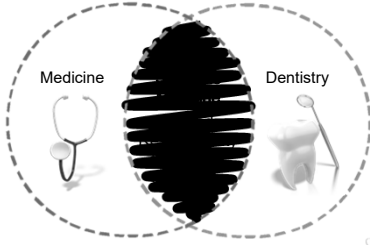


Looking Beyond the Tonsils: Chairside Medical Testing for Non-Communicable Diseases
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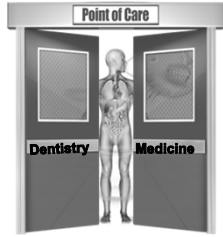
Looking Beyond the Tonsils: Chairside Testing for Non-Communicable Diseases

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Medicine Dentistry





- Holistic care; whether entry through medicine or dentistry
- Improves communication with other HCPs
- Decreases fragmented care; facilitates continuity of care
- Increases efficiency and eventually cost of care




SUNSTAR has provided an unrestricted educational grant to Viva Learning to underwrite my speaking honorarium. I serve on the scientific advisory board of SUNSTAR, but have no conflict of interest.


Thank you
SUNSTAR



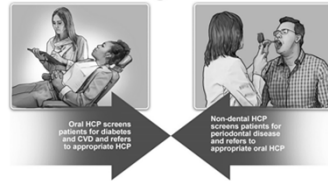

Redefining Our Role Within the Healing Arts: Oral HCPs as Non-Physician Primary Care Providers



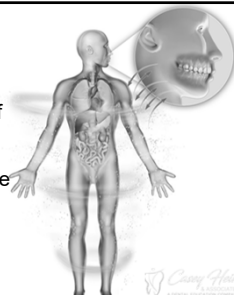


- HCPs from all disciplines share responsibility for health outcomes
- Non-dental HCPs have begun to screen and refer patients with dental diseases, and prevention
- To become valued members of the primary healthcare team, oral HCPs must practice at top-of-their-licensure to screen patients for life-altering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




Bi-Lateral Point of Care Screening & Referral

To limit dentists and dental hygienists to exclusive care of the oral cavity is based on obsolete information and an outdated and counterproductive model of care.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.







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)





Medical Screening for Periodontal Disease: The BUG Questions

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



Screening for Non-Communicable Diseases (NCDs)

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

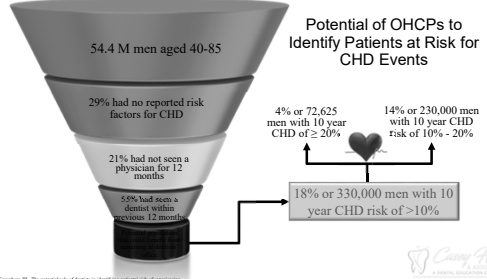



Screening Methods (in the Dental Setting)

- 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?

Potential of OHCPs to Identify Patients at Risk for CHD Events



54.4 M men aged 40-85

29% had no reported risk factors for CHD


21% had not seen a physician for 12 months

4% or 72,625 men with 10 year CHD of ≥ 20%

14% or 230,000 men with 10 year CHD risk of 10% - 20%

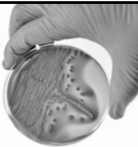

18% or 330,000 men with 10 year CHD risk of >10%

53% had seen a dentist within previous 12 months




Screening for Infectious Diseases

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



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



Screening for Other Conditions

- Hypercholesteremia
- Nutritional deficiencies
- Depression
- Overweight/Obesity
- Dermatologic lesions
- Child/Elder abuse
- Opioid dependence
- Poor eye sight
- Potential for adverse drug interactions
- Sleep Apnea
- Eating Disorders
- Up-to-date vaccinations and screening recommended for various life stages
- Others ?

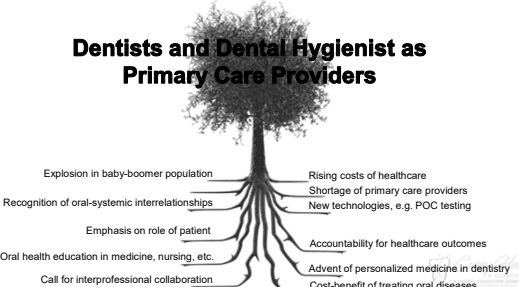



The Unique Position of OHCPs in Providing Primary Care Services


- 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 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


Dentists and Dental Hygienist as Primary Care Providers




- Explosion in baby-boomer population
- Recognition of oral-systemic interrelationships
- Emphasis on role of patient
- Oral health education in medicine, nursing, etc.
- Call for interprofessional collaboration
- Rising costs of healthcare
- Shortage of primary care providers
- New technologies, e.g. POC testing
- Accountability for healthcare outcomes
- Advent of personalized medicine in dentistry
- Cost-benefit of treating oral diseases



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




Tools for Screening for CVD

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





- Adults 20 to 39 years of age and those 40 to 59 years of age who have <7.5% 10-year ASCVD risk: may consider estimating lifetime or 30-year ASCVD risk


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




- 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)




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



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.)





Disease Burden of CVD & Stroke

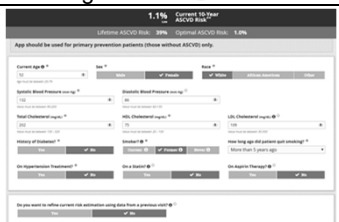
- 1 death every 40 seconds is attributable to CVD or stroke
- 2/3rds of unexpected cardiac deaths occur without prior recognition of cardiac disease
- ≈ 38% of the people who experience a coronary attack in a given year will die from it



- 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

CVD Screening Method



ASCVD Risk Estimator Plus

Impact of Therapy

AMERICAN COLLEGE OF CARDIOLOGY ASCVD Risk Estimator Plus

1.1% Current 10-year ASCVD Risk
30% Lifetime ASCVD Risk
1.6% Optimal ASCVD Risk

Project Risk Reduction by Therapy

1.0% with BP Medication

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- 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
- Training video: <https://youtu.be/fFZEH90A-E>

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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

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Treatment Advice

AMERICAN COLLEGE OF CARDIOLOGY ASCVD Risk Estimator Plus

LDL-C Management (for this Patient)

Supporting Guideline Recommendations

- Blood Pressure Management (for this Patient)
- Tobacco Cessation (for this Patient)
- Diabetes Mellitus Management (General)
- Lifestyle Recommendations (General)
- Aspirin Use Recommendations (for this Patient)
- Therapy Safety Information (General)

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

Category	Population Size	Total US Population
> 125 M people in the US live with diabetes or prediabetes	91.8 M	37.6%
35.4 M Diabetes	13.5%	
9.4 M Undiagnosed Diabetes	3.7%	
23 M Diagnosed Diabetes	9.8%	

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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 glycoemic control that may predict decline in periodontal health
- ...are at risk for hypoglycemic event during a long dental procedure

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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

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

- 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

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Criteria for Testing for Type 2 Diabetes or Prediabetes in Asymptomatic Adults

American Diabetes Association

- 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)

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American Diabetes Association.

- Women with Polycystic Ovary Syndrome (PCOS)
- Physical inactivity
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

American Diabetes Association.

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

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

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

Diabetes Control Chart

	Excellent	Good	Poor
HbA1c Percentage	4.0 5.0 6.0	7.0 8.0	9.0 10.0 11.0 12.0 13.0 14.0
Mean Blood mg/dL	50 80 115	150 180	215 250 280 315 350 380
Glucose mmol/L	2.0 4.7 6.3	8.2 10.0	11.9 13.7 15.6 17.4 19.3 21.1

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

American Diabetes Association.

- A1c $\geq 5.7\%$ (39 mmol/mol), IGT, or IFG on previous testing
- Women who were diagnosed with GDM (should have lifelong testing at last 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

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

Diagnostic Criteria for Diabetes and Prediabetes

American Diabetes Association.

	FPG	OGTT	HbA1c (%)
Diabetes	≥ 126 mg/dL (7.0 mmol/L)	≥ 200 mg/dL (11.1 mmol/dL)	$\geq 6.5\%$ (48 mmol/mol)
Prediabetes	100-125 mg/dL (5.6-6.9 mmol/L) IFG	140-199 mg/dL (7.8-11.0 mmol/L) IGT	5.7-6.4% (39-47 mmol/mol)

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

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 \downarrow in HbA1c \approx 35% less risk for microvascular complications of diabetes
- HbA1c $\leq 7\%$ reduces microvascular and neuropathic complications of diabetes
- Only about 37% of people with type 2 diabetes attain HbA1c $< 7\%$

Kozak SE, et al. Diabetes Care 2004; Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. N Engl J Med 2005; 352:854-65

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

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

American Diabetes Association.

- Testing should be considered for individuals after the onset of puberty or after 10 years old, whichever comes first, and who are overweight ($\geq 85\%$ percentile) or obese ($\geq 95\%$ percentile), and who have one or more additional risk factors:
 - Maternal history of diabetes or GDM during the child's gestation
 - Family history of type 2 diabetes in first- or second-degree relative

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

Measurement of Long Term Control of Blood Sugar – HbA1C

- Glycated hemoglobin
- Measure of the cumulative blood sugar level over patients' recent history (\approx 3 months)
- Reductions in HbA1c reduces risk for complications of diabetes

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

- Perform HbA1c test 2/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

American Diabetes Association Position Statement: Standards in Medical Care in Diabetes - 2019, Diabetes Care 2019

New CDT Code: D0411: HbA1c In-Office Point-of-Care Testing (POCT)

- Effective January 1, 2018
- Analyzes percentage of glycosylated hemoglobin; snapshot of glycemic control (over about 3 months)

Excellent	Good	Poor
< 5.7	5.7 – 6.4	6.5 or higher

PTS Diagnostics HemoCue Abbott Siemens

New CDT Code: D0412: Blood Glucose Level Test-in-Office using a Glucose Meter (POCT)

- 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

Hypoglycemia ≤ 70 mg/dl Likely Acceptable 80 – 180 mg/dl Hyperglycemia ≥ 200 mg/dl

We look beyond the tonsils!

Today we know that many diseases and conditions undermine the health of your mouth, and poor oral health may seriously impact your overall health. Because oral and overall health go hand-in-hand, public health authorities urge all health care professionals, including dentists and dental hygienists, to start screening their patients for cardiovascular disease, diabetes, and a number of infectious diseases such as HIV, HPV, and HCV, on a routine basis. To answer this call-to-action, our office now offers testing for these diseases. If you have not been screened for these diseases, please let us know if you'd like to take advantage of these services.

A Few Other Things Re: POCT for Diabetes

- Does not require Oral HCP to make a diagnosis
- Individual states have differences in scope-of-practice on POCT for diabetes
- CLIA and CMS: two-year Certificate of Waiver (COW) to dental offices that perform procedure
 - \$150 fee for waiver
 - COW holder is subject to on-site inspections for CMS

Using RBG of ≥ 100 mg/dL as the Cut Point for Referral for Formal Diabetes Testing

- Asymptomatic random blood glucose (RBG) value of ≥ 100 mg/dL are a strong indicator of diabetes risk –associated with undiagnosed dysglycemia.
 - Brown EB, et al. Doc. | Just Ask: Interpreting Random Blood Glucose Values in Patients with Unknown Glycemic Status. J Gen Intern Med 2017
- A single random blood glucose (RBG) ≥ 100 mg/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.
 - Brown EB, et al. Performance of a Random Glucose Case-Finding Strategy to Detect Undiagnosed Diabetes. Am J Prev Med 2017

What is the greatest challenge to implementing medical screening, with point-of-care screening? (choose 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

- What do we do with a positive test result?
 - Inform patient
 - Recommend following through with physician for definitive DX
 - Patient release of record
 - Referrals must be documented and tracked
 - How might results influence current and future TX plans?
 - Does patient's dental insurance provide coverage for additional prophylaxis?

Patient Candidates for CDT codes D0411 and D0412: 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 life style
- Family HX of diabetes
- Poor response to treatment
- Delayed wound healing
- Symptoms of diabetes
- Immunocompromised

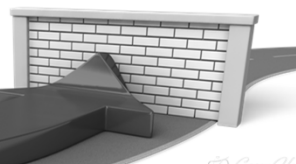
Barriers to Implementation of the Primary Care Provider Model in Dentistry

- 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

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

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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



Raggl, K. et al. Rapid 100 Testing in Dental Practices. Am J Pub Health. 2015
 Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting. J Pub Health Dent 2015
 Finkelman-Wolner, B. et al. Incentive versus no-incentive of preventive services in the dental setting. Health Care Qual Improve. 2011. Nov 17th March 2014

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- 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 dental practice as an ideal model for integrated delivery of health care
 - Reluctant to translate into actual reimbursement
 - Although the ADA provides CDT codes for smoking cessation counseling, etc., some services are not reimbursable
 - Medical testing will be offered, if and when, employers highly value it or when it becomes a standard of care



Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting. J Pub Health Dent 2015
 Finkelman-Wolner, B. et al. Incentive versus no-incentive of preventive services in the dental setting. Health Care Quality Improve. 2011. Nov 17th March 2014


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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

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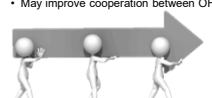
- Costs: training, equipment and materials, certification
- Time constraints; operatory, personnel training, paper work
- Turf wars (i.e., medicine vs dentistry, insurance companies with both medical and dental benefits)
- Low index of suspicion
- Lack of evidence of efficacy and cost effectiveness



Raggl, K. et al. Rapid 100 Testing in Dental Practices. Am J Pub Health. 2015
 Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting. J Pub Health Dent 2015
 Finkelman-Wolner, B. et al. Incentive versus no-incentive of preventive services in the dental setting. Health Care Quality Improve. 2011. Nov 17th March 2014

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- Authorities (Sweden) (i.e., professional associations, licensing agencies, educational institutions)
 - Dentistry – not the only context but preferable context to perform medical screening
 - Dental hygienists and dental nurses are most relevant professions to perform medical screening
 - OHCPs must have relevant competence
 - National guidelines to perform screening needed
 - Medical screening requires responsibility to inform and direct patient, but not necessarily follow-up
 - May improve cooperation between OHCPs and other HCPs



Gombay, B. et al. Medical screening in dental settings: a qualitative study of the views of authorities and organizations. Health Care Research News. 2017

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How competent are you in performing screening by utilizing point-of-care testing devices?

- Very confident
- Somewhat competent
- Not competent

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Acceptance of Medical Screening in Dental Setting

- Patients
 - Enhances opinion of OHCPs' knowledge, professionalism, compassion
 - But, OHCPs need appropriate training
 - May be willing to pay (\$20)
- Dentists
 - Majority willing; but, difficult to gauge until insurance and policy stakeholders change
 - Not widely practiced/implemented



Raggl, K. et al. Rapid 100 Testing in Dental Practices. Am J Pub Health. 2015
 Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting: are dentists willing to incorporate screening procedures into dental practice? J Dent Res Dent Pract 2013
 Raggl, K. et al. The financial cost of dental screening: a qualitative analysis of the perceptions of dental hygienists. Am J Dent. 2014
 Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting. J Pub Health Dent 2015
 Gombay, B. et al. Physicians' attitudes toward medical screening in a dental setting. Health Care Res News. 2017

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What do you think?



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

Open-ended answers

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