IX REUNIÓN DE LA RED INTERUNIVERSITARIA DE INNOVACIÓN DOCENTE EN FARMACOLOGÍA

Valencia, 15 y 16 de julio de 2024

Diseño de un curso y creación de materiales de docencia en Farmacología para un proyecto de innovación docente basado en un formato Erasmus BIP sobre Diabetes

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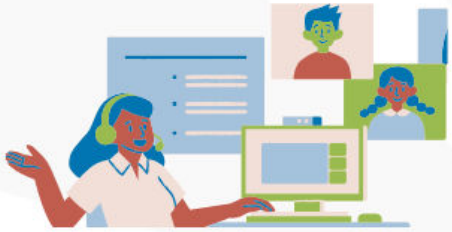
Diseño Erasmus BIP

Diabetes 360°

Metabolic Research + Writing



6 Online sessions

Background in diabetes

Novel therapies

4 sessions in June

2 sessions in September

5 days training in Almería

Search scientific databases

Learn how to write a paper

8-12th July

Group project

Boost your creativity

El reto de la multidisciplinaridad

Estudiantes

- Grado (1º Enfermería-4º Medicina)
- Postgrado (diferentes programas de Doctorado)
- Grados: Enfermería, Nutrición, Medicina, CAFyD, Biología
- Origen: Irak, Eslovenia, Lituania, Polonia, Portugal y España

Enseñar Farma sin enseñar farma

(con un poco de azúcar…)

- Contexto: Prevalencia y retos clínicos (enfermedades CV)
- Background: Fisiología/Fisiopatología
- Tratamientos:

  No farmacológicos

  Farmacológicos

Grupos de fármacos

Insulinas

Anti-diabéticos por grupos

Guías para el manejo de diabetes tipo 2

Diabetes 360º
Boot camp:
Metabolic Research + Writing

Sesiones online:

Principales tipos de fármacos
empleados en diabetes tipo 1, diabetes tipo 2,
Introducción a las guías clínicas para el manejo de ambas y últimos avances en terapias farmacológicas
Material docente específico
Cuestionarios en tiempo real mediante Wooclap

Parte presencial: cada grupo tiene un mini proyecto sobre algún tema de investigación en diabetes.
(Project-based learning)

Type 2 diabetes and its challenges

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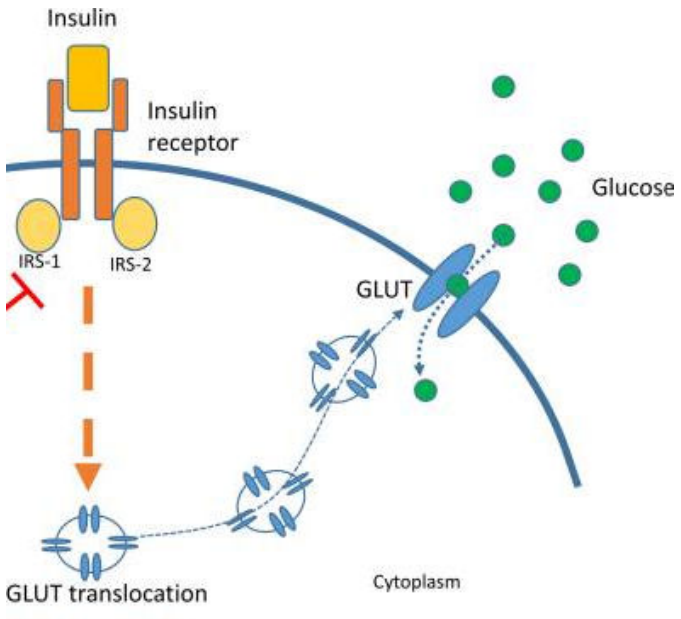
Type 2 diabetes: pathogenesis

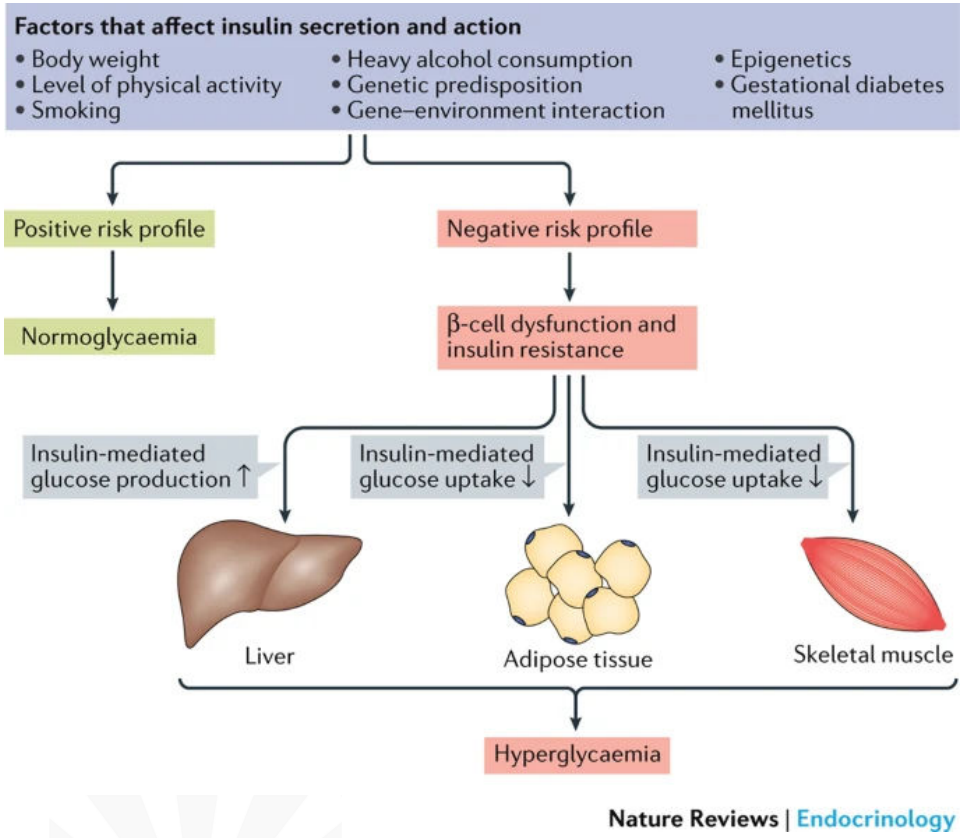
- Protect against overnutrition by preventing the accumulation and overloading of tissues with cell nutrients.



Berbudi et al., Curr Diabetes Rev. 2020 May; 16(5): 442–449.

Progressive failure of pancreatic islet β-cells to compensate for insulin resistance (IR)
10 years IR ≥50% T2D patients require insulin due β cell dysfunction

Insulin resistance



Type 2 diabetes: pancreatic β-cell failure
↑ insulin resistance → ↑ insulin secretion

- Early stages of the disease
  → increasing β-cell function and mass.

- Disease progression:
  → β cell function and mass due to accelerated apoptosis

- Main contributing factors:
  glucotoxicity, lipotoxicity
  Other factors??

Maintenance of β-cell function and mass crucial to prevent the onset of type 2 diabetes

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Current therapeutic strategies in type 2 diabetes

- **Healthy lifestyle:**

  Diet + exercise → weight loss

- **Pharmacological intervention**

<u>Anti-diabetics drugs</u>

Control glycaemia

Insulin, insulin analogues

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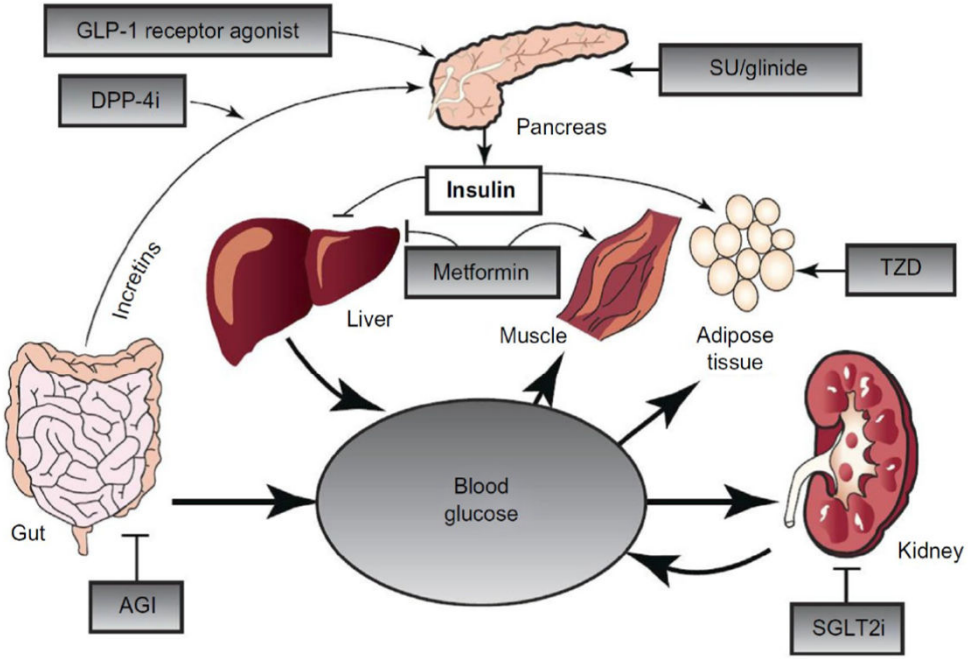
Non-insulin **glucose lowering drugs**

a. **Promoting insulin secretion**
   a. Sulphonylureas
   b. Meglitinide derivatives
b. **Promoting glucose uptake**
   a. Biguanides Metformin
   b. Thiazolidindiones (glitazones)
c. **Inhibiting glucose absortion**
   - α-glucosidase inhibitors
d. **Incretin-related compounds**
   – Incretin mimetics GLP1-R Agonists
   – Dipeptidylpeptidase-4 inhibitors (DPP4i)
e. **Inhibitors of renal glucose reabsortion**
   – sodium–glucose cotransporter-2 inhibitors (SGLT2i)



Bailey CJ; Renal glucose reabsorption inhibitors to treat diabetes; *Trends in Pharmacological Sciences*; 32(2); pages 63–71; 2011

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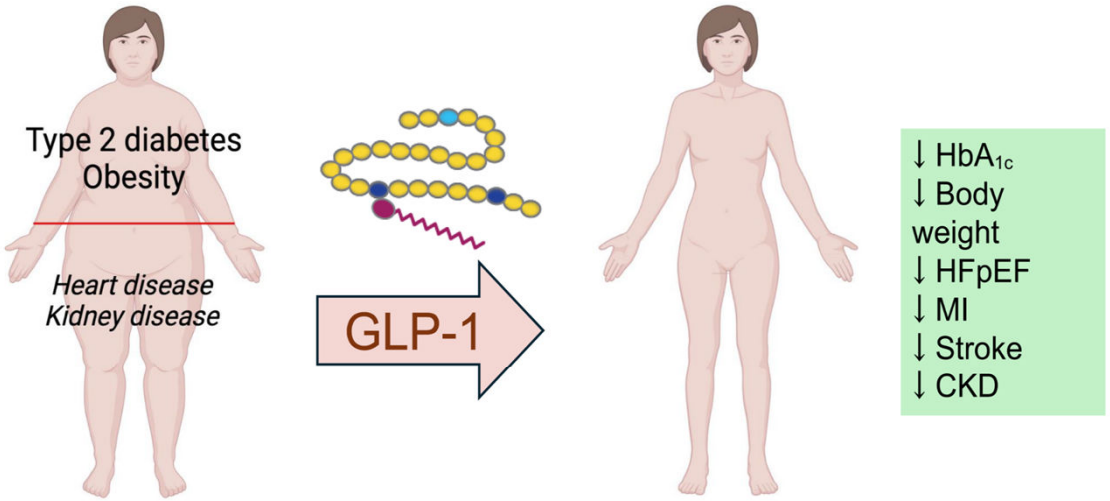
GLP-1 based medicines

GLP1-R Agonists (*-glutide*)
GLP1 mimetics *(-natide)*



Adverse Events
Nausea, vomiting, constipation, diarrhea, abdominal discomfort, fatigue, gallbladder disease, acute kidney injury

„Not having high CV risk diabetic patients on GLP-1 is like having cancer patients without chemotherapy“

CKD, chronic kidney disease; GLP-1, glucagon-like peptide 1; HFpEF, heart failure with preserved ejection fraction; MI, myocardial infarction.

Drucker, D Diabetes Care. Published online June 06, 2024. doi:10.2337/dci24-0003

Prof: Tina Visboll

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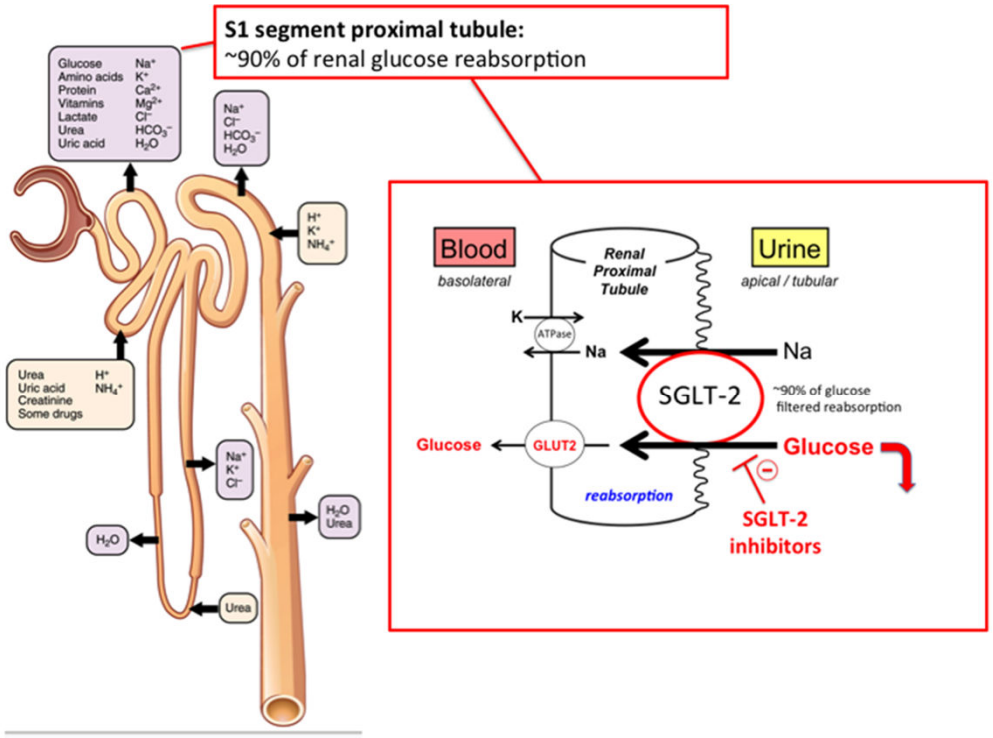
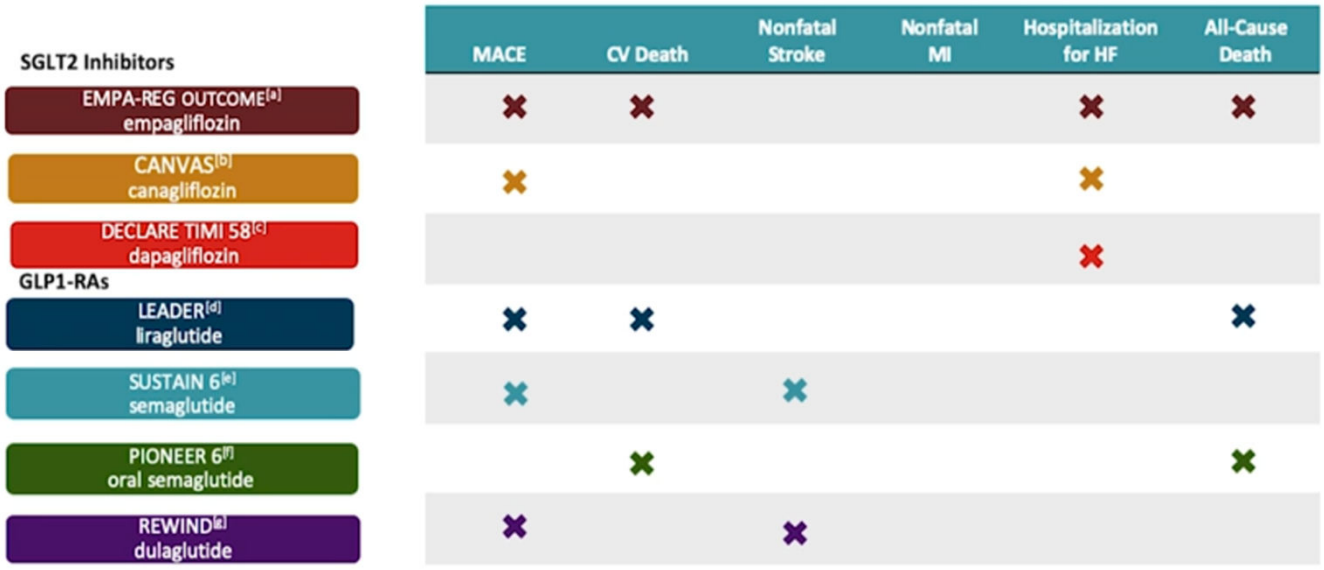
SGLT2 inhibitors



https://tmedweb.tulane.edu/pharmwiki/doku.php/sglt-2inhibitors

Diabetes and CVOTs



	MACE	CV Death	Nonfatal Stroke	Nonfatal MI	Hospitalization for HF	All-Cause Death
SGLT2 Inhibitors						
EMPA-REG OUTCOME[a] empagliflozin	✖	✖			✖	✖
CANVAS[b] canagliflozin	✖				✖	
DECLARE TIMI 58[c] dapagliflozin					✖	
GLP1-RAs						
LEADER[d] liraglutide	✖	✖				✖
SUSTAIN 6[e] semaglutide	✖		✖			
PIONEER 6[f] oral semaglutide		✖				✖
REWIND[g] dulaglutide	✖		✖			

a. Zinman B, et al. *N Engl J Med.* 2015;373:2117-2128; b. Neal B, et al. *N Engl J Med.* 2017;377:644-657; c. Wiviott SD, et al. *N Engl J Med.* 2019;380:347-357; d. Marso SP, et al. *N Engl J Med.* 2016;375:311-322; e. Marso SP, et al. *N Engl J Med.* 2016;375:1834-1844; f. Husain M, et al. *N Engl J Med.* 2019;381:841-851; g. Gerstein HC, et al. *Lancet.* 2019;394:121-130.

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From “treat-to-target” to “treat-to-benefit”

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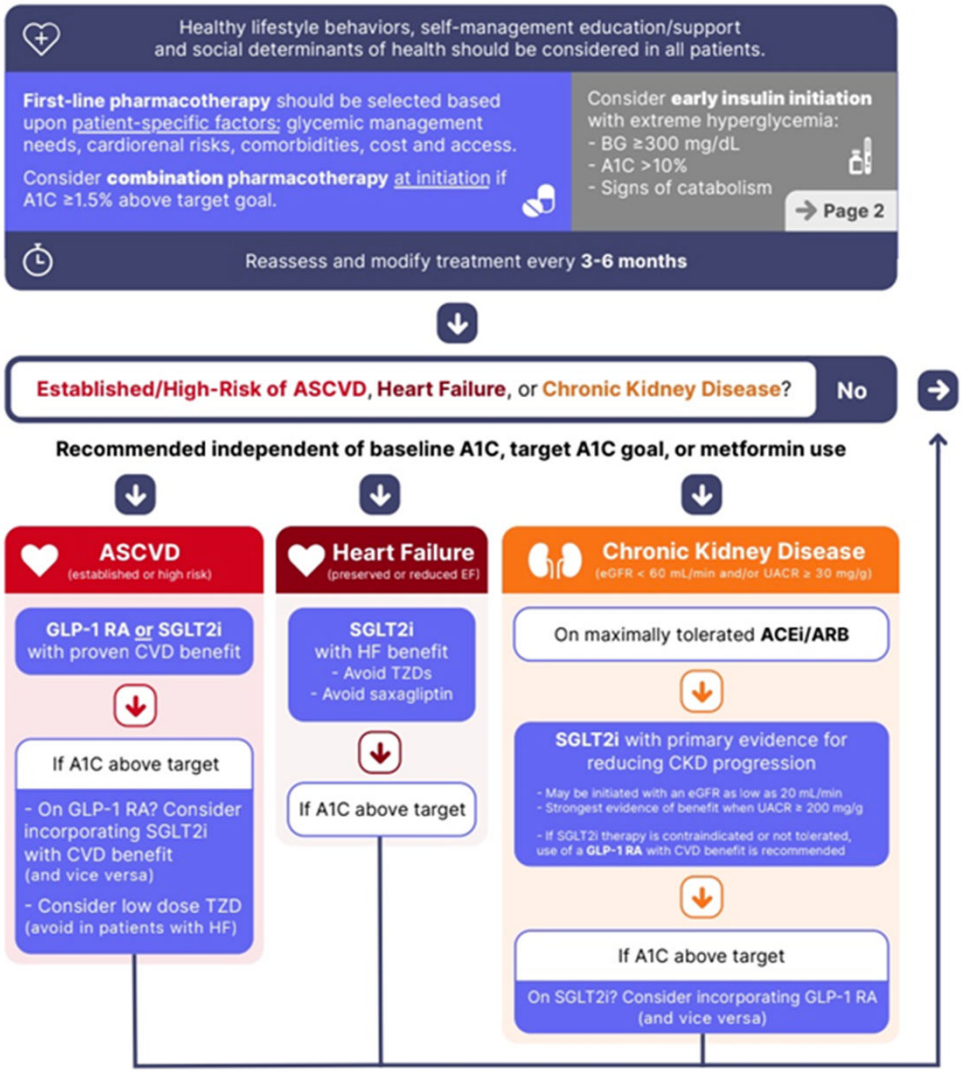
Diabetes and CVD management



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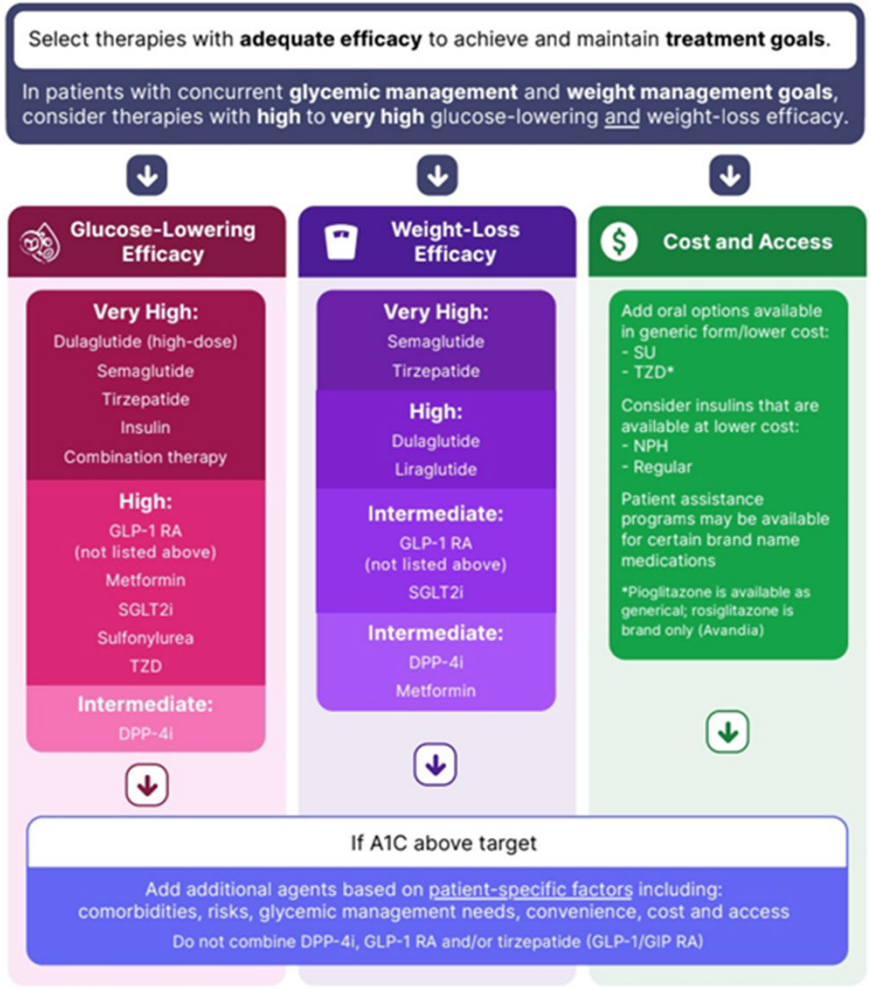
From “treat-to-target” to “treat-to-benefit”



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More clinical pearls at pyrls.com.

pyrls

References: American Diabetes Association. Section 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Medical Care in Diabetes-2023. Individual manufacturer product labels.

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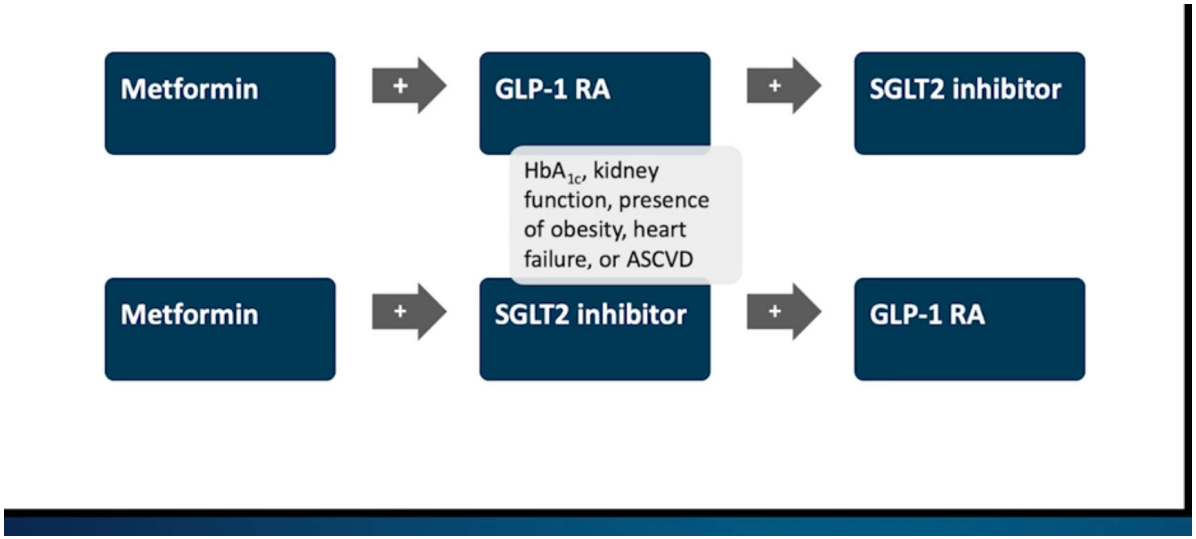
3 step strategy



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U.S. Food and Drug Administration
Protecting and Promoting Public Health

FOOD AND DRUG ADMINISTRATION (FDA)
Center for Drug Evaluation and Research (CDER)

Endocrinologic and Metabolic Drugs Advisory Committee (EMDAC) Meeting
June 28, 2016

"An observer came away from the meeting with the strong impression that the endocrinologists did not want to accept any evidence that empagliflozin could reduce the risk of cardiovascular death, were not prepared to acknowledge that drugs might work in diabetes by effects that were independent of blood glucose, and wanted to be left in peace to be allowed to micromanage hemoglobin A1c without being reminded that doing so does not change the cardiovascular risk of patients with diabetes."

Milton Packer

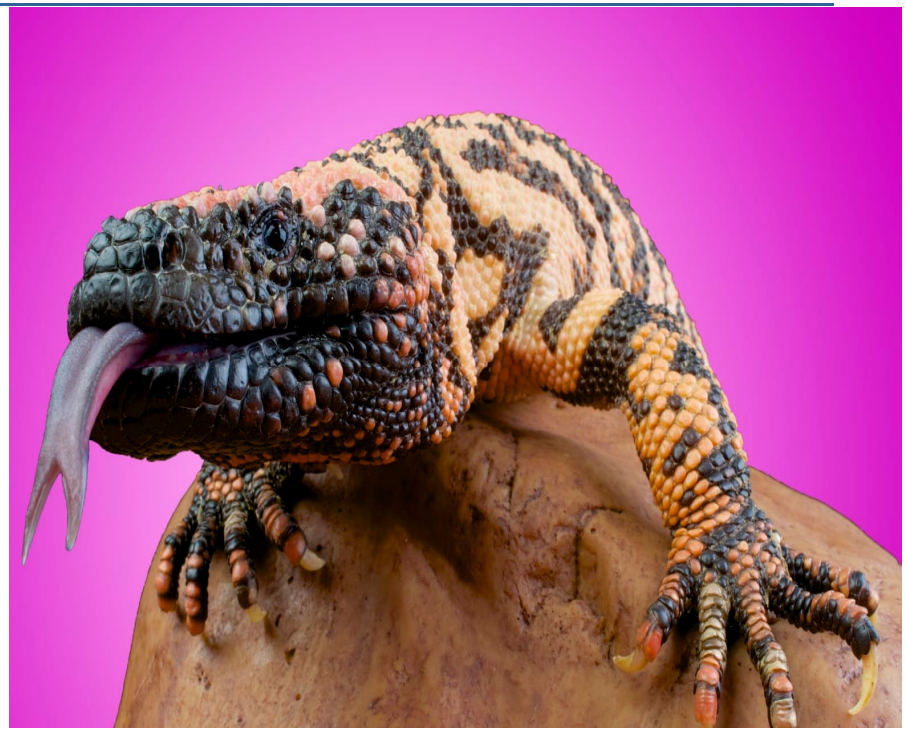
Conclusion

- T2D prevalence makes urgent that research focuses on its prevention as well as its treatment.
- Low grade chronic inflammation plays a key role in the pathogenesis and complications of type 2 diabetes
- Need to better understand the mechanisms linking inflammation to diabetes
- Taming inflammation might represent a potential strategy to prevent/treat/control diabetes and its complications

Stone Age genes and Space Age circumstances

Eaton, 1988

In the next episode….



https://cadenaser.com/nacional/2024/05/18/kim-kardashian-y-moda-de-la-silueta-ozempic-cadena-ser/