

3-2. Diabetes and Periodontal Disease

The relationship between periodontal disease and type 2 diabetes is well established, if not well defined, although recent evidence supports a bidirectional relationship between the two diseases.²² Since diabetes is known to be a major risk factor for periodontal disease, the 2018 Standards of Medical Care in Diabetes recommend referral to a dentist for comprehensive evaluation as part of initial care management.²³ Diabetes is often associated with other oral health problems, including xerostomia and candida infections. Recent evidence indicates that providing periodontal therapy to individuals with diabetes may result in medical cost savings.²⁴

Given these relationships, most integrated activities in this area fall into one of two categories:

- **Referring medical patients with diabetes for dental care.** Referrals from primary medical care to the dentist aim to control oral manifestations of the disease, including gum disease and tooth loss.
- **Blood glucose screenings of adult dental patients.** Screenings in dental settings aim to help identify and manage cases of prediabetes or diabetes.

These types of activities recognize that coordinated management of diabetes and periodontitis improve outcomes for both diseases. A third category of integrated activity focuses on environmental interventions to reduce sugar-sweetened beverage consumption. Details about environmental approaches such as multimedia campaigns are provided in **section 4**.

Environmental Scan of Publications

This section provides an overview of integrated activities targeting type 2 diabetes or prediabetes and oral health. We have not attempted to provide a complete list of publications related to diabetes screenings in dental settings, since the literature in this area is extensive. Rather, we have identified key publications based on relevance to our charge and innovation. For interested readers, several articles offer comprehensive reviews about the rationale for conducting screenings for type 2 diabetes in dental studies.^{25,26}

About chairside screenings

Point-of-care screening for type 2 diabetes in dental settings is typically done by measuring blood glucose levels or glycated hemoglobin (A1C) levels. Results from these tests are not sufficient for diagnosis²⁷; additionally, dental professionals are not permitted to diagnose prediabetes or diabetes. Referrals to primary care providers for patients with abnormal test results are required in order to diagnose and manage the disease. Recent feasibility and pilot studies are summarized in **Table 5**.

About diabetes risk assessment

Several of the studies in **Table 5** use the American Diabetes Association Diabetes Risk Test (available at <http://main.diabetes.org/dorg/PDFs/risk-test-paper-version.pdf>) or a slightly modified version by the National Diabetes Education Program (NDEP) (available at <https://www.niddk.nih.gov/health-information/diabetes/overview/risk-factors-type-2-diabetes/diabetes-risk-test>). This test generates a patient risk score ranging from 0 to 11, with scores greater than or equal to 5 indicating increased risk for type 2 diabetes. One previous study used the Diabetes Risk Test to prescreen patients: patients with high risk scores were targeted to receive chairside A1C testing.²⁸ However, two studies that we reviewed did not find significant associations between high Diabetes Risk Test scores and abnormal blood glucose or A1C levels.^{29,30}

Table 5. Chairside Screenings in Dental Settings: Feasibility and Pilot Studies

Study	Brief description	Findings
Barasch et al, 2012 ³¹	Pilot study to train practice-based research network (PBRN) practices (N=28) in United States and Sweden to use glucometers; surveys of patients and dental personnel about barriers	Dental practice survey (n=67 personnel): 100% of dental respondents thought that blood glucose testing was well received by patients and easy to perform. Major barriers: lack of reimbursement, insufficient patient demand. Dental patient survey (n=498): 90% felt testing showed a high level of care. Gaps: did not perform A1C testing, which is more expensive than finger-stick testing.
Barasch et al, 2013 ³²	Examined frequency of elevated plasma glucose in at-risk patients screened (N=498) via chairside glucometer in PBRN practices	"Opportunistic screenings" based on risk factors defined by the American Diabetes Association was highly acceptable to patients. Among patients with at least one risk factor, 31% had non-fasting glucose values ≥ 126 mg/dl. Gaps: communication of findings with medical providers, provider guidelines, and treatment.
Bossart et al, 2016 ³³	Pilot study of dental hygienists performing chairside finger-stick test of A1C in patients with periodontitis and at least one risk factor for diabetes	A1C testing of at-risk patients (N=50) found 34% of participants had values indicating prediabetes or diabetes. Direct cost per screening was \$9; mean screening time, including patient education, was 14 minutes. 53% of participants with elevated A1C values contacted their primary care provider (PCP) within two weeks as recommended. Gaps: protocol to identify at-risk patients for screening.
Genco et al, 2014 ³⁴	Field trial of feasibility of screening for diabetes in dental offices and a community health center using risk test and A1C finger-stick test	Among adults aged 45 or older (N=1022), 41% had elevated A1C values. Patients referred to primary care from the community health clinic (CHC) were significantly more likely to follow up than patients seen in private practice (79% vs. 22%, respectively; $p=.001$); having a physician of record at the same CHC with shared health records facilitated follow-up. Gaps: poor follow-up with primary care among patients screened in private dental practices.
Giblin et al, 2016 ³⁵	Pilot study screening of patients in an academic hygiene clinic	Patients (N=154) screened using the American Diabetes Association NDEP Risk Test; 42% found to have increased risk for diabetes. Among patients tested, 61% had elevated A1C indicating prediabetes or diabetes ($\geq 5.7\%$) and received written referrals to follow-up with primary care. Gaps: lack of patient-physician follow-up to confirm diagnosis.
Lalla et al, 2015 ³⁶	Randomized control trial of an intervention to improve follow-up with a primary care provider after elevated A1C screening	Baseline exam of patients (N=239) identified 42% with elevated A1C ($\geq 5.7\%$) who were then randomized to receive either a basic (control) or enhanced (test) intervention. Intervention focused on education; no significant differences seen at six-month follow-up. Among all participants, 84% reported follow-up with a physician.
Rosedale et al, 2017 ³⁷	Barriers to primary care follow-up after elevated screening results in a dental setting	Among contacted adults who were referred to PCP for follow-up (N=112), 55% had received the recommended care within three months. Screening letters from the dentist were alternatively viewed as helpful and motivating or burdensome. Most adults appreciated a three-month follow-up call, either to get more information or to alleviate fears. Cost of follow-up care, lack of a regular PCP, fear, and denial were common barriers to follow-up.
Strauss et al, 2014 ³⁸	Pilot test of a point-of-care A1C device in an academic dental clinic	Readings from lab test compared with point-of-care results were statistically different; in two-thirds of cases, the point-of-care values were greater than lab values, resulting in high proportions of false positive readings.

Studies of Patient and Provider Attitudes and Experiences

Several recent studies have examined provider attitudes and experiences with conducting chairside diabetes screenings in dental settings (**Table 6**). Study methods primarily include surveys of dental providers, medical providers, and dental patients about attitudes, experiences, perceived importance, and barriers to chairside diabetes screening. According to these studies, providers and patients generally believe that chairside screenings for diabetes is an important component of patient care. Providers are likely to provide counseling or patient education about the link between oral health and diabetes within their current clinical practice.

Dental providers' attitudes towards diabetes screenings in dental settings

When asked about current practices, comfort, and willingness to implement tests for diabetes screening into patient care, dental provider attitudes were mixed. For example, two studies found that few dentists inquired about A1C levels in patients with diabetes or recorded A1C levels in the EHR. Several studies found that dental providers were not likely to use a glucometer, including one study in which a majority of dental students believed that using a glucometer was outside of their scope of practice. However, two national surveys, one of dentists and one of dental hygienists, found that over half of both provider types were willing to conduct finger-stick tests.

Perceived barriers to chairside diabetes screenings in dental settings

Certain barriers are likely to impact dentist willingness to conduct chairside diabetes screening tests. Several studies have found that patient willingness, cost/reimbursement, time required, and legal issues related to scope of practice are important to dentists as they consider whether to implement medical screenings in dental practice (**Table 6**). Among those issues, one study found that dentists ranked patient willingness, cost, and time as the most important considerations.³⁹ Similarly, a study on patient attitudes toward chairside medical screenings found that the vast majority of patients viewed confidentiality, insurance coverage, and time as important.⁴⁰

It is promising that providers and patients generally agree on the importance of conducting diabetes screenings in dental settings; however, certain barriers to widespread implementation include provider comfort with conducting finger-stick tests, as well as the time and cost required.

Table 6. Chairside Diabetes Screenings in Dental Settings: Studies of Patient and Provider Attitudes and Experiences

Study	Brief description	Findings
Greenberg et al, 2010 ³⁹	National survey of general dentists (n=7,400) about attitudes and willingness regarding chairside medical screenings	More than three-quarters of respondents believed it was important to screen for diabetes in the dental office, and 56% were willing to conduct finger-stick tests to screen their patients for diabetes.
Greenberg et al, 2012 ⁴⁰	Survey of adult patients at an inner-city dental school clinic (n=288) and two private dental practices (n=182) about dentists conducting chairside screenings	All respondents had favorable attitudes toward chairside screening for medical conditions, although private practice patients had less favorable attitudes than dental school clinic patients. Patients viewed chairside screenings as important, and a majority of both groups indicated willingness to undergo finger-stick tests.
Efurd et al, 2012 ⁴¹	Survey of Arkansas dentists and dental hygienists (n=318) about practice behaviors and management of patients with diabetes	Survey of Arkansas providers with low response rate (17%). Limited proportion of providers (11% of dentists and 8% of dental hygienists) reportedly question patients with diabetes about their A1C levels. 51% of respondents were not confident about their ability to screen patients using a point-of-care glucose meter.
Wilder et al, 2014 ⁴²	Survey of North Carolina dentists (n=1350) to identify practices and perceived barriers into clinical practice	Only 8% of dentists recorded blood sugar levels of patients with diabetes, and 4% recorded A1C values. Only 8% were likely to use a glucometer to measure blood glucose. However, 60% were likely to counsel patients on the relationship between oral health and glycemic control.
Anders et al, 2014 ⁴³	Survey of dental students' (n=157) attitudes and barriers towards use of glucometer in dental settings	A majority of students agreed on the importance of educating patients about oral-systemic linkages and diabetes management. However, only 23% agreed that screening for diabetes with a glucometer is within the scope of dental practice.
Greenberg et al, 2015 ¹⁶	National survey of primary care physicians' (n=1,508) attitudes toward medical screening in a dental setting.	Survey of allopathic and osteopathic primary care providers with a response rate of 22%. The majority of respondents felt dental screening for major chronic diseases was valuable, including for cardiovascular disease (61%), hypertension (77%), diabetes (71%), and HIV (64%).
Greenberg et al, 2017 ⁴⁴	National survey of dental hygienists' (DHs) (n=3,133) attitudes towards chairside screenings.	Survey of DHs in the United States with a response rate of 49%. Majority of respondents felt chairside screening for major chronic disease was important, including for hypertension (94%), diabetes (89%), cardiovascular disease (85%), HIV (79%), and hepatitis (78%). 94% also reported they were willing to refer a patient for a medical consultation.

Twelve programs that target diabetes and oral health were identified by an internet search of peer-reviewed literature, reports, conference proceedings, and other publicly available information (Table 7).

Program Settings and Scope

The integrated clinical programs identified by this scan can be broadly categorized as:

- 1) Programs that target diabetes in dental settings
- 2) Programs that target oral health in primary care settings
- 3) Programs with co-located integration of medical and dental services (see section 5)
- 4) Integration of medical and dental insurance benefits (see section 7)

Targeting diabetes in dental settings

The most common clinical component among the identified programs was diabetes testing performed by dental providers. The **Gary and Mary West Senior Dental Center** (San Diego, CA) provides services to elderly patients. Blood pressure and A1C are taken at every dental visit since many patients do not see a primary care provider regularly (key informant interview, August 24, 2017). Patients with elevated screening results are referred for primary care. The Senior Dental Center is located at the Senior Wellness Center in downtown San Diego, where clients have access to nutrition, housing and social services, and care management.

The **ElderSmile** program integrates screenings for diabetes and hypertension in community-based senior centers in Manhattan.⁴⁵ ElderSmile is a clinical program implemented by Columbia University College of Dental Medicine in 2006. This program consists of 51 “prevention centers,” where participants receive oral health education and oral examinations. In 2010, ElderSmile expanded its activities to provide chairside A1C and blood pressure screenings. Patients with elevated screenings results were referred to local primary care facilities.

Table 7. Integrated Programs That Target Diabetes and Oral Health

Program ^a	State	Brief description
Blackstone Valley Community Health Care (BVCHC)	RI	Study to screen dental patients for diabetes risk with oral health screening, periodontal exam, and A1C finger-prick test; bidirectional referrals for high-risk patients
DentaQuest MORE Care (Medical Oral Expanded Care)	CO, PA, SC	Primary and secondary preventive oral health services provided in primary care offices for rural patients with referrals to dentists
Diabetes Healthy Outcomes Program (DHOP) at Hamilton Health Center	PA	Pilot study of diabetes management program to provide multidisciplinary services for uninsured patients with diabetes
ElderSmile	NY	Identification and care provided to seniors at risk for diabetes; blood glucose screening, referrals to PCP, appointment facilitation, and education provided for all patients at risk
Family Health Center of Marshfield, Inc	WI	Bidirectional referrals and EHRs; all patients with diabetes seen in dental setting receive risk assessment, blood glucose screenings, education, and referrals to primary care
Gary and Mary West Senior Dental Center	CA	Senior Dental Center is located within the Senior Wellness Center and provides comprehensive medical and social services for low-income elderly
Neighborcare Health	WA	Bidirectional referrals to increase the percentage of patients with diabetes that receive dental care; oral health procedure training for PCPs
Ravenswood Family Health Center (RFHC)	CA	Bidirectional referrals between medical and dental providers; physicians refer patients with diabetes for an annual dental visit
Salud Family Health Center	CO	Blood glucose screenings performed on all dental patients with diabetes; dental hygienist is embedded in primary care clinic
St. Elizabeth Ann Seton Dental Clinic	WI	Pilot program to provide dental care for patients seen in primary medical clinic with diabetes and other chronic conditions
Terry Reilly Health Services	ID	Diabetes collaborative includes a dental exam; PCPs refer patients with diabetes to a dental clinic and patients receive a microscopy periodontal assessment in the dental setting
United Community and Family Services	CA	Bidirectional referrals between medical and dental providers

^aPrograms listed are limited to clinic-based activities and exclude programs that involve integration of insurance benefits.

Targeting oral health in primary care settings

The **Ravenswood Family Health Center** (RFHC) (East Palo Alto, CA) refers patients with diabetes to receive an annual dental visit as part of the standardized care protocol.⁴⁶ A previous qualitative study of the RFHC identified that the lack of shared EHR between the medical and dental clinics of RFHC limits the ability to track patients.⁴⁶ Currently, referrals are made on paper and faxed between clinics.

In 2015, DentaQuest Institute partnered with the South Carolina Office of Rural Health and Medical University of South Carolina to pilot test a 12-month project to provide preventive dental services in seven rural primary care practices.⁴⁷ The **MORE Care (Medical Oral Expanded Care)** project targets adults with a diagnosis of diabetes, along with children aged 0-12. One key component of this project includes building a network of local dentists to provide care.⁴⁸

St. Elizabeth Ann Seton Dental Clinic (Milwaukee, WI) provides dental care to people without insurance. In 2015, Seton Dental Clinic began a two-year pilot program to address the needs of patients with diabetes (key informant interview, September 18, 2017). Patients seen at a partnering medical clinic—Columbia St. Mary's Family Health Center—are referred to a dental hygienist who screens patients and provides preventive services using mobile dental equipment. Patients who need restorative care are then referred to the dental clinic for treatment. One initial challenge to this program was occupational regulation that prevented the dental hygienist from performing screenings and services without direct supervision of a dentist. However, recent legislative changes in Wisconsin now permit dental hygienists to work independently and bill Medicaid for services provided in a range of community settings, including charitable institutions and nonprofit dental programs.⁴⁹

Terry Reilly Health Services (Boise, ID) refers medical patients with diabetes to an off-site dental clinic. When seen at the dental clinic, patients review microscopy periodontal assessments “to contribute to patients’ engagement in self-therapy measures.”⁵⁰ Completion rates for referrals to the dental clinic were noted to be low, which was hypothesized to be related to the off-site location.

One recent project screened adults for diabetes risk in a dental setting. As part of a research study conducted by the University of Buffalo with the dental clinic at **Blackstone Valley Community Health Center**, adults aged 45 and older were screened for diabetes risk, including a periodontal exam and a chairside A1C test.⁴⁶ Patients with A1C levels greater than or equal to 5.7% were referred for primary care at the health center.

Co-location of primary care and oral health services

Co-location of medical and dental providers was a common feature of public health activities that target integration of medical and dental care for patients with diabetes. Co-location facilitates bidirectional referrals of patients and also supports use of a common EHR between medical and dental providers. Additional details about co-location of services is described in a separate section of this report.

Additional program activities

In addition to the clinical activities, programs were found to frequently incorporate other activities:

- Provision of information (notable efforts to provide patient education)
 - Diabetes Healthy Outcome Program (DHOP) at Hamilton Health Center referred eligible patients to evening informational workshops.
 - ElderSmile providers gave presentations about oral health, hygiene, diabetes, and other chronic conditions to seniors.
 - Gary and Mary West Senior Dental Center provided education about nutrition and oral health to seniors.
 - Terry Reilly Health Services provided patients who were pregnant or had diabetes with the opportunity to review microscopic analysis of their oral bacteria and receive information on how to eliminate bacteria that cause dental decay.

- Provider or dental student training
 - **Family Health Center of Marshfield, Inc.**, dedicated space and facilities in multiple dental clinics to train medical and dental students and provide an integrative model of care.
 - **Terry Reilly Health Services** dental providers train medical providers regarding the importance of oral health in the prevention and treatment of chronic diseases. These trainings have increased buy-in and interest in an integrated model of care.
- Other services
 - **DHOP at Hamilton Health Center** provided patients with a variety of health and wellness services, including vision services and free YMCA memberships.

Other common risk factors targeted

We found that programs that targeted diabetes were also likely to target other common risk factors or conditions, including cardiovascular disease or tobacco use (**Table 8**).

Community Oral Health Programs

The online survey of community health programs indicated that only three of 30 respondents provide active screening for diabetes, with two of the programs having a formal mechanism for dental providers to refer patients with high blood glucose levels to primary care providers. These mechanisms include:

- a written policy that requires a medical consult when the dentist suspects that the patient has diabetes, or
- a computerized notification that the patient requires medical follow-up.

One of the respondents uses a public health hygienist to refer patients for diabetes screening and another program indicated that it employs a dental hygienist in its primary care location to provide dental services to diabetic patients.

Table 8. Other Conditions or Common Risk Factors Targeted by Programs

Other common risk factors	Programs	Example
Cardiovascular disease	Blackstone Valley Community Health Care DHOP at Hamilton Health Center ElderSmile Gary and Mary West Senior Dental Center Neighborcare Health Salud Family Health Center	Cardiovascular risk screening for all adults in the dental setting
Tobacco use	United Community and Family Services	Dental hygienists discuss tobacco use with parents during pediatric visit
Obesity or diet/nutrition	Gary and Mary West Senior Dental Center Salud Family Health Center United Community and Family Services	Nutrition education alongside oral health education
Pregnancy/OB-GYN	Blackstone Valley Community Health Care Family Health Center of Marshfield, Inc Neighborcare Health Ravenswood Family Health Center Salud Family Health Center St. Elizabeth Ann Seton Dental Clinic Terry Reilly Health Services United Community and Family Services	Education and facilitation of dental care, including CHW home visits
HIV	Neighborcare Health	Increase preventive services

State Chronic Disease and Oral Health Programs

In our online survey of state and territorial oral health programs, eight out of 26 respondents that their dental providers perform prediabetes and/or diabetes screening and referrals to primary care providers. However, most often programs are using proxy measures (i.e., risk factors) rather than performing blood draws to screen for A1C. Few states reported diabetes-specific targeted joint programs with the state chronic disease programs. When diabetes was mentioned, it was more likely to be the oral health program's educational efforts in reducing sugar-sweetened beverage consumption in relation with obesity, cardiovascular disease, diabetes, and dental caries.

More recently—and with CDC grant funding to support oral-medical integration in state oral health programs—there has a greater emphasis to creating alliances to address improving the oral health condition for those with prediabetes and diabetes. The two following states are examples where inroads are being made for oral-medical integration directly relating to patients with diabetes.

The state oral health program in Colorado initiated the **Diabetes Oral Health Integration (DOHI)** model, starting pilot implementation in one to two clinics. This model is based on input from experts on the oral health impact of diabetes, combined with efforts of an advisory board that also includes representatives who have worked with mental-physical health integration activities in the state. Moreover, the state oral health program is actively working with other statewide agencies to more fully develop the DOHI. For example, the Oral Health Unit (OHU) has worked with the primary care association to capture process maps as part of DOHI. OHU, in conjunction with the state's chronic disease program, created a shared metric for addressing diabetes performance indicators. Thus, OHU is able to use its current surveillance system to track progress in improvements (i.e., increasing the number of people screened for diabetes in dental settings, cross referrals between medical and dental, and treatment completion rate) concerning oral health for those with diabetes. The OHU is also planning on creating an oral health-diabetes fact sheet for general circulation.

Besides the incorporation of oral health questions into statewide diabetes surveys, the Idaho Oral Health Program recently cosponsored a session about diabetes and oral health screenings at the annual Idaho Physician Assistant Conference as part of its effort with the national Smiles for Life curriculum. The Oral Health Program is also partnering with the chronic disease section to develop and implement a community health program model for training community health workers to target higher risk patients, such as patients with diabetes, and then link these patients to local resources to manage their chronic condition.

State Oral Health Plans

Current state oral health plans from six states address the topic of diabetes: Alaska, Idaho, Iowa, Michigan, Minnesota, and Oregon. Examples from Alaska, Minnesota, and Oregon follow.

The Alaska Oral Health Plan (2012-2016) collaborates with Maternal and Child Health programs and Chronic Disease Prevention and Health Promotion programs to support educational activities that increase awareness of oral health and implications for general health.⁵¹

The Minnesota Oral Health Program includes at least two objectives, with accompanying strategies that address the topic of diabetes.⁵² Within the goal of implementing strategies that reduce oral disease and mitigate risks, there is a strategy to promote use of risk assessment (e.g., for periodontal disease, diabetes, or tobacco use) among medical and dental providers so that the state can determine a baseline for the number of providers who use standardized, evidence-based oral disease risk assessment tools. Second, there is a strategy of promoting inclusion of oral health evaluation in care guidelines for the aging and persons with diabetes and special health care needs, with a goal that calls for the development and promotion of clinical preventive oral health guidelines for use in settings outside the dental office.

The Strategic Plan for Oral Health in Oregon (2014-2020) includes the objective of implementing evidence-based prevention strategies across the lifespan.⁵³ One of the strategies to achieve this objective is to integrate oral health with chronic disease prevention and management by including dental screening and risk assessments in chronic disease programs, including oral health information in prevention materials relating to chronic diseases (e.g., diabetes), and requesting reimbursement for chronic disease prevention activities by dental professionals.

Conclusions

Chairside (point-of-care) screenings for diabetes in dental settings will identify a substantial proportion of adult patients with elevated blood glucose. Recent national data estimate that 14% of Americans aged 20 years or older have diabetes, including one-third of Americans aged 65 or older.⁵⁴ An additional 38% of Americans have prediabetes. Studies examining the prevalence of elevated blood glucose or A1C among dental patients are abundant and indicate that approximately 30-60% of patients screened in dental settings will have abnormal A1C or blood glucose levels, with prevalence varying depending on how patients are chosen for screenings (e.g., prescreening based on risk factors or the American Diabetes Association's Diabetes Risk Test).

Chairside screenings for diabetes in dental settings have broad acceptance. Additional studies demonstrate that chairside screenings for diabetes are widely accepted by dentists, dental hygienists, dental students, and patients.

Expanded oral health teams offer workforce flexibility and increased capacity. Several programs utilized expanded function dental assistants, dental hygienists, dental therapists, and community health workers to expand services beyond traditional dental care.

Co-located medical and dental clinics can implement bidirectional referrals for patients with diabetes. In addition to dental professionals' recognition of oral health concerns in this population, national guidelines recommend that primary care providers refer these patients to dentists for a periodontal exam. Several programs that we identified employ bidirectional referrals between medical and dental providers. However, we found very little specific information about guidelines, protocols, or outcomes associated with these systems of care.

Shared EHR systems facilitate referrals between medical and dental providers. However, published information and our key informants indicate that referral completion rates are low without explicit protocols, even when shared EHRs are in place.

The type of device used for chairside screenings should be chosen carefully in order to minimize the chance of false positives or negatives. One study comparing chairside screenings results with lab testing found high rates of false positives.³⁸ In addition to ethical considerations, this is important to keep in mind since rates of follow-up with primary care physicians tend to be low unless active referrals are implemented.

Challenges

- Point-of-care A1C testing (i.e., chairside finger-stick testing) is not recommended for diagnosis.²⁷ Dental providers should be aware of this and other limitations to chairside screenings; results should be presented to patients accordingly.
- Most programs have low rates of patient follow-up for primary care after elevated screening results in a dental setting. Patients have substantial barriers to follow-up that should be addressed in order for screenings to be useful.
- Shared EHRs facilitate integration by flagging records of at-risk patients, arranging for referrals, and scheduling across disciplines. Several sources identified lack of shared EHR systems as a major limitation.

Recommendations

- 1) Develop professional guidelines and toolkits to target at-risk patients in order to reduce start-up barriers, improve provider confidence, and facilitate standardization.
- 2) Perform needs assessment to identify the at-risk target population, health care provider partners, resources, and program priorities.
- 3) Perform A1C finger-stick testing using a method certified by the NGSP.²⁷
- 4) Include patient reminders that elevated screening results do not always mean they have prediabetes or diabetes; diagnosis confirmation must be performed by a medical provider.²⁷
- 5) Provide patients with screening letters that describe test results—letters can serve as a cue to action and patients can take these to their primary care follow-up.
- 6) Make follow-up calls to patients with abnormal test results—phone calls can collect information about rates of follow-up, remind patients to seek care, and answer questions.