Screenings in Dental Settings

Denise M. Bowen, RDH, MS

**The purpose of Linking Research to Clinical Practice is to present evidence based information to clinical dental hygienists so that they can make informed decisions regarding patient treatment and recommendations. Each issue will feature a different topic area of importance to clinical dental hygienists with A BOTTOM LINE to translate the research findings into clinical application.**

**Greenberg BL, Kantor ML, Shuying SJ, Glick M. Patients' attitudes toward screening for medical conditions in a dental setting. *J Public Health Dent.* 2012;72(1):28–35.**

**Objectives:** Previous studies demonstrated the efficacy of chairside medical screening by dentists to identify patients who are at increased risk for developing cardiovascular-associated events and the favorable attitude of dentists toward chairside medical screening. This study assessed patient attitudes toward chairside medical screening in a dental setting.

**Methods:** A self-administered 8-item questionnaire was given to a convenience sample of adult patients attending an inner-city dental school clinic and two private practice settings. A 5-point response scale was utilized. Wilcoxon-Mann-Whitney tests and t-tests were used to compare responses between study groups. Friedman non-parametric analysis of variance was used to compare response items within each question.

**Results:** Regardless of setting, the majority of respondents were willing to have a dentist conduct screening for heart disease, high blood pressure, diabetes, human immunodeficiency virus infection and hepatitis infection (55 to 90%); discuss results immediately (79 and 89%); provide oral fluids, finger-stick blood, blood pressure measurements and height and weight (60 to 94%) and pay up to \$20 (50 to 67%). Respondents reported that their opinion of the dentist would improve regarding the dentist's professionalism, knowledge, competence and compassion (48 to 77%). The fact that the test was not done by a physician was ranked as the least important potential barrier. While all re-

spondents expressed a favorable attitude toward chairside screening, the mean score was significantly lower among clinic patients across most questions/items. The priority rankings within an item were similar for both groups.

**Conclusions:** Acceptance by patients of chairside medical screening in a dental setting is a critical element for successful implementation of this strategy.

### Commentary

Dental hygienists, dentists and others providing oral health care are responsible for prevention, assessment and treatment of oral diseases. The association between oral and systemic health has increased our role in early identification and referral of patients with potential chronic medical conditions, and collaboration with other health professionals for comprehensive patient care. The U.S. Department of Health and Human Services selected oral health as one of 12 Leading Health Indicators for Healthy People 2020.<sup>1</sup> Oral health objectives address several areas for public health improvement, including the need to:

- Increase awareness of the importance of oral health to overall health and well-being
- Increase acceptance and adoption of effective preventive interventions<sup>2</sup>

Prevalence of diseases, such as cardiovascular diseases and diabetes, is increasing, and the population is aging. For many years, oral health practitioners have been screening patients for elevated blood pressure readings and referring them to their primary health care provider for medical evaluation

and diagnosis of hypertension. Recently, broader-based medical screenings for heart disease risk, diabetes, human insufficiency virus (HIV) and hepatitis in dental settings have been suggested.

This study evaluated patients' perceptions toward these screenings. Patients in outpatient dental school clinics in New Jersey (n=288) and two dental offices in Newark, New Jersey and Mesa, Arizona (n=182) were asked to complete a self-administered questionnaire when they arrived for an appointment; 90% agreed to participate. Surveys were returned to the front desk in sealed envelopes to provide confidentiality. Each question included a series of items assessing the respondents' attitudes, acceptability, and perceived barriers concerning screening for medical conditions by a dentist. Responses were favorable for both settings; however, clinic patients (CP) differed from private practice patients (PP) on some items.

Regardless of setting, patients were willing to have a dentist screen for common medical conditions about which they were unaware or to monitor existing conditions. They were willing to have screenings in dental settings for diabetes mellitus (CP 83.3%, PP 57.4%), hepatitis (CP 80.8%, PP 56.8%), heart disease (CP 81.7%, PP 57.3%) and HIV (CP 80.0%, PP 54.8%). Positive responses were significantly lower for all items in the private sector. The majority of CP and PP respondents said they would provide blood pressure measurements (CP 94%, PP 80%), weight and height (CP 89%, PP 77%), oral fluids (CP 87%, PP 79%) and finger-stick blood (CP 77%, PP 60%) for chairside medical screenings in dental settings. If the scope of practice for oral health professionals is to be re-conceptualized and expanded, patients will need to be receptive to primary health care activities in dental settings. Barriers identified by at least 80% of all respondents included confidentiality, time and insurance coverage. These responses indicate that successful implementation of chairside medical screenings in the dental settings would require an efficient, inexpensive system while also assuring patient confidentiality. Patients did not perceive the dentist-provider as a barrier and reported their opinion of the dental professional's knowledge, professionalism and compassion would be enhanced by chairside medical screening and monitoring.

Likely, some insurance companies would not reimburse patients for medical screenings in dental practice, at least until clear benefits for clients and/or cost savings are demonstrated. Most of these respondents would pay up to \$20 for chairside medical screening; however, CP patients (77%) were more willing to pay \$10 to \$20 than PP (50%). This difference increased with fees of \$21 to \$30 with 65%

CP versus 34% PP willing to pay. Plausible explanations for this difference might be that patients in private dental offices are more likely to have access to a primary care health care provider and/or insurance that would pay for screening tests in medical settings, whereas inner-city clinic patients might not. Data were not collected regarding reasons for responses. Interestingly, older patients were significantly less willing to pay any amount – no other item was significantly different by age. Many elderly patients in the U.S. are on limited or fixed incomes, and Medicare potentially would cover medical tests administered in primary care settings. An assessment of how much time and materials would be required to perform these screening tests in oral health care settings is needed to determine feasibility. These findings indicate, however, that most patients were open to receiving chairside medical screenings if time and cost were minimal and confidentiality was protected. Results cannot be generalized to other settings and groups because a convenience sample was employed.

The findings imply there may be challenges for dental hygienists and other oral health care providers who want to implement chairside medical screenings, but it can be accomplished. Cost needs to be low. Respondents reported being least willing to provide finger-stick blood, and heart disease screening was least important for PP. Finger sticks are needed for diabetes and cholesterol screenings. These issues need further exploration. Oral health professionals need strategies to foster patient acceptance and reduce perceived barriers. The goals of increasing awareness of the importance of oral health to overall well-being and increasing the adoption of effective preventive interventions warrant that commitment.

**Barasch A, Safford MM, Qvist V, et al. Random blood glucose testing in dental practice: A community-based feasibility study from the Dental Practice-Based Research Network. J Am Dent Assoc. 2012;143(3):262-269.**

**Background:** The prevalence of diabetes mellitus (DM) has been increasing. Instances of patients not having received a diagnosis have been reported widely, as have instances of poor control of DM or prediabetes among patients who have the disease. These facts indicate that blood glucose screening is needed.

**Methods:** As part of the Dental Practice-Based Research Network, the authors conducted a study in community dental practices to test the feasibility of screening patients for abnormal random blood glucose levels by means of glucometers and fin-

ger-stick testing. Practitioners and staff members were trained to use a glucometer, and they then screened consecutive patients older than 19 years at each practice until 15 patients qualified for the study and provided consent. Perceived barriers to and benefits of blood glucose testing (BGT) were reported by patients and dental office personnel on questionnaires.

**Results:** A total of 28 practices screened 498 patients. A majority of the respondents from the 67 participating dental offices considered BGT useful and worth routine implementation. They did not consider duration of BGT or its cost to be significant barriers. Among patients, more than 80% thought BGT in a dental practice was a good idea and found it easy to withstand; 62% were more likely to recommend their dentists to others if BGT was offered.

**Conclusion:** BGT was well received by patients and practitioners. These results support the feasibility of implementation of BGT in community dental practices.

**Clinical Implications:** Improved diagnosis and control of DM may be achieved through implementation of BGT in community dental practices.

## Commentary

DM is a worldwide endemic, and undiagnosed cases are considered to be highly prevalent. Oral health professionals have the capability and responsibility for early identification, assessment and management of patients with diagnosed DM or patients at risk of developing DM. An estimated 60 to 70% of individuals in the U.S. saw a dental professional within the past year; therefore, there is a tremendous opportunity for detecting and monitoring DM.<sup>3</sup> Monitoring of patients with DM and addressing their oral and general health care needs requires assessment and management during dental hygiene appointments and collaboration with their primary health care professionals. The result is better control of the oral/periodontal complications of DM and better management of patients' overall health. Screening for DM for high risk patients in dental offices was proposed by the International Diabetes Federation in 2007. Regardless, the practice of chairside testing and monitoring by dentists and dental hygienists is rare.

This study was conducted to examine the feasibility of BGT in community dental practices. Dentists (n=28) and staff members (n=44) were trained to perform finger stick tests and use glucometers. BGT was administered in practices by dentists only (n=19), dentists and hygienists (n=7) and dentists

and dental assistants (n=17). After BGT, practitioners (n=72) and patients (n=498) were asked to complete a questionnaire regarding their perceptions of benefits and barriers to chairside BGT in dental settings. BGT was offered to patients at risk for abnormal blood glucose levels according to American Diabetes Association recommendations. All patients with a body mass index (BMI) greater than 25 kilograms/square meter, self-reported history of hypertension or hypercholesterolemia, or with diagnosed DM/prediabetes were invited to participate. Both questionnaires used a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree).

Responses were received from 67 practitioners (93%) responded. The majority (60 to 88%) agreed or strongly agreed with these benefits of chairside BGT in descending order: promotes patients' opinion of them as being interested in their overall health, provides benefits for patients, helps identify patients at risk for periodontal disease, leads to better glycemic control and helps determine timing of invasive dental procedures. Most also believed BGT was not too time consuming (57%) or expensive (51%) to offer in a dental setting. Average time reported for chairside BGT was 2 to 5 minutes, and most did not believe the procedure was disruptive to their normal appointment. The majority (57%) of practices reported lack of insurance coverage as a barrier to implementation, and 28% reported a lack of patient demand. In the end, however, the vast majority (93%) recommended implementing DM screenings in practice, and all practices reported BGT was easy and well-received by patients.

Ninety percent of screened patients thought BGT demonstrated a high level of care by their dental professional. Patients reported BGT was easy for them (86%) and believed the information provided to them was useful (79%). The authors did not discuss patients' perceptions of cost for BGT or insurance concerns reported by practitioners. It would be interesting to know whether the fee exceeded the \$20 limit previously reported as acceptable to patients, and what percentage of insurance plans covered BGT in dental practices.

The biggest limitation was the use of BGT rather than HbA1c testing at chairside. Both require a finger stick. BGT is affected by recent carbohydrate intake and medication use. The HbA1c is more precise and reflects two to three months of glycemic control. Home tests and chairside professional tests are now available, so associated time and costs have been decreased recently. Dental hygienists considering in-office DM testing should

consider using HbA1c rather than BGT. Nonetheless, the purpose of the study was to examine the feasibility of chairside DM testing, and the procedure was easily implemented and well-received by most of the providers and patients.

These results only apply to patients at risk for DM whereas the previous patient survey regarding chairside medical testing proposed general health screenings. Patients who are diagnosed with DM or at risk might have a more positive attitude about chairside testing because of their association with the disease and the heightened probability of a potential problem. Dental hygienists could offer this preventive general health service to patients at risk or use HbA1c testing to determine relationships between existing periodontal disease and poorly controlled or undiagnosed DM. The bidirectional relationship is clear: periodontal disease affects glycemic control in DM and poor glycemic control affects periodontal disease severity and treatment. Although HbA1c is a diagnostic test for DM/pre-diabetes, dental hygienists would use it for screening purposes, making referrals for medical diagnosis and treatment. Addition of this chairside test would enhance our role as preventive professionals and potentially improve diagnosis and control of DM in the future.

## The Bottom Line

Each of these studies examined attitudes toward general health screenings in oral health care settings. Prevalence of cardiovascular diseases, DM/prediabetes, and hepatitis C is increasing worldwide. A critical component of any health care initiative is prevention, and dental hygienists are preventive oral health specialists. Health care reforms are enhancing opportunities for integrated oral and general health initiatives as well as interprofessional collaborations. Additionally, dental hygienists are increasingly found providing oral health care to underserved populations where individuals may be at greater risk for oral and systemic diseases. The majority of patients surveyed reported being willing to have a dentist do medical screenings at chairside if cost and time were nominal and their confidentiality was protected. Challenges to implementation included patients' acceptance of finger sticks and cost over \$20. Patients reported a heightened positive opinion of their dental care provider when general health screening was an option. The authors concluded that patient acceptance of chairside medical screening in dental settings is critical for successful implementation.

The second study examined chairside BGT for

patients at high risk of DM/prediabetes. General population screenings are not recommended for DM. Dental hygienists have the potential to identify patients at risk or those with undiagnosed DM and refer them to their primary care provider for diagnosis and treatment. Early diagnosis and better metabolic control through lifestyle changes and health care interventions can reduce complications, morbidity and mortality associated with DM. The bi-directional relationship between periodontal disease and DM makes it particularly relevant for dental hygienists. Improvement in rates of undiagnosed DM/prediabetes and poorly controlled DM will require interprofessional efforts beyond the capacity of medical care providers. Both patients and providers found chairside BGT for DM easy and desirable for implementation in dental settings. The oral health care professionals perceived lack of insurance coverage as a barrier. The authors concluded that BGT was well received by patients and practitioners. Results support the feasibility of BGT for DM screenings in community dental practices. Improved diagnosis and control of DM may be achieved through implementation.

Based on the findings of these two studies, the following conclusions can be drawn:

- Patients are receptive to general health screenings in dental settings.
- Patients' opinions of the professionalism, knowledge and compassion of their oral health professional are enhanced by addressing the oral-systemic health link and offering chairside general medical or DM screenings.
- Dental professionals who provided finger sticks for DM screenings did not believe that the procedure, requiring two to five minutes, was disruptive to their normal appointment.
- Most patients were willing to pay up to \$20 for medical screening test(s), with the exception of elderly patients. The actual cost of testing needs to be determined.
- Chairside medical screenings in oral health care settings are feasible. DM screenings for patients at risk may be the easiest and most relevant point to begin.

## Summary

Dental hygienists are preventive professionals responsible for the oral and general health of their patients. Chairside medical screenings would be a positive addition to comprehensive preventive care plans and interprofessional collaboration. The goals and oral health objectives of Health People 2020 include increasing the proportion of people receiving preventive interventions in dental offices, awareness

of the importance of oral health to overall health and acceptance and adoption of preventive interventions. All of these are within the realm of dental hygiene practice. Results of these studies show that patients would be receptive to general medical testing in oral health care settings. Patients at risk for DM are particularly receptive to chairside testing and information. General health screenings in dental hygiene practice could be an effective component of disease prevention/control and enhance integration of health care across disciplines.

*Denise M. Bowen, RDH, MS, is Professor Emerita in Dental Hygiene at Idaho State University. She has served as a consultant to dental industry, as well as numerous government, university and private organizations and presently is a member of the National Advisory Panel for the National Center for Dental Hygiene Research in the U.S. She has served as Chair of the American Dental Hygienists' Association Council on Research and Chair of the Research Committee for the Institute for Oral Health and has received national awards for excellence in dental hygiene.*

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