Cardiovascular Risk Reduction in People with Type 2 Diabetes

To access the audio portion:

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Note: The webinar will be archived and hosted on www.GuidelineAdvantage.org within one week
Cardiovascular Risk Reduction in People with Type 2 Diabetes

Jay Shubrook D.O. FACOFP, FAAFP
Director, Diabetes Fellowship
Associate Professor of Family Medicine
The Diabetes Institute at Ohio University
Ohio University Heritage College of Osteopathic Medicine
August 21, 2012
Program Model

1. Providers can use several different technology platforms.

2. Technology vendor collect clinical data for The Guideline Advantage.

3. Data are processed, analyzed and sent back to the providers or medical practices.

4. Performance is measured, Professionals can set measurable goals and chart improvements in performance.
Benefits of Participation

• Flexible data extraction model working directly with platform

• Accepts data currently collected for other programs – “give us what you’ve got”

• Provides quarterly reports on data quality and performance feedback on treatment to guidelines

• Includes access to valuable ACS/ADA/AHA resources, including professional education and patient education materials

Future opportunities

• Allows physicians to participate in key research that will change healthcare

• Offers national recognition for the work physicians do each day
Find out how your practice can participate in The Guideline Advantage and REGISTER TODAY.

About The Guideline Advantage

Heart disease, cancer, stroke and diabetes collectively account for more than 1.5 million U.S. deaths each year. Compounding the tragedy is the knowledge that so many of those deaths could be avoided through prevention or disease management. That’s why the American Cancer Society, American Diabetes Association and American Heart Association joined forces to address the challenge, focusing on the outpatient setting, where 83 percent of Americans visit physicians each year. The result is a program designed for outpatient practices ranging from general health clinics to specialized physician practices. Offered at no cost to healthcare providers, The Guideline Advantage supports consistent use of evidence-based guidelines for prevention and disease management through existing healthcare technology.

The program utilizes data collected through existing electronic health record (EHR) or health technology platforms to report on adherence to established guidelines. The Guideline Advantage provides quarterly feedback reports, including both state and national benchmarks, as well as quality improvement resources and formal recognition for active participation in the program.

www.GuidelineAdvantage.org
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Overview

- Review Important CV diabetes outcomes
- Discuss impact of DM on CV risk
  - Review available risk engines
- Discuss strategies to reduce CV risk
  - Lifestyle
  - Medical
  - Surgical
- Prioritize treatment protocols
Diabetes Is a CV Risk Factor


Mortality rate per 1000

Years of follow-up

CV=cardiovascular

Diabetes vs. No diabetes

Men

Women

Diabetes

No diabetes

2x

4–5x
Type 2 Diabetes and Prior Myocardial Infarction Predict Mortality Equally

Myocardial Infarction Onset Study
Adjusted Total Mortality After MI

San Antonio/Finland Heart Study
Adjusted CV Mortality

High BP, High Cholesterol, and Smoking Are Additive for CV Risk in Type 2 Diabetes

Results From Multiple Risk Factor Intervention Trial (MRFIT)

Adjusted CV death rate per 10,000 person-years

0 20 40 60 80 100 120

Number of risk factors

0 1 2 All 3

No diabetes

Diabetes

68% of people with DM die with CV disease
- Heart disease risk 2-4 times
- Women > men

16% of people with DM die with CVA
- Stroke risk 2-4
45 year old male who has had DM for 8 years and is not well controlled. HgA1c 9.8%, bp 146/92, total cholesterol 240 mg/dl, HDL 25 mg/dl, trigs 436, LDL 130.

He smokes only when he drinks.

Where do you start?
CV Risk Calculators

* Framingham risk calculator

* UKPDS risk calculator
  * http://www.dtu.ox.ac.uk/riskengine/index.php
    * Duration of DM, HgA1c, ethnicity, Afib. Gives CAD and CVA risk, in mmol

* ARIC CHD Calculator
    * Adds race and if have DM
UKPDS Risk Engine v2.0

Input

Age Now: 62 years
Duration of Diabetes: 11 years
HbA1c: 8.3%
Systolic BP: 145 mmHg
Total Cholesterol: 5.8 mmol/l
HDL Cholesterol: 1.1 mmol/l
Sex: Male
Atrial Fibrillation: No
Ethnicity: White
Smoking: Non-Smoker

Output

10 year risk

- CHD: 33.3%
- Fatal CHD: 24.4%
- Stroke: 11.6%
- Fatal Stroke: 1.8%

Adjusted for regression dilution
* 10 year Framingham Risk
  * 28% non-smoker 9%
* UKPDS
  * 37% women 21.9%
* ARIC
  * 24.5% AA non-smoker 13.3%
### Impact of Baseline Smoking on MI in Type 2 Diabetes: UKPDS

<table>
<thead>
<tr>
<th>Smoking Status</th>
<th>Hazard Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Smoked</td>
<td>1</td>
</tr>
<tr>
<td>Ex-Smoker</td>
<td>1.08 (0.75 - 1.54)</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>1.58 (1.11 - 2.25)</td>
</tr>
</tbody>
</table>

Smoking Cessation

- Smoking with DM 18%-25%
  - Physician advise cessation 83%
  - Recommended for everyone
    - Use your 5 A’s (Ask, Assess, Advise, Assist, Arrange)
    - Know your patients readiness to change
- Case example Risk Reduction
  - Framingham Risk 28%
  - No smoking 9%
- Use a basal-bolus approach
  - Basal coverage (patch) and bolus for cravings (gum, lozenge, inhaler, etc)

http://www.cdc.gov/tobacco/
Studies are mixed for primary prevention
  * Most not designed specifically for those with DM

USPSTF recommends ASA
  * Men age 45-79
  * Women age 55-79

USPSTF: Aspirin for Prevention of CV Disease.290;150:396-404
Aspirin: ATT Meta-Analysis

* Vascular event reduction
  * Non-fatal MI reduction
    * Men 12% (0.54-0.99)
    * CHD death 23% (0.67-0.89)
    * CVA
      * Women 23% (-.59-0.99)
  * CVA
    * Women NS

Ongoing ASA trials in Diabetes

* ASCEND
  * (in UK-all enrolled- monitor till 2017)
* ACCEPT-D
  * (Italy- planned 18 months enrollment then 5 yr FU)

http://www.ctsu.ox.ac.uk/ascend/
ACCEPT-D. Trials August 2007.
Aspirin

- **Primary Prevention**
  - Those with CV Risk >10%
  - Men > age 50 and Women > age 60
  - Dose? 81 mg-162 mg
  - 12% RR most by non-fatal MI (23%)

- **Secondary Prevention**
  - For all without contraindications
  - Increased CNS hemorrhage 1 in 10,000
  - 54% increase GI bleed- 3 in 10,000
    - Do not add to warfarin or NSAIDS

**Incidence of CVD per 1,000**

**Men**
- <100: 125 (n=56)
- 110-129: 200 (n=75)
- 130+: 267 (n=30)

**Women**
- <110: 105 (n=191)
- 110-129: 121 (n=199)
- 130+: 128 (n=78)

*Metropolitan Relative Weight percent (percentage of desirable weight)*

Hubert HB et al. Circulation. 1983;67:968-977
Weight Loss

* Look AHEAD trial
  * 5145 people with T2DM age 45-74
  * BMI >25
  * 4 year intervention
  * 11 year FU
  * Goal: maintain 7% weight loss
  * 175 minutes per week aerobic physical activity
* Primary objective: Can CV morbidity and mortality be reduced by weight loss from an intensive lifestyle intervention?

## Results at 1 year Look AHEAD

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight</td>
<td>-8.6 lbs</td>
<td>-0.7 lbs</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fitness</td>
<td>+ 20.9%</td>
<td>+5.8%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HgA1c</td>
<td>7.3%- 6.6%</td>
<td>7.3%-7.2%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SBP mmHg</td>
<td>-6.8</td>
<td>-2.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DBP mmHg</td>
<td>-3.0</td>
<td>-1.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Trigs</td>
<td>-30.3</td>
<td>-14.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HDL</td>
<td>+3.4</td>
<td>+1.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Normalization of Urine albumin/Cr ratio</td>
<td>3.9%</td>
<td>1.5%</td>
<td>=0.002</td>
</tr>
</tbody>
</table>

Look Ahead Diabetes Care 2007. 30(6):1374-1383. 4 yr Look AHEAD Arch Int. Med 2010
When addressing pharmacologic treatment what do you do first?

Hypertension
Dyslipidemia
Dysglycemia
<table>
<thead>
<tr>
<th></th>
<th>Physician’s Top Priority</th>
<th>Goal Achieved</th>
<th>Mortality Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>68%</td>
<td>58%</td>
<td>3rd</td>
</tr>
<tr>
<td>Lipids</td>
<td>11%</td>
<td>48%</td>
<td>2nd</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>9%</td>
<td>23%</td>
<td>1st</td>
</tr>
</tbody>
</table>

CV Risk Reduction: Hypertension
50% of people not currently at goal
CV Mortality Risk Doubles With Each 20/10 mm Hg BP Increment*

CV, cardiovascular; DBP, diastolic blood pressure; SBP, systolic blood pressure.
*Individuals aged 40-69 years, starting at BP 115/75 mm Hg.
HOT Trial: Effect of Targeted DBP on Cardiovascular Events Over 4 Years

Events/1,000 patient-years

<table>
<thead>
<tr>
<th>DBP</th>
<th>Patients with diabetes (n=1,501)</th>
<th>All patients (n=18,790)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤90</td>
<td>24.4</td>
<td>9.9</td>
</tr>
<tr>
<td>≤85</td>
<td>18.6</td>
<td>10.0</td>
</tr>
<tr>
<td>≤80</td>
<td>11.9</td>
<td>9.3</td>
</tr>
</tbody>
</table>

51% risk reduction \(P=0.005\)

\(P=NS\)

Diabetes: Tight Glucose vs Tight BP Control and CV Outcomes in UKPDS

- **Stroke**: 44% vs 5% (P < 0.05 compared to tight glucose control)
- **Any Diabetic Endpoint**: 24% vs 12%
- **DM Deaths**: 32% vs 10%
- **Microvascular Complications**: 32% vs 37%

Tight Glucose Control (Goal <6.0 mmol/l or 108 mg/dL)
Tight BP Control (Average 144/82 mmHg)

www.hypertensiononline.org
Target Blood pressure <130/80 mmHg
- Includes ACEI or ARB (titrate to max dose)
- Thiazide diuretic
- One med at bedtime
- DASH diet, limit alcohol
- Beta blockers if CAD
- Dihydropyridine CCB if still not at goal
- Microalbuminuria CV risk marker
- No benefit below 115/75 mm Hg

CV Risk Reduction: Dyslipidemia
Diabetic dyslipidemia

- Low HDL
- Elevated triglycerides
- Normal to high LDL
  - Small dense particles

- LDL primary target
  - 75% not at goal
Results From Statin Trials for Patients With Diabetes

PL=placebo; Tx=therapy.

Lipid Treatment Goals

* **Primary**
  * Those >age 40 + 1 other RF but no overt CVD
  * LDL <100 mg Hg
  * Trigs <150 mg Hg
  * HDL > 40 mg/dl in men, >50 mm Hg in women

* **Secondary Prevention**
  * LDL <70 mm Hg
### Statins and LDL Effects

<table>
<thead>
<tr>
<th>Statin</th>
<th>Effects</th>
<th>Dose 30% reduction /LDL effect</th>
<th>Max dose/ LDL Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atorvastatin</td>
<td>10      / 39%</td>
<td>80 / 60%</td>
<td></td>
</tr>
<tr>
<td>Lovastatin</td>
<td>40      / 30%</td>
<td>80 / 42%</td>
<td></td>
</tr>
<tr>
<td>Pravastatin</td>
<td>20      / 32%</td>
<td>80 / 37%</td>
<td></td>
</tr>
<tr>
<td>Simvastatin</td>
<td>10      / 30%</td>
<td>80 / 47%</td>
<td></td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>80      / 35%</td>
<td>80 / 35%</td>
<td></td>
</tr>
<tr>
<td>Rosuvastatin</td>
<td>5       / 45%</td>
<td>40 / 63%</td>
<td></td>
</tr>
</tbody>
</table>
CV Risk Reduction: Dysglycemia
| Clinical trial | Years     | Diabetes | Sponsor                                          | Patient number |
|----------------|-----------|----------|                                                  |                |
| DCCT           | 1983 – 93 | T1D      | NIH (NIDDK)                                     | 1,441          |
| UKPDS          | 1977 – 97 | T2D      | UK                                               | >5,000         |
| ADVANCE        | 2001 – 08 | T2D      | International (20 countries)                    | >11,140        |
| ACCORD         | 1999 - 2010 | T2D    | NIH                                              | 10,251         |
| VADT           | 2000 - 2008 | T2D    | VA                                               | 1,791          |
| Steno-2-       | 1992 - 2000 | T2D    | Steno Diabetes Center (Denmark)                 | 160            |
DCCT/EDIC: Intensive Treatment Is Associated With Reduction in Risk of CVD in Type 1 Diabetes

DCCT/EDIC: Mean 17 Years of Follow-up

- Conventional treatment (1-2 insulin injections/d during DCCT)
- Intensive treatment (≥3 insulin injections/d or treatment with external insulin pump, and glucose goals 70-120 mg/dL before meals and peaks after meals <180 mg/dL, during DCCT)

CVD=cardiovascular disease; EDIC=Epidemiology of Diabetes Interventions and Complications.
## Intensive Therapy Policy
### Various Endpoints in the UKPDS

<table>
<thead>
<tr>
<th>Complication</th>
<th>Reduction in Risk</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All microvascular</td>
<td>25%</td>
<td>(&lt;0.01)</td>
</tr>
<tr>
<td>– Retinopathy progression</td>
<td>21%</td>
<td>(&lt;0.02)</td>
</tr>
<tr>
<td>– Microalbuminuria</td>
<td>33%</td>
<td>(&lt;0.0001)</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>16%</td>
<td>(=0.052)</td>
</tr>
<tr>
<td>All diabetes-related endpoints studied</td>
<td>12%</td>
<td>(&lt;0.03)</td>
</tr>
</tbody>
</table>

Intensive Therapy for DM

- Drop HgA1c by 1
  - decreases diabetes related deaths 25%
  - decreases micro-vascular complications 35%
  - decreases myocardial infarctions 18%
  - Decreases all cause mortality 7%

UKPDS: 10 yr Follow up

HbA1c difference disappeared

* Outcome reduction with intensive control
  * Any DM end point 9%  p= 0.04
  * Myocardial infarction 15%  p=0.01
  * Death overall 13%  p=0.005

* If on metformin
  * MI 33%  p=0.005
  * Death 27%  p=0.002
### Primary outcomes in ACCORD, ADVANCE, VADT

<table>
<thead>
<tr>
<th>Trial</th>
<th>Outcomes</th>
<th>Outcomes met</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCORD</td>
<td>Composite of nonfatal MI, nonfatal stroke, or death from cardiovascular causes</td>
<td>Yes*</td>
</tr>
<tr>
<td>ADVANCE</td>
<td>Composite of major macrovascular events (death from cardiovascular causes, nonfatal MI, or nonfatal stroke) and major microvascular events (new or worsening nephropathy or retinopathy)</td>
<td>Yes**</td>
</tr>
<tr>
<td>VADT</td>
<td>Composite of major macrovascular events (MI, stroke, death from cardiovascular causes, congestive heart failure, surgery for vascular causes, inoperable coronary disease, and amputation for ischemic gangrene)</td>
<td>No</td>
</tr>
</tbody>
</table>

* The primary outcome was met but the glucose arm was terminated early.

** The primary outcome was met for combined macrovascular and microvascular events but not with macrovascular events alone.
## ACCORD – Primary Outcome by Subgroup

**Protocol Defined Subgroups**

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>n</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>10251</td>
<td>723</td>
</tr>
<tr>
<td>Primary Prevention</td>
<td>6643</td>
<td>330</td>
</tr>
<tr>
<td>Secondary Prevention</td>
<td>3608</td>
<td>393</td>
</tr>
<tr>
<td>Women</td>
<td>3952</td>
<td>212</td>
</tr>
<tr>
<td>Men</td>
<td>6299</td>
<td>511</td>
</tr>
<tr>
<td>Baseline Age &lt; 65</td>
<td>677</td>
<td>383</td>
</tr>
<tr>
<td>Baseline Age ≥ 65</td>
<td>3472</td>
<td>340</td>
</tr>
<tr>
<td>Baseline A1C ≤ 8.0</td>
<td>4868</td>
<td>284</td>
</tr>
<tr>
<td>Baseline A1C &gt; 8.0</td>
<td>5360</td>
<td>438</td>
</tr>
<tr>
<td>Non White</td>
<td>3647</td>
<td>222</td>
</tr>
<tr>
<td>White</td>
<td>6604</td>
<td>501</td>
</tr>
</tbody>
</table>

**Interaction P-value**

- 0.04
- 0.74
- 0.65
- 0.03
- 0.29

**HR (Intensive vs. Standard)**

- 0.6
- 1.0
- 1.4
Probability of non-fatal MI with intensive glucose-lowering vs. standard treatment

<table>
<thead>
<tr>
<th>Intensive treatment/standard treatment</th>
<th>Weight of study size</th>
<th>Odds ratio (95% CI)</th>
<th>Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>Events</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UKPDS\textsuperscript{47}</td>
<td>3071/1549</td>
<td>221/141</td>
<td>21.8%</td>
</tr>
<tr>
<td>PROactive\textsuperscript{18–20}</td>
<td>2605/2633</td>
<td>119/144</td>
<td>18.0%</td>
</tr>
<tr>
<td>ADVANCE\textsuperscript{5}</td>
<td>5571/5569</td>
<td>153/156</td>
<td>21.9%</td>
</tr>
<tr>
<td>VADT\textsuperscript{21,22}</td>
<td>892/899</td>
<td>64/78</td>
<td>9.4%</td>
</tr>
<tr>
<td>ACCORD\textsuperscript{8}</td>
<td>5128/5123</td>
<td>186/235</td>
<td>28.9%</td>
</tr>
<tr>
<td>Overall</td>
<td>17267/15773</td>
<td>743/754</td>
<td>100%</td>
</tr>
</tbody>
</table>

Ray et al, Lancet 2009; 373: 1765–72
## Impact of Intensive Therapy for Diabetes: Summary of Major Clinical Trials

<table>
<thead>
<tr>
<th>Study</th>
<th>Microvasc</th>
<th>CVD</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKPDS</td>
<td><img src="down.png" alt="down" /></td>
<td><img src="down.png" alt="down" /></td>
<td><img src="up.png" alt="up" /></td>
</tr>
<tr>
<td>DCCT / EDIC*</td>
<td><img src="down.png" alt="down" /></td>
<td><img src="down.png" alt="down" /></td>
<td><img src="up.png" alt="up" /></td>
</tr>
<tr>
<td>ACCORD</td>
<td><img src="down.png" alt="down" /></td>
<td><img src="up.png" alt="up" /></td>
<td><img src="up.png" alt="up" /></td>
</tr>
<tr>
<td>ADVANCE</td>
<td><img src="down.png" alt="down" /></td>
<td><img src="up.png" alt="up" /></td>
<td><img src="up.png" alt="up" /></td>
</tr>
<tr>
<td>VADT</td>
<td><img src="down.png" alt="down" /></td>
<td><img src="up.png" alt="up" /></td>
<td><img src="up.png" alt="up" /></td>
</tr>
</tbody>
</table>

Kendall DM, Bergenstal RM. © International Diabetes Center 2009

Approach to management of hyperglycemia:

- **Patient attitude and expected treatment efforts**
  - More stringent: highly motivated, adherent, excellent self-care capacities
  - Less stringent: less motivated, non-adherent, poor self-care capacities

- **Risks potentially associated with hypoglycemia, other adverse events**
  - Low
  - High

- **Disease duration**
  - Newly diagnosed
  - Long-standing

- **Life expectancy**
  - Long
  - Short

- **Important comorbidities**
  - Absent
  - Few / mild
  - Severe

- **Established vascular complications**
  - Absent
  - Few / mild
  - Severe

- **Resources, support system**
  - Readily available
  - Limited

*Figure 1*

*Diabetes Care, Diabetologia. 19 April 2012 [Epub ahead of print]*

Comprehensive CV Risk Reduction in Diabetes
80 pts T2DM with microalbuminuria randomized to:
- Control
- Regular care
- Intensive intervention
  - Step-wise introduction of lifestyle and pharmacological interventions aimed at keeping:
    - HgA1c <6.5%
    - blood pressure <130/80mmHg
    - total cholesterol <175mg/dl
    - and triglycerides <150mg/dl.
    - reduction in intake dietary fat regular exercise and smoking cessation.

Results of the STENO-2 study

<table>
<thead>
<tr>
<th></th>
<th>Control Group (n=80)</th>
<th>Intensive Treatment Group (n=80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycosylated Hemoglobin &lt; 6.5</td>
<td>3%</td>
<td>15%</td>
</tr>
<tr>
<td>Diastolic &lt; 80 mm Hg</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Systolic &lt; 130 mm Hg</td>
<td>18%</td>
<td>50%</td>
</tr>
<tr>
<td>Total Cholesterol &lt; 175mg/dl</td>
<td>22%</td>
<td>72%</td>
</tr>
</tbody>
</table>

Multi-modal intensive therapy: Steno 2

* Aggressive HTN, lipid, and glucose control
* Data at 7.8 yrs
  * Intensive therapy decreased
    * CV disease 53%
    * Nephropathy 61%
    * Retinopathy 58%
    * Autonomic neuropathy 63%
* 1 Cardiovascular event prevented for every 5 patients treated

STENO-2 Epidemiologic Follow up

Glycated hemoglobin (%)

Follow-up time (years)

Conventional therapy

Intensive therapy

STENO 2 - Risk of Death from Any Cause

Cumulative Incidence of death (%)

Follow-up time (years)

No. at risk
Intensive  80  78  75  72  65  62  57  51  43  30
Conventional  80  80  77  69  63  51  43  30

p = 0.02

Conventional therapy
Intensive therapy

Intensive DM Management

* Type 2 Diabetes
  * Early diagnosis and intervention
  * Use meds that improve morbidity and mortality
  * Early use of insulin
  * Mindful treatment of glucose, lipids and blood pressure
## Guidelines for Glycemic, BP, & Lipid Control

<table>
<thead>
<tr>
<th></th>
<th>ADA Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HbA1C</strong></td>
<td>&lt; 7.0% <em>(individualization)</em></td>
</tr>
<tr>
<td><strong>Preprandial glucose</strong></td>
<td>70-130 mg/dL (3.9-7.2 mmol/l)</td>
</tr>
<tr>
<td><strong>Postprandial glucose</strong></td>
<td>&lt; 180 mg/dL</td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>&lt; 130/80 mmHg</td>
</tr>
<tr>
<td><strong>Lipids</strong></td>
<td></td>
</tr>
<tr>
<td>LDL:</td>
<td>&lt; 100 mg/dL (2.59 mmol/l)</td>
</tr>
<tr>
<td></td>
<td>&lt; 70 mg/dL (1.81 mmol/l) <em>(overt CVD)</em></td>
</tr>
<tr>
<td>HDL:  (♂)</td>
<td>&gt; 40 mg/dL (1.04 mmol/l)</td>
</tr>
<tr>
<td></td>
<td>&gt; 50 mg/dL (1.30 mmol/l) <em>(♀)</em></td>
</tr>
<tr>
<td>TG:</td>
<td>&lt; 150 mg/dL (1.69 mmol/l)</td>
</tr>
</tbody>
</table>

HDL = high-density lipoprotein; LDL = low-density lipoprotein; PG = plasma glucose; TG = triglycerides.

ADA. Diabetes Care. 2012;35:S11-63
Surgery vs Meds in obese adults with T2DM

- 150 obese adults with type 2 DM
  * Intensive medical therapy
  * Roux-en-Y
  * Sleeve gastrectomy
- Primary outcome
  * % patients with HgA1c < 6%
- Secondary outcomes
  * Weight loss
  * Lab values

Schauer et al NEJM March 2012
Primary outcome achieved at 1 year
- 12% of medication group (p=0.008 vs surgeries)
- 37% of sleeve gastrectomy
- 42% of Roux-en-Y

Secondary outcomes
- Weight loss surgery groups better (p<0.01)
  - 24.7-27.5% vs 5.2% (p <0.001)
- Reduced medications
  - Surgery better (p<0.01)
Summary

* CV Disease is #1 killer of people with DM
* RF reduction requires
  * Screening
  * ongoing assessment
  * Multifactorial intervention
* Remember ASA, wt loss and smoking cessation
* Bp 1\textsuperscript{st}, lipids, second and glucose individualized and last
* Surgical approaches are effective for RFR
QUESTIONS?
shubrook@ohio.edu
Questions?

Type question into the Q&A tab at the top of your screen.

Additional questions email laura.jansky@heart.org

Download this slide deck within 5-7 working days from:
GuidelineAdvantage.org
Upcoming Events

The Guideline Advantage will be attending the following conferences:

• Community Health Institute (CHI) and Expo in Orlando, FL September 9-12, 2012
• AAFP’s Scientific Assembly in Philadelphia, PA October 18-20, 2012

For more information please contact Laura Jansky at laura.jansky@heart.org