



DSP Series Webinar: Diabetes and Insulin Administration

Presented by: Dr. Kathy Auberry, DNP, RN, CDDN
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Recent DSP Series Webinars

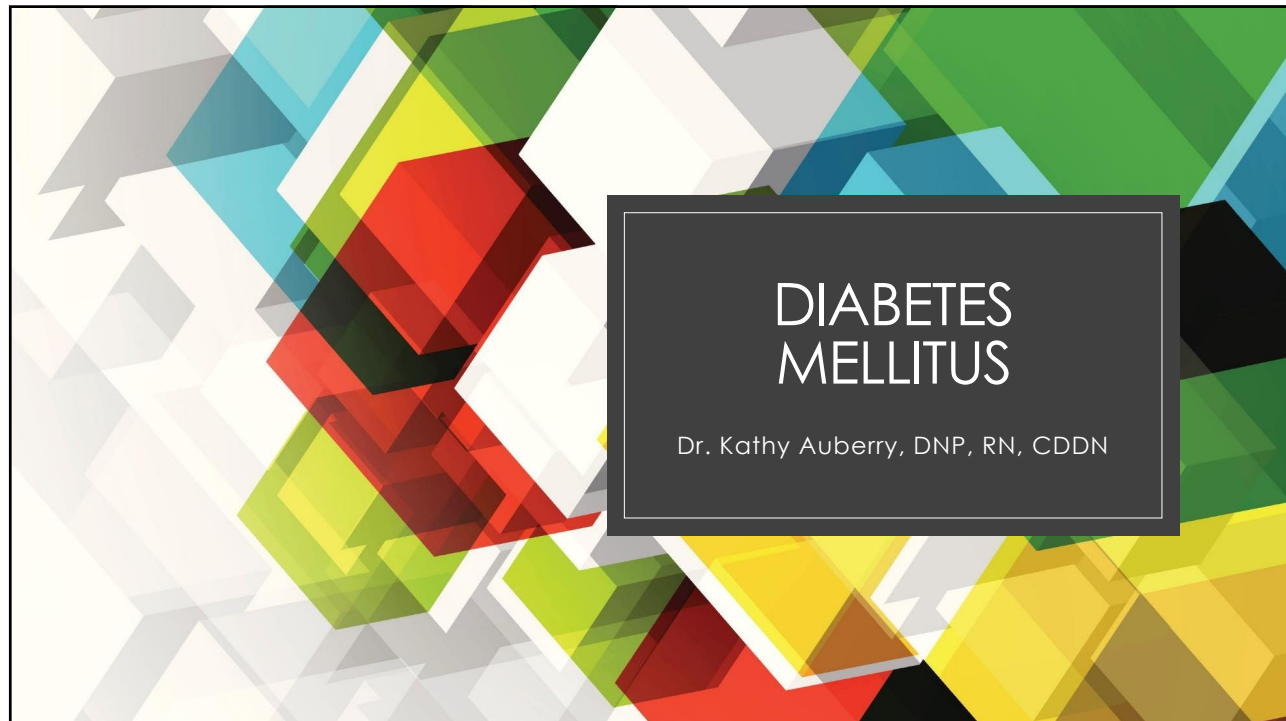
All DSP Series webinars are recorded and shared on the INARF Member Portal under the Quick Links section; including these recent webinars:

- Breaking it Down (Systematic Instruction, Simple Task Analysis)
- Safely and Fully Nourishing Individuals
- Staying Healthy and Safe in the Workplace While Navigating COVID-19

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THANK YOU INARF

For this Opportunity

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Presenter Background

Dr. Kathy Auberry is a registered nurse practicing in the field of intellectual and developmental disability for the past twenty-five years. She has been an Assistant Professor of Nursing at Indiana University School of Nursing at IUPUC since 2012. Dr. Auberry possesses a Doctor of Nursing Practice Degree, and a Master's Degree in Nursing- 'Healthcare Leadership with a Focus in Education', as well as certification in developmental disabilities nursing.



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Content Overview

- Diabetes and Persons with Intellectual and/or Developmental Disability
- Defining Type One and Type Two Diabetes
- Hyperglycemia and Hypoglycemia
- Treatment Options
- Administering Insulin with an Insulin Pen
- Educating and Supporting
- Prevention Strategies
- When to Call the Nurse

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Objectives

- Understand basic physiology of diabetes
- Define diabetes
- Identify risk factors for individuals with intellectual and/or developmental disability
- Name the normal range for blood sugar readings
- Identify the signs and symptoms of high blood sugar (hyperglycemia) and low blood sugar (hypoglycemia)

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Objectives

- Recognize treatment options for high blood sugar (hyperglycemia) and low blood sugar (hypoglycemia)
- Describe how to accurately complete a blood sugar check
- Label the steps for administering insulin using an insulin pen
- Identify when to notify the Nurse

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A Clarification

- Diabetes Management including blood sugar checks, oral medications, injectable insulin, and insulin pen administration should be under the continual guidance of the primary care provider and agency nurse. Guidance should include specific medication/insulin orders, schedule of blood sugar checks, training, and a treatment plan for hyperglycemic (high glucose) and hypoglycemic (low blood sugar) reactions.
- The following information is for background educational information only and is not intended to prepare DSPs to perform blood sugar checks, administer oral medications, or give insulin injections, and is not considered to be comprehensive in content.

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Diabetes and Persons with Intellectual and/or Developmental Disability

- Aging population with age related disorders such as diabetes
- Some classes of medication may increase chance of developing diabetes
 - Antipsychotics may lead to weight increase, a precursor to diabetes
- Inadequate focus on disease prevention
- Sedentary life-style

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Diabetes and Persons with Intellectual and/or Developmental Disability

- Physical limitations may increase chances of obesity
- Less likely to have adequate health checks
- Risks for *Type 1 Diabetes*: Klinefelter Syndrome, Prader Willi, and Down syndrome
 - Extra weight around, the girth, has been identified as contributing to insulin resistance

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Prevalence

According to the Center for Disease Control:

About 1 in 6 people with disabilities (16.7%) in the United States are diagnosed with diabetes, compared to 1 in 14 people without disabilities (7.4%).

(2018)

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Comprehension Checkpoint!

What are 3 risk factors for individuals with intellectual/developmental disability developing diabetes?

According to research by the CDC: What is the percent of individuals with intellectual-developmental disability who develop diabetes?

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Comprehension Checkpoint!

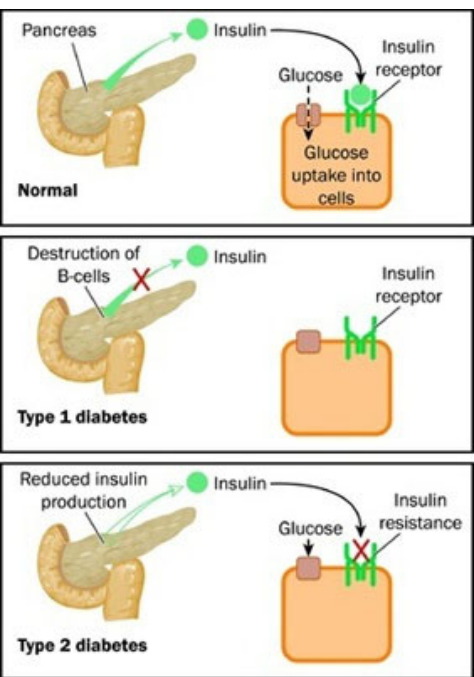
What are 3 risk factors for individuals with intellectual/developmental disability developing diabetes?

- Aging population
- Medications
- Sedentary life-style
- Limited focus on prevention

According to research by the CDC: What is the percent of individuals with intellectual-developmental disability who develop diabetes?

1 in 6 people with disabilities (16.7%)

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Normal

The pancreas produces insulin, which binds to the insulin receptor on the cell surface, allowing glucose to be taken up into the cell.

Type 1 diabetes

There is a destruction of B-cells in the pancreas, leading to a significant reduction in insulin production. The insulin receptor is present, but there is not enough insulin to bind to it.

Type 2 diabetes

There is reduced insulin production from the pancreas. Additionally, the cells develop insulin resistance, meaning the insulin receptor does not respond properly to the insulin that is present.

Definition

A condition in which the pancreas no longer produces enough insulin or cells stop responding to the insulin produced, so that glucose in the blood cannot be absorbed into the cells of the body

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Types of Diabetes

Type I

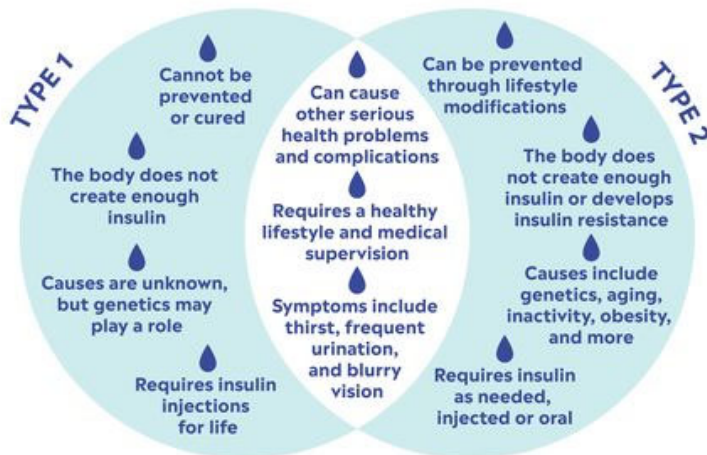
- **Type 1 diabetes**, your pancreas doesn't make insulin or makes very little insulin. Insulin is a hormone that helps blood sugar enter the cells in your body where it can be used for energy. Without insulin, blood sugar can't get into cells and builds up in the bloodstream.

Type II

- **Type 2 diabetes** is a condition in which the cells cannot use blood sugar efficiently to meet the body's needs

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TYPE 1 vs TYPE 2 DIABETES



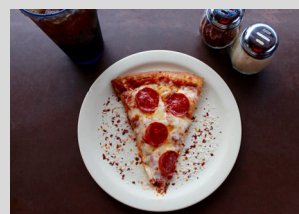
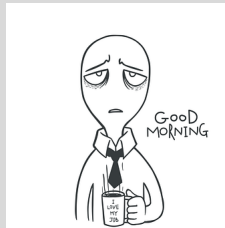
Comparing

Type One Diabetes and Type Two Diabetes

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Signs and Symptoms of Diabetes

- Frequent urination
- Lethargy
- Excessive Thirst
- Hunger
- Cuts/bruises that are slow to heal
- Weight loss—even though you are eating more (**type 1**)
- Tingling, pain, or numbness in the hands/feet (**type 2**)



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Hyperglycemia

- **Causes**
 - Undiagnosed diabetes
 - Infections
 - Medications
 - Emotional Stress
- **Symptoms:**
 - Increased thirst
 - Increased urination
 - Vision problems
 - Fatigue
- **Treatment**
 - Oral agents
 - Insulin

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Hypoglycemia


- **Causes:**
 - Overdose of insulin
 - Insufficient diet
 - Overexercise
- **Treatment:**
 - 4 oz. Orange Juice
 - Honey
 - Milk
 - Peanut Butter
 - Cheese
- **Symptoms:**
 - Fatigue
 - Pale skin
 - Shakiness
 - Anxiety
 - Sweating
 - Hunger
 - Irritability

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Diabetic Ketoacidosis (DKA)

- **TYPE ONE diabetes** can progress to DKA if untreated.
- DKA occurs when blood glucose is dangerously high, and the body can't get nutrients into the cells because of the absence of insulin.
- The body then breaks down muscle and fat for energy, causing an accumulation of ketones in the blood and urine.
- Symptoms of DKA include a fruity odor on the breath, heavy, taxed breathing and vomiting. If left untreated, DKA can result in stupor, unconsciousness, and even death.
 - <https://www.diabetes.org/diabetes/type-1/symptoms>

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Comprehension Checkpoint!

What are symptoms of Hyperglycemia?

What are symptoms of Hypoglycemia?

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Comprehension Checkpoint!

What are symptoms of Hyperglycemia?

- Increased thirst
- Increased urination
- Vision problems
- Fatigue

What are symptoms of Hypoglycemia?

- Fatigue
- Pale skin
- Shakiness
- Anxiety
- Sweating
- Hunger
- Irritability

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Screening and Monitoring for Diabetes

- **Fasting Blood Sugar (FBS).** This test checks fasting blood sugar levels. Fasting means not having anything to eat or drink (except water) for at least 8 hours before the test. This test is usually done first thing in the morning, before breakfast.

Result	Fasting Plasma Glucose (FPG)
Normal	less than 100 mg/dl
Prediabetes	100 mg/dl to 125 mg/dl
Diabetes	126 mg/dl or higher


- Diabetes is diagnosed at fasting blood sugar of greater than or equal to 126 mg/dl
- <https://www.diabetes.org/diabetes/type-1/symptoms>

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Screening and Monitoring for Diabetes

- **A1C Blood Draw:** average blood sugar over the past two to three months.
- 1. Can Diagnose Prediabetes
- 2. Monitors Diabetes
- If A1C level is between 5.7 and less than 6.5%, levels are in the prediabetes range.
- If A1C level of 6.5% or higher, levels are in the diabetes range.

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Comprehension Checkpoint!

What is the difference between the blood tests A1C and FBS?

Type answers in question box.

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Comprehension Checkpoint!

What is the difference between the blood tests A1C and FBS?

FBS: nothing to eat or drink for eight hours. Tests current blood sugar.

A1C: Is the average blood sugar over the past 3 months

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Taking a Blood Sugar Test

- **Receive specific training on the make and model of the glucometer, and finger stick device**
- Materials needed: Glucometer, lancets, test strips, alcohol swabs
- Wash your hands thoroughly
- Use an alcohol wipe to cleanse the finger to be tested. Be sure to let the site dry before testing.
- Place a testing strip into the meter.
- Prick the side of finger with the lancet to get a small drop of blood.
- The blood goes on the test strip you inserted into the meter.
- The monitor will analyze the blood and give you the blood glucose reading on its digital display usually within a minute.
- Finger pricks rarely require a bandage, but you may want to use one if bleeding continues beyond a few drops. It's important to follow all the instructions that came with your glucometer

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Treatment

- Weight Loss Healthy Diet
- Exercise
- Positive Emotional Support
- Oral Medications
- Insulin

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Oral Medications

- | <u>DRUG CLASS</u> | <u>AGENTS</u> |
|--|---------------|
| ◦ Sulfonylureas | |
| ◦ <i>First generation:</i> Acetohexamide (Dymelor), Chlorpropamide (Diabinese), Tolazamide (Tolinase), Tolbutamide (Orinase) | |
| ◦ <i>Second generation:</i> Glyburide (Micronase), Glipizide (Glucotrol), Glimepiride (Amaryl), | |
| ◦ Meglitinides: Repaglinide (Prandin), Nateglinide (Starlix) | |
| ◦ Biguanides: Metformin (Glucophage) | |
| ◦ Thiazolidinediones: Pioglitazone (Actos), Rosiglitazone (Avandia) | |
| ◦ Alpha-glucosidase inhibitors: Acarbose (Precose), Miglitol (Glycet) | |

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Common Side Effects of Oral Medications

- **Sulfonylureas:** low blood sugar, upset stomach, skin rash or itching, weight gain
- **Biguanides/Metformin:** sickness with alcohol, kidney complications, upset stomach, tiredness or dizziness, metal taste
- **Alpha-glucosidase inhibitors:** gas, bloating and diarrhea

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Insulin and Diabetes

- Various insulin types
 - Action: Long and short
- Accurate Measurement
- Sliding Scale orders
- Syringe/ Pen options
 - <http://bd.com/us/diabetes/page.aspx?cat=7001&d=7259>
- Storage
- What is your agency policy?
 - Is there a Protocol?



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Insulin Pen

Use correct needle size

Use needle one time and dispose

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Administering Insulin with a Pen



- <https://www.youtube.com/watch?v=8g4rEhOukmM>

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Insulin

- Used to treat Type I Diabetes (Also now sometimes Type II)
- Types
 - Humulin,
 - × Intermediate acting
 - Lantus,
 - × Long acting
 - Humalog
 - × Rapid acting
 - Novalog
 - × Rapid acting
- Side Effects



Insulin Types

Caution-Requires:

Comprehensive training by a medical professional with Hands on and return demonstration by DSP

Healthcare provider's order

Healthcare Diabetes Plan

Approval by the policy of the agency

Insulin syringe

Accurate administration

2- person check before administering

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Comprehension Checkpoint!

True or False:

There is only 1 type of Insulin to treat diabetes mellitus.

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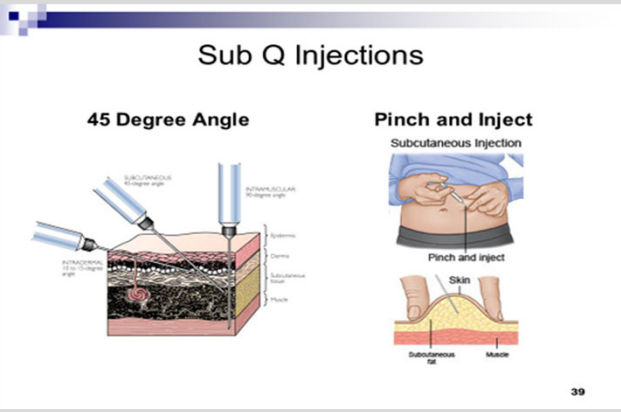
Comprehension Checkpoint!

True or False:
There is only 1 type of Insulin to treat diabetes mellitus.

False-there are many types of insulin

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Injection Type: Subcutaneous



Sub Q Injections

45 Degree Angle

Pinch and Inject
Subcutaneous Injection

Pinch and inject

Skin

Subcutaneous fat

Muscle

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Injection Sites

Injecting Insulin

Injections	Injection Sites
<ul style="list-style-type: none"> • Subcutaneous injection • <u>Have second person check accuracy</u> • Rotate sites • Premixed dose caution <ul style="list-style-type: none"> ○ Ex: Humulin 70/30 • Sliding Scale administration <ul style="list-style-type: none"> ○ Standing orders that are determined by blood sugar readings 	

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Sample of a Sliding Scale

Sliding Scale for Insulin

Finger Stick Blood Glucose	Mild Scale	Moderate Scale	Aggressive Scale
<60	1 amp (25 g) D50 or orange juice, call MD	1 amp D50 or orange juice, call MD	1 amp D50 or orange juice, call MD
60-150	No insulin	No insulin	No insulin
151-200	No insulin	3 units	4 units
201-250	2 units	5 units	6 units
251-300	4 units	7 units	10 units
301-350	6 units	9 units	12 units
351-400	8 units	11 units	15 units
>400	10 units, call physician	13 units, call physician	18 units, call physician

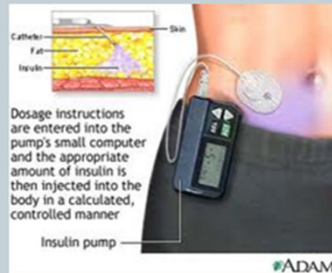
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Insulin Pump

Other Diabetic Treatments

• Insulin Pump



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Remember:

- **High Blood Sugar/Hyperglycemia:**
 - Follow the plan by the healthcare provider/support team
- **Low Blood Sugar/Hypoglycemia:**
 - Follow the plan by the healthcare provider/support team

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Educating and Supporting

- **DSPs** can help educate persons with developmental disability to reduce the risks associated with diabetes:
 - Educate using information about diabetes in a format appropriate to their level of understanding
 - Educate on the risk factors for type 2 diabetes
 - Assist them to modify their lifestyle and behaviors
 - Create with the team and individual, a diabetes/health action plan
 - Assist them to set realistic goals
 - Have a strong focus on celebration and positive support

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Preventing Diabetes

- Reduce obesity
- Diet Control
 - Reduce sugar intake. - Reduce fats and saturated food intakes.
 - Eat smaller portions of starchy carbohydrate foods, such as potatoes, rice and bread
- Promote Activity

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Individualized Diabetes Plan


- Developed by the Support Team
- Include a 'Sick Day' plan
- May include a sliding scale
- Monitor skin and feet
- Include tracking sheet for monitoring Blood Sugar Levels
- Include ordered lab tests and the rationale for testing
- Ensure all DSPs are trained on the Diabetes Plan
- Include 'when to call the nurse' in the Diabetes Plan

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When to Call the Nurse/Seek Assistance

- As A DSP Make sure to seek assistance when:
 - You have not been trained on the individual's diabetes plan
 - You have not received training on how to administer the individual's insulin pen
 - You have questions about the insulin or medication the individual has ordered
 - Signs and symptoms of hyperglycemia or hypoglycemia are present
 - As stated in the individuals support plan
 - ANY time you have concerns about the health and safety of the individual.

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Comprehension Checkpoint!

When should a DSP call the Nurse?

Type answers in question box.

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Comprehension Checkpoint!

When should a DSP call the Nurse?

- You have not been trained on the individual's diabetes plan
- You have not received training on how to administer the individual's insulin pen
- You have questions about the insulin or medication the individual has ordered
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- As stated in the individuals support plan
- ANY time you have concerns about the health and safety of the individual

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Questions?

Thank you!

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Thank you!

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