

Comparison Chart of Glucose-Lowering Agents for Management of Type 2 Diabetes Mellitus

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Class	Specific Agents	Expected A1c Reduction	Primary Action (FBG/PPBG ^a Effect)	Avg Monthly Cost	Dosing Frequency	SMBG ^b Required (Frequency)	Effect on Weight	Hypo-glycemia Risk	Notable Adverse Effects/ Precautions
Biguanide	Metformin (<i>Glucophage, Glucophage XR</i>)	1% -- 1.5%	Insulin sensitizer FBG	Low	Once daily (ER) Two - three times per day (IR)	No	Neutral/ Decrease 2.6 kg decrease	Low	<ul style="list-style-type: none"> • Nausea, diarrhea • Vitamin B12 Depletion • Lactic acidosis • Caution with renal dysfunction
Sulfonylurea (2nd Generation)	<ul style="list-style-type: none"> • Glipizide (<i>Glucotrol, Glucotrol XL</i>) • Glimpiride (<i>Amaryl</i>) • Glyburide (<i>Diabeta, Micronase</i>) 	1% -- 1.5%	Increase insulin secretion FBG	Low	Once daily	Yes Fasting once daily to monitor for hypoglycemia	Increase 1.9 kg increase	Moderate	<ul style="list-style-type: none"> • Diarrhea/flatulence • URI/UTI • Headache • Caution in elderly patients and with hepatic/renal dysfunction
Dipeptidyl peptidase-4 (DPP-4) inhibitor	<ul style="list-style-type: none"> • Sitagliptin (<i>Januvia</i>) • Saxagliptin (<i>Onglyza</i>) • Linagliptin (<i>Tradjenta</i>) • Alogliptan (<i>Nesina</i>) 	0.5% -- 1%	Increase insulin secretion and decrease glucagon secretion FBG	High	Once daily	No	Neutral 1.8 kg decrease	Low	<ul style="list-style-type: none"> • Angioedema/ dermatological reactions • May worsen HF (saxagliptin) • May be associated with pancreatitis • Dose modification in renal impairment
Glucagon-like, peptide-1 (GLP-1) agonist	<ul style="list-style-type: none"> • Exenatide (<i>Byetta, Bydureon</i>) • Liraglutide (<i>Victoza</i>) • Albiglutide (<i>Tanzeum</i>) • Dulaglutide (<i>Trulicity</i>) 	1% -- 1.5%	Increase insulin secretion and decrease glucagon secretion Slows gastric emptying PPBG	High	Once weekly (<i>Tanzeum</i>) Twice daily (<i>Byetta</i>) Once weekly (<i>Bydureon</i>) Once daily (<i>Victoza</i>)	No	Decrease 3.3 kg decrease	Low	<ul style="list-style-type: none"> • Nausea, vomiting • Increase in HR • Headache, dizziness • May be associated with pancreatitis • May be associated with renal insufficiency
Sodium-glucose co-transporter 2 (SGLT₂) inhibitor	<ul style="list-style-type: none"> • Canagliflozin (<i>Invokana</i>) • Dapagliflozin (<i>Farxiga</i>) • Empagliflozin (<i>Jardiance</i>) 	0.5% -- 1%	Increases glucose excretion PPBG	High	Once daily	No	Decrease 2 kg decrease	Low	<ul style="list-style-type: none"> • Hypotension, dizziness • Genitourinary infections • Increase in LDL • Increase serum potassium (transient)
Thiazolidinediones (TZDs)	<ul style="list-style-type: none"> • Pioglitazone (<i>Actos</i>) • Rosiglitazone (<i>Avandia</i>) 	1% -- 1.5%	Insulin sensitizer FBG	Low	Once daily	No	Increase 2.3 kg increase	Low	<ul style="list-style-type: none"> • Edema, worsening HF • Bone fractures

Meglitinides	<ul style="list-style-type: none"> Repaglinide (<i>Prandin</i>) Nateglinide (<i>Starlix</i>) 	0.5% -- 1%	Increase insulin secretion PPBG	Moderate	Three times daily with meals	Yes FBG once daily to monitor for hypoglycemia	Increase 0.9 kg increase	Moderate	<ul style="list-style-type: none"> Headache URI
INSULIN									
Basal	Intermediate Acting <ul style="list-style-type: none"> Human NPH (<i>Humulin N, Novolin N</i>) Long Acting <ul style="list-style-type: none"> Glargine (<i>Lantus</i>) Detemir (<i>Levemir</i>) 	1.5% -- 3.5%	Increase glucose uptake into tissue. FBG	Moderate	One – two times daily	Yes FBG	Increase 2-4 kg increase	High	
Prandial	Rapid Acting <ul style="list-style-type: none"> Lispro (<i>Humalog</i>) Aspart (<i>NovoLog</i>) Glulisine (<i>Apidra</i>) Short Acting <ul style="list-style-type: none"> Human Regular (<i>Humulin R, Novolin R</i>) 		Increase glucose uptake into tissue. PPBG		One – three times daily 10-15 minutes before meals	Yes Pre/post prandial BG			
Pre-mixed Biphasic	<ul style="list-style-type: none"> 70% insulin aspart protamine susp/30% insulin aspart soln (<i>NovoLog Mix 70/30</i>) 75% insulin lispro protamine susp/25% insulin lispro soln (<i>Humalog Mix 75/25</i>), (<i>Humalog Mix 50/50</i>) 70% NPH/30% regular (<i>Humulin 70/30, Novolin 70/30</i>) 		Increase glucose uptake into tissue. FBG/PPBG		Twice daily 10-15 min before breakfast and dinner	Yes BID – before breakfast and dinner			

Abbreviations: ^a FBG = fasting blood glucose, PPBG = post prandial blood glucose, ^b SMBG = self-monitoring of blood glucose

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