



To: Physicians, Nurses, and Other Health Care Providers in the Federated States of Micronesia
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Subject: Oral Agents for diabetes - metformin
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- Metformin is the most widely used oral agent for treatment of adult onset diabetes in the US.
- It works by decreasing hepatic glucose production and increasing glucose uptake into cells.
 - Unlike sulfonylureas, metformin does not increase insulin release from the pancreas and overdose is only rarely associated with hypoglycemia.
- Metformin is cleared by the kidneys and is contraindicated in patients with renal insufficiency.
 - Patients taking metformin therapeutically may become toxic if there is a decline in kidney function.
- Following overdose, patients commonly present with vomiting, diarrhea, or abdominal pain. The most serious concern is metformin-associated lactic acidosis, which is associated with high mortality.
- Exploratory ingestions by small children are typically mild and serious effects are uncommon.
- Patients with intentional overdose should have blood sugars checked, as they may have access to other diabetes medications such as insulin or sulfonylureas.
- It is important to follow the patient's acid base status along with electrolytes, kidney function, and lactate.
- The mainstay of treatment is supportive care with IV fluids, supplemental glucose if needed, and antiemetics.
 - Sodium bicarbonate infusion may be helpful if serum bicarbonate is very low.
- In patients with severe acidemia hemodialysis can be helpful for correcting the acidosis, as well as removing metformin, particularly if there is decreased kidney function.

- Dialysis should be considered in critically ill patients, those with pH \leq 7.1, or renal insufficiency.

References

Dell'Aglio DM *et al.* Acute metformin overdose. *Ann Emerg Med* 2009; 54: 818.

Kopec KT, Kowalski MJ. Metformin-associated lactic acidosis. *J Med Toxicol* 2013; 9: 61.

Our trained staff of nurse specialists in poison information and physician toxicologists is available 24 hours a day to answer your questions. In the Federated States of Micronesia, health care professionals and the public can reach the Poison Center by calling 288, wait for an automated operator, then 888-222-4516.