Module 2: Improving the Health & Wellness of People with Diabetes

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Objectives:

By the end of this module, students will know…..

• What are ways to prevent diabetes or manage pre-diabetes?
• How to monitor and treat patients with diabetes?
• What are the medical treatments for diabetes and its complications?
• What are some diabetes resources?
Prevention

Areas/opportunities for Interventions with Diabetes

Primary
- Prevent diabetes
- Screening and education (i.e. health fairs)
- Lifestyle changes

Secondary
- Prevent complications (i.e. amputations and dialysis)
- Lifestyle changes
- Medication and treatment

Tertiary
- Delay death (complications)
- Maintain quality of Life
- Medication and treatment
What are Ways to:

1. Prevent diabetes
2. Manage Pre-diabetes
Some other Pre-diabetic Conditions
Acanthosis Nigricans
Polycystic Ovarian Syndrome

- Usually obese
- Abnormal hair growth
- Menstrual irregularities
- Infertility
First line of therapy is...

1. Healthy Eating
2. Increase Physical Activity
3. Weight Management
Healthy Diet
The 3 R’s of a Healthy Diet

1. Right foods
2. Right amount
3. Right time
Eat the Right Foods

Eat the **Right Amount**

Portion sizes are key to this concept
Eat the **Right Amount**

- Clench one fist: 8 fluid oz or 1 cup
- Make a shaka: 3 ounces
- Cup one hand: 1/2 cup
- Press two thumbs: 1 tablespoon

It is important to try not to skip any meals
• Eating 3 regularly spaced meals per day
• Eating meals at about the same time each day.
• If you eat most of your calories at bedtime, you are not giving your body a chance to use these calories and you’re more likely to gain weight
Physical Activity
Physical Activity

- Includes anything that gets you moving, such as walking, ballroom dancing, hula, paddling or working in the yard.
- Being active helps you physically and mentally.
- The CDC suggests that adults get in at least 30-minutes of physical activity, 5-days a week.
### Physical Activity

Regular physical activity helps insulin work better, improving blood circulation, and keeps joints flexible.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Blood glucose</td>
<td>• Heart disease</td>
</tr>
<tr>
<td>• Blood pressure</td>
<td>• Stroke</td>
</tr>
<tr>
<td>• Cholesterol</td>
<td>• Stress</td>
</tr>
<tr>
<td>• Stress</td>
<td></td>
</tr>
</tbody>
</table>

**Strengthens:**
- Heart
- Muscles
- Bones
ACTIVITY SUGGESTIONS

- Limit television viewing
- Set a goal to increase your physical activity
- Start slow and work up (time and activity)
- Pick activities you like
- Set the example
Why are healthy diet & physical activity important in managing diabetes?

- **Food ➔ Sugar (Glucose) ➔ Energy**
- People with diabetes don’t effectively burn glucose for energy, and glucose can build up in the blood.
- A healthy diet and physical activity can help to keep blood glucose at normal levels.

+ = Diabetes control
Managing and Treating Patients with Type 2 Diabetes
Organs Affected by Diabetes

- Eyes - #1 cause of blindness
- Kidneys - #1 cause of renal failure/dialysis
- Blood vessels - risk equal to a heart attack
- Nerves – loss of sensation & control, pain
- Immune system - ↑ risk of infection #1 cause of amputations

1st step in preventing them all…. Blood Sugar Control!
Find the Balance to Maintain Blood Sugar

Exercise
Medication
Stress Reduction Activities

Food
Stress
Illness
Hormones

To reduce the risk of developing complications!
TREATMENT

TOOLS TO GET BLOOD SUGAR UNDER CONTROL

FOOD

ACTIVITY

MONITORING

STRESS MANAGEMENT

MEDICATION
ABCDEF's of Diabetes

• “A” is for Hemoglobin A1c
• “B” is for Blood Pressure
• “C” is for Cholesterol
• “D” is for Dialysis prevention
• “E” is for Eye Exam Yearly
• “F” is for Foot Care
• “G” is for Blood Glucose monitoring
“G” Blood Glucose monitoring

- Doctor should check regularly
- May prescribe home glucometer
- Best done a few times/day
  - usually once fasting in the morning
  - possibly another time after eating
  - keep results in log
  - correlate values with diet, lifestyle
Acute complications of poor glucose control

Poor glucose control with another factor (such as infections, trauma, heart attack, alcohol use):

- **Diabetic Ketoacidosis**
  Life-threatening electrolyte abnormality
  Symptoms: appears drunk, sweet breath like nail polish remover, rapid breathing, thirst, urination
  - Occurs predominantly in those with **Type 1** diabetes

- **Hyperosmolar Hyperglycemic State**
  Life-threatening dehydration, glucose usually >600
  Symptoms: extreme thirst, dry mouth, confusion, hallucinations, dark urine
  - Occurs predominantly in those with **Type 2** diabetes

Both conditions can cause coma and death
Oral Medications (Pills)

- Used to treat Type 2 diabetes
- Lowers blood sugar
- More than one drug can be used at the same time as the physician prescribed.
- **Must** be taken on a regular basis
  - The doctor may prescribe either only one pill or a combination of diabetes pills in order to regulate the blood sugar.
  - The goal remains the same: good blood sugar control.
# Oral Diabetes Medications

<table>
<thead>
<tr>
<th>Name</th>
<th>Side Effect</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metformin</strong></td>
<td>“Sore Stomach” (nausea/vomiting, diarrhea), metallic taste</td>
<td>Should pass in a few weeks, see doctor if not</td>
</tr>
<tr>
<td>(Glucophage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sulfonylureas</strong></td>
<td>Risk of hypoglycemia (low blood sugar) – similar to insulin</td>
<td>Eat regularly-don’t skip meals</td>
</tr>
<tr>
<td>(Glipizide, Glyburide, Glucotrol, Glimiperide)</td>
<td></td>
<td>Teach to notice signs &amp; correct</td>
</tr>
<tr>
<td><strong>Glitazones</strong></td>
<td>Swelling/water retention, potential risk of liver damage</td>
<td>Liver labs every 2 months for first year</td>
</tr>
<tr>
<td>(Actos, Avandia)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others: Sitagliptin</td>
<td>(Januvia) – no significant side effects</td>
<td></td>
</tr>
<tr>
<td>Acarbose (Precose)</td>
<td>– diarrhea and flatulence</td>
<td></td>
</tr>
</tbody>
</table>
Insulin Therapy

- Insulin injections allow the body to lower the individual’s blood sugar.
- In type 1 diabetics where the individual is not producing insulin the injections put insulin into the blood system.
- In type 2 diabetics insulin injections supplement (add to) the insulin that is produced by the pancreas.
Recognizing Hypoglycemia

Blood Glucose < 70

Risks: skipping meals, overdosing meds, excessive alcohol, excessive exercise

Symptoms:
- hunger
- nervousness and shakiness
- perspiration
- dizziness or light-headedness

- sleepiness
- confusion
- difficulty speaking
- feeling anxious or weak
Treating Hypoglycemia
Quick Fixes

- 2 or 3 glucose tablets
- 1/2 cup (4 ounces) of any fruit juice
- 1/2 cup (4 ounces) of a regular (not diet) soft drink
- 1 cup (8 ounces) of milk
- 3 to 6 pieces of hard candy
- 1 or 2 teaspoons of sugar or honey
ABCDEFG’s of Diabetes

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“A” is for A1c

- Blood test.
- Measures average blood glucose (sugar) for the past 2 to 3 months.
- The ADA recommends that people aim for an A1c below 6.5-7%.
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“B” is for Blood Pressure

• Blood pressure = force of blood inside blood vessels to flow to other parts of the body.

• ↑ blood pressure: your [heart symbol] has to work harder than it should.

• The ADA recommends that your blood pressure is below 120 / 80 mmHg.
# Blood Pressure Medications

<table>
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<tr>
<th>Name</th>
<th>Side Effect</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACE Inhibitor</strong></td>
<td><strong>Dry cough</strong></td>
<td>Doctor can switch to ARB</td>
</tr>
<tr>
<td>(Vasotec, Accupril, Lotensin)</td>
<td><strong>Angioedema</strong> (swelling of face, mouth)</td>
<td></td>
</tr>
<tr>
<td><strong>ARB</strong></td>
<td>Similar to ACE Inhibitors but side effects less common, headache</td>
<td></td>
</tr>
<tr>
<td>(Diovan, Cozaar)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These 2 types are used for diabetics with hypertension.
Other common medications that may be used include Hydrochlorothiazide and Beta blockers.
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- Blood test. At least yearly
- Cholesterol level = amount of fat in blood
- ↑ HDL helps to protect your heart.
- ↑ LDL can clog blood vessels and lead to heart disease.
- ↑ triglycerides raise your risk for heart disease.
# Cholesterol Medications

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</tr>
</thead>
<tbody>
<tr>
<td>Statin</td>
<td><strong>Muscle</strong> and joint aches, may lead to serious muscle damage&lt;br&gt;Rare liver damage</td>
<td>See doctor if aches don’t improve&lt;br&gt;Liver tests 1-2 months after starting</td>
</tr>
<tr>
<td>(Lipitor, Zocor, Crestor, Pravachol)</td>
<td></td>
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</tr>
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</table>

Other medications: Fibrates (side effects similar to statins, gall stones, GI upset), Niacin (flushing), Bile acid resins (Constipation, GI upset), Fish oil
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• Urine Microalbumin test
  - Detects “small kine” protein in your urine before full kidney damage begins
  - Should be done yearly by doctor

• Urinary Creatinine
  - Reflects amount of kidney damage

• Medications for kidney disease
  - ACE Inhibitors and ARBs
    (same ones used for blood pressure)
How to keep your ABCDs on target

• Make wise food choices (healthy diet)

• Increase physical activity

• Take medication(s) as directed
ABCDEFG’s of Diabetes

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- Annually beginning at diagnosis for Type 2
- Performed by an ophthalmologist or optometrist experienced in diagnosing diabetic retinopathy.
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• Daily Visual exam with shoes and socks off
• Annual complete exam including visual inspection, neurovascular examination (test with a microfilament) and risk categorization.
• Discuss appropriate footwear
• Refer high risk individual to foot specialist
Other Considerations for Diabetes
Diabetes & Pregnancy

- Diabetes near conception
  - risk of birth defects, miscarriage
- Gestational Diabetes
  - risk of macrosomia (big baby)

Treatment: diet, tight glucose control
Oral meds usually switched to insulin
Vaccinations

• Will not treat diabetes, but will help to prevent further complications from occurring.

• Vaccines to receive:
  – Influenza (often called the flu)
  – Pneumococcal
    • Pneumonia
    • Meningitis
  – Tetanus/diphtheria (Td) Toxoid
    • Caused by bacteria entering through wounds
Depression Screening

• ↑ Diabetes ↑ Depression
• ↑ Depression ↑ Diabetes
• ↑ Treatment ↓ Diabetes ↓ Depression

Successful treatment of depression in people with diabetes can improve glycemic control and overall quality of life.
Oral/Dental Exam

- Persistent poor glycemic control has been associated with the incidence and progression of diabetes-related complications including:
  - Gingivitis
  - Periodontitis
  - Dry mouth
  - Oral mucosal disorders
- More rigorous follow-up and attention to acute oral infections.
Products

- Insulin pens
- Insulin pumps
- Glucose monitoring watches

Coming Soon…
- Continuous monitoring systems
- Inhaled insulin
The Moral of the story

To prevent getting Type 2 diabetes …
- Maintain a healthy weight
- Eat a variety of foods in the right portion size
- Be active

To prevent complication of Type 2 diabetes…
- All the above
- Medications as directed
- Know your ABC’s
- Complete your recommend screening
Diabetes Resources
Resources

• National
  - American Diabetes Association (www.diabetes.org)
  - The National Kidney Foundation
  - The American Heart Association (www.heart.org)
  - National Diabetes information Clearinghouse
  - Center for Disease Prevent and Control (CDC) – Diabetes (www.cdc.gov/diabetes)

• State - Hawaii
  - American Diabetes Association – Honolulu 808-947-5979
  - Diabetes Care Connection (sponsored by HMSA, eligibility requirements) 1-800-499-5036
  - Hawaii Association of Diabetes Educators – www.hawaiidiabeteseducators.com