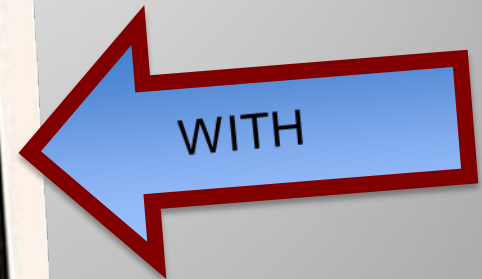
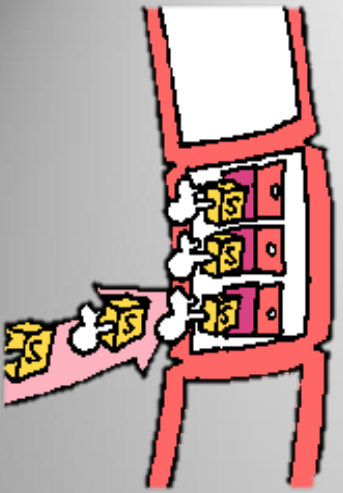


INSULIN ADMINISTRATION

Insulin Therapy



Why is Insulin so Important?

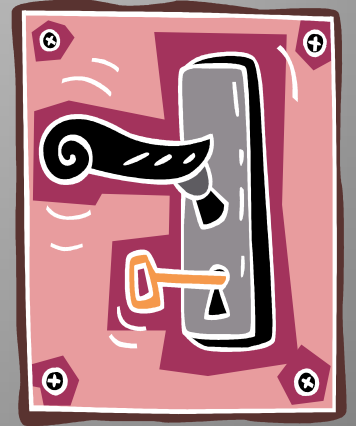


- If the glucose stays in your blood – it doesn't do your cells (body) any good
- The glucose has to get inside the cells for the body to use it



What Does Insulin Do?

Insulin is the key that opens up the door and allows the glucose to move from the blood into the cell where the cell can “burn” the fuel for energy.





Insulin in Schools Today

Most students with diabetes take insulin at school

- The insulin dose is specific to each student
- A student's need for assistance will vary as the student progresses in self-management
- Insulin will be given according to the student's medical orders



Definitions

Basal Insulin:

- Sometimes called “background” insulin
- The insulin that is working steadily throughout the day
- Like using the cruise control on a car to keep the speed steady



Definitions

Bolus Insulin:

- A single dose of insulin, given for one of two reasons
 - Carbohydrate/Meal/Snack Bolus: insulin which is given when carbohydrates are consumed
 - Correction Bolus: insulin which is given when blood glucose is too high and needs to be lowered
- Like stepping on the accelerator to give it more gas

Types of Insulin

Rapid-Acting

- Lispro (Humalog)
- Aspart (NovoLog)
- Glulisine (Apidra)

Short-Acting

- Regular (R)



Intermediate-Acting

- NPH
- NPL

Basal/Long-Acting

- Glargine (Lantus)
- Detemir (Levemir)

Rapid-Acting

- Insulin Glulisine--Apidra
- Insulin Lispro—Humalog
- Insulin Aspart—Novolog



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CHAPTER 7 INSULIN INSULIN BASICS

at:

[http://www.youtube.com/watch?v=-
FlavJim_Nl&feature=share&list=EC3DE9DDE8EB2A2E56](http://www.youtube.com/watch?v=-FlavJim_Nl&feature=share&list=EC3DE9DDE8EB2A2E56)

Insulin Delivery Devices

- Syringe
- Pen Device
- Pump





Insulin Syringes

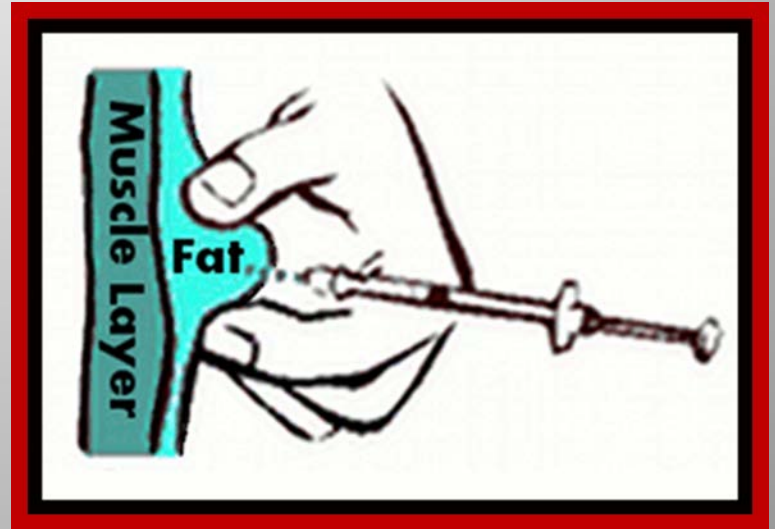
- **ONLY USE INSULIN SYRINGES!**
- Parent to supply insulin syringes
- As syringes have different markings, **ONLY** use the insulin syringes specific for that student
- Only use syringe once; do not re-use



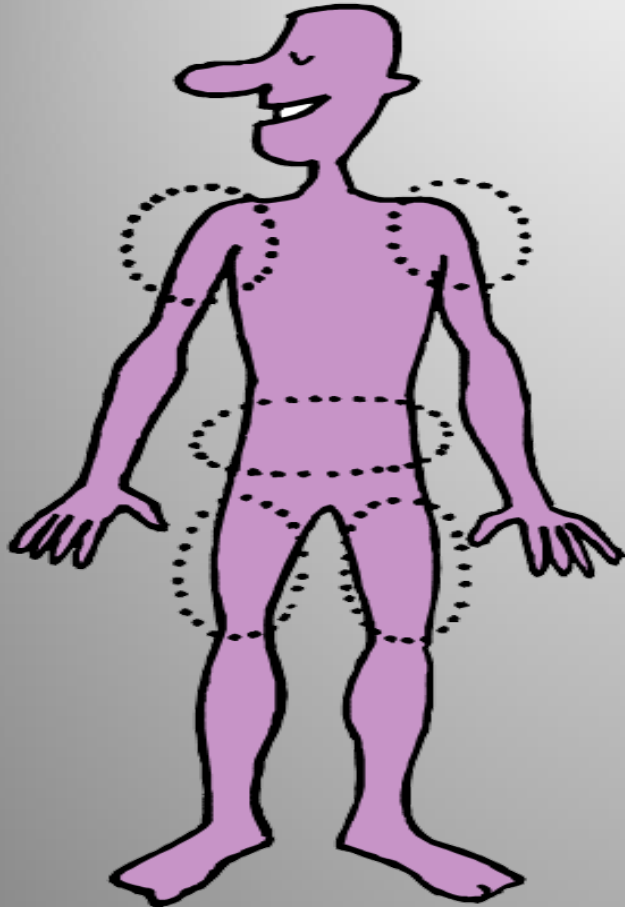


Where to Give Insulin

- Inject into fat layer under skin
- Rotate sites
- Student should help choose site
- Common sites at school:
 - Abdomen
 - Thigh
 - Upper arms

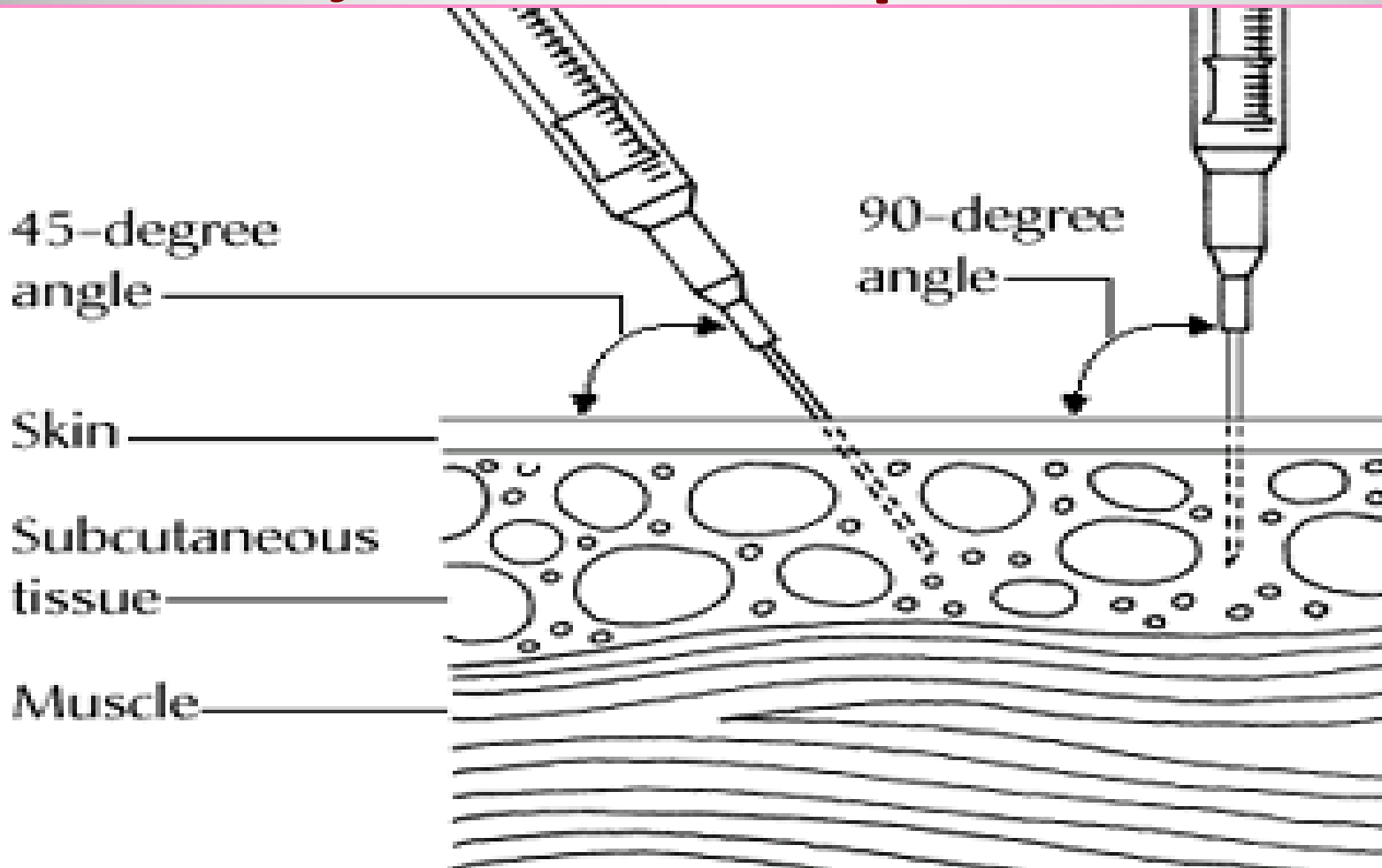


Injection Sites



- Each area absorbs insulin at a different rate
- Avoid injecting around belly button, in skin that is scarred or in skin that has visible blood vessels
- Move at least 1 inch from the last place given
- Exercise can also effect the rate of absorption

Insulin Injection Technique



Injecting Insulin with a Syringe



1. Check

Check insulin for type and expiration date. Humalog should appear clear, colorless, and free of clumps



2. Remove

Upon first use, **remove** the flat, colored cap but not the rubber stopper or metal band under the cap

Clean rubber stopper with an alcohol swab

Remove cover from needle

Pull plunger back to pull air into syringe until the tip of the plunger is at the line for the number of units required for your dose



3. Push

Push needle through rubber stopper

Make sure the tip of the needle is not in the insulin

Press the plunger to push air into the vial of insulin

Injecting Insulin with a Syringe



4. Fill

Turn the vial and syringe upside down so that the tip of the needle is in the insulin

Holding the vial with one hand, pull back on the plunger to pull insulin into the syringe. Stop when the plunger is at the line for your dose

Check that there are no large air bubbles in the syringe. If there are, use the plunger to push the insulin back into the vial and repeat step 4

Double-check that the tip of the plunger is at the line marking your dose and pull the needle out of rubber stopper



5. Insert

Choose an injection site where the skin is clean

Pinch a large area of skin and push the needle straight into the skin all the way at a 90-degree angle

Push the plunger all the way down to inject the insulin into your body



6. Release

Release the pinched skin, count to 5 slowly, and pull the needle straight out

Do not rub your injection site

Safely dispose of used needle and syringe as directed by your healthcare provider

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CHAPTER 8 INSULIN BY SYRINGE AND VIAL

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<http://www.youtube.com/watch?v=IfWiEqnVJYo&list=PL3DE9DDE8EB2A2E56&index=9>

Insulin Delivery

An insulin pen is a device that looks like a pen with a cartridge.



Insulin Pens

There are different types of insulin pens:

- Disposable prefilled pens
- Reusable (cartridge) pens

Techniques for dosing and insulin delivery are similar for pen devices.

ALWAYS FOLLOW MANUFACTURER'S INSTRUCTIONS

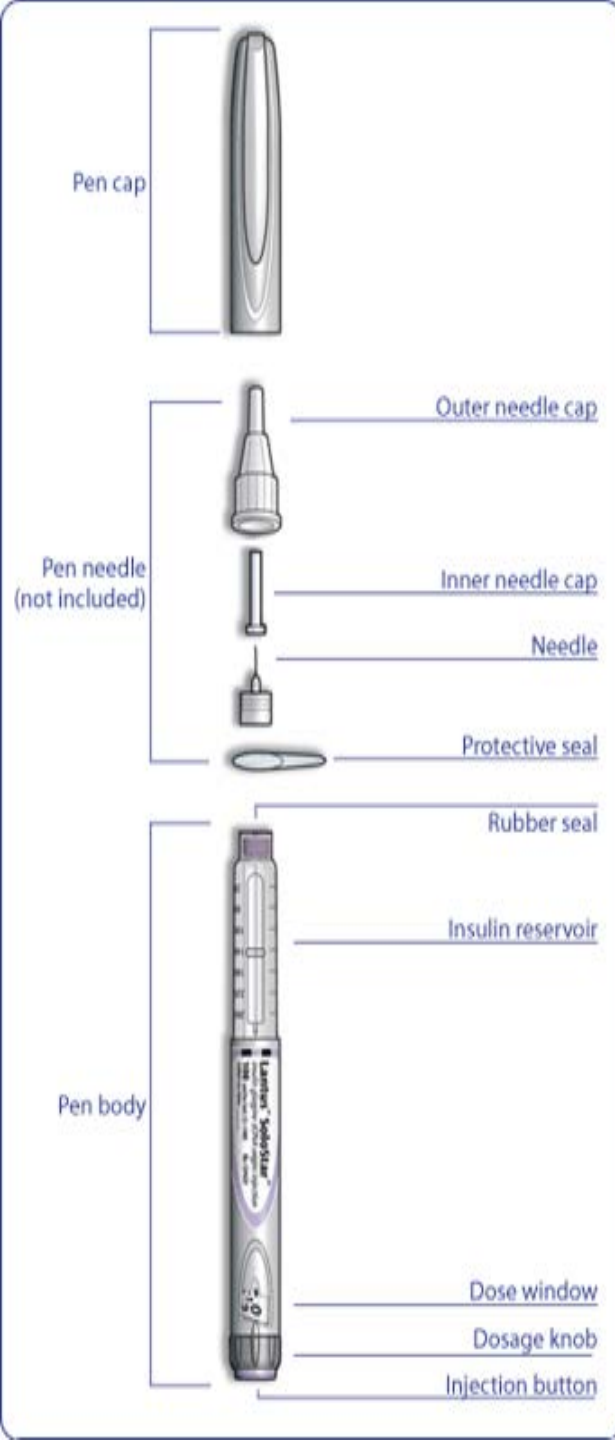
Insulin Pen: Preparation

ALWAYS FOLLOW MANUFACTURER'S INSTRUCTIONS

Step 1: Clean the rubber stopper on the end of the insulin pen with an alcohol pad.

Step 2: Remove protective tab from pen needle.

Step 3: Press needle onto the end of the pen and twist to the right until it is tight.



Insulin Pen: Dosing

- **Step 4:** Prime the pen needle by dialing the pen to 2 units, holding the pen with the needle upright and flicking the cartridge firmly with finger, and pushing the button all the way.
- **Step 5:** You **should see insulin come out the top of the needle**. If not, repeat previous step until a drop appears.
- **Step 6:** Priming will ensure you get your full dose of insulin and that the pen is working.
- **Step 7:** Dial your correct dose of insulin.

Insulin Pen: Injecting

- **Step 8:** Clean injection area with an alcohol pad and pinch up skin using finger and thumb.
- **Step 9:** Inject the needle straight into the skin and push the button with your thumb.
 - Make sure that all of the insulin was injected. Count for 10 seconds before removing needle from skin.
 - If slight bleeding or stinging occurs, you may apply slight pressure. DO NOT RUB injection area as this may cause insulin to be absorbed too quickly.
- **Step 10:** Remove pen needle after each use and discard into a sharps container. Follow Universal Precautions for removal and disposal.

Insulin Pens

Do not share insulin pens or supplies!



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Insulin Care Guidelines

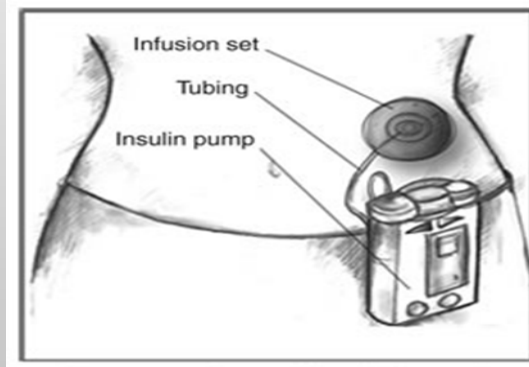
- Ask the school nurse regarding storage of insulin
- Do not use insulin past the expiration date
- Insulin stored at room temperature should be discarded after 28 days
- Insulin in use should be discarded after 28 days



Insulin Care Guidelines

- Don't expose insulin to extreme temperatures (not below 36°F or above 86°F)
- Never use insulin if it is expired
- Allow insulin you are injecting to come to room temperature before administering
- Always look at insulin for particles or unusual color. If it looks different than normal, don't use it!

Insulin Pumps



What is an Insulin Pump?

- Battery operated device about the size of a pager that delivers insulin directly beneath top layer of skin (fat layer)
- Reservoir or a “pod” filled with insulin
- Worn 24 hours per day
- Delivers only rapid-acting insulin

Insulin Delivery



Pump delivers insulin two ways:

1. Basal Rates: (automatically delivered) 24 hour/constant drip of insulin . Basal rates and times are programmed in the pump by family (per provider orders)
2. Insulin Bolus: (not automatically delivered) a dose of insulin is programmed by school nurse or trained school personnel for carbohydrates and/or high blood glucose correction

Insulin Pump and Delivery of Insulin

- All insulin pumps have a feature that will calculate the insulin boluses for carbohydrates and high blood glucose correction
- School RN, or trained staff must enter:
 - Current BG
 - Amount of carbs to be eaten
- Pump will calculate bolus amount needed for carbs and/or correction

Insulin Pump Training Basics

- **Have information readily available and be able to:**
 - **Administer an insulin bolus for carbohydrates and or high blood glucose correction**
 - **Temporarily Suspend (stop insulin delivery)**
 - **How to disconnect insulin pump**
 - **Recognize and troubleshoot alarms** - these alarms require immediate attention to prevent an interruption in the delivery of insulin
 - **Know who to call for technical help**

Pump Supplies at School

- Alcohol wipes
- Syringe or Insulin pen
- Rapid-acting insulin
- Pump batteries
- Manufacturers manual, alarm card
- Extra infusion set or pod

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SAFE AT SCHOOLS VIDEO: Insulin Pumps

[https://www.youtube.com/watch?v=w7-
JBjJgKS4&index=11&list=PL3DE9DDE8EB2A2E56](https://www.youtube.com/watch?v=w7-JBjJgKS4&index=11&list=PL3DE9DDE8EB2A2E56)

Continuous Glucose Sensors



What is Continuous Glucose Monitoring (CGM)?

- Real-time measurements of glucose levels, with glucose levels displayed at 5-minute intervals on CGM monitor or insulin pump
- CGM does not replace fingerstick blood glucose monitoring
- CGM requires a sensor be placed into skin (done by family)

Basics for Trained Staff

- CGM may be worn daily or occasionally
- Always confirm CGM results with blood glucose meter check before taking action on sensor glucose level
- CGM does not replace blood glucose monitoring using blood sample from finger tip
- No medical treatment should be given based on CGM result only. If student has symptoms or signs of hypoglycemia, check fingerstick blood glucose level regardless of CGM
- Know your role in responding to alerts and alarms