

# DIABETES MEDICATIONS DOSING GUIDE



THE FOLLOWING TABLE DETAILS DOSING RECOMMENDATIONS FOR DIABETES TREATMENT AGENTS

Class	Generic Name	Brand Names	Initial Dose <sup>1</sup>	Maintenance Dose <sup>1</sup>	Max Dose <sup>1</sup>	Dosing Adjust-ments <sup>1,2</sup>	Notes <sup>3-5</sup>	A1C Lowering Potential <sup>2</sup>
Biguanides	Metformin	Glucophage®	500mg BID or 850mg Daily	Increase in 500mg increments or 850mg every 2 weeks	Up to 2550mg daily	Contraindicated for patients with renal insufficiency	Low risk of hypoglycemia Gastrointestinal side effects First line treatment	1-1.5%
	Metformin Extended Release	Glucophage XR®	500mg daily	1000 to 2000 mg daily	Up to 2000mg daily			
	Metformin Extended Release	Fortamet®	500-1000mg daily	1000 to 2500mg daily	Up to 2500mg daily			
	Metformin Extended Release	Glumetza®	500mg daily	500 to 2000mg daily	Up to 2000mg daily			
	Metformin solution	Riomet®	500mg BID or 850mg Daily	Increase in 500mg increments or 850mg every 2 weeks	Up to 2550mg daily			
Sulfonylureas	Tolazamide	Tolinase®	100 to 250 mg daily with the first meal of the day		Up to 1000mg daily	No dosing adjustments required. Initial hepatic and renal impairment dosing should be conservative.	Notable hypoglycemia risk Sulfonylureas lose effectiveness due to their mechanism of action. Effectiveness is lost as pancreas damage progresses in some diabetics <sup>8</sup> Loses effectiveness and causes weight gain	1-1.5%
	Tolbutamide	Orinase®	1 to 2 g daily		Up to 3g daily			

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Sulfonylureas (continued)	<i>Chlorpropamide*</i>	Diabinese®	250mg daily	100 to 500mg daily	Up to 750mg daily	Should be avoided in those with CrCl <50mg/dl	Long half life, can be as long as 72 hours  Notable hypoglycemia risk  Loses effectiveness and causes weight gain	1-1.5%
	Glipizide	Glucotrol®	5mg daily	Titrate in 2.5 to 5mg increments	Up to 40mg daily	No dosing adjustments required  Doses over 10mg/day shown no increased effectiveness		
	Glipizide	Glucotrol XL®	5mg daily	5 to 10mg daily	Up to 20mg daily	No dosing adjustments required  Dosing should be titrated conservatively in those with hepatic or renal impairments  Doses over 10mg/day shown no increased effectiveness	Higher risk of hypoglycemia  Sulfonylureas considered second line by the ADA and add on therapy by AACE  May cause weight gain  Glyburide and chlorpropamide are considered high risk medications due to increased risk of hypoglycemia	
	Glimepiride	Amaryl®	1 to 2 mg daily	increase in 1 to 2 mg increments	Up to 8mg daily	No dosing adjustments required		
	<i>Glyburide*</i>	Diabeta®	2.5 to 5mg daily	1.25 to 20mg daily	Up to 5mg daily initially  Up to 20mg daily as maintenance	Doses over 10mg/day shown no increased effectiveness <sup>3</sup>  Should not be used in patients with CrCl <50ml/min		

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Sulfonylureas (continued)	<i>Glyburide*</i>	Glynase (Micronized) <sup>®</sup>	1.5 to 3mg daily	0.75 to 12mg daily or in split doses	Up to 3mg daily initially Up to 12mg daily as maintenance	Doses over 10mg/day shown no increased effectiveness <sup>3</sup>	Higher risk of hypoglycemia  Sulfonylureas considered second line by the ADA and add on therapy by AACE	1-1.5%
	<i>Glyburide*</i>	Micronase <sup>®</sup>	2.5 to 5mg daily	1.25 to 20mg daily	Up to 5mg daily initially Up to 20mg daily as maintenance	Should not be used in patients with CrCl <50ml/min		
	<i>Glyburide / Metformin*</i>	Glucovance <sup>®</sup>	Glyburide 1.25/ Metformin 250mg BID	2.5mg/500mg to 5mg/500mg BID	Up to 20mg/ 2000mg daily	No dosing adjustments required  Doses over 10mg/day shown no increased effectiveness <sup>3</sup>	May cause weight gain  Glyburide and chlorpropamide are considered high risk medications due to increased risk of hypoglycemia	
	Glipizide / Metformin	Metaglip <sup>™</sup>	Glipizide 2.5mg/ Metformin 500mg BID	Increase in increments of 5mg/500mg	Up to 20mg/ 2000mg daily	Contraindicated for patients with renal insufficiency		
Meglitinides	Repaglinide	Prandin <sup>®</sup>	0.5mg BID to QID prior to each meal	May double the dose weekly	Up to 16mg daily	CrCl 20-40mL/min: Start at 0.5 mg and titrate carefully	Do not use with sulfonylureas  Risk of hypoglycemia	0.5-1%
	Nateglinide	Starlix <sup>®</sup>	120mg TID prior to a meal			No dose adjustments required	Prandin is more effective than Starlix at lowering A1C	

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Thiazolidine-diones	Pioglitazone	Actos®	15 or 30 mg daily	Increase 15mg increments	Up to 45mg daily		Caution use in heart failure patients, black box warning.  Increased risk of peripheral edema and weight gain  Avandia-Rosiglitazone only available through Avandia-Rosiglitazone Medicines program	0.5-1.4%
	Rosiglitazone	Avandia®	4mg daily or in 2 doses	If there is insufficient fasting plasma glucose response, increase to 8mg daily	Up to 8mg daily	Patients with elevated transaminases or hepatic impairment should avoid this drug	These agents can be used with metformin as second line or as part of a multi-drug regimen	
	Pioglitazone/ Metformin	Actoplus metformin®	Pioglitazone 15/ Metformin 500 BID or 15/850 daily	Titrate based on tolerability	Up to 45/ 2550mg daily	Patients with CHF class I or II should use no more than 15mg daily  Patients with CHF class III or IV are contraindicated	Caution use in heart failure patients, black box warning.  Increased risk of peripheral edema and weight gain  Contraindicated for patients with renal insufficiency  These agents can be used with metformin as second line or as part of a multi-drug regimen	

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Thiazolidinediones (continued)	Pioglitazone/ Metformin XR	Actoplus Metformin XR®	Pioglitazone 15/ Metformin 1000mg or 30/1000 daily	Titrate based on tolerability	Up to 45/ 2000mg daily		Caution use in heart failure patients, black box warning	0.5-1.4%
	Rosiglitazone/ Metformin	Avandamet®	Previously received rosiglitazone 4mg daily: 2/500mg BID  Previously received rosiglitazone 8mg daily: 4/500mg daily			Patients with elevated transaminases or hepatic impairment should avoid this drug	Increased risk of peripheral edema and weight gain  Contraindicated for patients with renal insufficiency	
	Rosiglitazone/ Glimiperide	Avandaryl®	Rosiglitazone 4mg/ glimiperide1mg daily with first meal	Increase by no more than 2mg increments	Up to 8mg/ 4mg daily	Patients with CHF class I or II should use no more than 15mg daily  Patients with CHF class III or IV are contraindicated	Caution use in heart failure patients, black box warning	
	Pioglitazone/ Glimiperide	Duetact®	Pioglitazone 30mg/ Glimiperide 2mg or 30mg/ 4mg daily  Patients previously on glimepiride monotherapy or pioglitazone monotherapy have the same initial dose	Titrate gradually based on tolerability	Up to 45mg/ 8mg daily		Increased risk of peripheral edema and weight gain  Avandia- Rosiglitazone only available through Avandia- Rosiglitazone Medicines program	

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Alpha-Glucosidase inhibitors	Acarbose	Precose®	25mg TID with the first bite of each meal	May be increased to 50-100mg TID at four to eight week intervals	Up to 50mg TID for those <60kg Up to 100mg TID for those >61kg	Dose titration will limit gastrointestinal side effects	No significant weight changes ADA considers this medication third line May cause hypoglycemia, risk is higher when used with insulin or sulfonylureas	0.5-0.8%
	Miglitol	Glyset®	25mg TID with meals	50mg TID with meals	up to 100mg TID daily		Useful in decreasing post-prandial glucose levels Contraindicated in patients with inflammatory bowel disease, colonic ulceration, partial or complete intestinal obstruction	

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DPP4-Inhibitors	Sitagliptin	Januvia®	100mg daily			CrCl 30ml/min and dialysis: 25mg		0.5-1%
	Saxagliptin	Onglyza®	2.5 to 5mg daily			CrCl <50ml/min or strong CYP3a4 inhibitor: 2.5mg	<p>Risk of nasopharyngitis, upper respiratory tract infection</p> <p>Risk of hypoglycemia</p> <p>Weight neutral</p> <p>Rare cases of pancreatitis</p>	
	Linagliptin	Tradjenta®	5mg daily			No renal dosing necessary	<p>ADA considers second line after metformin</p> <p>Should not be used with DM type 1 or for the treatment of diabetic ketoacidosis</p>	
	Alogliptan	Nesina®	25mg daily			<p>CrCl 30—59 ml/min: 12.5 mg daily</p> <p>CrCl &lt; 30 ml/min: 6.25 mg daily</p>		

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DPP4-Inhibitors (continued)	Metformin / Sitagliptin	Janumet®	<p>Previously on Metformin: Sitagliptin 50mg plus current dose of Metformin BID</p> <p>Previously on 850mg Metformin BID: Sitagliptin 50mg plus 1000mg Metformin BID</p> <p>Previously on Sitagliptin: Sitagliptin 50mg plus 500mg Metformin BID</p>			CrCl 30ml/min and dialysis: 25mg of Sitagliptin	<p>Risk of nasopharyngitis, upper respiratory tract infection</p> <p>Risk of hypoglycemia</p> <p>Weight neutral</p>	0.5-1%
	Metformin / Sitagliptin	Janumet xr®	<p>Previously on Metformin: Sitagliptin 100mg plus current dose of Metformin daily</p> <p>Previously on 850mg Metformin BID: 2 tablets of Sitagliptin 50mg plus 1000mg Metformin daily</p>			CrCl 30ml/min and dialysis: 25mg of Sitagliptin	<p>Rare cases of pancreatitis</p> <p>ADA considers second line after metformin</p> <p>Should not be used with DM type 1 or for the treatment of diabetic ketoacidosis</p>	
	Metformin / Linagliptin	Jentadueto®	<p>Linagliptin 2.5mg/ Metformin 500mg BID with meals</p> <p>Currently using Metformin: 2.5mg/ current dose for Metformin BID</p>		Up to 2.5mg/ Metformin 1000mg BID	<p>No renal dosing necessary</p> <p>Metformin should be avoided for those with renal insufficiency</p>		



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DPP4-Inhibitors (continued)	Sitagliptin/ Simvastatin	Juvisync™	Sitagliptin 100mg/ Simvastatin 40mg QHS			CrCl 30ml/min to CrCl 50ml/ min should not be higher than sitagliptin 50mg/ simvastatin 40mg  CrCl <30ml/min: avoid using  Liver disease: Contraindicated	Risk of nasopharyngitis, upper respiratory tract infection	0.5-1%
	Saxagliptin / Metformin	Kombiglyze xr®	Saxagliptin 5mg/ Metformin 500mg daily	Should be adjusted based on prior or current therapy	Up to saxagliptin 5mg/ metformin 2000mg daily	Has not been studied in combination with insulin  Dose should be individualized based on current regimen and tolerability  Concomitant use with strong CYP3A4 inhibitors should use saxagliptin 2.5mg/metformin 1000mg daily	Risk of hypoglycemia  Weight neutral  Rare cases of pancreatitis  ADA considers second line after metformin  Should not be used with DM type 1 or for the treatment of diabetic ketoacidosis	
	Metformin/ Alogliptin	Kazano®	Alogliptin 25mg / Metformin 2000mg per day with meals			Metformin should be avoided for those with renal insufficiency		

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Sodium-Glucose Co-Transporter 2 (SGLT2) Inhibitors	Dapagliflozin	Farxiga™	5mg daily		Up to 10mg daily	Should be avoided in those with CrCl <60mg/dl	Risk of genital infections Increased risk of urinary tract infections, vulvovaginal pruritus, and increased urination	0.7-1%
	Canagliflozin	Invokana®	100mg daily		Up to 300mg daily if GFR is >60ml/min and additional efficacy is required	Should not exceed 100mg in patients with CrCl 45ml/min to 60ml/min Should be avoided in those with CrCl <45ml/min	May cause weight loss Risk of hypoglycemia when used in combination with other agents	
Glucagon-Like Peptide-1 (GLP1) Agonists	Exenatide	Byetta®	5mcg subcutaneously BID within 60 minutes before the morning and evening meal	10mcg subcutaneously BID within 60minutes before the morning and evening meal		No dose adjustment requirements, caution should be used when adjusting dosage	No hypoglycemia Weight loss Risk of pancreatitis Injection medications Can be used in combination with other medications as add on therapy	0.4-0.9%
	Exenatide extended release	Bydureon®	2mg subcutaneously once every 7 days				Should not be used with prandial insulin	

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Glucagon-Like Peptide-1 (GLP1) Agonists (continued)	Liraglutide	Victoza®	0.6mg subcutaneously daily for 1 week to reduce GI effects	1.2 subcutaneously daily	Up to 1.8mg daily	No dose adjustment requirements, caution should be used when adjusting dosage	No hypoglycemia Weight loss Risk of pancreatitis Injection medications Can be used in combination with other medications as add on therapy Should not be used with prandial insulin	0.4-0.9%
Amylin Analogs	Pramlintide	Symlin®	60mcg subcutaneously prior to meals	120mcg subcutaneously if tolerated		No specific renal dosage adjustments Should not be coadministered with insulin	Hypoglycemia risk requires reduction in insulin Injection medication Risk of nausea Weight loss ADA considers this medication as third line	0.5-1%



### Suggested Medications for Patients with Diabetes

Aspirin<sup>6,7</sup> - Patients with diabetes and high risk cardiovascular risk should be considered for low dose aspirin.

ACEI / ARB<sup>6,7</sup> - Patients with diabetes should be considered for ACEI or ARB if they have hypertension and/or for general prevention to macro albuminuria from micro albuminuria.

### References

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\*: These medications are considered high risk