

Nutrition Therapy

Guideline for management of adult diabetes

American Diabetes Association. 2018

R .Hashemi, MD.PhD of nutrition

Key component of diabetes management

- Healthful eating pattern.
- Regular physical activity.
- Pharmacotherapy.

Nutrition Therapy

Nutrition therapy is the treatment of a disease or condition through the modification of nutrient or whole food intake.

A large percentage of people with diabetes do not receive any structured diabetes education and/or nutrition therapy.

- Guidelines recommend the following structure for the implementation of MNT for adults with diabetes :
 - 1) A series of 3-4 encounters with an RD lasting from 45 to 90 min.
 - 2) The series of encounters should begin at diagnosis of diabetes or at first referral to an RD for MNT for diabetes and should be completed within 3-6 months.
 - 3) At least 1 follow-up encounter is recommended annually to reinforce lifestyle changes and to evaluate and monitor outcomes .

Goals of Nutrition Therapy

MEASURE	GOALS
Hemoglobin A1C	< 7
Blood pressure	< 140/90
LDL-Cholesterol	< 100
TG	< 150
HDL- Cholesterol	Men > 40 Women > 50
Maintain body weight goals	
Delay or prevent complications of diabetes	

Goals in older adults

Patient health status	life expectancy	A1C Goal	Bed time glucose	Blood pressure
healthy	longer	<7/5	90-150	<140/90
complex	intermediate	<8	100-180	<140/90
Very complex	limited	<8/5	110-200	<150/90

Goals in children

Before meal	Bed time	A1c	Rationale
9.0-13.0	9.0-15.0	< 7/5	< 7 More acceptable

Nutritional Recommendation

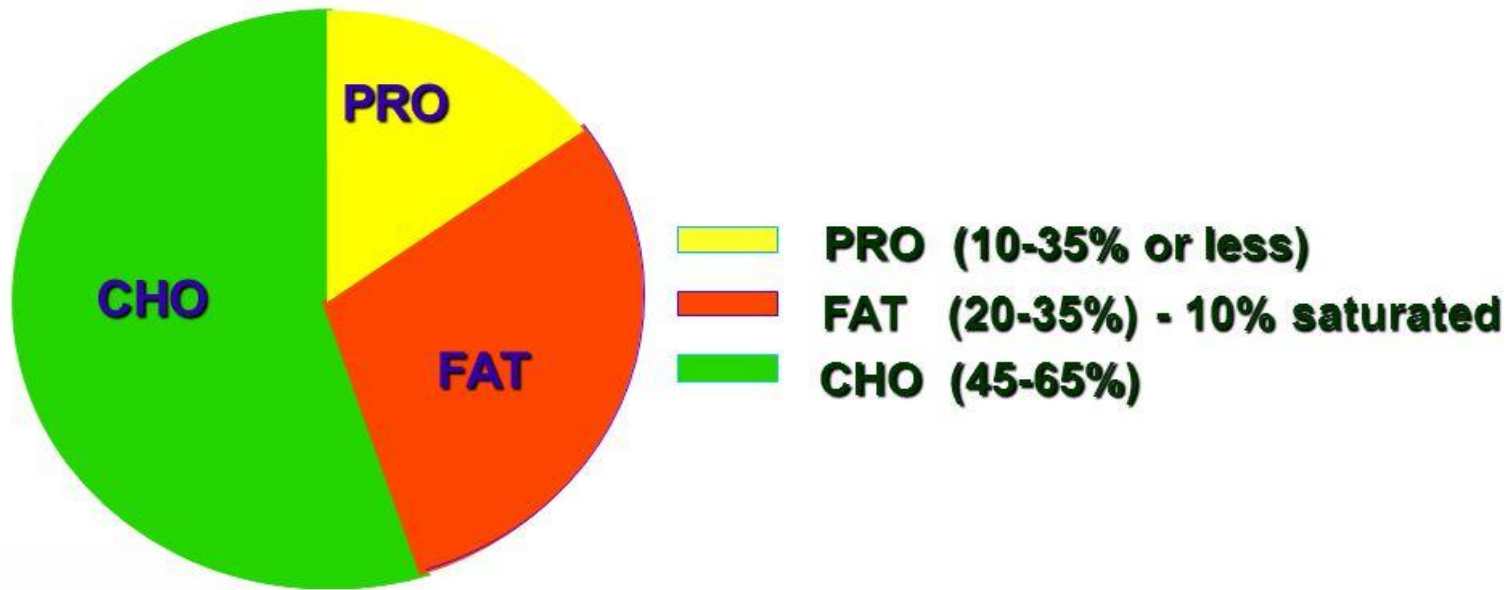
- Energy balance & weight management

Weight loss is recommended for overweight or obese adult with diabetes type 2.

Modest weight loss may provide clinical benefits.

To achieve modest weight loss, intensive lifestyle interventions are recommended.

Acceptable Macronutrient Distribution Ranges



Carbohydrates



Protein



Fat



Optimal macronutrient distribution

- There is not an ideal percentage of calories from :
carbohydrate, protein, and fat for all people with diabetes.

macronutrient distribution should be based on individualized assessment of current eating patterns, preferences, and metabolic goals.

Individual Macronutrient(carbohydrate)

- most important factor influencing glycemic response after eating is :
the amount of carbohydrates and available insulin.
- carbohydrate intake from :
vegetables, fruits, whole grains, legumes, and dairy products are better than those that contain added fats, sugars, or sodium.

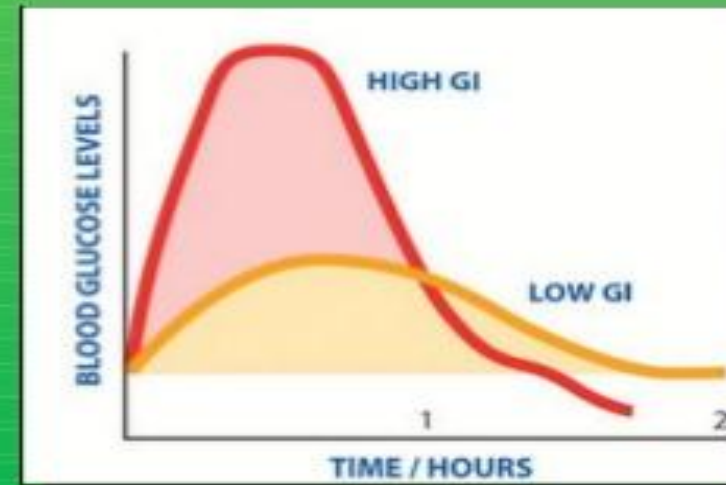
Quality Of Carbohydrates

- Glycemic index
- Glycemic load

The Glycemic Index

Definition: a number representing the ability of a food, relative to that of glucose, to increase the level of glucose in the blood.

- Low GI: 1 - 55
- Medium GI: 56 – 69
- High: 70+



Glycemic Index Classification

GI	GI Rating	Effect
HIGH GI	≥ 70	Rapid increase in blood sugar levels
MEDIUM GI	56-69	Moderate increase in blood sugar levels
LOW GI	≤ 55	Slow increase in blood sugar levels

Glycemic load

- Glycemic load accounts for :
 - how **much carbohydrates** is in the food (quantity)
 - how much **each gram** of carbohydrate in the food raises blood glucose levels.(quality)

Glycemic Load Formula

$$\frac{\text{Glycemic Index} \times \text{Total Carbs}}{\text{Divided by 100}} = \text{Glycemic Load}$$

(Speed of Sugar Absorption) *(Amount of Sugar)*

(Magnitude of Sugar Absorption)

- Substituting **low-glycemic load** foods for higher-glycemic load foods may modestly improve glycemic control.

	Glycemic Index	Glycemic Load
High	70 or more	20 or more
Intermediate	55 - 69	11 - 19
Low	54 or less	10 or less

بار گلیسمی	شاخص گلیسمی	ماده غذایی
6	38	سیب
9	31	زردآلو
13	51	موز
3	22	گیلاس
3	25	گریپ فروت
8	46	انگور
6	53	کیوی
5	48	پرتغال
5	42	هلو
7	59	آناناس
5	39	آلوبرقانی
28	64	کشمش
4	65	طالبی
4	72	هندوانه

Dietary fiber



Recommendations for the general public to increase intake to 14 g fiber/1,000 kcals daily.

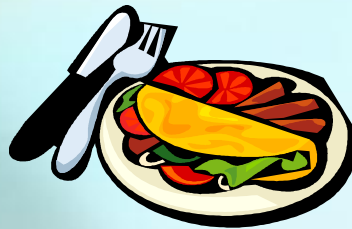
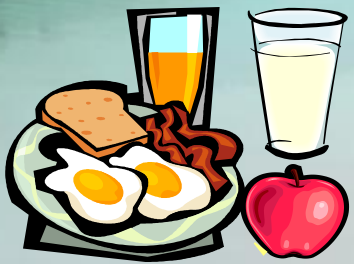
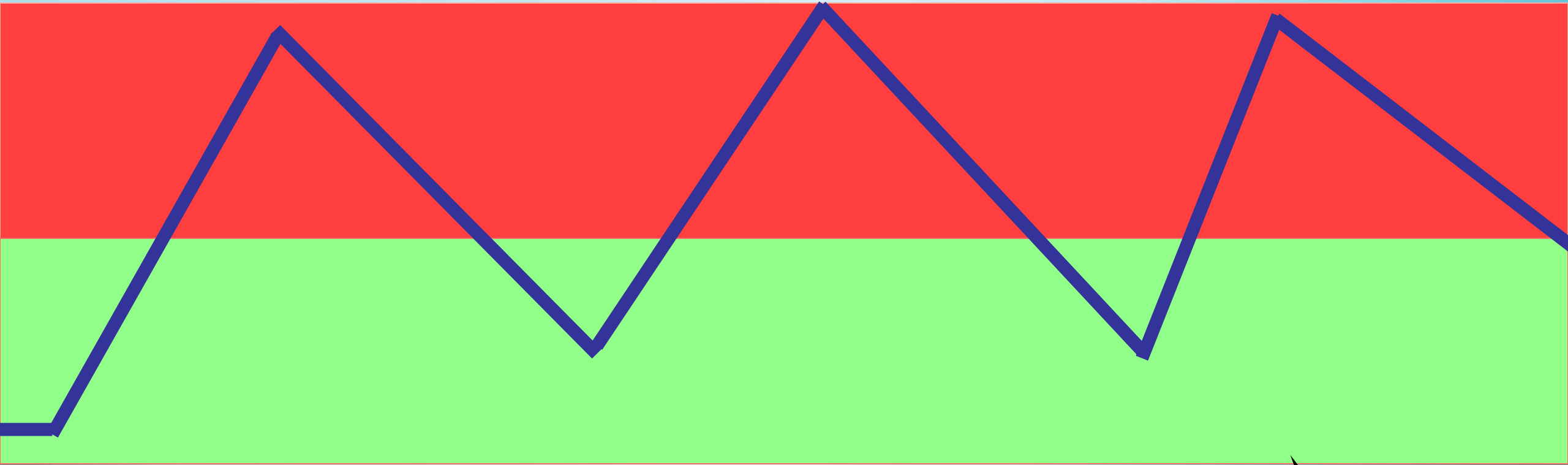
or about 25 g/day for adult women and 38 g/day for adult men are encouraged for individuals with diabetes.

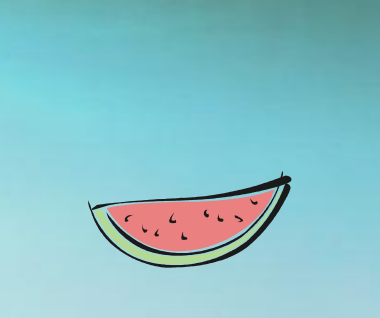
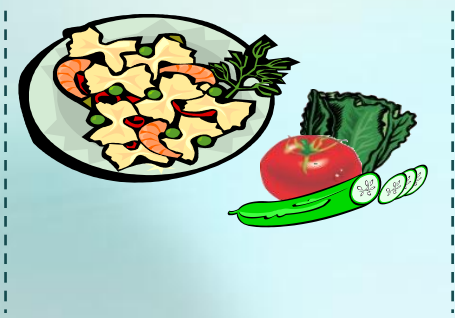
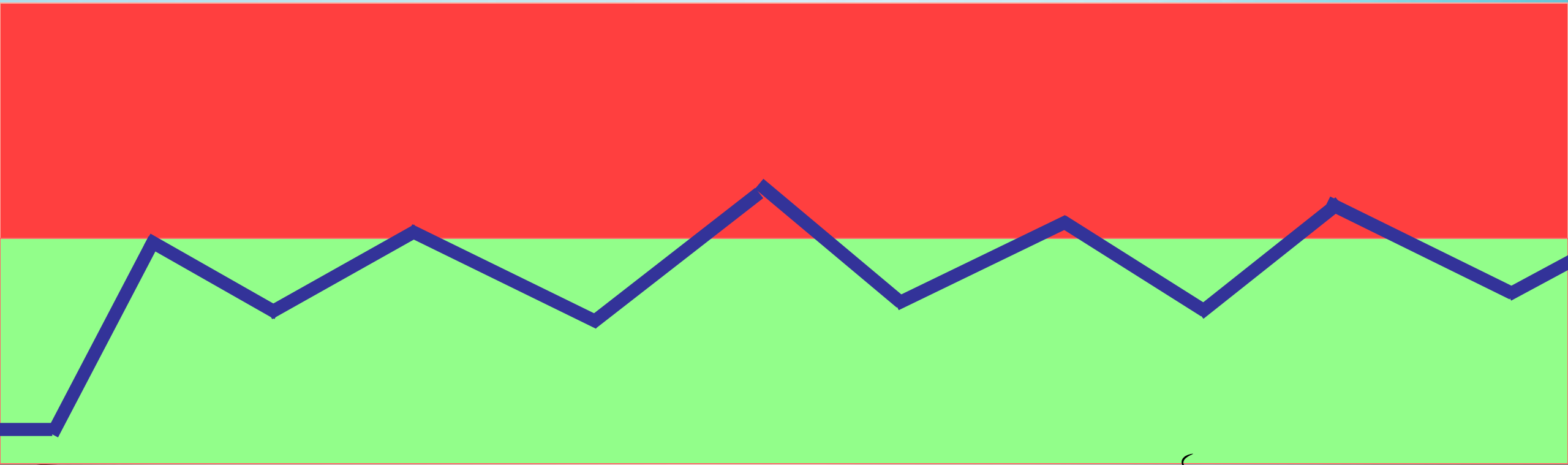
Whole grains

- The Dietary Guidelines for Americans, 2010, defines whole grains as foods containing the entire grain seed (kernel), bran, germ, and endosperm.
- People with diabetes should consume at least the amount of fiber and whole grains recommended for the **general public.**



Carbohydrates distribution





protein

- For people with diabetes and no evidence of diabetic kidney disease :

evidence is inconclusive to recommend an ideal amount of protein intake , therefore, goals should be individualized.

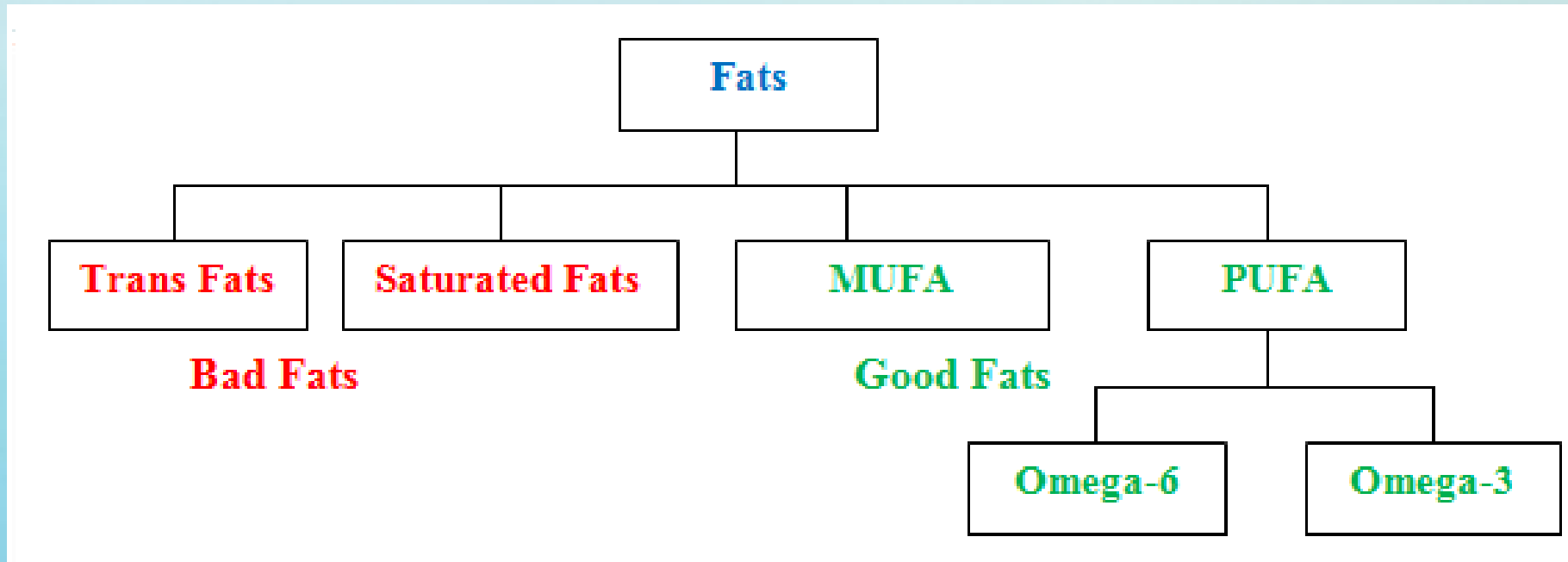
- For people diabetic kidney disease (either micro- or macroalbuminuria), reducing the amount of dietary protein below usual intake is not recommended .

because it does not alter glycemic measures, cardiovascular risk measures, or the **course of GFR decline**.

Total fat

- Fat quality appears to be far more important than quantity.
- Evidence is inconclusive for an ideal amount of total fat intake for people with diabetes;
- therefore, goals should be individualized.

MUFA / PUFA



OMEGA 3

- Evidence **does not** support recommending omega-3 supplements for people with diabetes.
- As recommended for the general public, an increase in foods containing (EPA and DHA) (from fatty fish) is recommended for individuals with diabetes.
- The recommendation for the general public to eat fish (particularly fatty fish) at **least two times** (two servings) per **week** is also appropriate for people with diabetes.

Saturated fat & cholesterol

- The amount of dietary saturated fat, cholesterol, and trans fat recommended for people with diabetes is the same as that recommended for the general population.

Micronutrient

- There is no clear evidence of benefit from vitamin or mineral supplementation in people with diabetes who do not have underlying deficiencies.
- There is insufficient evidence to support the routine use of micronutrients such as chromium, magnesium, and vitamin D to improve glycemic control in people with diabetes.
- Routine supplementation with antioxidants, such as vitamins E and C and carotene, is not advised.

Herbal supplement.

- There is insufficient evidence to support the use of cinnamon or other herbs/ supplements for the treatment of diabetes.

Alcohol

- Alcohol consumption may place people with diabetes at **increased risk for delayed hypoglycemia**, especially if taking insulin or insulin secretagogues.
- If adults with diabetes choose to drink alcohol, they should be advised to do so in moderation.

Sodium

- The recommendation for the general population to reduce sodium to less than 2,300 mg/day is also appropriate for people with diabetes.

summary

- There is no standard meal plan or eating pattern that works universally for all people with diabetes.
- nutrition therapy should be individualized for each patient/client based on his or her individual health goals; personal and cultural preferences.