BEYOND DIAGNOSIS

MODULE 2

Instructor Notes

BEYOND TYPE 1

SLIDE 1

WELCOME BACK to our Diabetes Education program. We are excited to have you return for more great information. Since our last session on Decoding Diabetes, we hope you have had the chance to think more about diabetes and create a healthy action plan. Today we'll be talking about thriving with diabetes.

You'll remember that I am **[INSTRUCTOR NAME}** and I work with **[INSERT ORGANIZATION NAME]** as a **[INSERT ROLE NAME]**. I am your instructor for today's session on Creating Your Best Path Forward. Please feel free to ask questions, share stories, and connect with others in the group.

Let's re-introduce ourselves. Names are important, but they can be tricky to remember! Please tell us your name, one update you would like to share since our last time together, and one question that you would like to have answered during today's session about Creating Your Best Path Forward.

NOTE: Instructor should write down each participant's learning goal/question they would like to have answered today.

Thank you. Let's get started!

SLIDE 2

As we go through our presentation today, you can follow along in your BT1/Bt2 toolkits in the "Creating Your Best Path Forward" section.

- BT1 Toolkit: p.19-30
- BT2 Toolkit: p.18-29

As we learn about best practices for managing blood sugars today, here are some of the topics we will discuss:

- Managing Your Blood Sugar
- Building Your Diabetes Care Team
- Common Blood Sugar Goals
- Low Blood sugar
- High Blood sugar
- Using Diabetes Technology
- A To-Do List for Medical Check-Ups

Give participants a minute or two to locate their toolkits and navigate to Section 2. If participants need a new toolkit, please distribute additional toolkits.

SLIDE 3

Introduce the group to the Beyond Diagnosis Ambassadors, Missy and Keith, by playing the videos linked.

MEET MISSY (T1D Caregiver)

MEET KEITH (PW T2D)

Thank you to Missy and Keith for bravely sharing their stories and advice with us. Let's get started with Creating Your Best Path Forward

SLIDE 4

As you remember from our Decoding Diabetes class, there are many treatments that help us manage our glucose levels and keep us healthy. The truth is, all of these strategies are important for living well and staying healthy.

Problem Solving

Everyone encounters challenges with their diabetes management. You can't plan for every situation you may face, but there are some problem-solving skills that can help you prepare for the unexpected—and make a plan for dealing with similar problems in the future.

Reducing Risks

By understanding the risks that cause negative outcomes and then taking actions to prevent them, you can lower your chance of having diabetes-related health problems.

Monitoring

Regularly checking your glucose (sugar) levels and other key health factors (e.g. blood pressure, kidney and foot health) gives you vital information to help you make decisions about your diabetes. THIS IS WHAT WE ARE FOCUSING ON TODAY: CHECKING YOUR BLOOD SUGAR AND WHY IT IS IMPORTANT.

Taking Medication

Medications work together to lower your blood sugar levels, reduce your risk of diabetes-related health problems, and help you feel better. Take your diabetes medication every day.

Healthy Eating

Having diabetes doesn't mean you have to give up your favorite foods or stop eating in restaurants. Focus more on knowing how foods you eat affect your blood sugar levels and then how to adjust your medication. Eating nutritious foods is the goal for everyone, not just those with diabetes.

Being Active

Being active has many health benefits that impact your diabetes management like lowering cholesterol, improving blood pressure, lowering stress and anxiety, and improving your mood.

Healthy Coping

It's natural to have mixed feelings about your diabetes management and experience highs and lows. The important thing is to recognize these emotions as normal and take steps to reduce the negative impact they can have on your self-care.

SLIDE 5

There are many factors which influence blood sugar, and you can see some of these here on the slide. 42!! Did you have any idea that so many factors can impact your blood sugar levels? What are some of the factors you know impact your own blood sugar? Are there any on this list that surprise you?

Great! As we learn more about how to check blood sugar, we have a better sense for the many things that can impact our blood sugar levels.

SLIDE 6

When we check our blood sugar or our hemoglobin A1c, what are we aiming for?

The American Diabetes Association recommends a hemoglobin A1c target of less than 7%. This is based on important research that demonstrates keeping blood sugars in this range will protect your body from health problems that can be caused by diabetes.

Has anyone here had their hemoglobin A1c measured?

- It is common to have this test done every 3 months.
- It is a measurement of how much sugar is attached to a red blood cell.
- The A1c test is a good measure of your average blood sugar over a 3 month period of time.

Achieving an A1c of less than 7% can seem like a big goal when your A1c level is above target; it's common not to know what you can do to help bring your A1c level down. Breaking this A1c goal into smaller steps in order to achieve it can create a roadmap for how to get there. By aiming for pre-meal glucose ranges of 80-130 mg/dL and post-meal (2 hours after eating) blood glucose of less than 180 mg/dL, an A1c of less than 7% is possible. Since most of us have experience with checking glucose values at home, how do these target numbers seem? Do your blood sugar values tend to run in these ranges? If not, this may be a sign that other parts of your care plan need adjusting- for example, medications, nutrition, or activity.

Many of you may have practiced checking your blood sugar at home. Does anyone here in the group need help with learning how to check their blood sugar? We can take a quick break so everyone in the group can learn the best technique and experience the least amount of discomfort. https://www.youtube.com/watch?v=nxIJeHWlhF4&t=9s

Often, blood sugars are checked first thing in the morning, before eating food, or 2 hours after eating. This can be done with a meter or a continuous glucose sensor. These individual tests show how much sugar is in your blood at the time of the test. Comparing your own blood sugar readings can give important information about how your diabetes treatment regimen is working, if other factors are impacting your blood sugar (remember the 42 from earlier), or if there are rapid changes in your blood sugar pattern that need attention.

Let's review recommendations from the American Diabetes Association:

- The American Diabetes Association recommends that before eating, a healthy blood sugar range is 80-130 mg/dL
- Because we expect that eating food will increase blood sugar, the healthy blood sugar target after eating is higher. It should be 180 mg/dL or less.

Aiming for these ranges will help you achieve an A1c test in the "healthy" less than 7% range.

Next, let's learn more about another option for monitoring our glucose.

There are different guidelines to help set goals like the ones published by the American Diabetes Association. https://diabetes.org/living-with-diabetes/treatment-care/checking-your-blood-sugar

These guidelines are just a starting point and you should talk to your doctor about how your blood sugar targets should be personalized to your unique needs.

SLIDE 7

Continuous Glucose Monitoring (CGM) measures more than just a few glucose readings per day. Continuous glucose monitoring uses a sensor that you wear on your skin to measure the changes in your interstitial glucose on a minute-to-minute basis. This is more similar to watching a movie of your blood sugar throughout the day. We are able to observe rises and drops in glucose levels and begin to understand specific blood sugar patterns that are not always visible with blood glucose meter checks alone. CGM devices may also have alerts and alarms that can warn you if your blood sugar level is above or below target, which can be helpful and also sometimes a bit stressful.

Just like the blood sugar goals we learned about on the last slide, similar glucose goals exist for those who use CGM. Because there are so many readings taken each day (almost 300!), "time in range" was developed to describe the amount of time that someone wearing a CGM spends in the optimal glucose range. We describe time in range using a percentage. We want to be in range for 70%. Usually, this target range for CGM is customized to each person's unique goals Your health care team can help you achieve the healthy CGM targets which are:

- At least 70% of the day in 70-180 mg/dL (in-range)
- Less than 4% of the day below 70 mg/dL (below-range)
- Minimize time each day above 180 mg/dL (above-range)

There are guidelines regarding TIR range goals depending on specific factors such as age and pregnancy, which you can read about here: https://beyondtype1.org/time-in-range

SLIDES 8-9

Let's recap on blood sugar targets that we should aim for.

1. **What is a healthy hemoglobin A1c level?**

   ANSWER: less than 7%.

   WHY? Research has shown keeping the A1c below this level is a healthy range and will prevent health problems from prolonged high blood sugar.

2. **What's a common blood sugar target before meals? 80-130 mg/dL or less than 180?**

   ANSWER: 80-130 mg/dL.

   WHY? Blood sugars should be at the lower range of 80-130 mg/dL before meals. Food usually increases our blood glucose, so we want to start meals at a lower number.

3. **What is a good target for a blood sugar reading that's taken after a meal (2 hours after eating)?**

   ANSWER: less than 180 mg/dL

   WHY? Blood sugars are impacted by food. Blood glucose rises when we eat. Staying below 180 mg/dL allows us to enjoy a variety of nourishing foods while also keeping our body safe from prolonged high blood sugars.

4. **For people using CGM, how much time do we want to spend in our target range of 70-180 mg/dL? 50%? 70% 100%?**

   ANSWER: We should aim for 70% of the time to be spent in the healthy blood sugar range (70-180 mg/dL)

   WHY? Staying in the target range as much as possible is important to protect our health and body. We want to have the best blood sugar readings we can reasonably achieve. Because diabetes means that we experience higher than normal blood sugars, it is often not feasible to spend 100% of time in the target range without undue stress and restriction on someone's life. Aiming for spending 70% of time in range is a better goal as it is enough to protect our bodies from the harm of prolonged high blood sugar but it also allows for natural blood sugar fluctuations after meals (which are common even in people who do not live with diabetes).

How did you do? Are you feeling confidence that you understand your glucose goals and targets? Anyone need to talk with their health care team to get more information about their personal targets or start improving their diabetes treatment plan to get closer to the goals we talked about today?

Now that we understand what we are aiming for with our blood sugar readings, let's take a moment to practice problem-solving when blood sugars are not where we would like them to be. This can happen to everyone, just so you know! The important thing is to continue monitoring your blood sugar and to ACT if they are consistently or unexplainably unusual.

SLIDE 10

What happens if you notice frequent, recurring, blood sugar numbers outside of your target range?

You can review your blood sugar patterns, play detective to determine the cause of out-of-range values, and develop a plan for what comes next. Ask why did this happen? What could have caused this out-of-range number? If you notice blood sugar changes that are unexplained, play detective and try to determine the cause. Remember some of the factors that we talked about earlier that can influence blood sugar (https://diatribe.org/diabetes-management/42-factors-affect-blood-glucose-surprising-update)? These offer some good clues.

Work with your healthcare team to set up some simple changes to increase your time in target range. You may need to adjust your medications or try new lifestyle behaviors to make improvements.

Can you think of a time when you've noticed a pattern of high or low numbers? What did you and your healthcare team do to address these?

SLIDES 11-12

What is low blood sugar? Low blood sugar, also called hypoglycemia, is when your blood sugar level drops below 70 mg/dL. Low blood sugar is URGENT and needs attention.

Has anyone here ever experienced low blood sugar before? What did it feel like?

Mild low blood sugar is defined as a blood sugar below 70 mg/dL. You may notice that you feel hungry, nervousness, shakiness, cold/clammy skin, headache, pounding heartbeat, shaking, or jitters.

Moderate low blood sugar or a blood sugar is defined as a blood sugar below 54 mg/dL. You may notice symptoms of dizziness, sleepiness, weakness, irritability, trouble speaking, or confusion, but you are still conscious and able to swallow.

SLIDE 13

Treating mild and moderate low blood sugars can be done with fast-acting carbohydrate foods which raise blood sugar quickly.

If you experience a low blood sugar: consume 15 grams of fast-acting carbohydrate like 3-4 glucose tablets, 4 oz of juice, or a tablespoon of honey. After you wait 15 minutes, check your blood sugar. If your blood sugar is still low, eat or drink 15 more grams of sugar. Usually mild to moderate low blood sugar can be treated yourself and does not require help from others.

Keep in mind that the amount of fast acting carbs that you need can vary (and can vary for each low blood sugar event). Use your best judgement. Also keep in mind that if you consume way more simple carbs than needed, it can lead to a high blood sugar later (we call that a rebound high).

SLIDE 14

Severe low blood sugar is a blood sugar reading of less than 54 and a loss of consciousness, seizures or convulsions, or even a state of coma. Severe low blood sugars often require assistance from others to treat. Because the person experiencing a severe low blood sugar may not be conscious, the best treatment for a severe low blood sugar is GLUCAGON. Glucagon is a hormone that your body produces to INCREASE blood sugar. This is the OPPOSITE of insulin, which DECREASES blood sugar. Family, friends, paramedics, and medical staff administer glucagon to quickly raise someone's blood sugar without the need to consume food. Glucagon is available in a nasal spray, auto-injector pens, prefilled syringe pens, or a powder that must be mixed with a liquid and drawn into a syringe before injecting.

Tip: Once your doctor gives you a prescription for glucagon, pick the medication up at your local pharmacy and keep it in a place that others know about. If you take insulin to treat your diabetes, you NEED to also have glucagon on hand as a safety precaution. Make sure your friends, family, roommates, and/or coworkers know that you have diabetes, know where your emergency glucagon is located, and have been trained on how to use it. You want others to know how to use glucagon in case there is an emergency situation where you need help and can't treat your own low blood sugar without their help. Being prepared before this happens will help everyone know what to do if something like this happens and feel ready to help immediately if it does happen. Here are some training videos to get you started.

- How to use a glucagon emergency kit: https://www.youtube.com/watch?v=ZUlx6F63gj0
- How to use Zegalogue: https://www.zegalogue.com/why-zegalogue/how-to-administer.html
- How to use Gvoke: https://youtu.be/UVPfKeEQMmE
- How to use Baqsimi: https://www.youtube.com/watch?v=iReyEfsetWQ

SLIDES 15-16

1. **What number indicates a low blood sugar?**

   ANSWER: Less than 70

2. **What is the best way to treat a mild or moderate low blood sugar?**

   ANSWER: Consume 15 grams of fast-acting carbohydrate like 3-4 glucose tablets, 4 oz of juice, or a tablespoon of honey. After you wait 15 minutes, check your blood sugar. If your blood sugar is still low, eat or drink 15 more grams of sugar.

3. **What should be used to treat a SEVERE low blood sugar of less than 54 mg/dL with loss of ability to eat or swallow?**

   ANSWER: GLUCAGON! Remember that your friends and family should know where your glucagon is located and how to administer it in the event of an emergency.

4. **What are the types of glucagon that are available?**

   ANSWER: glucagon is available in a nasal spray, Autoinjector pen, Prefilled syringe, or a powder (must be mixed with a liquid before injecting)

SLIDES 17-18

In general, blood sugar levels over 180 mg/dL are considered high and levels over 300 mg/dL are considered dangerously high if they stay elevated. Individual blood sugar ranges vary, so talk with your diabetes team about what is considered a level for you. Checking blood glucose is an important first step, but acting on the information is the most important next step.

What causes high blood sugar?

- Taking too little insulin or not using enough diabetes medication
- Under-counting carbohydrates at mealtimes
- Stress
- Not exercising as much as planned
- Fluctuating hormones
- Being sick or fighting an infection—including recovering from an injury or recent surgery
- Emotional stress
- When insulin has expired—or if it doesn't work as well because it was exposed to extreme heat or cold

When you have an elevated or high blood sugar, you may feel specific symptoms like:

- Unquenchable thirst
- Dry mouth
- Feeling tired or fatigued
- Frequent trips to the bathroom to urinate
- Blurry vision
- Frequent infections
- Slow healing cuts or sores on your skin

Symptoms tend to be more severe when blood glucose has been elevated for prolonged periods of time.

Having high blood sugar for long periods of time can be dangerous to us.

How do you treat high blood sugar?

- Adjust medications/insulin doses based on instructions from your doctor or diabetes specialist
- Drink water or sugar-free electrolyte solution to help your kidneys remove sugar through urine
- If your blood sugar is abnormally high, contact your healthcare team
- If you're vomiting and can't keep fluid down, you may need to go to the emergency department
- If you're sick, follow sick-day rules. Blood sugar tends to run higher during illness and stress which may require you to work with your healthcare team to increase your medication doses.
- Make sure your medications/insulin hasn't expired, been exposed to heat or cold, or otherwise gone bad
- Take note of any reasons or potential changes to your routine that may be contributing to high blood sugar: What did you eat or drink? Did you eat something higher in carbohydrates than usual? Are you stressed? Are you getting enough sleep? Are you traveling or has your exercise/eating schedule changed?

SLIDE 19

Managing high blood sugar is incredibly important for all of us. In those who take insulin or have T1D, acting on high glucose readings is critical and can be life saving. High blood sugar can accelerate and become more serious when it turns into diabetic ketoacidosis. Many people with T1D may have experienced DKA when they were first diagnosed with diabetes. The goal is to prevent high blood sugar from turning into DKA, and this can be done by regularly checking your blood sugar and acting on elevated blood sugar levels to STOP DKA from happening.

What is DKA? "When your cells don't get the glucose they need for energy, your body begins to burn fat for energy, which produces ketones. Ketones are chemicals that the body creates when it breaks down fat to use for energy. The body does this when it doesn't have enough insulin to use glucose, the body's normal source of energy. When ketones build up in the blood, they make it more acidic. They are a warning sign that your blood sugar is dangerously high or that you are getting sick very quickly. High levels of ketones can poison the body and cause damage. When glucose and ketone levels get too high, you can develop DKA. DKA may happen to anyone with diabetes, though it is rare in people with type 2. DKA is an emergency and means that your body needs insulin and medical attention ASAP. Treatment for DKA usually takes place in the hospital." But you can help prevent DKA by learning the warning signs and checking your urine and blood regularly, acting to treat high blood sugars before they become an emergency.

How can I check for ketones? It is recommended that you check for ketones when your blood sugar is greater than 250 mg/dL, when you are sick, when you are taking SGLT medications, and when you have symptoms of DKA. This can be done by checking urine ketones or through a meter that measures ketones in your blood. Urine ketone strips are affordable and available at your local pharmacy (no prescription needed). A blood ketone meter is a medical device requiring a prescription that your doctor will prescribe for you. It functions similar to a blood glucose meter, except that instead of measuring glucose, it measures ketones. Contact your healthcare provider if you check your ketones with urine strips or with a ketone meter and find that ketones, especially moderate or large ones, are present in your body.

What are the warning signs of DKA? DKA usually develops slowly. But when vomiting occurs, this life-threatening condition can develop in a few hours. Early symptoms include the following:

- Moderate or large urine/blood ketones
- Nausea
- Vomiting
- Abdominal pain
- Fruity or acetone breath (similar to the scent of nail polish remover)
- Rapid breathing
- Flushed Skin
- Lack of energy

As DKA worsens, other severe symptoms can appear:

- Constantly feeling tired
- Dry or flushed skin
- Nausea, vomiting, or abdominal pain. Vomiting can be caused by many illnesses, not just ketoacidosis. If vomiting continues for more than two hours, contact your health care provider immediately.
- Difficulty breathing
- Fruity odor on breath
- A hard time paying attention, or confusion

Again, our best defense against high blood sugar is regular blood glucose checks. By keeping a close eye on what's happening with your glucose, you have the necessary information to make treatment decisions and bring blood sugars back into the healthy range. If you notice a high blood sugar, ACT and don't delay!

SLIDE 20

More and more technology is becoming available to help manage your diabetes, including devices to deliver insulin and to check your glucose. Let's learn about the options! Keep in mind that the cost of these technologies vary with your health insurance coverage.

SLIDE 21

Options for glucose monitoring:

GLUCOSE METERS

A glucose meter–also called a "glucometer"–is a medical device for determining the approximate glucose concentration in blood. The user inserts a glucose "test strip" into the meter, pokes their finger with a sterile lancet/lancing device, and applies the blood to the reagent strip. The glucometer measures the amount of glucose in the blood sample and records this data in the meter's history. Glucometers are widely used to measure blood glucose and are commonly covered by health insurance plans.

CONTINUOUS GLUCOSE MONITOR (CGM)

(Abbott Freestyle Libre, Dexcom G6 or G7, Medtronic Simplera)

A CGM is a small, wearable device that continuously tracks your sugar levels throughout the day and night. These devices have alarms and alerts for glucose values that are above and below the user's target range. Most disposable CGM sensors are inserted by the PWD at home and worn for 7-15 days.

FLASH GLUCOSE MONITOR (FGM)

(Abbott Freestyle Libre)

This glucose sensor is similar to the disposable CGM above, except that the user must "scan" their FGM receiver or smartphone over the sensor in order to receive a glucose reading. FGM does not transmit this information to the PWD automatically. This technology offers more intermittent glucose information and requires the user to "scan" their receiver when they want to view the glucose value. This system can be lower in cost than CGM, but does not include the alarms and alerts that CGM does.

IMPLANTABLE CGM

(Eversense 365)

This type of CGM is implanted once per year in your arm by a healthcare professional. The glucose sensor implant remains in your arm for 365 days, and the user wears a rechargeable receiver on top of it which transmits glucose readings to a smartphone.

For current options available visit this page: https://beyondtype1.org/beyond-type-1s-continuous-glucose-monitor-cgm-chart

SLIDE 22

For those taking insulin:

INSULIN PENS

An insulin pen is a device for giving insulin injections. Insulin pens can make taking insulin more convenient because they combine the medication and syringe in one handy unit.

INHALED INSULIN

Powder insulin that is inhaled via disposable cartridges in a respiratory inhaler.

SMART INSULIN PENS

(InPen or Bigfoot Unity)

A smart pen is a special insulin pen that works with a phone app to keep track of when and how much insulin you take. Smart pens can be reusable or they can be attachments that go on top of disposable insulin pens.

SLIDE 23

INSULIN PUMPS

(Medtronic 630G, Omnipod DASH)

Insulin pumps are small, computerized devices. They are about the size of a pager and deliver insulin doses on a pre-programmed schedule. These devices require the user to input all necessary information (ie, carbohydrates, blood glucose, and activity) into the pump to administer or change the insulin dosing program. Traditional insulin pumps operate as a standalone delivery system which require a blood glucose meter and/or CGM to provide necessary glucose information.

NON-PROGRAMMABLE DISPOSABLE PATCH PUMPS

These are wearable insulin delivery devices designed for convenience and ease of use. They provide continuous insulin infusion without the need for complex programming.

- **V-GO:** is a disposable patch pump worn for 24 hours and replaced each day. It provides a continuous fixed basal rate and on-demand bolus dosing.
- **CEQUR SIMPLICITY:** is a Patch pump worn for up to three days. It delivers a fixed basal rate with the option for bolus dosing.

CLOSED-LOOP INSULIN-DELIVERY SYSTEMS

(Omnipod 5, Tandem Tslim X2, Tandem Mobi, Medtronic 780G, Sequel Twiist, Beta Bionics iLet)

Some people with T1D use an insulin pump and real-time continuous glucose monitor (CGM) that "talk to each other." This is possible through a computer program on your phone or inside the pump. Closed-loop insulin-delivery systems work to mimic the human pancreas by using CGM data to determine when it should or shouldn't make adjustments to the wearer's insulin delivery. Closed-loop systems have been around since the early 2000s, but they've seen their greatest strides in the past few years.

Let's take a few minutes to jot down any things that stand out to you as helpful technology tools that could help make managing your diabetes easier. Consider the pros and cons of using some of the diabetes therapies discussed here today. What are some areas they might help with? What are some areas that might become new challenges? Use this information to talk to your healthcare team about how diabetes technology can help you manage your diabetes, and choose the best option for you!

SLIDE 24

Direct participants to find the reflection page in their toolkit. For BT1 toolkit, see page 29. For BT2 toolkit, see page.28

It's time for us to each take a quiet moment to reflect on today's session. I want each of you to think about the topics we discussed today as we learned about managing glucose and Creating Your Best Path Forward. As you begin to consider how this new information will impact your journey with diabetes, jot down your thoughts. Everyone's answers will be different, and that's great! Taking this time to consider how the information impacts you will help us determine how to make an action plan. Please jot down your thoughts in your toolkit and remain quiet so the others have the chance to capture their insights, too.

[Give 3-5 minutes for participants to complete the workbook page]

[Give 1 minute warning for participants to finale their thoughts]

Great job! Time is up, and we've all captured our personal insights for Creating Your Best Path Forward.

SLIDE 25

Here is another great resource to help you plan your diabetes care visits throughout the year. Because diabetes can impact multiple body systems and parts, it's best to keep track of each of them. Here you can see each health item that needs to be checked on as well as the health care professional who can do this for you. Keeping an eye on your blood pressure, weight, feet, mouth & teeth, eyes, and kidneys will go a long way in keeping you healthy. Use this chart to track the important dates you accomplished these visits and record your results too.

SLIDE 26

In your toolkits, your reflection helped you identify your feelings about overcoming fears you have related to your diabetes, how you have overcome your fears in the past, and how you can begin to cope with diabetes-related fear in your life. Navigating this uncertainty and practicing your self-management routine takes a lot of effort, and it is common for this to be challenging.

SLIDE 27

Thank you for your attention and group participation today.

We will meet again on **XXX** at **XXX** to build on this knowledge and learn more about Fueling Well to Feel Well & Moving Your Body. We would love it if you brought a friend, family, member, or support with you to the next session - they are always welcome to join us and learn about diabetes alongside you. This is one easy way to begin to build your personal diabetes network.