

**Windy City Whispers**  
**67th Scientific Sessions American Diabetes Association**  
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**Insulins**

There were no new insulins marketed at the meetings. The most recent insulins to come on board were Levemir by Novo for a long-acting insulin and Apedra by Aventis as a short-acting analog. These insulins have been out for almost a year, however. There were several short presentations on various insulins that I would like to review. The first was from Italy comparing Levemir and Lantus. They found that for the first 12 hours after injection, the glucose metabolism is similar for both Lantus and Levemir. During the next 12 hours, Levemir also had lower activity on glucose metabolism. They concluded that Levemir should be used in Type I diabetics as a twice daily drug whereas Lantus can usually be used as a once daily insulin. *We have had some problems with misunderstanding about Levemir. Levemir is a very good insulin and behaves very much like Lantus, giving a steady insulin effect. The difference, however, is that Levemir usually lasts approximately 12 hours whereas Lantus works a total of 24 hours in most patients. We have had some patients who thought that Levemir and Lantus could be interchanged and they really cannot. Each has its own indication but they are not comparable.* There has been some comment that Levemir is less likely to cause weight gain than Lantus. There were no studies looking at that question directly this time but there was a study from France looking at weight gain with Levemir twice daily and NovoLog used with meals. They found a 1.1 kilogram increase in weight over six months. With their regression analysis, it was felt that the weight gain could be attributed solely to the use of the NovoLog and that the Levemir did not cause weight gain. *This information should not be used in comparison with Lantus because that was not part of the study. I still don't quite understand how they can finger one insulin and not the other.* I also thought that we also ought to review what was presented on inhaled insulin. It really would not be a full report without something about the newer forms of insulin. The Lilly group looked at the pharmacokinetics and gluco-dynamic effects of AIR inhaled insulin versus Humalog in asthmatic subjects. Overall, they found that overall the AIR insulin exposure in mild and moderate asthmatic subjects was reduced by approximately 30-40% when compared to healthy subjects. Interestingly, the gluco-dynamic response in mild asthmatic subjects approximated that of healthy subjects despite the lower insulin exposure. For moderate asthmatic subjects, the gluco-dynamic response was approximately 72% lower. They concluded that mild persistent asthma would not in and of itself require diabetic patients to make inhaled insulin dosing adjustments compared to healthy subjects. Dosing adjustments would be necessary for moderate asthmatic patients. A group from Illinois looked at a different inhaled insulin, ALVAIR, with which they used a palm-sized nebulizer. They found that the palm-sized device was highly effective in nebulizing the ALVAIR inhaled insulin. The biological activity was not affected with the nebulization. *Inhaled insulin has simply not proved to be popular with the adult population. As you know, it has been released only for patients 18 and older. The cumbersome inhaler that is being used for Exubra has turned off many patients. Most of our older patients are not at all interested because they want better control than they think they will get from the inhaled insulin. If some of the newer devices turn out to be as small as the inhalers*

*used for asthma, they might be somewhat more interested. It will take long-term studies showing equal control with inhaled insulin versus injected insulin before they or we are at all interested in trying it. They are still working on a nasal insulin and a group from New Hampshire reported on Nasulin insulin. They compared it to Humalog and found that the nasal insulin produced a greater decrease in glucose level in the first hour with Humalog reducing glucose levels more in the second hour. Thus it has a very rapid acting effect. They found no adverse events reported during the trial. Nasal insulin is still in its infancy and it will be years before they get to the point of suggesting it for patient use. I just wanted you to be aware that they are still working on it. There was only one study presented on oral insulin. They were using an insulin known as Capsulin which is in capsule form, of course. They found that the administration of the oral insulin demonstrated a significant increase in gluco-dynamics over a period of six hours but had only a small increase in the circulating plasma insulin concentrations. These studies were done in Type II diabetics. I have a hunch that the oral insulin, the nasal insulin and the inhaled insulin will find a market for Type II diabetics whereas they will not be particularly useful in Type I diabetics. As they work to fine tune these drugs, I may prove to be wrong, but at this point I don't see a particularly viable market in the Type I diabetics. Finally the German group again presented information on the VIAject insulin which is a rapid acting insulin that is actually faster acting than Humalog or Novolog. It is more biologically active because of its monomeric form. It achieves faster higher levels with a peak at 30 minutes. Thus it could be given immediately before meals rather than having to wait the 10 minutes or so that we now recommend. They felt that their study showed that VIAject provides better post-prandial (post meal) blood glucose control with less hyperglycemia in the first three hours after the meal and less risk of hypoglycemia in the next five hours as opposed to Regular insulin. Unfortunately they have not compared it to the rapid acting analogs yet, but it does appear faster. I think that the VIAject insulin might well have a place in our armamentarium but further studies still need to be done before it will be available. They still have Phase III studies to do so it will be a few years.*