## Intro & Hook

It's three o'clock at It's three o'clock at midnight. Your midnight. Your phone is screaming. Your phone is screaming. Your CGM shows 54 mg/dL with a CGM shows 54 mg/dL with a downward arrow. Now downward arrow. Now your heart is pounding.

your heart is pounding. You walk to You walk to the kitchen, drinking the kitchen, drinking orange juice orange juice like there's no tomorrow like there's no tomorrow. And at 7:00 in the morning. And at 7:00 in the morning you wake up with a you wake up with a blood sugar level of 260. That's the blood sugar level of 260. That's the thing. Often thing. Often this fall did this fall did not actually occur. I am not actually occur. I am Dr. Ahmet Ergin. I am Dr. Ahmet Ergin. I am an endocrinologist. I an endocrinologist. I review CGM reports, review CGM reports, probably dozens, every day probably dozens, every day at my clinic. And I at my clinic. And I can tell you: CGM is amazing. But is amazing. But they are not perfect.

they are not perfect. Today I'll show you the Today I'll show you the five most common five most common reasons why your CGM is reasons why your CGM is lying to you. Sleeping on lying to you. Sleeping on the sensor, vitamin C, a the sensor, vitamin C, a medication called medication called hydroxyurea hydroxyurea hydroxyurea that that that many people with many people with dermatological dermatological dermatological problems use, the first problems use, the first day of Libre and Dexcom, and dehydration.

Stay with me, Stay with me, because at the end I'll give you because at the end I'll give you my 60-second checklist for how to tell a checklist for how to tell a real fall from a real fall from a fake one.

fake one. This checklist alone can This checklist alone can keep you from keep you from overeating, overeating, overeating, subsequent subsequent subsequent sugar spikes, and a very sugar spikes, and a very dangerous mistake I dangerous mistake I see people see people making with insulin.

## How a CGM Actually Works

How CGM actually works How CGM actually works. Your CGM does not measure. Your CGM does not measure blood. The filament blood. The filament is found in the is found in the interstitial interstitial interstitial fluid, the fluid between fluid, the fluid between your blood vessels and your blood vessels and cells. It's like he's cells. It's like he's listening to the echo of listening to the echo of your blood sugar.

your blood sugar. This means two things: This means two things: time delay. time delay. Interstitial Interstitial Interstitial fluid usually fluid usually lags behind blood by lags behind blood by 5-15 minutes. When sugar 5-15 minutes. When sugar changes rapidly— after a meal, during after a meal, during exercise, or immediately exercise, or immediately after treating a after treating a fall—the CGM and fall—the CGM and the meter can the meter can diverge greatly, and diverge greatly, and both could be both could be right. So when you right. So when you drink juice and the CGM drink juice and the CGM still shows still shows 65 after 65 minutes, the juice is working. The echo has 65 after 65 minutes, the juice is working. The echo has n't caught up yet.

n't caught up yet. That's how people end up That's how people end up eating 15 grams of eating 15 grams of carbs, then another carbs, then another 15, then another, and 15, then another, and end up with a end up with a score of 280. Anything that changes that that changes that local fluid local fluid changes the score. Pressure, hydration, and, hydration, and chemicals that chemicals that confuse the sensor's enzymatic chemistry. Most CGMs sensor's enzymatic chemistry. Most CGMs use use use glucose oxidase to glucose oxidase to create a tiny create a tiny electrical signal, and some substances, and some substances can distort can distort this signal. The sensor this signal.

## Liar #1: Compression Lows, or Sleeping on Your Sensor

The sensor cannot tell cannot tell the difference. Liar number the difference. Liar number one: compression one: compression drops or sleeping on the drops or sleeping on the sensor. This is sensor. This is by far the by far the most common most common most common cause of false cause of false nightfalls. If nightfalls. If you remember only you remember only one thing from this video, one thing from this video, let it be this. What is let it be this. What is happening? You happening? You turn over onto your turn over onto your arm with the sensor and arm with the sensor and lie on it for an lie on it for an hour. The pressure restricts hour. The pressure restricts local blood flow.

local blood flow. The cells in this The cells in this small area small area continue continue continue to consume glucose, to consume glucose, but no fresh glucose is but no fresh glucose is supplied. So, the supplied. So, the glucose level in this glucose level in this area really drops.

area really drops. The sensor is working The sensor is working correctly. It simply correctly. It simply measures the clenched measures the clenched area of ??your arm, which does not area of ??your arm, which does not reflect the condition of reflect the condition of your body.

your body. Researchers describe Researchers describe it this way. A precise it this way. A precise local drop that local drop that causes a false hypoglycemia signal. This is not hypoglycemia signal. This is not uncommon. In one uncommon. In one survey, about survey, about half of half of half of Dexcom users Dexcom users reported reported reported false false false low sugar alerts low sugar alerts that went away after that went away after repositioning, repositioning, repositioning, calibrating, or calibrating, or replacing the sensor. How replacing the sensor. How to recognize to recognize to recognize hypoglycemia due to hypoglycemia due to compression? When I compression? When I look at the CGM graph, look at the CGM graph, they have they have characteristic features.

First, it happens First, it happens during sleep, usually during sleep, usually between midnight and 5 between midnight and 5 am. Secondly, am. Secondly, the fall is unusually the fall is unusually rapid. A true rapid. A true drop in blood sugar at night drop in blood sugar at night usually usually usually occurs occurs occurs gradually.

gradually. gradually. Hypoglycemia due to Hypoglycemia due to compression often compression often feels like falling feels like falling off a cliff: minus 40 or off a cliff: minus 40 or 50 units in 15-20 50 units in 15-20 minutes without minutes without insulin, insulin, insulin, exercise, or alcohol.

Third, the indicators Third, the indicators recover quickly. As soon as you. As soon as you roll over and roll over and release the pressure, release the pressure, the reading the reading rises back up sharply, often rises back up sharply, often to the exact level it to the exact level it was before. On was before. On a graph, this looks a graph, this looks like a V- or U-shaped like a V- or U-shaped dip in a flat dip in a flat line. Fourth, you line. Fourth, you feel good.

feel good. No sweating, No sweating, shaking, shaking, shaking, rapid rapid rapid heartbeat, or heartbeat, or vivid nightmares. Fifth, it happens on the same side. If you always side. If you always sleep on your left side sleep on your left side and the sensor is on your left and the sensor is on your left arm—that's a clue.

arm—that's a clue. True True True hypoglycemia hypoglycemia hypoglycemia looks different. looks different. They are more gradual. They are more gradual.

They usually have a They usually have a reason. Evening reason. Evening insulin, insulin, insulin, dose adjustment, alcohol, dose adjustment, alcohol, exercise—and they don't exercise—and they don't recover on their own recover on their own in 5 minutes without in 5 minutes without food. Why is this important?

food. Why is this important? Treatment for "squeezed" Treatment for "squeezed" hypoglycemia involves hypoglycemia involves consuming excess consuming excess sugar, high levels sugar, high levels in the morning, and interrupted in the morning, and interrupted sleep. And poor sleep itself sleep. And poor sleep itself increases increases insulin resistance the next insulin resistance the next day. With an automatic day. With an automatic pump, false pump, false hypoglycemia can hypoglycemia can suspend suspend suspend insulin delivery, causing insulin delivery, causing sugar to remain high sugar to remain high for hours. How to for hours. How to fix this. Wear fix this. Wear the sensor on the arm you are the sensor on the arm you are not sleeping on, or not sleeping

on, or use another use another approved location.

approved location. Place it on Place it on the back of your shoulder the back of your shoulder so that less weight falls on it when you turn it over. When less weight falls on it when you turn it over. When the alarm sounds, the alarm sounds, turn over first, and turn over first, and then check your then check your blood sugar level with a blood sugar level with a glucometer before glucometer before treatment if treatment if you feel you feel you feel fine. Now fine. Now let me explain let me explain clearly. If you have clearly. If you have symptoms, symptoms, symptoms, treat hypoglycemia first. Sweating,. Sweating, shaking, shaking, shaking, confusion confusion confusion, heart, heart palpitations—act. The palpitations—act. The false hypoglycemia false hypoglycemia you treat you treat only costs you only costs you a few calories.

a few calories. True True True hypoglycemia that you hypoglycemia that you ignored could ignored could cost much cost much more. The “ meter first” rule meter first” rule only applies when you only applies when you feel completely feel completely well and the graph well and the graph looks like a contraction.

## Liar #2: High-Dose Vitamin C

Liar number two: Liar number two: high doses of vitamin high doses of vitamin C. This surprises people, C. This surprises people, especially this time of especially this time of year when everyone year when everyone is taking is taking is taking immune boosters.

Vitamin C, or Vitamin C, or ascorbic acid, ascorbic acid, can affect the can affect the electrochemistry of some electrochemistry of some sensors, causing glucose readings to be glucose readings to be higher than they actually are. This is the exact opposite of the. This is the exact opposite of the "low "low "low level due to pressure" effect.

level due to pressure" effect. That case gives you a That case gives you a falsely low falsely low score. Vitamin C score. Vitamin C gives you a falsely high gives you a falsely high or falsely normal or falsely normal reading when you reading when you actually have low actually have low levels. That's the levels. That's the danger. In its own danger. In its own safety guidance safety guidance for the FreeStyle Libre, for the FreeStyle Libre, Abbott notes that Abbott notes that taking more than 1,000 mg of taking more than 1,000 mg of vitamin C per day vitamin C per day may falsely increase the may falsely increase the sensor readings. This sensor readings. This can cause can cause you you you to miss a critical to miss a critical drop in your sugar levels.

drop in your sugar levels. Your actual Your actual sugar level is 55. The sensor sugar level is 55. The sensor reads 85. There is reads 85. There is no alarm and you no alarm and you go to sleep. Where is he go to sleep. Where is he hiding?

hiding? hiding? Emergency or Airborne type bags. Emergency or Airborne type bags. Many of them contain Many of them contain around 1,000 mg per around 1,000 mg per serving. And people serving. And people use use use two or three during illness. Chewable two or three during illness. Chewable vitamins for vitamins for immunity, powerful immunity, powerful multivitamins, and multivitamins, and intravenous intravenous intravenous vitamin C in vitamin C in clinics. The problem is not the clinics. The problem is not the food. Orange will not food. Orange will not disrupt your disrupt your sensor. What sensors?

sensor. What sensors? The warning is The warning is The warning is most relevant most relevant for the FreeStyle for the FreeStyle Libre family. Older Libre family. Older Libre sensors had a more general Libre sensors had a more general warning about warning about vitamin C. And vitamin C. And the instructions for the new Libre 2 the instructions for the new Libre 2 Plus and Libre 3 Plus already Plus and Libre 3 Plus already indicate a threshold of indicate a threshold of 1000 mg per day. Other 1000 mg per day. Other brands list other brands list other substances. Therefore, always substances. Therefore, always check the section check the section on substances that on substances that interfere with performance interfere with performance for your specific for your specific device. They device. They change depending change depending on the generation. What on the generation. What to do? If you to do? If you are taking Libre, are taking Libre, limit your limit your vitamin C intake to 1,000 mg per vitamin C intake to 1,000 mg per day or day or consult your consult your doctor first. If you are given vitamin C IVs, vitamin C IVs, schedule a schedule a glucose test with a glucometer glucose test with a glucometer that day or that

day or ask about sensor replacement compatibility. If sensor replacement compatibility. If your CGM suddenly your CGM suddenly shows higher shows higher results than your results than your symptoms and symptoms and meter readings, meter readings, ask yourself: Have ask yourself: Have I started taking new I started taking new supplements? Bonus: supplements? Bonus: acetaminophen.

acetaminophen. acetaminophen. He's not on the He's not on the main list today, but main list today, but you should know about him you should know about him. On some. On some sensors, especially sensors, especially certain Dexcom certain Dexcom and Medtronic systems, high doses of and Medtronic systems, high doses of acetaminophen, which acetaminophen, which is found in is found in Tylenol, can Tylenol, can falsely increase falsely increase readings. Doctors readings. Doctors typically prescribe a typically prescribe a dose of more than 4 g per day dose of more than 4 g per day for the Dexcom G6 and G7. For for the Dexcom G6 and G7. For Medtronic Guardian sensors, the Medtronic Guardian sensors, the FDA's guidance FDA's guidance warns that any medication with any medication with acetaminophen may acetaminophen may falsely increase falsely increase readings and advises readings and advises talking to a doctor talking to a doctor before making treatment decisions.

treatment decisions. Remember, Remember, Remember, acetaminophen acetaminophen acetaminophen is hidden in many is hidden in many combination combination combination cold and flu remedies, cold and flu remedies, as well as prescription as well as prescription pain relievers. So, pain relievers. So, when you're sick, the when you're sick, the combination of vitamin C combination of vitamin C and Tylenol can and Tylenol can cause your sensor readings to be too high, just when your just when your sugar levels are sugar levels are most most most unpredictable.

unpredictable.

## Liar #3: Hydroxyurea

Liar number three: Liar number three: hydroxyurea. hydroxyurea. Most viewers Most viewers don't take this don't take this drug, but if you drug, but if you or someone or someone close to you does, this is the most important most important part of the video.

Hydroxyurea Hydroxyurea is used for is used for sickle cell sickle cell sickle cell anemia, certain types of anemia, certain types of blood cancers such as blood cancers such as polycythemia vera polycythemia vera and essential and essential thrombocythemia, thrombocythemia, thrombocythemia, and other and other conditions. This is a very conditions. This is a very important drug.

The problem is that The problem is that for Dexcom sensors, it for Dexcom sensors, it overestimates the readings overestimates the readings compared to the actual compared to the actual glucose level. Dexcom glucose level. Dexcom directly states this.

directly states this. You may miss a hypoglycemic signal or hypoglycemic signal or inject too much inject too much insulin insulin insulin by correcting an by correcting an by correcting an unrealistic value.

unrealistic value. Imagine. Your Imagine. Your sensor reads 220. So sensor reads 220. So you take a you take a corrective dose. corrective dose. But your actual But your actual blood sugar level is 140.

blood sugar level is 140. Now you have injected Now you have injected insulin that was not insulin that was not needed. And you needed. And you are heading towards are heading towards hypoglycemia, which the hypoglycemia, which the sensor may not even sensor may not even show. This is a show. This is a double whammy. For the double whammy. For the Medtronic Simplera sensor, Medtronic Simplera sensor, the instructions specify the instructions specify even stricter even stricter restrictions. If you restrictions. If you are taking are taking are taking hydroxyurea, hydroxyurea, hydroxyurea, you should not you should not use this use this CGM at all. What to do? If you CGM at all. What to do? If you start taking start taking hydroxyurea, hydroxyurea, hydroxyurea, tell tell tell your endocrinologist your endocrinologist and the doctor who and the doctor who prescribed the medication, as prescribed the medication, as they don't always they don't always communicate with each

communicate with each other. Ask if other. Ask if another CGM is safer, another CGM is safer, or if you should or if you should determine your dose using a fingerstick blood test. And fingerstick blood test. And take this as a take this as a rule. Whenever rule. Whenever you start you start taking a new medication, taking a new medication, ask your ask your pharmacist, "Will pharmacist, "Will this affect my CGM?

## Liar #4: The First-Day Warm-Up

" Liar number four: Liar number four: warming up on the first day. You have just installed a. You have just installed a new sensor. It new sensor. It completes the warm-up and completes the warm-up and outputs the numbers. You outputs the numbers. You assume they are assume they are as accurate as they were on the as accurate as they were on the fifth day. Often this is fifth day. Often this is not the case. What is not the case. What is happening?

happening? happening? Inserting the sensor is a Inserting the sensor is a microtrauma. Local microtrauma. Local inflammation and inflammation and fluid level changes fluid level changes subside within the subside within the first day while the sensor's chemistry sensor's chemistry stabilizes. Therefore, the stabilizes. Therefore, the first day, especially the first day, especially the first hours, is the first hours, is the period of the least period of the least accurate accurate accurate sensor operation. Dexcom indicates 30 sensor operation. Dexcom indicates 30 minutes for warm-up for the minutes for warm-up for the G7 and 60 minutes for the Libre 3 G7 and 60 minutes for the Libre 3 and 3 plus. But and 3 plus. But completing the warm-up completing the warm-up only means only means readiness for operation, readiness for operation, not perfect not perfect accuracy. Early accuracy. Early indicators indicators indicators are often inaccurate, are often inaccurate, often underestimated.

often underestimated. What to do? What to do? Use a " pre-soak" pre-soak" if your if your device and doctor allow it. device and doctor allow it. Some people install a Some people install a new sensor a new sensor a few hours before the old one expires, allowing old one expires, allowing the tissues to settle down while the old sensor is working while the old sensor is working. This is not in all. This is not in all manufacturers' instructions, and some manufacturers' instructions, and some systems systems systems only allow one sensor to be activated only allow one sensor to be activated at a time. But at a time. But many experienced many experienced users users users do this, and it can do this, and it can smooth out the work on the smooth out the work on the first day.

first day. Ask your Ask your medical team if medical team if this is appropriate for your this is appropriate for your system. Do not system. Do not insert a new insert a new sensor before going to bed sensor before going to bed if you can if you can avoid it. If the first avoid it. If the first day is day is day is the most unstable, the most unstable, you don't want it to you don't want it to fall on a fall on a nighttime sleep. Change nighttime sleep. Change sensors in the morning to sensors in the morning to be ready be ready during periods of during periods of instability.

instability. instability. Check your Check your glucose level with a glucose level with a fingerstick before fingerstick before making important making important decisions in the first 24 decisions in the first 24 hours, especially if the hours, especially if the reading does not reading does not match how you match how you feel. Don't feel. Don't calibrate in a panic.

calibrate in a panic. If your system If your system allows allows allows calibration, such as the calibration, such as the Dexcom G7, calibrate Dexcom G7, calibrate only when your only when your blood sugar is blood sugar is stable, not stable, not rising or falling rapidly, and when you are measuring correctly with a fingerstick. Calibrating fingerstick. Calibrating during rapid changes in during rapid changes in sugar levels introduces sugar levels introduces error due to error due to signal delay signal delay directly into your directly into your sensor. Libre sensors sensor. Libre sensors are calibrated at are calibrated at the factory and do not the factory and do not require require require user calibration. The end of the sensor's lifespan also the sensor's lifespan also matters. Accuracy matters. Accuracy may decrease on the may decrease on the last day or during the last day or during the grace grace grace period that period that some systems provide. If some systems provide. If you are getting strange you are getting strange readings at the end of readings at the end of the sensor's run, this is the sensor's run, this is probably the reason probably the reason.

.. Installation tips for the entire Installation tips for the entire wearing period. wearing period. Choose a spot with a Choose a spot with a small layer of fat, small layer of fat, away from scars, away from scars, tattoos, and muscles.

tattoos, and muscles.

## Liar #5: Dehydration

Stay Stay Stay a few a few centimeters away from insulin injection sites or insulin injection sites or infusion sets, infusion sets, as insulin as insulin lowers lowers lowers glucose levels locally, and glucose levels locally, and rotate sites rotate sites as scar as scar tissue produces poorer tissue produces poorer results. Liar results. Liar number five— dehydration.

dehydration. dehydration. Remember, the sensor Remember, the sensor is in liquid. is in liquid. If you do If you do n't have enough fluid, n't have enough fluid, the environment around the environment around the sensor changes.

the sensor changes. When you are dehydrated, When you are dehydrated, blood flow to the skin blood flow to the skin slows down and slows down and intercellular fluid intercellular fluid shifts. Therefore, shifts. Therefore, the gap between the gap between the sensor the sensor and the meter readings and the meter readings increases, and increases, and the error can be in the error can be in either direction. Nuance.

either direction. Nuance. High sugar levels High sugar levels cause cause cause dehydration. Above dehydration. Above approximately 180–200 mg/dL, the approximately 180–200 mg/dL, the kidneys excrete kidneys excrete glucose, followed by glucose, followed by water. So, when water. So, when the readings are high, your the readings are high, your sensor is least sensor is least reliable, which is exactly when you need it you need it the most. On the the most. On the Treasure Coast : think : think boating, boating, boating, afternoon golf, afternoon golf, gardening in gardening in August, and beers in the August, and beers in the sun. What to do?

sun. What to do? Drink water before Drink water before you feel thirsty. Water, not sweet tea or, not sweet tea or regular sports regular sports drinks. If you are sick, drinks. If you are sick, have vomiting, or have vomiting, or diarrhea, don't trust diarrhea, don't trust your CGM blindly.

your CGM blindly. Use a Use a Use a blood glucose meter. And if you are blood glucose meter. And if you are on insulin, on insulin, stick to your illness plan. If you have illness plan. If you have type 1 diabetes or are type 1 diabetes or are taking taking taking SGLT2 inhibitors, SGLT2 inhibitors, check your check your ketone levels.

ketone levels. Warnings about Warnings about SGLT2 inhibitors. If SGLT2 inhibitors. If you take Jardiance, you take Jardiance, Farxiga, Invokana, or Farxiga, Invokana, or similar drugs and you are dehydrated or and you are dehydrated or sick, you may sick, you may develop develop develop ketoacidosis with blood ketoacidosis with blood sugar levels that don't sugar levels that don't seem too seem too high. This high. This is called is called is called euglycemic euglycemic euglycemic diabetic diabetic diabetic ketoacidosis. Your CGM ketoacidosis. Your CGM could read 170 and could read 170 and you could still you could still be in danger.

be in danger. Nausea, vomiting, Nausea, vomiting, abdominal pain, or abdominal pain, or rapid breathing rapid breathing while taking this while taking this medication means: medication means: check your ketones and check your ketones and call your doctor, regardless of what your, regardless of what your CGM shows. Bonus CGM shows. Bonus for Florida. Test strips and insulin strips and insulin left in a hot left in a hot machine will give incorrect machine will give incorrect results and results and lose lose lose effectiveness.

effectiveness. effectiveness. The temperature in the The temperature in the glove compartment in July can glove compartment in July can exceed 55 ° C.

exceed 55 ° C.

## The 60-Second Real-vs-Fake Low Checklist

Keep the means with Keep the means with you. 60-second checklist: true or checklist: true or false hypoglycemia. false hypoglycemia. This is what I tell my This is what I tell my patients when the patients when the alarm goes off.

alarm goes off. Do this. Step Do this. Step one. How are you one. How are you feeling? feeling? feeling? Symptoms such as Symptoms such as sweating, sweating, sweating, shaking, shaking, shaking, rapid rapid rapid heartbeat, heartbeat, heartbeat, confusion, confusion, confusion, or hunger or hunger mean that mean that immediate action is needed. Don't immediate action is needed. Don't waste time waste time checking. If you checking. If you feel feel feel completely normal, completely normal, move on to move on to step two. Step step two. Step

Two: Is there a reason

Two: Is there a reason for the low for the low sugar level? Have you taken sugar level? Have you taken insulin within the insulin within the last three to four hours?

four hours? Correction dose? Did Correction dose? Did you do you do intense intense intense exercise during the day or exercise during the day or evening? Physical evening? Physical activity can activity can lower blood sugar for up to 24 lower blood sugar for up to 24 hours. Have you been drinking hours. Have you been drinking alcohol? Alcohol alcohol? Alcohol blocks the release of blocks the release of glucose by the liver, and glucose by the liver, and this effect can this effect can occur at night or occur at night or in the morning. If there is a in the morning. If there is a real reason, real reason, assume it is assume it is true. Step three: true. Step three: what does the graph look like? A what does the graph look like? A sharp drop while you sharp drop while you are lying on your hand with the are lying on your hand with the sensor after a sensor after a straight line indicates straight line indicates compression. A compression. A gradual decline gradual decline after a known after a known cause indicates cause indicates reality. Step reality. Step four: four: four: turn over and turn over and measure your finger.

measure your finger. Remove pressure from Remove pressure from the sensor, then the sensor, then test the blood test the blood properly. How properly. How to measure to measure correctly, because bad correctly, because bad measurement is deception.

measurement is deception. Wash your hands with soap Wash your hands with soap and wipe them dry; and wipe them dry; antiseptic is not antiseptic is not suitable. A tiny suitable. A tiny bit of juice, fruit, bit of juice, fruit, or sugar on your finger or sugar on your finger can give a falsely can give a falsely high result.

If you just If you just treated treated treated hypoglycemia with juice and hypoglycemia with juice and then measured your blood sugar with a then measured your blood sugar with a dirty finger, dirty finger, the result is the result is worthless.

worthless. worthless. Use the side of your Use the side of your fingertip, fingertip, fingertip, not the center. It's less not the center. It's less painful and you'll painful and you'll do it more often. Don't do it more often. Don't press too hard.

press too hard. Squeezing the blood Squeezing the blood can dilute can dilute the drop with interstitial the drop with interstitial fluid. Check fluid. Check the strips: are the strips: are they expired or have they they expired or have they been stored in a warm place?

been stored in a warm place? Step Five: If Step Five: If you are in treatment, you are in treatment, follow rule follow rule 15 and allow for 15 and allow for delay. Take 15 delay. Take 15 g of fast carbohydrates: g of fast carbohydrates: 120 ml of juice, four 120 ml of juice, four glucose tablets or a glucose tablets or a tablespoon of sugar.

tablespoon of sugar. Wait 15 minutes and Wait 15 minutes and check again, check again, preferably with a glucometer, because preferably with a glucometer, because CGM lags behind CGM lags behind recovery. Don't recovery. Don't take another 15g of take another 15g of carbs just because your carbs just because your CGM reading hasn't CGM reading hasn't changed. This is the main changed. This is the main reason why nocturnal reason why nocturnal hypoglycemia hypoglycemia hypoglycemia turns into 14 turns into 14 mmol/L at 7 am.

mmol/L at 7 am. Avoid treating Avoid treating hypoglycemia with hypoglycemia with hypoglycemia with chocolate,

chocolate, chocolate, peanut butter crackers, peanut butter crackers, or other fatty foods. Fat or other fatty foods. Fat slows down digestion, so sugar stays low for longer and then spikes. Step six: do not. Step six: do not administer a large administer a large correction dose correction dose when sugar rebounds when sugar rebounds. Stick to.

## When the Low Is Real: 3 AM Patterns You Should Not Ignore

Stick to your correction plan your correction plan and look for and look for patterns patterns patterns instead of chaotic instead of chaotic actions. When actions. When hypoglycemia is real, nighttime patterns, nighttime patterns cannot be ignored.

cannot be ignored. Now let's look at it from the Now let's look at it from the other side. Not every other side. Not every nighttime nighttime nighttime alarm is false.

alarm is false. True nocturnal True nocturnal hypoglycemia hypoglycemia hypoglycemia occurs frequently and is occurs frequently and is dangerous, and the doctor dangerous, and the doctor should be aware of it.

should be aware of it. Signs that your Signs that your nocturnal hypoglycemia is nocturnal hypoglycemia is real. Morning real. Morning headaches, night headaches, night sweats or sweats or wet beds, wet beds, vivid nightmares, vivid nightmares, hangovers without hangovers without alcohol, a partner alcohol, a partner who says you were who says you were restless or restless or hard to wake up, and hard to wake up, and inexplicably high inexplicably high morning blood sugar, morning blood sugar, as a real as a real slump can slump can trigger a trigger a trigger a hormonal surge that masks it.

that masks it. Common causes of Common causes of true nocturnal true nocturnal hypoglycemia. hypoglycemia. hypoglycemia. Excessive basal Excessive basal insulin dose, insulin dose, evening correction evening correction doses, exercise doses, exercise in the afternoon, alcohol with, alcohol with dinner, worsening dinner, worsening renal function, and renal function, and sulfonylureas sulfonylureas sulfonylureas such as glipizide, such as glipizide, glibenclamide, and glibenclamide, and glimepiride, which glimepiride, which can cause can cause prolonged persistent prolonged persistent hypoglycemia, hypoglycemia, hypoglycemia, especially in the especially in the elderly. And the main elderly. And the main reason that I am currently reason that I am currently correcting in the clinic.

correcting in the clinic. Weight loss on Weight loss on GLP-1 drugs GLP-1 drugs such as Ozempic such as Ozempic or Munjaro while or Munjaro while you are still taking you are still taking the same dose of insulin the same dose of insulin or or or sulfonylurea.

sulfonylurea. sulfonylurea. As you become more As you become more sensitive to sensitive to insulin, your old insulin, your old doses become too doses become too strong.

strong. strong. Unawareness of Unawareness of Unawareness of hypoglycemia. If you have had hypoglycemia. If you have had diabetes for diabetes for a long time or have had a long time or have had many many many hypoglycemias, your hypoglycemias, your body may body may stop giving stop giving warning warning warning signals. In that signals. In that case, the statement “I case, the statement “I feel good” is not feel good” is not reliable, and the first reliable, and the first step on my list will step on my list will not protect you. You not protect you. You should take should take low CGM readings more seriously and more seriously and discuss discuss discuss temporarily temporarily temporarily lowering your target lowering your target values ??with your doctor. Strictly values ??with your doctor. Strictly avoiding avoiding avoiding hypoglycemia hypoglycemia hypoglycemia for several for several weeks may weeks may help reverse help reverse some of these some of these warning warning warning symptoms. Always symptoms. Always keep glucagon keep glucagon on hand if you are on on hand if you are on insulin therapy.

insulin therapy. Nasal and Nasal and autoinjectable forms are autoinjectable forms are much simpler than the much simpler than the old kits where you old kits where you have to mix it have to mix it yourself, and can be yourself, and can be administered by a family member.

## Other CGM Saboteurs

Other CGM saboteurs. Other CGM saboteurs. Blitz review. MRI and Blitz review. MRI and some types of examinations. some types of examinations. Most CGMs need to Most CGMs need to be removed. Let be removed. Let the technician know you are wearing the technician know you are wearing the device. Jacuzzis, the device. Jacuzzis, saunas, saunas, saunas, sunscreen and sweat. Heat sunscreen and sweat. Heat changes blood flow in changes blood flow in the skin, and moisture the skin, and moisture breaks down the adhesive breaks down the adhesive base. A base. A detached edge gives detached edge gives inaccurate data before inaccurate data before the sensor the sensor falls off.

falls off. Use Use Use a patch over the patch and do not a patch over the patch and do not apply lotion to the apply lotion to the application area. Hits. A blow to the. Hits. A blow to the door frame can door frame can dislodge the dislodge the sensor thread.

sensor thread. Hospital stay. Low Hospital stay. Low blood pressure and blood pressure and intravenous intravenous intravenous medications reduce medications reduce accuracy, so accuracy, so hospitals often hospitals often use use use fingerstick blood measurements fingerstick blood measurements. Focus. Focus on the trend, not the on the trend, not the number. Your CGM is a number. Your CGM is a tracking tool first and foremost, and a number counter second. When number counter second. When I look at your I look at your data, I look at the time data, I look at the time in the target in the target range of 70 to 180.

range of 70 to 180. The target for most The target for most adults is above 70%. adults is above 70%. Time below 70 is less than 4%, Time below 70 is less than 4%, and below 54 is less than 1%.

and below 54 is less than 1%. For older adults or high-risk patients, goals high-risk patients, goals are often set are often set less stringently. Patterns. Consistent nightly. Consistent nightly decline. Jumping decline. Jumping after breakfast.

after breakfast. Falls only at night Falls only at night after physical after physical exertion. And when I exertion. And when I see nocturnal see nocturnal hypoglycemia that hypoglycemia that drops sharply and then immediately drops sharply and then immediately recovers, I don't recovers, I don't reduce your reduce your insulin dose. I ask insulin dose. I ask which side you which side you sleep on.

## Closure

If your CGM wakes you up If your CGM wakes you up every night and you can't every night and you can't figure out why, figure out why, show the data to your show the data to your endocrinologist. If endocrinologist. If you are on the you are on the Treasure Coast, we Treasure Coast, we see this every day at see this every day at my clinic, Diabetes my clinic, Diabetes Thyroid and Hormone Center.

Thyroid and Hormone Center. Please visit Please visit sugarmds.com to learn sugarmds.com to learn a lot of useful things and a lot of useful things and write in the comments.

write in the comments. Question for you. And you Question for you. And you should answer it should answer it in the comments. Have you ever had your CGM. Have you ever had your CGM wake you up due to a false wake you up due to a false low low low sugar reading? And please sugar reading? And please share this with share this with someone. This is an important someone. This is an important video. With someone who video. With someone who wears a sensor. This wears a sensor. This can save them from having an can save them from having an extra glass of extra glass of orange juice at orange juice at 3 a.m. I am 3 a.m. I am Dr. Ergin.

Dr. Ergin. See you in the See you in the