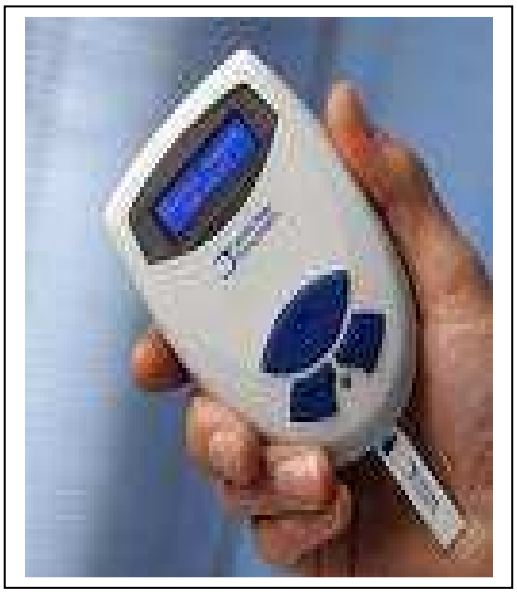
OHIO DEPARTMENT of DEVELOPMENTAL DISABILITIES

Curriculum for DD Personnel

Certification 3



Subcutaneous Insulin Injection

By Nursing Delegation

Training Manual

Last Rev Aug – 09

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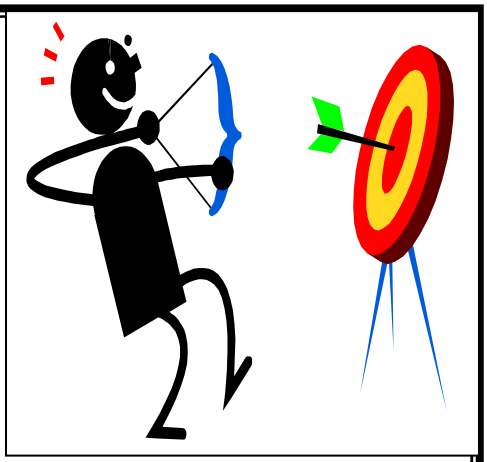
DD Personnel: Subcutaneous Insulin Injection by Nursing Delegation Training Program (Ohio Administrative Code 5123:2-6-03)

Introduction

Licensed nurses may delegate the administration of subcutaneous insulin to trained and certified Ohio Department of Developmental Disabilities (ODODD) personnel in specified DD residential environments. The Ohio Department of Developmental Disabilities has developed this instruction manual for training unlicensed DD personnel in the care and treatment of individuals with diabetes mellitus, including the administration of subcutaneous insulin and commercially packaged Glucagon.

Objectives

As a result of this training, DD personnel will be able to:



1. Describe two types of diabetes mellitus: Type I and Type 2.
2. Identify potential signs and symptoms of diabetes mellitus.
3. Describe the treatment of diabetes mellitus.
4. Demonstrate correct use of a Glucometer per classroom simulation.
5. Demonstrate ability to administer insulin per classroom simulation.
6. Describe the importance of diet and exercise in the care of the individual with diabetes.
7. Describe the importance of foot care for the individual with diabetes mellitus.
8. List the potential complications of uncontrolled diabetes mellitus.
9. Describe methods for infection control, disposal of sharps, and documentation of insulin administration
10. Verbalize comprehension that **only the delegating nurse** shall:
    - receive orders for insulin and
    - transcribe orders for insulin onto the client's MAR

Chapter 1: General Information

According to the Ohio Revised Code (ORC) 5123.42 and in conjunction with rules which are Ohio Administrative Code (OAC) 5123: 2-6-03 and OAC 5123:2-6-06 (E) (1) (a-k), insulin injection may be delegated to trained, certified DD personnel by a licensed nurse in the following environments:

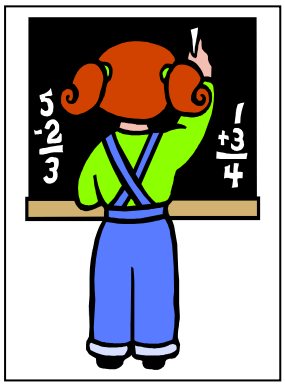
- Family Support Services
- Certified Support Living
- Certified Home and Community Based Environments of 1-4 beds
- Residential Facilities of 1-5 beds

DD Personnel Eligibility Requirements

In addition to general eligibility training requirements as per 5123:2-6-06 (A) & (B), in order to be eligible for Subcutaneous Insulin Injection Certification, the DD personnel shall have a current Certification 1 (Medication Administration and Health-Related Activities) as a prerequisite.

Curriculum Content

This course shall be a minimum of **4 hours** in length and include the following content:



- Information on the pathophysiology of diabetes mellitus.
- Correct and safe practices, procedures and techniques for administering subcutaneous insulin.
- Signs and symptoms of subcutaneous injection complications.
- Safe handling and disposal of sharps
- Documentation requirements for subcutaneous insulin administered, missed, held or refused
- Documentation requirements for errors of subcutaneous insulin injection or via insulin pump
- Proper storage, care, and preparation of insulin to be administered via injection or pump
- Signs and Symptoms of hypoglycemia / hyperglycemia and procedures for intervention and notification of the nurse, doctor, or emergency medical services.
- Use of commercially packaged Glucagon for treatment of hypoglycemia as prescribed by a licensed healthcare professional.
- Instruction that only a licensed nurse shall transcribe an insulin prescription on the medication administration record.
- Requirements for nursing delegation of subcutaneous insulin injection.

Information about Certification 3 Course:

1. The course length is **a minimum of 4 hours.** The course may be lengthened to meet the needs of the class participants or the nurse trainer.

2. To obtain state certification, Developmental Disabilities (DD) personnel must:

   - ♦ Attend the **ENTIRE** program, participate in discussion and activities and complete and submit an evaluation of this program to the instructor.
   - ♦ **D**emonstrate use of a glucometer and injection of insulin and Glucagon.
   - ♦ Pass a closed book course written exam with a score of 80% or better.

     Failure to pass the written exam will result in the personnel being required to retake the entire 4 hour course before attempting to take the written exam again. Follow your agency's policy for the number of times you may retake the course in order to pass the test.

NOTE: Certified DD personnel must receive delegation and individual specific training prior to administering insulin injection. Individual specific training will be provided by the delegating licensed nurse and shall include:

- ♦ Use of the individual's Glucometer
- ♦ Parameters of blood sugar results that are to be reported to the delegating licensed nurse and/or physician
- ♦ Training regarding the specific type of insulin and injection equipment prescribed, including insulin pump when applicable.

What You Need To Know About Your Certificate

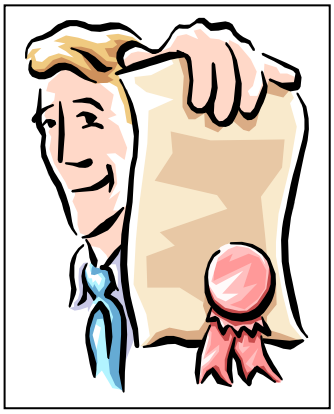
1. It belongs to you and you only. If you lose your certificate, you can get another copy

2. It is good for any DD environment only in the State of Ohio

3. It is good for 1 year only and must be renewed each year on or before your anniversary date

4. We recommend that your renewal and return demonstration be completed **no earlier than** 6 months after certification and **no later than** your actual anniversary date.

5. You must maintain your Certification 1 in order to receive Certification 3. Certification 3 is not valid if Certification 1 has lapsed or been revoked. **If certification 1 is lapsed or revoked you may not administer medications of any type.**



Renewing your Certificate:

At least 8 weeks before your anniversary date, check with your supervisor about the procedure you should follow to renew your certificate.

1. To renew your certificate, you **must have 1 hour** of approved continuing education on or before your renewal (anniversary) date. (See OAC 5123:2-6-04

2. You must **demonstrate use of a glucometer and subcutaneous injection of insulin as well as Glucagon**

What happens if you fail to renew your Certificate:

1. If your certification lapses due to lack of obtaining the required continuing education training, or if you fail to do the return demonstrations, your certification will be suspended for up to 60 days. During this time, you must complete at least 1 hour of continuing education and perform a return demonstration for the delegating nurse. **You may NOT administer insulin during the time your certificate is suspended / lapsed.**

2. Should you allow your certification to remain suspended to day 61, your certification is lapsed and you will be required to re-enroll in the four hour certification course to regain your certification to administer insulin.

Chapter 2:
Introduction to Diabetes Mellitus (DM)

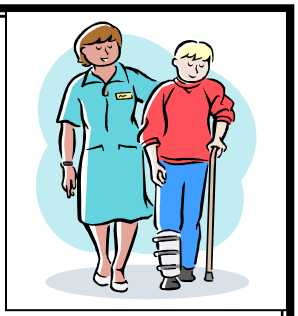
Diabetes mellitus (DM) is the full name for the disease most commonly called *Diabetes.* DM is a condition that affects millions of people and it is one of the fastest growing conditions affecting society today. People with diabetes cannot produce enough or effectively use insulin to control their blood sugar (glucose) level.

Different people view diabetes differently, depending upon their perspective.

Perspective on DM of health care professionals (nurses, physicians, dieticians)

- DM is a chronic disease – it does not go away. It requires frequent and intense management.
- DM is a metabolic deficiency resulting in hyperglycemia (high blood sugar / blood glucose).
- It is a challenge to find the right treatments to decrease / prevent complications. It is difficult to get the client to accept recommendations for diet, exercise, and medications so their DM can be successfully managed.

Perspective on DM of certified DD personnel who assist the client with DM



- It is a challenge to promote the health and safety of the client diagnosed with DM.
- Problem solving is important for ensuring the client receives appropriate treatment regardless of time or place
- Caring for a person with DM provides opportunity to become more knowledgeable about care issues and develop the skills needed to provide the care needed.
- It can be worrisome to care for an individual with DM. It can be scary to administer Glucagon or give insulin as well as be responsible for recognizing signs of complications.

Perspective on DM of the person diagnosed with DM

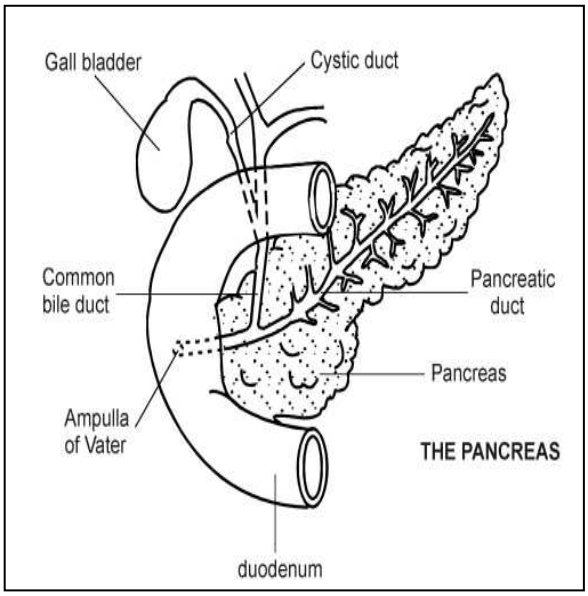
- Because of diabetes, I have to adopt a life style I may not want to adopt.
- DM is costly. Supplies and doctors can be expensive.
- DM is with me 24-7-365. I can control it, but I can't cure it.
- I have to consider my DM with every decision I make.
- I can die from complications. I must always guard against complications.

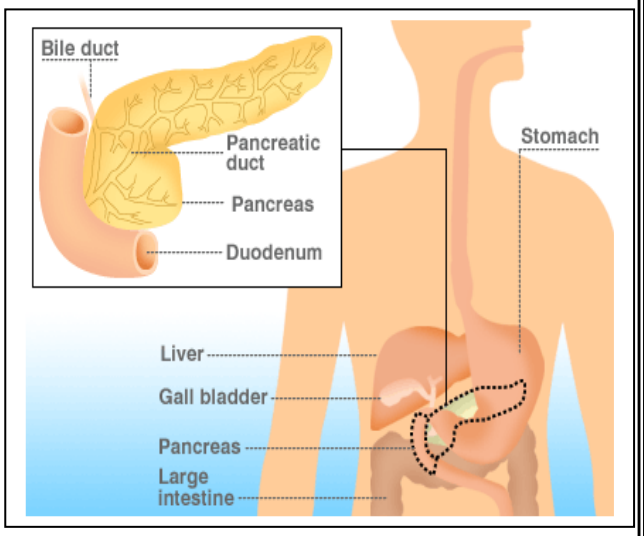
What is glucose and how does the body work to maintain normal glucose levels?

Glucose is the chief fuel for the body. The source of this fuel / energy [glucose] is **carbohydrates (CHOs)**

Glucose is a form of sugar. Often the word *sugar* is used when referring to glucose levels in the blood. For example, someone may refer to their *blood sugar* level. In this case, *blood sugar* level means the same thing as *blood glucose level* (glucose equals sugar). Other sources of fuel for your body include protein and fats. Glucose is the only source of fuel that produces enough energy for brain function. Glucose levels must stay within normal limits to keep the body functioning normally and to its fullest capacity.

The Pancreas



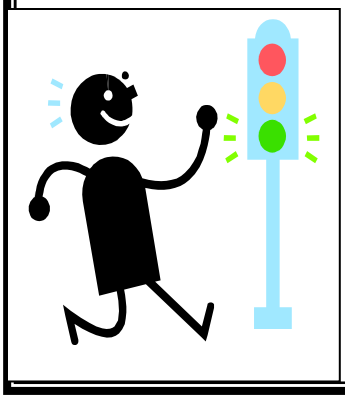


The pancreas is the organ in the body primarily responsible for making sure blood glucose levels remain within normal limits.

- The pancreas is located below the liver and behind the stomach
- The pancreas contains cells called the **Islets of Langerhans.** Some of these cells:
  - Secrete **glucagon** and other hormones that help with digestion and glucose levels
  - Secrete insulin
- Blood levels of glucose are regulated by glucagon and insulin. Secretion of one stimulates the secretion of the other
- Diabetes is the result of too much glucose / sugar in the blood

How The Body Controls Glucose Levels

Your body requires fuel for energy to make all of your body systems work correctly. The primary source of energy for your body is the food you eat, specifically **carbohydrates (CHOs)**. Carbohydrates (CHOs) break down into a type of sugar after you eat them. This sugar is called **glucose, and it is the body's main fuel.** When a person eats CHOs and the body breaks these foods into **sugar / glucose**, the **sugar / glucose** begins to rise in the blood



When your body senses a rise in the **blood sugar / glucose**, it sends a signal to your **pancreas**. In response to this signal, the **pancreas makes insulin** and sends it into the blood stream.

Insulin lowers the level of blood sugar by acting like a key to open up the cells in the body, to allow **sugar / glucose** to pass from the blood into the cells to be used for **fuel and energy**.

The level of **sugar / glucose** in the blood begins to fall as the **sugar / glucose** passes into the cells and is used for fuel and energy.

What happens when a person's blood glucose is too low?

When your body is getting too low on glucose, (ie. during hard work, exercise, or between meals), a signal is sent throughout your body. This signal causes your **pancreas to produce glycogen**. Glycogen acts like sugar / glucose and goes into your blood stream to be used for fuel until you can eat and supply your body with CHOs. While this is happening, your brain sends the message that you are hungry so you will stop and eat.

All the while, **insulin is being produced by the pancreas** and is being released into the blood stream to make sure all sugar sources of fuel and energy stay in balance. Other sources of fuel for your body include **fats and proteins**, but these are not the body's first choice for fuel and energy.

When your body cannot detect enough sugar sources in your blood stream, it begins to breakdown fats for fuel. This might sound good, but if the person is not careful and does not replace the sugar / glucose in the blood stream, the body uses too much fat for fuel. When this happens, there are substances left in the blood from the fat burning process. These substances are called **ketones**. These substances are very hard for your body to get rid of and if too many **ketones** accumulate in the bloodstream, a person can become very ill and it can be a real emergency.

When your body has no sugar and / or no fat to use for fuel, it will turn to its protein sources. This can also be dangerous because the protein sources in your body are your muscles, which include the heart. Breaking down muscles for fuel can also make a person very ill and be a real emergency.

Why glucose blood levels become too high when a person has DM

Hormonal regulation of glucose is lost due to insulin deficiency. Insulin is the key because insulin allows the cells to utilize glucose for fuel. When a person has DM, the pancreas can't supply enough insulin or the cells in the body cannot use the insulin that is made by the pancreas to keep the blood sugar / glucose levels in balance.

- Insulin deficiency may be absolute. Insulin deficiency may occur because the pancreas is not producing enough insulin or none at all. This is known as **absolute insulin deficiency.** When the beta cells in the pancreas are absent or destroyed, no insulin can be produced.

- Insulin deficiency may be relative. Insulin deficiency may occur because even though the pancreas is producing a normal amount of insulin, the person's body needs more or is unable to use the insulin to "unlock the cells" and allow glucose to enter the cells and be used as fuel.

When the body does not have enough insulin or cannot use the insulin made by the pancreas, blood sugar / glucose levels become too high. When **blood glucose levels become too high, this is called hyperglycemia.**

Why an Individual might develop Diabetes Mellitus (DM)

The exact reason why insulin production is affected in some persons is often unknown, but there are some factors which predispose an individual to insulin deficiency or no insulin production. Below are some predisposing factors for DM.

- **Genetics:** There may be a family history of DM or a person may be born with a condition or syndrome which is associated with DM or the development of DM.

- **Viruses:** The beta cells in the pancreas may have been affected by a virus which attacked and destroyed them. When beta cells are absent or destroyed, no insulin can be produced.

- **Abnormal Immune Response:** For some reason, a person's body may develop antibodies against cells in the pancreas. These antibodies destroy the cells in the pancreas or attack the insulin these cells create.

- **Gestational:** During pregnancy, some women have a temporary DM which very often corrects itself after the baby is born. Sometimes, however, the diabetes does not go away.

- **Medication:** Certain drugs (especially certain psychotropic drugs) can affect blood glucose levels.

- **Obesity:** Being **o**verweight predisposes a person to develop DM. The person who is both overweight and has high blood pressure has a significant risk for developing diabetes.

Chapter 3: Type 1 and Type 2 DM

Symptoms of Diabetes Mellitus (DM)

- Symptoms may begin slowly and usually are recognized by the way the body reacts to a lack of fuel. For example, a person may feel weak and / or tired due to a lack of fuel.

- An individual may feel hungry all the time because the cells are "starved" for fuel and cannot use the sugar / glucose that is in the blood stream no matter how much the individual keeps eating (that is, putting in the fuel).

- When the blood sugar / glucose levels are too high and cells cannot absorb the glucose for fuel, the extra glucose floats around and accumulates in the blood stream. This blood with the extra glucose circulates through the body and kidneys. The kidneys are like filters and when things are working right, the glucose is filtered out and used for fuel. But when that process is interrupted, the body tries to rid itself of the "extra" glucose by increasing fluid to the kidneys to dilute the glucose and get rid of it. The person gets rid of this extra fluid by urinating. This results in frequent urination (during the day and at night).

- Because of frequent urination, the body loses extra fluid. The person eventually becomes dehydrated and feels very thirsty. A message is then triggered in the brain to take in more fluid, more frequently because the body is thirsty.

Symptoms of Diabetes Mellitus (DM)

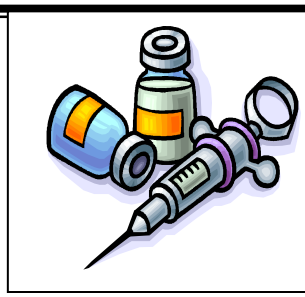
- ♦ Thirst
- ♦ Hunger
- ♦ Tiredness
- ♦ Weight Loss
- ♦ Frequent Urination
- ♦ Slow Wound Healing
- ♦ Severe Irritation and Itching (especially vaginal or rectal)
- ♦ Fruity smelling breath (like overly ripe apples or newly mown hay)

Other signs and symptoms of DM include:

- ♦ Unexplained weight loss,
- ♦ Blurred vision,
- ♦ Slow-healing cuts or sores,
- ♦ Frequent infections.

Types of Diabetes: Type 1 and Type 2

Type 1 DM (in the past was referred to as **I**nsulin-**D**ependent **D**iabetes **M**ellitus, IDDM)



The pancreas produces decreased levels of insulin or no insulin at all because the beta cells do not function.

The person must take insulin to live. This is why this type of diabetes is called *insulin dependent diabetes mellitus.* The person with this type of DM has to get insulin from injections of artificially produced insulin.

Age of onset: usually occurs under age 30, but can occur in older adults.

Weight: Individuals with Type 1 diabetes are usually thin or of normal weight.

- The body turns to fat for fuel because the body is unable to use sugar / glucose for fuel.
- No matter how much the person eats, the body cannot use the sugar / glucose for fuel, so the body continues to burn fat for fuel.
- The problem with using too much fat for fuel is that there could be too many ketones in the bloodstream.

Treatment: Insulin, therapeutic diet, and exercise

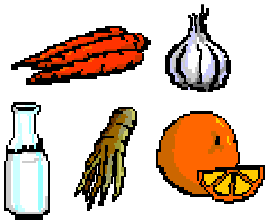
Type 2 DM The most common diabetes. (In the past Type 2 DM was referred to as non-insulin-dependent diabetes mellitus or non-IDDM)

The body still makes insulin, but it either doesn't make enough (this is *called insulin deficiency*) or is unable to correctly use the insulin it does make (called *insulin resistance* – the body *resists* using the insulin naturally made by the pancreas)

Age of onset: generally over age 30-40, but may occur in younger individuals. (There is now a rise in Type 2 DM in children and adolescents)

Weight: The person is usually overweight or obese because the body is producing some insulin and the cells are able to absorb some glucose and therefore not using fat for fuel.

Treatment: Diet, exercise, oral hypoglycemics (oral medications to decrease blood sugar / glucose levels) and sometimes insulin.



DIET

EXERCISE

ORAL HYPOGLYCEMICS

Chapter 4:
The Down-side of Diabetes Mellitus (DM)

Introduction:

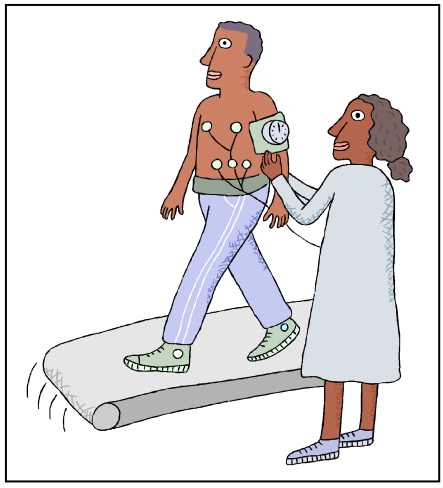
When blood sugar / glucose levels remain out of control, DM has the potential to cause many long-term problems. **The American Association of Clinical Endocrinologists recommends an individualized treatment plan that includes:**

- Exercise
- Diet guidelines
- Self-glucose monitoring
- Appropriate oral medications and / or insulin
- HbA1c less than 7 percent **

- **Every 3 months a health care professional should check the person's**
  - Feet
  - HbA1c **
  - Height / weight
  - Blood pressure
  - Body for complications of DM (physical exam)

NOTE: **HbA1c measures the average amount of sugar in the blood over a 3 month period of time

- **Annual checks should include**
  - Eye exam
  - Peripheral nerve test
  - Stress test (Treadmill EKG)
  - A diabetes education review
  - Lipid profile (cholesterol - HDL, LDL, triglycerides)
  - Kidney function tests (creatinine, urine protein, microalbumin)



Complications from Diabetes include:

- Stroke
- Hypertension
- Circulatory problems
- Elevated cholesterol
- Nerve damage from poor circulation (diabetic neuropathy)
- Kidney failure
- Frequent infections
- Uncontrolled blood sugar when ill
- Eye problems leading to blindness

Discussion of Complications:

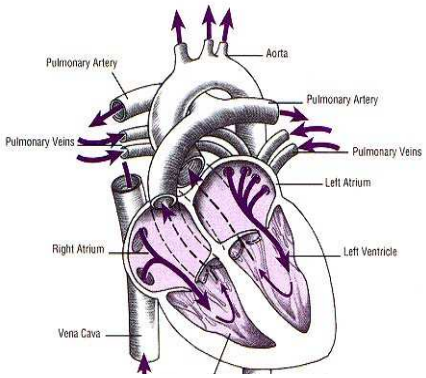
Damage to Heart and Blood Vessels

Heart disease is a major cause of death in persons with diabetes mellitus (DM).

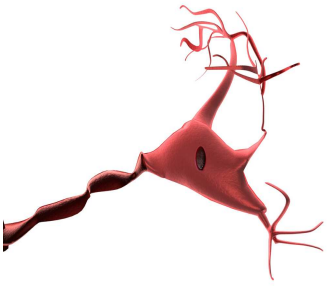
People with DM have a tendency to develop high blood pressure (BP) and high cholesterol levels.

The risk of stroke is 2-4 times higher in persons with (DM).

Problems with circulation may affect the heart, eyes, kidneys, legs, and especially the feet.



Nerve Damage: Diabetic Neuropathy



Nerve damage may occur as a result of poor circulation.

DM can cause damage to the nerves which decreases sensation to fingers, toes, hands, and feet. This is called **diabetic neuropathy.**

Symptoms of neuropathy include burning pain, numbness, tingling or loss of feeling in the feet or lower legs, especially at night.

Neuropathy can also cause changes in stomach and bowel function.

Neuropathy can cause problems with sexual function in both men and women.

Decreased sensation can be a serious threat to safety and security.

- When a person has decreased sensation in a particular body part, they may not realize they have injured themselves.

  For example with decreased sensation in the feet a person may not realize they have stepped on something sharp and have a cut. With decreased sensation in the hands, the person may not realize they have burned themselves on something hot.

- With no pain to warn the person of injury, an infection may develop. Because the body has developed problems circulating blood, the body is less able to fight the infection and heal the injury.

- In very serious cases, infected body parts may need to be amputated. Amputation and foot ulceration are some of the most common consequences of diabetic neuropathy.

When caring for a person with diabetic neuropathy:

- Caution the person against going barefoot.
- Review safety principles of handling sharp or hot items with the person
- Instruct the person to avoid use of hot water bottles, heating pads, or any device that heats up, unless prescribed by a healthcare professional. If used, review safety principles of these devices.

Too much sugar in the blood stream coats nerves and vessels like ice coats tree branches in an ice storm. Ice covered branches become brittle and break because they have lost their flexibility. So too, blood vessels and nerves lose their flexibility and become damaged when exposed to too much blood sugar over a period of time.

(Discussion of complications continued)

Avoiding Foot Problems in the Person With DM

Poor circulation, nerve damage and trouble fighting infection Can cause even simple foot problems to become very serious. Here are some ways to avoid complications and keep feet healthy. These are things you can do for the person or teach them to do for themselves.

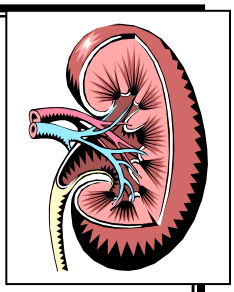
- Have the client's doctor check his/her feet at every visit.
- Have a foot doctor (podiatrist) check the client's feet once a year.
- Check the client's feet daily for any redness, swelling, corns, calluses, ingrown toenails, or breaks in the skin. Look between the toes and at the bottom of the foot. Use a mirror to examine the foot if it is difficult to bend down and look closely. Report any problems to the nurse or doctor immediately.
- Wash the feet daily with warm water and a mild soap. If the client has decreased sensation in the feet, test the bath water with the elbow rather than stepping right into the water which may be too hot. Dry the feet thoroughly, using the edge of the towel to carefully dry between the toes.
- If the person complains their feet are too cold, do not use a heating pad or hot water bottle to warm the feet. A diabetic with a neuropathy cannot accurately tell the temperature of something touching their feet or hands, and can be burned very easily. The person should wear cotton socks.
- Do not soak the feet. Soaking can dry the skin and cause cracking and peeling.
- If moisturizer is required, ask the doctor or nurse which would be the best to use. Only a water-based moisturizer should be used on the feet. NEVER put moisturizer between the toes or over any cuts or breaks in the skin.
- The client should be seen by a Podiatrist on a regular basis for nail trimming and cutting.
- NEVER apply tape or band-aids on the skin of the foot.
- NEVER wear socks or stockings that are too tight around the toes or ankles. Wear cotton socks that are not so big they bunch up inside the shoe when walking.
- Caution the client to NEVER go barefoot, to ALWAYS wear shoes or slippers with hard soles.
- Look inside the shoe daily to make sure there is nothing that got inside such as a stone or that the lining of the shoe is not worn or torn and bunched up inside the shoe.
- Shoes should ALWAYS be comfortable and supportive. If shoes become uncomfortable or non-supportive, it's time to replace them.

(Discussion of complications, continued)

Eye Problems

Diabetes can affect vision by causing blood vessels in the eye to become fragile. DM is the leading cause of new cases of blindness in adults. Eye symptoms can come on slowly and the person may not notice changes in vision until the problem is no longer treatable. It is important for the person to have a complete eye examination every year.

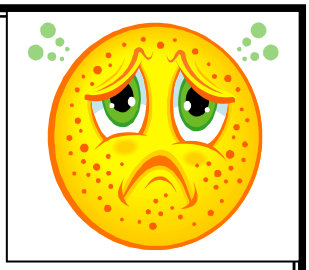
Kidney Problems



The person with DM should have his / her urine checked at least once a year by a doctor to rule out kidney failure or malfunctioning.

DM can cause damage to the blood vessels of the kidneys and is the leading cause of kidney failure. Once the kidneys fail, the person will need dialysis to stay alive.

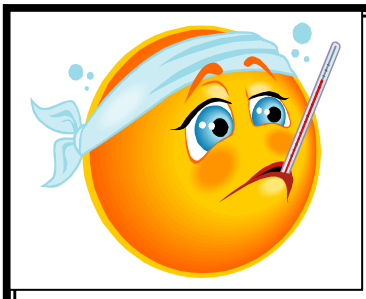
Frequent Infections



High blood sugar levels reduce the body's ability to fight off many kinds of infections such as skin infections, bladder infections, vaginal yeast infections, tooth and gum (periodontal) infections. Even the slightest cut or sore may be slow to heal and become easily infected. Some things you can do for the person with DM or teach the person to do are cited below.

- Use sunscreen to avoid sunburns.
- Avoid dental problems by brushing and flossing daily and seeing the dentist regularly.
- Ask a nurse or doctor about getting a flu shot annually and a pneumonia vaccination.
- Wear puncture resistant gloves when doing anything that might cause injury to the skin.
- Prevent blisters by wearing socks with shoes and gloves when sweeping the sidewalk.
- Avoid frostbite in the winter by keeping hands and feet warm and wearing a hat that covers the ears. Change shoes or gloves immediately if these get wet from snow.
- Report any sign or symptoms of infection to the nurse or doctor immediately. Signs and symptoms of infection include:
  - Redness
  - Swelling
  - Tenderness
  - Oozing of yellow or green discharge
  - An area that is red and warm or hot to the touch
  - Temperature of greater than 100^0 F
- Take care of the skin by keeping it clean. Bathe daily or every other day with warm water and a mild soap. Use a water-based moisturizer recommended by the health care professional. Avoid lotions containing perfumes.

Wash cuts and scrapes immediately with warm water and soap. Use antibacterial ointment if recommended by the doctor or nurse. Cover the area with a bandage. Change bandage at least daily or more frequently as needed. It should be changed if it gets wet or dirty.



Managing Sick Days to Avoid Imbalances in Blood Sugar / Glucose

Below are general guidelines you can use when the person with DM becomes sick. The delegating nurse will provide individual specific instructions

There should be a plan for days when a person with DM becomes ill for whatever reason. Talk with the delegating nurse to determine the best actions to take if the client becomes ill.

Because illness can cause blood glucose levels to be higher or lower than normal, it is important to include more frequent Glucometer testing in the plan.

It is recommended that the client's urine be tested for ketones (products of the breakdown of fats when the body uses fat instead of glucose for fuel). Discuss how to perform this simple test with the nurse or doctor.

If blood sugar / glucose levels become too high, the ill person may urinate more frequently. It is necessary to replace the body's fluids to avoid dehydration. Have the client take frequent sips of low calorie, sugar free liquids such as water, unsweetened iced tea or soda or broth. If nausea and / or vomiting prevent the client from drinking fluids, call the nurse.

Follow the client's regular meal plan as much as possible. If the client's appetite is decreased, have him / her eat small amounts of carbohydrates every few hours. See the list below for suggestions:

- 1 twin popsicle
- 1/2 cup ice cream
- 1/2 cup apple juice
- 1/2 cup regular soda
- 1/2 cup regular gelatin
- 1/4 cup sherbet
- 6 saltine crackers
- ½ cup cooked cereal
- 1 cup broth with noodles or rice

If nausea and / or vomiting do not permit the client to eat even these small amounts of food, contact the nurse.

It is important for the client to take all of the diabetic medications ordered by the doctor during a time of illness. The client should be careful about taking any over-the-counter (OTC) medications since these can also affect blood sugar / glucose levels.

Chapter 5
Uncontrolled Blood Glucose Levels: Hyperglycemia

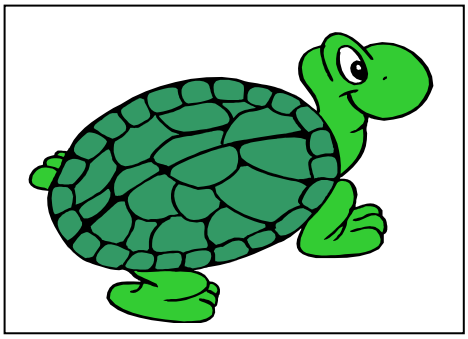
Blood glucose gets too high when there is not a balance between the food and fluids the individual consumes, their exercise / activity level and their diabetic medication (oral or insulin). This imbalance occurs when the person with diabetes:

- Is stressed
- Is not exercising enough or is not active enough
- Is taking medications which increase blood glucose levels (eg. certain psychotropics and steroids)
- Has consumed too many solid or liquid carbohydrates (eg. pasta, rice, breads, juces, soda)
- Is not getting enough medication to balance the amount of food and beverage taken in.
- Is not getting the right amount of medication for their level of activity / exercise.
- Is ill, has an infection, vomits, has diarrhea, etc.

Symptoms of Hyperglycemia

Symptoms occur slowly over hours, days, or weeks and may include:

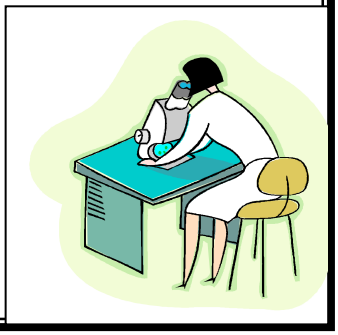
- Dry skin
- Drowsiness
- Blurred vision
- Slower healing
- Excessive thirst
- Being hyper-alert
- Excessive hunger
- Frequent urination
- Being tired all the time
- Tendency for infections
- Complaints of headache or flu-like symptoms
- Appearing intoxicated when they're not
- Confusion (stupor, decreased level of consciousness, coma – unconsciousness)



Symptoms of Hyperglycemia come on *slowly.*

Remember, only a nurse may receive and transcribe orders for insulin.

The delegating nurse will provide you with individual specific instructions on reporting, treating and documenting high blood glucose levels.



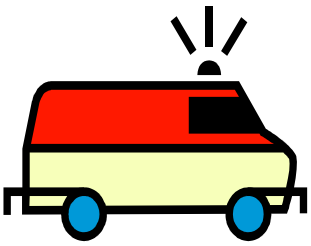
General Guidelines for Treatment of Hyperglycemia

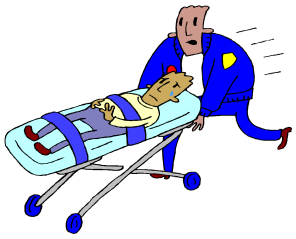
The delegating nurse will provide you with the blood glucose level that is considered hyperglycemic for the client. The doctor will prescribe treatment for high blood sugar. The nurse will discuss this with you during Individual Specific Training.

Treatment for hyperglycemia (high blood glucose levels) which the delegating or on-call nurse may instruct you to perform can include:

- ♣ Giving the individual additional insulin.
- ♣ Performing more frequent glucometer checks to validate the effectiveness of treatment (Remember to document all glucometer readings)
- ♣ Checking the client's urine for ketones (the products of fat metabolism) - This involves collecting a urine sample and testing it with a test strip. The delegating nurse will train you to do this test if it is necessary.
- ♣ Increasing fluid intake by mouth with water and / or non-sweetened liquids. If the individual has a gastrostomy or jejunostomy tube, the delegating nurse will provide instructions on increasing fluids and hydration.
- ♣ Following prescribed parameters for contacting the physician or 911.
- ♣ Transfer to the hospital for treatment.

If at any time the client cannot tolerate oral fluids, becomes increasingly less alert, loses consciousness, or has difficulty breathing, call IMMEDIATELY for emergency assistance and then contact the nurse per agency policy.





Documenting:

Know your employer's policies and procedures for documenting hyperglycemic reactions and treatments as well as the client's response to treatment. Follow the instructions of the delegating nurse in regard to documentation.

Chapter 6
Uncontrolled Blood Glucose Levels: Hypoglycemia

Hypoglycemia may also be called low blood sugar, insulin reaction, or insulin coma. Hypoglycemia happens when the blood sugar / glucose gets too low. A low blood glucose reaction is sometimes referred to as an insulin reaction, although oral hypoglycemic medications can also cause a hypoglycemic reaction.

Blood sugar is considered to be low **(hypoglycemic)** when a glucometer reading is below 70. The doctor and / or the nurse will provide individual specific parameters for low and high blood glucose.

Why does hypoglycemia occur?

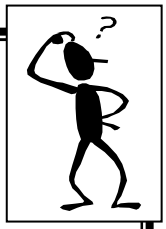
- Stress can cause hypoglycemia
- Illness may cause hypoglycemia
- Not eating enough food during mealtime or skipping a meal or snack
- Not pre-planning for diet or medication needs for times of exercise or increased activity

Symptoms of hypoglycemia can come on suddenly. Symptoms of hypoglycemia can be physical, mental, and / or emotional. Some individuals may experience only physical symptoms, or only mental symptoms, or only emotional symptoms. Other individuals may experience a combination of symptoms. The delegating nurse will provide you the individual specific symptoms of the client for whom you are providing care and support.

Signs of Hypoglycemia (low blood sugar) Physical Symptom can include:

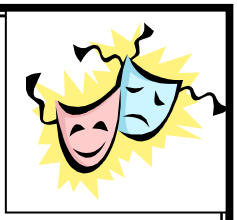
- ♦ Nausea
- ♦ Headache
- ♦ Fast pulse
- ♦ Feeling hungry
- ♦ Blurred vision
- ♦ Unsteadiness
- ♦ Feeling too hot / cold
- ♦ Tremors, shakiness
- ♦ Feeling dizzy / lightheaded
- ♦ Feeling like heart "pounding"
- ♦ Excessive sweating
- ♦ Slurred speech
- ♦ Tingling in hands, feet or face
- ♦ Unsteadiness when walking, standing up, or reaching for things

Mental Symptoms of Hypoglycemia can include:



- ♦ Inability to follow directions
- ♦ Sleepiness/drowsiness, weakness
- ♦ Difficulty concentrating, slow thinking
- ♦ Feeling that something isn't quite right
- ♦ Confusion or being disoriented: not knowing where they are, what time it is, or not recognizing people they usually know.

Emotional Symptoms of Hypoglycemia can include:



- ♦ Irritability
- ♦ Looking frantic
- ♦ Inappropriate giggling
- ♦ Change in usual behavior
- ♦ Feeling anxious
- ♦ Anger
- ♦ Sudden crying

If the blood sugar / glucose goes extremely low, the individual may be confused, disoriented, have a seizure, and / or become unconscious and remain unconscious – in a coma. These symptoms can come on very quickly. If these symptoms occur and are left untreated, the person could die.

Treatment for Hypoglycemia

In most cases hypoglycemia is easily reversible by using the correct intervention. For each client, the delegating nurse will provide you with the individual specific parameters for low and high blood glucose; blood levels below 70 mg/dl are generally considered to be hypoglycemic (low) and need treatment immediately. For each client, the delegating nurse will provide you with individual specific instructions for how to treat a hypoglycemic reaction.

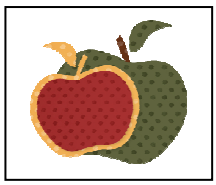
Below are general recommendation for treating a hypoglycemic reaction.

Actions to Take With an Alert Individual Experiencing Hypoglycemia

If the individual is alert, can chew and swallow and follow directions and a glucometer reading reveals a glucose level of less than 70, give the person one of the items from the list below. Each item equals about 15 grams of a fast acting (CHO) carbohydrate / sugar which should raise the blood sugar approximately 30-45 points.

- 6-8 life-saver candies
- ½ cup (4-6 ounces) of fruit juice
- 1 cup (8 ounces) of milk
- 2-3 regular candies, hard or soft
- 2 tablespoons of raisins
- 1 piece of fruit (the size of a tennis ball
- ½ cup (4-6 ounces) of regular **(not diet)** soda

- ½ tube of glucose gel or instant glucose (eg. Instaglucose)
- 1 tablespoon of honey, jelly, jam, corn syrup, or pancake syrup
- 1 small tube of cake decorating gel or a small tube of cake frosting
- 3 glucose tablets (5 grams of CHO each) or 4 glucose tablets (4 grams of CHO) each).

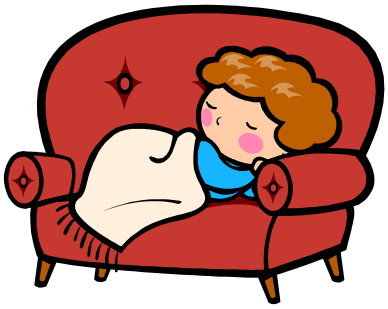


Recheck the blood sugar 15-20 minutes after the carbohydrate (CHO) has been eaten. If the blood sugar is below 70, the person is alert, can follow instructions, chew, and swallow, repeat the CHO treatment.

Recheck the client's blood sugar in15-20 minutes after additional CHOs have been eaten. If the blood sugar is still below 70, or the client is still experiencing symptoms, or the client at any time becomes sleepy or unconscious, contact emergency medical personnel (911) immediately, then call the delegating or on-call nurse. Do NOT leave the client alone.

If the client's symptoms go away, the blood sugar is above 70, and it is close to a meal or snack time (within 30-60 minutes), have the client eat their planned meal or snack. If it is not close to snack or meal time, then have the client eat a food that will be slowly digested such as a slice of bread, a slice of cheese, six crackers, one cup of milk, or one tablespoon of peanut butter.

If Client with Hypoglycemia Becomes Less Alert / Unconscious



If at any time the client's symptoms become worse, the client becomes less alert and is not able to follow directions or chew and swallow, becomes unconscious, has difficulty breathing, or has a seizure, **DO NOT TRY TO FEED THE HIM / HER.**

- Call for emergency medical services immediately, and notify the delegating or on-call nurse.

- If a Glucagon Emergency Kit has been prescribed for the client, the order of treatment steps is as follows:

1. Call for emergency personnel
2. Administer Glucagon
3. Call the delegating or on-call nurse

Hypoglycemia in Client with a Feeding Tube

NOTE: If the Client has a feeding tube the delegating nurse may instruct you how to administer the appropriate carbohydrate (CHO) to treat hypoglycemia.

If at any time the client is observed to be increasingly symptomatic and / or becomes less alert, loses consciousness, has difficulty breathing or has a seizure, immediately stop food and / or beverage and call for emergency medical services and the delegating nurse. Follow the individual specific instructions provided by the delegating nurse and the client's physician.

This action is very important because prolonged hypoglycemia can result in damage to the central nervous system (brain damage).

Chapter 7
Glucagon Emergency Kit

The Glucagon Emergency Kit:

May be prescribed for treatment of severe low blood glucose (hypoglycemia) that can lead to unconsciousness, seizure, or inability to safely take food or liquids by mouth or by feeding tube.

♥Glucagon, like insulin must be injected

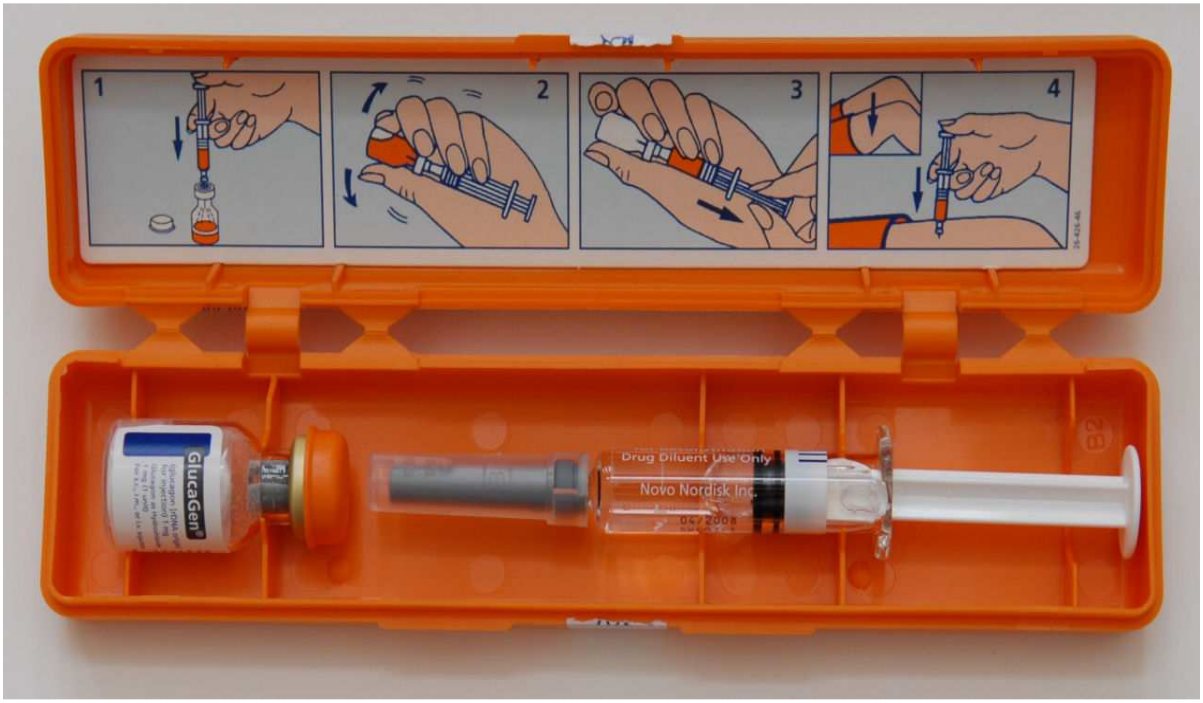
♥Glucagon is for hypoglycemic emergencies only

♥When injected, glucagon releases glucose stored in the liver into the blood stream and raises the level of glucose (sugar) in the blood very quickly.

♥If prescribed for the client, Glucagon should be on the MAR and specific instructions provided for when and how to administer it.

♥Glucagon should be used ONLY of the client is unable to safely swallow food (CHO).

♥Glucagon comes in an emergency kit containing all the supplies that are needed to administer it. The kit usually contains a vial with Glucagon powder and a syringe filled with special liquid. The powder and liquid are premeasured so there is no danger of giving too much medication. Other kits have similar equipment, but may require different instructions to prepare the dose of Glucagon.



General Instructions for Use of a Glucagon Emergency Kit

If is very important to become familiar with the Glucagon Emergency Kit instructions **BEFORE** an emergency happens. Instructions for preparation and/or administration may vary from Kit to Kit, depending upon the manufacturer. **You need to be prepared!**

The delegating nurse and pharmacist will provide instructions for storage and the expiration date of the Glucagon emergency kit.

DO NOT PREPARE the Glucagon for injection **UNTIL YOU ARE READY TO USE IT.**

Glucagon is given in the buttock, arm or thigh.

Before injecting, turn the client on his side, as he may vomit after the injection of Glucagon. The client could choke on vomit.

After injection, if the client becomes responsive (usually within 15 minutes) and is able to swallow, then food should be given as directed by the delegating nurse or the client's physician or emergency medical services (generally a fast-acting carbohydrate followed by a food more slowly absorbed).

After injection, if the client does not become responsive, then await for emergency medical services to arrive since you already contacted them. Maintain an open airway and be prepared to perform CPR if necessary.

Documenting:

Follow the delegating nurse's instructions for documenting a hypoglycemic episode. Include:

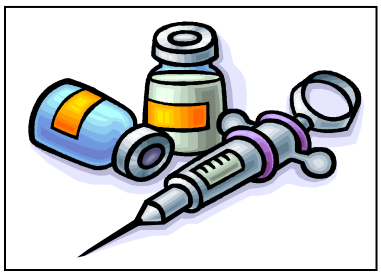
- ☐ Blood glucose (Glucometer reading) results
- ☐ Symptoms the individual was exhibiting
- ☐ Treatment provided (CHOs by mouth or feeding tube or injection of Glucagon)
- ☐ Response of the client to the treatment
- ☐ Contact of emergency medical services and the delegating or on-call nurse

See example of procedure to use for administering Glucagon on next page. ⟶

Skills Checklist: Administering Glucagon

Place a check mark before each step completed by the trainee. Must be checked off on all steps to pass (can demonstrate per simulation or verbalize in classroom setting only)

Preparing the Glucagon



_____ 1. Be sure work surface clean and dry

_____ 2. Wash hands

_____ 3. Get Glucagon Emergency Kit from secured storage area

_____ 4. Remove elements of Glucagon Emergency Kit from Package and place on a clean, dry work surface.

_____ 5. Carefully remove flip seal from vial containing glucagon powder

_____ 6. Remove needle protector from fluid-filled syringe

_____ 7. Insert needle into rubber stopper; inject all fluid from syringe into Glucagon vial

_____ 8. Remove needle. Hold syringe above level of waist with needle upright. With other hand gently shake vial until Glucagon powder dissolves into a clear liquid.

_____ 9. Reinsert needle into rubber stopper; draw up all solution from vial into syringe by pulling back gently on the syringe plunger

_____ 10. Once all solution drawn into syringe, remove needle from vial and carefully recap

_____ 11. Place filled syringe in a safe, but accessible place close to the client

Giving the Injection:

_____ 12. Locate the injection site. (Same as sites for insulin)

_____ 13. Clean the site with alcohol. Make sure site is clean and dry before injecting

_____ 14. Pick up syringe and remove cap from needle

_____ 15. Hold needle in your dominant hand (hand you write with)

_____ 16. Place thumb and forefinger of other hand on either side of the injection site, about 2 inches apart, and pinch up the skin.

_____ 17. With a darting motion of the wrist, quickly insert needle at a 45 -90 degree angle into the pinched up skin between your thumb and forefinger. Insert needle all the way into the skin

_____ 18. Keeping your thumb and forefinger on the skin, slide your thumb and forefinger apart, releasing the skin. Keep thumb and forefinger on either side of the injection site while holding the syringe in place with your writing hand.

_____ 19. **SLOWLY** push down on the plunger until all the glucagon has been injected.

Removing the needle from the injection site

_____ 20. While holding the syringe in place with your writing hand, count to 5 and then quickly pull the needle straight out. If there is bleeding at the site, use a clean Band Aid, gauze, or cotton ball to apply gentle pressure until bleeding stops.

After the procedure is completed

_____ 21. As soon as the injection is completed and the needle removed, turn the client on his side to help prevent chocking because Glucagon can cause nausea and vomiting

_____ 22. Call emergency medical personnel (911)

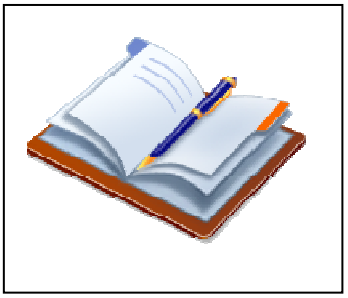
_____ 23. If the client becomes alert, and can eat, drink and swallow, give food or beverage as directed by the nurse, doctor, or emergency medical personnel

_____ 24. If the client does not become alert, wait for emergency medical personnel; do not attempt to feed the client and do not leave the client alone.

_____ 25. Dispose of the glucagon syringe in a sharps container per your agency's policy and procedure for disposal of sharps.

Documentation

_____ 26. Document per your agency policy and procedure (see example of documentation p. 33)



Employee _____ Date:_____

Nurse: _____ Supervisor _____

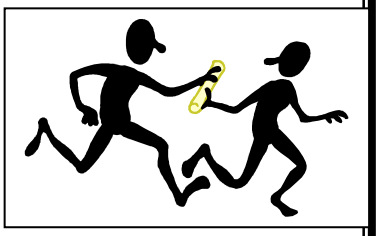
Comments:

Chapter 8
Treatment of Diabetes Mellitus (DM)

Goals

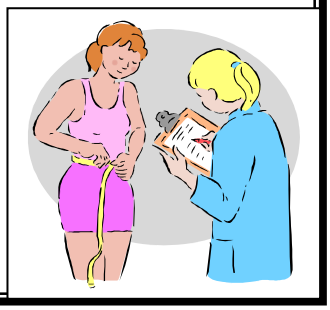
The Primary Goal of Treatment

The primary goal of treatment is to assist the client to keep blood glucose levels as normal as possible and to be as safe and healthy as possible despite having DM. In general, treatment should:



- Provide a sense of freedom
- Have the potential to be adapted to the person's life style
- Restore the body to as normal a state of balance as possible
- Help the person live a long and healthy life, free of complications from DM
- Provide opportunities for the person to be responsible and participate in self-care
- Assist the person to live as he / she prefers as much as possible
- Provide opportunities for choice and control

Client Goals Regarding Prescribed Treatment Should Include



- Opportunities to be responsible and participate in self-monitoring
- Maintaining the recommended diet, exercise, and medication plan and to do this with assistance as needed
- Maintain blood glucose levels within a range that avoids complications resulting from hyperglycemia (high blood sugar levels)

Goals for Healthcare Professional Regarding Treatment

- Provide those treatments that keep blood glucose levels in check
- Provide treatments that keep carbohydrate, fat, and protein metabolism in balance
- Whenever possible, engage the client in making decisions about his treatment options
- Help the client get assistance whenever needed or inform him / her about accessible options

(Goals, continued)

Goals for DD Personnel Assisting Person with DM

- Assist the client as needed with prescribed treatment while promoting his participation in his own care.
- Administer prescribed treatment when assigned to do so by the delegating licensed nurse.
- Report to the delegating nurse any signs and symptoms of hypo or hyperglycemia exhibited by the client and / or other issues that may be affecting the client's health and safety.
- Maintain certification, skill, and knowledge related to assisting clients with DM to follow their prescribed treatment.

Methods of Treatment for Diabetes Mellitus

All methods of treatment should compliment one another and work in conjunction with one another. Treatment methods include:

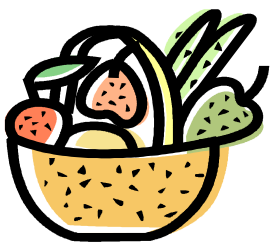
- Diet
- Exercise
- Oral medications
- Insulin
- Education
- Prevention
- Monitoring blood glucose

DIET: One of the most difficult parts of treatment for most clients and their caregivers.

An important part of dietary treatment is to consider the client's preferences and encourage the client to make good choices. Good meal planning includes an understanding of how different foods and the amounts eaten (portions) affect blood glucose levels. Choosing healthy foods, eating regular meals at the right times, and the activity level of the client are important for maintaining blood glucose levels in the normal range.

A doctor, nurse, or dietician should provide guidelines for meal planning and assist the client to understand the nutritional component of his / her food plan. The client will be instructed to:

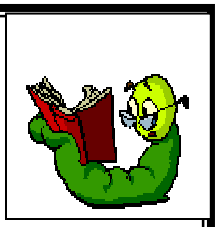
- Eat a variety of foods
- Use salt in moderation
- Reduce / eliminate use of refined sugar
- Eat plenty of fruits and vegetables. **CAUTION:** Fruits contain natural sugars which can increase blood sugar / glucose levels if not consumed with other types of foods.
- Avoid or limit the use of alcohol because the effect of alcohol on blood glucose is difficult to predict.
- Choose a diet low in fats (especially saturated fats [animal fats] and shortenings because these fats tend to raise blood cholesterol levels and are bad for the health of your heart)



To learn how to read food labels refer to the following website:
http://www.cfsan.fda.gov/~dms/foodlab.html

(Methods of treatment, continued)

Education:



Both the client and caregivers need to be educated about healthy choices and the client's prescribed treatments.

Decisions made by and for the client today can impact the client in both short-term and long-term outcomes.

Exercise:

- Important in the client's overall well-being.
- Can affect need for glucose by the body
- Improves the effects of diet and medication
- Helps control blood pressure and cholesterol level

Prevention:

There can be many serious complications from DM such as blindness, kidney failure resulting in the need for dialysis, nervous disorders, amputations from infection and poor circulation, heart disease from high blood pressure and hardening of the arteries. **Maintaining blood sugar within normal range (70-110 or prescribed parameters) is paramount to avoiding these complications**

Oral Medications:

When diet and exercise alone are not successful in lowering blood glucose, the doctor may prescribe oral medication for the client with DM. Oral medications used to help control blood glucose levels are called **hypoglycemics.** There are several types of oral hypoglycemics and they help lower blood sugar / glucose levels in different ways.

Some clients may need only one type of oral hypoglycemic to lower blood sugar, others may need a combination of hypoglycemics and / or insulin as well. Hypoglycemics can only work for clients whose bodies still produce some insulin.

Things to remember when a client is taking a hypoglycemic(s):

- Know the side effects for the medication(s) you are giving the client
- Talk with the delegating nurse about situations that might require you to contact her / him
- Monitor the client's blood sugar as prescribed by the healthcare provider
- Follow any special instructions for giving this medication. Ask the nurse, pharmacist, or doctor the following questions about the medication:
  - Should the medication be given before, with, or after meals?
  - Should the medication be taken if the client feels sick?
  - Can the medication be crushed and mixed with food?
  - What should I do if a dose is missed?

Remember, even though hypoglycemics are not insulin, they do lower blood sugar and a low blood sugar reaction can occur. Be prepared to take action should this occur. Also be alert for any signs of an allergic reaction to the hypoglycemic. See next page for a list of hypoglycemics.

A list of common oral hypoglycemics is found in the table below

Trade Name	Generic Name	How medication Works	Positive Side Effects	Negative Side Effects
Glycoset Precose		Blocks the absorption of carbohydrates in the intestine	Lowers blood sugar / glucose after meals. Does not cause low blood sugar	May cause gas, bloating, and diarrhea
Glucophage Glucophage XR	Metformin	Helps the body use its own insulin better	Does not cause low blood sugar. May help with weight loss and improve cholesterol levels	Can cause nausea and diarrhea when first started. Should not be taken if the person drinks alcohol
Prandin		Lowers blood sugar levels by stimulating the pancreas to release insulin	Absorbed quickly by the body. Can be used alone or with Glucophage	Can cause blood sugar levels to get too low.
Actos Avandia	Pioglitazone Rosiglitazone	Improves ability of the muscles to use insulin. Does not make more insulin.	Does not cause blood sugar to get too low if it is taken by itself without any other diabetic medication.	Can cause liver problems. May interfere or cause some birth control pills not to work.
Januvia	Sitagliptin	Helps to improve levels of insulin produced in the body after a meal. Decreases the amount of sugar made by the body.	Unlikely to cause hypoglycemia because it does not work when the blood sugar is low.	Associated with upper respiratory infection, stuffy or runny nose, and headache.
Diabeta Glucotrol XL Amaryl Micronase	Glyburide Glipizide Glimepiride Glynase	Lowers blood sugar by helping the pancreas to produce more insulin	Less side effects than some of the other medications	Can cause blood sugar levels to get too low.

If the client is changed from one type of oral hypoglycemic to another, the client MUST be monitored for any potential complications or failure to respond as expected.

(Methods of treatment, continued)

Monitoring Blood Glucose:

Accurate and regular testing of blood glucose levels is important for successful diabetic management. The doctor will determine the times routine blood sugars will be tested. A doctor or nurse may determine when additional testing is needed.

Blood glucose monitoring (BGM) may be ordered to be done:

- Before breakfast (fasting blood sugar)
- Before and / or after other meals
- At bedtime
- Whenever a client is experiencing symptoms
- Before and after exercise.
- When the client is sick .

There are two ways to monitor blood glucose -

- A blood test known as HbA1c done in a lab: This test is done every 3-6 months and measures the client's average blood sugar during that time. A test result of less than 7% shows good blood glucose control

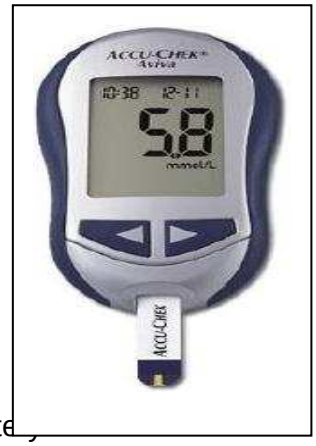
- Use of a glucometer to track blood glucose at home: Home testing allows the client to make changes in meal planning as well as accommodate for increases or decreases in activity level.

Desired Blood Glucose Readings for Persons Without and With DM:

Desired Readings for Person without DM	***Desired Readings For Person <u>with</u> DM***
• 70-110 before meals • Less than 140 two hours after meals	• Less than 110 before meals • Less than 140 two hours after meals • Between 100-140 at bedtime

The doctor or delegating nurse will provide you with information regarding desired glucose levels and normal ranges for an individual as part of individual specific training. The doctor or delegating nurse will give you guidelines regarding what glucose levels are to be routinely recorded on the MAR and when blood glucose levels shall be reported to the doctor or delegating nurse.

What to Consider When Choosing A Glucose Meter (Glucometer)



- Is the meter easy to hold?
- Can the numbers be seen easily?
- How many steps are required to perform the test?
- Can the strips be easily handled?
- Can the container the strips come in be opened easily?
- Are the meter and test strips covered by medical insurance?
- Are the test strips available at a local pharmacy?
- What kind of battery is used in the meter? Is it hard to change the batte
- Are the batteries available at a local pharmacy or store?

General instructions for the use of a glucometer
All meters come with manufacturer's instructions. Procedures often vary from manufacturer to manufacturer. As part of your individual specific training, the delegating licensed nurse will teach you how to use the meter used by the client.

Documenting test results

Documenting test results is a necessary step in glucose monitoring and you will need to know your organization's policies and procedures related to documenting glucose meter tests that are:

♦completed, ♦missed, ♦held, or ♦refused.

The delegating licensed nurse will provide you with information about about:

- Documentation requirements for errors in the performance of glucose meter tests.
- Those situations that would require a call to the nurse or emergency personnel

Other things to consider when performing a glucose meter test:

- Protect the test strips. Sunlight, cold, and humidity can destroy test strips. Keep test strips in the container they came in. Never use test strips that have expired.

- Learn how to code the meter. Make sure the code on the meter's display screen matches the code on the strips you are using. If these numbers do not match, you will need to recode the meter or the test result will be incorrect.

- Ask the delegating licensed nurse how to do control checks on the meter to make sure the meter is in good working order.

Whenever possible, encourage the client to participate in the testing procedure. Talk with the delegating nurse about ways to do this.

Chapter 9
Treatment of (DM): Insulin

Insulin is the backbone of all treatment whether it is produced by the body or is administered as an injection or by an insulin pump. The insulin pump injects insulin into the body when it produces no insulin or not enough insulin to meet the body's daily needs.

Insulin cannot be taken by mouth because it would be digested before it could lower blood sugar / glucose.

Insulin must be injected into the tissue directly below the skin. This is called the **subcutaneous tissue**. (See diagram below)

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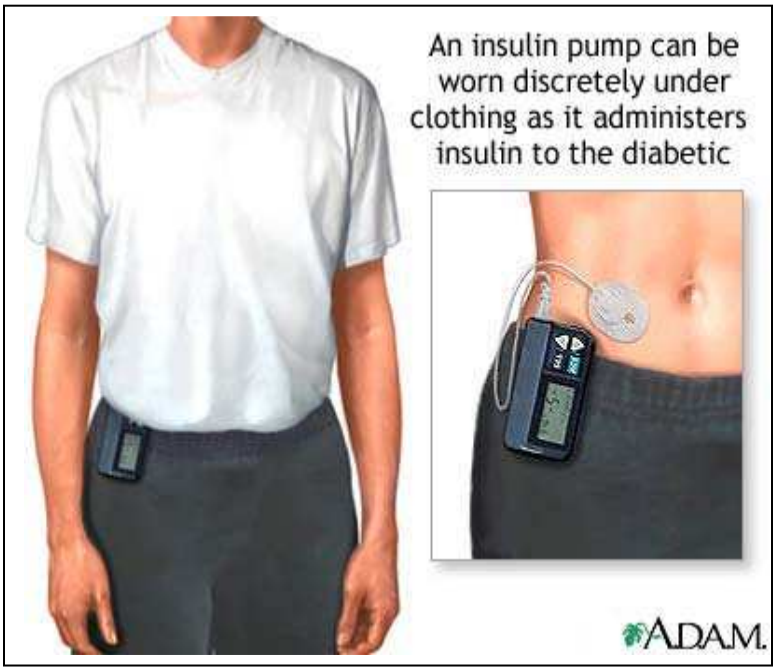


A subcutaneous injection into the fatty layer of tissue under the skin.

REMEMBER: Only a nurse can transcribe insulin orders into the MAR.

Because each person is different, the doctor will prescribe the type and amount of insulin each client needs. For types of insulin, see the next page.

Depending upon the type of insulin ordered, some Insulin is cloudy in appearance and some insulin is clear. It is necessary to know how the insulin should appear.

Insulin is categorized by:

- **ONSET**: When it begins to work
- **PEAK:** When its effect is the greatest
- **DURATION:** How long it continues to work

Onset, peak, and duration of action are approximate for each insulin product as there may be variability depending on each person, the injection site, and the exercise program.

The table on the next page lists some of the more common preparations available today.

Adult Insulin Therapies

CLASSIFICATION (and common Brand Names)	ONSET	PEAK	DURATION	ADMINISTRATION TIME	PATIENT EDUCATION
Rapid-acting Insulin					
Humalog (insulin Lispro)	5-20 minutes	60-90 minutes	3-4 hours	0-15 min before meals	Hypoglycemia from 1-3 hrs after injection
Novolog (insulin aspart)	5-10 minutes	40-50 minutes	3-5 hours	5-10 min before a meal	If mixing insulin aspart with NPH insulin, draw up insulin aspart first
Apidra (insulin glulisine)	5-20 minutes	60-90 minutes	3-5 hours	Within 15 minutes before or up to 20 min after starting a meal	If mixing insulin glulisine with NPH insulin, draw up insulin glulisine first.
Short-acting Insulin Humulin R Novolin R (regular insulin)	5-60 minutes	2-3 hours	4-6 hours	Give 30 minutes before a meal	Avoid injection of cold insulin. Regular insulin is clear, so if the solution is cloudy or discolored the vial should be discarded.
Intermediate – acting insulin Humulin N (NPH)	60-120 minutes	6-8 hours	12-16 hrs	Give 30 min before the first meal of the day. If necessary, a smaller dose may be prescribed 30 min before supper or at bedtime.	Do NOT shake. Mix thoroughly by rotating vials between palms. These are cloudy in appearance when mixed and OK to administer.
Mixed-insulin Novolin 70/30 Humulin 50/50 Humulin 70/30	30-60 minutes	Dual 3-8 hours	10-16 hrs	Give 30 min before breakfast. You may require another injection 30 min before supper time or bedtime.	
Long-acting insulin Lantus (Glargine)	1-2 hours	16-24 hrs Constant effect – does not have a peak time	Up to 24 hours	Give at same time daily, usually at bedtime.	These are not clear so DO NOT mistake for regular insulin. Also DO NOT use if cloudy or discolored. **Do not mix these with ANY other insulin.**
♠Novo-Nordisk Levimer (Detemir)	1-4 hours	50% in 3-4 hrs; up to 14 hrs	Up to 24 hours	Give at the same time daily, usually with the evening meal or at bedtime. Twice a day dosing should be given 12 hrs apart.	Not recommended for use in pregnancy. Levimer is also NOT recommended for insulin infusion pumps nor mixed with other insulins in the same syringe. Duration of action is dose-dependent.

NOTES: For rapid acting insulin eat within 15 minutes of administration; for short-acting insulin, within 30-45 minutes of administration to avoid hypoglycemia episodes. Hypoglycemia is most likely to occur during PEAK times; however, it may also occur if meals are skipped, CHO intake is insufficient at meal times, or during periods of increased activity / exercise.

With all insulin therapies: ◄ Exercise may influence insulin effectiveness.

◄ Notify your nurse or physician if any of the following: itching, fever, hives, swelling, infection, trauma, diarrhea, nausea, and vomiting.

◄ If you experience signs and symptoms of hypoglycemia immediately take a soluble carbohydrate (CHO) like orange juice or honey.

(See Home Health Care Nurse (26) 7, 08, p. 423)

Storage of Insulin

Generally, insulin should be refrigerated. Unopened insulin should be kept in the refrigerator and can be used until the date on the box or bottle indicates that it has expired. (Unopened insulin means the rubber stopper has not been punctured. Opened insulin means the rubber stopper on the top of the vial has been punctured.) Opened insulin can be stored at room temperature for 30 days. When traveling, the client should keep their insulin with them and not put it in a bag that would go in the trunk of a car or in a baggage area. Use a cooler to transport insulin when necessary.

When you take the vial of insulin from the box and remove the cap, write the date on the label so you know when the medication is 30 days old and should be thrown away. An open vial of insulin should not be used and should be thrown away after 30 days whether it is empty or not. Always make sure there is enough insulin available.

Insulin does not work if it gets too hot or too cold. Though insulin can be refrigerated, do not keep insulin in very cold places like your car in cold weather where the temperature cannot be controlled. The same goes for hot places. Insulin should not be kept in very hot places or in direct sunlight (ie. in front of the window).

If the client uses an insulin pen to administer medication, follow the manufacturer's recommendations in regard to storage.

Examples of Insulins Commonly Marketed Today

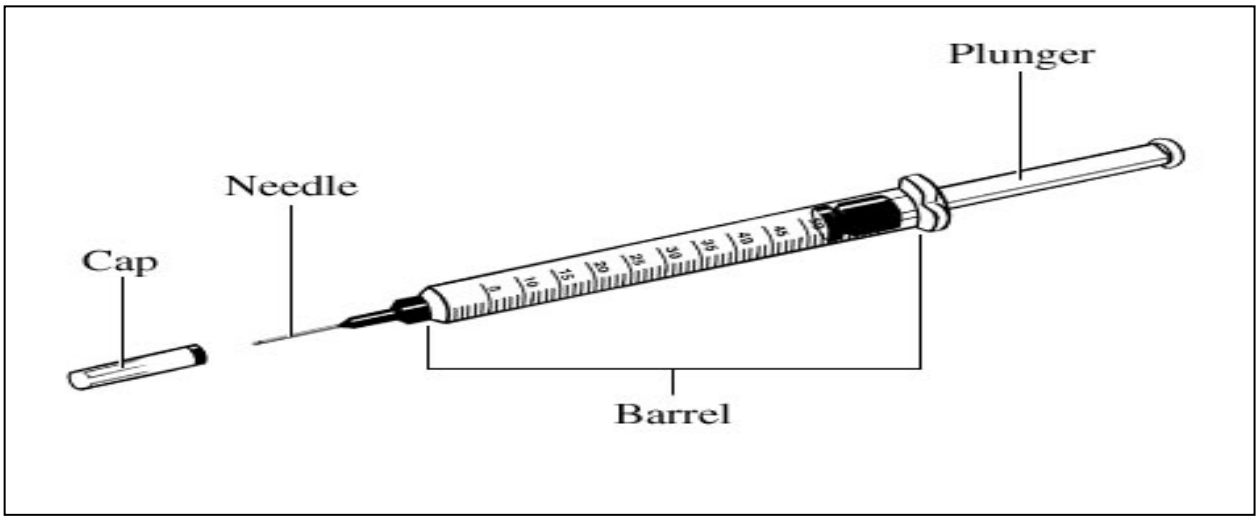
NPH Insulin

Humulin N, Humulin R, Humulin 70/30, Humulin 50/50

Lantus Insulin

Novo-Nordisc Insulin

Insulin Injection Devices



Insulin Syringes are made of plastic and are disposable. These type of syringes come in different sizes: U-100, U-50, and U-30. In most instances you will use a U-100. The U stands for units. Insulin is prescribed in units. The doctor will prescribe the size of syringe needed. The needles are already connected to these syringes when they come from the pharmacy. These are the syringes used to draw up insulin from a bottle. **NOTE: Never recap insulin syringes**

NOTE: Syringes are never recyclable and once used should never be used again by or for the same person or another person.

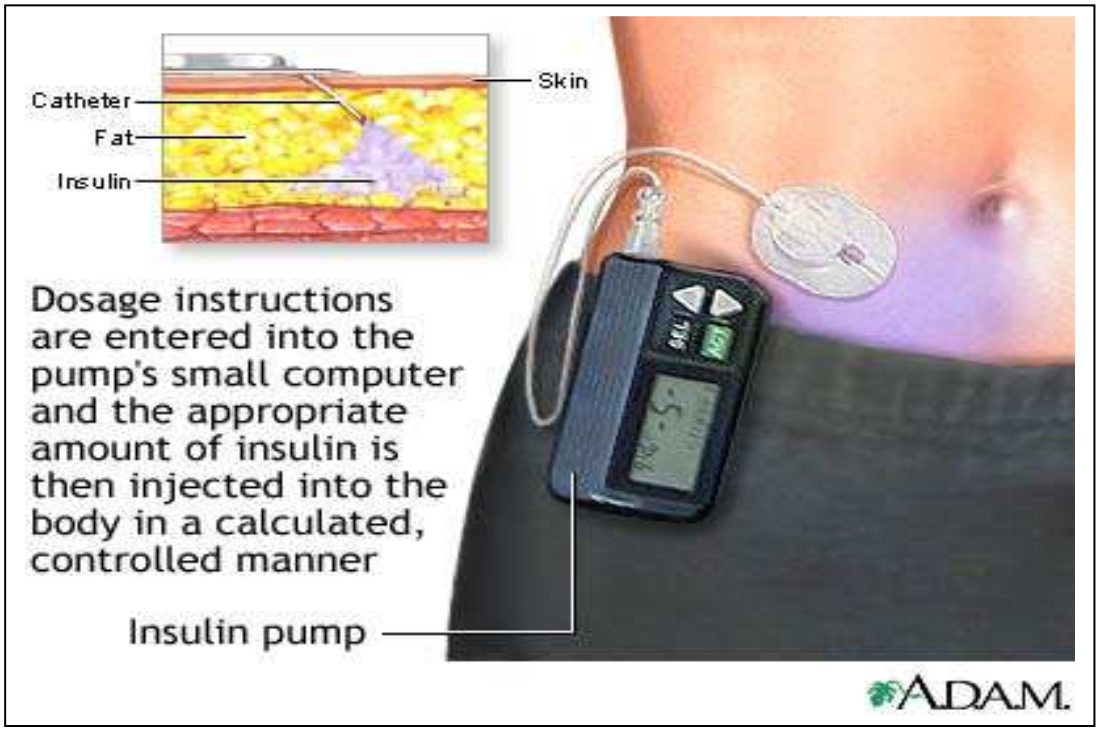
Insulin pens are another type of injection device. Insulin pens may be refillable, using a cartridge of insulin, just like a fountain pen, or they may come pre-filled from the pharmacy, with a cartridge of insulin which cannot be removed already inside the pen. Refillable pens are not disposable, but are meant to be used over and over.

The pre-filled pens are disposable. The user must attach the needle to this type of injection device. Storage of insulin for these injection devices should be according to the manufacturer's recommendations. Insulin cartridges and pre-filled insulin pens will have expiration dates and should not be used after the expiration date. **NOTE: Needles on insulin pens must be recapped in order to remove them from the reusable cartridge.**

Insulin pumps are small battery operated computers, about the size of a pager device. The small device is worn on the belt and is connected to the person by a small plastic tube attached to a needle which is inserted into the subcutaneous tissue of the person's abdomen. Just like a computer requires programming, this device is programmed, based upon the doctor's prescription, to administer an additional dose of insulin when appropriate to the amount of carbohydrate the person eats.

Insulin pumps may not be for everyone and there are special guidelines the doctor uses before prescribing this type of injection device for the client. The type of device used to administer insulin will be prescribed by the doctor and meet the specific needs of the client.

The type of injection device should be included in the individual specific training provided by the delegating licensed nurse. If the client has an insulin pump, the delegating licensed nurse will instruct you in its maintenance.



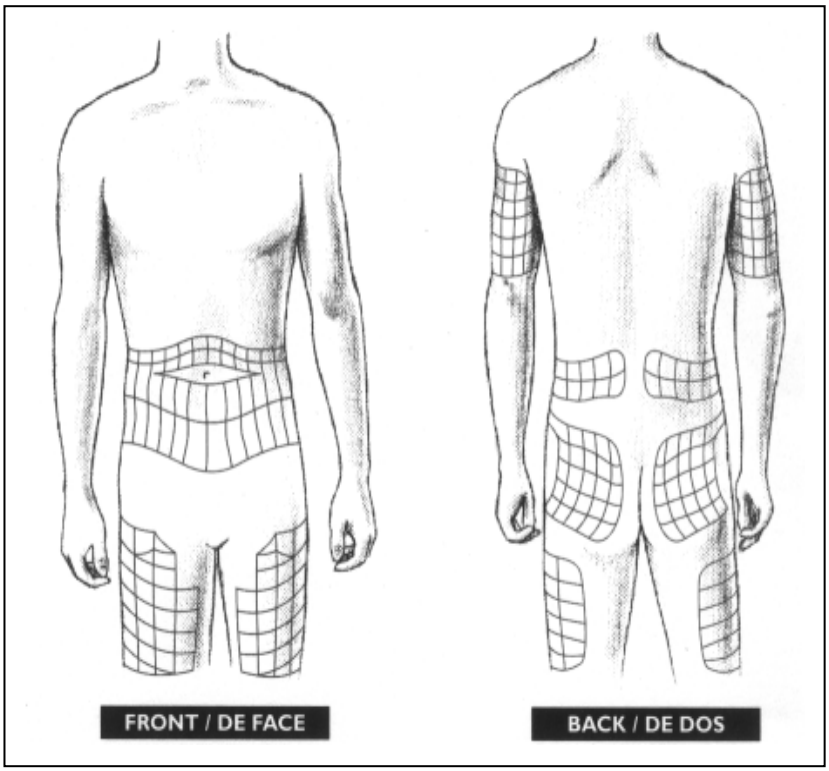
Injection Areas

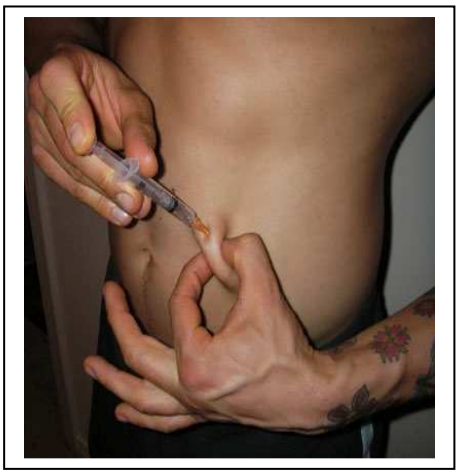
Injection areas are those places on the body where insulin injections can be performed safely and with ease, so that the client gets the most beneficial effects of the insulin.

Injection areas include:

- Upper outer arm
- Upper outer leg (thigh)
- Upper hip (buttocks
- Lower abdomen, but not right around the naval or waistline

Use the same injection area for only 1-2 weeks and then move to another area of the body identified as an injection site. It is NOT a good idea to change from one injection area to another each day. Changing injection areas on a daily basis could cause blood sugar / glucose levels to go up and down.





Insulin is injected into the fatty area under the skin called the subcutaneous tissue. From the subcutaneous tissue, insulin moves into the bloodstream where the body can use it. Depending upon where the insulin is injected, it will move quickly or slowly:

- ♣ Insulin injected into the abdomen moves quickly.
- ♣ Insulin injected into the hip area moves slowly.

The delegating nurse will give you instructions about the best injection area for the client and how to set up a schedule for rotating injection sites within an injection area. This should be a part of your individual specific training.

Rotating Injection Sites

It is important to use different places within the same injection area each time you administer insulin. Rotating injection sites (the exact spot where you insert the needle) within an area is the best way to prevent skin problems and injection reactions. If insulin is administered in the same place (site) over and over again, the skin may become hard and thick.

Never inject insulin in spots (sites) where the skin is thick, hardened, or bruised. If you observe there are many areas of bruising, redness at injection sites, scabbed areas, or areas that are warm and / or hard when touched with a gloved hand, avoid these areas when injecting and report these observations to the nurse right away.

Sometimes there may be a small amount of bleeding after the injection has been given. If this happens, do not rub the spot. With a gloved hand, press a dry cotton ball or gauze over the spot. This may prevent bruising. A small amount of bleeding does not mean that you did the injection incorrectly and will not affect your insulin injection.

Documentation of insulin injections should include documenting the injection area or site. Know your organization's policy regarding documentation of insulin injections. Discuss documentation requirements with the delegating nurse.

Example of Documentation of Insulin injection:

Administered (give name of insulin and number of units given) in upper outer left arm. Disposed of insulin needle and syringe in sharps container. Small amount of bleeding after injection. Pressure applied with a gauze pad for about 1 minute. No bruising noted. Client voiced no complaints. Insulin vial placed in storage area.

Snow White, SA

Chapter 10
Treatment of (DM): Giving Insulin

Follow the policies and procedures of your agency for insulin administration. Below is a generic procedure that can be used.

Administering a single dose of Insulin

PREPARING TO ADMINISTER INSULIN:

- ☐ 1. Wash hands with soap and water before preparing equipment
- ☐ 2. Prepare the injection in a clean area where you are not easily distracted
- ☐ 3. If ordered, perform glucometer test
- ☐ 4. Gather equipment
  - Insulin syringe
  - Insulin vial
  - Cotton ball or gauze
  - Alcohol swab
  - Sharps container
  - Small Band-Aid
  - Gloves
- ☐ 5. **FIRST CHECK:** Identify the type of insulin to be given and compare label on vial with entry on the MAR. Check for 6 rights (Dr. Ti, MD)
- ☐ 6. Check expiration date on vial. Do not give if expired. Discard per your agency policy.
- ☐ 7. Be sure insulin is clear. If cloudy or if containing particles, do not use. Call delegating nurse.
- ☐ 8. If you are supposed to give a cloudy insulin (ie. NPH), gently roll vial between your palms 10 times. **NEVER SHAKE A VIAL OF INSULIN**
- ☐ 9. Remove cap from insulin vial
- ☐ 10. Clean rubber stopper with alcohol pad or cotton ball moistened with alcohol
- ☐ 11. Get an insulin syringe. Remove needle cover. Push plunger back and forth to make sure it moves freely. Look at needle. **Do not touch needle** Make sure needle is not bent and is smooth. If bent or not smooth, remove needle, place in sharps container, and place another needle on the syringe.
- ☐ 12. Check MAR for amount of insulin to be given. Insulin is ordered in units.
- ☐ 13. Pull back on the plunger to draw the same amount of air into the syringe as the dose ordered.
- ☐ 14. **SECOND CHECK ;** Check the insulin vial again against the MAR. Check for 6 rights
- ☐ 15. Without disturbing the plunger, insert the needle through the rubber stopper on the vial, then push air into the vial by pushing down on the plunger.
- ☐ 16. Place one hand on the vial and the other on the syringe. Keeping needle in the vial, turn vial upside down.
- ☐ 17. Fill the syringe with the required units of insulin. Be sure the needle tip in the liquid as you pull out the insulin by pulling back on the plunger.

☐ 18. With the needle still in the vial, tap the syringe to remove any air bubbles.

☐ 19. If you withdrew too much insulin, push the plunger to put the unwanted insulin back into the vial.

☐ 20. Check the syringe again to be sure you have withdrawn the prescribed units and look for air bubbles. If you have air bubbles, you may want to push the insulin back into the vial and begin again with step #17.

☐ 21. If you have the correct insulin dose and there are no air bubbles in the syringe, pull the needle from the vial.

☐ 22. Recap the needle the way the delegating nurse taught you, using a one handed technique to avoid a needle stick. Place the capped needle on a clean surface and put on gloves. **Remember, if at anytime the needle becomes contaminated, you must discard the needle and syringe and start over again from step 5.**

☐ 23. **THIRD CHECK:** When the syringe is filled, check the insulin vial again against the MAR for correct medication and the 6 rights. If there is another staff member available, have the staff member verify the dose of insulin you have prepared to make sure it is correct. Depending on your agency's policies and procedures you and the staff who verifies the dose of insulin may be required to document on the MAR. Discuss this with your delegating nurse.

☐ 24. Put on gloves. You are now ready to administer insulin.

INSULIN ADMINISTRATION:

PREPARING THE INJECTION SITE:

☐ 25. Choose the injection area and select a site within the area that is not swollen, red, bruised, or appears hard or puckered. Do not inject into scarred areas.

☐ 26. Clean the injection site with alcohol (swab or cotton ball / gauze dipped in alcohol). Wipe away any excess alcohol with a dry, clean gauze or cotton ball. Make sure the injection site is clean and dry before injecting.

GIVING THE INJECTION:

☐ 27. Pick up the syringe. Carefully remove the cap from the needle.

☐ 28. Hold the syringe in the hand you write with.

☐ 29. Place the thumb and forefinger of your other hand on either side of the injection site, about 2 inches apart, and gently pinch up the skin. (See picture on next page)

☐ 30. With a darting motion, quickly insert the needle into the pinched skin between your thumb and forefinger. The needle should never enter the skin straight up and down (90 degree angle). Be sure the needle has gone all the way into the pinched up skin.

☐ 31. Keeping your thumb and forefinger on the skin, slide your thumb and forefinger apart, releasing the skin and returning your fingers to their original position on either side of the injection site while still holding the syringe in place with your writing hand.

☐ 32. Slowly push down on the plunger until all the insulin has been injected.

☐ 33. While holding the syringe in place with your writing hand, use the other hand to place a dry cotton ball or gauze at the injection site where the needle went in and the syringe meets the skin. Count to 5 and then pull the needle straight out.

☐ 34. Hold the cotton ball or gauze over the injection site, applying gentle pressure while counting to 5. If you observe any bleeding, hold the cotton ball or gauze over the injection site for a few more seconds. Do NOT rub the injection site.

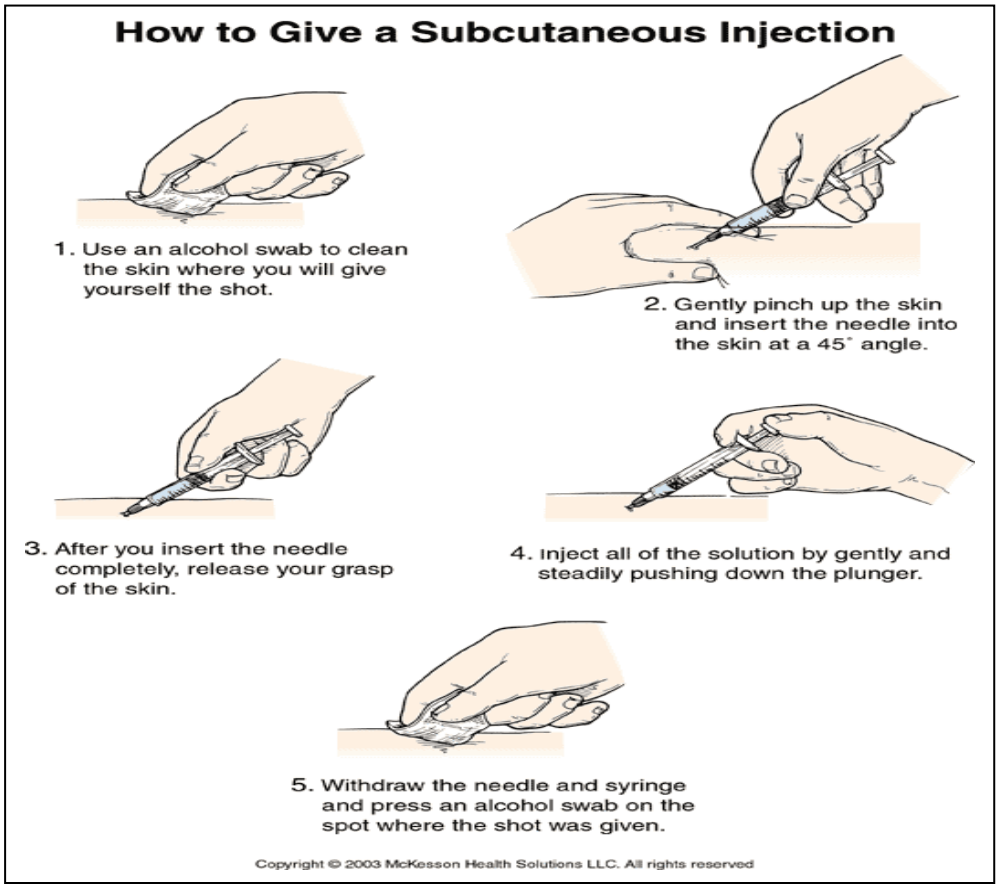
After the injection: DO NOT RECAP THE NEEDLE! DO NOT TOUCH THE NEEDLE! Immediately dispose of the used needle and syringe by dropping them into a puncture proof container.

This container should be labeled to identify its contents. For example, it should have a label that says "SHARPS" or "USED NEEDLES AND SYRINGES" and should be stored in a secured area until it is 75% filled and ready to throw away. Discuss with the delegating nurse what type of equipment is available for this purpose and how you are to dispose of the container once it is 75% filled.

Place the container in the trash or follow the policies and procedures of your employer for disposing of contaminated materials.

☐ 35. Dispose of any other contaminated materials according to infection control procedures and according to your employer's policies and procedures.

☐ 36. Remove your gloves and wash your hands.



1. Clean area with alcohol
2. Pinch up skin between thumb and forefinger and insert needle at 45-90 degree angle (see p. 45)
3. Release pinched up skin
4. Inject insulin slowly
5. Withdraw needle and press gauze over injection site

http ;//www.fairview.org/healthlibrary/content/subinj

Sub Q Injection Using Side of Leg as Injection Site

Note pinched up skin between thumb and forefinger. Remember to release pinched up skin **after** needle inserted and **before** insulin injected.

DOCUMENTATION OF INSULIN ADMINISTRATION

☐ 37. Document on the MAR under the correct date and time. Your employer may use a special form to document insulin injection rather than the MAR. You may also be required to document the location of the injection site and the number of units you administered. **Any prescribed insulin doses which are missed, held, or refused by the client, must be reported to the nurse immediately.** Talk with your delegating nurse about documentation requirements.

☐ 38. Any error in the insulin injection procedure must be reported to the nurse immediately and documented according to your employer's policies and procedures.

☐ 39. Return the insulin vial to its place of storage. Return any unused syringes and other equipment to their appropriate places

☐ 40. Observe the client for 10-15 minutes post injection to be sure they are not having a reaction to the insulin. Follow the individual specific training in regard to how soon after the insulin injection the client should eat.

☐ 41. **Some clients are prescribed more than one type of insulin and may require a combination of insulins in the same injection.** There are two ways this can be done. One way is by using a premixed insulin. The other way is by mixing the two types yourself. If the client you are caring for requires this type of insulin injection, the delegating nurse will instruct you in this procedure.

General Guidelines for Needle stick

✓ Follow your employer's policies and procedures.

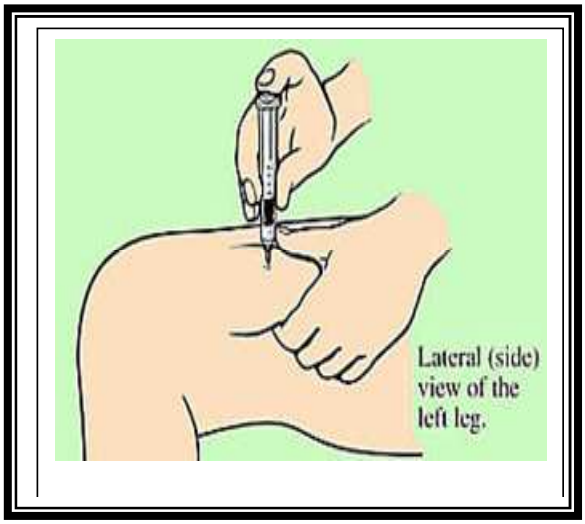
✓ If stuck with a clean needle, wash the area and follow the appropriate policy

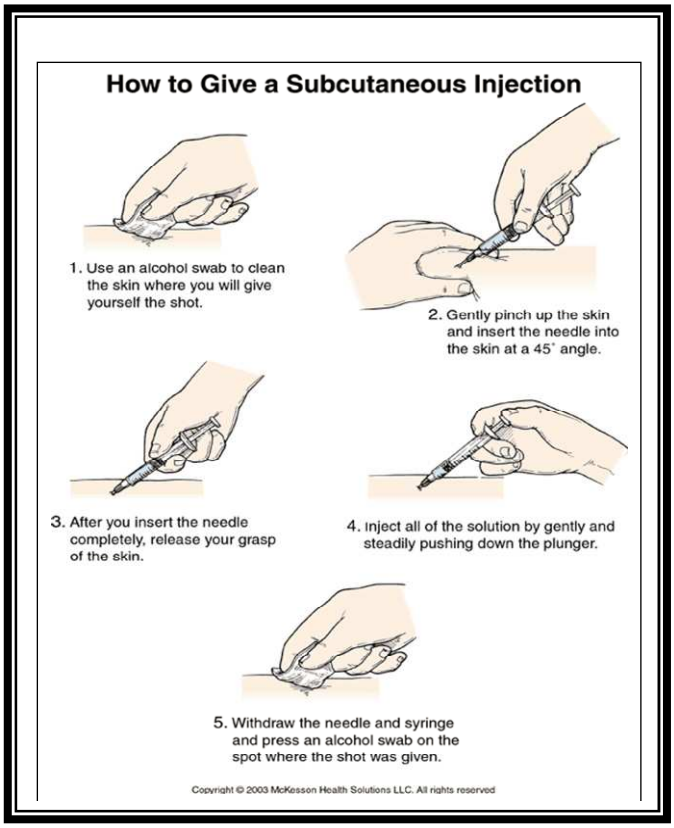
✓ If stuck with a contaminated needle, clean the area with soap and water and an antiseptic and follow the appropriate policy.

Angle of Needle Insertion for Sub-Q Injection

Inserting the needle at a 90 degree angle or closer to a 45 degree angle depends on the amount of adipose tissue on the person. A person who is overweight or obese has enough adipose tissue to justify inserting the needle at a 90 degree angle. Very thin individuals will need to have the needle inserted at a 45 degree angle because of the close proximity of muscle tissue.

Insert needle at a 45 degree angle if person thin.





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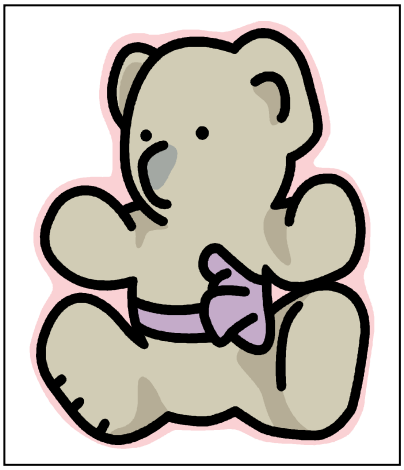

Insert the needle at a 90 degree angle. if person of normal weight or heavy.

The delegating nurse will instruct you about the angle you are to use when inserting the needle when you give a subcutaneous injection.

Introduction to Completion of Self-Administration Assessment: Insulin and Blood Glucose Monitoring

The purpose of the Self-Administration Assessment is to ensure that the client is able to SAFELY administer insulin to him or herself or perform own blood glucose monitoring as needed. Every client with DD has the right to self-administer their medications. The CB and the service provider are responsible for the safety of the individual with DD.

When it is determined a Self – Administration Assessment is needed:

Consider the client's safety. If on occasion the client cannot safely self administer insulin or do own blood sugar test (e.g. ◂ client experiences an episode of mental illness, ◂ client becomes physically ill, ◂ client goes to a new environment and cannot transfer skills to the new environment right away), **certified** staff will need to provide assistance with blood sugar monitoring or medicate the client during those times. When the client is able, he can perform his/her own blood glucose test and self administer insulin as indicated in the ISP.

The self administration assessment needs to be completed at a minimum of every 3 years, with a review done annually. A new assessment will be completed in the event of (but not limited to) the following occurrences:

- The needs of the individual changes
- The delivery system changes (ie. insulin syringe to insulin pen or vise versa, new glucometer used).
- There is a change in the usual administration routine (new location, new provider, new times)

Where to complete the assessment

Complete the assessment in the setting where the client self administers his insulin or receives insulin administration/ blood sugar monitoring. This is to determine if the client is able to safely administer insulin / do blood glucose monitoring in his / her own environment.

Using the forms (Insulin Administration Form and Blood Glucose Monitoring Form)

Answer each question on the appropriate form. Questions are answered with a "Yes" or "No." Follow the instructions on the form to determine where to go following a "Yes" or "No" response.

Processing the Assessment results

Once the assessment is completed, the Individual's Service Plan should specify how insulin administration/ blood glucose monitoring will be done. See the form for statements that could be used. Check the appropriate statements to include in the ISP.

Other

Remember, clients have the right to do as many steps of the insulin administration / blood glucose monitoring as they can do either independently or with support, even if they are not assessed to be able to self-administer with or without assistance (5123: 2-6-02 (C).

Medication(s) assessed at this time:

Attach another page if there is not enough space on the form to record insulins or attach a copy of the MAR. Multiple Self-Administration Assessments may be used for an individual.

For example, if a client requires certified staff assistance due to need for two types of insulin at 8am but can self – administer 1 type of insulin at 12pm, or can use the glucometer, separate Self –Administration forms must be used and should be included in the ISP.

Reviewed by (May be other than those completing Self Administration Assessment Form):

- ♦ If the client has a SSA, the SSA should review the results and make the applicable indications on the IP.
- ♦ The delegating nurse should view and sign the assessment.
- ♦ The Insulin Administration course (Certification 2) is a training for DD personnel and does not constitute authorization, or delegation from the RN teaching the course.

If two people do not agree with the assessment, a third party should be consulted. If an agreement cannot be determined, the DODD representative should be consulted.

Rev Aug 09

Self - Administration Assessment for Subcutaneous Insulin Injection

Name of Individual: _____

*Signature & Title of Persons **Observing** Assessment (2 required). One of the observers **MUST** be a licensed nurse:*

Nurse's Signature: _____Date: _____ Time: _____

Other Observer's Signature: _____ Date: _____ Time: _____

Persons conducting assessment will need to have ALL necessary information regarding the individual's current medications and physician's orders for glucometer checks. The demonstrations must take place during the actual assessment. See reverse side for additional documentation.

1. I know why I take insulin.
YES ☐ **Go to 2.** **NO** ☐ Go to ⊘

2. I know how many units of insulin I should take, including how many units to take if I am on a sliding scale.)
YES ☐ **Go to 3.** **NO** ☐ Go to ⊘

3. I know when to take my insulin. I have demonstrated that I take my insulin at the right time every day by using the clock or my routine (after the news, before lunch, etc).
YES ☐ **Go to 4.** **NO** ☐ Go to ▽

4. If the insulin is from a vial, I have demonstrated that I can read the label on the vial and the numbers on the syringe. I have demonstrated that I draw up the correct dosage into the syringe. I will not take insulin from the wrong vial.
YES ☐ **Go to 5** **NO** ☐ **Go to** ⊘ **N/A** ☐

5. If the insulin is from a pre-filled insulin pen, I have demonstrated that I can dial the correct dose.
YES ☐ **Go to 6** **NO** ☐ **Go to** ⊘ **N/A** ☐

6. I know who to tell when I have 4-7 days of insulin left so I never run out.
YES ☐ **Go to 7.** **NO** ☐ Go to ⊘

7. I know the places on my body where I can inject the insulin and I know how to rotate sites. I have demonstrated that I can safely and properly inject myself with insulin.
YES ☐ **Go to 8.** **NO** ☐ Go to ⊘

8. I keep my insulin in the correct place and properly dispose of used syringes.
YES ☐ **Go to 9.** **NO** ☐ Go to ⊘

9. I have demonstrated harmful behaviors to self and cannot self administer my glucometer check with or without assistance.
YES ☐ **Go to** ✕ **NO** ☐ see comment below

If the answer to questions 1-8 were all **Yes** **Go to** ↬

⊘
Unable to Self Administer With or Without Assistance

Will Require Staff With Certification 1 and current Certification 3 in Subcutaneous Insulin Injection to give insulin under Nursing Delegation

Continue to next assessment question.
Complete this form in its entirety.

▽
Self Administer With Assistance

Service Plan to Include:
Time Reminder

Continue To Next Step

↬
Self - Administer Without Assistance

✕
Unable to Self Administer With or Without Assistance

Will Require Staff With Certification 1 and current Certification 3 in Subcutaneous Insulin Injection to give insulin under Nursing Delegation

Identified Behavior/Justification
MUST be documented

Continue to next page ⟶

Once the assessment is completed, the service plan for the individual should specify how insulin administration will be done. Any of the following statements could be used in the service plan, depending on what is correct for each specific person.

☐ I can self-administer insulin without assistance.

☐ I can self-administer insulin with assistance (select one of the following related to the assistance).

- ☐ The individual receives assistance with self-administration of insulin through reminders of when to administer the insulin. Specify reminders needed in the client's ISP.
- ☐ The individual receives assistance with insulin administration through physically handing prefilled Insulin Syringe / Pen to client. Provide specific instructions in the client's ISP.

Other:

☐ I need certified staff to administer my insulin. Use this if answer to any question leads you to the top box on the right side of this form. If any question, #1-2, 4-6 is answered "no" use this answer.

☐ I require certified staff to administer my insulin while I am learning to self inject. IP Team should consider Skill Development programs as appropriate. Use this answer if the client cannot consistently self-inject. A specific plan should be written with goals and time frames. See 5123:2-6-02 (C).

☐ I can self-administer insulin.

- ☐ Describe insulin _____
- ☐ Ability Level with task_____
- ☐ Designate if independence or staff administration of insulin is applicable to a specific location or time of day (ie. Work setting) _____

☐ I have demonstrated unsafe behaviors and am therefore unable to self-administer insulin with or without assistance. **I**dentify behavior / justification.

If the client has a history of unreliability or noncompliance the person doing the assessment may indicate that the client requires insulin administration for his / her own safety.

RESULT:

☐ Self Administration with assistance ☐ Self Administration

Insulin Administration / Delegated Nursing (DN)

☐ I live in a 5 bed or less setting and will receive my medication from staff that have a level 3 certification for insulin administration **(or)** ☐ I will receive DN services per the state DN rules

Insulin(s) assessed at this time: (Attach another page if more space needed – or copy of MAR)

Insulin Name	**Dose**	**Route**
_____	_____	_____
_____	_____	_____

Reviewed by:

SERVICE SUPPORT ADMINISTRATOR (signature & date): _____

NURSE (signature & date): _____

Self - Assessment for Using a Glucometer

Name of Individual(Client) : _____

*Signature & Title of Persons **Observing** Assessment (2 required):*

Signature: _____Date: _____ Time: _____

Signature:_____ Date: _____ Time: _____

Persons conducting assessment will need to have ALL necessary information regarding the individual's current medications and physician's orders for glucometer checks. In addition, the persons doing the assessment must know how to properly use and maintain the type of glucometer being used by the individual. See reverse side for additional documentation.

1. I can check my glucometer to make sure it is working correctly. I know what to do if it is not working correctly.
YES ☐ **Go to 2.** **NO** ☐ **Go to** ⊘

2. I know how to check the code on my test strip with the code on the glucometer. I know what to do if the codes do not match.
YES ☐ **or NA** ☐ **Go to 3.** **NO** ☐ **Go to** ⊘

3. I know how to clean my glucometer and lancet pen.
YES ☐ **Go to 4.** **NO** ☐ **Go to** ▽

4. I can use the lancet and / or pen correctly.
YES ☐ **Go to 5.** **NO** ☐ **Go to** ▽

5. I have demonstrated that I can correctly place the blood sample on the test strip and successfully complete the glucometer check.
YES ☐ **Go to 6.** **NO** ☐ **Go to** ⊘

6. I know what to do if the number is too high or too low.
YES ☐ **Go to 7.** **NO** ☐ **Go to** ⊘

7. I know who to tell when I have 4-7 days of test strips left so I never run out. **YES** ☐ **Go to 8.** **NO** ☐ **Go to** ⊘

8. I know to wash my hands and change the finger I use for the finger stick. **YES** ☐ **Go to 9.** **NO** ☐ **Go to** ⊘

9. I have demonstrated that I do my glucometer check at the right time every day by using the clock or my routine (after the news, before lunch, before taking insulin, etc).
YES ☐ **Go to 10.** **NO** ☐ **Go to** ▽

10. I can get the glucometer supplies to and from storage, out of the container, and properly dispose of used needles.
YES ☐ **Go to 11.** **NO** ☐ **Go to** ▽

11. I have demonstrated harmful behaviors to self and am unable to self-administer my glucometer check with or without assistance.
YES ☐ **Go to** ✕ **NO** ☐ **Go to** ☙

If answers to questions 1-10 are all yes, then go to ☙

⊘

Unable to Use Glucometer With or Without Assistance

Will Require Medication Administration Certified Staff to Do All Glucometer Checks as Ordered

Continue to next assessment question. Complete this form in its entirety.

▽

Able to Use Glucometer With Assistance

Service Plan to Include all that apply:

- Time Reminder
- Physical Assistance with any of the following:
  - Use of pen and lancet
  - Cleaning the glucometer
  - Checking with test solutions
  - Set-up and storage of equipment

Continue To Next Step

☙

Able to do own Blood glucose monitoring Without Assistance

✕

Unable to perform Blood Glucose Monitoring With or Without Assistance

Will Require MRDD Staff with Certification 1 to Perform Blood Glucose Monitoring

Identified Behavior/Justification MUST be documented

Continue on next page ⟶

Once the assessment is completed, the service plan for the individual should specify how Blood Glucose Monitoring (BGM) will be done. Any of the following statements could be used in the service plan, depending on what is correct for each specific person.

☐ I can perform my own blood glucose monitoring (BGM) without assistance.

☐ I can perform BGM with assistance (select one of the following related to the assistance).

- ☐ The individual receives assistance with BGM through reminders of when to perform BGM. Specify reminders needed in the client's ISP.
- ☐ The individual receives assistance with BGM through physically handing the equipment needed to the client. Provide specific instructions in the client's ISP.

Other:

☐ I need certified staff to do my blood sugar testing. Use this if answer to any question leads you to the top box on the right side of this form. If any question, #1-10 is answered "no" use this answer.

☐ I require certified staff to do my blood sugar checks while I am learning how to do them. IP Team should consider Skill Development programs as appropriate. Use this answer if the client cannot consistently do own BGM. A specific plan should be written with goals and time frames. See 5123:2-6-02 (C).

☐ I can do my own BGM.

- ☐ Describe BGM procedure _____
- ☐ Ability Level with task_____
- ☐ Designate if independence or staff performance of BGM is applicable to a specific location or time of day (ie. Work setting) _____

☐ I have demonstrated unsafe behaviors and am therefore unable to do my own BGM with or without assistance. **I**dentify behavior / justification.

If the client has a history of unreliability or noncompliance the person doing the assessment may indicate that the client requires someone to do his / her BGM to assure safety.

RESULT:

☐ Self BGM with assistance ☐ Self BGM – no assistance needed.

BGM / Delegated Nursing (DN)

☐ I live in a 5 bed or less setting and will receive my BGM from staff that have been trained to do BGM. **(or)** ☐ I will receive DN services per the state DN rules

Schedule for BGM (Attach another page if more space needed – or copy of MAR)

Schedule and Manner for BGM

(Time)_____ Manner _____ Site _____

(Time) _____ (Manner)_____ Site _____

Reviewed by:

SERVICE SUPPORT ADMINISTRATOR (signature & date): _____

NURSE (signature & date): _____

References

American Diabetes Association resource guide. (2004). Retrieved from http://www.diabetes.org.

Beacham, T., Williams, PR., Askew, R., Walker, J., Schenk, L., May, M. (2008). "Insulin Management: A Guide for the Home Health Nurse." **Home Healthcare Nurse**, (26)7, 420-428.

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Funnell, M. (2008). **"**Standards of Care for Diabetes: What's New, What's Different." **Nursing 2008.** (38)10, 47-49.

Hall, M. (2008). "Type 2 Diabetes: The Many Facets of Care." **Home Healthcare Nurse**, (26)6, 346-353.

Lugar, S. & Chabanuk, A. (2009). "Management of Type 2 Diabetes: Implications for the Home Healthcare Clinician. ." **Home Healthcare Nurse**, (27)2, 92-101.

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National Diabetes Education Program Fact Sheet. Retrieved from http://ndep.nih.gov.

NIDDK. **What I Need to Know About Diabetes Medicines.** Retrieved from http://ndep.nih.gov website, Nov. 2008.

Understanding Diabetes: The Basics. Diabetic Association. of Greater Cleveland. **Managing Your Diabetes**. Eli Lilly and Company.

Websites:

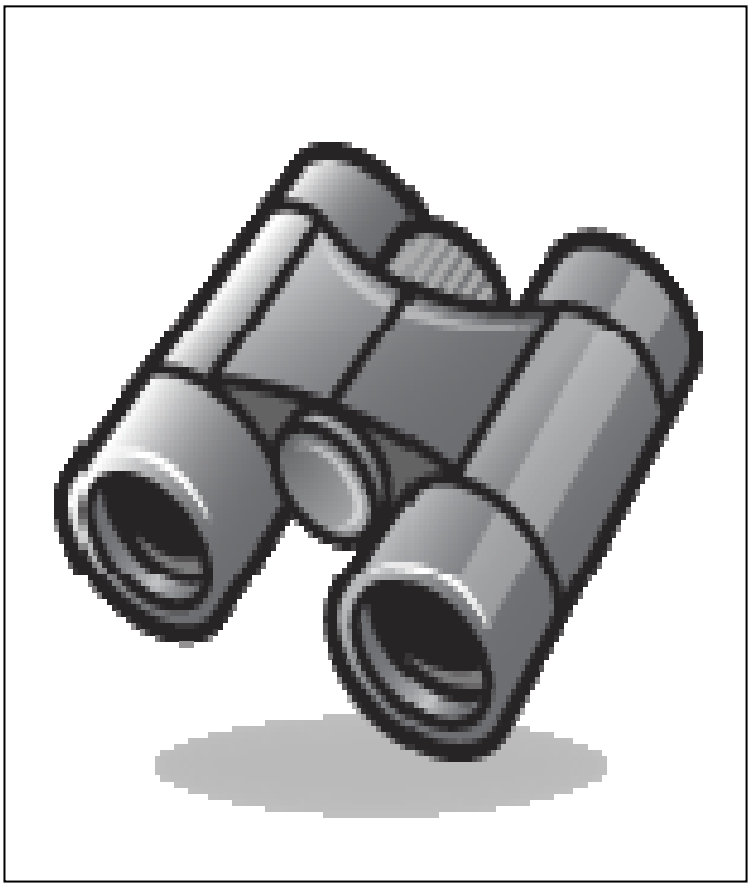
www.diabeteseducator.org (Diabetes Educators)

www.jdrf.org (Juvenile Diabetes Research Foundation)

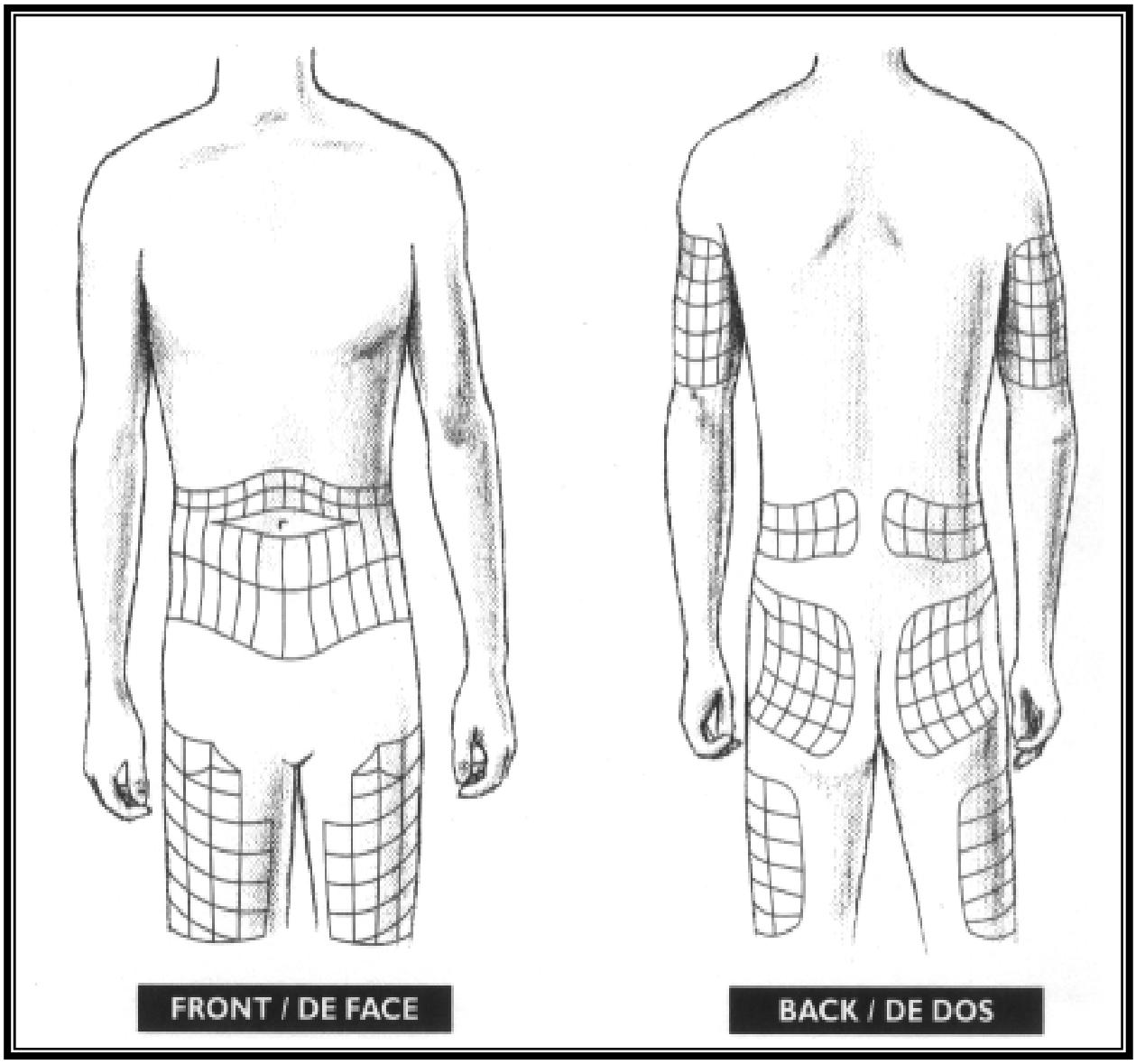
www.ndep.nih.gov (National Diabetes Education Program)

www.diabetes.niddk.nih.gov (National Diabetes Information Clearinghouse – booklets to duplicate)

Materials to use as you choose

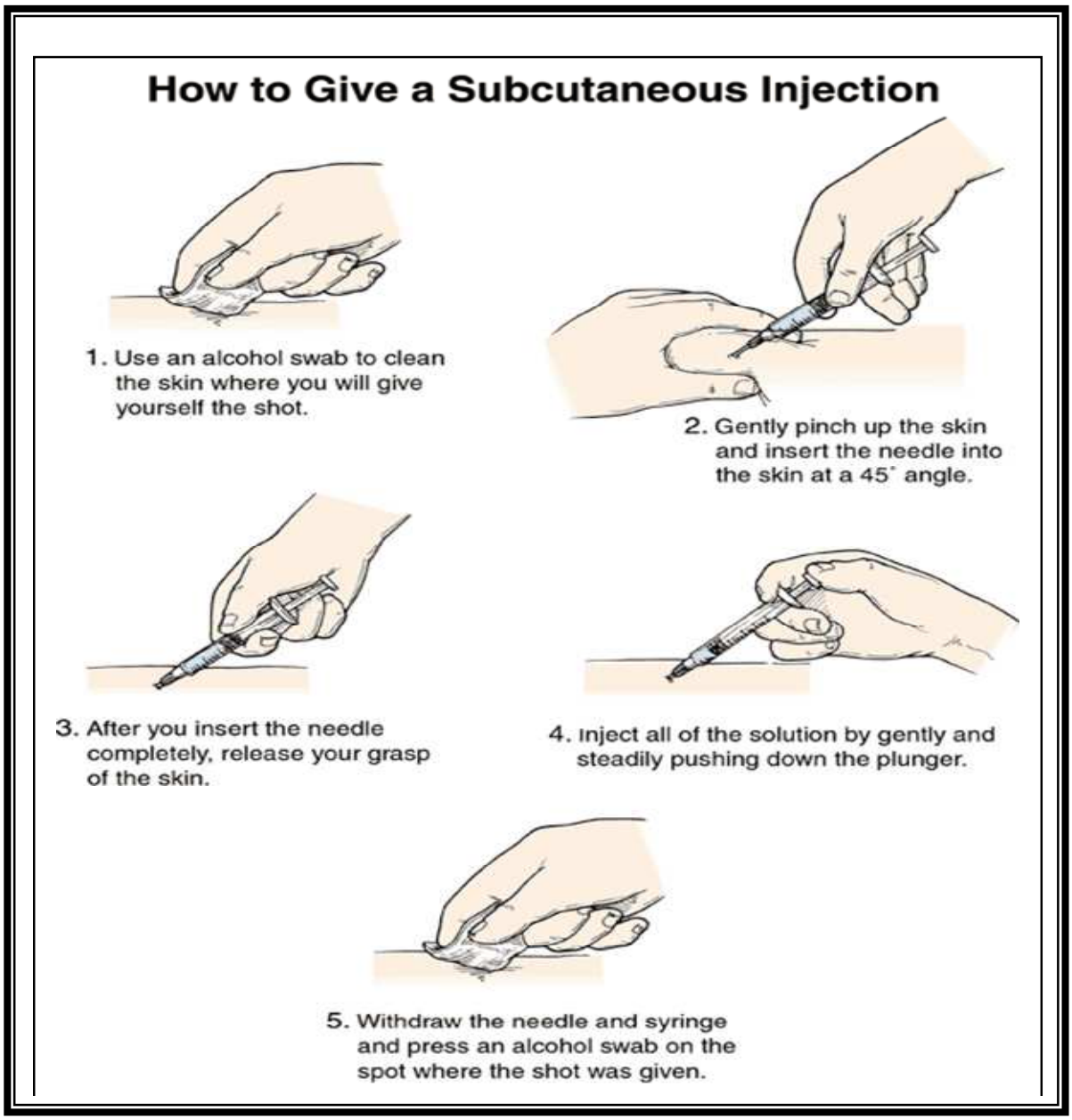


Subcutaneous Injection Sites



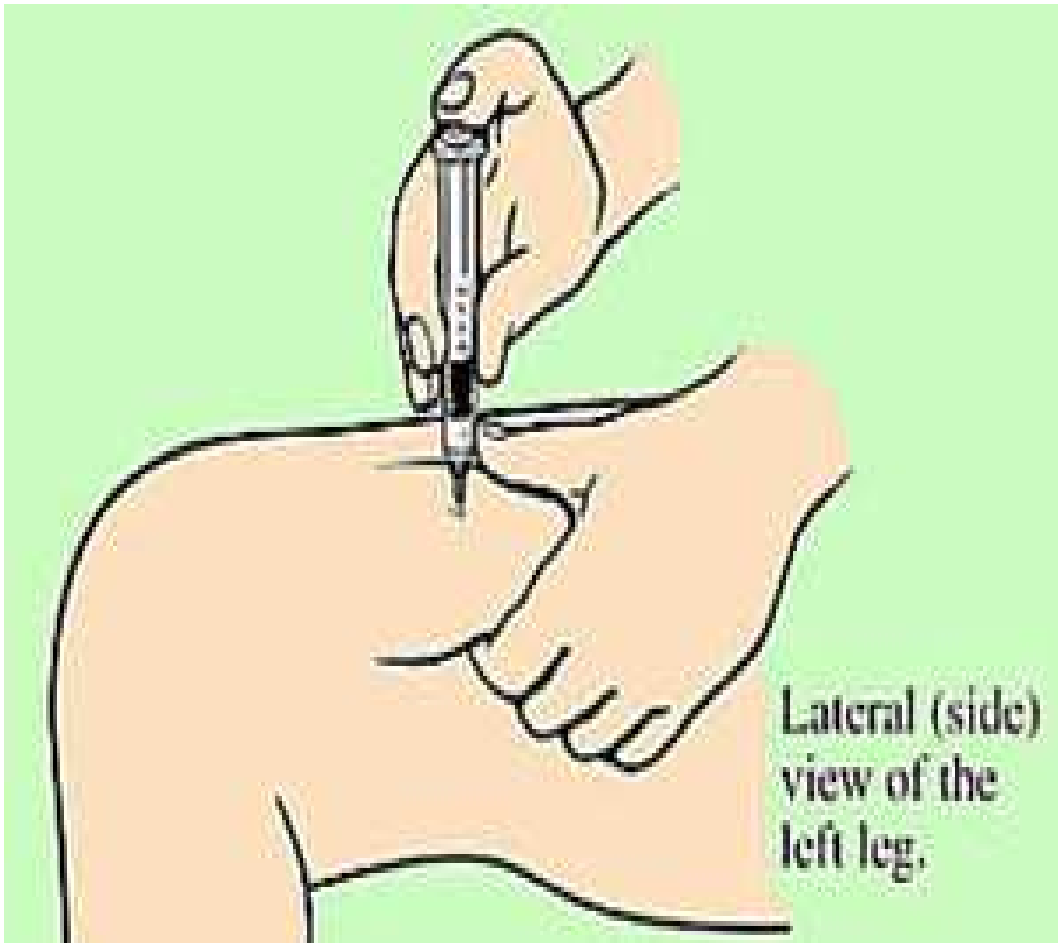
Subcutaneous Injection in Abdominal Site

How to Give a Subcutaneous Injection



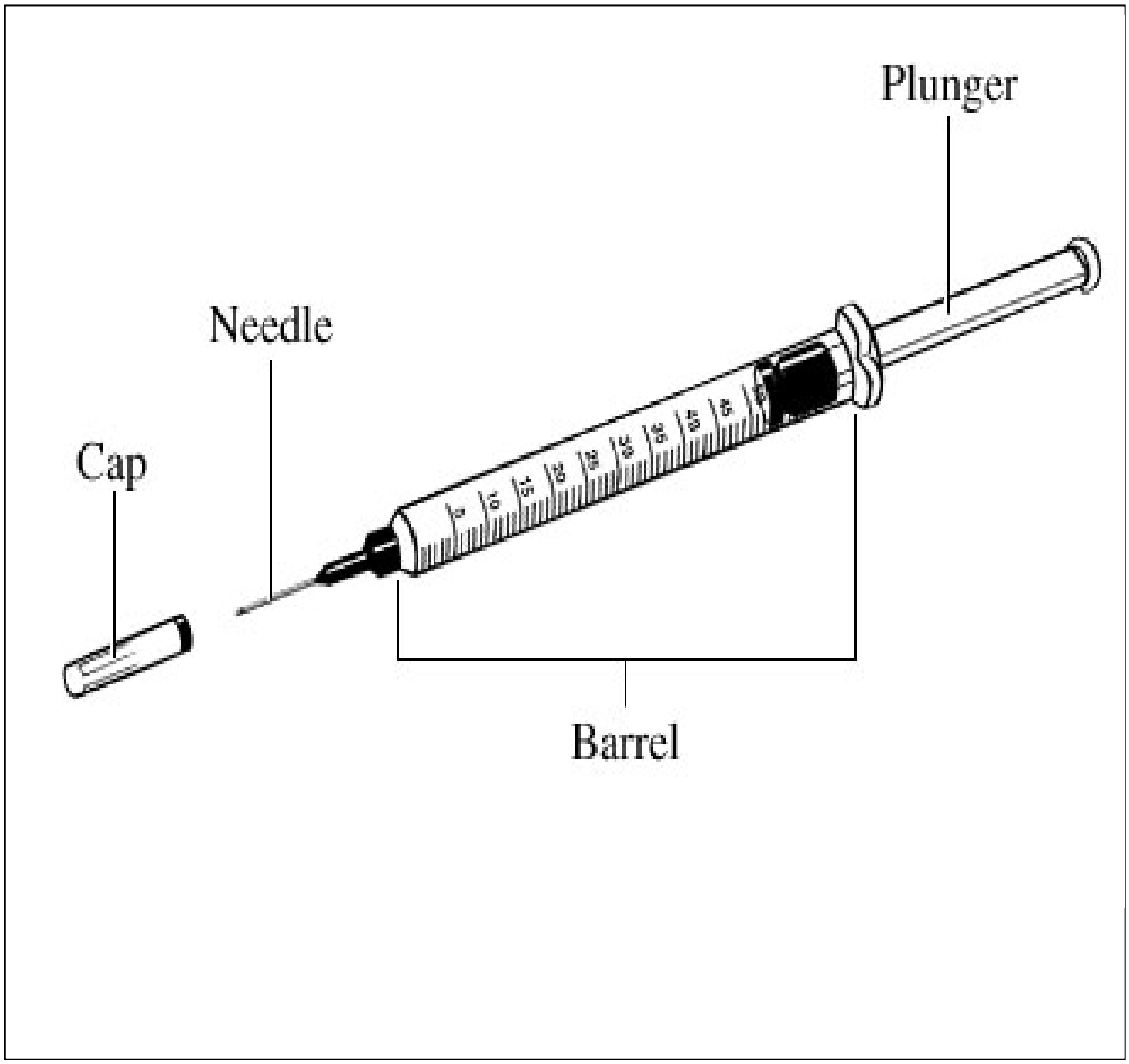
http ;//www.fairview.org/healthlibrary/content/subinj

Subcutaneous Injection in Thigh

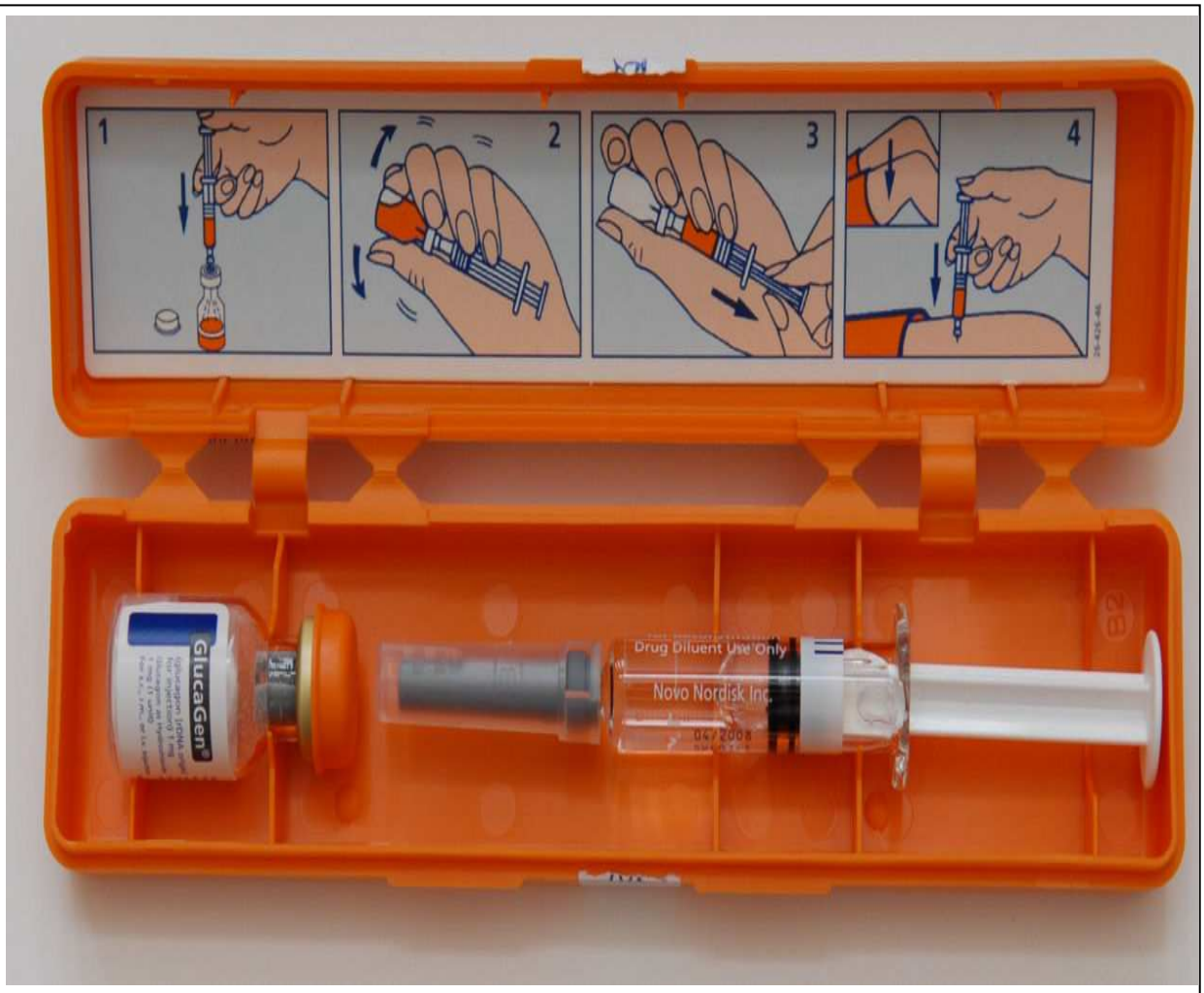


Withdrawing Correct Dose of Insulin

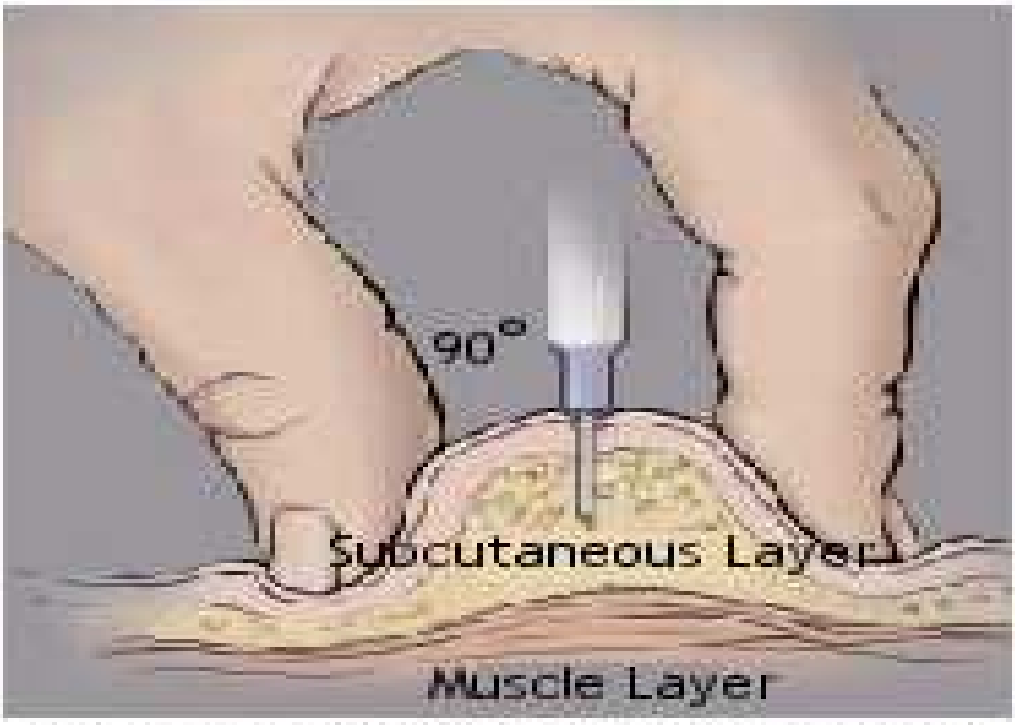
Insulin Syringe



Example of Glucagon Emergency Kit



Insert Needle at a 45-90 Degree Angle



A subcutaneous injection into the fatty layer of tissue under the skin.

Insert needle at 90 degree angle if person average weight or heavier

Insert needle at 45 degree angle if person very thin or has little subcutaneous tissue

Name of DDP _____

Skills Checklist / Procedure
Insulin Injection – Filling the Syringe:

☐ 1. Washes hands with soap and water.

☐ 2. Gathers equipment needed:
- Vial of insulin
- Sterile disposable syringe
- Alcohol swab
- Sharps (puncture proof) container

☐ 3. Identifies insulin by comparing MAR / Med Log to label on vial.

☐ 4. **Clear Insulin:**
Check Insulin for floaters, discoloration, or cloudiness. Discards if any of these are observed

Cloudy Insulin:
Checks insulin for floaters and white lumps. Discards if either of these is observed.

☐ 5. Checks expiration date on insulin vial.

☐ 6. If using cloudy insulin, gently rolls insulin between hands to mix well.

☐ 7. Removes cap from vial and cleans top of vial with alcohol swab.

☐ 8. Removes syringe from package. Removes cap from needle and checks needle for any bends or barbs. Checks syringe by pushing plunger back and forth to make sure it moves freely.

☐ 9. Pulls back plunger, drawing air into the syringe. The amount of air should be the same as the amount of insulin ordered by the physician.

☐ 10. Pushes the needle into the rubber stopper on the insulin vial, then injects the air into the vial.

☐ 11. Keeps the needle in the rubber stopper while turning the vial upside down, making sure the tip of the needle remains in the insulin.

☐ 12. Fills the syringe with the correct dose of insulin by drawing back on the plunger.
- If too much insulin is drawn into the syringe, pushes the plunger in, returning insulin to the vial.
- If too little insulin is drawn into the syringe, continues pulling on the plunger.

☐ 13. Checks the syringe for air bubbles.
- If there are air bubbles, gently taps the syringe barrel while the needle remains in the rubble stopper of the vial. Air bubbles will move to the top of the syringe and back into the vial. Continues to tap until all air bubbles are gone.

☐ 14. Checks the syringe for the correct dose of insulin. Makes sure there are no are bubbles. If air bubbles persist, pushes all medication back into the vial and begins to redraw the correct dose of insulin.

☐ 15. Checks the syringe once more to ensure that the correct amount of insulin has been drawn up before pulling needle from vial.

☐ 16. Carefully recaps needle as taught.

Nurse's Sig. _____ Date: _____

Name of DDP _____

Skills Checklist / Procedure
Insulin Injection – Giving the Insulin:

- ☐ 1. Washes hands with soap and water and puts on gloves.
- ☐ 2. Chooses the injection site.
  - Makes sure the site is clean by using an alcohol swab or washing the area with soap and water
  - Dries the site
  - Avoids areas that are red, swollen, or bruised.
- ☐ 3. Informs the client that he will be given his / her insulin injection.
- ☐ 4. Checks to be sure the right insulin is being given in the right dose to the right person at the right time.
- ☐ 5. Places thumb and forefinger on either side of the injection site, about 2 inches apart, and pinches up the skin.
- ☐ 6. With a darting motion, inserts the needle into the pinched up skin between the thumb and forefinger. Makes sure the needle enters at a 45 or 90 degree angle.
- ☐ 7. Releases the skin, holding the syringe in place.
- ☐ 8. While holding the syringe in place, pushes down on the plunger, injecting the insulin at a slow, steady pace, until all insulin has been injected. This takes about 3-5 seconds.
  - The syringe can be held in place with one hand and the other hand used to inject, or a one handed technique may be used.
- ☐ 9. Places a cotton ball or clean gauze next to the needle where the needle has entered the skin and with a smooth motion, carefully removes the needle from the client's skin.
- ☐ 10. Holds the cotton ball or gauze over the injection site for a few seconds.
  - If bleeding occurs, holds the cotton ball or gauze over the injection site until bleeding stops
- ☐ 11. **DOES NOT RECAP THET NEEDLE.** Disposes of the syringe in the sharps container.
- ☐ 12. Removes gloves and washes hands.
- ☐ 13. Stays with the client, ensuring the client is safe and comfortable.
- ☐ 14. Secures the medication area making sure all equipment and medication is put away according to agency policy and procedure.
- ☐ 15. Documents per agency policy and procedure.

Nurse's Signature: _____ Date: _____

DD Personnel: _____

Skills Checklist for Insulin Injection per Insulin Pen

☐ 1. Wash hands with soap and water

☐ 2. Gather supplies
- ♣ Alcohol swabs
- ♣ Insulin Pen
- ♣Sharps Container
- ♣ Gloves
- ♣ Needles

☐ 3. Compare label on Insulin container with MAR 3 times
- ♣Before assembling
- ♣After assembling
- ♣Before administering

☐ 4. Remove cap of pen. Check insulin in pen for floaters and / or discoloration

☐ 5. Wipe off area the needle is inserted (screwed in)

☐ 6. Screw needle into top of pen (Remove outer cap at this point, but leave second cap)

☐ 7. Turn dial at bottom of pen to "2." Remove needle protector. Push up on plunger to release air – several small drops will come out of needle.

☐ 8. Put on gloves

☐ 9. Turn dial to correct number for correct dosage

☐ 10. Place outer needle cap lightly over needle. Lay pen down without contaminating

☐ 11. Select appropriate injection site and wipe with alcohol

☐ 12.
- [1]Pick up pen.
- [2]Remove cap.
- [3]Hold pen in fist leaving thumb loose.
- [4]Pinch fold of skin. .
- [5]Inject pen into pinched up skin
- [6]Push plunger with thumb until it stops
- [7]Release fold of skin.
- [8]Count to five and remove needle from skin.

☐ 13. Clean area with alcohol.

☐ 14. Recap needle with outer cap. Unscrew needle from top. Put needle into sharps container.

☐ 15. Wash hand and replace insulin in locked storage container in refrigerator

☐ 16. Document according to agency procedure and policy

Nurse Name: _____ Date: _____

Nurse Signature: _____

Health-Related Activities Skills Checklist: Using a Glucometer For Blood Sugar Monitoring

_____ 1. Assemble equipment.

_____ 2. Identify individual and explain procedure.

_____ 3. Wash hands and apply gloves

_____ 4. Place lancet in pen if a pen is used for the procedure with this client

_____ 5. Set up glucometer

_____ 6. Have client wash hands thoroughly. Use of an alcohol wipe on the chosen finger***** is optional. If a wipe is used, be sure the finger is dry before applying the lancet.

_____ 7. Turn glucometer on, then apply lancet to side of finger (never the finger pad)

_____ 8. Point finger downward and gently squeeze to get an adequate blood sample.

_____ 9. Place blood drop on test strip and wipe finger with gauze pad and hold in place, applying gentle pressure until bleeding stops.

_____ 10. Read and record result or store result in the glucometer if this option available.

_____ 11. Clean equipment and dispose of used supplies appropriately.

_____ 12. Remove and dispose of gloves appropriately and wash hands.

_____ 13. Follow process for medication administration or request assistance if necessary.

*****With some glucometers, sites other than the side of the finger may be used. If using the fingers, be sure to use the sides of the finger, never the pads. Rotate finger sites to avoid formation of calluses. Be sure to document finger site used.

Trainee Name: _____ Date: _____

_____ Instructor initials Instructor Name _____

COMMENTS:

INSULIN PENS AND CARTRIDGES: SAFETY INFORMATION

According to the FDA, insulin pens and cartridges are never to be shared among patients because of the potential for transmitting hepatitis viruses, HIV, or other blood-borne pathogens. Insulin pens are not designed to be used by more than one person. Any blood contamination of the pen reservoir could result in transmission of already existing blood-borne pathogens from the previous user.

http://www.fda.gov/medwatch/safety/2009/safety09.htm#Insulin