Looking Beyond the Tonsils: Chairside Medical Testing for Non-Communicable Diseases

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Thank you
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To limit dentists and dental hygienists to exclusive care of the oral cavity is based on obsolete information and an outdated and counterproductive model of care. We must look beyond the tonsils.

Medical Screening for Periodontal Disease: The BUG Questions

- Do you have bleeding gums?
- Do you have unstable teeth?
- Do you have receding gums, or do your teeth look longer?

American Academy of Family Physicians (AAFP) report

Redefining Our Role Within the Healing Arts: Oral HCPs as Non-Physician Primary Care Providers

- HCPs from all disciplines share responsibility for health outcomes
- Non-dental HCPs have begun to screen and refer patients with dental diseases, and prevention
- To become valued members of the primary healthcare team, oral HCPs must practice at top-of-licensure to screen patients for life-altering diseases/conditions and refer

Non-Physician Primary Care Provider: “...providers of health care other than physicians, who render some primary care services...may include nurse practitioners, physician assistants and some other health care providers.” (American Academy of Family Practitioners)
Screening for Non-Communicable Diseases (NCDs)

- Cardiovascular disease
- Diabetes
- Hypertension
- Osteoporosis
- Cancer
- Chronic respiratory diseases

Screening for Infectious Diseases

- Human Immunodeficiency Virus (HIV)
- Human Papilloma Virus (HPV)
- Hepatitis C Virus (HCV)
- Herpes Simplex Virus (Oral Pharynx)
- Chlamydia trachomatis (CT) and/or Neisseria gonorrhoeae (NG) (Oral Pharynx)
- Yeast Infection (Candida)

Screening for Other Conditions

- Hypercholesteremia
- Nutritional deficiencies
- Depression
- Overweight/Obesity
- Dermatologic lesions
- Child/Elder abuse
- Opioid dependence
- Poor eye sight

Screening Methods (in the Dental Setting)

- Visual examination (e.g., dermatologic lesions)
- Manual measurements (e.g., waist circumference)
- Questionnaires (e.g., type 2 diabetes)
- Patient interviewing (e.g., depression)
- Salivary diagnostics (e.g., HIV)
- Point-of-Care Testing (Blood) (e.g., HbA1c)
- Online screening tools (e.g., CVD)
- Other?

I screen (using any tool) for the following non-communicable diseases:

- Cardiovascular disease
- Diabetes
- Hypertension
- Osteoporosis
- Chronic respiratory diseases
- Cancer (oral or dermatologic)
- Overweight/obesity
- Child/Elder abuse
- Alcohol or drug abuse
- Eating disorders

Opportunities: Identify people who...

- Have life-threatening, asymptomatic NCDs and are unaware
- Have poorly-managed chronic diseases; e.g., diabetes
- Are unaware they have risk factors for various diseases/conditions: need to be educated on risk factor reduction
- Do not comply with physician recommendations

The Unique Position of OHCPs in Providing Primary Care Services

- Medical Expenditure Panel Survey (MEPS): of 31,262 people:
  - 26% of children and 24.1% of adults had not visited their physician within 1 year.
  - Among these, 34.7% of children and 23.1% of adults had seen their dentist within the same period.
- Data extrapolation: each year 19.5 M people visit dentists’ offices regularly without seeing a physician, despite the fact that the majority who do not see a physician, have health insurance.

Potential of OHCPs to Identify Patients at Risk for CHD Events

- 18% or 330,000 men with 10-year CHD risk of >10%.
- 4% or 72,625 men with 10-year CHD risk of ≥ 20%.
- 14% or 230,000 men with 10-year CHD risk of 10% - 20%.
- 29% had no reported risk factors for CHD.

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Providing Primary Care Services in the Dental Setting is not a New Concept

- 1945 Belding. Blood pressure readings in the dental office. Dental Items of Interest
- 1974 Abbey. Screening for hypertension in the dental office. JADA
- 1974: ADA urged members to participate in National High Blood Pressure Initiative
- 2018: ADA approves CDT code for HbA1c testing chairside (D0411)
- 2019: ADA approves CDT code for blood glucose using glucose meter testing chairside (D0412)

Disease Burden of CVD & Stroke

- 1 death every 40 seconds is attributable to CVD or stroke
- 2/3rds of unexpected cardiac deaths occur without prior recognition of cardiac disease
- ≈ 38% of the people who experience a coronary attack in a given year will die from it

Tools for Screening for CVD

- Framingham CVD risk score (general)
- Reynolds risk scores
- SCORE (Systematic Coronary Risk Evaluation)
- QRISK/JBS3 tools
- Scottsdale Report
- ASCVD

2019 ACC/AHA Recommendations for Assessment of Cardiovascular Risk

- Adults 40 to 75 years of age: routinely assess traditional cardiovascular risk factors and calculate 10-year risk of ASCVD by using the pooled cohort equations (PCE)
- Adults 20 to 39 years of age: assess traditional ASCVD risk factors at least every 4 to 6 years
- Adults at borderline risk (5% to <7.5% 10-year ASCVD risk) or intermediate risk (≥7.5% to <20% 10-year ASCVD risk): use additional risk-enhancing factors to guide decisions about preventive interventions (e.g., statin therapy)
- Adults at intermediate risk (≥7.5% to <20% 10-year ASCVD risk) or selected adults at borderline risk (5% to <7.5% 10-year ASCVD risk), if risk-based decisions for preventive interventions (e.g., statin therapy) remain uncertain, measure coronary artery calcium score to guide clinician-patient risk discussion

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease; https://www.ahajournals.org/doi/10.1161/CIR.0000000000000678; Accessed May 21, 2019

Low Risk: < 5%
Borderline Risk: 7.5-19.9%
High Risk: ≥ 20%

Please Google: ASCVD-Risk-Estimator - ACC

The ASCVD Risk Estimator was devised with Pooled Cohort Equations (PCE) (In 2018 revisions were made to the 2013 original version of the ASCVD.)

CVD Screening Method

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Impact of Therapy

- Patient-friendly — finger stick with sample size of 15 to 40 µL
- Certifications
  - CLIA-waived
  - Meets NCEP guidelines for accuracy and precision
  - FCC and ISO certified wireless communication
- Wireless communication — compatible with end-user interface

Projections of the Prevalence of Diabetes within the Average Dental Practice

- Average general dental practice consists of 2,000 patients; 1,400 adults over the age of 18
  - 189 probably have diabetes
  - 51 probably do not know they have diabetes
  - 526 probably are prediabetic
  - Does not include young children and adolescents

Disease Burden of Type 2 Diabetes and Prediabetes (NHANES 2013-2016)

- > 125 M people in the US live with diabetes or prediabetes
- 35.4 M (13.5%) of total US population has diabetes
- 9.4 M Undiagnosed Diabetes (4.8% of total US population)
- 23 M Diagnosed Diabetes (9.8% of total US population)

- 20.9% adults were treated and controlled (FG < 126 mg/dL)
- 45.2% were treated but uncontrolled
- 9.2% were aware they had diabetes but were not treated
- 24.7% were undiagnosed and not treated

Why should OHCPs check blood sugar levels?

- To identify patients who...
  - ...may have undiagnosed diabetes or prediabetes
  - ...have poorly controlled diabetes that may influence:
    - Treatment plans
    - Recare intervals
  - ...have periodontal disease and who may also be at risk for diabetes
  - ...have changes in glycemic control that may predict decline in periodontal health
  - ...are at risk for hypoglycemic event during a long dental procedure

Use of Point-of-Care Device to Screen for CVD

- Measures total cholesterol, HDL cholesterol, triglycerides, and glucose
- Calculates LDL, TC/HDL ratio, LDL/HDL ratio and non-HDL cholesterol
- 90 seconds for test results
- Handheld, compact, light weight, portable, battery-powered, and easy to use, transport and store

Disease Burden of Type 2 Diabetes and Prediabetes (NHANES 2013-2016)

- 91.8 M Prediabetes
  - 37.6% Total US Population
- 35.4 M Diabetes
  - 13.5% Total US Population
- 9.4 M Undiagnosed Diabetes
  - 3.7% Total US Population
- 23 M Diagnosed Diabetes
  - 9.8% Total US Population

Heart Disease and Stroke Statistics—2019 Update: A Report From the American Heart Association; Circulation; https://www.ahajournals.org/doi/10.1161/CIR.0000000000000659

- Disease Burden of Type 2 Diabetes and Prediabetes (NHANES 2013-2016)
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Criteria for Testing for Type 2 Diabetes or Prediabetes in Asymptomatic Adults

- Testing should be considered in overweight or obese (BMI ≥ 25 kg/m² or ≥ 23 kg/m² in Asian Americans) adults who have one or more of the following risk factors:
  - First-degree relative with diabetes
  - High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
  - History of CVD
  - Hypertension (≥140/90 mmHg or on therapy for hypertension)
  - HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)
• Women with Polycystic Ovary Syndrome (PCOS)
  • Physical inactivity
  • Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

• Race/ethnicity (e.g., Native American, African American, Latino, Asian American, Pacific Islander)
• Other clinical conditions associated with insulin resistance (e.g., acanthosis nigricans, hypertension, dyslipidemia, Polycystic Ovary Syndrome (PCOS), or small-for-gestational-age birth weight)

Diabetic Control Chart

<table>
<thead>
<tr>
<th>HbA1c Percentage</th>
<th>Excellent</th>
<th>Good</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 - 6.0</td>
<td>7.0 - 8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0 - 11.0</td>
<td>12.0 - 15.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0 - 18.0</td>
<td>15.0 - 19.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.0 - 30.0</td>
<td>21.0 - 25.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If screening is normal, repeat at a minimum of 3 year intervals, or more frequently in BMI is increasing

Diagnostic Criteria for Diabetes and Prediabetes

<table>
<thead>
<tr>
<th>Diabetes</th>
<th>FPG</th>
<th>OGT</th>
<th>HbA1c (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 126 mg/dL</td>
<td>≥ 200 mg/dL</td>
<td>≥ 6.5% (48 mmol/mol)</td>
<td></td>
</tr>
<tr>
<td>(7.0 mmol/L)</td>
<td>(11.1 mmol/L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-125 mg/dL</td>
<td>140-199 mg/dL</td>
<td>5.7-6.4% (39-47 mmol/mol)</td>
<td></td>
</tr>
<tr>
<td>IFG</td>
<td>IGT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Risk-Based Screening for Type 2 Diabetes and Prediabetes in Asymptomatic Children and Adolescents

• A1c ≥ 5.7% (39 mmol/mol), IGT, or IFG on previous testing
• Women who were diagnosed with GDM (should have lifelong testing at least every 3 years)
• For all other patients, testing should begin at age 45
• If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending upon initial results (e.g., those with prediabetes should be tested yearly) and risk status

Goals for Glycemic Control in Patients with Diabetes

• Maintain glycemic status as close to the normal range as safely possible
• Monitor HbA1c soon after Dx of diabetes to reduce macrovascular disease
• 1 percentage point ↓ in HbA1c ≈ 35% less risk for microvascular complications of diabetes
• HbA1c ≤ 7% reduces microvascular and neuropathic complications of diabetes
• Only about 37% of people with type 2 diabetes attain HbA1c < 7%

Measurement of Long Term Control of Blood Sugar – HbA1C

• Glycated hemoglobin
• Measure of the cumulative blood sugar level over patients’ recent history (= 3 months)
• Reductions in HbA1c reduces risk for complications of diabetes

• Perform HbA1c test 3/year in patients who are meeting treatment goals (and who have stable glycemic control)
• Perform the HbA1c test 4/year in patients whose therapy has changed or who are not meeting glycemic goals
New CDT Code: D0411: HbA1c (In-Office Point-of-Care Testing POCT)
- Effective January 1, 2018
- Analyses percentage of glycosylated hemoglobin; snapshot of glycemic control (over about 3 months)

- Effective January 1, 2019
- Provides immediate findings of a patient's blood glucose level at time of sample collection
- Added to plans that cover D0411

Excellent: < 5.7
Good: 5.7 – 6.4
Poor: ≥ 6.5

PTS Diagnostics
HemoCue
Siemens
Abbott

Using RBG of ≥100 mg/dL as the Cut Point for Referral for Formal Diabetes Testing
- Asymptomatic random blood glucose (RBG) value of ≥100mg/dL are a strong indicator of diabetes risk associated with undiagnosed dysglycemia.
- A single random blood glucose (RBG) ≥100mg/dL is more strongly associated with undiagnosed diabetes than traditional diabetes risk factors (i.e., ADA, USPSTF).
- Modest increases in random RBG provide early indicator of dysglycemia well before values meet/exceed diabetes diagnostic threshold of 200 mg/dL.

Patient Candidates for CDT codes DO411 and DO412: People who have/are:
- At risk for diabetes
- Gingivitis or periodontitis
- Obese or overweight
- High risk ethnic background (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- Sedentary lifestyle
- Family hx of diabetes
- Poor response to treatment
- Delayed wound healing
- Symptoms of diabetes
- Immunocompromised

What is the greatest challenge to implementing medical screening, with point-of-care screening? (chose one)
- Reimbursement
- Scope of practice/turf wars
- Privacy and confidentiality issues
- Legal liabilities
- Responsibility for follow-through
- Time and costs
- Acceptance of patients
- Lack of education and training

Barriers to Implementation of the Primary Care Provider Model in Dentistry
- Acceptance of patients, dentists, dental hygienists, physicians, insurers, authorities, associations
- Scope of practice issues
- Lack of education (knowledge) and training:
  - How to perform POCT
  - How to educate patients
  - How to convey a positive test result, or counsel patients
  - How to make appropriate referrals
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• Reimbursement
• Segregation of financing and medical-dental records
• Lack of demand, particularly employer demand
• Privacy & confidentiality issues
• Legal liabilities
• Responsibility for follow-through after referral, patient tracking

How likely are you to implement medical screening, even if it is only screening for one disease?
• Can't wait to start
• Likely
• Undecided
• Not interested

• Costs: training, equipment and materials, certification
• Time constraints; operatory, personnel training, paperwork
• Turf wars (i.e., medicine vs dentistry, insurance companies with both medical and dental benefits)
• Low index of suspicion
• Lack of evidence of efficacy and cost effectiveness

How competent are you in performing screening by utilizing point-of-care testing devices?
• Very confident
• Somewhat competent
• Not competent

Acceptance of Medical Screening in Dental Setting

• Physicians and nurses
  • Chairside medical testing is valuable and worthwhile
  • Majority willing to accept referrals from dentists
  • Important: Patient acceptance, OHCP training
  • Insurance companies
  • Support incorporating preventive screening into dentistry practice as an ideal model for integrated delivery of dental care
  • Reluctant to translate into actual reimbursement
  • Although the ADA provides CDT codes for screening, some services are not remunerable
  • Medical testing will be offered, if and when, employers highly value it or when it becomes a standard of care

What do you think?

What education and training do you need to be competent, or more competent in medical screening?
Open-ended answers