#### ALI 375: Lifestyle Management with Diabetes Presented by Anar Allidina, MPH, RD, CDE



### **Objectives**

- 1. Overview of Diabetes Mellitus (DM)
- 2. Understanding complications of DM Type 2
- 3. Importance of blood sugar testing
- 4. Management of DM:
  - Diet and Nutrition
  - Exercise
  - Blood sugar testing

2

Diabetes is a condition where your body does not produce or use insulin properly, resulting in high blood sugars.



#### **Overview of DM - What is Diabetes?**

In a person without DM.....

- Insulin, a hormone produced by the pancreas, is secreted in response to carbohydrate digestion
- Insulin acts like a key it allows sugar to enter into the body's cells to create energy

In a person with DM.... The process of insulin opening the cells to allow sugar in is not working properly → high blood sugars



#### Type 1 Diabetes

- Occurs in approx.
  10% of people
  with DM
- Formerly known as Juvenile Diabetes
- Insulin therapy is initiated immediately

#### Type 1 Diabetes





#### Type 2 Diabetes

- Occurs in approximately 90% of people with Diabetes
- Used to be known as "Adult Onset"
- Management: healthy eating, exercise, medication and/or insulin injections
- Progressive disease

## Type 2 Diabetes

 The stomach changes food into glucose.

3. The pancreas

4. Insulin enters

makes insulin.

the bloodstream.

Glucose enters the bloodstream.

> 5.Glucose can't get into the cells of the body. Glucose builds up in the blood vessels.

Blood

vessel

Copyright @ 2001 WebMD Corporation

MR part of

### **Overview of DM – Risk Factors for Type 2 Diabetes**

- Age >40
- Being overweight
- Having an "apple" shaped body
- Family history (very strong)
- Gestational diabetes or baby >9 lbs
- Ethnicity (African, Asian, South Asian, Aboriginal descent)



7

#### **Overview of DM Symptoms**

- Fatigue
- Increased thirst
- Increased urination
- Unexplained weight loss
- Blurred vision



If you have any of these symptoms, see your doctor. For more information about diabetes call Eli Lilly and Company at 1800-545-5979 or Bochringer Mannheim Corporation at 1800-858-8072.

8



60-HI-3327-2 10011627098 COPYRIGHT 6 1066, EU LULY AND COMPANY ALL RIGHTS RESERVED, PRINTED IN USA 233-6813-0696 6 1969 IDDE-RINGER MANNHEIM CORPORATION



## **Diagnosis of DM Type 2**

#### FPG ≥7.0 mmol/L

Fasting = no caloric intake for at least 8 hours

or

#### A1C ≥6.5% (in adults)

Using a standardized, validated assay, in the absence of factors that affect the accuracy of the A1C and not for suspected type 1 diabetes

#### or

#### 2hPG in a 75-g OGTT ≥11.1 mmol/L

#### or

#### Random PG ≥11.1 mmol/L

Random= any time of the day, without regard to the interval since the last meal

2hPG = 2-hour plasma glucose; FPG = fasting plasma glucose; OGTT = oral glucose tolerance test; PG = plasma glucose Reference: Canadian Diabetes Association 2013 Clinical Practice Guidelines

- IFG (FPG 6.1 6.9 mmol/L)
- IGT (2hPG in a 75-g OGTT 7.8 to 11.0 mmol/L)
- A1C 6.0 6.4% (for use in adults in the absence of factors that affect the accuracy of A1C and not for use in suspected type 1 diabetes)



#### A1C Level and Future Risk of Diabetes: Systematic Review

A1C Category (%)	5-year incidence of diabetes
5.0-5.5	<5 to 9%
5.5-6.0	9 to 25%
6.0-6.5	25 to 50%



#### **Overview of DM - Diabetes Complications**

# Prolonged high blood sugars can affect:

- Eyes Retinopathy
- Heart and cardiovascular system
- Kidney nephropathy
- Nervous system neuropathy
- Sexual organs erectile dysfunction

BEST WAY TO REDUCE COMPLICATIONS IS WITH GLYCEMIC CONTROL Diabetes Can Affect Various Parts of Your Body





13

part of **CALMC** 

## **Preventing Complications: ABCDE'S**

- A A1C optimal glycemic control (usually ≤7%)
- **B** BP optimal blood pressure control (<130/80)
- C Cholesterol LDL ≤2.0 mmol/L if decided to treat
- Drugs to protect the heart (regardless of baseline BP or LDL)
  - **A** ACEi or ARB **S** Statin **A** ASA if indicated

14

- E Exercise / Eating healthily regular physical activity,
  achieve and maintain healthy body weight
- **S** Smoking cessation

#### **Management of DM – Blood Sugar Targets**

-FPG / pre meal : 4-7 mmol/L

nol/L 10 mmol/l

- -2 hours after eating: 5-10 mmol/L
  - If HbAIC not being met: 5-8 mmol/L



#### Management of DM: Hypoglycemia = blood sugar <4.0 mmol/L



16

#### Management of DM Hypoglycemia: Causes

#### **Causes of hypoglycemia include**:

- increased physical activity
- not eating on time
  - eating less than normal
  - taking too much medication/insulin
  - the effects of drinking alcohol





#### Management of DM Hypoglycemia: Treatment

## Check blood glucose right away. If there is no meter but symptoms are present, treat!

- 1. If blood sugar is < 4 mmol/L, eat or drink 15 g of a fast acting carbohydrate such as:
  - 3 glucose tablets
  - 1/2 cup of juice or 3 packets of sugar dissolved in water
  - 6 Life Savers™ (chewed up)

2. Wait 15 minutes and then check blood sugar again. If blood sugar is still < 4mmol/L, treat again.

3. If the next meal is more than one hour away, eat a snack (15g of carbohydrates and a protein source ex: 1 oz of cheese and 7 soda crackers).

18

#### Management of DM – How often to test?

#### Diet alone and/or Medication:

- Individualize to each person
- Suggestion: test before and 2 hrs after a meal
- A few times per week
- Insulin Therapy:
  - 4-7 x /day for MDI
  - Before each insulin injection for safety
  - 2 hrs post meal are helpful





#### **Management of DM - Smart Testing**

- Smart testing empowers you to analyze the values, not just record them
- When the blood sugars are out of target ask why?
- This helps to reach A1c target





- Healthy eating or nutrition therapy can reduce AIC by 1.0-2.0%
- Healthy eating
  - when to eat
  - what to eat
  - *how much to eat*





- 3 meals/day
- Do not exceed more than 6 hours between meals



If gap is greater than 6 hours
 between meals → consider a healthy snack



- Grains and starches
- Fruits
- Milk and Alternatives
- Vegetables
- Fats
- Other choices



• Carbohydrates  $\rightarrow$  Sugar/Glucose  $\rightarrow$  fuel = energy

#### • Sources of Carbohydrates :

- Grains and Starches (rice, legumes, bread, corn, potato, pasta, bread, chapatti)
- Fruit, fruit juice, and dried fruit
- Milk and Yogurt
- Other choices (syrup, pop, candy, baked goods)

#### Are all carbs considered equal?

No!

- Glycemic Index (GI)
- High GI foods will raise blood sugars quickly - examples: white bread, fruit juice
- Low GI foods are digested more slowly and sugar is released more gradually into the bloodstream. For example: whole grain bread, legumes



\*\*\*Higher fibre foods tend to be lower GI

The amount of carbohydrate in the reference and test food must be the same.



- Protein → build, maintain and repair the body's tissue, such as muscles, organs, skin and hair.
- Sources of protein:
  - meat, poultry, fish,
  - eggs
  - cheese
  - nuts



26

\*ADAM

• Protein does not raise blood sugars unless eaten in excess.

- Vegetables
  - Add bulk,
  - Fibre
  - Vitamins and minerals
- Starchy vegetables to consider: potato and corn
  <sup>1</sup>/<sub>2</sub> cup is a carb serving
- Sweeter vegetables to consider: carrots, peas, beets, squash, turnips - > 2 cups – count as a carb





- Fat  $\rightarrow$  good and bad
- Sources of fat:
  - oils
  - butter/margarine
  - avocado
  - bacon
  - olives
  - nuts
- Fats do not raise blood sugars, but excessive fat intake will lead to weight gain
- Fat, specifically total fat, saturated fat and trans fat will negatively affect blood cholesterol levels



#### **Food Group Activity**





#### **Carbohydrates** =

fist size = ~1 cup or medium fruit





#### **Protein** =

palm of hand (or size of deck of cards) = 3 oz.





#### **Vegetables** =

Amount that fits in both hands





#### Fat =

#### Tip of the thumb





#### **Management of DM Nutrition**

#### Each meal aim for:

- 1 fist of carb
- 2 handfuls of vegetables
- 1 palm of protein
- 1 thumb of added fat





#### **South Asian Diet**

#### Pros

- Lentils, beans
- Whole grains from roti, chana flour
- Vegetables

Cons

- High carb naans, rice, potatoes
- High fat fried, too much oil



#### **Example of an unbalanced plate**



part of CLMC

#### **Example of a balanced plate**



#### Management of DM – Menu Planning Activity

#### **Breakfast example**

- 2 slices whole wheat toast
- 2 tsp butter
- Tea with milk and 2 sugar

#### **To Improve:**

- Have an omelette with 1 slice of toast – protein will keep you full for longer
- 2. Reduce sugar in your tea to 1 tsp or use sweetener



### **Management of DM – Nutrition Activity**

#### Lunch example

- Cheese sandwich
- Bag of chips
- Can of soda

#### **To Improve**

- Add lettuce and tomatoes to the sandwich to boost fibre
- Swap out the cheese for some avocado or hummus for hearty healthy fat, fibre and vitamins
- In place of chips choose air popped popcorn or a piece of fruit
- 4. Swap soda for diet soda, water or unsweetened ice tea

39

#### **Management of DM – Nutrition Activity**

#### **Dinner example**

- 2 cups of rice
- 1 cup of meat curry with potatoes
- 2 roti
- Orange juice

#### To Improve

- Decrease portion of rice to 1 cup (brown basmati) and add 1 cup curry with no potatoes
- 2. Reduce roti to 1
- Swap orange juice for water
  OR try sparkling water with orange slices

40

#### **Management of DM – Nutrition**

#### Snack example

- Crackers
- Fruit

#### To Improve

- Include a protein source with your snack to help slow down the digestion of carbohydrate.
  - Add a handful of nuts with your fruit (10-12 almonds)
  - Add 1 ounce of cheese with a serving of crackers

41

#### Management of DM Physical Activity: Benefits

- Improved blood sugars
- Increased insulin sensitivity
- Increased glucose uptake
- Decreased risk of heart disease
- Increased metabolism
- Important for bone strength
- Weight loss/maintenance
- Improved sleep patterns
- Increased energy





#### Management of DM Physical Activity: Exercise Safely

#### Be sure to follow the guidelines below:

- 1. Discuss exercise with your physician prior to beginning an exercise routine
- 2. Measure blood glucose pre and post activity
- 3. You may need to reduce medication/have a snack prior to exercise
- 4. Carry ID, Medic Alert bracelet and simple carbs
- 5. Drink water
- 6. Check feet and wear proper shoes



## Management of DM Physical Activity: Different

- Cardio (walking, hiking, biking, swimming)
  - 150 minutes/week at least 3X/wk
  - anything more than a walk should be discussed with a physician
- Strength Training - 2x/week, 1-3 sets of 10-15 reps

types

• Stretching (yoga, pilates)

Include all 3 types into your lifestyle





- What is self management? Taking responsibility of one's health and wellbeing
- Educator's role: Providing the tools, skills and support needed to improve wellbeing
- *Your role:* Have an active role in managing your diabetes so you and your health care team can work together to set goals that will lead to better health.



# **Questions?**



