# Glucose-centric algorithm for glycemic control

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Term Project
CS 580

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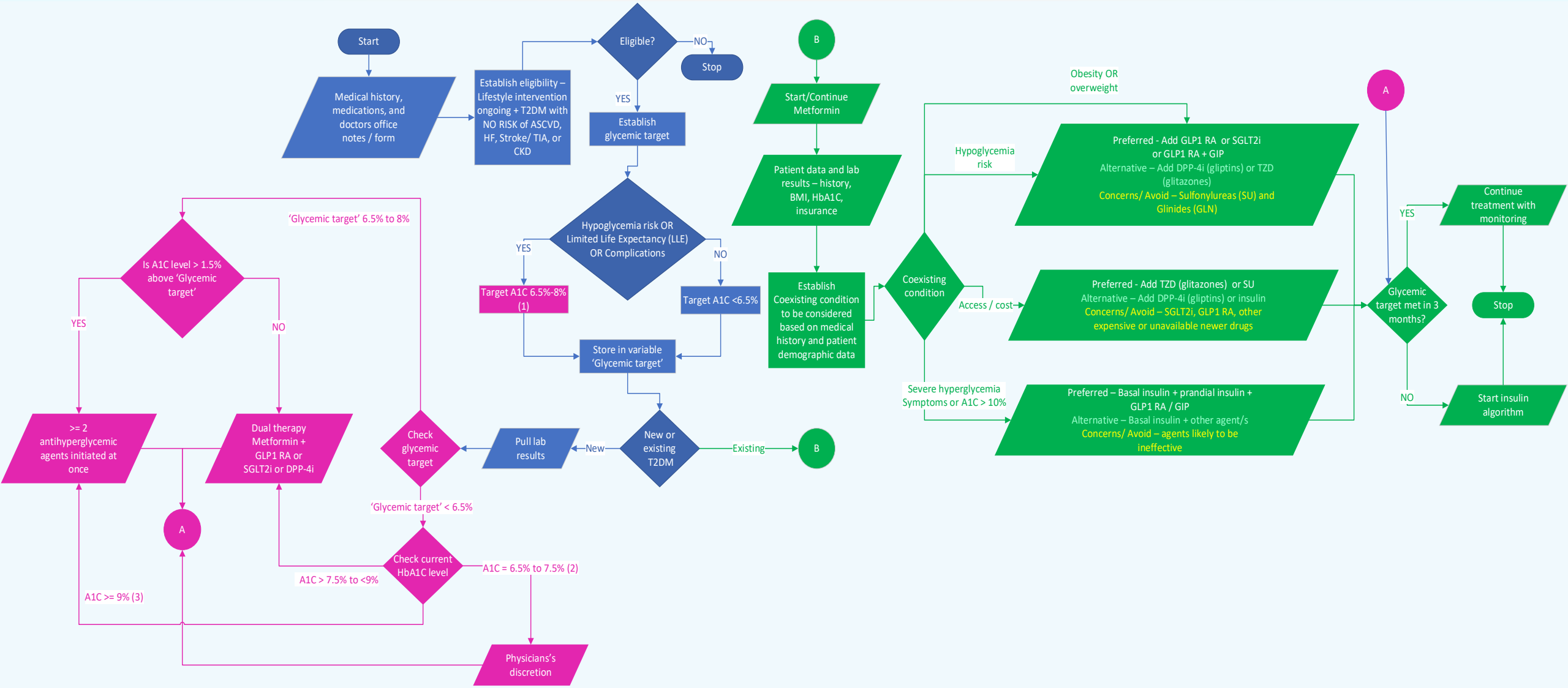
# Flowchart




Notes :

1.Glycemic target of second category changed from 7%-8 % TO 6.5% to 8% (different from algorithm)

2. Output of A1C 6.5% – 7.5 % is assumption

3.Glycemic target <6.5 + 1.5 = <9

# Scope, strengths, and limitations



**Scope –** This algorithm was created by a task force of AACE - American Association of Clinical Endocrinology, to **assist healthcare professionals in clinical decision-making** when managing patients with T2DM, with a focus on glycemic control.

**Strengths –**

- Clear criteria for **identifying eligible** patients
- Clear instructions for establishing **glycemic targets**
- **Evidence-based** treatment plans that consider **secondary goals** like weight loss.
- Provides a **further course of action** if targets are unmet from recommended treatment

**Limitations –**

- **Extensive exclusion** criteria – Excludes T2DM with a risk of ASCVD, HF, Stroke/ TIA, or CKD.
- **Does not** address the existence of **more than one secondary issue** in the same patient.
- **Unclear** about **blood glucose levels** needed for achieving glycemic targets.
- Relies on HbA1C only, which **takes weeks**, to show glycemic control status.
- For example – it is mentioned that for HbA1C <6.5%, an FBG of <110 mg/dL and 2-hour PPG of < 140 mg/dL is needed, but does not mention different blood glucose ranges for other glycemic targets like HbA1C <8%.

# Functional goals

Quality of health care and clinical outcomes

- Provides a clear and simple treatment plan for **both new and existing** patients.
- Provides a range of **individualized glycemic targets** for different patients.
- Considers **access and cost** of drugs.
- Addresses **secondary goals** by instructing which drugs to choose and avoid for each condition based on the **drug's profile**.
- **Addresses barriers** to good glycemic control from the patient's side like a history of hypoglycemia. This can also become a barrier for physicians.

Productivity of healthcare workers

- Among a plethora of drugs and algorithms, this is clear and concise and comes with a **visual guide/ chart**.
- If treatment is unsuccessful, it presents the **next algorithm** to be used, making it better than a standalone algorithm.

# Functional goals

Productivity of healthcare workers (cont.)

- Addresses glycemic control **barriers** from the physician side like – complex patients (hypoglycemia risk), confusion due to multiple different algorithms, etc.

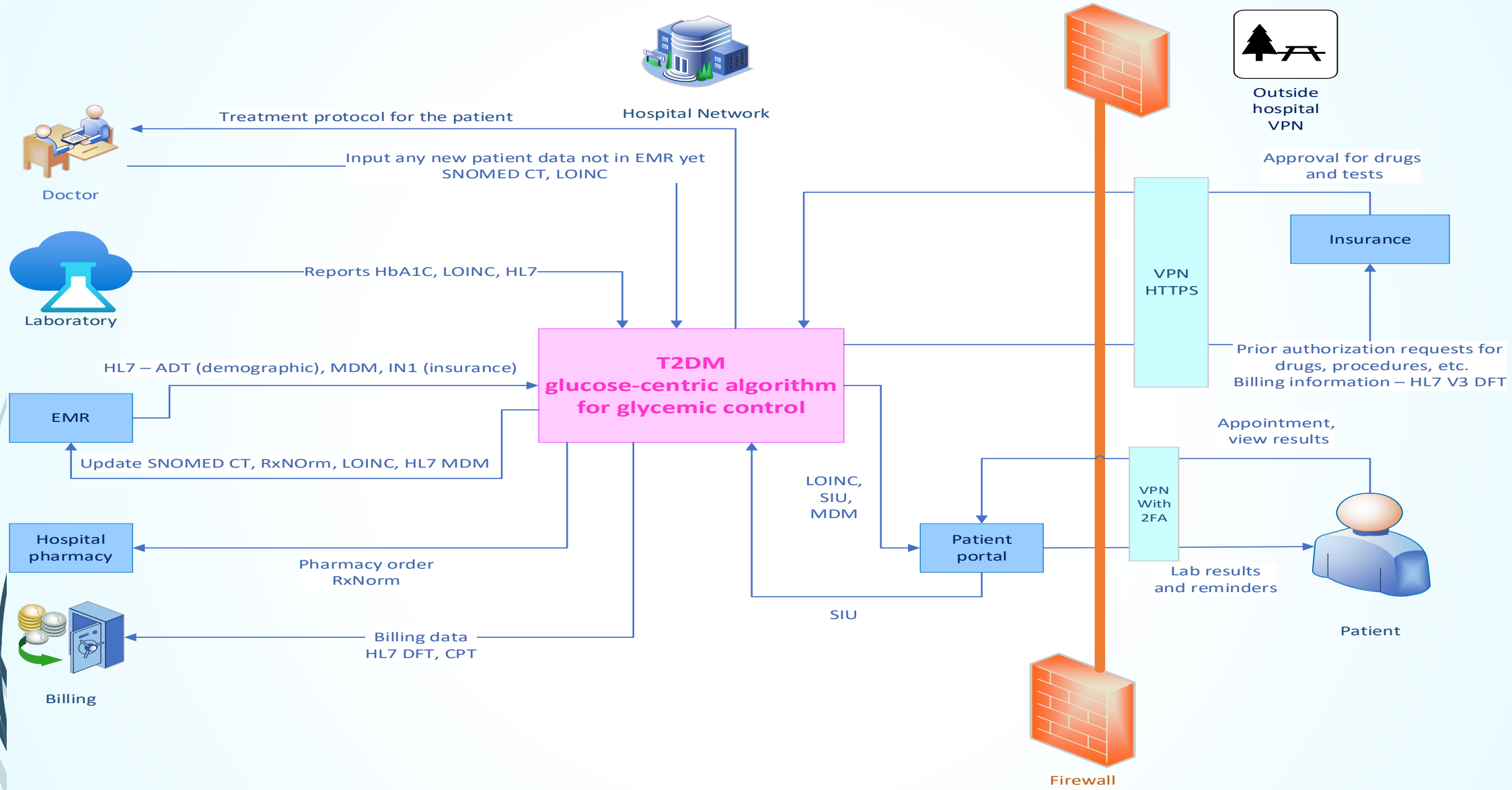
Safety of patients

- **Avoids** drugs that might worsen existing conditions like TZD and SU in obese patients as they cause weight gain.
- **Avoids** the use of multiple drugs from the same group together like two antihyperglycemics (MET/SU) or multiple incretin-based drugs (GLP1RA /GIP/DPP 4i) – safer and more effective.

Involvement of patients in their healthcare

- The patient is already doing **active lifestyle modifications**.
- Know and understand their **individualized glycemic target**.

# Integration



# References


1. Samson, S. L., Vellanki, P., Blonde, L., Christofides, E. A., Galindo, R. J., Hirsch, I. B., Isaacs, S., Izuora, K., Wang, C. C. L., Twining, C. L., Umpiérrez, G. E., & Valencia, W. M. (2023). American Association of Clinical Endocrinology Consensus Statement: Comprehensive Type 2 Diabetes Management Algorithm – 2023 Update. *Endocrine Practice*, *29*(5), 305–340. https://doi.org/10.1016/j.eprac.2023.02.001

2. Blonde, L., Aschner, P., Bailey, C., Ji, L., Leiter, L. A., Matthaei, S., & Management, E. D. (2017). Gaps and barriers in the control of blood glucose in people with type 2 diabetes. *Diabetes and Vascular Disease Research*. https://doi.org/10.1177/1479164116679775