



To: Physicians, Nurses, and Other Health Care Providers in American Samoa
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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 $\text{pH} \leq 7.1$, 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.

- **In American Samoa, health care professionals and the public can reach the Poison Center by calling 1-800-222-1222.**

Our trained staff of nurse and physician assistant specialists in poison information and physician toxicologists is available 24 hours a day to answer your questions.