Noninsulin Therapies for Type 2 Diabetes (Short Form)

Class Brand Name	Generic Name	Typical Dosing Directions	Effect on A1C	Hypo. Risk	Cost	Weight Change ↑↓↔	Use in Renal Disease	Monitoring Labs	Other
Oral Medication									
Biguanides			**Decrease hepatic glucose output, sensitizer**						**Targets fasting BG**
Glucophage®	metformin	1000 mg BID with morning and evening meals	Up to 2%	No	$	↔ to ↓	↓ dose per eGFR; stop if eGFR<30	eGFR, ALT	First-line therapy; black box warning for lactic acidosis (rare); no binge alcohol; use caution with contrast; GI side effects, less with XR; titrate slowly; may lower vit. B12
Glucophage XR®	metformin ER	2000 mg at evening meal							
Sulfonylureas			**Increase release of insulin**						**Targets fasting & postmeal BG**
Amaryl®	glimepiride	1–8 mg with AM meal	Up to 1.5%	↑	$	↑	Use caution and ↓ dose; avoid glyburide if GFR <60	eGFR, ALT	Works quickly, may be less effective late in disease; avoid glyburide due to high risk of hypoglycemia; ensure consistent carbohydrate at meals to avoid hypoglycemia; glipizide and glimepiride preferred with renal impairment.
Glucotrol®	glipizide	5–20 mg BID 30 min before meals		↑↑					
Glucotrol XL ®	glipizide XL	2.5–20 mg with AM meal		↑					
Micronase®	glyburide	2.5–10 mg QD		↑↑					
Glynase	glyburide	1.5–12 mg QD with meal							
Meglitinides (short-acting)			**Increase release of insulin**						**Targets postmeal BG**
Prandin®	repaglinide	0.5–4 mg TID with meals	1–2%	↑	$$	↑	Yes, if eGFR <30 ↓ dose	eGFR, ALT	Inconvenient mealtime dosing; good for variable meal schedule; consider lower dose if hepatic impairment.
Starlix®	nateglinide	60–120 mg TID with meals							
Thiazolidinedione			**Increase insulin sensitivity**						**Targets fasting BG**
Actos®	pioglitazone	15–45 mg QD	1–2%	No	$$	↑↑	Yes	ALT	Black box warning for CHF; weight gain, edema and long-term use associated with bone fracture; increased risk of bladder cancer; generic available; limit dose to 30 mg.
DPP-4 Inhibitors			**Increase insulin, decrease glucagon**						**Targets postmeal BG**
Januvia®	sitagliptin	100 mg QD	Up to 1%	No	$$$	↔	Yes, ↓ dose	eGFR	Don't use with history of pancreatitis; overall well tolerated; possible hypersensitivity reaction and severe joint pain (rare); consider lower dose of SU/insulin; CV neutral (safe); increased risk for HF with saxagliptin.
Onglyza™	saxagliptin	2.5–5 mg QD					Yes, ↓ dose		
Tradjenta™	linagliptin	5 mg QD					Yes		
Nesina®	Alogliptin	25 mg QD					Yes, ↓ dose		
Alpha-glucosidase Inhibitors			**Slow breakdown of carbohydrate**						**Targets postmeal BG**
Precose®	acarbose	25–100 mg TID with meals	0.5–1%	No	$$	↔	Yes, avoid if eGFR <30	eGFR ALT	GI side effects: flatulence (titrate slowly), avoid if bowel disorder; treat low glucose with glucose tabs or milk.
Glyset®	miglitol	25–100 mg TID with meals							

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SGLT2 Inhibitors			**Lowers renal threshold for glucose**						**Targets fasting & postmeal BG**
Invokana®	canagliflozin	100–300 mg before first meal of day	~1%	No	$$$	↓	Yes, do not initiate if eGFR <30	eGFR, ALT, LDL	Risk of hypotension and dehydration, genital fungal infections, modest increase in LDL, DKA (rare); hypo with SU or insulin; risk of necrotizing fasciitis of perineum; reduces CV events and hospitalization for HF; slows progression of CKD; use until dialysis, then contraindicated; do not use for glucose lowering if eGFR <45 Canagliflozin: Hyperkalemia possible in high-risk patients (renal impaired, on ACE-I or ARB); may increase risk of amputation. Ertugliflozin: May increase risk of amputation; does not have ASCVD and CKD benefit like other SGLT2 inhibitors.
Farxiga™	dapagliflozin	5–10 mg in the morning with or without food					Yes, do not initiate if eGFR <25	eGFR, LDL	
Jardiance®	empagliflozin	10–25 mg in the morning with or without food					Yes, do not initiate if eGFR <20	eGFR, LDL	
Steglatro™	ertugliflozin	5–15 mg in the morning; correct volume depletion before initiation					Yes, do not initiate if eGFR <45	eGFR, LDL	
Injectable Medications									
GLP-1 Receptor Agonists		**Increase insulin, decrease glucagon, increase satiety, slow gastric emptying**							**Targets fasting & postmeal BG**
Byetta®	exenatide	5–10 mcg BID, up to 1 hour before meals	Up to 2.0%	No	$$$	↓↓	Do not use if eGFR <30	eGFR	Black box warning for thyroid C-cell tumors in rodents: don't use with history of medullary thyroid carcinoma or MEN syndrome type 2; GI side effects common (but transient), titrate slowly; avoid use if other GI disease; pancreatitis (rare), discontinue if pancreatitis occurs; may need ↓dose SU/meal insulin (up to 50%); CV benefit in patients with established CVD; increased risk of diabetic retinopathy with semaglutide; take oral semaglutide upon waking with <4 oz water 30 minutes before any food, liquids or medications.
Bydureon®	exenatide ER	2 mg/week							
Victoza®	liraglutide	Start 0.6 mg QD, titrate to 1.2–1.8 mg QD					Yes, use caution	eGFR	
Ozempic™	semaglutide	Start 0.25 mg/week, titrate to 0.5–2.0 mg/week					Yes, use caution when starting and adjusting dose with renal impairment		
Rybelsus®	oral semaglutide	Start 3 mg/day for 30 days, then 7 mg/day for 30 days; may increase to 14 mg/day							
Trulicity™	dulaglutide	0.75–4.5 mg/week							
GIP/GLP-1 Receptor Agonist		**Increase insulin, decrease glucagon, increase satiety, slow gastric emptying**							**Targets fasting & postmeal BG**
Mounjaro®	tirzepatide	2.5 mg weekly for 4 wks then increase to 5.0 mg weekly; if needed, increase in 2.5 mg increments every 4 weeks to max dose 15 mg weekly	Up to 2.5%	No	$$$	↓↓↓	Yes, use caution	eGFR	Black box warning for thyroid C-cell tumors in rodents: don't use with history of medullary thyroid carcinoma or MEN syndrome type 2; GI side effects common, titrate slowly; discontinue promptly if pancreatitis is suspected; increased risk of diabetic retinopathy; CVOT underway

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