Screening for diabetes

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What are your risks?

All Risk Weight Chart

1. I am a woman who has had a baby
   who weighed 9 pounds or more at
   birth. Yes 1  90  110

2. I have a father or mother with diabetes. Yes 1  100  120

3. I have a sibling with diabetes. Yes 1  100  120

4. My ethnic or racial background places me at risk. Yes 1  100  120

5. I am under 45 years of age and my blood pressure is over 130/85. Yes 1  100  120

6. I am between 45 and 64 years of age Yes 1  100  120

7. I am 65 years of age or older. Yes 1  100  120

Add all numbers and divide by 100. If you have a result of 100 or above, consult a healthcare provider.
Diabetes Mellitus

- A problem with glucose regulation
- Type 1: pancreas cannot produce insulin so total insulin deficiency, diagnosed primarily in children
- Type 2: impaired glucose utilization although pancreas still works, diagnosed primarily in adults although increased recognition in overweight or sedentary children

Screening for Type 2 DM: Why Screen?

- Uncontrolled DM may lead to complications including retinopathy, neuropathy, nephropathy, and cardiovascular disease
- Early detection and effective treatment can reduce the risk of having these complications

Screening for type 2 diabetes mellitus

- Current recommendations?
- Who should be screened?
- How often?
- Follow-up?
Current Recommendations for Screening

- ADA Clinical Practice Guidelines 2006 (these are updated annually and made available at http://www.diabetes.org)
- Screening is primarily for type 2 DM
- Diagnostic testing versus Screening
  - If sx are present, a diagnostic test should be performed
- Community screening, even in high risk populations, is not generally recommended

How often should screening be performed and Who should be screened?

- Expert opinion (not evidence based)
  - Adults: Screening should be considered for high risk individuals at 45 years old, particularly if BMI ≥ 25 kg/m² at 3 year intervals
  - Children: If BMI >85th percentile for age/sex, wt for ht >85th percentile, or wt >120% ideal for ht. or high risk (family hx, certain race/ethnicity, signs of insulin resistance – htn, hyperlipidemia, polycystic ovary syndrome), perform screening every 2 years starting at 10 years old or onset of puberty, if earlier

Risk factors for Type 2 DM

- Increasing age (>45 years old)
- Obesity (BMI ≥ 25 kg/m²)
- Lack of physical activity
- Family history of diabetes (parents or siblings)
- History of gestational (pregnancy) diabetes
- African-American, Hispanic American, Native-American, Asian-American, Pacific Islander
- Hypertension (> 140/90 mm Hg in adults)
- HDL < 35 or triglyceride > 250
- IFG or IGT (impaired glucose tolerance)
- Polycystic ovary syndrome
- History of vascular disease
Recommendation

- Risk assessment followed by screening to target high risk populations
- Focuses the screening on those at high risk
- Motivated healthy that often participate in screenings will receive reassurance and counselling
- Efficient use of patient and health care system time and resources

Screening Tests for Type 2 DM

- The ADA risk questionnaire can be used to help identify risks (although it has not been validated in individuals <20 years or in Asian Americans or Pacific Islanders)
- The fasting plasma glucose test (positive if >125 mg/dL) is the preferred screening test although a 75 gm oral glucose tolerance test is suitable
- Portable glucose meters (e.g. Accuchek Advantage) test capillary blood glucose from a whole blood sample. Some meters convert the result to that of a plasma sample (which is 10-15% greater than whole blood) so that it is equivalent to a venous blood sample tested in a lab
Screening Scenario #1

- Betty is a 64 year old female patient of your pharmacy. She is overweight, has painful arthritis in her knees and hips, has hypertension, hyperlipidemia, and a family history of DM. Her ADA risk score is 12. Her FPG is 142 mg/dL.

Screening Scenario #2

- Fred is a 47 year old male patient of your pharmacy. He weighs 194 lbs, is 6'4", runs 2 miles daily, lifts weights 3 days a week, has hyperlipidemia (takes atorvastatin), weighed 10.5 pounds at birth, and has a father with type 2 DM. What is his ADA risk score?

Screening Scenario #3

- You are a 23 year old pharmacy intern who is putting together a DM screening program for the pharmacy. You are physically active, ideal weight, but your ADA risk score is 2. What does this mean?
Follow-up for Screening

- Provide immediate counseling on results with clear instructions for patient follow-up.
- Assure patient understands the need to consult with primary care provider to convey test results or seek medical evaluation, if warranted.
- If possible, activate a follow-up system to assure continuity of information (e.g., with the patient’s permission, fax the results to the PCP) – in the past, the ADA outlined a records maintenance system for screening programs.
- Close with counseling on healthy lifestyle changes to promote risk reduction in those who screened negative and risk management in those who screened positive (e.g., diet and appropriate exercise).

What are the symptoms of DM?

- Significant hyperglycemia is associated with polyuria, polydipsia, weight loss, polyphagia, and blurred vision.
- If the hyperglycemia develops gradually or is not significant, these symptoms may go unnoticed so symptoms alone are not used for screening.
- If a patient has these symptoms, immediate follow-up is warranted.

Conducting a community screening program for Type 2 DM

- Identify high risk individuals (target populations or use ADA risk assessment).
- Screen (interview) for presence of symptoms (refer any patients with symptoms for diagnostic evaluation).
- Consider screening with referral for those with high risk.
- Provide counseling to assure the patient understands what diabetes is, the risks, and when to follow-up with their primary care provider.
Counseling: Risk or Concern for DM

- Encourage DM risk reduction
  - Increased physical activity (supervised, if needed) “Get moving”
  - Meal planning - "watch what you eat"
    - Balance calories throughout the day (e.g. 3 meals a day with occasional snacks)
    - Limit dietary excesses such as fat, carbohydrates, alcohol ("moderation!")

Counseling: If DM present

- “Get moving and watch what you eat”

Get Moving...

- Assess physical activity and suggest moderate increase if person is able
- Refer to medical evaluation if any physical limitations, excessive blood glucose levels, heart disease, or concern about health with exercise
- Get creative! The right activity is one that is fun and easy to do (physically, financially, and from a convenience standpoint)
  - One notch up from the individual's usual level of activity is a good place to start
Watch what you eat

- Perform nutrition screening and refer to a dietician if needed
- Encourage meal planning to promote healthy eating and to reduce dietary excesses or binges
- Initiate basic education on carbohydrate intake such as
  - 15 gm=1 serving, 3-4 servings per meal (adults)
  - how to read a food label to look for carbs/servings
  - Limiting simple sugars as an easy way to reduce carbs

Monitor Blood Sugar

- Why?
  - To identify what foods, activities, feelings, etc. affect it
  - To monitor if the changes you are making (exercise, eating, medications) matter
- How?
  - Assure test strips are in date
  - Assure the meter is clean and in good repair
  - Set the date and time, if not done, for the meter
  - Perform a quality control test of the meter
  - Prick finger or alternate site (if ok for meter)
  - Apply drop of blood to test strip

Performance of a glucose test

Refer to the Instruction Booklet for the specific meter for details

- Ask the patient to wash hands in warm, soapy water, rinsing well
- With the patient sitting comfortably in a position easy for you to obtain a drop of blood...
  - explain the procedure involved in the test
  - ask the patient to let hand dangle at side (i.e. below heart) in order to promote peripheral blood flow
  - turn meter on
  - insert strip when indicated by meter
  - prick finger (or the side of the tip of finger, preferably on non-dominant hand)
  - apply drop of blood to test strip
  - await result (30-45 seconds), document, and interpret result while providing patient counseling
Infection Control

- Treat all body fluids (e.g. blood) as potentially infectious taking precautions to protect yourself and your patients from inadvertent exposure to infectious fluids
- Refer to the Infection Control Procedures at your place of employment
- Wash hands prior to testing
- Wear protective surgical gloves during all aspects of blood testing (both hands)
- Dispose of sharps in a biomedical sharps container
- Dispose of blood or blood tinged supplies in bio-hazard bag or sharps container (e.g. test strips, cotton gauze, band aids)
- Apply new pair of gloves prior to each test
- Wash hands following testing