

*The [Dakota Diabetes Coalition](#) is proud to offer a new feature, which we hope you find useful. Dr. Eric Johnson plans to write a column for this space every other Friday.*



Dr. Eric 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.

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<http://www.ndhealth.gov/diabetescoalition/>

## **Newer diabetes medications -- and more on the way!**

### **Q. What are some of the newest medications out there for diabetes treatment, and how do they work?**

The diabetes treatment landscape is growing ever more complex. Many new medication options have to come to market in the last few years, with others on the horizon.

As recently as 1995, treatment choices for type 2 diabetes were limited to sulfonylureas, metformin, and older insulin products such as Lente, NPH, and Regular. Treatment options are no longer so simple. But for the patient, that's all the better. Today, up-to-date providers can tailor regimens to meet a patient's individual needs.

#### **First, long-acting insulins**

When glargine (Lantus) insulin was introduced in 1999, it was the first long-acting basal analog insulin. Novo Nordisk has introduced another long-acting basal analog insulin detemir, sold as Levemir. It is designed for once or twice daily dosing. There are some minor differences in the mechanism of action between these insulins.

Levemir binds to serum albumin and stays in solution as its mechanism for long half-life, whereas Lantus becomes a subcutaneous precipitate, going back into solution over time. As a result, we might expect some patients to perform better with one insulin over the other. Both insulins are available in pen devices, which are superior to vial and syringe for both accuracy of dose and ease of use.

There is some data that Levemir may cause less weight gain. These insulins are indicated for both type 1 and type 2 patients. In type 2 patients, they are suitable for use with oral agents, although not FDA approved for use with sitagliptin –Januvia. And they are suitable in multiple daily injection regimens with rapid-acting insulins such as Humalog, Novolog, and

Apidra. In type 1 patients, they would typically also be used in a multiple daily injection program, along with a rapid-acting insulin.

### **Byetta and Januvia come to forefront**

Incretin-based therapies have come to the forefront in past year, first with the release of exenatide (Byetta) and more recently, sitagliptin (Januvia). Byetta is an analog of Glucagon-Like-Peptide 1, a naturally occurring gut hormone. It is dosed twice daily by subcutaneous injection, and is available in a pen device. Currently, it is indicated for use with metformin, sulfonylureas (specifically glyburide), and TZD's (Actos or Avandia). Hypoglycemia is rare unless used with sulfonylureas. Many patients will experience modest weight loss with this drug. **It is not currently FDA approved for use with insulin.**

Side effects include nausea, but this is usually limited and transient. Once weekly formulations of exenatide and similar agents are under development and could appear as early as 2008.

Sitagliptin (Januvia) is a once daily oral agent in the new DPP-IV class for diabetes treatment. Instead of an exogenous source of GLP-1 as with Byetta, this drug increases the body's own level of GLP-1. Weight loss is not as common, but the drug is considered to be fairly weight neutral, with a rare incidence of hypoglycemia. It is presently indicated with Metformin or TZD's, and as monotherapy. Dosage adjustments are recommended for renal impairment. Its drug interaction profile is very low as well.

Vildagliptin (Galvus) is another agent in this class, but has not yet received final FDA approval.

### **Post-prandial control**

Synthetic amylin, Symlin, is another relatively new diabetes product. It is injectable, but currently is only available in vials. A pen device is in development. Naturally occurring amylin is also a product of pancreatic beta cells, as is insulin. Its function is complex, but primarily affects blood glucose levels in the post-prandial period. It can be used with meal time insulin in both type 1 and type 2 patients. Side effects include the possibility of hypoglycemia, sometimes severe. Insulin dosages usually need to be decreased accordingly. Many patients on Symlin will have modest weight loss.

### **Getting headlines but not yet approved**

And finally, rimonabant (Acomplia) has generated a lot of advance "buzz" despite not being available in the United States. This medication binds to endocannabinoid (yes, *that cannibinoid*=marijuana=THC) receptors in the brain, suppressing appetite. If ever approved, it will likely be indicated for weight loss, type 2 diabetes, and pre-diabetes conditions such as metabolic syndrome. It also has some positive lipid profile effects, and may also have a role in smoking cessation! The FDA has recently blocked initial approval pending more safety data.

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*If you have comments about the column, or questions for Dr. Johnson's future columns, please contact [gailhand@qwest.net](mailto:gailhand@qwest.net)*