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*Dakota Diabetes Coalition is proud to offer this column on diabetes and related concerns every other Friday.*



Dr. Johnson is a family practice doctor in Grand Forks with a special interest in diabetes -- and a special knack for writing. As a member of the Dakota Diabetes Coalition, he has generously made himself available to answer questions through our listserv. If you have comments, or questions for Dr. Johnson to address in future columns, please contact [gailhand@q.com](mailto:gailhand@q.com)



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**Lifetime Achievement Award to...**

# Metformin!

Metformin is an oral diabetes medication in the biguanide family. It was originally developed in the 1950's, but was not officially on the market in the United States until 1995. The market branding for metformin was "Glucophage," but this medication has been available generically for several years. Metformin is indicated as initial drug therapy for most patients with type 2 diabetes, and can be used in combination with many other diabetes medications, including insulin.

The primary blood glucose lowering action of metformin is through suppression of glucose production by the liver. Metformin also has a minor effect in improving insulin sensitivity, particularly in obese patients with type 2 diabetes. Metformin also has some positive impact on cholesterol profiles, and also possesses some minor anti-inflammatory properties. You may recall that a general inflammatory state is the context in which cardiovascular disease occurs in pre-diabetes and type 2 diabetes. Metformin is approved for pediatric patients with type 2 diabetes, and it also has a role in the treatment of

polycystic ovarian syndrome (PCOS). Metformin is considered to be weight neutral, and some patients may actually have modest weight loss.

Metformin's side effects are primarily gastrointestinal (upset stomach, diarrhea), but a potentially serious side effect is that of lactic acidosis, which can be fatal. This rare side effect can be seen in patients with overt liver or kidney disease who are taking metformin. Generally, patients with CHF, a history of CHF, or patients over the age of 80 should avoid metformin. An underappreciated aspect of metformin is its effect on Vitamin B12 deficiency, particularly important in patients who have had weight loss surgery.

Recently, some important new information has been published on metformin. In the March 23, 2009 issue of Archives of Internal Medicine, a reduction in macrovascular (cardiovascular) complications was noted in patients with type 2 diabetes taking metformin and insulin. The original UKPDS study, published in 1998, showed modest reduction in cardiovascular disease in patients taking metformin, but recently published long-term follow up showed an impressive 33% reduction in heart attack (New England Journal of Medicine, Oct. 9, 2008).

Metformin is an older, generically available oral diabetes medication for type 2 diabetes mellitus. It should be started in most patients with type 2 diabetes at diagnosis (unless there is a contraindication), and can be an effective treatment in most regimens for patients with type 2 diabetes. In addition to its glucose lowering effect, it appears to have many other positive effects on metabolism and cardiovascular outcomes, and may even help some patients lose weight.

Metformin, we salute you on your lifetime achievements!

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[Many Charms of Metformin, Dr. Johnson's Column #44, May 1, 2009](#)