




**HYPOGLYCEMIA SYMPTOMS** (know these):

- Jittery, anxious, irritable
- Sweating, chills
- Skin pale, cold, clammy
- Confusion
- Tachycardia
- Dizziness
- Nausea
- Fatigue, weakness
- Blurred vision
- Headache

KNOW **SIGN & SYMPTOMS OF HYPERGLYCEMIA & HYPOGLYCEMIA**  **THROUGHOUT THE ENTIRE SHIFT, every shift**





What causes hyperglycemia? Infections raise blood sugar, Medications (steroids+), stress, carb/food intake

What causes hypoglycemia? N/V, **too much insulin**, alcohol intake, low food intake, excess exercise + insulin + low food

**QMA TO CONTACT NURSE IF RESIDENT SHOWING SIGNS OF HYPO OR HYPER**

**MUST KNOW THESE TRADE & BRAND NAME hypoglycemics**

<b>GENERIC</b>	<b>TRADE/BRAND NAME</b>
glipizide	Glucotrol pill
metformin	Glucophage pill
pioglitazone	Actos pill
sitagliptin	Januvia pill
liraglutide	Victoza pen (injection)
glimepiride	Amaryl pill
dapagliflozin	Farxiga pill

<b>INSULIN</b>	<b>NAME</b>	<b>APPEARANCE</b>	<b>ONSET</b>	<b>PEAK</b>	<b>DURATION</b>
Rapid Acting	HumaLOG NovoLOG	 Clear	< 15 min	1-2 hours	3-4 hours
Regular	Humulin R Novolin R	 Clear	½ hour – 1 hour	2-4 hours	5-7 hours
Intermediate NPH	Humulin N Novolin N	CLOUDY 	2-4 hours	4-10 hours	10-16 hours
Long Acting	Lantus Levemir	 Clear	2-4 hours	Never peaks Strong all day	0-24 hours daily

Measured in “unit” and uses SPECIAL syringe for INSULIN use ONLY: **U-100** used in USA. **QMAs can give U-100 only.**

RARELY SOME RESIDENTS USE U-500 INSULIN. 5 times stronger than other insulins. **ONLY NURSES GIVE U-500 injections.**

Needles & syringes are available in many sizes and types. Needles are measured by ‘gauge’ from 14-30. The larger the gauge the smaller the diameter of the needle. So 30 gauge is smallest; 14 gauge is largest.

## **TERMS YOU MUST KNOW: You WILL be tested on these**

- Pancreatic **ENZYMES**
  - > Amylase **Amy** (EATS Carbs)
  - > Protease **PRO**tease (EATS PROtein)
  - > Lipase **Lipase** FAT LIPS (eats Fat)
- Autonomic Neuropathy **Disease process of 'Automatic' Nerves**
- Beta Cells **In pancreas the Islets of Langerhans beta cells secrete the hormone Insulin**
- Blood Glucose level **The amount of blood sugar measured at a particular time**
- Carbohydrates **More carbs, Blood Sugar** ↑
- Cataracts **Eye condition that decreases vision; more common w diabetics @ earlier age**
- Diabetes Mellitus **Official name "D.M."**
- Endocrine system **A group of organs that secrete HORMONES that control body functions**
- Duration **How long a medication works for**
- Fat **Diabetics have issues with fat, proteins, & sugars**
- Focal Neuropathy **Nerve disease in certain areas (affected by diabetes: eyes, extremities, kidneys, etc.)**
- Gastroparesis
- Glaucoma **Increased pressure in the eye(s)**
- Glucagon **A HORMONE secreted by Pancreas (to the liver to release stored sugar-not enough energy in cells)**
- Glucose **Sugar**
- Hyperglycemia **High Blood sugar WATCH FOR S/S (extreme thirst, extreme hunger, urination +)**
- Hypoglycemia **Low Blood sugar WATCH FOR S/S (sweating profusely, jittery, cool clammy skin, c/o not feeling well +)**
- Insulin **A HORMONE secreted by the Pancreas to escort sugar in your blood to cells for energy**
- Insulin resistance **when the body cannot process all the sugar eaten for energy purposes, pre-diabetes diet/exercise needed**
- Intermediate Acting Insulin-aka NPH Insulin or N **ONLY CLOUDY INSULIN onset 2-4 hr, peak 4-10, lasts 10-16 hours names have 'N' (Humulin N)**
- Islets of Langerhans **Cells in the Pancreas that secrete Insulin, triggered by eating**
- Ketoacidosis
- Ketones **Keeps sugar in blood from being used by insulin**
- Long Acting Insulin **CLEAR INSULIN All long acting insulin begins with L (Lantus) continuous action 24/7**
- Macrovascular complications **Circulatory Issues from Diabetes in smaller vessels**
- Microvascular complications **Circulatory Issues from Diabetes in smaller vessels**
- Nephropathy **Kidney disease D/T small vessels in kidneys damaged by complications of Diabetes**
- Neuropathy **Nerve disease D/T nerve cells damaged by complications of Diabetes**
- Onset **How long it takes until the insulin starts working**
- Pancreas **Endocrine Organ that secretes insulin to take sugar in blood to cells needing energy**
- Peak **The time at which the insulin reaches the best effectiveness**
- Polydipsia **Much thirst; must dip water; THIRSTY**
- Polyuria **Much urine; drink more, bathroom more**
- Polyphagia **Much EATING (throat/pharynx); EAT more; HUNGRY**
- Protein
- Proximal neuropathy **Nerve disease proximal/near to center of body D/T high sugars; example: eyes**
- Rapid Acting Insulin **CLEAR INSULIN very rapid onset. Insulin names have 'LOG' (rapid log ride) (Humalog)**
- Regular Insulin **CLEAR INSULIN fast acting 1/2 hr onset; given before meals +; peak 2-4 hrs Insulin names have "R" (Humulin R)**
- Retinopathy **Disease process of the retina (back of eye), D/T** ↑ **Blood Sugars, leads to blindness in diabetics**
- Type I Diabetes **Pancreas secretes no Insulin, therefore Insulin injections are needed for life**
- Type II Diabetes **Pancreas secretes some insulin, not enough for body needs, diet, exercise, meds**

**3 Ps: S&S** ↑ **Blood Sugar**

**ALWAYS CHECK BS 24/7 PRN**

## WHAT IS NEEDED FROM Facilities to have QMAs administer insulin

Facility that has QMAs administering insulin must have a policy in place that allows QMAs to admin insulin under the supervision of RN.

**Copy of facility policy must be sent to Med Ed so QMA can take class & do clinicals.**

**A student cannot just take the class, they need a facility to do 2 hrs clinicals at.**

**Med Ed Insulin Training Class will be on our YouTube channel: med ed inc**

Students are given the class, terms they should know, insulin medication names, etc. We go thru the entire program online. After students have watched the online education, they need to come to a one day class and take an exam for the info that is on YouTube. First 4 hours of class will be going over insulin education program for QMAs. Then student will take a final exam, 25 questions and can only miss 3. If student passes final exam (info on med ed inc YouTube page), then student may move on to the next portion of the class which involves (actual) insulin administration demonstration and practice until procedure is done correctly. Then student will go to job and do 2 hours of insulin administration clinicals. Paperwork then returned to Med Ed to send to IVT for testing.

**IF STUDENT DOES NOT PASS FINAL EXAM after the 4 hour lecture, then student must leave. Student may have one other attempt to pass exam at a different class/date.**

**If student is not successful after 2 attempts at Med Ed's final exam, must retake class.**

**Cost \$250 – does not include \$50 money order to Ivy Tech for state testing.**

**1<sup>st</sup> Session 4 hours** is from the ISDH Insulin Education Module. There is information on the disease, treatments, meds, and administration of insulin via syringe and insulin pen. There are different types of insulins plus other information you must learn and take a final exam after morning session of class.

**2<sup>nd</sup> Session** will start with a 25 question final exam. You can only miss 3 on the final.

If you miss more than 3, you must leave. You are allowed to take the final one more time at a different session- for a total of two times taking the Med Ed final.

If you do not pass the final exam the 2<sup>nd</sup> time, you must retake the class, \$250-so study!

When you do pass your final exam, the next part of the class involves drawing up insulin, administering insulin via syringe and insulin pen with Pat. There is a step-by-step procedure that you must perform with 100% accuracy in order to go onto your 2 hour clinical at your job with RN.

When done with clinicals, you will fill out the IN State Exam Application for Insulin Administration and mail to Med Ed with \$50 money order made out to IVY TECH. All will be sent to IVY TECH to schedule your 25 question IN state test for Insulin QMA.

**YOU CANNOT ADMIN INSULIN UNTIL YOUR NAME IS ON STATE REGISTRY AS INSULIN QMA!!!**

**STUDENT SIGNS UNDERSTANDING ABOVE: \_\_\_\_\_ Date \_\_\_\_\_**

**Last 4 student SSN: \_\_\_\_\_**

## QMA Insulin Practice Test Questions

1. What kind of syringe should the QMA use for injecting insulin?
  - a) 10 units
  - b) U 10
  - c) U 100
  - d) U 500
  - e) C & D
2. Which insulin is the only one that is cloudy?
  - a) HUMULIN N
  - b) NOVOLIN N
  - c) REGULAR
  - d) HUMALOG
  - e) A & B
3. Which of the following are Long Acting?
  - a) NOVOLOG
  - b) LANTUS
  - c) REGULAR
  - d) HUMALOG
  - e) A & C
4. Where is glucagon secreted from?
  - a) Blood
  - b) Liver
  - c) Pancreas
  - d) Small Intestine
  - e) B & C
5. What does Amylase breakdown?
  - a) Proteins
  - b) Carbohydrates
  - c) Fats
  - d) Insulin
  - e) A & B
6. Which length needle is correct to use for insulin injection?
  - a)  $\frac{1}{4}$  to  $\frac{1}{2}$  inch
  - b)  $\frac{1}{2}$  to  $\frac{5}{8}$  inch
  - c)  $\frac{1}{4}$  to  $\frac{5}{8}$  inch
  - d)  $\frac{3}{8}$  to  $\frac{5}{8}$  inch
  - e) All of the above are correct
7. Which of the following is true regarding injection via insulin pen?
  - a) Click the pen dial to the ordered amount of insulin
  - b) Must keep needle in resident for 10 seconds after insulin administration
  - c) Insert pen at a 45 degree angle into the skin
  - d) Insert pen at a 90 degree angle into the skin
  - e) A, B and D
8. What do the Islets of Langerhans do?
  - a) Secrete insulin from Pancreas
  - b) Metabolize insulin in the Liver
  - c) Secrete insulin & glucagon from Pancreas
  - d) Secrete glucagon from the Liver
  - e) A & B
9. What kind of insulin starts to act within the first hours of injecting, then a peak activity lasting up to 7-10 hours?
  - a) Intermediate Acting Insulin
  - b) NPH
  - c) HUMALOG N
  - d) B & C
  - e) All of the above
10. What is the onset time for Regular insulin?
  - a) 30 minutes to 1 hour
  - b) 15 minutes to 1 hour
  - c) 2-4 hours
  - d) 12 hours
  - e) A & C