Diabetes at Camp: Insulin Injections with Syringes and Pens

Module 4 of 12

Special thanks to the team below and everyone who contributed to this work.

Abby Hollander, MD
Professor of Pediatrics
Division of Pediatric Endocrinology and Diabetes
Washington University School of Medicine and
St. Louis Children's Hospital, One Children's Place
St. Louis, MO

Vicki Moran, PhD, RN, CNE, CDE, PHNA-B, TNS
Assistant Professor
St. Louis University School of Nursing
St. Louis, MO

Stephanie Kassels, DNP, FNP-BC, CDE
Nurse Practitioner
Memorial Hospital
North Conway, NH

Carla Cox, PhD, RD, CDE, CPT
Providence Medical Group, Endocrinology,
Diabetes and Nutrition, Missoula, MT
Mountain Vista Medicine
Kamas, UT

Kelly Mueller, MS, PMP
Vice President, Consumer and Community Impact
American Diabetes Association
Arlington, VA

Emily Fay
Territory Director, Youth and Family Initiatives
American Diabetes Association
Denver, CO

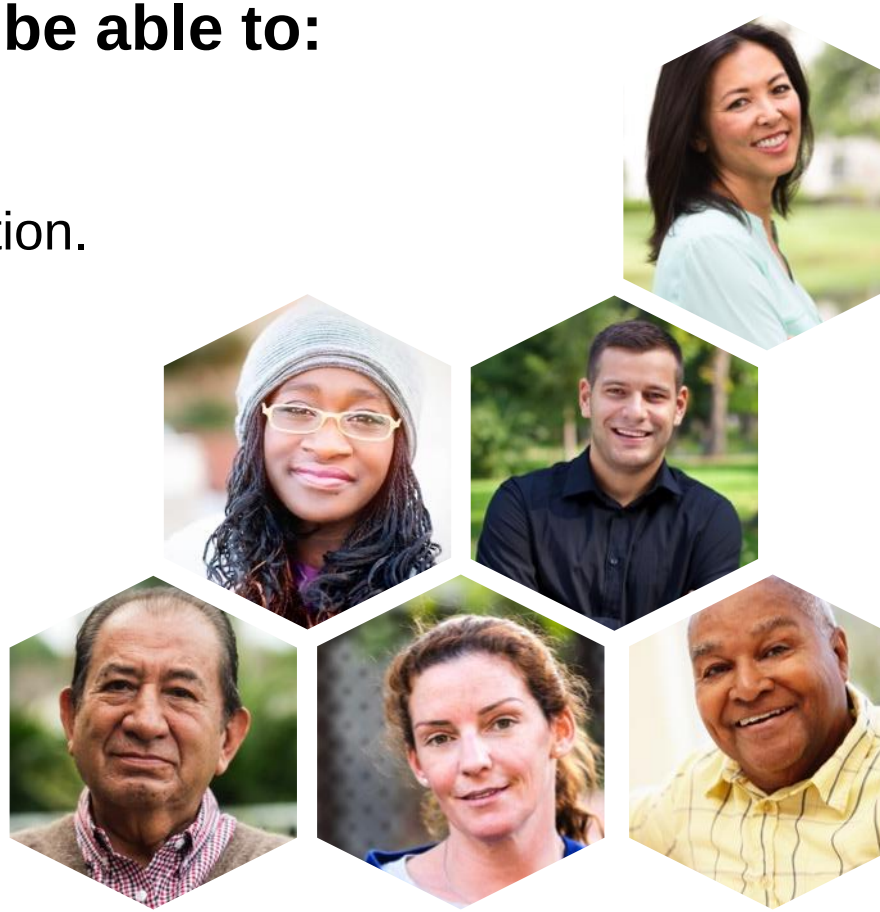
American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Objectives

At the end of this module, the participant should be able to:

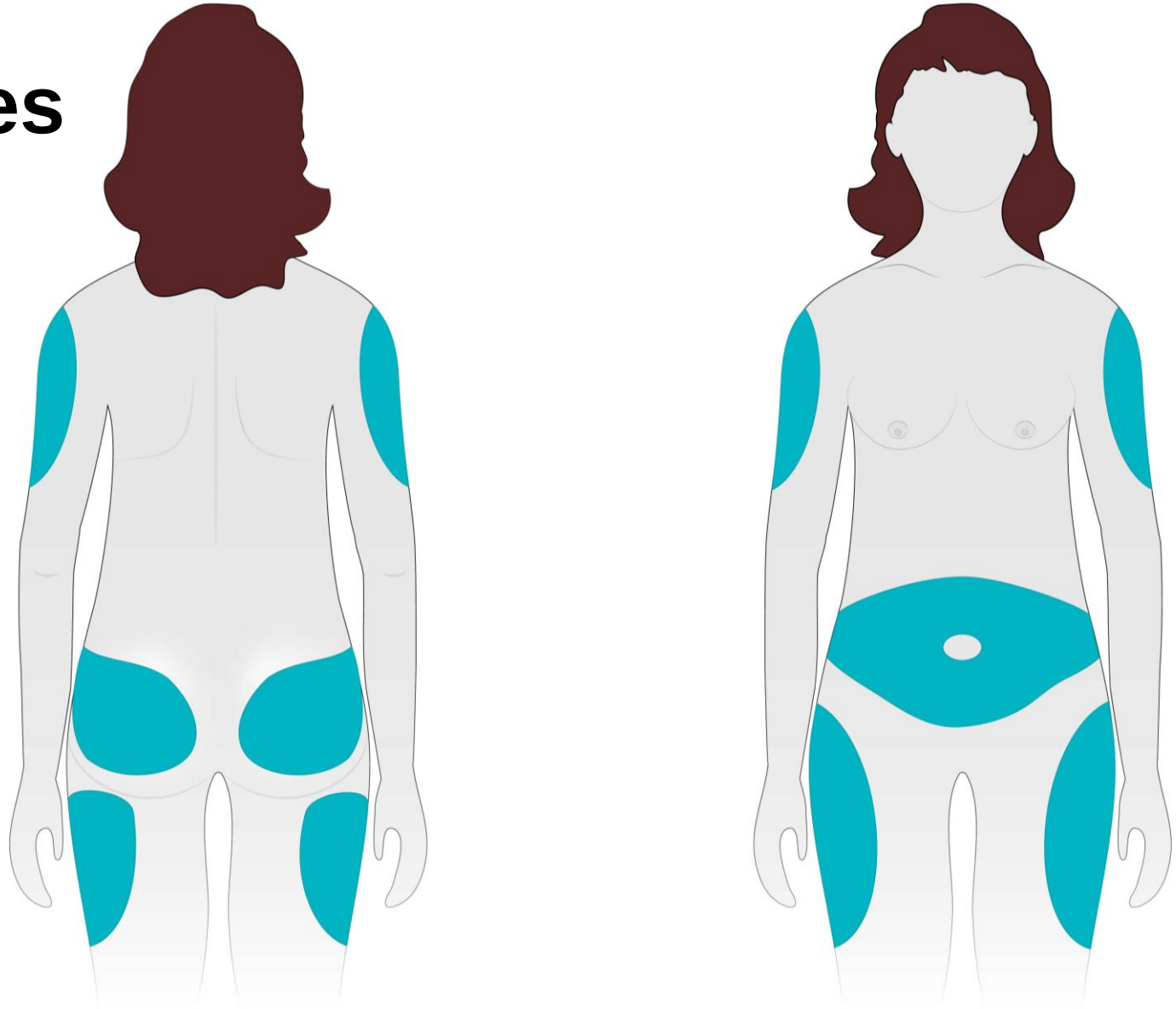
- List types of syringes/pens and where to inject insulin.
- State the preparation steps for syringe/pen priming and injection.
- Demonstrate how to dose and inject insulin with a syringe.



American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Insulin Injection Sites



American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Insulin Delivery Devices

- Pen Device
- Syringe
- Jet Injector
- Insulin pump
  Note: insulin pumps are another insulin delivery device and are discussed in another module
- Inhaled insulin
  (FDA approved > 18 years; clinical trials for < 18 years)

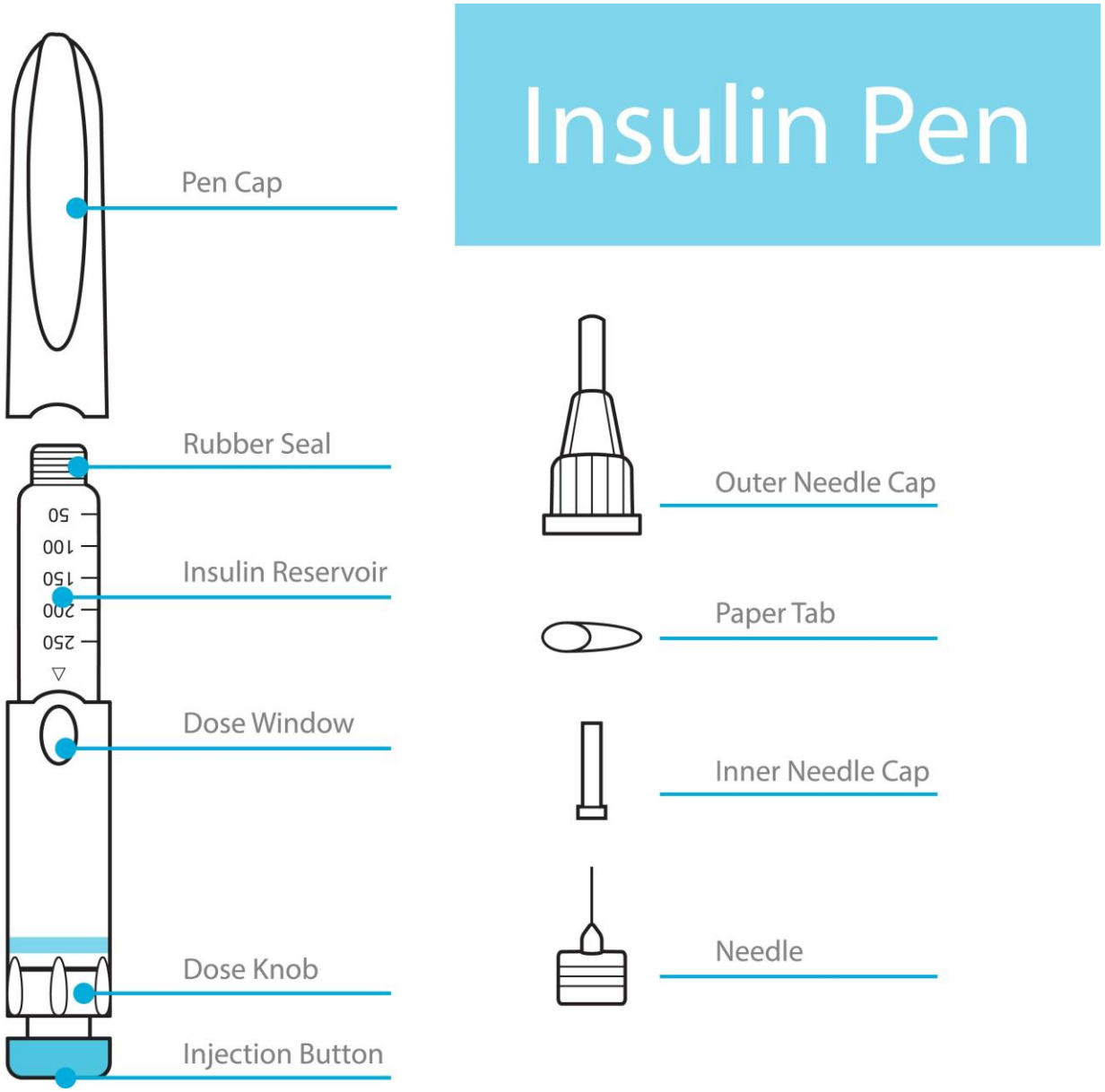
American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Pen Devices

Singular modular units that can be disposable (prefilled insulin) or reusable/refillable (replacement cartridges of insulin)

Various needle lengths (4mm, 5mm, 6mm)



American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Syringes

Disposable insulin syringes for use with U-100 insulin

Various needle lengths
(6mm or 8mm ok for all BMI)

Various syringe sizes

0.3 mL
8mm (5/16") x 31 G
Half unit markings

0.3 mL
8mm (5/16") x 31 G
12.7mm (1/2") x 29 G

0.5 mL
8mm (5/16") x 31 G
12.7mm (1/2") x 29 G
12.7mm (1/2") x 28 G

1.0 mL
8mm (5/16") x 31 G
12.7mm (1/2") x 29 G
12.7mm (1/2") x 28 G

American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Jet Injector

Needle-free system that delivers insulin transcutaneously by releasing a fine stream of insulin at high speed and under high pressure to penetrate the skin **(very limited use).**

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Items needed for insulin injection

- Alcohol swab
- Insulin
- Delivery device – syringe, pen plus needle tip, jet injector (less common), or inhaled delivery system (if in clinical trial)
- Sharps container

American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Injection steps using vial and syringe

Step 1
Clean the top of the vial with an alcohol pad, then remove the cap from the syringe needle.

Step 2
Draw air into your syringe—an amount equal to the units of insulin you'll be injecting. To do so, pull back the syringe's plunger until its black stopper reaches your insulin dose amount on the syringe barrel. So if you will be taking 6 units of insulin, pull back the plunger until the stopper hits the 6 etched onto the barrel.

Step 3
Put the vial on a flat surface and hold it. Insert the syringe into the vial, and press down on the plunger to inject the air from Step 2 back into the vial.

Step 4
With the syringe still in the bottle, turn the vial and syringe upside down. The tip of the needle should be fully covered by insulin.

Step 5
Make air bubbles less likely by slowly pulling down on the plunger. Draw insulin past your dose. Tap the syringe a few times so any bubbles rise to the top.

Step 6
Without removing the syringe from the vial, slowly push the plunger until the edge of its black stopper reaches the number of units in your dose, as marked on the syringe. If you see any bubbles, push all that insulin back into the vial and repeat these steps until no bubbles are present.

Step 7
Identify an injection site. Pinch up a bit of skin (if necessary). Insert the needle at a 90-degree angle. Hold the needle in the skin for 5 seconds to ensure there is no leakage.

Step 8
Dispose of your syringe and needle in a sharps container.

American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Injection steps using insulin pen

Step 1
Remove the pen cap and wipe the top of the pen with an alcohol swab to clean the area.

Step 2
Remove the paper tab from the pen needle, then screw the needle tightly onto the top of the pen.

Step 3
Prime your pen to remove air from the needle and insulin: Dial 2 units of insulin, hold the pen vertically with the tip facing the ceiling, and press the dose button. You should see a drop or stream of insulin at the tip of the pen needle. If you don't, which is common the first time you prime a pen, repeat the process until a drop appears.

Step 4
Set your dose. If you take 6 units of insulin, for instance, you'll dial to 6 in the dose window.

Step 5
Holding your pen at a 90-degree angle over your injection site, push the needle into the skin. Press the dose button.

Step 6
Hold your pen still for about 10 seconds to make sure all the insulin is delivered. Remove the needle from your skin.

Step 7
Put the plastic cap on the end of the needle, unscrew the needle from the pen, and dispose of it in your sharps container. Recap your pen.

American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Disposal of Syringe or Pen needle

- The entire syringe should be placed in a sharps container
- The pen needle should be removed from the insulin pen and discarded in the sharps container
- Used insulin syringes should not be discarded in regular trash cans or recycling bins or flushed down the toilet due to risk of injuring others
- **Need to check local or state health department for needle disposal procedure and disposal of sharps containers**

American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Summary

- Insulin can be administered by pen, syringe, and other devices
- Priming of the pen device is important each time insulin is administered
- Priming of the syringe is important each time insulin is administered
- Attention should be given to avoid air bubbles that will replace insulin dosage
- The injection site should be cleaned with alcohol prior to administration

American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Assessment

1. Which are the necessary supplies needed for an insulin injection by pen? Select all that apply.

A. Alcohol swab

B. Insulin vial

C. Pen needle

D. Syringe

E. Blood glucose meter

2. Which are the necessary supplies needed for an insulin injection by syringe? Select all that apply.

A. Pen needle

B. Syringe

C. Scissors

D. Insulin vial

E. Alcohol swab

3. A nurse is preparing to administer an injection of insulin to a 12 year old camper with T1D. Which statement is necessary to prepare the camper for the injection?

A. “This will only hurt for a millisecond.”

B. “Where do you want me to give you this?”

C. “Do you think you can give yourself the injection?”

D. “Let’s call your mom for instructions on how to give this shot.”

American Diabetes Association®

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp

Assessment

1. Which are the necessary supplies needed for an insulin injection by pen? Select all that apply.

A. Alcohol swab

B. Insulin vial

C. Pen needle

D. Syringe

E. Blood glucose meter

2. Which are the necessary supplies needed for an insulin injection by syringe? Select all that apply.

A. Pen needle

B. Syringe

C. Scissors

D. Insulin vial

E. Alcohol swab

3. A nurse is preparing to administer an injection of insulin to a 12 year old camper with T1D. Which statement is necessary to prepare the camper for the injection?

A. “This will only hurt for a millisecond.”

B. “Where do you want me to give you this?”

C. “Do you think you can give yourself the injection?”

D. “Let’s call your mom for instructions on how to give this shot.”

American Diabetes Association

American Diabetes Association, Diabetes at Camp 12.2018
Proprietary information of the American Diabetes Association. All rights reserved.
Available for download: diabetes.org/summercamp