Objectives

- Review the 14 Standards of Care to the best of our ability in 90 minutes!
1. Strategies for Improving Care

- Based on a recent report by the CDC, <7% of privately insured adults with newly diagnosed diabetes from 2009 to 2012 joined a self-management education and training program.

- Consider Chronic Care Model
  1. Optimize Provider and Team Behavior
  2. Support Patient Behavior Change
  3. Change the Care System

1. Keep it Patient Centered

- “It is clear that optimal diabetes management requires an organized, systematic approach and the involvement of a coordinated team of dedicated health professionals, working in an environment where patient centered care is a high priority”.

BMI Categories
2. Classification and Diagnosis of Diabetes - Update

- Screening criteria update for Asian Americans: BMI ≥ 23
  - the cut point for screening Asian Americans for prediabetes and type 2 diabetes is now a BMI ≥ 23 (vs 25) to reflect the increased risk of diabetes at a lower BMI level relative to the general population.

3. Initial Eval and Diabetes Management Planning

- Medical Evaluation
  1. Classify diabetes
  2. Detect diabetes complications
  3. Review previous treatment and risk factor control
  4. Assist in formulating a management plan
  5. Provide a basis for continuing care

3. Initial Eval – Conditions to look for

- Type 1 - Autoimmune diseases
- Other conditions that may appear Type 1/2
  - Depression and anxiety
  - Obstructive sleep apnea
  - Fatty liver disease
  - Cancer
  - Fractures
  - Cognitive impairment
  - Low Testosterone in Men
  - Periodontal disease
  - Hearing impairment
4. Foundations of Care

- Education –
  - Setting Up Successful Diabetes Ed Program – Level 2
- Nutrition
- Physical Activity
  - Nutrition and Exercise Course – Level 1
- Smoking Cessation
- Psychosocial Care
- Immunization

4. Education

- People with diabetes and pre diabetes should receive DSME
  - Monitor for effective self-management and quality of life
  - Address psychosocial issues and emotional well being
  - Results in cost savings and improved outcomes, should be reimbursed by third party payers.

4. Exercise Recommendations

- Activity update – Don’t sit more than 90 minutes
  - Evidence supports that everyone, including with diabetes should be encouraged to reduce sedentary time, by not sitting for more than 90 minutes at a time.
  - It is recommended that people with pre diabetes and diabetes engage in 150 minutes of activity a week and at least 2 weekly sessions of resistance exercise.
Good Exercise Info / Quotes

- 20% of people walk 30 mins a day
- Exercise decrease A1c 0.7%
- No change in body wt, but 48% loss in visceral fat

- "If you don’t have time for exercise, you better make time for disease."

- "I don’t have time to exercise, I MAKE time."

Mike Huckabee

Best Shake For People with Diabetes

"The only diet shake I recommend is the shake your bounty makes when you exercise."

From Debbie Nagata’s slide collection

4. Vaccinations- Immunizations

- Influenza vaccine
  - every year starting at age 6 months
- Hepatitis B Vaccine
  - For diabetes pts age 19 – 59 (not previously vaccinated)
  - Double risk of Hep B due to lancing devices/glucose meter exposure
4. Pneumonia Vaccinations

- Pneumonia polysaccharide PPSV23 vaccine to all patients starting at age 2
- Adults ≥ 65 years of age, if not previously vaccinated, should receive pneumococcal conjugate vaccine 13 (PCV13), followed by PPSV23 6-12 months after initial vaccination.
- Adults ≥ 65 years of age, if previously vaccinated with PPSV23 should receive a follow-up ≥ 12 months with PCV13.

4. E- Cigarettes

- Not supported as an alternative to smoking or to facilitate smoking cessation.

The uptake of e-cigarettes, which use battery-powered cartridges to produce a nicotine-laced vapor (and often contain other bad stuff)

4. Smoking and Diabetes

Smoking increases risk of diabetes 30%

- Ask at every visit
- Assess
- Advise
- Assist with stop smoking
- Arrange for referrals
- Organize your clinic
5. Prevention or Delay of Type 2

- Patients with prediabetes
  - Refer to behavioral counseling /DSME program to:
    - Focus on intensive diet and physical activity
    - Weight loss target of 7%
    - Increase physical activity to 150 minutes a week
  - Follow-up counseling critical for success
  - Consider Metformin for type 2 prevention
    - If A1c 5.7-6.4
    - Especially for those with BMI >35 and hx of GDM
  - Monitor annually and screen and mitigate modifiable CV risk factors

Can we stop pre diabetes from progressing?

3, 234 people w/ Pre-Diabetes randomized:

- Placebo
- Diet/Exercise or
- Metformin
  over a three year period

Diabetes Prevention Program (DPP) 2001

Diabetes Prevention Program

- Standard Group - 29% developed DM
- Lifestyle Results - 14% developed DM
  - 58% (71% for 60yrs +) Risk reduction
    - 30 mins daily activity
    - 5-7% of body wt loss
- Metformin 850 BID - 22% developed DM
  - 31% risk reduction (less effective with elderly and thinner pt’s)
Weight loss and Prevention

- For every 2.2 pounds of weight loss, risk of type 2 diabetes was reduced by 13%.

Have Pre-Diabetes? Steps to Prevent Type 2

- Lose 7% of body weight
  - Healthy eating, high fiber, low fat, avoid sugar sweetened beverages, reduce total caloric intake
- Exercise 150 minutes a week
- Consider Metformin Therapy for
  - Women with history of GDM
  - Patients with BMI of 35 or greater
  - Under the age of 60
- Follow-up and group education
- Annual monitoring and tx of CVD risk factors
6. Glycemic Targets

- **Adult non pregnant A1c goals**
  - A1c < 7% - a reasonable goal for adults.
  - A1c < 6.5% - may be appropriate for those without significant risk of hypoglycemia or other adverse effects of treatment.
  - A1c < 8% - may be appropriate for patients with history of hypoglycemia, limited life expectancy, or those with longstanding diabetes and vascular complications.

6. Pediatric Glycemic Targets-2015

- **A1c goal <7.5 % for all ages;**
  - however individualization is still encouraged.
  - A lower goal, <7% if can be achieved w/out excessive hypoglycemia

- **Blood glucose goals**
  - Before meals: 90-130
  - Bedtime/overnight: 90-150
6. A1c Goals for Non Pregnant Adults
Individualize Targets – ADA

- < 7% for patients **in general**
- For individual pts, as close to normal as possible (<6.5%) w/out significant hypo*

Frequency:
- If pt meeting goal - At least 2 times a year
- If pts not meeting goal – Quarterly
6. A1c Test

- Measures glycation of RBC's over 2-3 months
- Weighted mean (50% preceding month)
- Each 1% ~ 29mg/dl
- Accuracy: affected by some anemias, hemoglobinopathies
- A measurement of glucose in fasting and postprandial states
- African Americans may have false lows

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6. A1c and Estimated Avg Glucose (eAG)

<table>
<thead>
<tr>
<th>A1c (%)</th>
<th>eAG</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>97</td>
</tr>
<tr>
<td>6</td>
<td>126</td>
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<td>7</td>
<td>154</td>
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<td>8</td>
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<td>240</td>
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<tr>
<td>11</td>
<td>269</td>
</tr>
<tr>
<td>12</td>
<td>298</td>
</tr>
</tbody>
</table>

\[ eAG = 28.7 \times A1c - 46.7 \sim 29 \text{ pts per 1%} \]

Order teaching tool kit free at diabetes.org

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Individualize Targets – ADA

- Pre-Prandial BG 80-130
- rather than 70–130 mg/dL, to better reflect new data comparing actual average glucose levels with A1C targets.

- 1-2 hr post prandial < than 180
  *for nonpregnant adults
7. Approaches to Glycemic Management

- Join our Meds for Type 2 (Part 1)
  - Jan 19 – in Level 1 Series
- Join our Meds Management for Type 2 (Part 2)
  - Webcast on Feb 4 – in Level 2 Series
- Join Insulin Pattern Management Gone Crazy (Part 2)
  - Webcast on Feb 19 – in Level 2 Series

7. Steps to manage hyperglycemia in Type 2:

- Start with lifestyle: healthy eating, weight management, increased physical activity and diabetes education.
- Add metformin: When lifestyle alone is not achieving A1c goal. Metformin should be added at, or soon after diagnosis (unless contraindicated).
- Using GFR as safety indicator for metformin. The ADA Stds 2015 suggests GFR may be a more appropriate measure than creatinine to screen for risk of lactic acidosis. They suggest if GFR <45, max dose is 1000mg a day. If GFR <30, stop metformin.
- Metformin has a long standing evidence base for efficacy and safety, is cheap and may reduce CV risk.
- If A1c target is not achieved after 3 months, consider adding one of 6 treatment options or basal insulin.
  - Consider starting dual therapy if A1c ≥ 9%. Also consider starting insulin therapy since it is most effective at getting A1c to goal.
  - A1c still above target? Consider:
    - Basal/bolus therapy or add a GLP-1 Agonist.
    - Twice daily premixed biphasic insulin (70/30)

7. Hyperglycemia Algorithm – Type 2
7. Insulin Management for Type 2

8. Cardiovascular Disease and Risk Management
- Cardiovascular disease is the leading cause of mortality and morbidity in diabetes
- Largest contributor to direct and indirect costs
- Controlling cardiovascular risk improves outcomes
- Large benefits are seen when multiple risk factors are addressed globally

8. BP Goal 2015
BP < 140 / 90
- Some pts may benefit from B/P 130/80 (younger and achieved with undue tx burden)
- Studies indicate that the previous B/P target of 140/80 didn’t improve outcomes enough to balance the risk of side effects such as orthostatic hypotension and polypharmacy.
8. Hypertension Guidelines 2015

Screening – Check BP at each visit.
If either
• systolic 140 or > diastolic 90 or > repeat on separate day.
Hypertension = Repeat systolic or diastolic above or equal to these levels

When taking B/P
• Pt sit still for 5 min’s
• Feet on floor,
• Arm supported at heart level
• Right size cuff

8. BP Treatment

ADA 2015 Standards

• Pts with B/P > 120/80
  • encourage lifestyle changes to reduce B/P
• B/P > 140/90
  • Lifestyle plus prompt initiation of B/P meds.
• Lifestyle =
  • Weight loss
  • DASH Style diet (fresh fruit, veggies, whole grains, reducing sodium and increasing potassium intake)
  • Moderation of alcohol intake
  • Increased physical activity

8. Blood Pressure Treatment

• First Line B/P Drugs
  • ACE Inhibitors or
  • Angiotensin receptor blocker (ARBs) (type 2)
  • If one class is not tolerated, the other should be tried
• Multiple Drug Therapy often required
  • Including an ACE Inhibitor / ARB at max dose, plus a thiazide diuretic
8. Hyperlipidemia Update 2015

- **Statin treatment and lipid monitoring** were revised to reflect the 2013 findings of American College of Cardiology/ American Heart Association.
- **Statin therapy initiation** is no longer based on the LDL level.
  - Starting and dosing stratification is driven by risk status.

8. Dyslipidemia Screening - Adults

- Screening lipid profile is recommended at time of diagnosis
- And/or at 40 years
- And periodically thereafter (every 1-2 years)

8. Dyslipidemia Management

- Start with lifestyle
  - Reduce trans, saturated fat, cholesterol
  - Increase intake of omega-3 fatty acids, viscous fiber, and plant sterols
  - Contained in grains, vegetables, fruits, legumes, nuts, and seeds. Also added to margarine, OJ and other food products
  - Lose weight (if indicated)
  - Get Active
8. Dyslipidemia Management

- Intensify lifestyle therapy and optimize glucose control for patients with:
  - Triglycerides ≥ 150 and/or
  - HDL ≤ 40 (men) ≤ 50 (women)

8. ADA Guidelines 2015

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk factors</th>
<th>Recommended statin dose*</th>
<th>Monitoring with lipd panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40 years</td>
<td>None/CVD risk factors**</td>
<td>None/Overt CVD***</td>
<td>Annually or as needed to monitor adherence</td>
</tr>
<tr>
<td>40–75 years</td>
<td>None/CVD risk factors</td>
<td>Moderate or high</td>
<td>As needed to monitor adherence</td>
</tr>
<tr>
<td>&gt;75 years</td>
<td>None/Overt CVD</td>
<td>Moderate or high</td>
<td>As needed to monitor adherence</td>
</tr>
</tbody>
</table>

*In addition to lifestyle therapy.
**CVD risk factors include LDL cholesterol ≥ 100 mg/dL (2.5 mmol/L), high blood pressure, smoking, and overweight and obesity.
***Overt CVD includes those with previous cardiovascular events or acute coronary syndromes.
8. Statin Therapy

- **High intensity statins (lowers LDL 50%)**:
  - Lipitor (atorvastatin) 40-80mg
  - Crestor (rosuvastatin) 20-40mg
- **Moderate intensity (lowers LDL 30-50%)**:
  - Lipitor (atorvastatin) 10-20mg
  - Crestor (rosuvastatin) 5-10mg
- **Low intensity**
  - Pravachol (pravastatin) 10 – 20mg
  - Mevacor (Lovastatin) 20mg

2013 ACC/AHA Cholesterol Guidelines

<table>
<thead>
<tr>
<th></th>
<th>High-Intensity Statin Therapy</th>
<th>Moderate-Intensity Statin Therapy</th>
<th>Low-Intensity Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily dose lowers LDL-C cm average, by approximately 50%</td>
<td>Atorvastatin 80 mg</td>
<td>Rosuvastatin 20 mg</td>
<td>Simvastatin 40 mg</td>
</tr>
<tr>
<td>Daily dose lowers LDL-C cm average, by approximately 30% to &lt;50%</td>
<td>Atorvastatin 40 mg</td>
<td>Rosuvastatin 10 mg</td>
<td>Simvastatin 20-40 mg</td>
</tr>
<tr>
<td>Daily dose lowers LDL-C cm average, &lt;50%</td>
<td>Pravastatin 40 mg</td>
<td>Fluvastatin XL 80 mg</td>
<td>Fluvastatin 40 mg</td>
</tr>
<tr>
<td></td>
<td>Fluvastatin 20 mg</td>
<td>Fluvastatin 80 mg</td>
<td>Fluvastatin 40 mg</td>
</tr>
</tbody>
</table>

8. Lipid Management

**ADA Clinical Practice Recommendations**

- **Add Statins for pts (regardless of LDL)**
  - With CVD
  - Without CVD who are 40+ with CVD risk factor
- **Treatment Recommendations**
  - Lifestyle interventions
    - reduce saturated & trans fat, cholesotery
    - More viscous fiber, n-3 fatty acids, plant stenols/sterol
    - wt loss, exercise, stop smoking,
Aspirin Therapy
(75-162/day)

- Aspirin not recommended for diabetes if low CVD risk and under age of 50 women, 60 men
- Use for men >50 yrs, or women >60 yrs who smoke or have CV risk factor – primary prev)
- Use aspirin therapy for diabetes pts with history of CV disease (secondary prev)
- Combo therapy of aspirin + clopidogrel is reasonable for a year after MI
- Do not use in pts w/ allergy use Plavix, (clopidogrel)

8. Coronary Heart Disease

- In patients with known CVD, use:
  - Aspirin
  - Statin
  - B/P Med
    - Consider using ACE Inhibitor to reduce risk of CV event
    - In pts with prior MI, Beta Blockers should be continued at least 2 years after the event
  - Don’t use Actos or Avandia in pts with CHF
  - In pts with stable CHF, Metformin can be used in renal function normal and stable

A 78 yr old man, smokes ppd

- A1c was 8.1% (down from 10.4%)
- B/P 136/76   AM BG 100, 2 hr pp 190
- Chol – TG 54, HDL 46, LDL 98
- Meds:
  - Insulin – 16 units Lantus at HS
  - Benazepril 20 mg
  - Metropolol 50mg
  - Warfarin 5mg
  - Actos 15 mg

What class of meds is this patient on?
Any special instructions?
Any med missing?
Mr. Jones - What are Your Recommendations for Self-Care?

**Patient Profile**
62 yr old with newly dx type 2.
History of previous Mr.
Meds: Lasix, synthroid

**Labs:**
- A1c 9.3%
- HDL 37 mg/dl
- LDL 156 mg/dl
- Triglyceride 260mg/dl
- Proteinuria - neg
- B/P 142/92

Self-Care Skills
- Walks dog around block 3 x’s a week
- Bowls every Friday
- Widowed, so usually eats out

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**ABCs of Diabetes**

- A1c less than 7% (avg 3 month BG)
  - Pre-meal BG 70-130
  - Post meal BG <180
- Blood Pressure < 140/80
- Cholesterol
  - Eval if statin therapy indicated

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**Diabetes Care Guidelines- ADA**

<table>
<thead>
<tr>
<th>Test / Exam</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1c</td>
<td>At least twice a year</td>
</tr>
<tr>
<td>B/P</td>
<td>Each diabetes visit</td>
</tr>
<tr>
<td>Cholesterol (LDL, HDL, Tri)</td>
<td>Yearly (less if normal)</td>
</tr>
<tr>
<td>Weight</td>
<td>each diabetes visit</td>
</tr>
<tr>
<td>Microalbumin/GFR/Creat</td>
<td>Yearly</td>
</tr>
<tr>
<td>Eye exam</td>
<td>Yearly</td>
</tr>
<tr>
<td>Dental Care</td>
<td>At least twice a year</td>
</tr>
<tr>
<td>Comprehensive Foot Exam</td>
<td>Yearly (more if high risk)</td>
</tr>
<tr>
<td>Physical Activity Plan</td>
<td>As needed to meet goals</td>
</tr>
<tr>
<td>Preconception counseling</td>
<td>As needed</td>
</tr>
</tbody>
</table>
9. Microvascular Complications

- "Every time you see your doctor, take off your shoes and socks and show your feet!"
- For those at high risk for foot complications
- All patients with loss of protective sensation, foot deformities, or a history of foot ulcers

Kidney Disease

- Optimize glucose and B/P Control to protect kidneys
- Screen for Albumin-Creat ratio and GFR
  - Type 2 yearly
  - Type 1 after had diabetes for 5 years
- Treat hypertension with ACE or ARB and intensify as needed
- Consider referral to specialist when management is difficult and kidney disease is advanced
- Not recommended to limit dietary protein intake below 0.8 g/kg/day (doesn't improve outcomes)

Eye Disease

- Optimize glucose and B/P Control to protect eyes
- Screen with initial dilated and comprehensive eye exam by ophthalmologist or optometrist
  - Type 2 at diagnosis, then every one to 2 years
  - Type 1 within 5 years of dx, then every 1-2 years
- Can use high quality fundus photography as screening tool- Initial exam should be done in person
- Promptly refer pts with macular edema, severe non-proliferative disease trained specialist
- Treatment includes laser therapy (retinopathy) and Antivascular and Endothelial Growth Factor for Macular Edema
9. Microvascular Complications

- Nerve Disease
  - Tight glycemic control is the only strategy shown to prevent or delay the development and progression of neuropathy.
  - Screen all patients for nerve disease using simple tests, such as a monofilament
    - Type 2 at diagnosis, then annually
    - Type 1 diabetes 5 years, then annually
  - Assess and treat patients to reduce pain and symptoms to improve quality of life.

10. Older Adults

- If functional and cognitively intact with significant life expectancy, use same goals as younger adults
- Glycemic goals may need to be relaxed with focus on quality of life
- Address Cardiovascular Risk factors
- Focus screening for complications on those that would lead for functional impairment
- Over age 65, high risk for depression

11. Children and Adolescents

- See Level 2 Course
  - Kids and Diabetes – will be re-recording in February
12. Gestational DM ~ 7% of all Pregnancies

- GDM prevalence increased by ~10–100% during the past 20 yrs
- Native Americans, Asians, Hispanics, African-American women at highest risk
- Immediately after pregnancy, 5% to 10% of GDM diagnosed with type 2 diabetes
- Within 5 years, 50% chance of developing DM in next 5 years.

12. Management of Diabetes in Pregnancy

- Provide preconception counseling, focus on importance of glycemic control, A1c<7%, to prevent anomalies
- Avoid teratogenic meds (ACE Inhibitors, Statins) in sexually active women not using reliable contraception
- Manage GDM with diet and exercise first, add meds if needed.
- Women with pregestational diabetes need baseline eye exam in first trimester, monitor every trimester
- A1c target during pregnancy if <6%, if can be achieved without hypo
- Meds used in pregnancy include insulin, metformin and glyburide, still need long term safety data

12. Screen Pregnant Women Before 13 weeks

- Screen for undiagnosed Type 2 at the first prenatal visit using standard risk factors.
- Women found to have diabetes at their initial prenatal visit treated as "Diabetes in Pregnancy"
- If normal, recheck at 24-28 weeks
12. GDM Criteria - 2 Options
“1 Step” – 75 gm OGTT

- 24-28 weeks
- OGTT in am after overnight fast of 8 or > hrs
- **GDM Diagnosis if ANY** of the following values met or exceeded:
  - FBG 1 HR 2 HR
    - ≥92 or ≥180 or ≥153

*Based on Hyperglycemia and Adverse Pregnancy Outcomes Study - IADPSG*

12. GDM Criteria – Option 2
“NIH 2 step”

**Step 1**
- 50 gm Oral Glucose Tolerance Test (non-fasting)
- If BG 140* at 1 hour proceed to Step 2

**Step 2** – 100 gm Oral Glucose Tolerance (fasting)

- **GDM Diagnosis if 2 values are met or exceeded**

<table>
<thead>
<tr>
<th>Carpentier/Coustan</th>
<th>or</th>
<th>NDDG</th>
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</thead>
<tbody>
<tr>
<td>Fasting</td>
<td>95 mg/dL (5.3 mmol/L)</td>
<td>105 mg/dL (5.8 mmol/L)</td>
</tr>
<tr>
<td>1 h</td>
<td>180 mg/dL (10.0 mmol/L)</td>
<td>190 mg/dL (10.6 mmol/L)</td>
</tr>
<tr>
<td>2 h</td>
<td>155 mg/dL (8.6 mmol/L)</td>
<td>165 mg/dL (9.2 mmol/L)</td>
</tr>
<tr>
<td>3 h</td>
<td>140 mg/dL (7.8 mmol/L)</td>
<td>145 mg/dL (8.0 mmol/L)</td>
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</table>

*NDDG, National Diabetes Data Group. *The American College of Obstetricians and Gynecologists (ACOG) recommends a lower threshold of 135 mg/dL (7.5 mmol/L) in high-risk ethnic minorities with higher prevalence of GDM; some experts also recommend 130 mg/dL (7.2 mmol/L).*

Postpartum after GDM

- 50% risk of getting diabetes in 5 years
- Screen at 6-12 wks post partum
- Repeat at 3 yr intervals or signs of DM
  - Encourage Breast Feeding
  - Encourage weight control
  - Encourage exercise
  - Make sure connected with health care
  - Lipid profile/ follow BP
  - Preconception counseling
13. Diabetes Care in Hospital, Nursing Home and Skilled Nursing Facility

- Start discharge planning on admission
- Avoid sole use of sliding scale insulin during hospital stay
- Clearly identify type of diabetes on admission
- Critically ill patient goals:
  - Start insulin if BG >180
  - Goal BG 140-180 (some pts may benefit from 110-140)
  - Non Critically ill patient goals
  - Premeal < 140
  - Post meal <180
- Basal bolus preferred treatment
- Have hypoglycemia protocol
- Get A1c on all patient with DM/hyperglycemia

14. Diabetes Advocacy

- People living with diabetes should not face discrimination
- We need to all be a part of advocating for the best care and the rights of people living with diabetes.

Thank You

- Please email us with any questions.
- www.diabetesed.net