Thank you for joining The Guideline Advantage this afternoon!

To access the audio portion:
Dial: (866) 832-6378
Conference ID: 27549527

We will be starting the presentation shortly.
Cardiometabolic Risk, Type 2 Diabetes and Cardiovascular Disease

Webinar Presented September 10, 2013
Vision & Goal

Vision

To improve the health of all patients through widespread application of primary and secondary prevention guidelines in the United States through data collection, analysis, feedback and quality improvement in the ambulatory setting.

Goal

To improve the long-term compliance with the ACS, ADA and AHA/ACC guidelines, which in turn supports our shared organizational mission to prevent chronic diseases and to improve the lives of those living with the nation’s most prevalent chronic diseases.

The Guideline Advantage is based on the success of nearly 10 years experience in inpatient quality improvement and over 2 millions lives touched.
Program Model

1. Providers can use several different technology platforms

2. Practices submit collective clinical data to Forward Health Group for The Guideline Advantage

3. Data are processed, analyzed and provided back to the practice via a practice portal

4. Performance is measured, Professionals can set measurable goals and chart improvements in performance
As a part of quality improvement, clinical data must be aggregated into a data warehouse to facilitate analysis and reporting.

Technically speaking... how does it work?

As a part of quality improvement, clinical data must be aggregated into a data warehouse to facilitate analysis and reporting.
Program Functionality

- The Guideline Advantage measure sets + an additional measure set available as defined by the customer
- Patient lists and action list functionality
- View and filtering options for teams
- Comparison, benchmarking and historical trending
- Customer driven functionality, including demographic information displays, incentive program tracking, and non-clinical custom groupings
- Complete data advisory service, including comprehensive consultations and guidance in identifying data sources, mapping, data cleansing and alignment
- Fixed implementation fee and annual licenses
Advantages to Practices & Physicians

- On-demand access to quality improvement data using a web-based tool
- Available physician-level reporting
- Clinic and system aggregation
- Tools for creating action lists
- Alignment with key national initiatives
- National and state benchmarking
- Practice network opportunities including virtual workshops and national recognition
# The Guideline Advantage’s Measures

<table>
<thead>
<tr>
<th>Diabetes Mellitus</th>
<th>Preventive Care Screening</th>
<th>Cancer</th>
<th>Cardiovascular</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HbA1c Control</td>
<td>• BMI Screening &amp; Follow-up</td>
<td>• Colorectal Cancer Screening</td>
<td>• Ischemic Vascular Disease: Aspirin Use &amp; Lipid panel</td>
</tr>
<tr>
<td>• LDL Control</td>
<td>• Influenza Vaccination</td>
<td>• Mammography Screening</td>
<td>• Hypertension: Blood Pressure Control</td>
</tr>
<tr>
<td>• High Blood Pressure Control</td>
<td>• Tobacco Use and Counseling</td>
<td>• Cervical Cancer Screening</td>
<td>• CAD: Lipid-lowering Therapy</td>
</tr>
<tr>
<td>• Annual nephropathy screening (urine albumin)</td>
<td>• Blood Pressure Screening</td>
<td></td>
<td>• CAD: Antiplatelet Therapy</td>
</tr>
<tr>
<td></td>
<td>• LDL Measurement</td>
<td></td>
<td>• CAD: Blood Pressure Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• CAD: Tobacco Use</td>
</tr>
</tbody>
</table>
Alignment with National Programs

**Million Hearts Initiative**

The Guideline Advantage reports on the “ABCS” measures of interest to Million Hearts

MillionHearts.hhs.gov

**Uniform Data System (UDS)**

The program reports all adult UDS measures of interest to Community Health Centers and Federally Qualified Health Centers

Hrsa.gov
Leading practices for effective participation

- Use existing EHR platform; don’t interrupt work flow to collect data; offer vendor or neutral program model
- Provide tools and resources (Webinars, CME programs, etc.) to help develop a culture of quality improvement
- Provide feedback and consult with practices on how to disseminate information
- Encourage focus on 1-2 areas only
- Direct practices to resources to support improvement
- Recognize and link to incentives

These are just a few of the best practices shared by the program.
Cardiometabolic Risk, Type 2 Diabetes and Cardiovascular Disease

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Verne S Caviness Distinguished Professor
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University of North Carolina School of Medicine
Disclosures

Dr. Buse is an investigator and/or consultant without any direct financial benefit to me under contracts between my employer and the following companies: Abbott, Amylin, Andromeda, Astra-Zeneca, Bayhill Therapeutics, BD Research Laboratories, Boehringer-Ingelheim, Bristol-Myers Squibb, Catabasis, Cebix, Diartis, Elcylex, Eli Lilly, Exsulin, Genentech, GI Dynamics, GlaxoSmithKline, Halozyme, Hoffman-LaRoche, Johnson & Johnson, LipoScience, Medtronic, Merck, Metabolic Solutions Development Company, Metabolon, Novan, Novella, Novartis, Novo Nordisk, Orexigen, Osiris, Pfizer, Rhythm, Sanofi, Spherix, Takeda, Tolerex, TransPharma, Veritas, and Verva
The State of Risk

- 2 out of 3 Americans are overweight or obese
- There are an estimated 79 million Americans with prediabetes
- Nearly 1 in 2 U.S. adults has high cholesterol
- 1 in 3 American adults has high blood pressure
Number and Percentage of U.S. Population with Diagnosed Diabetes 1958–2010

Heart Disease Facts

- About **400,000 people** die of heart disease in the United States every year—that’s **1 in every 6 deaths**.

- Heart disease is the leading cause of death for both men and women.

- Every year about **715,000 Americans** have a heart attack. Of these, 525,000 are a first heart attack and 190,000 happen in people who have already had a heart attack.
Cardiometabolic Risk

- Overweight/Obesity
- Abnormal Lipid Metabolism
  - LDL ↑
  - ApoB ↑
  - HDL ↓
  - Triglycerides ↑
- Genetics
- Age
- Insulin Resistance
- Insulin Resistance Syndrome
  - ↑Lipids
  - ↑BP
  - ↑Glucose
- Global Diabetes/CVD Risk
- Hypertension
- Smoking, Physical Inactivity
- Age, Race, Gender, Family History
- Inflammation, Hypercoagulation
## Cardiometabolic Risk Factors

<table>
<thead>
<tr>
<th>Non-Modifiable</th>
<th>Modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Overweight</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>Abnormal lipid metabolism</td>
</tr>
<tr>
<td>Gender</td>
<td>Inflammation</td>
</tr>
<tr>
<td>Family history</td>
<td>Hypertension</td>
</tr>
<tr>
<td></td>
<td>Smoking</td>
</tr>
<tr>
<td></td>
<td>Physical inactivity</td>
</tr>
<tr>
<td></td>
<td>Unhealthy diet</td>
</tr>
<tr>
<td></td>
<td>Insulin resistance</td>
</tr>
</tbody>
</table>
More recent studies suggest that this is perhaps only true for those with fairly long-standing diabetes – duration over ten years.

Current approaches for CVD risk management

1) Screen for diabetes and its co-morbidities
2) Manage lipids, blood pressure, glucose, and tobacco in everyone
3) Aspirin therapy for selected individuals
## Screening For Diabetes

Testing at least every 3 yrs starting at age 45

<table>
<thead>
<tr>
<th>Test</th>
<th>Prediabetes</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPG</td>
<td>100-125 mg/dL</td>
<td>≥126 mg/dL</td>
</tr>
<tr>
<td>OGTT</td>
<td>140-199 mg/dL</td>
<td>≥200 mg/dL</td>
</tr>
<tr>
<td>A1C</td>
<td>5.7-6.4%</td>
<td>≥6.5%</td>
</tr>
</tbody>
</table>
Younger/More Frequent Testing

If patient is overweight or obese (BMI ≥ 25 kg/m^2) and has one or more of the following risk factors (or two if not overweight):

- First degree relative with diabetes
- Physically inactive
- High risk race/ethnicity
- A1C ≥ 5.7%, IFG or IGT on previous test
- Hypertension (140/90 mmHg)
- HDL cholesterol (<35 mg/dL and/or a triglyceride level >250 mg/dL)
- History of GDM or delivering baby weighing >9 lbs
- Polycystic ovary syndrome (PCOS)
Screen for Diabetes:
- A1C - or -
- FPG – or -
- 2-hour, 75-g OGTT

**Normal**
- Re-evaluate in 3 years if risk factors remain

**Diabetes**
- Lifestyle intervention plus metformin; follow-up @3 mo

**A1C ≥ 5.7%**
- IFG or IGT
- Lifestyle intervention; follow-up @1 year

**A1C ≥ 6.0%**
- IFG and IGT + Other Features*
- Lifestyle intervention and/or metformin; follow-up @6 mo

*METFORMIN IS NOT FDA APPROVED FOR PREVENTION

Prediabetes

- Prediabetes is an important risk factor for future diabetes and cardiovascular disease
- Studies have shown that lifestyle modification can reduce the rate of progression from prediabetes to diabetes

Interventions in DPP

Lifestyle Modification

- Lose 7% of body weight
- Reduce calories and intake of dietary fat
- Achieve USDA recommendations for dietary fiber and foods containing whole grain
- Limit intake of sugar-sweetened beverages
Lifestyle Modification

- Fit physical activity into daily routine
- Aim for at least 150 minutes/week of moderate aerobic exercise
- Start slowly and gradually build intensity
- Wear a pedometer (10,000 steps)
- Encourage patients to take stairs, park further away or walk to another bus stop, etc.
Benefits of Physical Activity

- Increased insulin sensitivity
- Improved lipid levels
- Lower blood pressure
- Weight control
- Improved blood glucose control
- Reduced risk of CVD
- Prevent/delay type 2 diabetes

Statins reduce coronary events

Diabetic Patients  Nondiabetic Patients

Patients With Major Coronary Event (%)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Diabetic Patients</th>
<th>Nondiabetic Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>45</td>
<td>32%</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Placebo</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

*CHD death or nonfatal MI

Pyörälä et al. *Diabetes Care*. 1997;20:614
Dyslipidemia

- Statin therapy should be added to lifestyle therapy, regardless of baseline lipid levels, for diabetic patients:
  - with overt CVD (A)
  - without CVD who are over the age of 40 and have one or more other CVD risk factors (A)

- For lower-risk patients than the above (e.g., without overt CVD and under the age of 40 years), statin therapy should be considered if LDL cholesterol remains above 100 mg/dL or in those with multiple CVD risk factors. (C)
Dyslipidemia

- In individuals without overt CVD, the goal is LDL cholesterol <100 mg/dL. (B)

- In individuals with overt CVD, a lower LDL cholesterol goal of <70 mg/dL, using a high dose of a statin, is an option. (B)

- Combination therapy has been shown not to provide additional cardiovascular benefit above statin therapy alone and is not generally recommended. (A)
Tight blood pressure control (144/82 mmHg) lead to:

- 32% reduction in diabetes deaths
- 44% reduction in stroke
- 37% reduction in microvascular complications

BMJ. 1998 Sep 12;317(7160):703-13
Hypertension

Goals for people with diabetes and hypertension

- Systolic blood pressure goal of <140 mmHg. (B)
  - Lower targets, such as <130 mmHg, may be appropriate for certain individuals, such as younger patients, if it can be achieved without undue treatment burden. (C)
- Diastolic blood pressure <80 mmHg. (B)
Hypertension

Treatment for people with diabetes and hypertension

- With confirmed blood pressure $\geq 140/80$ mmHg: lifestyle therapy + prompt initiation/timely titration of drugs to achieve goals. (B)
  - Include either an ACE inhibitor or an angiotensin receptor blocker. (C)
  - Multiple-drug therapy (two or more agents at maximal doses) is generally required. (B)
  - Administer one or more antihypertensive medications at bedtime. (A)
UKPDS: “Legacy Effect”

After median 8.8 years post-trial follow-up

<table>
<thead>
<tr>
<th>Aggregate Endpoint</th>
<th>1997</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any diabetes related endpoint</td>
<td><strong>RRR:</strong> 12%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td><strong>P:</strong> 0.029</td>
<td>0.040</td>
</tr>
<tr>
<td>Microvascular disease</td>
<td><strong>RRR:</strong> 25%</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td><strong>P:</strong> 0.009</td>
<td>0.001</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td><strong>RRR:</strong> 16%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td><strong>P:</strong> 0.052</td>
<td>0.014</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td><strong>RRR:</strong> 6%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td><strong>P:</strong> 0.44</td>
<td>0.007</td>
</tr>
</tbody>
</table>

RRR = Relative Risk Reduction P = Log Rank

## ACCORD:
### Exploring lower targets

<table>
<thead>
<tr>
<th>Three randomizations</th>
<th>Three results</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C target &lt;6% vs 7-8%</td>
<td>More intensive glycemic control</td>
</tr>
<tr>
<td></td>
<td>• microvascular benefit</td>
</tr>
<tr>
<td></td>
<td>• no CVD benefit</td>
</tr>
<tr>
<td></td>
<td>• Increased mortality</td>
</tr>
<tr>
<td>SBP &lt;140 mmHg vs 120-130 mmHg</td>
<td>More intensive BP control</td>
</tr>
<tr>
<td></td>
<td>• no CVD benefit</td>
</tr>
<tr>
<td></td>
<td>• less stroke</td>
</tr>
<tr>
<td>Statin to get LDL to goal plus either fenofibrate or placebo</td>
<td>Fibrate plus statin</td>
</tr>
<tr>
<td></td>
<td>• no CVD benefit</td>
</tr>
<tr>
<td></td>
<td>• microvascular benefit</td>
</tr>
</tbody>
</table>

*References:*
Blood Glucose

Glycemic Targets Must Be Individualized

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<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C</td>
<td>&lt; 7.0 % in general</td>
</tr>
<tr>
<td>Preprandial plasma glucose</td>
<td>70- 130 mg /dL</td>
</tr>
<tr>
<td>Peak postprandial plasma glucose</td>
<td>&lt; 180 mg /dL</td>
</tr>
</tbody>
</table>

- More stringent A1C goals (<6%) should be considered in individual patients with recent onset and long life expectancy
- Less stringent goals are reasonable in those with frequent or severe hypoglycemia, advanced complications and those who respond poorly to therapy

Antiplatelet therapy reduces CV events in high-risk patients

Diabetic Patients
- Placebo: 22.3
- Antiplatelet: 18.5
- 17% Risk Reduction

Nondiabetic Patients
- Placebo: 16.4
- Antiplatelet: 12.8
- 25% Risk Reduction

Antiplatelet Trialists’ Collaboration. BMJ. 1994;308:81
Aspirin Therapy

- Consider aspirin therapy (75–162 mg/day) as a primary prevention strategy in those with increased cardiovascular risk (10-year risk >10%).

- This includes most men aged >50 years or women aged >60 years who have at least one additional major risk factor (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria). (C)

- Use aspirin therapy (75–162 mg/day) as a secondary prevention strategy in those with diabetes with a history of CVD. (A)
Smoking

- Obtain documentation of history of tobacco use
- Ask whether smoker is willing to quit
  - If no, initiate brief, motivational discussion regarding:
    - the need to stop using tobacco
    - risks of continued use
    - encouragement to quit, as well as support when ready
  - If yes, assess preference for and initiate either minimal, brief, or intensive cessation counseling.
ADA’s Standards of Care

An update of standards of care appears annually in the January supplement of the journal *Diabetes Care*

[Professional.Diabetes.org](http://Professional.Diabetes.org)
Questions?

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

Additional questions email laura.jansky@heart.org

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