

Outpatient Glycemic Control Algorithm for Adults with Type 2 Diabetes

→ Healthy eating, weight control, increased physical activity, education

→ (1) Initial Drug therapy: Metformin

Efficacy (↓HbA _{1c})...	...High
Hypoglycemia...	...Low risk
Weight...	...Neutral / loss
Side effects...	...GI/lactic acidosis
Costs...	...Low

Key:
 GI: gastrointestinal
 TZD: thiazolidinedione
 DPP4i: dipeptidyl peptidase 4 inhibitors
 SGLT2i: sodium-glucose cotransporter 2 inhibitors
 GLP1-RA: glucagon-like peptide 1 receptor agonist
 SU: sulfonylureas
 HF: heart failure
 Fx: bone fractures
 GU: genitourinary infections

→ (2) If HbA_{1c} target not reached after 3 mo. proceed to two-drug combination:

	Metformin +	Metformin +	Metformin +	Metformin +	Metformin +	Metformin +
	Sulfonylureas: Glipizide or glyburide	TZD: Pioglitazone	DPP4i: Sitagliptin or Linagliptin	SGLT2 inhibitor: Dapagliflozin	GLP1-RA:exenatide or liraglutide	Basal insulin: detemir or glargine
EfficacyHigh	...High	...Intermediate	...Intermediate	...High	...Highest
Hypoglycemia...	...Moderate risk	...Low risk	...Low risk	...Low risk	...Low risk	...High risk
Weight...	...Gain	...Gain	...Neutral	...Loss	...Loss	...Gain
Side effects...	...Hypoglycemia	...Edema, HF, Fx	...Rare	...GU,dehydration	...GI	...Hypoglycemia
Costs...	...Low	...Low	...High	...High	...High	...Variable

→ (3) If HbA_{1c} target not reached after 3 mo. proceed to three-drug combination:

Metformin + SU + TZD or DPP4i or SGLT2i or GLP1-RA or Insulin	Metformin + TZD + SU or DPP4i or SGLT2i or GLP1-RA or Insulin	Metformin + DPP4i + SU or TZD or SGLT2i or Insulin	Metformin + SGLT2i + SU or TZD or DPP4i or Insulin	Metformin + GLP1-RA + SU or TZD or Insulin	Metformin + Insulin + TZD or DPP4i or SGLT2i or GLP1-RA
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→ (4) If combination therapy that includes basal insulin did not achieve HbA_{1c} target after 3-6 mo., proceed to a more complex insulin strategy usually in combination with one or two non-insulin agents:

Combination Injectable therapy



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University
Health System

Criteria for Use:

Choice of agent must also take into consideration efficacy, side effects, and cost.

(1) Initial Drug Therapy:

Metformin is preferred initial drug therapy

Avoid use: metabolic acidosis, SCr >1.5mg/dl (men) or 1.4 mg/dl (women), or abnormal CrCl from any cause (i.e. shock, myocardial infarction, septicemia)

Consider alternative monotherapy agent for patients unable to tolerate or with contraindications (CI) to metformin:

- SU: *avoid use in diabetic ketoacidosis*
- TZD- consider use in patients unable to tolerate or with CI to SU; *avoid use in NYHA Class III/IV heart failure*
- DPP4i – consider use in patients unable to tolerate or with CI to TZD; *avoid use in patients with serious hypersensitivity reaction*
- GLP1-RA – consider use in patients unable to tolerate or with CI to above agents; *avoid use in patients with personal or family history of medullary thyroid carcinoma or with Multiple Endocrine Neoplasia syndrome 2*

(2) Two-drug Combination Therapy

Consider starting with combination therapy when HbA_{1c} ≥ 9%

- Metformin plus [SU, TZD or DPP4i] should be considered for initial oral combination therapy
- SGLT2i: consider use in patients unable to tolerate or with CI to metformin plus [SU, TZD, or DPP4i]
Avoid use: estimated GFR < 60mL/min/1.72m², dialysis, active bladder cancer
- GLP1-RA: consider use in patients unable to tolerate or with CI to oral combination therapy
- Basal insulin: consider use in patients unlikely to achieve HbA_{1c} target on oral combination therapy

(3) Three-drug Combination Therapy – choice of therapy should be made in stepwise approach listed above

(4) Combination Injectable Therapy – consider starting at this step when HbA_{1c} ≥ 10-12%