

Metformin (Glucophage)

Metformin functions by decreasing glucose production and increasing insulin sensitivity. It is recommended for the treatment of Type 2 diabetes, gestational diabetes, and polycystic ovary syndrome (PCOS). Metformin is associated with minimal side effects, including nausea, diarrhea, decreased appetite, and lactic acidosis. Alcohol intake and IV contrast agents should be used with caution when metformin is administered.



PLAY PICMONIC

Mechanism

Decrease Glucose Production

[Down-arrow Glue](#)

Metformin is an oral hypoglycemic drug that decreases the production of glucose within the liver and increases the sensitivity of existing insulin.

Increase Insulin Sensitivity

[Up-arrow Insect-syringe Crying](#)

Metformin works by decreasing the production of glucose and reducing resistance to existing insulin.

Indications

Type 2 Diabetes

[Dyed-bead-pancreas in \(2\) Tutu](#)

Metformin is the recommended drug for initial treatment of Type 2 diabetes and gestational diabetes, because it decreases the production of glucose and increases the sensitivity of insulin. Generally, metformin is started if diet and exercise modifications have not been effective for the management of Type 2 diabetes.

Polycystic Ovary Syndrome (PCOS)

[Peacock with PCOS](#)

Polycystic Ovary Syndrome (PCOS) is characterized by excess androgens and increased insulin resistance. Metformin has been found to be effective in treating PCOS, as it increases the sensitivity of insulin. The outcome of this response is improved glucose tolerance, improved ovulatory menstrual cycles, and increased pregnancy rates.

Side Effects

GI Distress

[GI with Flare-gun](#)

Because metformin functions in the liver to decrease production of glucose, it often causes gastrointestinal symptoms including nausea, diarrhea, decreased appetite, and lactic acidosis. Further, metformin reduces the absorption of folic acid and vitamin B12 and may lead to vitamin deficiency.

Decreased Appetite

X on Mouth

Metformin works by decreasing glucose production, increasing sensitivity to insulin, and may decrease appetite leading to weight loss.

Lactic Acidosis

Lake of Acidic-lemon

Lactic acidosis is a rare side effect of metformin and is indicative of drug toxicity. This occurs because metformin inhibits normal oxidation of lactic acid, which promotes the development of lactic acidosis. Patients taking metformin should be assessed for signs of lactic acidosis, which include hyperventilation, malaise, myalgia, and somnolence.

Considerations

IV Contrast

IV-bag and Contrasting-con

Metformin should be held 1-2 days before the use of IV contrast agents and 48 hours after administration. IV contrast agents contain iodine, which can promote renal failure and further exacerbate lactic acidosis.

Limit Alcohol Consumption

Limiting Alcoholic-martini

Alcohol should be limited in patients taking metformin. Alcohol further limits the breakdown of lactic acid and therefore promotes and intensifies metformin induced lactic acidosis.