

# Pre-Diabetes and Diabetes



Chandra Lingisetty MD, MBA, MHCM  
Chief Medical Officer



# AGENDA

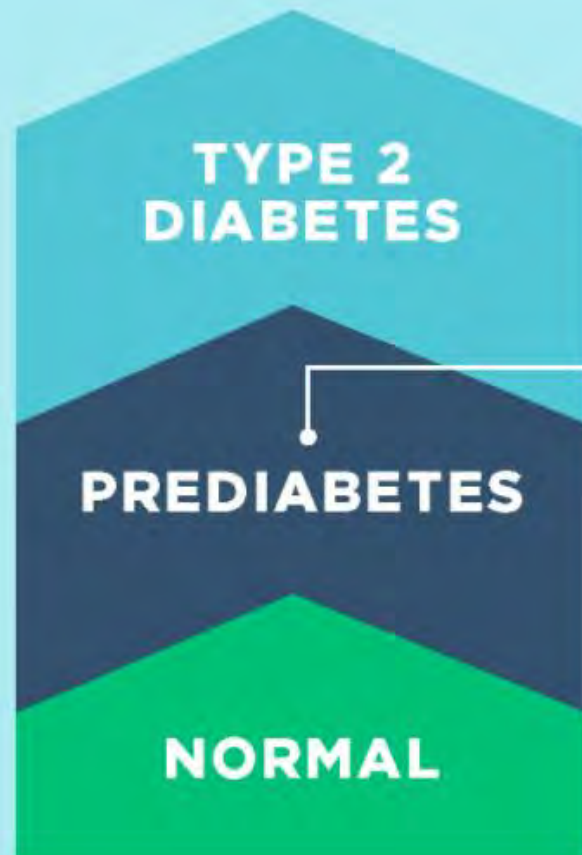
## PRE-DIABETES

- ❖ What is prediabetes?
- ❖ What are the symptoms of prediabetes?
- ❖ How to calculate prediabetes Risk score?
- ❖ How to diagnose prediabetes?
- ❖ What are the risks associated with prediabetes?
- ❖ Management of prediabetes

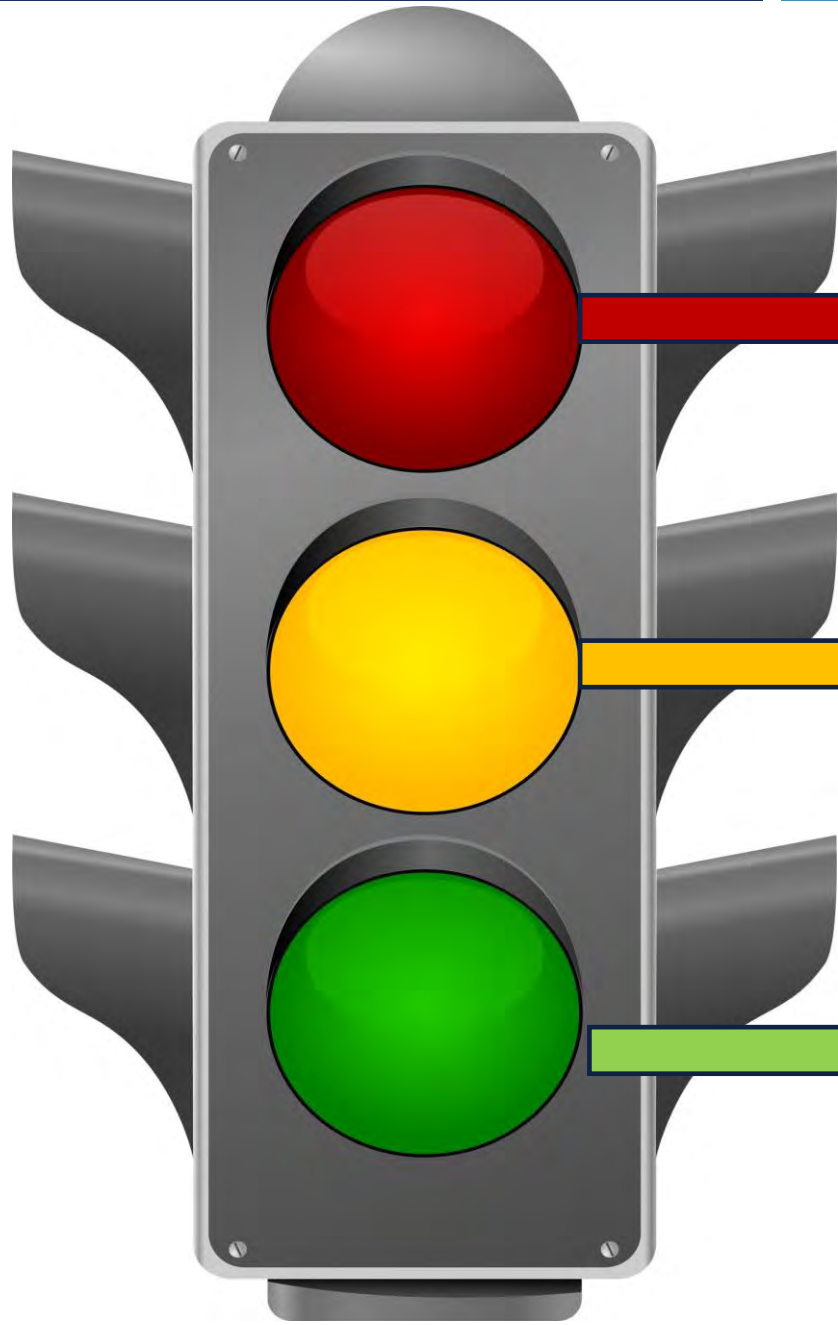
## DIABETES

- ❖ What is Diabetes?
- ❖ Symptoms of Diabetes
- ❖ Complications of Diabetes
- ❖ 3 Teams Approach in the Management of prediabetes

# WHAT IS PREDIABETES?



Prediabetes is when your blood sugar level is higher than normal but not high enough yet to be diagnosed as type 2 diabetes



DIABETES

PREDIABETES

Prediabetes its an intermediate stage between completely normal glucose levels and type 2 diabetes.

NORMAL

# PREVALENCE

More than 96 million American adults have prediabetes - accounting to 38% of all US adults.



More than 1 in 3 Americans Adults - have prediabetes

# SYMPTOMS IN PREDIABETES



9 OUT OF 10

people with prediabetes  
don't know they have it

# BLOOD TESTS NEEDED FOR DIAGNOSIS

- 1. Fasting plasma glucose.

OR

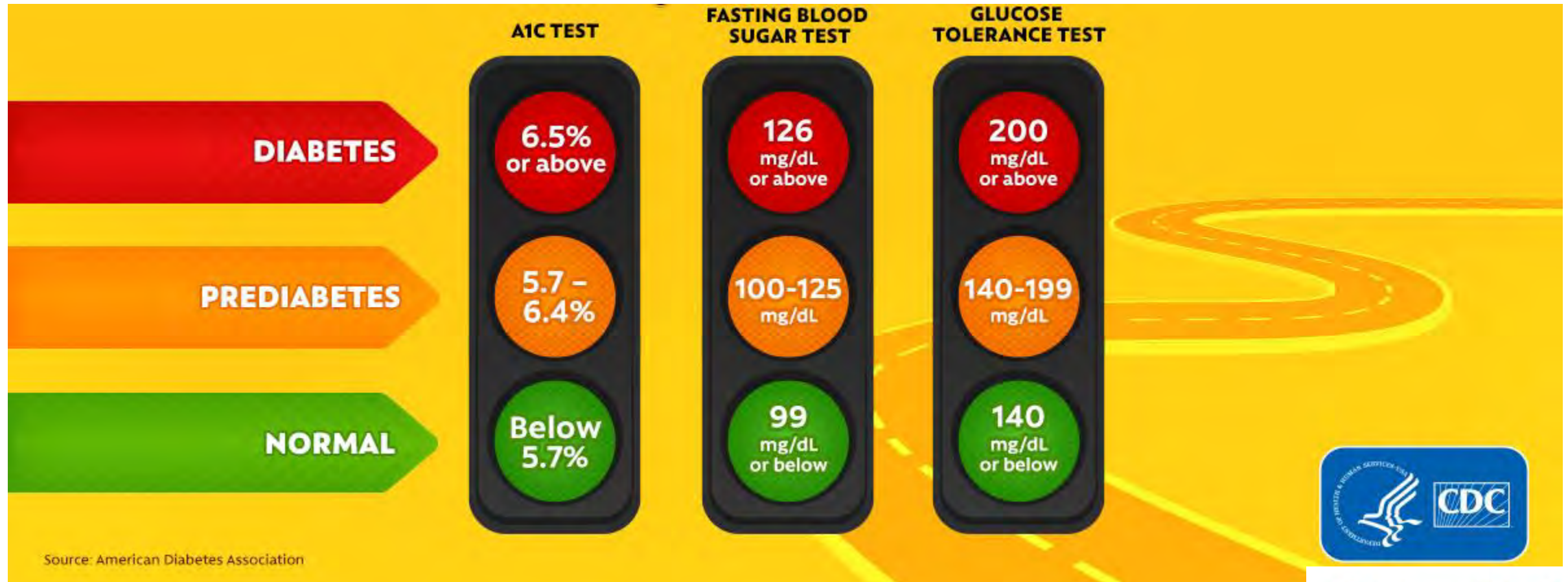
- 2. Hemoglobin A1C test.

OR

- 3. Glucose tolerance test.



# DIAGNOSTIC CRITERIA





## QUESTION

Q: A1C=5.7% - Is it normal value or prediabetes?

- A: Prediabetes.

Q: Fasting plasma glucose of 100mg/dl – is it normal value or prediabetes ?

- A: Prediabetes.

Not doing enough physical activity

Having a close relative with diabetes

## **RISK FACTORS**

Having diabetes during pregnancy, called "gestational diabetes"

Smoking

Being overweight or having obesity, especially if you carry your extra weight in your belly area

# Prediabetes Risk Test

NATIONAL  
**DIABETES**  
PREVENTION  
PROGRAM

## 1. How old are you?

Younger than 40 years (0 points)  
40–49 years (1 point)  
50–59 years (2 points)  
60 years or older (3 points)

Write your score in  
the boxes below

## 2. Are you a man or a woman?

Man (1 point) Woman (0 points)

## 3. If you are a woman, have you ever been diagnosed with gestational diabetes?

Yes (1 point) No (0 points)

## 4. Do you have a mother, father, sister, or brother with diabetes?

Yes (1 point) No (0 points)

## 5. Have you ever been diagnosed with high blood pressure?

Yes (1 point) No (0 points)

## 6. Are you physically active?

Yes (0 points) No (1 point)

## 7. What is your weight category?

(See chart at right)

Total score:

Height	Weight (lbs.)		
4'10"	119-142	143-190	191+
4'11"	124-147	148-197	198+
5'0"	128-152	153-203	204+
5'1"	132-157	158-210	211+
5'2"	136-163	164-217	218+
5'3"	141-168	169-224	225+
5'4"	145-173	174-231	232+
5'5"	150-179	180-239	240+
5'6"	155-185	186-246	247+
5'7"	159-190	191-254	255+
5'8"	164-196	197-261	262+
5'9"	169-202	203-269	270+
5'10"	174-208	209-277	278+
5'11"	179-214	215-285	286+
6'0"	184-220	221-293	294+
6'1"	189-226	227-301	302+
6'2"	194-232	233-310	311+
6'3"	200-239	240-318	319+
6'4"	205-245	246-327	328+
	1 Point	2 Points	3 Points
	You weigh less than the 1 Point column (0 points)		

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009. Original algorithm was validated without gestational diabetes as part of the model.

## If you scored 5 or higher

You are at increased risk for having prediabetes and are at high risk for type 2 diabetes. However, only your doctor can tell for sure if you have type 2 diabetes or prediabetes, a condition in which blood sugar levels are higher than normal but not high enough yet to be diagnosed as type 2 diabetes. **Talk to your doctor to see if additional testing is needed.**

If you are African American, Hispanic/Latino American, American Indian/Alaska Native, Asian American, or Pacific Islander, you are at higher risk for prediabetes and type 2 diabetes. Also, if you are Asian American, you are at increased risk for type 2 diabetes at a lower weight (about 15 pounds lower than weights in the 1 Point column). Talk to your doctor to see if you should have your blood sugar tested.

## You can reduce your risk for type 2 diabetes

Find out how you can reverse prediabetes and prevent or delay type 2 diabetes through a **CDC-recognized lifestyle change program** at <https://www.cdc.gov/diabetes/prevention/lifestyle-program>.

Risk Test provided by the American Diabetes Association and the Centers for Disease Control and Prevention.



American  
Diabetes  
Association



# RISKS ASSOCIATED WITH PREDIABETES

## Progression to Type 2 Diabetes





# TREATMENT – PRE-DIABETES

- LIFESTYLE CHANGES: **American Diabetes Association (ADA)** – The ADA recommends lifestyle modification as the primary intervention.
- GOALS
  - Healthy eating plan.
  - Moderate-intensity exercise (30 minutes daily).
  - Modest weight loss (5 to 10 percent of body weight).
  - Smoking cessation.

## MEDICATION:

**METFORMIN** : Is recommended for selected patients (age <60 years and/or BMI  $\geq 35 \text{ kg/m}^2$  history of gestational diabetes) in whom lifestyle interventions fail to improve glycemic indices.

# WHAT IS DIABETES?

Diabetes occurs when the body does not make enough insulin, makes no insulin at all, or doesn't respond to insulin properly. Insulin plays an important role in lowering your blood sugar level

Type 1 Diabetes	Type 2 Diabetes
1. Young onset (less than 35 years)	Older onset
2. Rapid onset of symptoms (eg. ketoacidosis)	No obvious symptoms in the early stage
3. Non-obese	Obese
4. Body cannot produce insulin	Insulin secretion can be normal or abnormal, Body cells are resistant to insulin
5. Managed by insulin injections, with diet and exercise control	Managed by oral medications or insulin injections, with diet and exercise control



# SYMPTOMS OF DIABETES?



Blurred vision



Feeling hungry all the time



Feeling thirsty all the time (despite drinking lots of water)



Frequent urination



Losing weight



Poor healing of wounds and/or infection



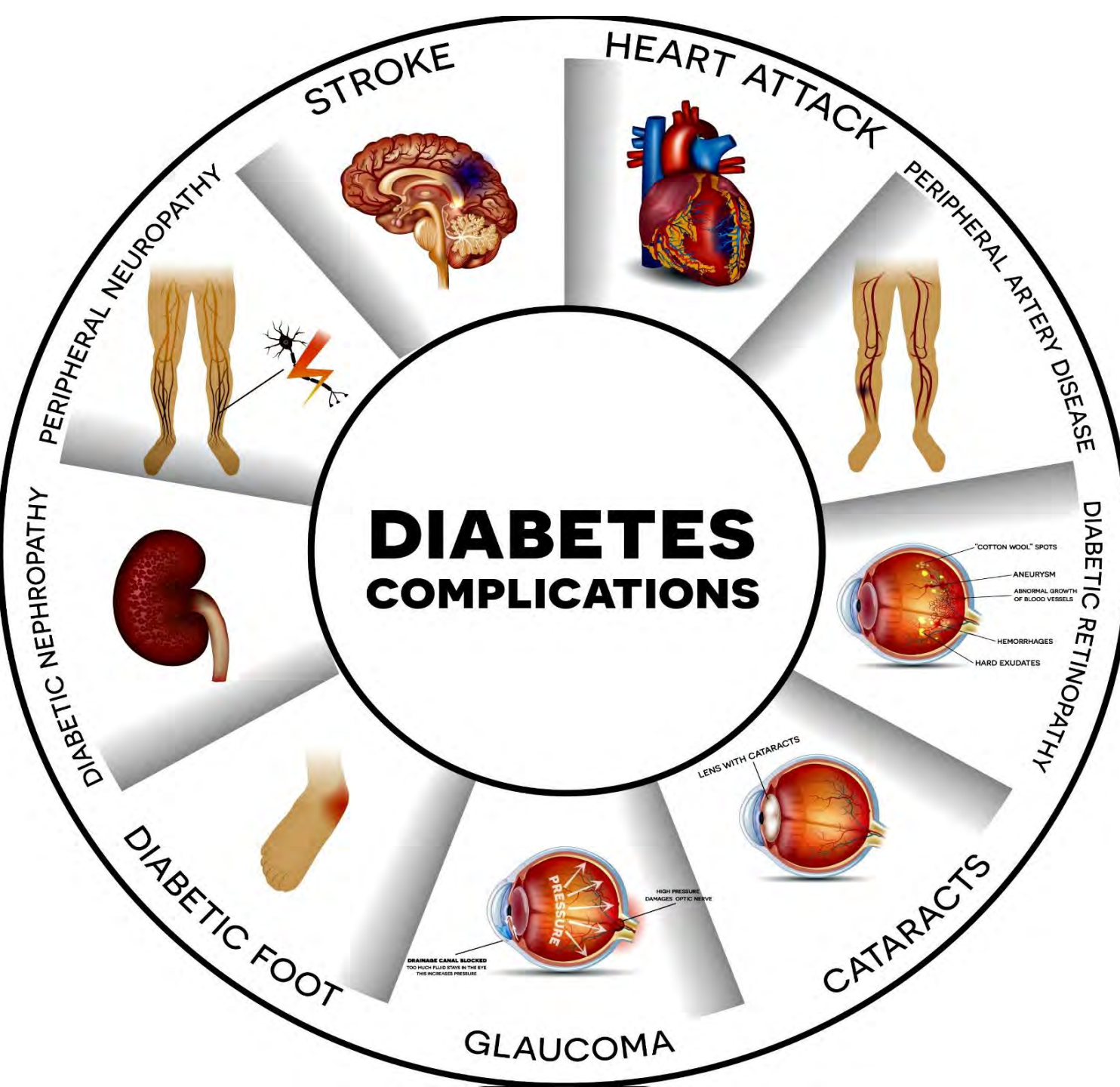
Feeling tired and weak



Numbness or tingling in hands, arms, feet and legs



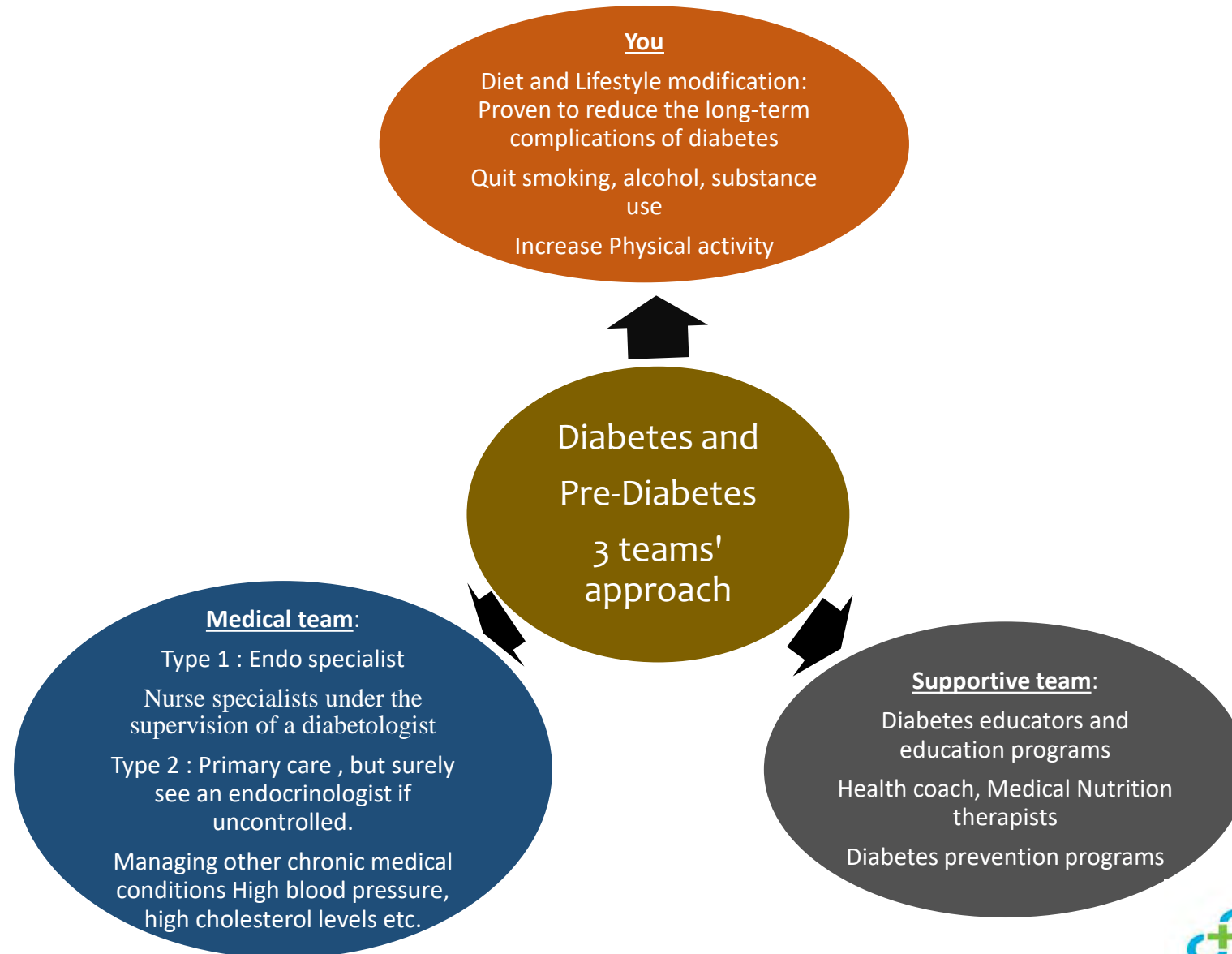
Feeling of nausea and/or vomiting



# COMPLICATIONS OF DIABETES?

# TREATMENT – DIABETES

# Diabetes and Prevention : Best Approach – Multi Disciplinary, 3 Teams Approach



## QUESTION

Which one of the following is a superior diet for prediabetes/ diabetes?

- Keto diet
- Low fat diet
- Paleo diet
- Vegetarian/vegan diet

ANSWER:

**NONE.**

Everyone's body responds differently to different types of foods and diets, so there is no single "magic" diet for prediabetes/diabetes.



# ADA RECOMMENDATIONS ON EATING PATTERN

## NO ONE PARTICULAR DIET

1. ADA: emphasizes eating non-starchy vegetables.
2. Minimizing added sugars and refined grains.
3. Choosing whole foods over highly processed foods.

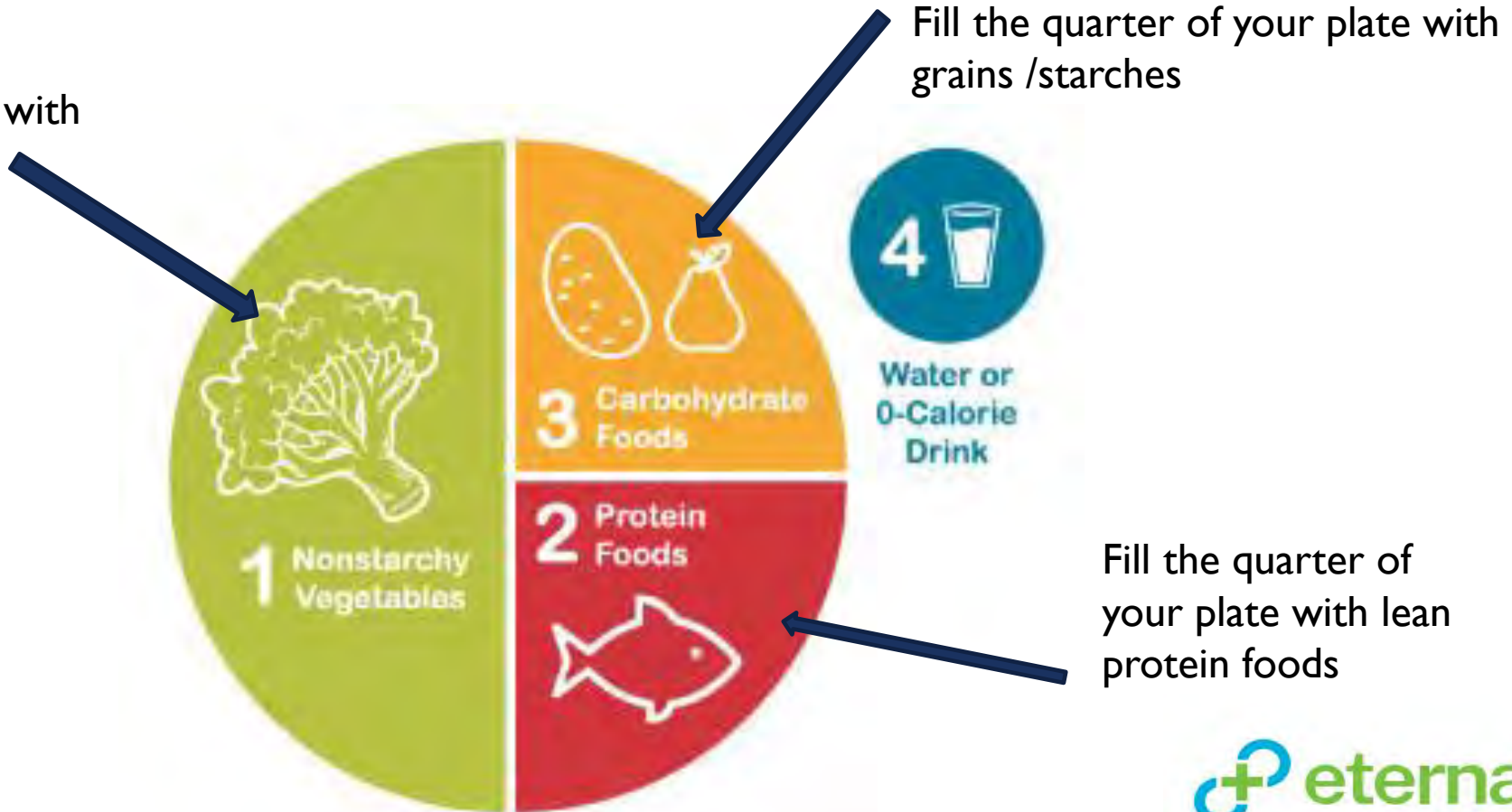
Powerful tool : **PLATE METHOD OF EATING.**





# PLATE METHOD

Fill up half of your plate with  
non starchy vegetables



Fill the quarter of  
your plate with lean  
protein foods

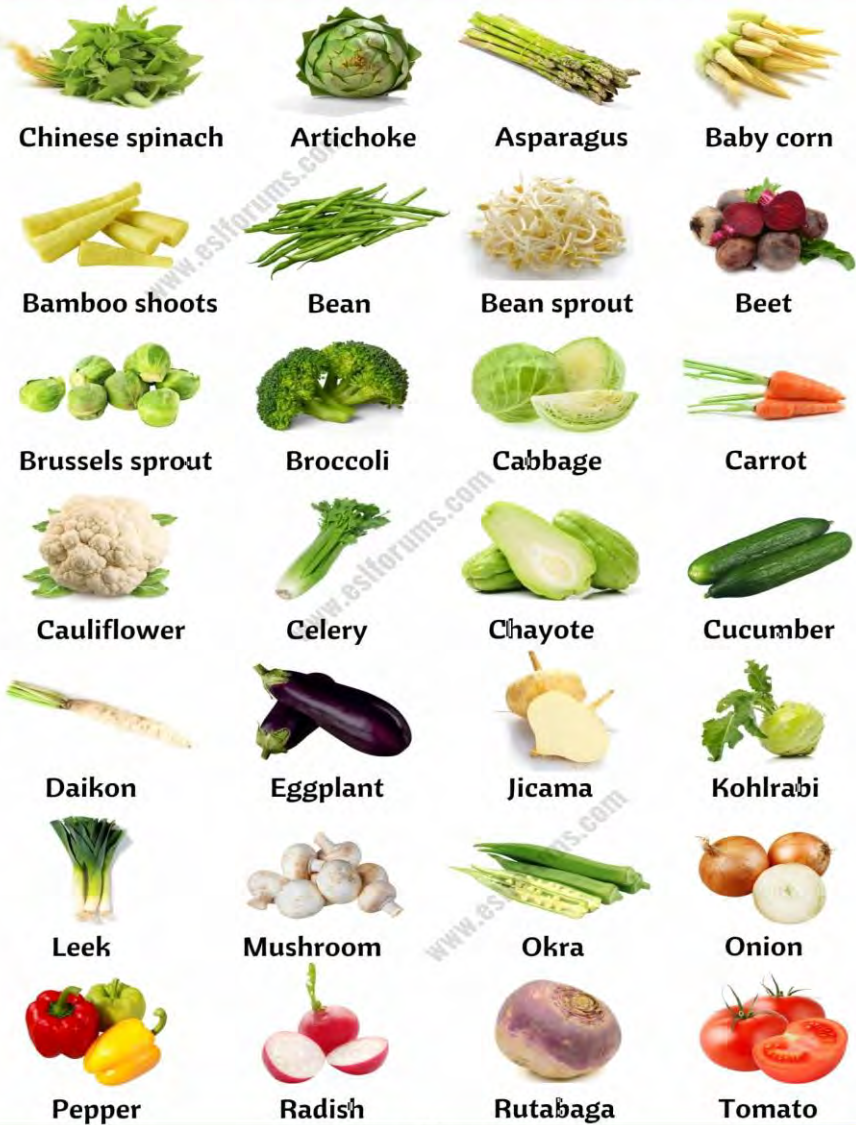
# QUESTION

- Which one of the following is a starchy vegetable?
- 1. Okra
- 2. Sweet potato
- 3. Cabbage
- 4 . Eggplant
- 5. Spinach



## NON-STARCHY VEGETABLES

## NON-STARCHY VEGETABLES



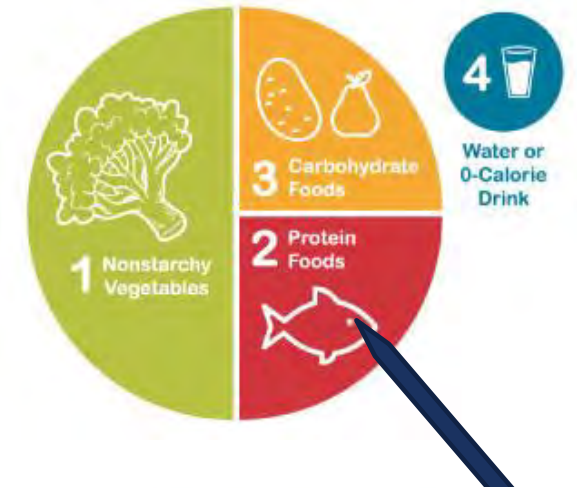
www.eslforums.com

Try to eat at least three to five servings of vegetables a day



# PROTEIN

- Lean meats
  - Fish and sea food
  - Poultry chicken , turkey
  - Cheese and eggs
- 
- **Plant-based proteins /meat substitutes**
  - Beans : black, kidney and pinto
  - Lentils : brown, green or yellow
  - Peas : black-eyed or split peas
  - Edamame
  - Nuts and spreads like almond butter, cashew butter or peanut butter
  - Tempeh, tofu





# PLANT BASED PROTEINS

## 7 high-protein pulses v



# GRAINS AND STARCHES

Foods that are high in carbohydrates include grains, starchy vegetables, beans and legumes, fruit, yogurt, and milk. These foods have the greatest effect on blood sugar.

- Whole grains: Brown rice, bulgur, oats/oatmeal, quinoa and whole grain products (bread, pasta, tortillas).
- Starchy vegetables: Acorn squash, butternut squash, green peas, parsnips, plantain, potato, pumpkin and sweet potato/yam.
- Beans and legumes.
- Fruits and dried fruit.
- Dairy products like milk, yogurt and milk substitutes.





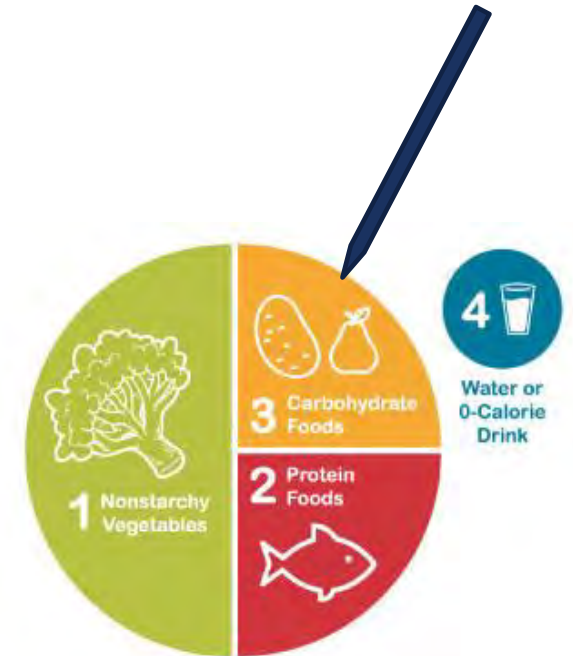
## QUESTION

■ Which of the following fruits are to be avoided ?

- Banana
- Orange
- Mango
- Peaches

ANSWER:

**NONE**



Just make it part of meal plate – ½ cup or small portion of the whole fruit.

# LOW GLYCEMIC FRUITS

- Cherries
- Grapefruit
- Dried apricots
- Pears
- Apples
- Oranges
- Plums
- Berries



# HEALTHY FATS

## ■ Sources of monounsaturated fat:

- Avocado
- Canola oil
- Nuts like almonds, cashews, pecans and peanuts
- Olive oil and olives (look for low/reduced sodium)
- Peanut butter and peanut oil
- Safflower Oil

## Sources of Omega 3s:

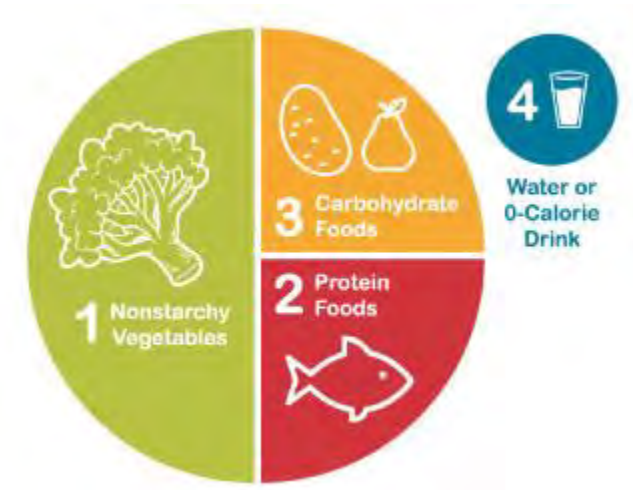
- Oily fish (salmon, sardines, herring, mackerel, tuna)
- Walnuts
- Flaxseeds and flaxseed oil
- Canola Oil
- Chia seeds

## Sources of Omega 6s :

- Tofu
- Walnuts
- Flaxseed and flaxseed oil
- Canola oil
- Eggs
- Sunflower seeds
- Peanut butter

# LOW CALORIC DRINKS

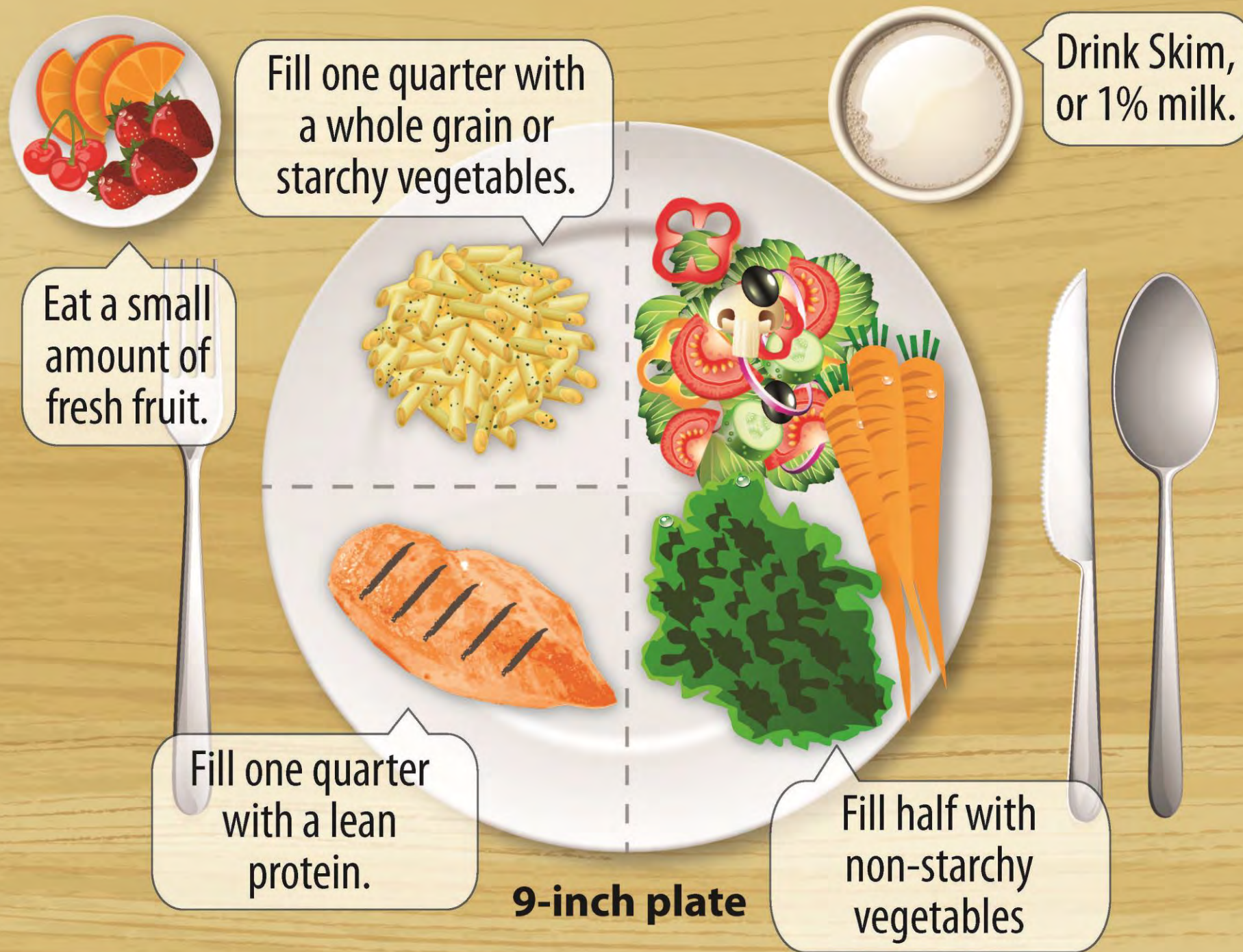
- Unsweetened tea (hot or iced)
- Unsweetened coffee (hot or iced)
- Sparkling water/club soda without added sugar
- Flavored water without added sugar
- Diet soda or other diet drinks: minimal usage.



Highly recommend choosing water over any other drinks.



# HAPPY HEALTHY PLATE



## KEY TAKEAWAYS FROM ADA'S NUTRITION CONSENSUS REPORT

- There is no “diabetes diet.” Talk to your doctor and get a referral to a registered dietitian nutritionist (RDN) who can help you figure out what eating plan makes the most sense for you and your treatment goals.
- You have choices—lots. Whatever diet plan you choose, be sure to include lots of non-starchy vegetables, minimize added sugars and refined grains, and choose whole, minimally processed foods.
- Macronutrients: there is no perfect percentage of calories from carbs, protein, and fat that you need, but the truth is the percentages can and should be individualized.
- Current eating patterns, preferences, and individual metabolic goals (glycemia, lipid profile, etc.), physical activity, food preferences and availability.



# PHYSICAL ACTIVITY

There is no one exercise prescription for all individuals.

ADA encourages at least 30 to 60 minutes of moderate-intensity aerobic activity on most days of the week (at least 150 minutes of moderate-intensity aerobic exercise per week).

## WEIGHT LOSS

- Any amount of weight loss works. Losing modest amounts of weight (start with 5%) can improve your blood sugars . Recommended 5-10 % .
- There are lots of ways to lose weight, from changing your diet to getting more exercise, taking medications or even surgery.
- A focus on lifestyle changes is the preferred starting point.

# Diabetes Management Checklist

- ✓Balanced meal
- ✓Exercise
- ✓Medication compliance
- ✓Test and record your blood glucose regularly
- ✓Keep appointments with health care providers
- ✓HbA1c at least two times a year
- ✓Eye exam once a year
- ✓Dental exam every 6 months
- ✓Good foot and skin care
- ✓Manage stress
- ✓NO Smoking

# National Diabetes Prevention Program (DPP)

- The purpose of National DPP is to prevent or delay type 2 diabetes.
- The goal is to make it easier for those at risk to participate in the evidence-based **lifestyle change programs**.
- The CDC-recognized lifestyle change program can cut one's risk of T2DM by 58% (71% for those over 60 years old).
- The one-year lifestyle change program promotes:
  - Healthy eating
  - Routine physical activity
  - Stress management
- The program helps participants stay motivated and problem solve to reach their goals.

# Websites & References

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  - <https://nccd.cdc.gov/Toolkit/DiabetesImpact>
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  - Galaviz, KI. Diabetes Care 2018. Global Diabetes Prevention Interventions: A systematic Review and Network Meta-analysis of the Real-World Impact on Incidence, Weight, and Glucose.



# Thank you!

