Glycemic Control Algorithm for Type 2 Diabetes Mellitus in Adults

Glycemic Goals

- Individualize goal based on patient risk factors
- \( \text{A1c} \leq 6\% \) (\(<7\%\)) (\(<8\%\))
- FPG \( \leq 110 \) \( \leq 120 \) \( \leq 140 \text{ mg/dL} \)
- 2h PP \( \leq 130 \) \( \leq 180 \) \( \leq 180 \text{ mg/dL} \)

Initial Intervention

1. Diabetes Self-Management Education and
2. Self-monitored Blood Glucose
3. Medical Nutrition, Weight Control, Exercise
4. Begin monotherapy with metformin if \( \text{A1c} < 1\% \) above goal, otherwise begin dual therapy if \( \text{A1c} > 1\% \) above goal

If A1c not at goal after 3 months

Dual therapy
- Continue non-pharmacological measures and Metformin plus:
  - SU or TZD or DPP-4i or SGLT2i or GLP-1 or Basal Insulin

If A1c not at goal after 3 months

Triple therapy
- Continue non-pharmacological measures and Metformin if using:
  - SU add TZD or DPP-4i or SGLT2i or GLP-1 or Basal Insulin
  - TZD add SU or DPP-4i or SGLT2i or GLP-1 or Basal Insulin
  - DPP-4i add SU or TZD or DPP or Basal Insulin
  - SGLT2i add SU or TZD or DPP-4i or Basal Insulin
  - GLP-1 add SU or TZD or Basal Insulin
  - Basal Insulin add TZD or DPP-4i or SGLT2i or GLP-1

If A1c not at goal after 3 months

Begin basal insulin and continue oral agents
- Begin basal + prandial insulin and metformin (+/- SGLT-2i)
- Change to basal + prandial insulin management
- Basal insulin (+/- prandial insulin) plus GLP-1 agonist
- Four-oral agents may be considered

A1c at Goal

- Continue therapy
- Recheck A1c every 6 months

Footnotes

1 Powers MA et al. Diabetes self management and education support in type 2 DM. Diabetes Care 2015;38:1372-1382
2 If initial A1c on presentation is \( \geq 10\% \), consider insulin, with or without oral agents, as the initial intervention (see Insulin Algorithm)
3 These interventions should be maintained life-long (refer to Medical Nutrition, Weight Loss, and Exercise Algorithms)
4 Dose is reduced based on either serum creatinine (metformin, DPP4i’s) or calculated/estimated glomerular filtration rates (SGLT2i’s)
5 If a SU is selected, glipizide ER or glimepiride are recommended because they have a lower incidence of hypoglycemia than glyburide
6 SGLT-2 inhibitors are not indicated if the glomerular filtration rate is less than 40%
7 See package insert for drug contraindications and warnings.
8 See Insulin Algorithm

Abbreviations

- DPP-4i: Dipeptidyl peptidase-4 Inhibitor
- FPG: Fasting plasma glucose
- GLP-1: Glucagon-like peptide-1 agonist
- PP: Postprandial
- SGLT2i: Sodium-Glucose Cotransporter-2 inhibitor
- SU: Sulfonylurea
- TZD: Thiazolidinedione

See disclaimer at www.tdctoolkit.org/algorithms_and_guidelines.asp
Recent Review Articles

Dual Therapy
Empagliflozin + Linagliptin
Metformin or Sulfonylurea + Acarbose
Metformin + Pioglitazone
Metformin + Rosiglitazone
Sulfonylurea + Pioglitazone
Sulfonylurea + Rosiglitazone
Metformin or Sulfonylurea + Exenatide

Nateglinide or Repaglinide + Metformin
Repaglinide + Metformin
Nateglinide + Metformin
Nateglinide + Thiazolidinedione
Repaglinide + Thiazolidinedione
Liraglutide + Metformin
Liraglutide + Sulfonylurea
Marre M, Shaw J, Brändle M, Behbakar WM, Kamaruddin NA, Strand J, Zdravkovic M, Le Thi TD, Colagiuri S; LEAD-1 SU study group. Liraglutide, a once-daily human GLP-1 analogue, added to a sulphonylurea over 26 weeks produces greater improvements in glycaemic and weight control compared with adding rosiglitazone or placebo in subjects with type 2 diabetes (LEAD-1 SU). Diabet Med. 2009 Mar;26(3):268-78.
Triple Therapy
Metformin + Saxagliptin + Dapagliflozin

Sulfonylurea + Metformin + Alpha glucosidase inhibitors


Sulfonylurea + Metformin + Thiazolidinedione


Sulfonylurea + Metformin + Exenatide


Liraglutide + Metformin and TZD

Liraglutide + Metformin and Sulfonylurea