Primary care for patients with diabetes Type 2: What’s new?

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Objectives
- Review recent changes in ADA guidelines
- Discuss screening and the clinical goals for glycemic, blood pressure and lipid control
- Mention newer medications for Type 2 diabetes
- Consider what innovations in delivery of primary care can offer in improving care of individuals and populations with Type 2 diabetes

Diagnosis
- Fasting glucose ≥ 126 mg/dl x 2
- 2 hour 75gm Oral glucose tolerance test ≥ 200 mg/dl
- Random glucose ≥ 200 mg/dl with hyperglycemic symptoms
- Hemoglobin A1C ≥ 6.5% x 2

Diagnosis
- HgA1C testing- point of care testing not sufficiently accurate for diagnosis
- Identifies a third fewer cases than fasting glucose criteria [analysis of NHANES data]
- Pros: does not require fasting state
- Cons: cost, limited with patients with abnormal hemoglobin or red cell turnover (pregnancy, hemolysis, blood loss, transfusion)
“Pre-diabetes”

- **Categories of increased risk for diabetes (prediabetes)**
  - FPG 100–125 mg/dl (5.6–6.9 mmol/l): Impaired fasting glucose
    - or
  - 2-h plasma glucose in the 75-g OGTT 140–199 mg/dl (7.8–11.0 mmol/l): impaired glucose tolerance
    - or
  - A1C 5.7–6.4%

*For all three tests, risk is continuous, extending below the lower limit of the range and becoming disproportionately greater at higher ends of the range.

Screening

- **Screening**
  - Age ≥ 45 years
  - Patients who are overweight/ obese with one of the following:
    - Physical inactivity
    - 1st relative with diabetes
    - High risk race/ethnicity
    - Women who delivered baby >9 lbs or diagnosed with GDM
    - Hypertension
    - Low HDL or high triglyceride level
    - Women with PCOS
    - prediabetes
    - Conditions associated with insulin resistance (acanthosis nigricans)
    - h/o CVD
    - Repeat every 3 years if screen is normal

- **Screening**
  - US Preventative Services Task Force recommends screening patients with sustained BP ≥135/80
Prenatal screening

- Screen for type 2 diabetes on first prenatal visit according to regular screening criteria
- Screen ALL women between 24-28 weeks for GDM
  - 2 hour 75 GM OGTT
  - GDM diagnosis if ONE value above limits
    - Fasting 92 mg/dl (5.1 mmol/l)
    - 1 h 180 mg/dl (10.0 mmol/l)
    - 2 h 153 mg/dl (8.5 mmol/l)

Screening children

- T2DM accounts for 15% of new-onset diabetes for non-Hispanic white children over 9 years old and over 50% within minority children over 9.
- Screen obese children with one additional risk factor
  - Family history, acanthosis nigricans, high-risk race/ethnicity
  - Pubertal or age≥ 10 years


Treatment goals

- Prediabetes treatment goals= Prevention
  - Diabetes Prevention Program
    - Lifestyle change more effective than medications
      - Lifestyle change goals of 7% weight loss and 150 min/wk exercise
      - 34-58% reduction in rate of conversion to diabetes type 2
    - Metformin reserved for high risk patients [BMI>35 kg/m²]
Diabetes type 2 treatment goals

- Prevention of macrovascular [CVD] and microvascular complications
  - Glycemic control
  - Blood pressure control
  - Lipid control
  - Antiplatelet therapy
  - Smoking cessation

Not just glycemic control

- The benefits of a multifactorial approach to diabetes care are supported by the results of the Steno 2 Study of 160 patients with type 2 diabetes and microalbuminuria.
  - Multifactorial interventions achieved a 50% reduction in mortality and significant reduction in microvascular complications five years after ending a 7.8-year multifactorial intervention that achieved A1c of 7.8%, low-density lipoprotein 83 mg/dL, blood pressure 131/73, compared to a conventional group that achieved A1c 9%, low-density lipoprotein 126 mg/dL and blood pressure 146/78 (Gaede, 2008 [A]).

Glycemic control: HgA1C treatment goals?

- UK Prospective diabetes trial
  - Enrollment soon after diagnosis- mean 10 years of duration
  - n= 4209
  - Goal of <7% vs 8% decreased microvascular complications, but not macrovascular events
  - 10 year follow up
    - 15-33% decreased MIs
    - 13-27% decreased all cause mortality


Glycemic control: HgA1C treatment goals?

- ACCORD trial (population with more advanced diabetes)
  - HbA1c achieved 6.7 vs 7.5%
  - N=10251; 38% women
  - No benefit on primary composite outcome (non-fatal MI or stroke, death from cardiovascular causes)
  - Reduction of microalbuminuria and neuropathy
  - All cause mortality 1.4% vs 1.1% with HR 1.22 (95% CI 1.01-1.46)

Take home points regarding glucose targets

- For younger patients with short duration of diabetes, aiming for an HbA1c of < 7% can reduce the risk of both microvascular and macrovascular complications.
- Patients with history of severe hypoglycemia & advanced atherosclerosis should not aim for < 7%.

Summary of glycemic recommendations for many nonpregnant adults with diabetes

- HbA1C 7.0%
- Preprandial capillary plasma glucose 70–130 mg/dl
- Peak postprandial capillary plasma glucose† 180 mg/dl
- Goals should be individualized based on:
  - duration of diabetes
  - age/life expectancy
  - comorbid conditions
  - known CVD or advanced microvascular complications
  - hypoglycemia unawareness; severe episodes
  - individual patient considerations
- More or less stringent glycemic goals may be appropriate for individual patients.

Case example

- 40 yo F diagnosed in 2009 with A1C of 15
- Last 2 years, also diagnosed with retinopathy, nephropathy, gastroparesis, autonomic insufficiency
- + HTN
- No other CAD risk factors
- Goal HbA1C?

Medications

- First line
  - Biguanides
- Second line
  - Sulfonylureas
  - Insulin
- Others
  - Thiazolidinediones (glitazones)
    - 2010 FDA restriction of rosiglitazone
  - Alpha-glucosidase inhibitors
  - Meglitinides
Newer medications

- **GLP-1 receptor agonists**
  - GLP-1 stimulates insulin release and slows digestion rate.
  - Exenatide [Byetta]
  - Bid injection within 60 min prior to meals. Small pen needles. Used with oral meds. Does not replace insulin. Only for type 2.
  - Reduces hunger and can help with weight loss.
  - Does not cause hypoglycemia.
  - Cons: Side effect of nausea in more than 10% patients; Cost; reports of altered renal function; pancreatitis; long-term safety
  - Contraindicated for GFR<30
  - Patients motivated to lose weight, at risk for hypoglycemia, willing to give self-injections and A1C is not too high.
  - Also Liraglutide [Victoza]
  - Daily injection but higher risk pancreatitis, thyroid tumors in mice

- **DPP-4 inhibitors**
  - Block DPP-4, an enzyme that deactivates protein GLP-1
  - Sitagliptin phosphare [Januvia] and saxagliptin (Onglyza)
  - Oral med, once a day.
  - Do not cause hypoglycemia or weight gain.
  - Cons: cost, modest efficacy and long-term safety

- **Amylin analogs**
  - Synthetic amylin, hormone used by pancreas to lower glucose levels
  - Pramlintide acetate [Symlin]
  - Both type 1 and 2
  - Helps with appetite control/weight loss
  - Extra injection with mealtime insulin, can cause hypoglycemia [reduce mealtime insulin by 50%]
  - Common side effect of nausea

Blood pressure control: treatment goals?

- **UKPDS, HOT, and ADVANCE trials**
  - Found reduced CV outcomes with lower achieved BPs
  - None achieved SBP <130 mm Hg

- **ACCORD trial**:
  - Systolic target <120 vs. 130-140 mm Hg
    - Mean BP achieved: 119/64 vs. 133/70
    - 3.4 medications per participant vs. 2.1 medications
      - Cost, side effects
    - No difference in primary outcome [composite of MI, stroke, CVD death]
    - HR 0.88 (95% CI 0.73-1.06; p= 0.2)
    - Subanalysis for stroke: HR 0.59 (95% CI 0.39-0.89; p=0.01)

ADA blood pressure goals

- A goal systolic blood pressure 130mmHg is appropriate for most patients with diabetes. (C)
- Based on patient characteristics and response to therapy, higher or lower systolic blood pressure targets may be appropriate. (B)
- Patients with diabetes should be treated to a diastolic blood pressure 80 mmHg. (B)

Alternative BP goals?

- Kaiser Permanente goal “comfortably below 139/89”
- Health Partners in MN <140/85
- JNC8
  - Coming soon to a website near you!

Lipid control

- If no CVD, age >40 and with one other CVD risk factor, goal LDL< 100 or on statin.
- If no CVD, age < 40 years, consider statin and lifestyle changes if LDL> 100.
- With CVD, “LDL< 70 is an option”
- Alternative goal: 30-40% reduction of LDL from baseline

Lipid control goals: evidence?

<table>
<thead>
<tr>
<th>Study (ref.)</th>
<th>CVD</th>
<th>Statin dose and comparator</th>
<th>Relative risk reduction (%)</th>
<th>Absoluterisk reduction (%)</th>
<th>LDL cholesterol reduction (mg/dL)</th>
<th>LDL-cholesterol reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4G-DIM (217)</td>
<td>2°</td>
<td>Simvastatin 20-40 mg vs. placebo</td>
<td>50</td>
<td>42.5</td>
<td>100 to 119</td>
<td>36</td>
</tr>
<tr>
<td>ASPHY (224)</td>
<td>2°</td>
<td>Atorvastatin 10 mg vs. placebo</td>
<td>34</td>
<td>15</td>
<td>112 to 79</td>
<td>29</td>
</tr>
<tr>
<td>HPS-DM (216)</td>
<td>2°</td>
<td>Simvastatin 40 mg vs. placebo</td>
<td>4.8 to 6.3</td>
<td>7.5</td>
<td>129 to 94</td>
<td>31</td>
</tr>
<tr>
<td>CARE-DM (217)</td>
<td>2°</td>
<td>Pravastatin 40 mg vs. placebo</td>
<td>13</td>
<td>5.4</td>
<td>130 to 65</td>
<td>27</td>
</tr>
<tr>
<td>TCT-COH (218)</td>
<td>2°</td>
<td>Atorvastatin 80 mg vs. 30 mg</td>
<td>10</td>
<td>7.8</td>
<td>99 to 77</td>
<td>22</td>
</tr>
<tr>
<td>HPS-DM (216)</td>
<td>1°</td>
<td>Simvastatin 40 mg vs. placebo</td>
<td>7.5 to 11.5</td>
<td>6.0</td>
<td>124 to 86</td>
<td>31</td>
</tr>
<tr>
<td>CARE (222)</td>
<td>1°</td>
<td>Atorvastatin 10 mg vs. placebo</td>
<td>5.5</td>
<td>4.9</td>
<td>118 to 71</td>
<td>40</td>
</tr>
<tr>
<td>ASPHY (224)</td>
<td>1°</td>
<td>Atorvastatin 10 mg vs. placebo</td>
<td>1.9</td>
<td>1.9</td>
<td>119 to 80</td>
<td>30</td>
</tr>
<tr>
<td>ACCO-DM (204)</td>
<td>1°</td>
<td>Atorvastatin 10 mg vs. placebo</td>
<td>11.3 to 10.1</td>
<td>0</td>
<td>123 to 92</td>
<td>24</td>
</tr>
</tbody>
</table>

Notes: Some trials comparing atorvastatin and/or pravastatin to placebo showed significant benefit at 1 year, but were too short to evaluate long-term effects. The table includes data from 2184 patients in 9 trials of simvastatin and pravastatin. The trials compared LDL cholesterol at treatment and at 1 year. The trials were randomized, double-blind, placebo-controlled, and blinded to treatment group assignment. The primary end point was the change in LDL cholesterol level from baseline to 1 year. Authors: D. B. W. Cleary, et al. The Journal of the American Medical Association, 2005.
Aspirin

- No change for secondary prevention
- 1st prevention
  - Men > 50 years and women > 60 years with one additional risk factor (smoking, hypertension, dyslipidemia, family hx of early CVD, albuminuria)
  - CVD risk ≥ 10%

If we set goals, we should ask

HOW ARE WE DOING?

What’s Changing?

- 8% of US adults have diabetes
  - 12% for those <100% of the FPL
  - 7% of those >200% of the FPL
- The number of people with diabetes is expected to double in the next 25 years from 24 million to 48 million.
- Costs are expected to increase from $132 billion to $430 billion

The Health of Our Nation

- 21% of adults smoke cigarettes
- 33% of men and 35% of women are obese
- 75% of adults do not eat 5 fruits/vegetables a day
- 51% of adults do not exercise regularly

Sources: CDC and Kaiser Family Foundation; www.kff.org/medicaid/kcmu072208nr.cfm
Non-adherence is a significant burden on health care

- Adherence with long-term therapy for chronic diseases in developed countries averages 50%.
- Poor adherence to medications causes an estimated 125,000 deaths annually.
- Non-adherence results in $100 billion in additional health care costs each year in the United States.

...in terms of outcomes and costs.

66% of physician office visits generate a prescription

However, many prescriptions go unfilled or are used incorrectly.

![Graph showing the reasons for prescription non-compliance.]

How are we doing?

- National study of physician performance on 439 process indicators for 30 medical conditions plus preventive care: physicians provided only 55% of recommended care.
- 50% of people with hypertension are inadequately treated.
- 63% of people with diabetes have HbA1c levels greater than 7.0%.
- 62% of people with elevated LDL-cholesterol have not reached lipid goals.

Physicians do not explain their care plan well and do not make the care plan together with the patient and family.

- Asking patients to repeat back what the physician told them, 50% get it wrong.
- Asking patients: “Describe how you take this medication,” 50% take it differently than prescribed.
- In a study of 1000 physician visits, the patient did not participate in decisions 91% of the time.

References:

4. How are we doing? Not so well....

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References:

The Usual Way

- Patient not engaged in her illness care
- Short, unplanned MD visit, no team

Uninformed, passive patient \[\rightarrow\] Unprepared practice team

Frustrating unproductive interactions

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Chronic Care Model

First Step: Whose treatment goals?

- Do your patients know their treatment goals?
- Do your patient agree that these are their goals?
- Do your patients understand and agree how to reach these goals?

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What is self-management?

- Self-management is what people do every day: decide what to eat, whether to exercise, if and when they will monitor their health or take medications.
- People who are motivated to make daily decisions and choose actions favoring healthy behaviors are sometimes called “good self-managers.”

Supporting Patients Where They Are

- People like me
- Family and friends
- Communication
- Health system
- Health education
- Follow up
- Team Care
- Community, including workplace

Components of self-management support

- Provide information
- Intensive skills training (disease specific)
- Encouraging healthy behavior change
- Teach patients problem-solving skills
- Assisting patients with psychosocial issues and the emotional impact of having a chronic condition
- Provide ongoing and regular follow-up
- Encourage and train patients to become active participants in their care

PCPs cannot do this work alone

- Average primary care panel in US is 2,300

- A primary care physician with a panel of 2,500 average patients will spend 7.4 hours per day doing recommended *preventive care*

- A primary care physician with a panel of 2,500 average patients will spend 10.6 hours per day doing recommended *chronic care*

Primary Care Teams

Teams:
a group of diverse clinicians who participate in, and communicate with each other regularly about the care of a defined group (panel) of patients.

Which one *most closely* matches your primary care team?

1. Self, MA
2. Self, MA and RN
3. Self, MA, PA/NP and RN
4. Self, MA, PA/NP, RN, nutritionist
5. Self, MA, PA/NP, RN, nutritionist, pharmacist
6. I’m not sure.

The Primary Care Team

- The entire team can include physicians, PA/NPs, RNs, pharmacists, health educators, physical therapists, social workers, receptionists, medical assistants, health workers
- The *crucial subunit* of this team is traditionally the clinician and the medical assistant (MA) or health worker (HW)

Redesign example: Panel Management

- Making sure every patient on a team’s panel has all the chronic and preventive care tasks done on time, and that everyone with poorly controlled chronic disease is offered planned visits for self-management support
- Panel managers close care gaps (process and outcome)
- True panel management separates this work from clinicians, leaving them time for more complex patients and improving access
- Needed: registry, training, and protected time

Does your practice use a registry to track T2DM patients?

1. No, we don’t have a registry.
2. Yes, we have a registry but it is not updated in a timely way.
3. Yes, we have an updated registry, but we do not use it often in patient care.
4. Yes, we have an updated registry. Only MDs/NPs use it.
5. Yes, we have an updated registry that our primary care team uses.
6. I am not sure.
Redesign example: Panel management by teams

What is Panel Management?

• Train personnel as panel managers
• Clinicians create evidence-based rules for panel managers
• Panel manager combs registry/data base, identifies patients who need services, contacts patients, orders services
  ➢ Preventive: mammograms, FOBT, immunizations
  ➢ Chronic: HbA1c, LDL cholesterol, diabetic eye exams
  ➢ Identifies chronic patients in poor control, arranges planned education/med adherence/lifestyle visits

Redesign example: Primary Care Team Model: “The Teamlet”

Teamlet is a “mini-team” including

- the provider and
- a health coach (HC)

Teamlet planning and expanding the visit

The visit is planned

- HC prints out patient summary sheet, med list and lab graphs
- Provider and HC can huddle to discuss plan before visit

The 15-minute visit is extended to

- Pre-visit by health coach
- Visit by clinician (with health coach)
- Post-visit by health coach
- Between-visit by health coach
Health Coach Role

**Self management support**
- Supporting patient to have knowledge, skills and confidence to become active participant in their care

**Bridge**
- Clarifying information and updates
- Cultural/linguistic gaps

**Clinical Navigation**
- Due to language concordance, health coaches can make follow-up phone calls or no-show phone calls between visits
- Health coaches are in clinic every day and can become a primary contact person for patients throughout the week

**Health Coach Core Skills**
- Ask-Don’t Tell
- Setting agendas
- Discussing ABCs of diabetes care
- Medication reconciliation
- Closing the loop
- Behavioral change action plans

**Clinical continuity**
- Patients are part of continuity panel
- Goal to maximize continuity between patient and health coach/resident

**Emotional support**


**Teamlet Communication**
- Essential for coordination of care
  - HUDDLES in clinic
  - Documentation
  - Email
  - Voicemail
Building Teams

Essential for functioning teams
- Protected meeting time
- Trust, respect and open communication
- Defined roles

Thank you!
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