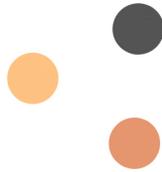


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Type 1 Diabetes

- **Type 1 diabetes is an autoimmune disease**--your body has destroyed its own insulin producing cells (islet or beta cells). You are no longer able to produce insulin in quantities sufficient to “feed” your body. It can happen at any age, although classically it occurs in children.
- How is DM1 diagnosed?
 - The classic scenario is someone becomes critically ill with a condition called diabetic ketoacidosis, or DKA, because of their inability to make insulin. They go to the hospital, and improve once fluids and insulin are given.
 - Antibodies help us decide if someone is Type 1: GAD, IA-2, islet cell antibodies and zinc transporter antibodies.
 - A low or undetectable C-peptide when glucose is high also proves that the pancreas is unable to make insulin.
- How is DM1 treated?
 - All DM1 patients need insulin. Drugs like Metformin, Januvia or Victoza will not work for them. Patients do very well with insulin pumps that are linked to continuous glucose monitors (CGMs).
 - There is new technology available among insulin pumps that functions quite a bit like an artificial pancreas.
 - There are early studies underway for islet cells implants encapsulated in nanoparticles that keep the antibodies OUT while permitting insulin secretion--a cure may be on the horizon.
- What kinds of insulin are used?
 - Long acting, or basal insulin (glargine, Lantus, Basaglar, Tresiba, Toujeo, etc.): This is administered once, or sometimes twice daily. It mimics the “background” insulin secretion from your pancreas.
 - Short acting, or mealtime insulin (lispro, aspart, Humalog, Novolog, etc.):
 - this is administered before meals and when “correction” is required for sugars that are too high.
 - You can learn to count your carbohydrates to administer the precise amount of insulin you need for a meal. This gives you maximum flexibility in your lifestyle.
- How do I adjust my insulin?
 - Basal (Lantus, glargine, Levemir, detemir, Tujeo, degludec, Tresiba, etc.)



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- For most diabetes patients, a fasting AM sugar 90-120 is PERFECTION
- Choose **2 days of the week that are not next to one another**, i.e., Monday & Thursday
- These are the days of the week where you will adjust your basal insulin doses
- If your fasting AM sugar is > 120 you will ADD more basal insulin to the next dose
 - Similarly if your fasting AM sugar is < 90, you will REDUCE the next basal insulin dose
- Keep doing this on the Mondays and Thursdays until you achieve your goal range.
- Mealtime (Humalog, Novolog, lispro, Apidra, aspart, etc.)
 - For most diabetes patients, the 4 hour post-meal sugar of < 150 is PERFECTION.
 - Because mealtime insulin is so rapid-acting, you can make changes to your dose on any day.
 - If your 4 hour post-meal sugar is > 150 you will ADD insulin to your next mealtime dose. If your 4 hour post-meal sugar is < 100 consider REDUCING the dose.
- How to RESCUE a sugar < 70
 - Glucose tablets are available over the counter and a bottle of 50 tabs costs about \$7
 - Eat 16g glucose, **wait 15 minutes** and recheck sugar
 - 4 glucose tablets OR,
 - 6 oz juice or cola OR,
 - 2-3 packets of sugar in water
 - If sugar is still < 100, repeat step 1 until sugar > 100
 - Once sugar > 100, eat a small mixed snack (protein, fat, carb) to maintain your glucose in the normal range.
 - **Avoid overtreatment** -- we don't want to have a glucose of 300 afterward!
 - Think about what caused your low: did you miss a meal? Exercise? Miscalculate how much insulin you needed? We need to find and correct the cause.
 - **NOTE:** chocolate is not a good rescue source of glucose because it has a lot of fat in it. You won't get a quick improvement.
- **What if I RUN OUT OR LOSE my insulin?**
 - First call your pharmacy to see if you have refills.
 - If you don't have refills, call the office to get one.
 - If you can't reach anyone to refill your insulin, here's what to do:

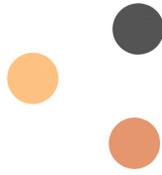


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- Go to Walmart and tell the pharmacist that you are diabetic and you have run out of insulin.
- Ask them to give you NPH insulin and the needles/syringes over the counter. **You DO NOT NEED A PRESCRIPTION IN Most US States.**
- Give yourself half NPH insulin every 12 hours -- **this will keep you OUT of DKA and the ER** until you can get a refill of your usual insulin. It's OK if your sugar isn't perfectly controlled, it's just a temporary stopgap.
- Family planning (women only)
 - About half of all pregnancies in the United States are UNPLANNED.
 - There are significant risks to both mother and baby when an unplanned pregnancy occurs in diabetes, so **it is fundamental to everyone's safety to plan for conception appropriately.**
 - If you are NOT ready for pregnancy there are many options for reliable contraception: intrauterine devices, progesterone implants, contraceptive pills/injections, contraceptive rings or permanent sterilization depending on your needs and preferences.
- How to make your life easier
 - Dexcom and Medtronic have continuous sensors that integrate with insulin pumps. Unlike the Freestyle Libre, these devices will ALARM if you glucose is changing too fast, or if you are about to have a low. Medicare and commercial insurances will pay for these devices.
 - Eversense is the newest sensor, which is approved for 90 day wear and is implantable under the skin. It communicates with an adhesive transmitter worn on the body and will vibrate to alarm you of changes in glucose.
- Resources to utilize when you have questions or want to learn more:
 - American Diabetes Association www.diabetes.org
 - Centers for Disease Control <https://www.cdc.gov/diabetes/ndep/index.html>
 - National Institutes of Health <https://www.niddk.nih.gov/health-information/diabetes>
 - Mayo Clinic www.mayoclinic.org/diseases-conditions

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Disclaimer:



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This article is not medical advice. It is intended for general informational purposes and is not meant to be a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition. If you think you may have a medical emergency, immediately call your physician or dial 911.