How Sweet It Is! Management of Diabetes: Lifestyle Modification and Diabetes Mellitus

Mary Lynn McPherson, PharmD, MA, BCPS, CPE

Live Activity Handout
2 slides per page
How Sweet It Is! Management of Diabetes: Lifestyle Modification and Diabetes Mellitus

ACTIVITY DESCRIPTION
Step one after diagnosis of diabetes mellitus is implementation of a plan for lifestyle modification, which generally includes dietary change and a physical activity plan. Pharmacy practitioners are frequently unsure how to provide these recommendations. Pharmacy practitioners may also advise patients with diabetes on other interventions such as stress management.

TARGET AUDIENCE
The target audience for this activity is **pharmacists**, **pharmacy technicians**, and **nurses** in hospital, community, and retail pharmacy settings.

LEARNING OBJECTIVES
After completing this activity, the **pharmacist** will be able to:

- Describe current recommendations for dietary modification for type 1 and type 2 diabetes mellitus.
- Describe a physical activity plan for patients with diabetes mellitus.
- Recommend other non-pharmacologic strategies for patients with diabetes mellitus.

After completing this activity, the **pharmacy technicians** will be able to:

- Describe current recommendations for dietary modification for type 1 and type 2 diabetes mellitus.
- Describe a physical activity plan for patients with diabetes mellitus.
- Recommend other non-pharmacologic strategies for patients with diabetes mellitus.

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Professor, University of Maryland School of Pharmacy

ABOUT THE AUTHOR
Mary Lynn McPherson, Pharm.D., BCPS,CPE, is Professor and Vice Chair in the Department of Pharmacy Practice and Science at the University of Maryland School of Pharmacy in Baltimore. She has maintained a practice in both hospice (local and national) and ambulatory care her entire career. At present, Dr. McPherson is the Director of Pharmacotherapy Services at UniversityCare Heritage Crossing in Baltimore where she works primarily with chronic pain patients and patients with diabetes mellitus. Dr. McPherson teaches extensively in the Doctor of Pharmacy curriculum on pain management and end of life care, including didactic and experiential content. She also developed one of the first and few palliative care pharmacy residencies in the U.S.

Dr. McPherson serves on the Board of the Hospice Network of Maryland and is also the President of the American Society of Pain Educators. McPherson is a Fellow in the American Society of Health-Systems Pharmacists, the American Pharmacists Association, the American Society of Consultant Pharmacists and the American Society of Pain Educators. She is Board Certified in Pharmacotherapy, a Certified Diabetes Educator and a Certified Pain Educator. She has received many honors for her work, including the American Pharmacists Association Distinguished Achievement Award in Specialized Practice, the Maryland Pharmacists Association Innovative Practice Award, and the Maryland Society of Health-Systems Pharmacists W. Purdum Lifetime Achievement Award. Dr. McPherson has received many awards for teaching including the Presidential Citation from the Hospice and Palliative Nurses Association, Professor of the Year many times from the School of Pharmacy, University of Maryland Baltimore Founder’s Week Teacher of the Year and the Robert Chalmers Distinguished Educator Award from the American Association of Colleges of Pharmacy. She has written four books, including “Demystifying Opioid Conversion Calculations: A Guide for Effective Dosing,” and many book chapters and peer-reviewed articles on pain management, palliative care, and other topics.

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Objectives

1. Describe current recommendations for dietary modification for type 1 and type 2 diabetes mellitus.

2. Describe a physical activity plan for patients with diabetes mellitus.

3. Recommend other non-pharmacologic strategies for patients with diabetes mellitus.

1. Introduction to diabetes mellitus.

2. Lifestyle modification and diabetes mellitus

3. Monitoring diabetes mellitus

4. Medication management Part 1

5. Medication management Part 2

6. Problem solving with diabetes mellitus

7. Coping with diabetes mellitus

8. Risk reduction and management of complications with diabetes mellitus Part 1

9. Risk reduction and management of complications with diabetes mellitus Part 2

10. Diabetes disease state management
So what is diabetes mellitus?

• “A condition characterized by hyperglycemia resulting from the body’s inability to use blood glucose for energy. In Type 1 diabetes, the pancreas no longer makes insulin and therefore blood glucose cannot enter the cells to be used for energy. In Type 2 diabetes, either the pancreas does not make enough insulin or the body is unable to use insulin correctly.”

• See more at: http://www.diabetes.org/diabetes-basics/common-terms/#sthash.OIpR7p0L.dpuf

What’s your type?

DIABETES MELLITUS

TYPES OF DIABETES

Type I diabetes
Type II diabetes
Criteria for the Diagnosis of Diabetes

FPG > 126 mg/dl. Fasting is defined as no caloric intake for at least 8 hours*

OR

2-h PG ≥ 200 mg/dl during an OGTT. The test should be performed as described by the WHO, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water*

OR

A1c > 6.5%. The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay

OR

In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg/dl

*In the absence of unequivocal hyperglycemia, results should be confirmed by repeat testing

Categories of increased risk for diabetes (prediabetes)

• FPG 100 mg/dl – 125 mg/dl (IFG), OR
• 2-h PG in the 75-g OGTT 140 mg/dl–199 mg/dl (IGT), OR
• A1c 5.7–6.4%

Lifestyle Management

• Diabetes self-management education
• Diabetes self-management support
• Nutrition therapy
• Physical activity
• Smoking cessation counseling
• Psychosocial care
Diabetes Self-Management Education and Support

- All people with diabetes should participate in diabetes self-management education and support (DSME/S)
  - To facilitate the knowledge, skills and ability necessary for diabetes self-care and in diabetes self-management support
- Effective self-management skills improve:
  - Clinical outcomes, health status, quality of life
- DSME/S should be patient-centered, respectful and reflect patient preferences, needs and values and help guide clinical decisions
- DSME/S programs should adjust to meet patient needs (DM?, pre-DM?). Should be reimbursed by third party payers.

American Association of Diabetes Educators

- AADE7 Self-Care Behaviors
  - Healthy Eating
  - Being Active
  - Monitoring
  - Taking Medication
  - Problem Solving
  - Reducing Risks
  - Healthy Coping

https://www.diabeteseducator.org/patient-resources/aaade7-self-care-behaviors
Nutrition Therapy

- "Just tell me what to eat!"
- Individualized eating plan (MNT)
  - Dietitian with experience in diabetes
  - A1c reduction by:
    - 0.3-1% with T1DM
    - 0.5-2% with T2DM
  - Entire team should be able to recommend
    general nutrition principles and be
    supportive of implementation
- Mediterranean, Dietary Approaches to Stop Hypertension (DASH) and plant-based diets are examples of healthful eating patterns

Healthiest Diets

- Mediterranean Diet is abundant in fruits, vegetables, whole grains, legumes and olive oil. It features fish and poultry—lean sources of protein—over red meat, which contains more saturated fat. Red wine is consumed regularly but in moderate amounts.
- The DASH diet is a lifelong approach to healthy eating that’s designed to help treat or prevent high blood pressure (hypertension). The DASH diet encourages you to reduce the sodium in your diet and eat a variety of foods rich in nutrients that help lower blood pressure, such as potassium, calcium and magnesium.
- It’s a diet based on fruits, vegetables, tubers, whole grains, and legumes; and it excludes or minimizes meat (including chicken and fish), dairy products, and eggs, as well as highly refined foods like bleached flour, refined sugar, and oil.

http://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/dash-diet/art-20048456
http://www.eatingwell.com/nutrition_health/weight_loss_diet_plans/your_1_day_mediterranean_diet_plan
Goals of Nutrition Therapy for Adults with DM

1. To promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, in order to improve overall health and specifically to:
   - Achieve and maintain body weight goals
   - Attain individualized glycemic, blood pressure and lipid goals
   - Delay or prevent the complications of diabetes
2. To address individual nutrition needs based on personal and cultural preferences, health literacy and numeracy, access to healthful foods, willingness and ability to make behavioral changes, and barriers to change.
3. To maintain the pleasure of eating by providing nonjudgmental messages about food choices.
4. To provide an individual with diabetes the practical tools for developing healthy eating patterns rather than focusing on individual macronutrients, micronutrients or single foods.

Eyes on the Prize!

- Modest weight loss can delay the progression from pre-diabetes to diabetes, and to the management of type 2 diabetes mellitus
- Sustained reduction of 5% of initial body weight → reduce the need for glucose-lowering medications
- For some patients (very obese), > 5% weight loss is necessary to achieve these results
- Shoot for 500-750 kcal/day energy deficit
  - 1200-1500 kcal/day for women
  - 1500-1800 kcal/day for men

Macronutrient Distribution

- There is no SINGLE ideal dietary distribution of calories among carbohydrates, fats, proteins for PWD → should be individualized
- CHO – whole grains, vegetables, fruits, legumes, dairy products
  - Emphasis on foods higher in fiber and lower in glycemic load
  - Avoid sugar-sweetened beverages in order to control weight and reduce risk for CVD and fatty liver (soda, fruit juice)
- Protein – increases insulin response without increasing plasma glucose concentration. Will not treat hypoglycemia.
- Fat – Monounsaturated fats may improve glucose metabolism and lower CVD risk
  - Fatty fish, nuts, seeds may prevent CVD

Micronutrients, etc.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Micronutrients, and herbal supplements | • No clear evidence that dietary supplementation with vitamins, minerals, herbs or spices can improve outcomes in people with diabetes who have no underlying deficiencies  
  • Safety concerns about long-term use of antioxidant supplements such as vitamins E and C and carotene |
| Alcohol                            | • Adults with DM should only drink alcohol in moderation (up to one per day for adult women, up to two per day for adult men)  
  • Alcohol consumption increases risk of hypoglycemia (especially if on insulin/secretogogues). |
| Sodium                             | • Same as general populations; limit sodium consumption to < 2,300 mg/day  
  • Restrict further with concomitant diabetes and hypertension |
| Non-nutritive sweeteners           | • Non-nutritive sweeteners have potential to reduce overall caloric and CHO intake  
  • Generally safe to use within the defined acceptable daily intake levels |
Let’s talk strategy...

• Questions to ask the patient:
  • What does the word “diet” mean to you?
  • How do you feel about making changes in your eating habits?
  • What do you want to learn today about healthy eating?
  • What is your greatest concern about eating?
  • What is the hardest part about healthy eating?
  • For you, what is the best part about healthy eating?
  • What have you heard about the benefits of healthy eating?

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Barriers to Healthy Eating

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can’t afford “healthy” food</td>
<td>• Can work everyday food into your meal plan</td>
</tr>
<tr>
<td></td>
<td>• Important thing is total calories, total carbohydrates, portion control</td>
</tr>
<tr>
<td>I was taught to clean my plate</td>
<td>• Ok, clean it, but use a smaller plate</td>
</tr>
<tr>
<td></td>
<td>• Put half your meal in a “to go” container when served in a restaurant</td>
</tr>
<tr>
<td>I’ll never achieve my IBW</td>
<td>• Let’s shoot for a realistic healthy weight</td>
</tr>
<tr>
<td></td>
<td>• Losing even 5-10% of TBW has many health benefits</td>
</tr>
<tr>
<td>I get too hungry; I want to binge later on</td>
<td>• Space your meals, include snacks, eat every 3 hours</td>
</tr>
<tr>
<td></td>
<td>• Eat slowly (15 minutes for brain to catch on)</td>
</tr>
<tr>
<td></td>
<td>• Eat more vegetables to feel fuller, use a smaller plate</td>
</tr>
<tr>
<td>I’m a stress eater, I eat while watching TV</td>
<td>• Consider other ways to deal with stress</td>
</tr>
<tr>
<td></td>
<td>• Keep healthier snacks in the kitchen; if it’s not there you won’t eat it</td>
</tr>
<tr>
<td>My family complains; workers bring in food</td>
<td>• Get your family involved; make changes gradually</td>
</tr>
<tr>
<td></td>
<td>• Ask co-workers to bring healthier snacks, bring your own snack</td>
</tr>
<tr>
<td>I don’t have time for breakfast</td>
<td>• Fix it before you go to bed; use meal replacement on the go</td>
</tr>
<tr>
<td></td>
<td>• Get up 15 minutes earlier!</td>
</tr>
<tr>
<td>I travel a lot; on the road</td>
<td>• Learn about healthy restaurant options; ask them to adjust their cooking</td>
</tr>
<tr>
<td></td>
<td>• Carry portable healthy snacks with you; consider meal replacements</td>
</tr>
</tbody>
</table>
Hips, waists and weight...oh my!

• BMI Calculator -
  https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm

<table>
<thead>
<tr>
<th>BMI</th>
<th>Weight Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 18.5</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5 - 24.9</td>
<td>Normal</td>
</tr>
<tr>
<td>25 – 29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>30 and higher</td>
<td>Obese</td>
</tr>
</tbody>
</table>

Waist/hip ratio and risk of cardiovascular disease:
Increased if →
Waist/hip > 0.9 men
Waist/hip > 0.85 women

Some good news please??
Losing just 2.3 inches from your waist lowers the risk of heart disease by 11% in men and 15% in women!

Meal Planning Approaches

• Choose your foods – Exchange Lists for Diabetes
  • Exchange one for another based on equal nutritional value
• Carbohydrate Counting – basic or advanced
  • For consistency
  • For insulin dosing
• The Plate Method
• Menus (ADA – “Month of Meals”)
• Reading food labels
• Eating out!
Let’s meet Trent Jamison

• Trent Jamison is 11 years old
• He is 4’7”, 78 pounds (usually)
• His mother brings him in to see the pediatrician with complaints of bed-wetting, general lethargy, and a recent 5 pound weight loss.
• On questioning Trent says he’s been drinking a lot of Gatorade because he’s been thirsty.
• No family history of diabetes.

Resources

• WIN – Weight-Control Information Network
  • https://www.niddk.nih.gov/health-information/health-communication-programs/win/pages/default.aspx
• Health.gov - https://health.gov/dietaryguidelines/
• American Dietetic Association - www.eatright.org
• National Heart Lung and Blood Institute – cookbooks
• Heart Healthy Home Cooking African American Style
  • www.nhlbi.nih.gov/health/public/heart/other/chdblack/cooking.htm
• Platillos Latinos ¡Sabrosos y Saludables! Heart Healthy Latino Recipes
  • www.nhlbi.nih.gov/health/public/heart/other/sp_recip.pdf
• Weight Watchers – www.weightwatchers.com
Physical Activity

- Children and adolescents with T1 or T2DM or prediabetes should engage in:
  - 60 minutes/day or more of moderate to vigorous intensity aerobic activity
  - Vigorous, muscle-strengthening and bone-strengthening activities included at least 3 days/week
- Most adults with T1 or T2DM should engage in:
  - 150 minutes or more of moderate-to-vigorous intensity activity per week, spread over at least 3 days/week, with no more than 2 consecutive days without activity
  - Shorter duration (75 min/week) may be sufficient for younger/more physically fit
  - 2-3 sessions/week of resistance exercise on nonconsecutive days
  - Decrease amount of time spent in daily sedentary behavior
    - Prolonged sitting should be interrupted every 30 minutes for BG benefits, particularly in T2DM
  - Flexibility training and balance training recommended 2-3 times/week for older adults with DM. Yoga, tai chi may be included as desired.

Physical Activity – But What If??

Retinopathy
- If patient has proliferative diabetic retinopathy or severe nonproliferative retinopathy:
  - Vigorous-intensity aerobic or resistance exercise may be contraindicated
  - Risk of triggering vitreous hemorrhage or retinal detachment
  - Consult with ophthalmologist prior to engaging in an intense exercise regimen

Peripheral Neuropathy
- Decreased pain sensation and a higher pain threshold in extremities:
  - Result in an increased risk of skin breakdown, infection, and Charcot joint destruction with some forms of exercise
  - Patient requires thorough assessment to ensure neuropathy does not alter kinesthetic or proprioceptive sensation during physical activity, particularly in those with more severe neuropathy

Physical Activity – But What If??

**Autonomic Neuropathy**

- Autonomic neuropathy can increase the risk of exercise-induced injury or adverse events through decreased cardiac responsiveness to exercise, postural hypotension, impaired thermoregulation, impaired night vision due to impaired papillary reaction, and greater susceptibility to hypoglycemia
- Also an independent risk factors for CV death and silent myocardial ischemia

**Diabetic Kidney Disease**

- Physical activity can acutely increase urinary albumin excretion
- No evidence that vigorous-intensity exercise increases the rate of progression of diabetic kidney disease
- No need for specific exercise restrictions for people with diabetic kidney disease

Let’s talk strategy…

- Questions to ask the patient...
  - What information have you been given about physical activity as part of diabetes self-care?
  - What are your thoughts about making physical activity a part of your diabetes self-care?
  - What do you want to learn today about physical activity?
  - What is your greatest concern about physical activity?
  - For you, what is the hardest part about being physically active?
Barriers to Physical Activity

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m way too out of shape</td>
<td>• Start small, go slow</td>
</tr>
<tr>
<td>I’m too busy!</td>
<td>• Prioritize, get up earlier. Do things with the kids.</td>
</tr>
<tr>
<td>It’s too hot/cold outside</td>
<td>• Do an exercise tape inside. Mall walking.</td>
</tr>
<tr>
<td>My neighborhood is dangerous</td>
<td>• Is there a safer place to go? Even if you have to drive there? YMCA? Mall?</td>
</tr>
<tr>
<td>I’m afraid my blood sugar will drop too</td>
<td>• Monitor your glucose before exercising; bring a carbohydrate snack.</td>
</tr>
<tr>
<td>low</td>
<td>• Plan an after meal activity for when your blood glucose is rising.</td>
</tr>
<tr>
<td>I’m so fat, I’m embarrassed to be seen</td>
<td>• Exercise alone, inside. If you go out, wear loose clothes.</td>
</tr>
<tr>
<td>Exercise is boring! I just don’t have</td>
<td>• Do things you enjoy; mix it up. Focus on your reasons for improving our health</td>
</tr>
<tr>
<td>any motivation!</td>
<td>(family, long-term goals in life). Practice positive affirmations. Reward yourself</td>
</tr>
<tr>
<td>Unrealistic expectations</td>
<td>• It takes time to see the changes in your body. Focus on improved energy, sleep, BG</td>
</tr>
<tr>
<td>My bad knee won’t let me go for a walk</td>
<td>• Choose activities that won’t aggravate physical ailments.</td>
</tr>
<tr>
<td></td>
<td>• Chair exercises or water exercises</td>
</tr>
</tbody>
</table>

Types of Exercise

- **Aerobic Exercise**
  - Brisk walking
  - Riding a bicycle
  - Swimming
  - Rowing
  - Jogging or running
  - Tennis or racquetball
  - Dancing

- **Resistance Activity**
  - Weight lifting with dumbbells or free weights
  - Weight-lifting machines
  - Resistance bands or tubes
  - Certain types of calisthenics
    - Moving your body weight for resistance such as abdominal crunches, push-ups, toe raises

Warm-up before exercising
Stretch as part of your cool-down when your muscles are already warmed up
Other Considerations before Jumpin’ in Jack!

- Medical clearance
- Hydration
- Foot safety
- Medical identification
- Preventing hypoglycemia or hyperglycemia
- Physical activity and monitoring
- Glucose check before or after
- Physical activity and insulin
- Physical activity and diabetes medications
- Timing of physical activity

Smoking Cessation: Tobacco and e-Cigarettes

- Advise all patients not to use cigarettes and other tobacco products or e-cigarettes
- Include smoking cessation counseling and other forms of treatment as a routine component of diabetes care
  - People with diabetes who smoke consistently have a higher risk of CVD, premature death and microvascular complications
  - Smoking may have a role in the development of T2DM
- Smoking cessation in newly diagnosed T2DM found smoking cessation associated with amelioration of metabolic parameters and reduced BP and albuminuria at 1 year
Psychosocial Issues

• Psychosocial care should be integrated with a collaborative, patient-centered approach and provided to all people with diabetes, with the goals of optimizing health outcomes and health-related QOL.

• Psychosocial screening and follow-up may include, but are not limited to:
  • Attitudes about the illness
  • Expectations for medical management and outcomes
  • Affect or mood
  • General and diabetes-related QOL
  • Available resources (financial, social and emotional)
  • Psychiatric history

Psychosocial Issues

• Providers should assess for symptoms of the following at initial visit and periodically, and with changes in life circumstances:
  • Diabetes distress
  • Depression, anxiety
  • Disordered eating
  • Cognitive capacities

• Consider screening older adults (age ≥ 65 years) with diabetes for cognitive impairment and depression.
Psychosocial Issues – Diabetes Distress

• Routinely monitor people with diabetes for diabetes distress, particularly when treatment targets are not met and/or at the onset of diabetes complications.
• Diabetes distress – very common
  • Distinct from other psychologic disorders
  • Refers to significant negative psychological reactions related to emotional burdens and worries specific to an individual’s experience in having to manage a severe, complicated, and demanding chronic disease such as diabetes.

Obesity Management in T2DM

• At each patient encounter, the BMI should be calculated and documented in the medical record.
  • Classify as overweight or obese
  • Discuss with patient
  • Document in the medical record

<table>
<thead>
<tr>
<th>Treatment</th>
<th>25.0-26.9 (23.0)*</th>
<th>27.0-29.9</th>
<th>30.0-34.9 (27.5)*</th>
<th>35.0-39.9</th>
<th>≥ 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet, physical activity, and</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>behavioral therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Metabolic surgery</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* Cutoff for Asian Americans; ✓ may be indicated for motivated individuals
Strategies

- Diet, physical activity and behavioral therapy designed to achieve > 5% weight loss should be prescribed for overweight and obese patients with T2DM ready to achieve weight loss
- Diets should be individualized
  - Consider very low-calorie supervised diet (≤ 800 kcal/day) using total meal replacement products in a medically supervised setting
- Pharmacotherapy
  - Glucose-lowering medications – consider effect on weight
  - Weight loss medications (orlistat, lorcaserin, phentermine/topiramate, naltrexone/bupropion, liraglutide)
- Metabolic surgery – different procedures
  - Long-term lifestyle support and routine monitoring of micronutrient and nutritional status

Remember Fred Flintstone?

- Fred is a 72 year old man, whose wife passed away about a year ago.
- He lives alone and admits “I’m a terrible cook,” consequently he hits the fast food restaurants frequently, and eats a lot of frozen dinner entrees.
- His BG profile is as follows:
  - FPG 118 mg/dl
  - A1c 6.2%
- Does Fred have diabetes?

So what should we do with Fred?
Diabetes Prevention Program

- Patients with pre-diabetes from 27 clinical centers in the US
  - 3,234 study participants; 45% from minority groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Intervention</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle</td>
<td>Intensive training in diet, physical activity, behavior modification (with motivational counseling)</td>
<td>Reduced risk of developing T2DM by 58% Patients ≥ 60 years old reduced risk by 71% 5% of patients/year developed T2DM</td>
</tr>
<tr>
<td>Metformin</td>
<td>Metformin 850 mg twice daily plus information on diet/exercise (no motivation counseling)</td>
<td>Reduced risk of developing T2DM by 31% Least effective in those ≥ 45 years old and BMI &gt; 35 (&gt; 60 pounds overweight) 7.8% of patients/year developed T2DM</td>
</tr>
<tr>
<td>Placebo</td>
<td>Placebo twice daily plus information on diet/exercise (no motivation counseling)</td>
<td>11% of patients/year developed T2DM</td>
</tr>
</tbody>
</table>

Weight loss was shown to be the main predictor of reduced risk for developing diabetes in this study.


Remember Sofía Hernandez?

- Sofía is 42 years old; she was born in Puerto Rico but has lived in Maryland for over 20 years
- Sofía is 5’4” and weighs 375 pounds
- LOVES regular soda and apple juice
- Wondering if there’s a problem – feels fatigued, not sleeping well, nocturia x 3
- BP 148/94 mmHg (145/92 on repeat)
- Lipid panel: TC 220 mg/dl, TG 260 mg/dl, HDL 28 mg/dl, LDL 140 mg/dl
- Fasting plasma glucose 185 mg/dl
- One week later, A1c measured = 10.4%
- Sofía’s physician referred her to your pharmacy for diabetes disease state management. She has a prescription for metformin, and a note to teach her about diet, exercise, med management and monitoring. Your turn...

Sofía is diagnosed with diabetes. Now what?
Sofía

- Sofía works is a single Mom who works at home, she is a telemarketer. Meal history:
  - Breakfast – She buys honey-dip pastries at 7-11 and freezes them, then microwaves two for breakfast, with a bottle of apple juice.
  - Snack – Mid-morning she starts to feel shaky so she snacks on cookies and potato chips
  - Lunch – Sofía generally orders food to be delivered (wings, pizza, subs and fries)
  - Snack – Sofía drinks about a liter of regular soda during a day; likes candy in the afternoon
  - Dinner – She and her son generally hit a fast-food restaurant, or have something delivered. Occasionally she cooks (burgers, box-mix au gratin potatoes).
  - After dinner – snacks all evening, drinks regular soda

- Physical activity:
  - As little as possible (very sedentary). She gets out of breath moving around. Sofía says her knees are “bad” so she tries to pace her activities and she’s not willing to go for a walk
  - She has health insurance through her job.
  - Sofía starts crying and tells you her parents both had diabetes; her mother died of a heart attack. Her uncle had diabetes and had his leg amputated. She worries about who will care for her son.

Holy moly! Where do you start with Sofía?

Counseling Sofía

- Survival nutrition skills
  - No more regular soda – non-negotiable
  - No more regular fruit juice – at least for now
  - Eat at home, skip the deliveries and fast food
  - Plan a few breakfasts, lunches, dinners

- Referral to dietitian
- Confirm her physician has cleared her for exercise; determine her limitations
  - Chair exercises? Aerobic, strength training, stretching/yoga
How about Hector Hernandez?

• Hector is also 11 years old
• Presents to pediatrician for annual physical
• Hector LOVES to play computer games
• 4’10”, 130 pounds
  • BMI 27.2; 98th percentile
• Mom (Sofía) had GDM during her pregnancy with Hector
• Hector has been diagnosed with pre-diabetes.
• Mom, Sofía, is very upset by this. What should be done now?

Sofía and Hector

• Mom is actually more motivated now to take care of herself because she’s worried about Hector progressing to T2DM
• Mom could invite Hector to do exercises with her
• As Mom’s diet improves, so should Hector’s
• Mom could sit outside while Hector plays outside
• As Mom loses weight she should be able to go for a walk with Hector
The Pharmacist Diabetes Educator

IM
POSSIBLE

Preview of Coming Attractions

1. Introduction to diabetes mellitus.
2. Lifestyle modification and diabetes mellitus
3. Monitoring diabetes mellitus
4. Medication management Part 1
5. Medication management Part 2
6. Problem solving with diabetes mellitus
7. Coping with diabetes mellitus
8. Risk reduction and management of complications with diabetes mellitus Part 1
9. Risk reduction and management of complications with diabetes mellitus Part 2
10. Diabetes disease state management

Does Fred reign things in?
Does Trent start insulin?
Do Sofia and Hector turn the tide?
Tune in for part 3 for the continuing story!