

MEDICINES FOR TYPE 2 DIABETES

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Medicine	FDA Approval	Formulations (color indicated for Brand products)	Dosing	Comments (SE= side effects)
SULFONYLUREAS (SFUs): INSULIN RELEASING PILLS (Secretagogues) - increase insulin secretion from pancreas²				
Tolazamide Tolinase® various generics	1965	100 mg, 250 mg, 500 mg (white, scored) tablets	Initial: 100-250 mg daily Range: 100-1000 mg Dosed once or twice (if >500 mg) daily	SE: hypoglycemia, weight gain
Tolbutamide Orinase® various generics	1957	500 mg (white, scored) tablets	Initial: 1000-2000 mg daily Range: 250-3000 mg (seldom need >2000 mg/day) Dosed two or three times daily	SE: hypoglycemia, weight gain Preferred SFU for elderly Must be taken 2-3 times daily
Glimepiride Amaryl®	11/95	1 mg (pink), 2 mg (green), 4 mg (blue) tablets	Initial: 1-2 mg daily Range: 1-8 mg Dosed once daily	SE: hypoglycemia, weight gain Need to take only once daily
Glipizide Glucotrol® Glucotrol XL® various generics	5/84 4/94	5 mg, 10 mg (white, scored) tablets XL: 2.5 mg (blue) 5 mg (white), 10 mg (white) tablets	Initial: 5 mg daily Range: 2.5-40 mg ¹ (20 mg for XL) Dosed once or twice (>15 mg) daily	SE: hypoglycemia, weight gain Preferred SFU for elderly XL = extended release/take once a day
Glyburide Micronase®, DiaBeta® various generics	5/84	1.25 mg (Diaβ-peach, Micronase-white), 2.5 mg (Diaβ-pink, Micronase-pink), 5 mg (Diaβ-green, Micronase-blue) tablets (scored)	Initial: 2.5-5 mg daily Range: 1.25-20 mg ¹ Dosed once or twice daily	SE: hypoglycemia, weight gain
Glyburide, micronized Glynase PresTab® various generics	3/92	1.5 mg (white), 3 mg (blue), 4.5 mg, 6 mg (yellow) micronized tablets (scored)	Initial: 1.5-3 mg daily Range: 0.75-12 mg Dosed once or twice (>6 mg) daily	SE: hypoglycemia, weight gain
GLINIDES: INSULIN RELEASING PILLS (Secretagogues) - increase insulin secretion from pancreas				
Repaglinide Prandin®	12/97	0.5 mg (white), 1 mg (yellow), 2 mg (red) tablets	Initial: 1-2 mg daily (0.5 mg if A1C <8%) Range: 0.5-16 mg Max dose per meal is 4 mg	SE: hypoglycemia Safe for elderly Duration of action is only 4 hours Take within 15-30 minutes of meal
Nateglinide Starlix®	12/00	60 mg (pink), 120 mg (yellow) tablets	Initial: 120 mg three times daily Range: 60-120 mg three times daily	SE: hypoglycemia Safe for elderly; Duration of action is only 2 hours Take within 30 minutes of meal
BIGUANIDES: EUGLYCEMIC - decreases glucose release from liver and brings the glucose into the normal range				
Metformin Glucophage® Extended release (ER): Glucophage XR® Fortamet® Glumetza Riomet® (liquid, 500 mg/5ml)	12/94 10/00	Glucophage: 500 mg (white to off-white), 850 mg (white to off-white), 1000 mg (white oval scored) tablets Glucophage XR: 500 mg (white to off-white), 750 mg (pale red) tablets Fortamet: 500 mg (white), 1000 mg (white) biconvex tablets Glumetza: 500 mg (blue) oval tablets Generic metformin ER: 500 mg, 750 mg (white to off-white) capsule shaped tablets	Initial: 500 mg twice daily or 850 mg once daily Range: 500-2550 mg Dosed two or three times daily ER: Initial: 500 mg once daily Range: 500-2000 mg Dosed once daily	SE: Gastrointestinal symptoms (diarrhea, nausea, upset stomach), metallic taste (3%), lactic acidosis (0.03 cases/1000 people) ^{3,4} Take with meals (ER with evening meal) Cannot use if have liver or kidney problems, take drug to treat heart failure, or drink alcohol excessively.
ALPHA-GLUCOSIDASE INHIBITOR: STARCH BLOCKER – EUGLYCEMICS - delay digestion and absorption of carbohydrates and bring the glucose into the normal range				
Acarbose Precose®	9/95	25 mg, 50 mg, 100 mg (white) tablets	Initial: 25 mg three times daily Range: 75-300 mg (max 150 mg if <60 kg) Dosed three times daily	SE: flatulence Take with first bite of meal Start with low dose and slowly ↑ to minimize GI intolerance.

THIAZOLIDINEDIONES: EUGLYCEMICS - decrease insulin resistance and bring the glucose into the normal range				
Rosiglitazone Avandia®	5/99	2 mg (pink), 4 mg (orange), 8 mg (red-brown) tablets	Initial: 4 mg daily Range: 4-8 mg Dosed once or twice daily	SE: anemia, fluid retention, edema, weight gain, CHF ⁵ , bone loss in women. May cause CAD ⁶ Cannot use if have liver problems Requires liver monitoring ⁷
Pioglitazone Actos®	7/99	15 mg, 30 mg, 45 mg (white to off-white) tablets	Initial: 15-30 mg daily Range: 15-45 mg Dosed once daily	SE: anemia, fluid retention, edema, weight gain, CHF ⁵ , bone loss in women. Cannot use if have liver problems Requires liver monitoring ⁷
COMBINATION ORAL PRODUCTS				
Glyburide/Metformin Glucovance®	7/00	1.25 mg/250 mg (pale yellow), 2.5 mg/500 mg (pale orange), 5 mg/500 mg (yellow) capsule shaped	Initial: 1.25 mg/250 mg once or twice daily Range: up to – 20/2000 mg Dosed once or twice daily	Same as above with glyburide & metformin
Glipizide/Metformin Metaglip®	10/02	2.5 mg/250 mg (pink), 2.5mg/500 mg (white), 5mg/500 mg (pink) oval tablets	Initial: 2.5 mg/250 mg daily or 2.5mg/500 mg twice daily Range: up to 20/2000 mg Dosed once or twice daily	Same as above with glipizide and metformin
Rosiglitazone/Metformin Avandamet®	10/02	2 mg/500 mg (pale pink), 2 mg/1000 mg (yellow), 4 mg/500 mg (orange), 4 mg/1000 mg (pink) oval tablets	Initial: 2 mg/500 mg once or twice daily Range: up to 8 mg/2000 mg; Dosed twice daily	Same as above with metformin and rosiglitazone
Pioglitazone/Metformin ActoPlus Met®	8/05	15 mg/500 mg, 15 mg/850 mg (white to off-white) oblong tablets	Initial: 15 mg/500 mg or 15 mg/850 mg once or twice daily Range: up to 45 mg/2550 mg Dosed once or twice daily	Same as above with metformin and pioglitazone
Pioglitazone/Glimepiride Duetact®	7/06	30 mg/2 mg, 30 mg/4 mg (white to off-white) tablets	Initial: 30 mg/2 mg or 30 mg/4 mg once daily Range: max of one tablet daily Dosed once daily	Same as above with pioglitazone and glimepiride
Rosiglitazone/Glimepiride Avandryl®	11/05	4 mg/1 mg (yellow), 4 mg/2 mg (orange), 4 mg/4 mg (pink) rounded triangle tablets	Initial: 4 mg/1 mg or 4 mg/2 mg once daily Range: up to 8 mg/4 mg Dosed once daily	Same as above with rosiglitazone and glimepiride
INCRETIN-BASED THERAPIES: EUGLYCEMICS - increases glucagon secretion, reduces glucose release from liver after meals, delays food emptying from stomach (exenatide only) and promotes satiety (exenatide only), and bring the glucose into the normal range				
Exenatide (GLP-1 analog) Byetta®	4/05	5 mcg per dose and 10 mcg per dose pen devices Injected under the skin (subcutaneous/SQ)	Initial: 5 mcg SQ twice daily Range: up to 10 mcg SQ twice daily Dosed twice daily	SE: nausea, headache, hypoglycemia (when used with insulin secretagogues), may cause pancreatitis May cause mild weight loss
Sitagliptin (DPP-4 inhibitor) Januvia®	11/06	25 mg (pink), 50 mg (light beige), 100 mg (beige) tablets	Initial: 100 mg daily Range: 25-100 mg daily Dosed once daily	SE: runny nose, upper respiratory infection Lower doses used if renal problems

¹ "Clinical" maximum daily dose for glyburide is 10 mg and glipizide is 20 mg; higher doses are not likely to be more effective and may be associated with increased side effects.

² *SFUs, repaglinide, and nateglinide and hypoglycemia*: increase risk of hypoglycemia when skip meals. Avoid skipping meals.

³ Lactic acidosis symptoms: feeling very weak, tired or uncomfortable; unusual muscle pain, trouble breathing, unusual or unexpected stomach discomfort, feeling cold, feeling dizzy or lightheaded, or suddenly developing a slow or irregular heartbeat.

⁴ Radiologic tests using iodinated contrast media: stop metformin at the time of or prior to the procedure, and withhold for 48 hours after procedure and restart after kidney function has been re-evaluated and found to be normal.

⁵ Congestive Heart Failure (CHF); ⁶ Coronary Artery Disease (CAD); ⁷ Liver toxicity symptoms: unexplained nausea, vomiting, abdominal pain, fatigue, anorexia, or dark urine.

****Oral agents [other than SFUs, repaglinide, and nateglinide] are EUGLYCEMICS & do not cause hypoglycemia when used *alone*. However, when used *with* SFUs, repaglinide, nateglinide, or insulin, hypoglycemia may occur**

Table is prepared with information from package inserts of the various medications and opinion of the UCSF Diabetes Teaching Center.

This table is not meant to be all inclusive and contains important educational information, as viewed by the UCSF Diabetes Teaching Center

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