

Take More Than 200 Units of Insulin a Day? Consider Taking U-500



There is one concentrated insulin sold in the United States: U-500 Humulin R. It has 500 units of insulin per milliliter of liquid.

If you use more than 200 units of insulin a day (or your child needs more than three units of insulin per kilogram of body weight per day), and you aren't reaching your blood glucose goals, you may want to consider U-500 insulin.

Commonly used insulins (long-acting, NPH, regular, or rapid-acting) have 100 units of insulin per milliliter of liquid (U-100). There is one concentrated insulin sold in the United States: U-500 Humulin R. It has 500 units of insulin per milliliter of liquid.

Few doctors are familiar with U-500. Elaine Cochran, MSN, CRNP, and Phillip Gorden, MD, at the National Institute of Diabetes and Digestive and Kidney Diseases, in Maryland, treat an average of 15 patients a year with U-500 insulin. They note U-500 has advantages:

Lower cost: U-500 comes in 20-ml vials. These cost more than twice as much as 10-ml vials of U-100 insulin, but when you figure out the cost per unit of insulin, U-500 is less expensive. And with U-500, you may use fewer syringes and pump cartridges, another savings.

More effective: At a given dose (number of units), the smaller volume of U-500 may work better than the larger volume of U-100.

Cochran's and Gorden's guidelines for making the switch from U-100 to U-500 are in the October issue of the journal *Insulin* (www.insulinjournal.com). In brief, their guidelines are:

If your daily insulin dose is: **Options for a U-500 plan**

200 to 299 units Two times a day, 60/40 split

(For example, at 8 a.m., 60% of the daily dose; at 6 p.m., 40% of the daily dose)

Or

Three times a day, 40/30/30 split

(For example, 8 a.m., noon, and 6 p.m.)

300 to 599 units

Three times a day, 40/30/30 or 45/35/25 or 40/40/20

Or

Four times a day, 30/30/30/10

600 units or more

Four times a day, 30/30/30/10

Don't inject more than 1000 units at one site.

For doses less than 600 units a day, you can use U-500 in an insulin pump. Work with your healthcare team and pump trainer on dosing.

You won't figure your dose on what you plan to eat or what your blood glucose level is right before you give the injection. In other words, you won't do carb counting or correction doses. Cochran and Gorden recommend keeping carbohydrate intake consistent and adjusting doses by 10 percent to 15 percent based on blood glucose trends seen over a week.

U-500 is available by prescription only. Your pharmacy will have to special order it, and it may take a day or two.

Ask your doctor to write the prescription in units and in volume and to tell you what that looks like on your U-100 syringe. Go over the instructions with your pharmacist when you pick up the prescription. For example, if you need 150 units three times a day, the prescription might be written as: "Regular Insulin U-500, 150 units, inject 0.3 ml subcutaneously (under the skin) three times daily before meals." On your U-100 syringe, you will need to draw up what looks like 30 units, but it will really be 150 units because U-500 is five times as strong as U-100 insulin.