



**Keeping pharmacy students informed on current and pertinent diabetes information!**

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## Recent Drug Approval: Tresiba

Written by: Oge Amaka, 3<sup>rd</sup> Year Pharm.D. Candidate

Insulin glargine (Lantus®) is a long acting insulin that has been widely prescribed; however, Novo Nordisk’s *ultra* long acting Tresiba® (insulin degludec) is a new competitor on the market. Tresiba® recently received FDA approval in September 2015 for adults with type 1 or type 2 diabetes. It is formulated as a pre-filled injectable pen with once daily dosing and a duration of action of more than 40 hours.<sup>2</sup> So what is it that makes Tresiba so exciting?

Tresiba’s® extended duration can be attributed to its unique mechanism of action. Once it is injected subcutaneously, it forms multihexamers

resulting in a depot of insulin from which insulin is slowly absorbed into systemic circulation. In addition, insulin degludec binds to circulating albumin. Thanks to these mechanisms, the glucose lowering effects of Tresiba® were seen for at least 42 hours in a study of Type 1 diabetics after 8 single daily injections.<sup>1</sup> Because of its long duration of action, it is marketed as an insulin that can be injected any time of day to provide patients with more flexibility; however, it is still encouraged that Tresiba is used at the same time daily. It is important to note that doses must be injected at least 8 hours apart.<sup>2</sup>

The BEGIN trials evaluated basal insulin therapy in type 1 and type 2 diabetes and compared insulin degludec to insulin glargine. When compared to insulin glargine (Lantus®), Tresiba® showed similar A1C and fasting blood glucose lowering effect. However, a meta-analysis of 5 randomized BEGIN trials showed that Tresiba® displayed a significant reduction in nocturnal hypoglycemia com-

pared to insulin glargine.<sup>4</sup> The same result was seen in a similar study that was performed in insulin-naive patients who were uncontrolled on oral antidiabetic agents.<sup>5</sup> In general, rates of hypoglycemia are lower with basal insulin therapies; however, this additional benefit that Tresiba® provides may be something to consider.

Finally, Tresiba® is available in two concentrations: 100units/mL (U100) and 200units/mL (U200).



They come as Flextouch pens with a maximum of 80 and 160 units per injection. For patients requiring higher doses of insulin, fewer daily

injections are required with a formulation like Tresiba®. At this time, Tresiba® is the only long acting insulin with a 160-unit pen.<sup>2</sup>

As the first basal insulin to be approved by the FDA in ten years, Tresiba is paving the way for similar yet new medications in the future. There is already excitement surrounding a new “game-changing” injectable insulin for type 2 diabetes called Xulotophy, a GLP-1 agonist that combines Tresiba with Victoza and is in the pipeline to receive FDA approval in the future.<sup>3</sup>

Sources:

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4. Rodbard H, et al. Reduced Risk of Hypoglycemia with Insulin Degludec Versus Insulin Glargine in Patients with Type 2 Diabetes Requiring High Doses of Basal Insulin. Endocrine Practice: April 2014, Vol. 20, No. 4, pp. 285-292.
5. Zinman B, et al. Insulin Degludec Versus Insulin Glargine in Insulin-Naive Patients With Type 2 Diabetes. Diabetes Care. 2012 Dec; 35(12): 2464-2471

# Counseling Tips

Written by: Darshan Patel, 2<sup>nd</sup> Year Pharm.D. Candidate

Patient counseling is one of many important services a pharmacist can offer to patients. However, in the hustle and bustle of a pharmacy, counseling on a topic as complex as diabetes can seem overwhelming. The following is an outline to help practitioners convey some key points about diabetes in a relatively quick counseling session:

## What is diabetes?

Diabetes is a disease that affects millions of people. Although it is not curable, patients can live a normal life with the proper lifestyle modifications and adequate pharmacotherapy. Taking control of your diabetes is very important – in fact, people with diabetes can develop serious complications such as heart disease, stroke, kidney failure, and blindness. Simply put, diabetes is a disease state characterized by high levels of sugar in the bloodstream. The problem is that sugar is needed in cells for energy and is not meant to stay within the bloodstream. This is where insulin comes into the picture by helping move sugar from the blood into the cells. This can be better understood by thinking of the lock and key system. In order for glucose to get past the locked door that is our cells, it needs insulin to unlock the door so glucose can enter.

The two most common types of diabetes are Type 1 and Type 2. In Type 1 diabetes, the body makes little or no insulin. In Type 2 diabetes, which is the most common, the body may still make some insulin, but it is insufficient to meet the body's needs and it does not work correctly.

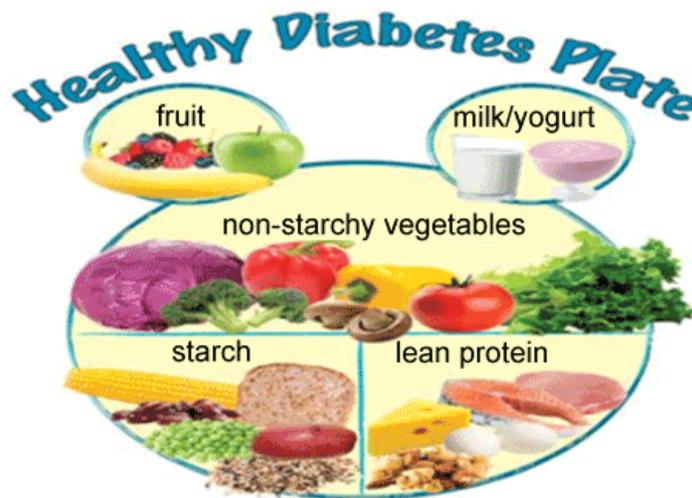
## So what can I do?

Diabetes can be managed by a healthy diet, regular exercise, and medications adherence. In addition, checking blood sugar regularly is one of the best ways to assess whether diabetes is under control.

## How do I know what to eat?

Although the idea of a healthy diet may seem complex and intimidating at first, it really just comes down to sticking to a

few key concepts. To begin with, don't deny yourself food that you love—just remember moderation is key. One effective method for diabetes management, as well as losing weight, is utilization of the plate method. This method still allows you to choose the carbohydrate-based foods you enjoy, but it requires considering portion sizes so that you are obtaining a balanced diet with sources of sustaining energy. When using this method, half the plate should be filled with non-starchy vegetables such as broccoli, bell peppers, or leafy greens. A fourth of the plate should be filled with starchy foods like bread, potatoes, corn, or beans. The other fourth of the plate should include lean protein like eggs, chicken breast, or fish. In addition, a serving of fruit and dairy should be included. The plate method is a helpful and easy way to start making changes to portions and food selection for people with diabetes.



## How much should I exercise?

Aerobic exercise helps your body use insulin more effectively. It has many benefits such as making your heart

and bones strong, improving blood circulation, and lowering blood pressure, blood glucose, and cholesterol. Some examples of aerobic exercise include brisk walking, biking, dancing, and swimming. The American Diabetes Association recommends 150 minutes of moderate-intensity aerobic exercise per week. Breaking it down, this equates to 30 minutes of exercise 5 days per week. To achieve the proper intensity, it is important to remember that moderate intensity exercise means you are working hard enough that you can talk but not sing during the activity. Finally, if you haven't been active recently, it is better to start out with 5 to 10 minutes of exercise per day and to increase activity by a few minutes every day in order to improve stamina.

## Sources:

1. Create Your Plate. American Diabetes Association. <http://www.diabetes.org/food-and-fitness/food/planning-meals/create-your-plate/>. Accessed October 2016.
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# Diabetic Foot Examination

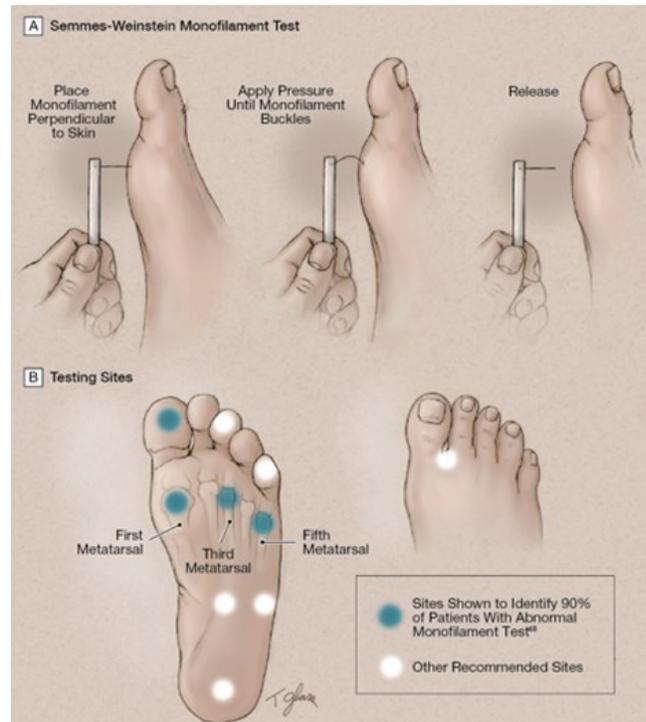
Written by: Tiffany Park, 3<sup>rd</sup> Year Pharm.D. Candidate

Diabetes affects more than 29 million people in the United States and is increasing yearly.<sup>3</sup> The progression of diabetes often involves secondary complications including peripheral neuropathy. This is characterized by irreversible nerve damage, decreased circulation, and potential development of foot ulcers and infection that may progress to the need for amputation if not treated in time. Due to serious complications that can result, prevention is key. Diabetic patients should be encouraged to schedule a foot examination with their physician annually.<sup>1</sup> Patients with insensate feet, foot deformities, or a history of foot ulcers should have examinations done at every visit.<sup>1</sup>

The foot examination process involves dermatological, musculoskeletal, neurological, and vascular assessments. Dermatological assessment includes inspection for the presence of ulceration, callus with hemorrhage, nail dystrophy, paronychia, and temperature differences. The musculoskeletal assessment includes evaluation for deformities that can lead to increased pressure and increased risk for ulceration. Deformities include metatarsal phalangeal joint hyperextension with interphalangeal flexion (claw toe), distal phalangeal extension (hammer toe), overlapping toes, and rocker-bottom midfoot secondary to Charcot arthropathy. Charcot arthropathy is characterized by red, swollen, hot, and flat feet. Patients should be immediately referred to a specialist if Charcot arthropathy is suspected.<sup>2</sup>

Neurological assessment is used to determine whether patient has loss of protective sensation (LOPS). Five clinical tests can be used to identify LOPS: 10-g monofilaments, 128-Hz tuning forks, pinprick sensations, ankle reflexes, and vibration perception threshold testing. The 10-g monofilament test and one other test is usually conducted during a comprehensive foot examination. Having at least one abnormal test suggests LOPS and puts a patient at increased risk for foot ulceration.<sup>2</sup>

Vascular assessment is used to identify the absence of the posterior tibial pulse or the dorsalis pedis pulse. Further assessment may be conducted with the ankle brachial pressure index (ABI) pressure testing if abnormalities in pulse are found or if patients are at high risk for peripheral artery disease. ABI involves finding ankle blood pressure using a Doppler ultrasonic probe.<sup>2</sup>



Singh N. Preventing Foot Ulcers in Patients With Diabetes. 2017

Based on examination assessment results, patients are categorized into risk categories. Patients in risk category 0 should receive general foot care education and continue foot examinations on an annual basis. Patients in category 1 should be seen every 3 to 6 months by either a generalist or a specialist. Patients in category 2 or 3 should be referred to a specialist and seen every month to every third month.<sup>2</sup>

#### Sources:

1. American Diabetes Association. Standards of medical care in diabetes—2016. *Diabetes Care*. 2016;39(suppl 1):S1-S106.
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# Become a Certified Diabetes Educator

Written by: Sydney Finder, 1<sup>st</sup> Year Pharm.D. Candidate

Nearly one in eleven Americans has diabetes. Every person with diabetes is at a higher risk for serious health consequences including peripheral neuropathy, renal failure, retinopathy and more. Their medical expenses are more than twice that of the average individual. These are all facts found easily on the internet and are likely to cause feelings of anxiety and helplessness in a newly diagnosed diabetes patient. However, what these websites do not tell the diabetic patient is that diabetes is a manageable disease and with the right knowledge, the patient can live a long and healthy life. A certified diabetes education (CDE) will equip healthcare professionals to teach patients how to manage the disease on their own and provide patients with the tools to make informed decisions when managing their diabetes every day.

The road to becoming a CDE starts with practicing in a field relevant to diabetes. The applicant must be a licensed pharmacist or one of the other health professionals listed by the National Certification Board for Diabetic Educators (NCBDE). The applicant must complete a minimum of two years in the field in which they desire to be certified.

The next step in the process to becoming a CDE is to complete 1000 diabetes self-management education (DMSE) hours with 400 of those hours being in the same year that the applicant will be applying for certification. DMSE hours include duties such as creating an assessment and education plan developed by both the patient and the applicant. This plan should help the patient achieve their self-management goals via educational interventions. It should also involve performing periodic evaluations of the patient's success in self-management to determine if further interventions or an alternate plan is needed.

In addition to DMSE hours, the applicant must also complete 15 hours of continuing education applicable to diabe-

tes within the two years prior to applying for certification. The NCBDE has an extensive list of approved education programs to choose from including programs by the American Diabetic Association and the International Diabetes Federation.

Once all the previously stated requirements have been fulfilled, the applicant must submit all documentation to the NCBDE for review. The board will then determine if the applicant is eligible to take the examination. Once the applicant is approved to take the exam, it must be taken within 90 days of approval. The exam is 200 multiple choice questions taken over a four hour time period. The exam is curved based on difficulty, and the scaled score must be greater than 70% to pass. A passing score means that you are now a certified diabetes educator!

In conclusion, this certification is especially relevant in the field of pharmacy. Pharmacists regularly dispense the medications and supplies to diabetic patients, and it is important for pharmacists to be well informed so they may educate the patient in the most beneficial way possible. Pharmacists are the most accessible health care providers, and diabetic patients may come into a retail pharmacy at any time with questions. A pharmacist with CDE certification could not only dispense the medical supplies to the patient, but they could seamlessly transition into educating the patient on how to manage their disease. This will lead to a more valuable pharmacy experience for the patient and elevation of importance in the pharmacist's role in diabetes management.

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1. 2014 National Diabetes Statistic Report. CDC website. <https://www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html>. Updated May 15, 2015. Accessed November 2016.
2. Certification Information. NCBDE website. [https://www.ncbde.org/certification\\_info/](https://www.ncbde.org/certification_info/) Accessed November 2016.

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#### SDC Highlights

- Fundraised over \$100 at a Barnes and Noble gift wrap
- Prepared and distributed a diabetes-friendly cookbook
- Educated on how to manage diabetes at Barney's Pharmacy
- Learned more about pharmacists' role in diabetes management from guest speaker and ambulatory care pharmacist Meredith Miles

