
In The Name Of God

Diabetes

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CLASSIFICATION

Diabetes can be classified into the following general categories:

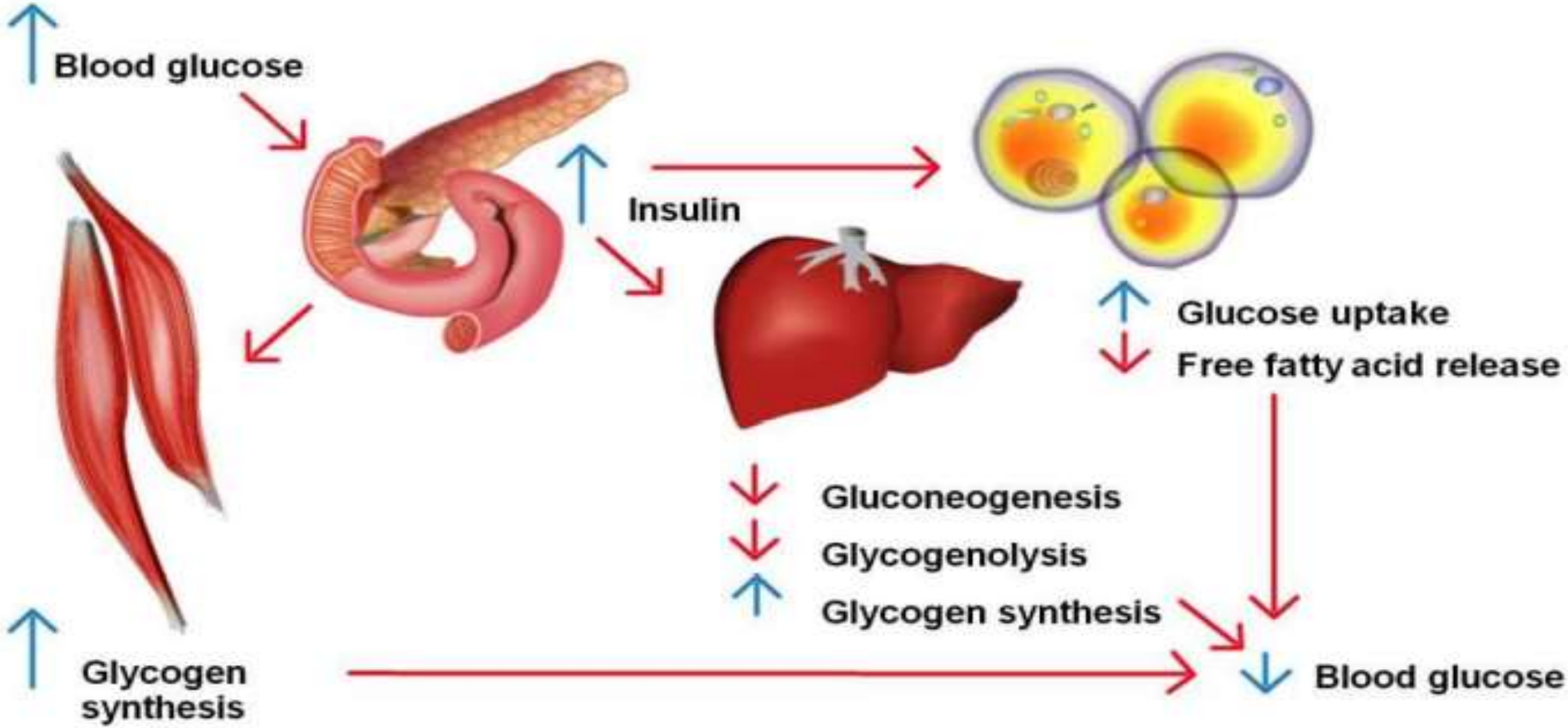
1. Type 1 diabetes
2. Type 2 diabetes
3. Gestational diabetes mellitus (GDM)
4. Specific types of diabetes due to other causes

Type 1 diabetes

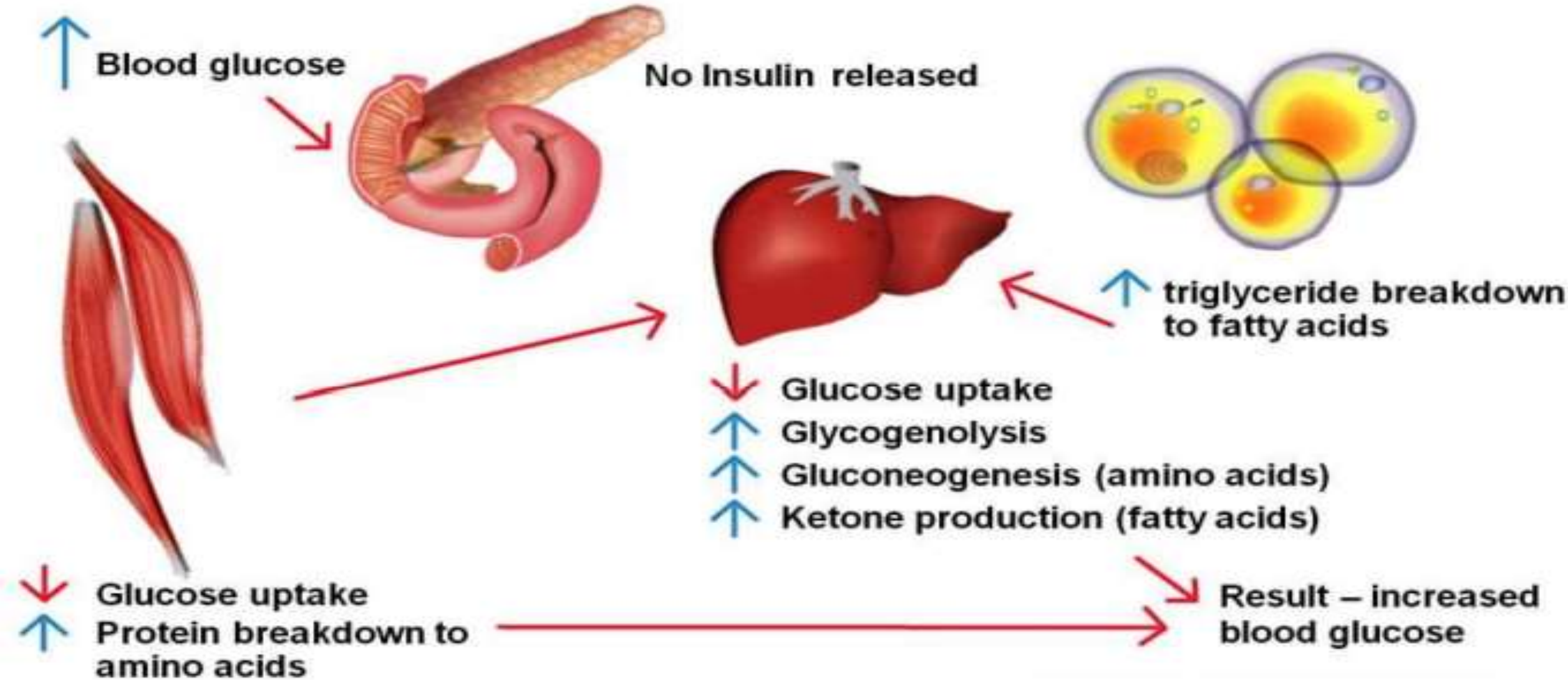
- autoimmune destruction of the pancreatic beta cells, leading to absolute insulin deficiency.

- Type 1 diabetes accounts for approximately 5 to 10 percent of diabetes in adults

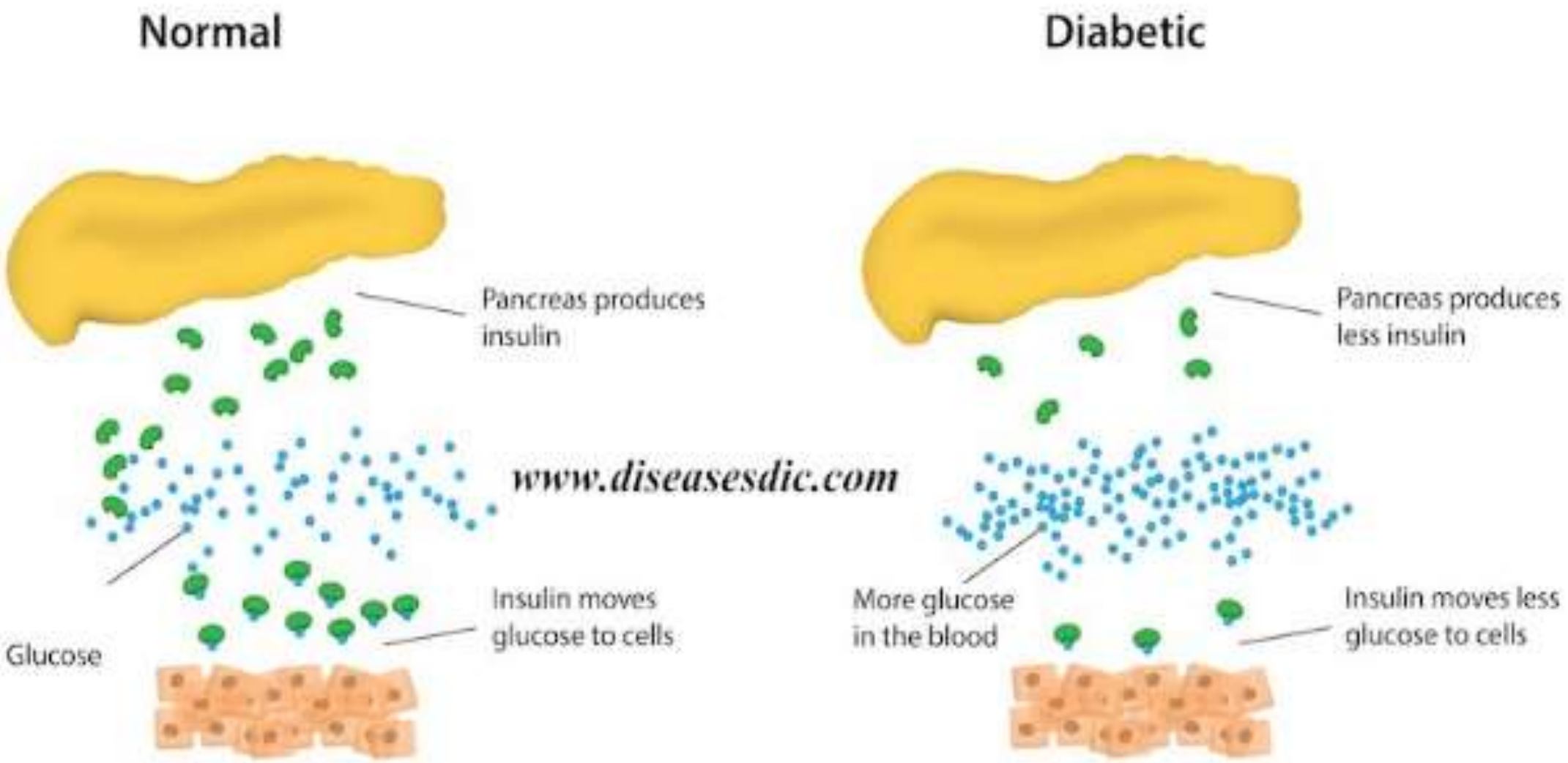
Pathophysiology of diabetes
-Insulin and glucose disposal (without diabetes)

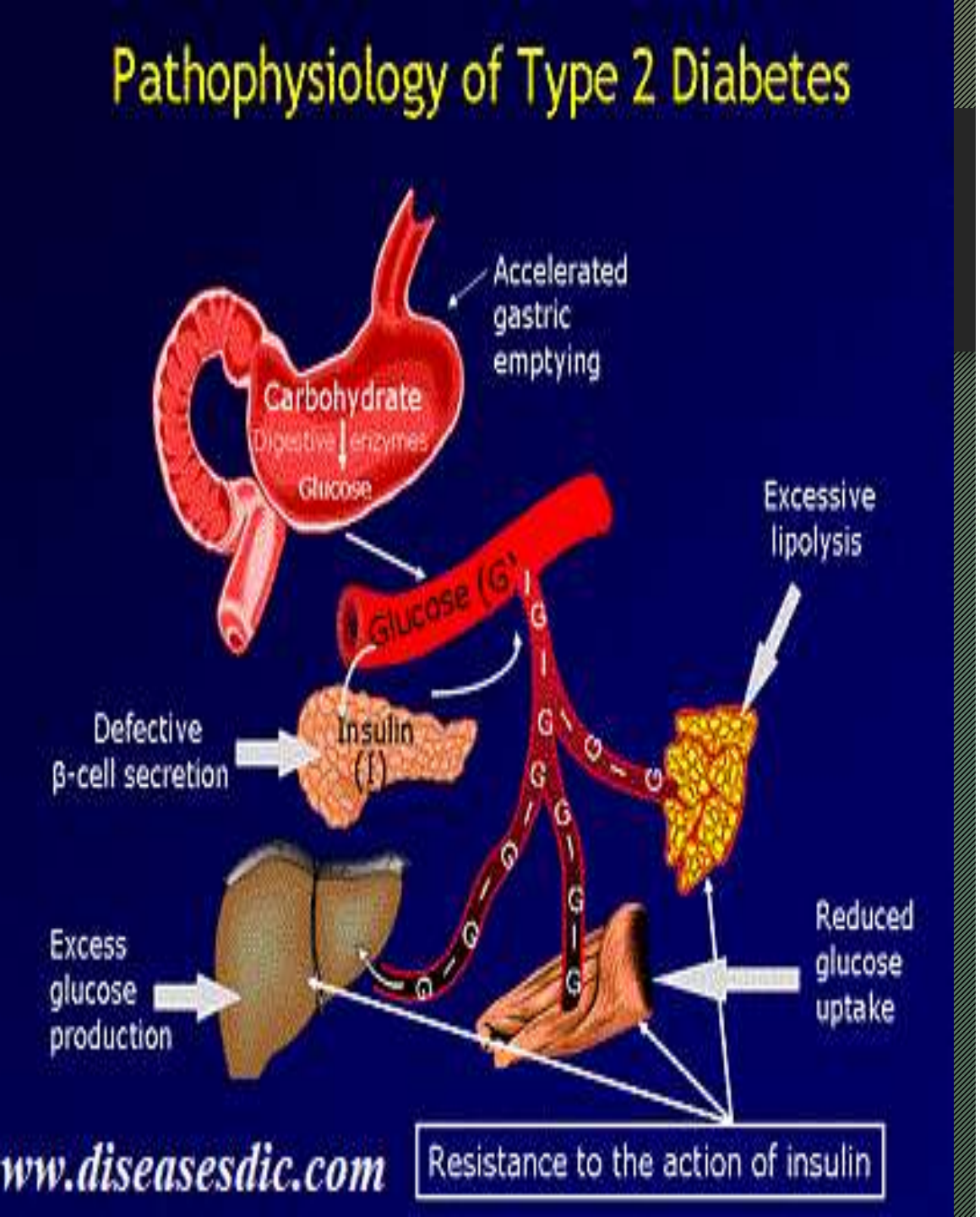


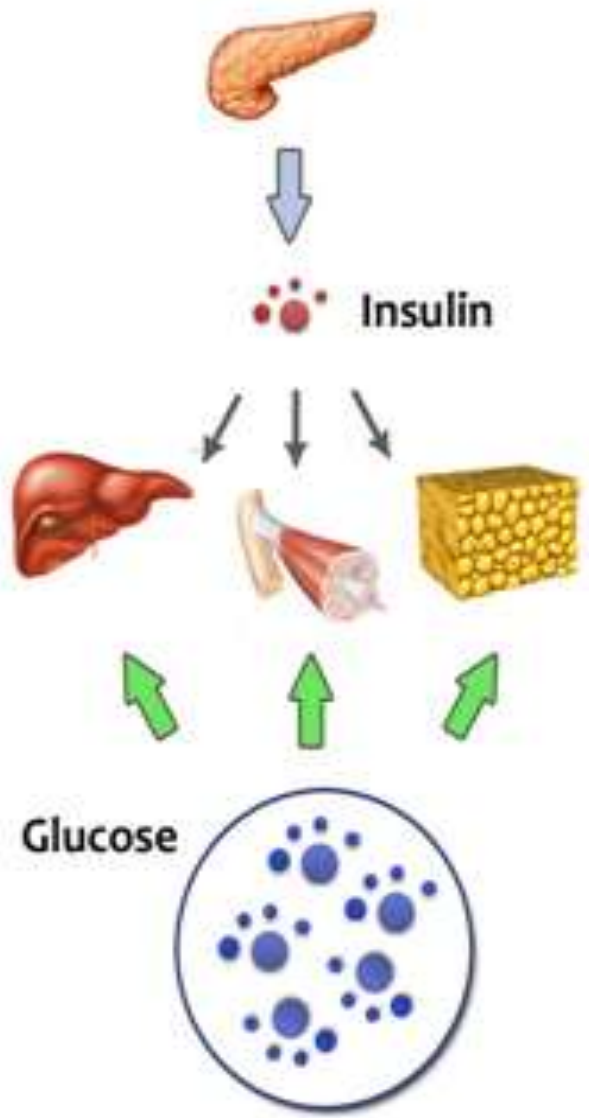
Pathophysiology of diabetes
-Insulin and glucose disposal (diabetes)



Type 2 Diabetes

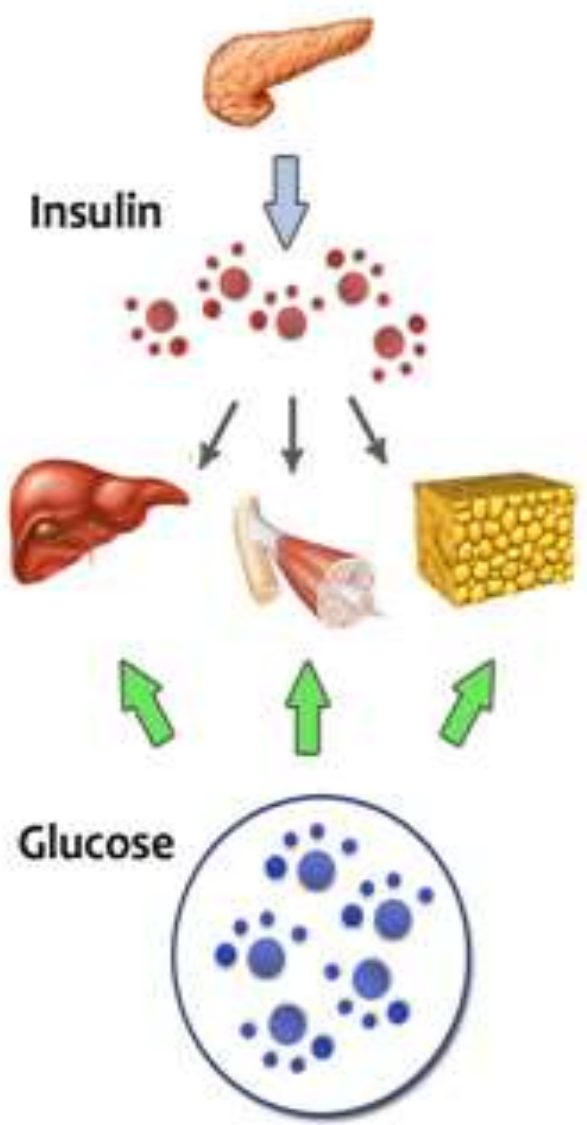






INSULIN SENSITIVE

When a small amount of insulin can push large amounts of glucose into body tissues



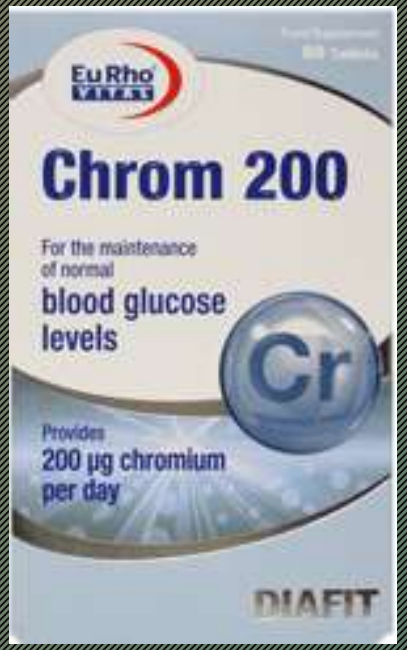
INSULIN RESISTANT

When a large amount of insulin is needed to push glucose into body tissues

Clinical manifestation

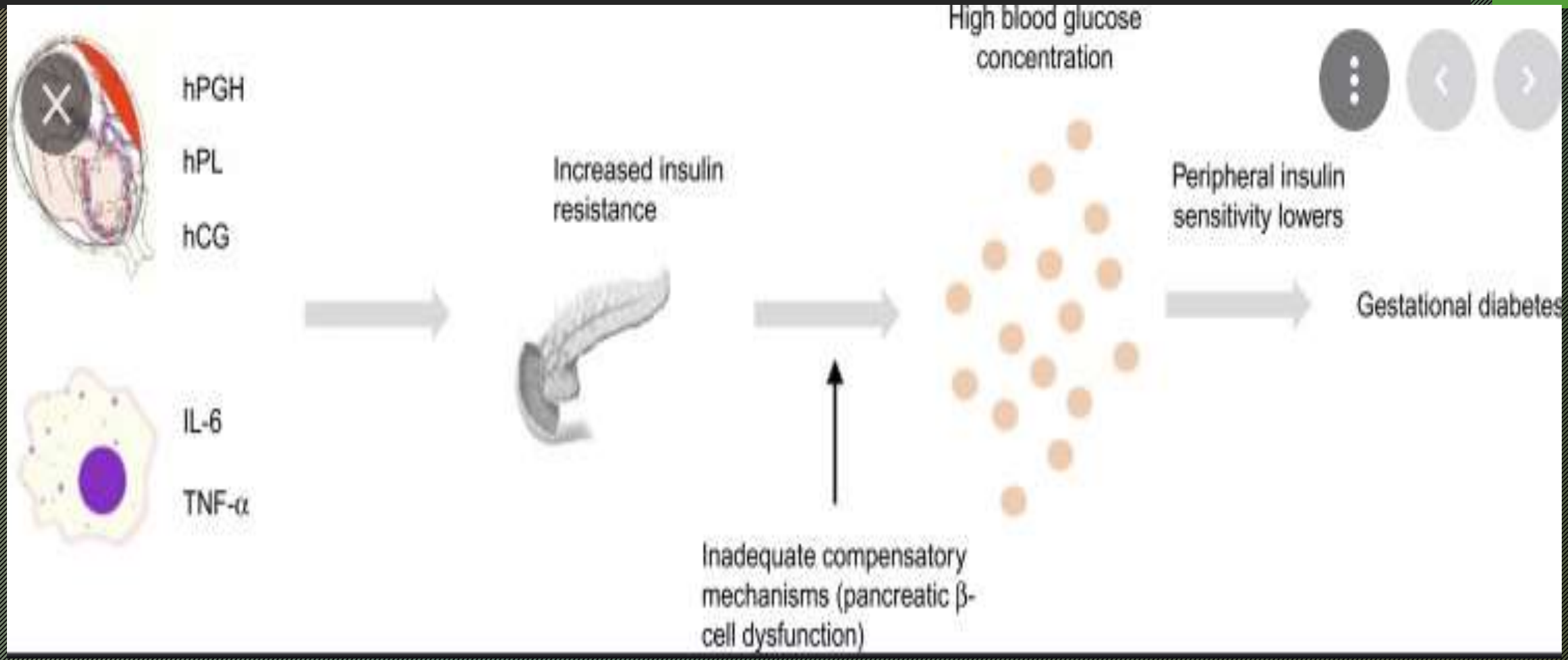
10

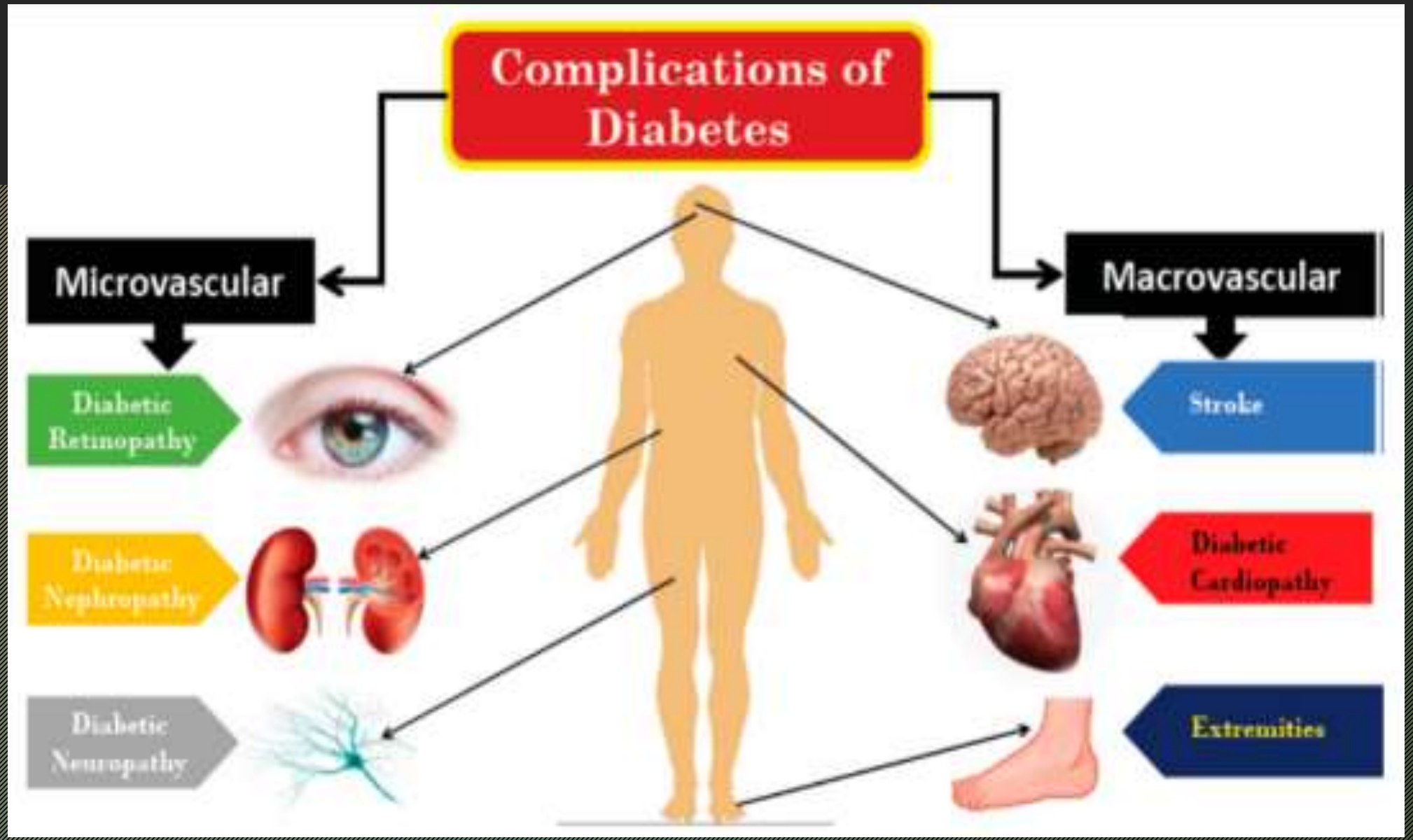
Supplement?


EuRho Vargus
Chrom 200
For the maintenance of normal
blood glucose levels
Cr
Provides
200 µg chromium per day
DIAFIT


VITABIOTICS
ultra
Chromium
200 µg
as PICOLINATE
MADE TO HIGH STANDARDS OF QUALITY CONTROL
NO ARTIFICIAL COLOURS OR PRESERVATIVES
VITABIOTICS
Suitable for Vegetarians

GDM


hPGH
hPL
hCG
IL-6
TNF-α
Increased insulin resistance
Inadequate compensatory mechanisms (pancreatic β-cell dysfunction)
High blood glucose concentration
Peripheral insulin sensitivity lowers
Gestational diabetes


Complications of Diabetes
Microvascular
Macrovascular
Diabetic Retinopathy
Diabetic Nephropathy
Diabetic Neuropathy
Stroke
Diabetic Cardiopathy
Extremities

CATEGORIES OF INCREASED RISK FOR DIABETES (PREDIABETES)

Table 2.3—Criteria for testing for diabetes or prediabetes in asymptomatic adults

1. Testing should be considered in overweight or obese (BMI ≥25 kg/m^2 or ≥23 kg/m^2 in Asian Americans) adults who have one or more of the following risk factors:
   - First-degree relative with diabetes
   - High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
   - History of CVD
   - Hypertension (≥140/90 mmHg or on therapy for hypertension)
   - HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)
   - Women with polycystic ovary syndrome
   - Physical inactivity
   - Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
2. Patients with prediabetes (A1C ≥5.7% [39 mmol/mol], IGT, or IFG) should be tested yearly.
3. Women who were diagnosed with GDM should have lifelong testing at least every 3 years.
4. For all other patients, testing should begin at age 45 years.
5. If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.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CLINICAL PRESENTATION

The majority of patients are asymptomatic at presentation

The classic symptoms of hyperglycemia (including

- polyuria,
- polydipsia,
- nocturia,
- blurred vision

جدول ۱- اندازه‌گیری و تفسیر قند خون

قند خون ناشتا	≤۹۹	طبیعی
FPG[1]	۱۰۰-۱۲۵	قند خون ناشتای مختل IFG[2]
(mg/dl)	≥۱۲۶	آزمایش باید تکرار و تأیید شود.
آزمایش تحمل گلوکز دو ساعت پس	≤۱۳۹	طبیعی
از دریافت ۷۵ گرم گلوکز	۱۴۰-۱۹۹	اختلال تحمل گلوکز IGT[4]
OGTT[3] (mg/dl)	≥۲۰۰	آزمایش باید تکرار و تأیید شود.
	<٪۵/۷	طبیعی
هموگلوبین گلیکوزیله (HbA_1c)[5]	٪۵/۷-٪۶/۴	خطر بالا/ پیش دیابت[6]
(به عنوان تست غربالگری)	>٪۶/۴	آزمایش باید تکرار و تأیید شود.
قند خون تصادفی		حضور نشانه های هیپرگلیسمی کنترل نشده
RPG[7]	≥۲۰۰	(پرنوشی، پرادراری، پرخوری) برای
(mg/dl)		تشخیص دیابت ضروری است.

DIAGNOSTIC TESTS FOR DIABETES

Table 2.2—Criteria for the diagnosis of diabetes

FPG ≥126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 h.*
OR
2-h PG ≥200 mg/dL (11.1 mmol/L) during 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% (48 mmol/mol). 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 (11.1 mmol/L).

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

Treatment

- Improved glycemic management lowers the risk of microvascular complications in patients with type 2 diabetes

- Treatment of patients with type 2 diabetes mellitus includes evaluation for micro- and macrovascular complications, attempts to achieve near normoglycemia minimization of cardiovascular and other long-term risk factors,

جدول ۳- اهداف درمانی کنترل قند خون

	طبیعی	هدف
هموگلوبین گلیکوزیله (HbA۱c)[1]	<٪۶	<٪۷*
قند خون ناشتا FPG[2](mg/dl)	<۱۰۰	۹۰-۱۳۰
قند خون پس از غذا 2h-PP[3](mg/dl)	<۱۴۰	<۱۸۰

[1]Hemoglobin A۱c, [2]Fasting Plasma Glucose, [3]2Hour-Post Prandial Glucose

* HbA۱c>٪۶/۵ در افرادی که بیماری قلبی-عروقی، خطر هیپوگلیسمی، ابتلا طولانی مدت به دیابت نداشته و دارای امید به زندگی بالایی باشند.

* HbA۱c<٪۸ در افرادی که سابقه هیپوگلیسمی شدید، عوارض پیشرفته دیابت، بیماری همراه و دارای امید به زندگی پایین باشند.

GOALS OF THERAPY

- manage the "ABCs" of diabetes control:

- glycated hemoglobin (**A**1C),
- **b**lood pressure
- low-density lipoprotein (LDL) **c**holesterol

TABLE 30-4 Recommendations for Lipid and Blood Pressure for Most Adults with Diabetes

Lipids/Blood Pressure	Criteria
LDL cholesterol	<100 mg/dl (<2.6 mmol/l)*
HDL cholesterol	
Men	>40 mg/dl (>1.1 mmol/l)
Women	>50 mg/d (>1.4 mmol/l)
Triglycerides	<150 mg/dl (<1.7 mmol/l)
Blood pressure	<140/90 mm Hg

Modified from American Diabetes Association: Standards of medical care in diabetes—2014, *Diabetes Care* 37(S1):S14, 2014.

*In individuals with overt CVD, a lower LDL cholesterol goal of <70 mg/dl (1.8 mmol/l), using a high dose of a statin, is an option.

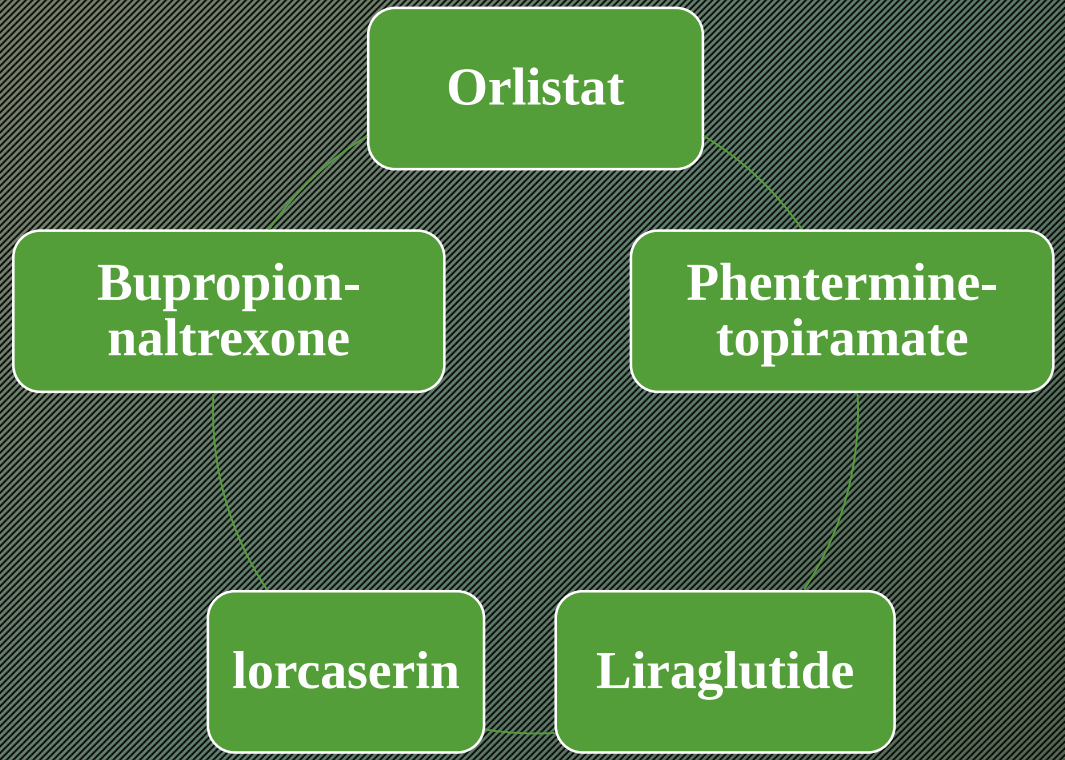
Nutritional considerations in type 2 diabetes mellitus

- The strongest evidence for diabetes prevention comes from the Diabetes Prevention Program (DPP)
- The two major goals of the DPP intensive, behavioral, lifestyle intervention were to achieve and maintain a minimum of 7% weight loss and 150 min of physical activity per week
- Uptodate: Diet is one of the most important behavioral aspects of diabetes treatmen

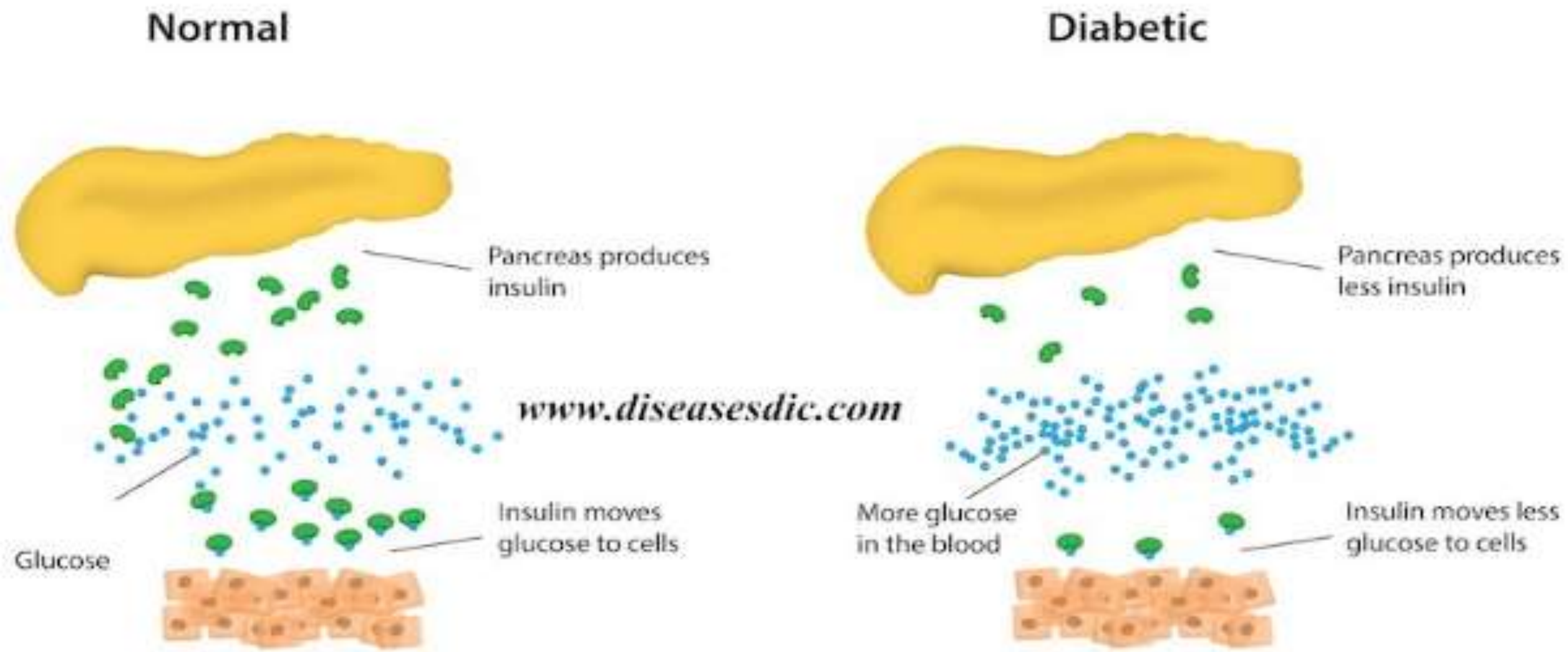
- If weight loss cannot be achieved, weight maintenance (rather than gain) is an important goal.

- Pharmacologic therapy for weight loss and weight loss surgery can be effective but are not considered initial therapy

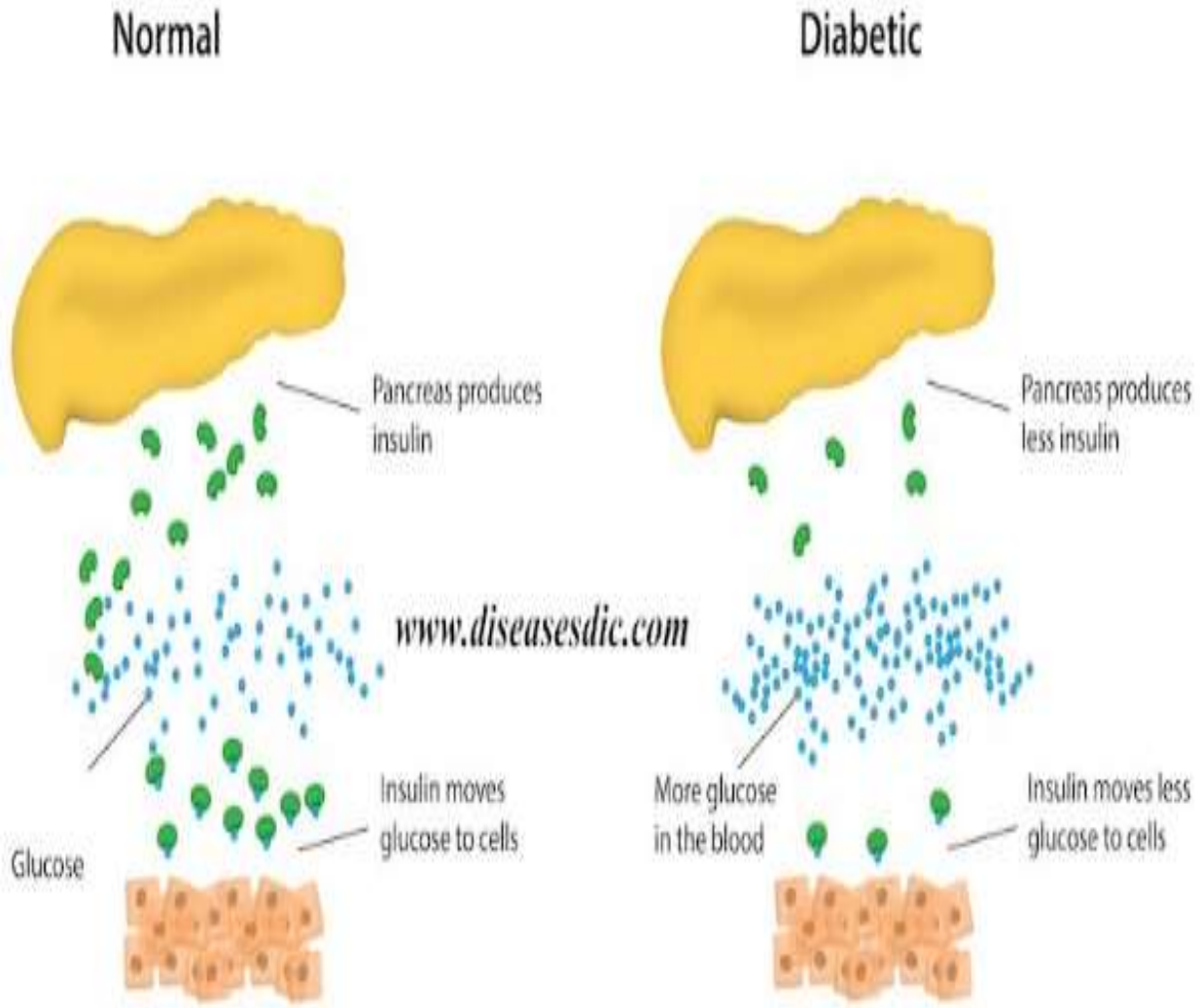
Drugs available as adjuncts to diet and exercise for treatment of obesity



Type 2 Diabetes



Type 2 Diabetes

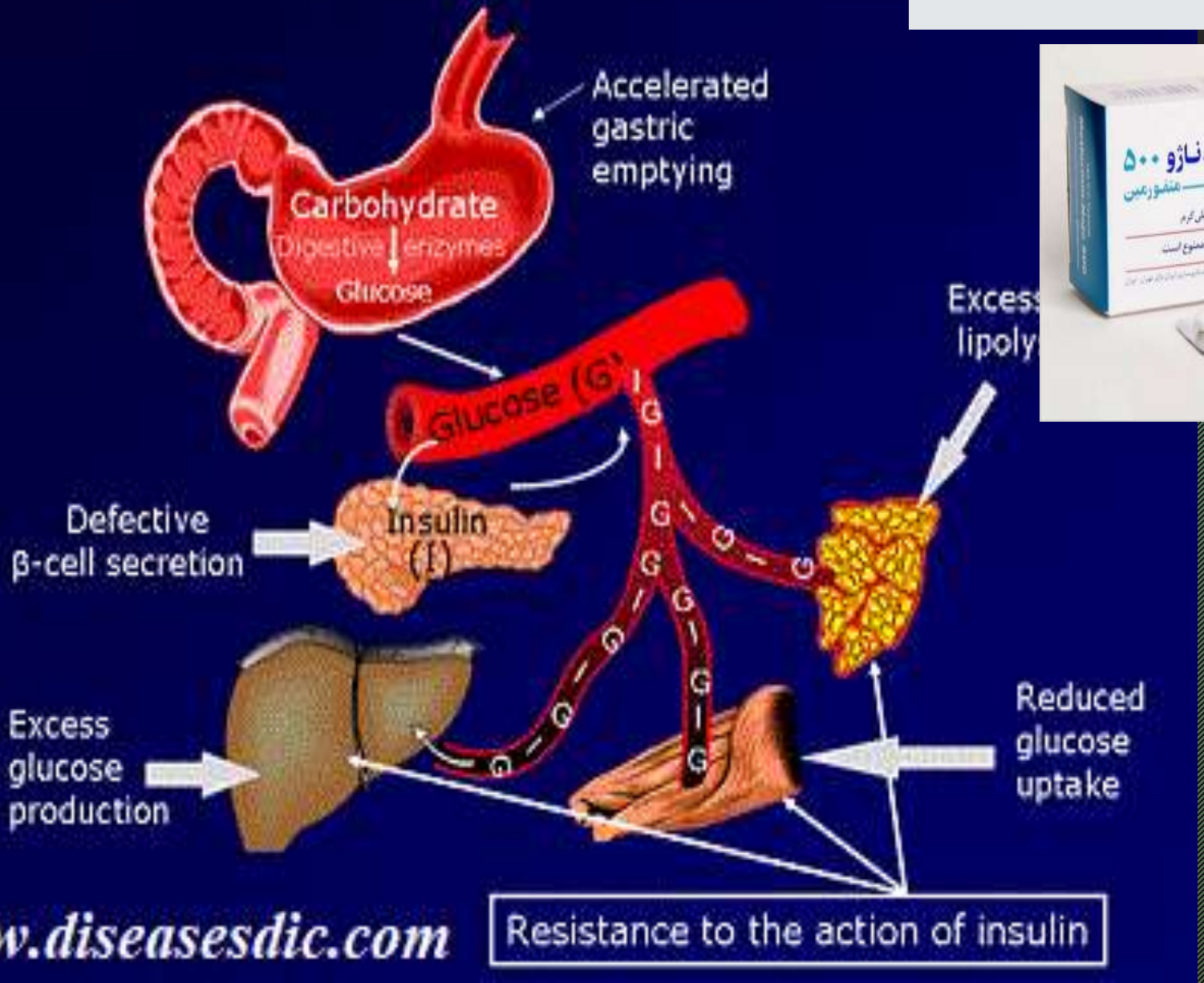


Sulfonylureas (2nd generation)	• Glyburide • Glipizide • Glimepiride
Meglitinides (glinides)	• Repaglinide • Nateglinide

Weight time

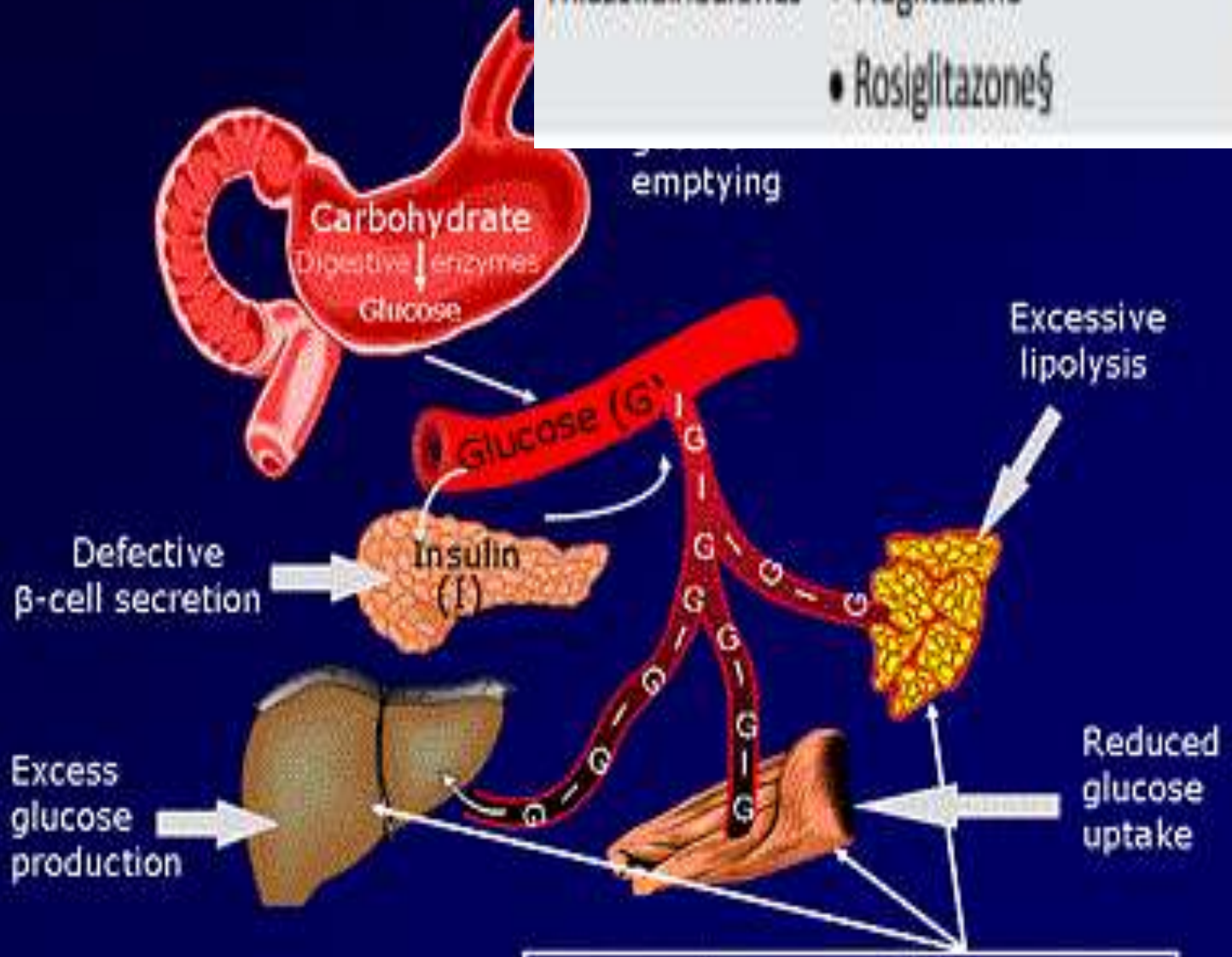
Biguanides	• Metformin	Activates AMP kinase (? other)	↓ Hepatic glucose production

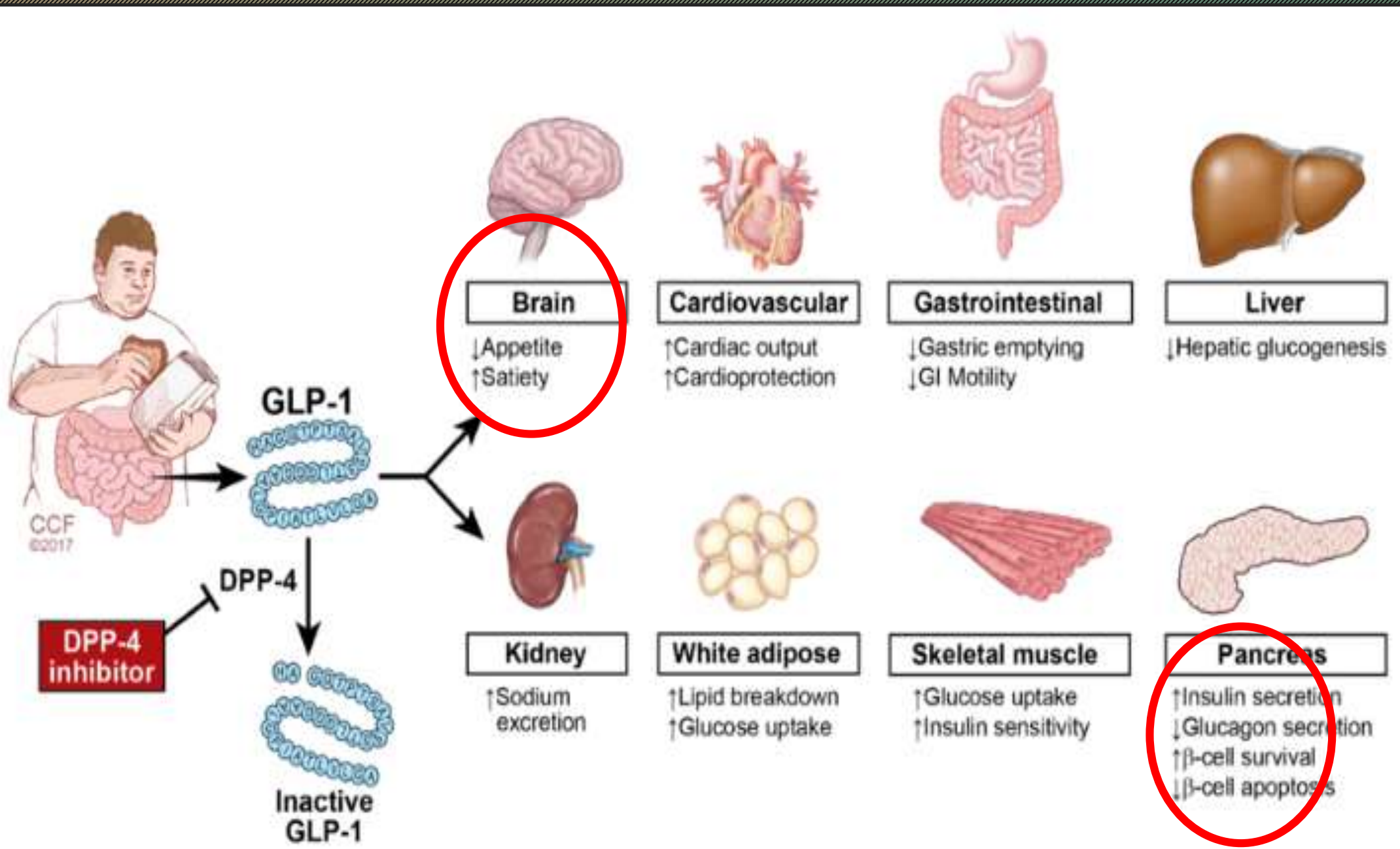
Weight?
Vitamin?

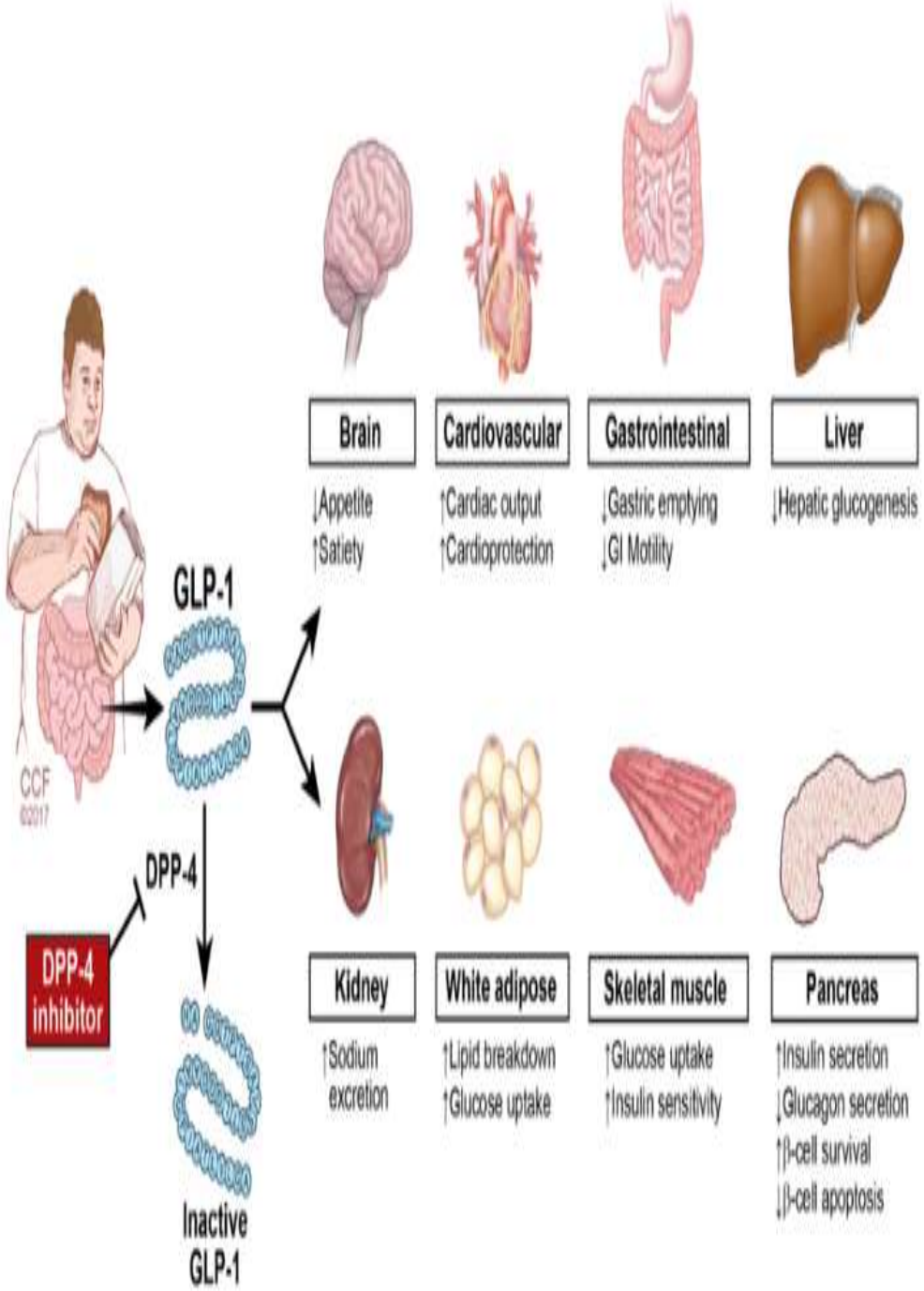


Pathophysiology of Type 2 Diabetes

Thiazolidinediones	• Pioglitazone • Rosiglitazone§	Activates the nuclear transcription factor PPAR-γ	↑ Insulin sensitivity

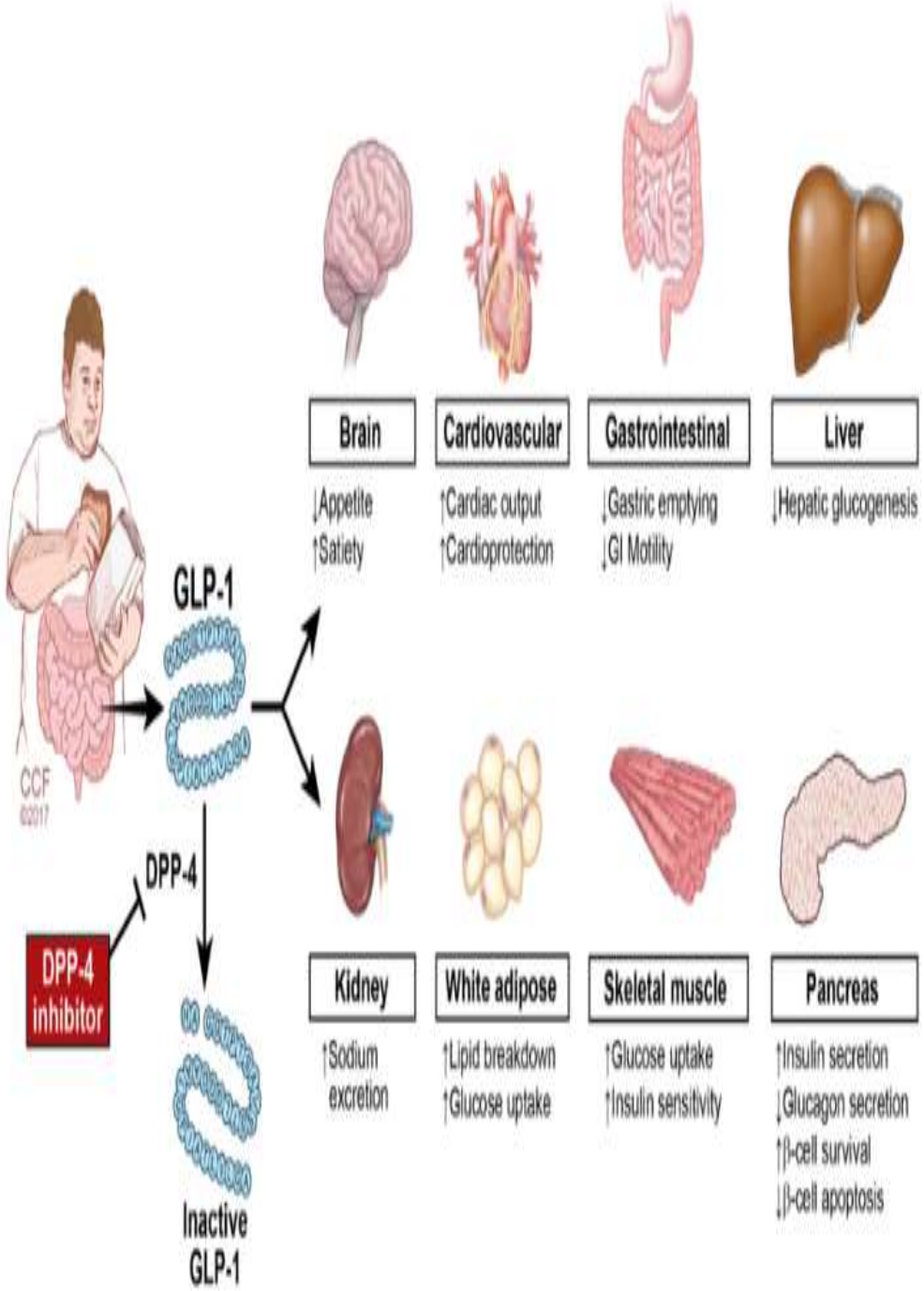



GLP-1
DPP-4
DPP-4 inhibitor
Inactive GLP-1
CCF ©2017
Brain
↓Appetite
↑Satiety
Cardiovascular
↑Cardiac output
↑Cardioprotection
Gastrointestinal
↓Gastric emptying
↓GI Motility
Liver
↓Hepatic glucogenesis
Kidney
↑Sodium excretion
White adipose
↑Lipid breakdown
↑Glucose uptake
Skeletal muscle
↑Glucose uptake
↑Insulin sensitivity
Pancreas
↑Insulin secretion
↓Glucagon secretion
↑β-cell survival
↓β-cell apoptosis

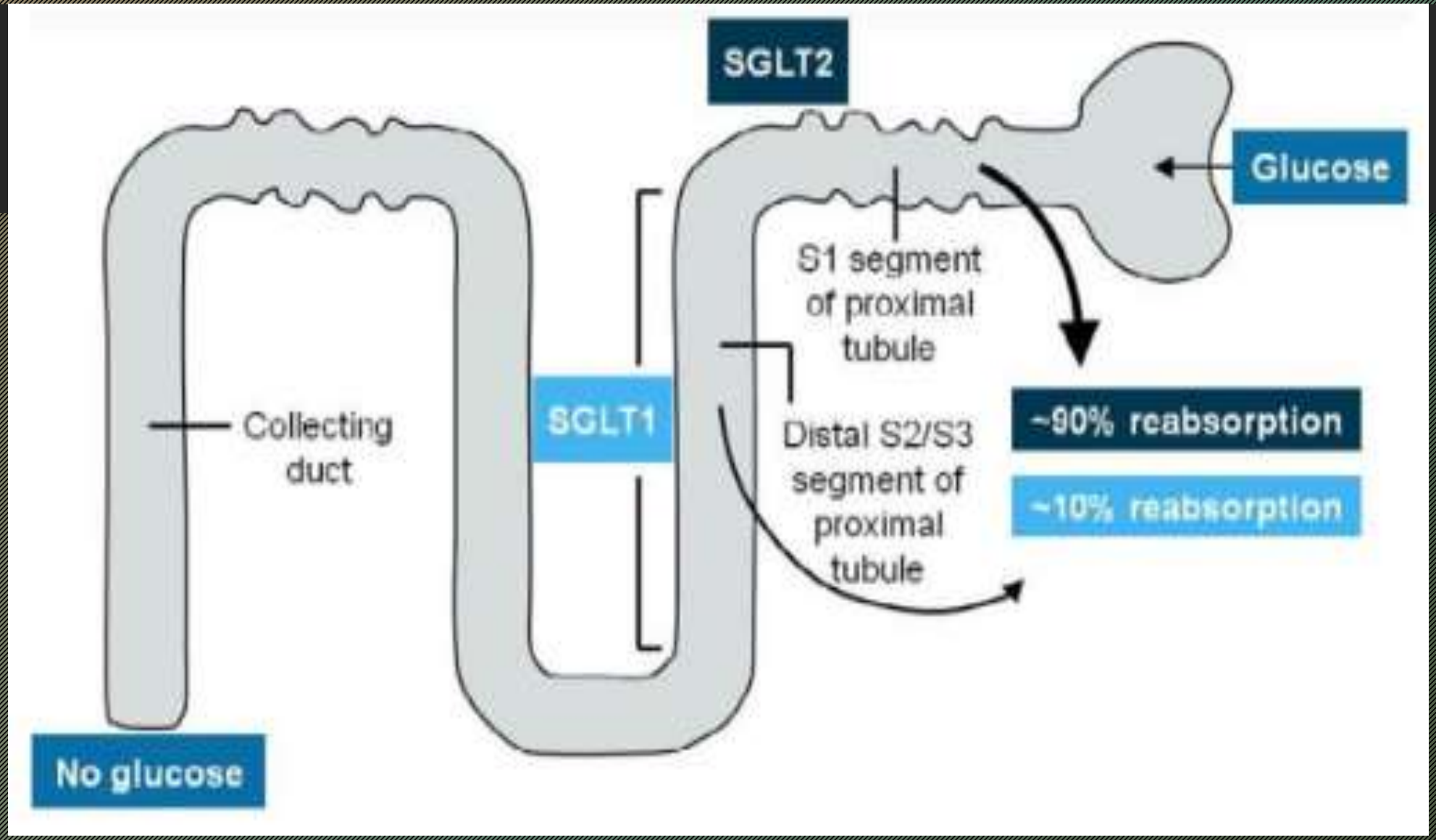


DPP-4 inhibitors	• Sitagliptin • Saxagliptin • Linagliptin • Alogliptin	Inhibits DPP-4 activity, increasing postprandial incretin (GLP-1, GIP) concentrations	↑ Insulin secretion (glucose dependent); ↓ Glucagon secretion (glucose dependent)

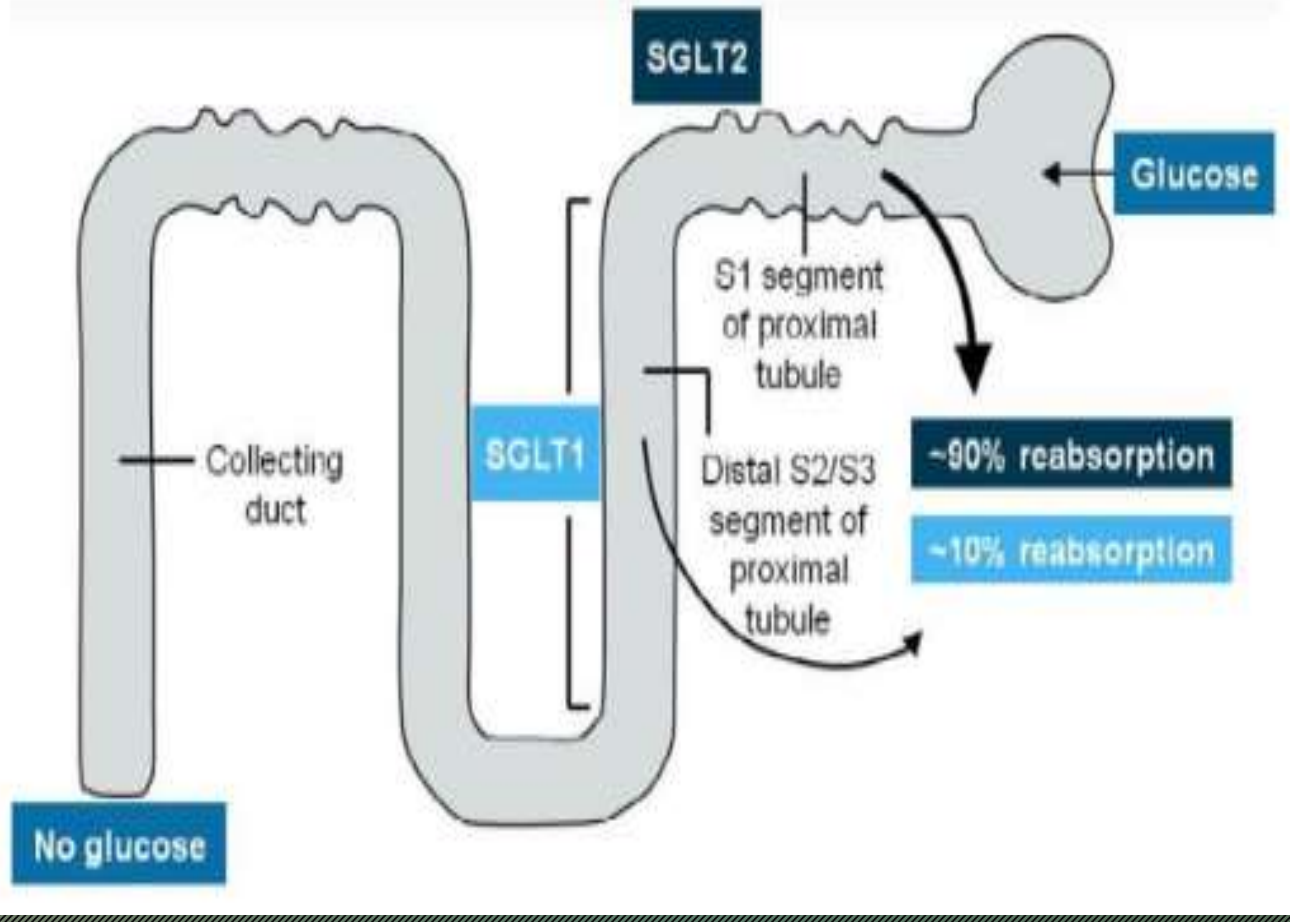
Ziptin®
Sitagliptin



GLP-1 receptor agonists	• Exenatide • Exenatide extended release • Liraglutide • Albiglutide • Lixisenatide	Activates GLP-1 receptors	↑ Insulin secretion (glucose dependent) ↓ Glucagon secretion (glucose dependent); Slows gastric emptying; ↑ Satiety


SGLT2
Glucose
S1 segment of proximal tubule
Collecting duct
SGLT1
Distal S2/S3 segment of proximal tubule
~90% reabsorption
~10% reabsorption
No glucose

SGLT2 inhibitors	• Canagliflozin • Dapagliflozin • Empagliflozin	Inhibits SGLT2 in the proximal nephron	Blocks glucose reabsorption by the kidney, increasing glucosuria



	Efficacy*	Hypoglycemia	Weight Change
Metformin	High	No	Neutral (Potential for Modest Loss)
SGLT-2 Inhibitors	Intermediate	No	Loss
GLP-1 RAs	High	No	Loss
DPP-4 Inhibitors	Intermediate	No	Neutral	Neutral	Potential Risk: saxagliptin, alogliptin
Thiazolidinediones	High	No	Gain	Potential Benefit: pioglitazone	Increased Risk
Sulfonylureas (2nd Generation)	High	Yes	Gain	Neutral	Neutral
Insulin: Human Insulin	Highest	Yes	Gain	Neutral	Neutral
Insulin: Analogs					

Antihyperglycemic Therapy in Adults with Type 2 Diabetes

At diagnosis, initiate lifestyle management, set A1C target, and initiate pharmacologic therapy based on A1C:

A1C is less than 9%, **consider Monotherapy.**

A1C is greater than or equal to 9%, **consider Dual Therapy.**

A1C is greater than or equal to 10%, blood glucose is greater than or equal to 300 mg/dL, or patient is markedly symptomatic, **consider Combination Injectable Therapy** (See Figure 8.2).

Monotherapy

Lifestyle Management + Metformin

Initiate metformin therapy if no contraindications* (See Table 8.1)

A1C at target after 3 months of monotherapy?

Yes: - Monitor A1C every 3–6 months

No: - Assess medication-taking behavior
- Consider Dual Therapy

Dual Therapy — Lifestyle Management + Metformin + Additional Agent

ASCVD?

Yes:
- Add agent proven to reduce major adverse cardiovascular events and/or cardiovascular mortality (see recommendations with * on p. S75 and **Table 8.1**)

No:
- Add second agent after consideration of drug-specific effects and patient factors (See Table 8.1)

Yes:
- Monitor A1C every 3–6 months

No:
- Assess medication-taking behavior
- Consider Triple Therapy

Lifestyle Management + Metformin + Two Additional Agents

Add third agent based on drug-specific effects and patient factors# (See Table 8.1)

A1C at target after 3 months of triple therapy?

Yes:
- Monitor A1C every 3–6 months

No:
- Assess medication-taking behavior
- Consider Combination Injectable Therapy (See Figure 8.2)


5
500
mg
EMPAVER plus® 5/500
Empagliflozin/Metformin
30 F.C. tablets


Synoripa® 12.5/1000
Empagliflozin 12.5 mg / Metformin HCl 1000 mg
30 Film-Coated Tablets
Each tablet contains:
Empagliflozin 12.5 mg
Metformin HCl 1000 mg


Glorenta®
Empagliflozin / Linagliptin

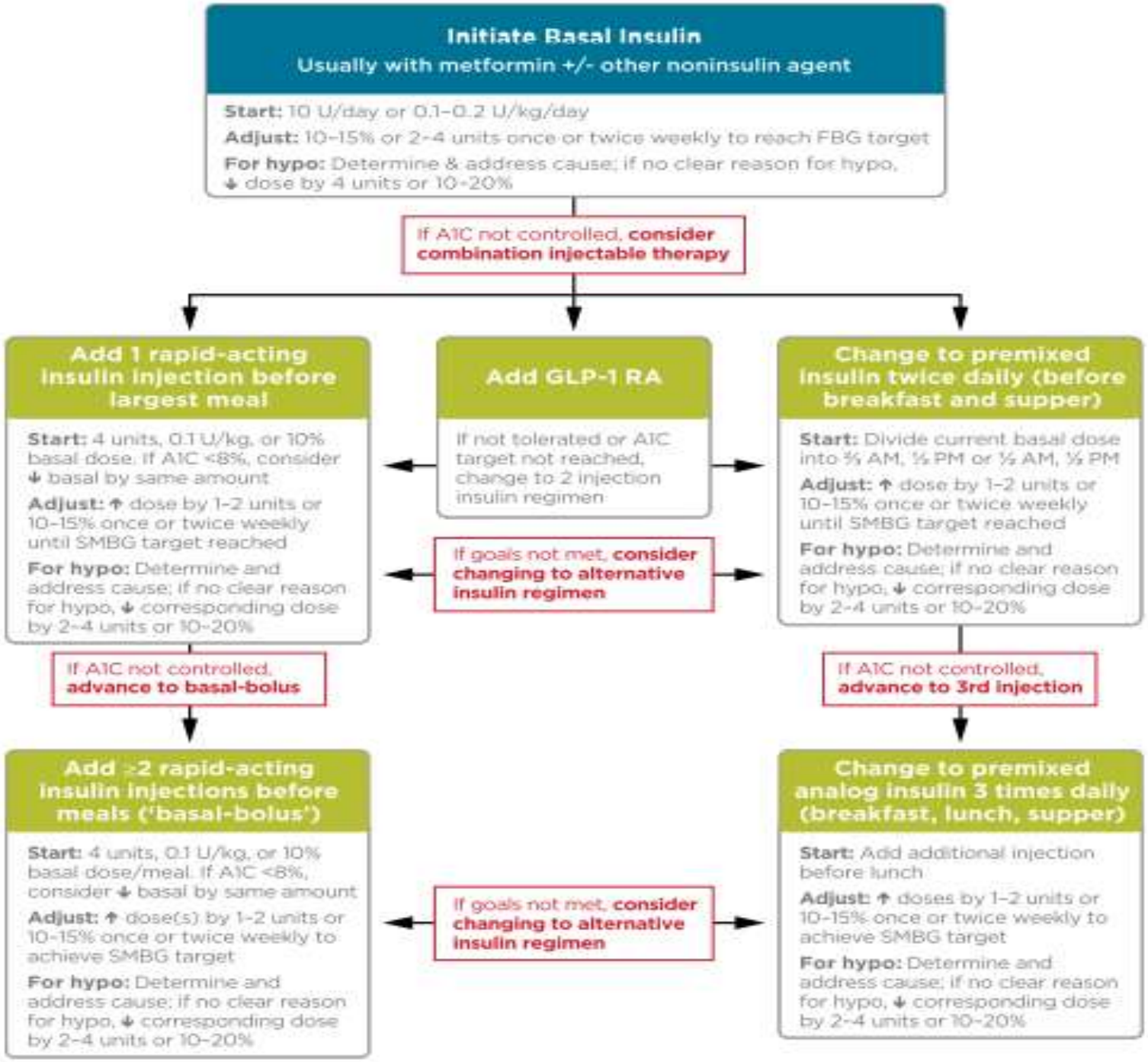

۵۰/۵۰۰
زیپمت®
سیتاگلیپتین / متفورمین
۳۰ قرص روکشدار فیلم دار


Empajent 10/5
Each F.C. tablet contains:
10 mg
5 mg

- Gloripa
- Glorenta
- Gloria

Glorenta®

Empagliflozin / Linagliptin


Initiate Basal Insulin
Usually with metformin +/- other noninsulin agent
Start: 10 U/day or 0.1–0.2 U/kg/day
Adjust: 10–15% or 2–4 units once or twice weekly to reach FBG target
For hypo: Determine & address cause; if no clear reason for hypo, ↓ dose by 4 units or 10–20%
If A1C not controlled, consider combination injectable therapy
Add 1 rapid-acting insulin injection before largest meal
Start: 4 units, 0.1 U/kg, or 10% basal dose. If A1C <8%, consider ↓ basal by same amount
Adjust: ↑ dose by 1–2 units or 10–15% once or twice weekly until SMBG target reached
For hypo: Determine and address cause; if no clear reason for hypo, ↓ corresponding dose by 2–4 units or 10–20%
If A1C not controlled, advance to basal-bolus
Add ≥2 rapid-acting insulin injections before meals ('basal-bolus')
Start: 4 units, 0.1 U/kg, or 10% basal dose/meal. If A1C <8%, consider ↓ basal by same amount
Adjust: ↑ dose(s) by 1–2 units or 10–15% once or twice weekly to achieve SMBG target
For hypo: Determine and address cause; if no clear reason for hypo, ↓ corresponding dose by 2–4 units or 10–20%
Add GLP-1 RA
If not tolerated or A1C target not reached, change to 2 injection insulin regimen
If goals not met, consider changing to alternative insulin regimen
If goals not met, consider changing to alternative insulin regimen
Change to premixed insulin twice daily (before breakfast and supper)
Start: Divide current basal dose into ⅔ AM, ⅓ PM or ½ AM, ½ PM
Adjust: ↑ dose by 1–2 units or 10–15% once or twice weekly until SMBG target reached
For hypo: Determine and address cause; if no clear reason for hypo, ↓ corresponding dose by 2–4 units or 10–20%
If A1C not controlled, advance to 3rd injection
Change to premixed analog insulin 3 times daily (breakfast, lunch, supper)
Start: Add additional injection before lunch
Adjust: ↑ doses by 1–2 units or 10–15% once or twice weekly to achieve SMBG target
For hypo: Determine and address cause; if no clear reason for hypo, ↓ corresponding dose by 2–4 units or 10–20%

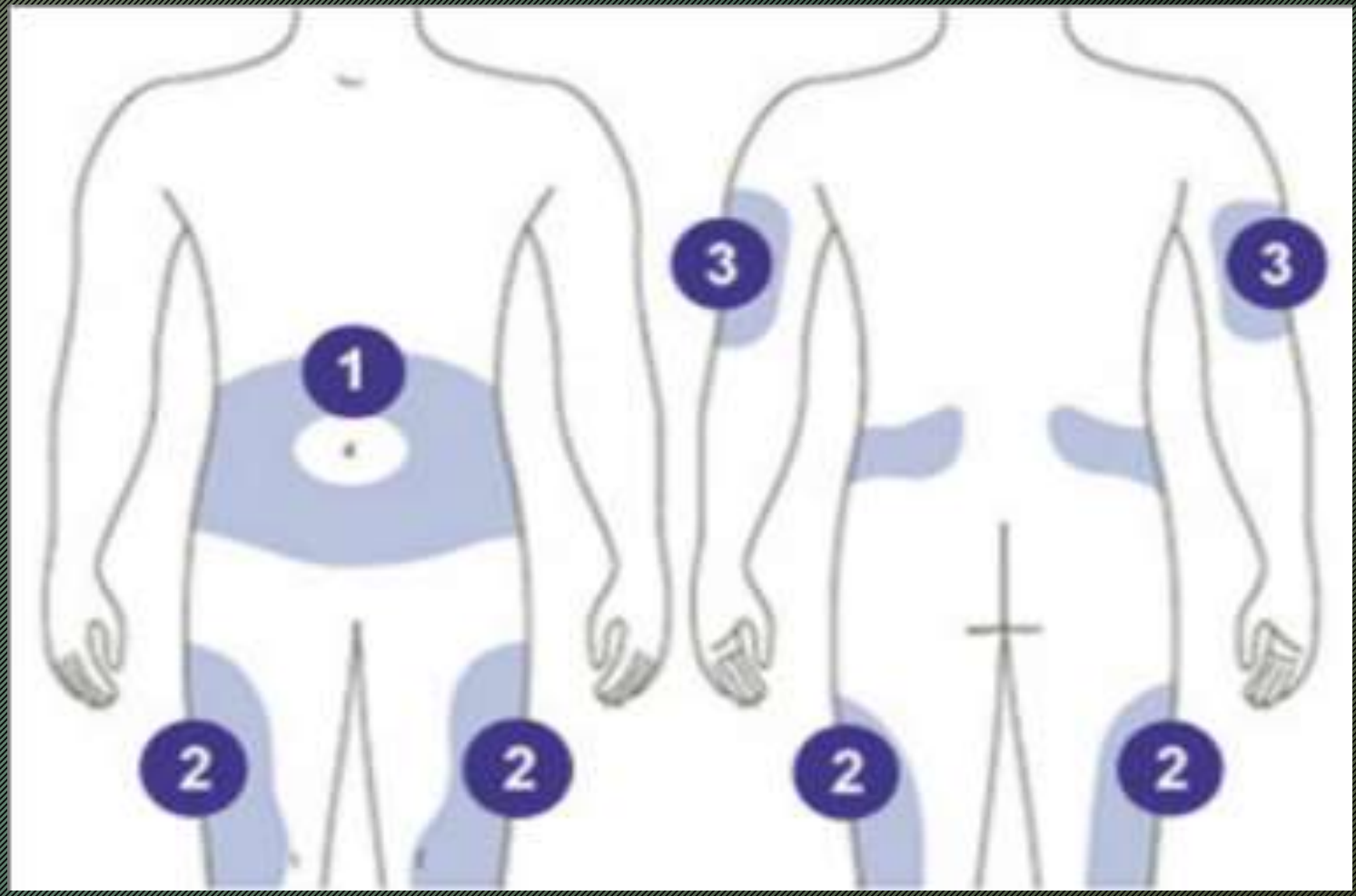
insulin

PREPARATION & brand names	TIME OF ACTION		
	ONSET, h	PEAK, h	EFFECTIVE DURATION, h
Short-acting: provide post-prandial needs			
Aspart	<0.25	0.5-1.5	3-4
Glulisine	<0.25	0.5-1.5	3-4
Lispro	<0.25	0.5-1.5	3-4
Regular	0.5-1.0	2-3	4-6
Long-acting: provide daily insulin needs			
Detemir	1-4	—[a]	20-24
Glargine	1-4	—[a]	20-24
NPH	1-4	6-10	10-16
Insulin combinations			
75/25-75% protamine lispro, 25% lispro	<0.25	1.5 h	Up to 10-16
70/30-70% protamine aspart, 30% aspart	<0.25	1.5 h	Up to 10-16
50/50-50% protamine lispro, 50% lispro	<0.25	1.5 h	Up to 10-16
70/30-70% NPH, 30% regular	0.5-1	Dual[b]	10-16

۱– انسولین نوومیکس Novomixیا قلم سرمه ای
۲ –انسولین لانتوس یا گلارژین Glargineیا Lantusیا قلم طوسی/بنفش کم رنگ
۳–انسولین اسپارت یا نووراپید Novorapidیا قلم سرمه ای / نارنجی
۴- انسولین اپیدرا Apidraیا گلولیزین Glulisineبا قلم رنگ ابی

PREPARATION & brand names	ONSET, h	PEAK, h	ACTION
Short-acting: provide post-prandial needs			
Aspart	<0.25	0.5-1.5	3-4
Glulisine	<0.25	0.5-1.5	
Lispro	<0.25	0.5-1.5	
Regular	0.5-1.0	2-3	4-6
Long-acting: provide daily insulin needs			
Detemir	1-4	—	
Glargine	1-4	—	
NPH	1-4	6-10	10-16
Insulin combinations			
75/25-75% protamine lispro, 25% lispro	<0.25	1.5 h	
70/30-70% protamine aspart, 30% aspart	<0.25	1.5 h	
50/50-50% protamine lispro, 50% lispro	<0.25	1.5 h	
70/30-70% NPH, 30% regular	0.5-1	Dual[b]	10-16

- Side effect
- absorb



Insulin to Carbohydrate Ratio (ICR)

1- Insulin (bolus)/CHO

مثال ۱: ۶ واحد انسولین R و ۶ واحد NPH قبل نهار تزریق کرده

نهار مصرفی: ۹۰ گرم نان+ ۱۲۰ گرم جوجه کباب+ گوجه فرنگی ۱ عدد+ ۲ لیوان دوغ

نسبت انسولین به کربو؟

- Insulin (bolus)/CHO
  - مثال ۲: آقای ۶۰ ساله، میزان انسولین دریافتی روزانه بشرح زیر است

    لانتوس ۱۵ واحد شب ها

    نوروپید ۶ واحد قبل نهار/ ۶ واحد قبل شام

    در کل روز ۱۳ واحد کربو هیدرات دریافت کرده است
  - نسبت انسولین به کربو؟

- Total daily dose/30

- مثال ۳: نسبت انسولین به کربوهیدرات در فردی که روزانه ۶۰ واحد انسولین N/R دریافت میکند را محاسبه کنید.

- ۴۵۰ OR 500/Total Daily Dose
- 500: انسولین آنالوگ
- 450: انسولین انسانی (N/R)

- مثال ۴: نسبت انسولین به کربوهیدرات با استفاده از این قانون در فردی که ۵۰ واحد انسولین لانتوس/نوورپید تزریق میکند چه میزان است؟

ISF (insulin sensitivity factor)

- 1500 or 1700-1800/TDD
- 1500: انسولین انسانی(N/R)
- 1700-1800: انسولین آنالوگ
- مثال ۵: در فردی که ۵۰ واحد انسولین (N/R) مصرف میکند هرواحد انسولین چه میزان قند خونش را کاهش میدهد>

- مثال ۶:

TDD: 30 unit (N/R)
Target glucose level: 100
Premeal glucose level: 250
60 gram carbohydrate are to be consumed

- TDD: 30 unit (N/R)
- Target glucose level: 100
- Premeal glucose level: 250
- 60 gram carbohydrate are to be consumed

ISF: 1500/30=50
250-100=150
150/50=3 UNIT to decrease high glucose level

450/30= 15 gr
60/15=4 unit ins
3+ 4= 7 unit insulin

- آقای ۴۵ ساله با دیابت نوع ۱، با وزن ۶۲ کیلوگرم و قد ۱۷۰ مراجعه کرده است
- رژیم دارویی فرد: صبح ها ۱۶ واحد NPH، ۶ واحد رگولار
- شب ها ۸ واحد NPH، ۶ واحد رگولار
- یادآمد غذایی فرد نشان داده است ۱۰ واحد کربو مصرف میکند

FBS: 210 HbA1C: 9% TG: 317 LDL-c: 70 Chol: 180

قند هدف: ۱۰۰

- TDD: 36
- Ins (bolus)/cho: 12/10=1.2
- TDD/30: 36/30= 1.2
- CHO count: 4 unit 4*1.2=4.8
- ISF: 1500/TDD: 1500/36=41.6
- 210-100=110
- 110/41.6=2.6
- 2.6+ 4.8=7.4
-

Table 6.2—Summary of glycemic recommendations for many nonpregnant adults with diabetes

A1C	<7.0% (53 mmol/mol)*
Preprandial capillary plasma glucose	80–130 mg/dL* (4.4–7.2 mmol/L)
Peak postprandial capillary plasma glucose†	<180 mg/dL* (10.0 mmol/L)

*More or less stringent glycemic goals may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations. †Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals. Postprandial glucose measurements should be made 1–2 h after the beginning of the meal, generally peak levels in patients with diabetes.

The nutritional goals for people with type 2 diabetes are to

- Maintain blood glucose levels as near-normal as possible by balancing food intake with activity and medications or insulin

- Achieve optimal blood pressure and lipid levels
- Provide appropriate calories for achieving and maintaining a healthy, desirable body weight
- Manage risk factors and prevent complications of diabetes, both acute (hypoglycemia) and long term (gastroparesis, [CVD], renal disease, and other consequences of micro- and macrovascular disease)

MNT for type 2 diabetes should consider five key aspects:

- Weight management and increased physical activity
- Caloric intake (balanced with caloric expenditure)
- Consistency in day-to-day carbohydrate intake at meals and snacks
- Nutritional content
- Timing of meals and snacks

- Meal content, quantity, and timing are particularly important for patients who are treated with insulin secretagogues or traditional insulin regimens.

Weight loss goals

For patients with type 2 diabetes who are overweight (BMI ≥25 to 29.9 kg/m^2) or obese (BMI ≥30 kg/m^2), initial recommendations for weight loss and physical activity are to lose 5 to 10 percent of initial body weight

- and to accumulate at least 30 minutes of moderate physical activity over the course of most days of the week

Other supplements

- some minerals and nutritional supplements have purportedly improved glycemic control in patients with type 2 diabetes

- As an example, in some randomized trials, chromium supplementation improved glycemia among patients with diabetes but not among those with normal glucose tolerance

- Cinnamon supplementation
- However, meta-analyses have shown conflicting results

- A variety of eating patterns (Mediterranean, low fat, low carbohydrate, vegetarian) are acceptable.

- Fat quality is more important than fat quantity.
- Trans fats contribute to coronary heart disease, while mono- and polyunsaturated fats (eg, those found in fish, olive oil, nuts) are relatively protective.

- Trans fatty acid consumption should be kept as low as possible.

- Protein intake goals should be individualized but not lower than 0.8 g/kg body weight per day (the recommended daily allowance).

- Patients should be encouraged to substitute lean meats, fish, eggs, beans, peas, soy products, and nuts and seeds for red meat

- Fiber intake should be at least 14 grams per 1000 calories daily; higher fiber intake may improve glycemic control.

- A reduced sodium intake of 2300 mg per day with a diet high in fruits, vegetables, and low-fat dairy products is prudent and has demonstrated beneficial effects on blood pressure

Hypoglycemia

- Patients taking insulin or oral hypoglycemic medications that increase insulin secretion should be well trained in methods to treat hypoglycemia, for example during or after exercise, to prevent overcompensation.

- In the long-term, it is better to adjust medications or insulin to compensate for increased activity (or a reduced calorie intake) rather than add extra snacks in patients with type 2 diabetes, as most are trying to lose weight or manage weigh

- Advise patients to carry a snack with 10 to 15 grams of carbohydrate to prevent hypoglycemia or to treat hypoglycemia.

blood glucose	carbohydrate
51 to 70 mg/dL	10 to 15 g
≤50 mg/dL	20 to 30 g

- Retest 15 minutes after ingestion and repeat treatment as needed based on blood glucose levels

ملاحظات تغذیه ای در اصول رژیم نویسی برای بیمارا ن دیابتی

رژیم نویسی در بیماران دیابتی مشابه با بیماران غیردیابتی است و تنها تفاوت در نحوه توزیع کربوهیدرات بین وعده های غذایی است

- کمترین افزایش قندخون بعد از هر وعده غذایی

-جلوگیری از هیپوگلیسمی ناشی از تجویز انسولین یا قرص های کاهنده قندخون

جهت توزیع کربوهیدرات بین وعده های، بعد از محاسبه کل کربوهیدرات مورد نیاز روزانه، بصورت درصدهای زیر بین وعده های غذایی توزیع میکنیم:

صبحانه	میان وعده صبح	نهار	میان وعده عصر	شام	میان وعده آخرشب
%۱۵	%۱۳	%۲۲	%۱۳	%۲۲	%۱۵
%۱۵	%۱۳	%۲۴	%۱۳	%۲۴	%۱۱

Weight consequences of diabetes medications

- Thiazolidinedione therapy (pioglitazone and rosiglitazone) is associated with significant weight gain.

- It is both dose dependent and time dependent, and it can be substantial. Some weight gain from thiazolidinediones may be associated with fluid retention, which is of significant concern in patients with congestive heart disease

- in contrast, the use of glucagon-like peptide-1 (GLP-1) agonists and sodium-glucose co-transporter 2 (SGLT2) inhibitors are associated with moderate weight loss.

- Metformin and dipeptidyl peptidase-4 (DPP-4) inhibitors are generally weight neutral


THE END