Diabetes and Cardiovascular Disease

National Diabetes Education Program
Quarterly Webinar Series
Wednesday, February 20, 2013
2-3 PM ET
Webinar Presenters

John Buse, M.D., Ph.D.
Chair, National Diabetes Education Program
Director, Diabetes Care Center and Chief, Division of Endocrinology, UNC Chapel Hill School of Medicine

Mary Jo Mehelich, R.N., M.P.H.
Nurse Specialist, Minnesota Department of Health
Heart Disease and Stroke Prevention Unit

Joanne Gallivan, M.S., R.D.
Director, National Diabetes Education Program
National Institutes of Health
National Diabetes Education Program

• US Department of Health and Human Services program jointly sponsored by:
  – National Institutes of Health
  – Centers for Disease Control and Prevention
  – With over 200 public and private partners

• Seeks to reduce the burden of diabetes in the US by:
  – facilitating adoption of proven approaches to prevent or delay the onset and progression of diabetes and its complications
Webinar Objectives

• Discuss the relationship between diabetes and cardiovascular disease (CVD)
• Discuss research findings related to diabetes and cardiovascular disease and the implications of these findings
• Provide resources to help participants promote diabetes and heart health messages
Webinar Logistics

• All lines are muted

• Two ways to ask questions during Q&A period:
  1. Type your question into “chat section” and we will read your question aloud
  2. Click the “raise hand” icon and we will call your name and unmute your line allowing you to ask your question
Diabetes and Cardiovascular Disease

John Buse, M.D., Ph.D.
Chair, National Diabetes Education Program
Verne S. Caviness Distinguished Professor
Chief, Division of Endocrinology
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
Overview

• Type 2 diabetes: a silent killer
  – Asymptomatic, often undiagnosed
  – Insulin resistance associated factors and associated clinical risks

• Current approaches for CVD risk management
  – Screen for diabetes and its co-morbidities
  – Manage tobacco, lipids, blood pressure, glucose in everyone
  – Aspirin therapy for selected individuals
Diabetes: Asymptomatic Opportunity

• 1/4 of people with diabetes are undiagnosed
• Screening detects diabetes 10 to 12 years earlier
• “Legacy effect”

Cardiometabolic Risk

Diabetes is a CVD Risk Equivalent

More recent studies suggest that this is perhaps only true for those with fairly long-standing diabetes – duration over ten years.

What are we to do?

- Current approaches for CVD risk management
  - Screen for diabetes and its co-morbidities
  - Manage tobacco, lipids, blood pressure, glucose in everyone
  - Aspirin therapy for selected individuals
Screening and Diagnosis: Intervention and Follow-Up

- IFG: fasting (8 hours) plasma glucose 100-125 mg/dL
- IGT: 2-hour value in 75-g OGTT 140-199 mg/dL

† Follow-up here refers to formal reassessment of glycemic status. Follow-up should be individualized with respect to venue, frequency and goals.

* "Other features": < 60 years old, BMI ≥ 30 kg/m² and either A1C > 6.0%, hypertension, low HDL, high triglycerides or family history of diabetes in first-degree relative

- Diabetes: A1C ≥6.5%, fasting ≥126 mg/dL, 2-hour ≥200 mg/dL; should be confirmed on a separate day unless unequivocally elevated and/or symptomatic

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

RRR = Relative Risk Reduction  
P = Log Rank

Antiplatelet Trialists’ Collaboration: Antiplatelet therapy reduces CV events in high-risk patients

4S: Statins reduce coronary events

**Diabetic Patients**
- Placebo: 45
- Simvastatin: 23
  - 55% Risk Reduction

**Nondiabetic Patients**
- Placebo: 27
- Simvastatin: 19
  - 32% Risk Reduction

*CHD death or nonfatal MI*

Pyörälä et al. *Diabetes Care.* 1997;20:614
VA-HIT: Gemfibrozil reduces vascular events

Note: Similar effects not seen with fenofibrate or niacin in other trials

UKPDS Blood Pressure Study

Diabetes-related deaths

Microvascular Disease

No of patients at risk:
- Less tight control: 390, 370, 323, 16
- Tight control: 758, 728, 630, 32

Reduction in risk with tight control 32% (95% CI 6% to 51%) (P = 0.019)

Reduction in risk with tight control 37% (95% CI 11% to 56%) (P = 0.0092)
HOT Trial: Diastolic BP and CV events, subgroup analysis

Diabetic Patients

Events per 1000 Patient-yrs

- ≤90: 24.4
- ≤85: 18.6
- ≤80: 11.9

Risk Reduction: 51%

P ≤ 0.005

Nondiabetic Patients

DBP (mm Hg)

- ≤90: 9.9
- ≤85: 10.0
- ≤80: 9.3

P = NS

ACCORD: Exploring lower targets

Three randomizations:

- A1C target <6% vs 7-8%
- SBP 130-140 mmHg vs <120 mmHg
- Statin to get LDL to goal plus either fenofibrate or placebo

Three results:

- More intensive glycemic control
  - microvascular benefit
  - no CVD benefit
  - Increased mortality
- More intensive BP control
  - no CVD benefit
  - less stroke
- Fibrate plus statin
  - no CVD benefit
  - microvascular benefit

“Standards of Medical Care”
from the American Diabetes Association

• An update of standards of care appears annually in the January supplement of the journal “Diabetes Care”

http://care.diabetesjournals.org/content/36/Supplement_1/S11.full.pdf+html
Tobacco
Glycemic targets must be individualized:

- A1C <7.0 % in general
- Preprandial plasma glucose 70-130 mg/dL
- Peak postprandial plasma glucose <180 mg/dL
- 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
ACCORD Mortality: It’s not the A1C that’s the problem

Steady increase of risk from 6% to 9% A1C in INT strategy

Excess risk with INT vs STD above A1C 7%

**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 (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria). (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)
- 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)
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)

• Treatment (for people with diabetes and hypertension)
  – With confirmed blood pressure ≥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)
Antithrombotic 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)
Webinar Poll

What is the most important factor in managing CV risk in a middle-aged patient with T2DM, Hypertension, and Dyslipidemia?

Use the webinar panel to select your answer
Minnesota Diabetes & Heart Health Collaborative Initiatives

Mary Jo Mehelich, RN, MPH
Minnesota Department of Health
mary.mehelich@state.mn.us
651-201-5419

www.mn-dc.org
About Minnesota

• Mostly white, educated, urban
  • 5.4 million people
  • 60% reside in metro area
  • 92% high school graduate or higher
  • 83% non-Hispanic White population
  • 89% living above poverty level

• Increasing diversity
  • 7% foreign-born
  • 80% state’s growth due to minority population increases
  • 100+ languages spoken by kids entering metro schools

• Significant health disparities
MN-DC Diabetes & Heart Disease Campaigns - Overview

• **Control Your Diabetes for Life!** health literacy educational tools covering 24 self-care topics

• **Make the Link - Diabetes and Heart Disease** messages for consumers or providers

• **Is Diabetes or Heart Disease in Your Family Tree?** family history risk awareness campaign
• **Users:** lay or professional health educators
• **Audience:** adults with diabetes
• **Content:** 9 basic subjects, 15 self-care topics, behavior changes tips, goal setting work sheets
• **NDEP sources:** “4 Steps to Control Your Diabetes. For Life,” “Know Your Diabetes ABCs,” “Diabetes HealthSense,” others
• **Evaluation:** Pilot tested at 50 clinics; 100% satisfaction; stimulated discussion/goal setting; plain language valued
Audience: people with diabetes; providers

Materials: 1-page patient handouts (set of 3); provider fact sheets; print ads; news releases

NDEP sources: “Take Care of Your Heart. Manage Your Diabetes,” “Know Your Diabetes ABCs” and others

Evaluation: users value simple messages, resource links & colorful graphics
Family History Risk Awareness Campaign

• **Audience:** general public; people with diabetes and/or heart disease

• **Materials:** print ad, fact sheet, handout, hand-held fan

• **NDEP sources:** “Am I at Risk?”

• **Evaluation:** Action steps makes this message popular; valued by people with the disease who worry about their family’s risk
Lessons Learned

• Leverage partners’ existing communication vehicles – large reach, no cost
• Content expertise not needed by group if using NDEP
• Even literate people prefer simple, plain language materials
• Photos preferred – must consider cultural appropriateness
• People with diabetes/heart disease are effective advocates of prevention messages with their families & communities
NDEP National Diabetes Survey: Diabetes and Heart Disease

Joanne Gallivan, M.S., R.D.
Director, National Diabetes Education Program
National Institutes of Health
NNDS: Diabetes and Heart Disease

• Awareness of link between diabetes and heart disease has decreased
  – Percentage of people with diabetes who said heart attacks were a serious health problem caused by diabetes decreased from 1 in 5 people making the connection in 2006 to about 1 in 20 in 2011
  – Among the general population, only 1 of every 5 people age 45 and older thought heart conditions were among the most serious health problems caused by diabetes
NNDS: Diabetes and Heart Disease

Implications

• Need for more education, information, and messaging about the link between diabetes and heart disease

• Health care providers play an important role in providing advice to people on how to lower their risk for heart disease
NDEP Resources for Diabetes and Heart

www.ndep.nih.gov
Managing Diabetes – It’s not easy, but it’s worth it.
Additional NDEP Resources

Diabetes HealthSense
www.ndep.nih.gov/HealthSense

Tasty Recipes for People with Diabetes and Their Families and Recipe Card Sets
Resources from the National Diabetes Information Clearinghouse (NDIC)

http://diabetes.niddk.nih.gov/
Resources from the National Heart, Lung and Blood Institute (NHLBI)

- Keep the Beat™ Heart Healthy Recipes

Webinar Page, Slides, and Evaluation

- Webinar Series Webpage
  - http://ndep.nih.gov/resources/webinars
- PowerPoint Slides
- Webinar Evaluation
- Certificate of Completion for Webinar Attendees
Questions and Answers