



BEAT DIABETES REFRESHER TRAINING

TRAIN THE TRAINER

Learning Objectives

This train-the-trainer presentation for OSH Supervisors will:

- **Provide Supervisors with effective engagement techniques to promote learner participation and involvement in a training session.**
- **Offer Supervisors various training tools to help them plan their session to meet learners goals and objectives.**
- **Suggest best practices for executing a productive training session.**
- **Provide strategies for handling surprise situations and difficult participants.**

Key Strategies to Conduct an Effective Training

- Review training materials ahead of time
- Practice using Zoom Web conference Application
- Tell trainees what you're going to cover.
- Tell your nurses the information.
- Tell them what you told them.
- Involve trainees (school nurses)
- Keep your session on track.
- Put yourself in their shoes—or seats.
- Solicit feedback on the training session.

*<https://simplifytraining.com/article/how-to-conduct-an-effective-training-session/>

What's New in the BEAT Diabetes Refresher

- Resources (PDF, handouts and Presentations) to share with staff
- Abbreviated Power Point Presentation (70 slides vs 101)
- Case Scenarios
- 504 Meeting Presentaion
- Gvoke HypoPen Presentation
- Agenda will be provided

Items from BEAT Diabetes Curriculum that will not be included in Refresher Training

- No Pre or Post test for Staff.
- No Competency Checklist.
- No Seperate Technology Presentations.
- No Hands on Section.



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Overview



Diabetes is a disease where the body does not produces insulin or does not use insulin properly.

Two Main Types of Diabetes

Type 1 Diabetes

- ▶ Pancreas makes too little or no insulin

Type 2 Diabetes

- ▶ Cells do not use insulin well (insulin resistance)
- ▶ Ability for pancreas to make insulin decreases over time

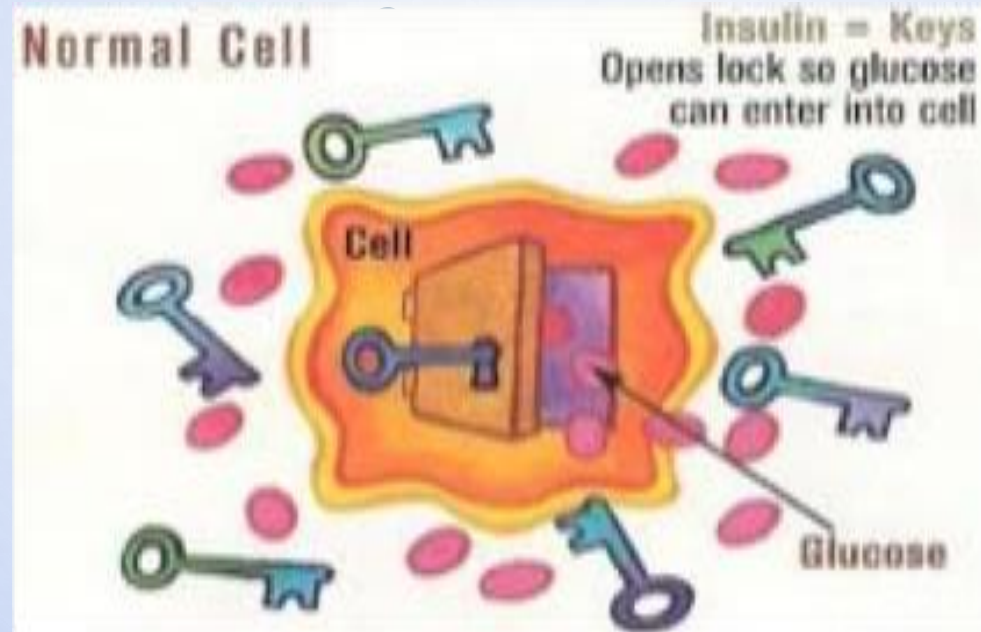


TYPE 1 PRESENTATION

- ONSET OFTEN ABRUPT, ESPECIALLY IN CHILDREN
- MOST FREQUENT SYMPTOMS: POLYDIPSIA, POLYURIA AND POLYPHAGIA, WEIGHT LOSS, FATIGUE, BLURRY VISION, AND ABDOMINAL PAIN.
- CANDIDAL INFECTIONS ARE OFTEN PRESENT IN CHILDREN UNDER 6 YEARS.
- IN THE US, 34% PRESENT IN DIABETIC KETOACIDOSIS (DKA), HALF ARE MODERATE OR SEVERE. (J. OF PEDIATRICS, FEB 2013) ASSOCIATED WITH AGE (<3 AND 10-14 YEARS AND AWARENESS OF TYPE 1).
- WHY IS THIS IMPORTANT? SCHOOL NURSES SHOULD BE AWARE OF THE EARLY SYMPTOMS OF TYPE 1 DIABETES.

REMAIN ALERT TO STUDENTS WITH RECENT ONSET OF BLADDER CONTROL ISSUES

Insulin is a hormone normally made by the body. It helps glucose (sugar) enter cells where it can be used



Without **insulin**, glucose remains in the blood stream and cannot be used for energy by cells.

**Only the Student, School Nurse,
Parent or Parent designee
administers the insulin with one of
the following:**

- ▶ Insulin pen
- ▶ Syringe
- ▶ Insulin pump
- ▶ Insulin Pod

**HOW IS INSULIN GIVEN
AT SCHOOL?**



Idealized insulin time-action profiles after subcutaneous injection of insulin aspart, insulin lispro, insulin glulisine, regular insulin, NPH insulin, insulin detemir, and insulin glargine.

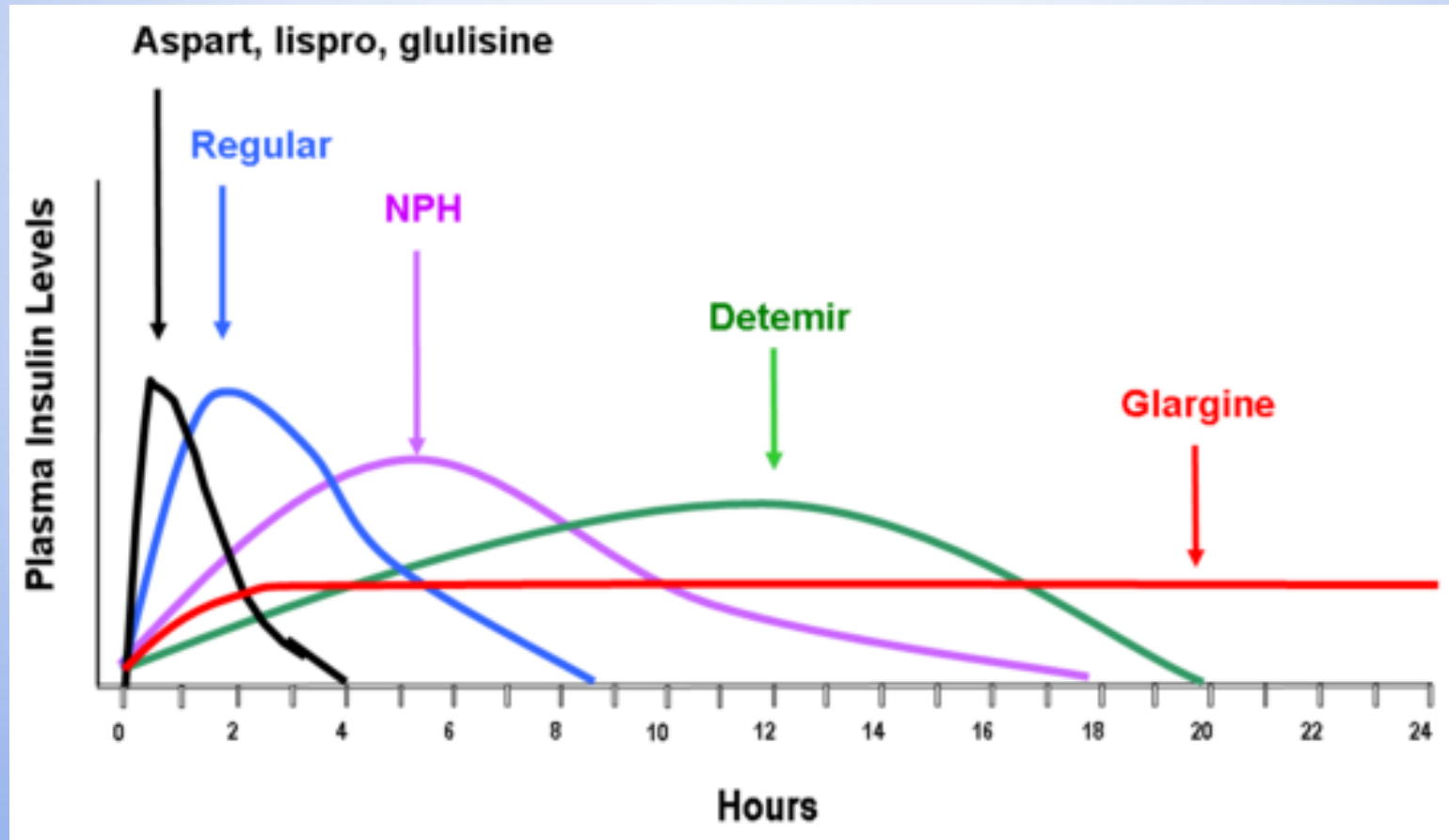
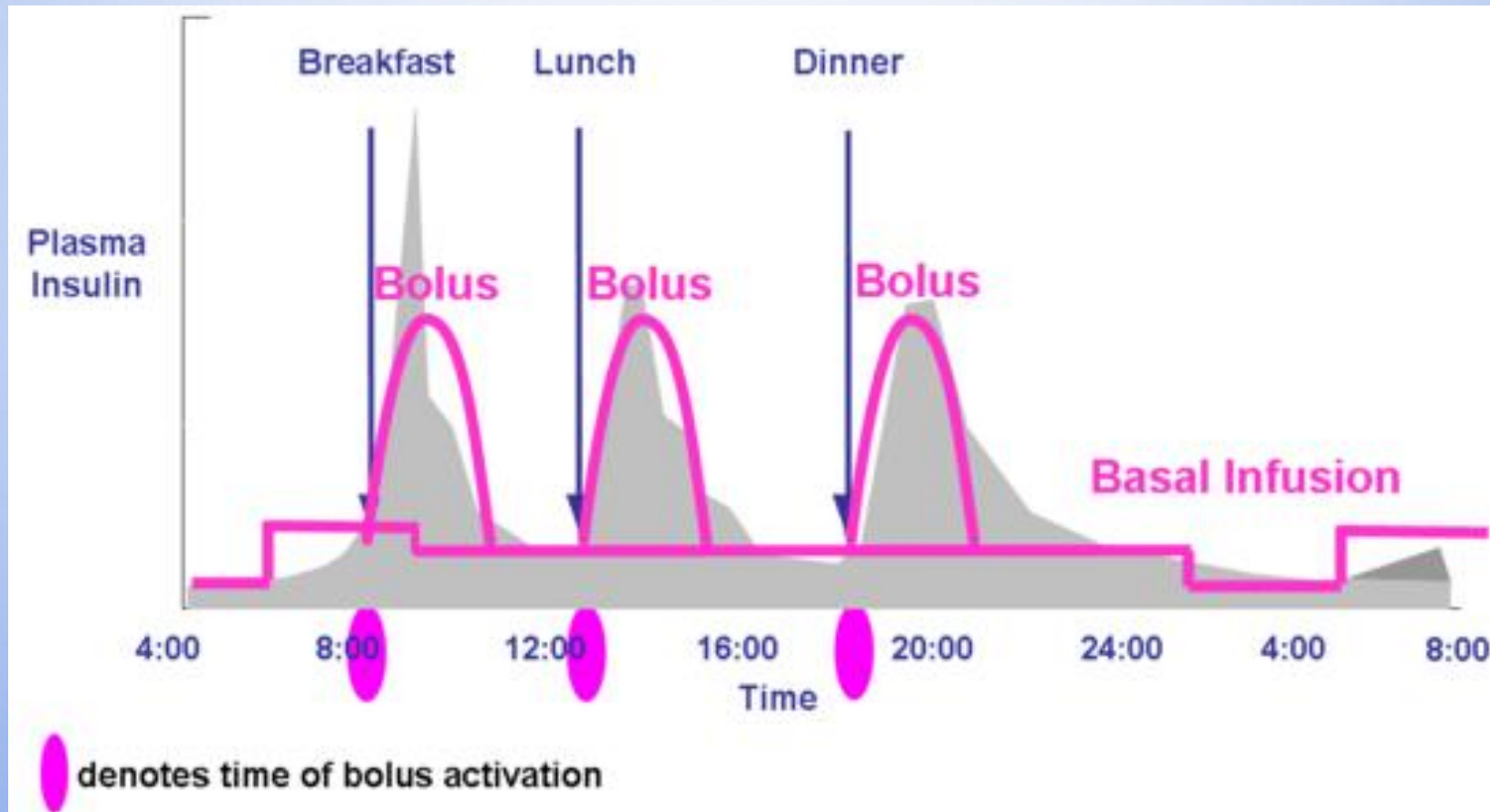
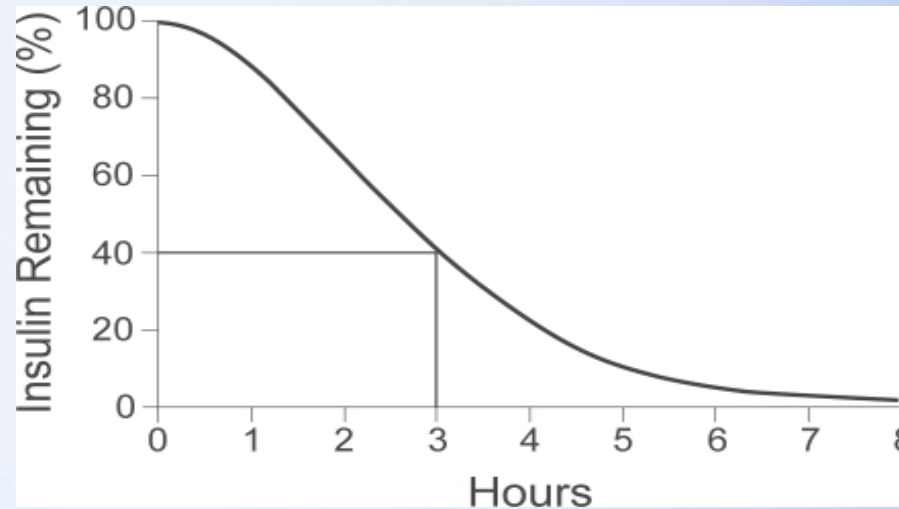


Figure 9. Idealized insulin curves for CSII with either insulin lispro, aspart, or glulisine, with a gray background of physiologic insulin levels seen in healthy individuals. Note the basal insulin component can be altered based on changing basal insulin requirements. ...Modern-day pumps can calculate prandial insulin dose by the patient entering into the pump the blood glucose concentration and the anticipated amount of carbohydrate to be consumed. The pump calculates how much previous prandial insulin is still active, and provides the patient a final suggested dose which the patient may activate or override. B=breakfast; L=lunch; S=supper; HS=bedtime.



Insulin on Board and Insulin Stacking

Graph shows % of rapid acting insulin remaining after injection. 50% can still be active 3 hours after injection in some kids.



Many providers will check this on the DMAF and write in 3 hours (especially true with MDI sometimes seen with pumps):

☐ Carb coverage PLUS Correction Dose when BG > Target BG AND at least ___ hours since last insulin

NORMAL BLOOD GLUCOSE LEVELS

- NORMAL BLOOD GLUCOSE LEVELS VARY THROUGHOUT THE DAY.
- FOR A NON-DIABETIC, A FASTING BG (ON AWAKENING IN THE MORNING) SHOULD BE <100 MG/DL, BEFORE MEALS IT SHOULD BE 70-99 MG/DL AND TWO HOURS AFTER MEALS IT SHOULD BE <140 MG/DL.
- FOR AN ADULT DIABETIC THE ADA RECOMMENDS BG LEVELS BEFORE MEALS BE 80-130 MG/DL AND TWO HOURS AFTER MEALS <180 MG/DL.

BLOOD SUGAR LEVELS FOR KIDS AND TEENS WITH DIABETES

Target Blood Sugar Levels for Diabetes			
Age 6-12		Age 13-19	
Fasting	80-180	Fasting	70-150
Before Meal	90-180	Before Meal	90-130
Before Exercise	at least 150 <small>(depends on intensity and duration)</small>	Before Exercise	at least 150 <small>(depends on intensity and duration)</small>
Bedtime	100-180	Bedtime	90-150
Amounts shown above mg/dL			
A1c	less than or around 8.0%	A1c	less than or around 7.5%

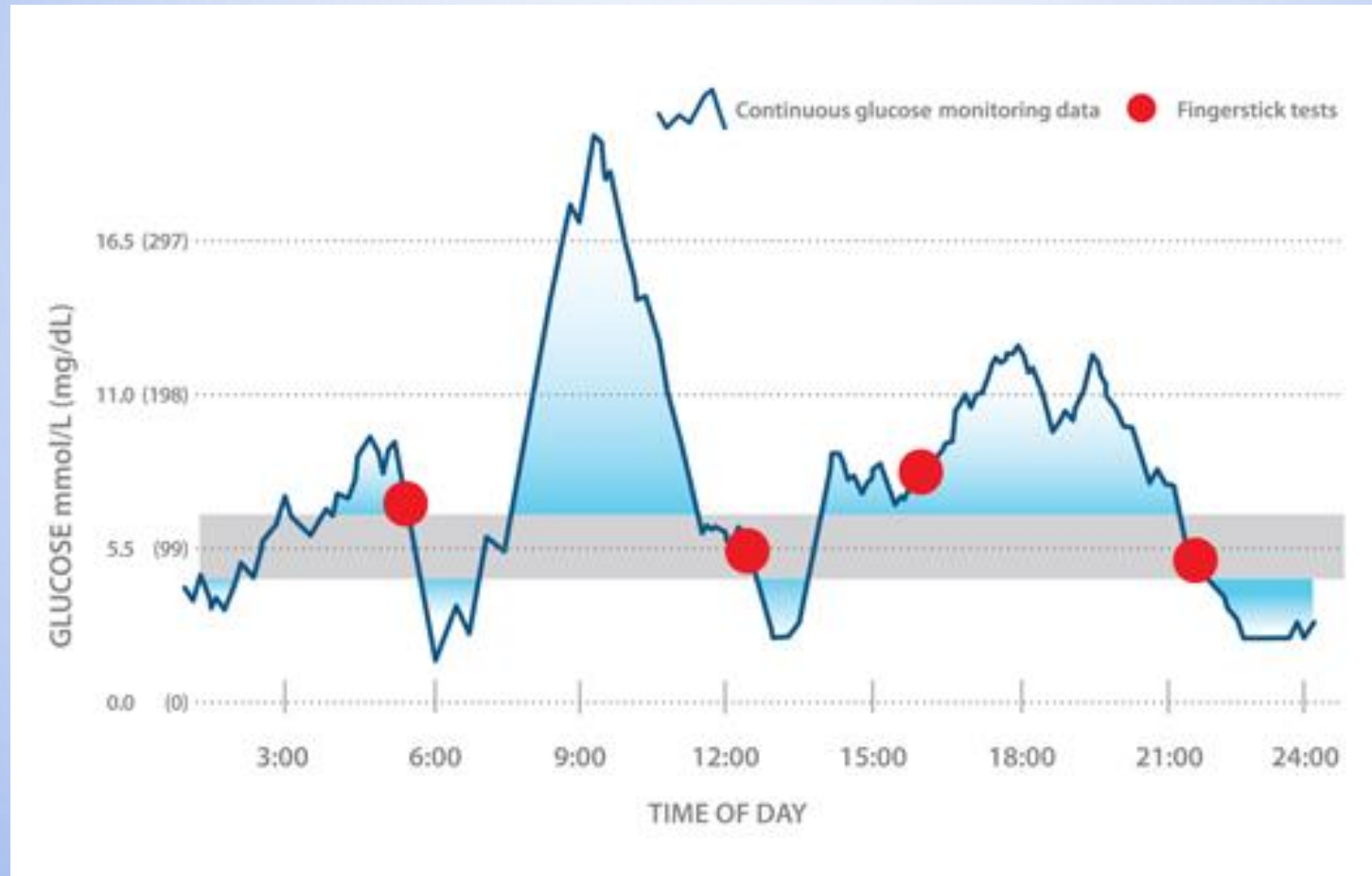
These are general medical guidelines. Please follow your doctor's instructions.

WebMD

CONTINUOUS GLUCOSE MONITORING

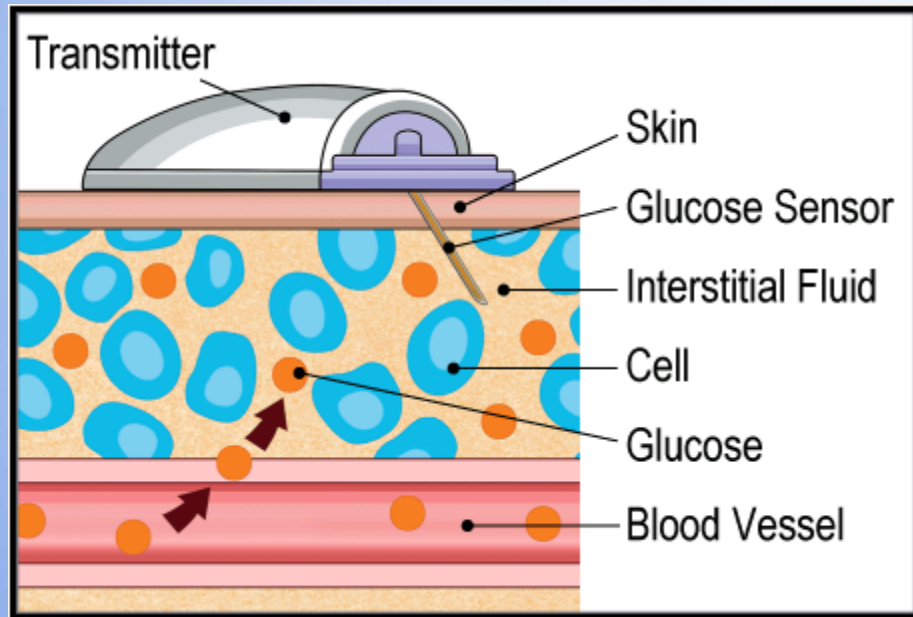
- CGM'S MEASURE THE GLUCOSE IN THE INTERSTITIAL FLUID.
- THESE READINGS MAY LAG BLOOD GLUCOSE LEVELS BY 20 MINUTES.
- MOST CGM RECEIVERS WILL ALSO DISPLAY ARROWS TO INDICATE GLUCOSE TRENDS, UP OR DOWN, AND HOW QUICKLY THE VALUE IS SHIFTING.
- OSH ONLY USES FDA APPROVED CGM READINGS IN DETERMINING INSULIN DOSING.
 - DEXCOM 5 AND DEXCOM 6 ARE CURRENTLY APPROVED FOR INSULIN DOSING FOR CHILDREN.
 - THE FREESTYLE LIBRE CGM IS ONLY APPROVED FOR INSULIN DOSING FOR THOSE 18 YO. AND OLDER – IN SCHOOL, FOR THOSE < 18 YO. A NURSE WOULD NEED TO DO A BG TO DOSE INSULIN.
 - As of June 2020 THE FREESTYLE LIBRE 2 CGM is APPROVED for children ages 4 and over. Like the original FreeStyle Libre, FreeStyle Libre 2 has a 14-day wear, is factory-calibrated (no fingerstick calibrations required) with a one hour warm-up time.

Why Use CGM?



Finger stick BG levels and CGMs complement each other tremendously and aid in diabetes management and care

CGMS - CONTINUOUS GLUCOSE MONITORS

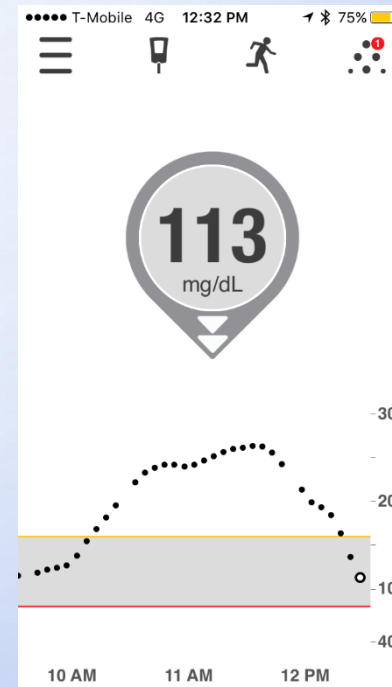


EXAMPLES OF CGM ARROWS (DEXCOM 5)

SINGLE ARROWS UP, DOWN OR NEUTRAL


















DOUBLE ARROW TRENDING DOWN



CGM RATE OF CHANGE ARROWS (DEXCOM 5)

Rate of Change Arrows

App	Receiver	What your glucose is doing
		Glucose is steady. Not increasing/decreasing more than 1 mg/dL per minute or up to 15 mg/dL in 15 minutes.
		Glucose is slowly rising 1-2 mg/dL each minute or up to 30 mg/dL in 15 minutes.
		Glucose is rising 2-3 mg/dL each minute or up to 45 mg/dL in 15 minutes.
		Glucose is rapidly rising more than 3 mg/dL each minute or more than 45 mg/dL in 15 minutes.

App	Receiver	What your glucose is doing
		Glucose is slowly falling 1-2 mg/dL each minute or up to 30 mg/dL in 15 minutes.
		Glucose is falling 2-3 mg/dL each minute or up to 45 mg/dL in 15 minutes.
		Glucose is rapidly falling more than 3 mg/dL each minute or more than 45 mg/dL in 15 minutes.
	No arrow	You are not getting any sensor glucose readings. System can't calculate the speed and direction of your glucose change.

FreeStyle Libre



A trend arrow
showing the
direction your
glucose is heading

A number
representing your
current glucose
reading

A trend graph
depicting the
latest 8 hours of
glucose history

CGM USE

- FOLLOW DMAF FOR CHECKING BG BEFORE MEALS AND IF SIGNS/SYMPTOMS OF LOW BG (WITH EXCEPTION OF DEXCOM G5 OR G6)
- NOT FOOL PROOF (SENSOR CAN BE WRONG!)
- SOME MUST BE CALIBRATED - A PROCESS THAT GIVES A FINGER STICK BG VALUE TO THE CGM SO NUMBERS ALIGN. DEXCOM G6/ Freestyle Libre 2 DOES NOT REQUIRE CALIBRATION.
- VIBRATE AND/OR BEEP ALERTS
 - LOW BG ALARMS SHOULD BE TURNED ON IN SCHOOL

REBOUND

- REBOUND IS A COUNTER REGULATORY HORMONE RESPONSE TO A LOW BG THAT PRODUCES HYPERGLYCEMIA.
- HYPOGLYCEMIA TRIGGERS A HORMONE RELEASE THAT CAUSES THE LIVER TO RELEASE GLUCOSE INTO THE BLOOD.
- REBOUND CAN RESULT IN A HIGHER BG AFTER AN EPISODE OF HYPOGLYCEMIA THAN EXPECTED.

► GLUCAGON is a hormone that helps the liver release glucose in order to raise blood-sugar levels. It can be administered through injection, auto-injection pen or nasal spray.

► The school nurse, or other ***trained school personnel should administer glucagon*** in the case of a severe hypoglycemic emergency.

DIABETES EMERGENCY TREATMENT



GLUCAGON TREATMENT FOR SEVERE HYPOGLYCEMIA

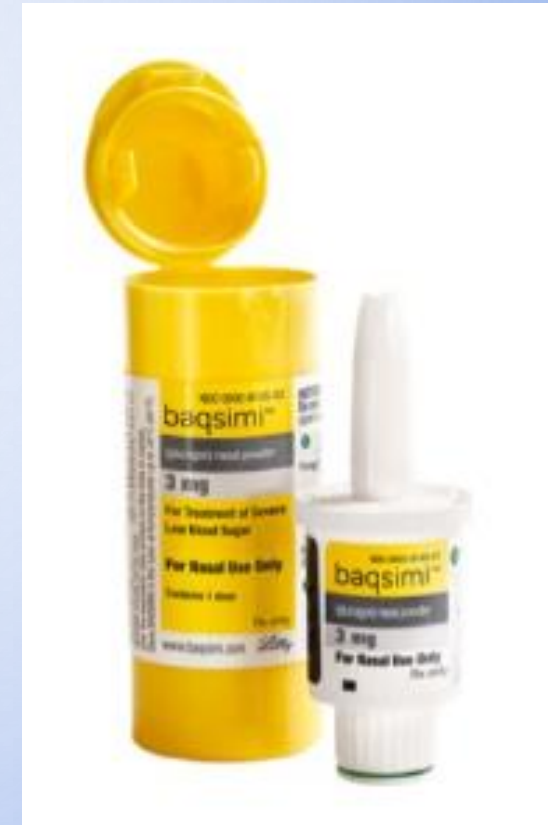
- WHEN TO GIVE GLUCAGON
 - IF THE CHILD IS UNCONSCIOUS AND THE BG IS UNKNOWN OR LOW
 - IF THE CHILD IS SEIZING AND THE BG IS UNKNOWN OR LOW
 - IF THE CHILD IS SEVERELY HYPOGLYCEMIC AND UNABLE TO TAKE P.O.
 - IT IS NOT NECESSARY TO TAKE A BLOOD GLUCOSE FINGERSTICK BEFORE GIVING GLUCAGON

GLUCAGON TREATMENT

- HOW TO GIVE GLUCAGON –
 - GLUCAGON CAN BE GIVEN IM OR SC. THE DOSE WILL BE SPECIFIED IN THE DMAF – TYPICALLY IT RANGES FROM 0.5 TO 1 MG FOR SCHOOL AGED CHILDREN.
 - PLACE THE CHILD ON THEIR LEFT SIDE TO PREVENT ASPIRATION.
 - CALL 911.

NEW FORM OF GLUCAGON

- FDA HAS RECENTLY APPROVED ELI LILLY & CO.'S NASAL GLUCAGON, TO BE SOLD UNDER THE NAME BAQSIMI.
- BAQSIMI IS APPROVED TO TREAT SEVERE HYPOGLYCEMIA IN PATIENTS WITH DIABETES 4 AND OLDER.
- BAQSIMI WILL COME IN A SINGLE-USE DISPENSER.
- THE MOST COMMON ADVERSE REACTIONS ASSOCIATED WITH BAQSIMI ARE SIMILAR TO INJECTABLE GLUCAGON, WITH THE ADDITION OF NASAL AND EYE-RELATED SYMPTOMS, SUCH AS WATERY EYES AND NASAL CONGESTION, BECAUSE OF THE WAY THE DRUG IS ADMINISTERED.
- **ONLY THE SCHOOL NURSE CAN ADMINISTER GLUCAGON INTRANASAL**



NEW FORM OF GLUCAGON

- Gvoke HypoPen is FDA approved for the treatment of severe hypoglycemia in pediatric and adult patients with diabetes ages 2 years and above
- Premixed, prefilled autoinjector, that is room temperature stable for up to 24 months from date of manufacture
- Gvoke HypoPen was launched in July 2020 (Gvoke pre-filled syringe launched September 2019)
- The recommended dose for adults and pediatric patients aged 12 years and older is 1 mg
- The recommended dose for pediatric patients aged 2 to under 12 years of age is weight dependent:
 - a. For pediatric patients who weigh less than 45 kg, the recommended dose is 0.5 mg GVOKE
 - b. For pediatric patients who weigh 45 kg or greater, the recommended dose is 1 mg GVOKE



MANAGING DIABETES IN SCHOOL

MANAGING DIABETES IN SCHOOL

- THE DIABETES MEDICATION ADMINISTRATION FORM (DMAF) WILL INCLUDE:
 - BG (BLOOD GLUCOSE) MONITORING ORDERS (AND/OR CGM ORDERS)
 - HYPOGLYCEMIA TREATMENT ORDERS
 - HYPERGLYCEMIA MANAGEMENT ORDERS
 - INSULIN ORDERS
 - METHOD FOR INSULIN DELIVERS (SYRINGE, PEN, PUMP)
 - METHOD FOR CALCULATING INSULIN
 - CARB COVERAGE
 - CARB COVERAGE WITH CORRECTION
 - SLIDING SCALE
 - INSTRUCTIONS ON WHEN TO GIVE INSULIN
 - SKILL LEVEL ON THE DMAF: INSTRUCTION ON WHO (CHILD OR NURSE) CAN GIVE INSULIN

DMAF NURSE REVIEW, IMPLEMENTATION, PROCESSING

OSH NURSES SHOULD REVIEW AND IMPLEMENT DMAFS RECEIVED PRIOR TO SENDING TO OSH DIABETES UNIT FOR

ADDITIONAL REVIEW WITH THE FOLLOWING CRITERIA AND DOCUMENT APPROPRIATELY:

- THE STUDENT OR FAMILY SUBMITTED A DMAF SIGNED AND DATED FOR SCHOOL YEAR (SY) 20-21
- THE SAME OSH RN SERVICED THE SAME STUDENT LAST SCHOOL YEAR (SY) 19-20
- THE ROUTE IS THE SAME AS LAST YEAR
- THE ORDERS ARE CLEAR
- THE OSH RN WILL THEN ENTER THE GLUCAGON IN ASHR IF ORDERED
- THE OSH RN WILL FAX THE DMAF TO THE OSH DMAF UNIT AND CHECK ASHR FOR FOLLOW UP
- THE OSH MD WILL INDICATE A REVIEW IN ASHR, TITLED, "SUMMARY PAGE" FOR PUBLIC SCHOOL NURSES

DMAF NURSE REVIEW, IMPLEMENTATION, PROCESSING

DMAF AMENDMENTS

- THE OSH RN WILL REVIEW AND IMPLEMENT VERBAL/WRITTEN AMENDMENTS FROM THE STUDENT'S PCP SUCH AS:
- CHANGES IN INSULIN TO CARB RATIO
- CHANGES IN THE INSULIN SENSITIVITY FACTOR (CORRECTION FACTOR)
- CHANGES IN SLIDING SCALES

DMAF ADDENDUM

- THE PCP MAY PRESCRIBE PARAMETERS FOR PARENTAL INPUT INTO INSULIN DOSING
- THE NURSE MAY ADJUST THE CALCULATED DOSE UP OR DOWN WITHIN THE PCP PRESCRIBED PARAMETERS BASED ON
- PARENTAL INPUT AND NURSING JUDGEMENT

OSH DMAF REVIEW

THE ASHR SUMMARY PAGE IS GENERATED AS FOLLOWS:

- OSH STAFF RECEIVE THE DMAF AND OSH RNS ENTER THE GLUCAGON INTO ASHR IF PRESCRIBED ON THE DMAF
 - STAFF CHECK TO BE SURE THE DMAF AND DMAFA ARE COMPLETE.
- OSH STAFF FAX THE DMAF TO THE OSH CENTRAL OFFICE (CO) DIABETES UNIT (OR A PARENT OR PCP MAY SUBMIT IT TO OSH CO FOR REVIEW)
- THE OSH MD REVIEWS THE DMAF, CONTACTS THE PCP IF NEEDED AND ADJUSTS WHERE NEEDED.
- THE COMPLETED MD REVIEW GENERATES A “SUMMARY PAGE” AVAILABLE FOR THE NURSE TO PRINT OUT.
- CO SCANS THE DMAF INTO ASHR – THEY SCAN THE FINAL VERSION OF THE DMAF ORDER INTO ASHR. ON OCCASION A PROVIDER NEEDS TO REWRITE AN ORDER FOR CLARITY OR COMPLETENESS.

THE SUMMARY PAGE CONTAINS THE MOST CURRENT VERSION OF THE STUDENTS ORDERS. IT INCLUDES INFORMATION THAT WAS CLARIFIED UNDER THE PHYSICIANS REVIEW.

MANAGING DIABETES IN SCHOOL

- THE DMAF MAY ALSO INCLUDE:
 - KETONE TESTING ORDERS
 - INCLUDING MANAGEMENT OF (+) KETONES
 - GLUCAGON ORDERS
 - PUMP MANAGEMENT INSTRUCTIONS
 - SNACK INFORMATION
 - INSTRUCTIONS FOR MANAGING GYM
 - AND OTHER CLARIFICATIONS RELEVANT TO THE INDIVIDUAL CHILD'S CARE

HYPOGLYCEMIA (Low Blood Glucose)

Causes: Too little food or skip a meal; too much insulin or diabetes pills; more active than usual

Onset: Often sudden; may pass out if untreated.

SYMPTOMS:



SHAKY



FAST
HEARTBEAT



SWEATING



DIZZY



ANXIOUS



HUNGRY



BLURRY
VISION



WEAKNESS
OR FATIGUE



HEADACHE



IRRITABLE

WHAT CAN YOU DO?



CHECK

TREAT



CHECK



CHECK your blood glucose right away; if you can't check, treat anyway.

TREAT by eating 3 to 4 glucose tablets or 3 to 5 hard candies you can chew quickly (such as peppermints), or by drinking 4-ounces of fruit juice, or 1/2 can of regular soda pop.

CHECK your blood glucose again after 15 minutes. If it is still low, treat again. If symptoms don't stop, call your healthcare provider.

HYPERGLYCEMIA (High Blood Glucose)

Causes: Too much food, too little insulin or diabetes pills, illness, or stress.

Onset: Often starts slowly. May lead to a medical emergency if not treated.

SYMPTOMS:



EXTREME THIRST



NEED TO
URINATE OFTEN



DRY SKIN



HUNGRY



BLURRY VISION



DROWSY



SLOW-HEALING
WOUNDS

WHAT CAN YOU DO?



CHECK
BLOOD
GLUCOSE

CALL YOUR
HEALTHCARE
PROVIDER



Call your healthcare provider if your blood glucose levels are higher than normal for 3 days and you don't know why.

MANAGING DIABETES IN SCHOOL

- FOLLOW DMAF FOR HYPOGLYCEMIA TREATMENT
 - COMMON SYMPTOMS OF LOW BG
 - SWEATY, SHAKY,
 - DIZZY
 - FAST HEARTBEAT
 - CHECK BG
 - FOLLOW DMAF TO TREAT HYPOGLYCEMIA

MANAGING DIABETES IN SCHOOL

- FOLLOW DMAF FOR HYPERGLYCEMIA TREATMENT
 - COMMON SYMPTOMS OF HIGH BG
 - THIRSTY, HUNGRY, SLEEPY
 - FREQUENT URINATION, DRY SKIN
 - BLURRY VISION
 - CHECK BG
 - CHECK KETONES, IF ORDERED – FOLLOW INSTRUCTIONS FOR “RISK FOR DKA”
 - GIVE INSULIN, IF ORDERED

MANAGING DIABETES IN SCHOOL

- **WHEN TO CALL 911**

- IF GLUCAGON IS GIVEN
- UNCONSCIOUS AND NO GLUCAGON ORDER
- SEVERE HYPOGLYCEMIA, UNABLE TO TAKE P.O. AND NO GLUCAGON ORDER
- HYPERGLYCEMIA WITH MOD/LARGE KETONES AND:
 - VOMITING, UNABLE TO TAKE P.O. AND THE MD IS NOT AVAILABLE
 - NOT RESPONDING TO TREATMENT AND THE PARENT OR MD IS NOT AVAILABLE

CALCULATING AN INSULIN DOSE

- INSULIN IS NEEDED TO:
 - COVER CARBOHYDRATES IN FOOD (CARB COVERAGE)
 - TO CORRECT THE CURRENT BG, IF NEEDED (CORRECTION DOSE)
- CALCULATING THE CARB COVERAGE:
 - ESTIMATE THE NUMBER OF GRAMS OF CARBOHYDRATE TO BE EATEN
 - DIVIDE THE NUMBER OF CARBS BY THE INSULIN:CARB RATIO (I:C RATIO)
 - I:C RATIO – 1 UNIT OF INSULIN COVERS X NUMBER OF CARBS.
 - EXAMPLE – I:C= 1:30; 45 GMS OF CARBS TO BE EATEN
 - $45/30 = 1.5$ UNITS OF INSULIN

CALCULATING AN INSULIN DOSE

- CALCULATING THE CORRECTION DOSE TO CORRECT AN ELEVATED BLOOD GLUCOSE:
 - GIVEN TO CORRECT A BG THAT IS GREATER THAN THE TARGET BG FOR THAT STUDENT.
 - USE THE INSULIN SENSITIVITY FACTOR (ISF) TO CALCULATE A CORRECTION DOSE.
 - THE ISF – 1 UNIT OF INSULIN REDUCES THE BG BY HOW MANY POINTS
 - AN ISF OF 1:60 MEANS 1 UNIT OF INSULIN WILL REDUCE THE BG BY 60 POINTS.
 - TO CALCULATE THE CORRECTION DOSE: SUBTRACT THE TARGET BG FROM THE BG AND DIVIDE THAT BY THE ISF. $(BG - TARGET\ BG) / ISF = INSULIN\ CORRECTION\ DOSE$
 - EXAMPLE – TARGET BG = 140; ISF = 1:20; BG = 180; THEN $(180-140)/20=40/20=2$ UNITS

CALCULATING THE INSULIN DOSE - EXAMPLES

CRAIG IS ABOUT TO EAT LUNCH. HIS ISF IS 1:25 WITH A TARGET BG OF 120 AND HIS I:C RATIO IS 1:20. RIGHT NOW HIS BG IS 244. IT HAS BEEN OVER 3 HOURS SINCE HIS LAST INSULIN DOSE. HE PLANS ON EATING 39 CARBS. HOW MUCH INSULIN SHOULD HE GET?

$$\text{CORRECTION} = \frac{244-120}{25} = \frac{124}{25} = 4.96$$

$$\text{CARB COVERAGE} = \frac{39}{20} = 1.95$$

$$\text{TOTAL DOSE} = 4.96 + 1.95 = 6.91 = 6.9$$

- **NOTE: WITH A DEVICE MEASURING HALF UNITS, 6.5 UNITS WOULD BE GIVEN; IF ONLY SINGLE UNITS, 6.0 UNITS WOULD BE GIVEN (UNLESS SPECIFIC ORDERS FOR ROUNDING).**

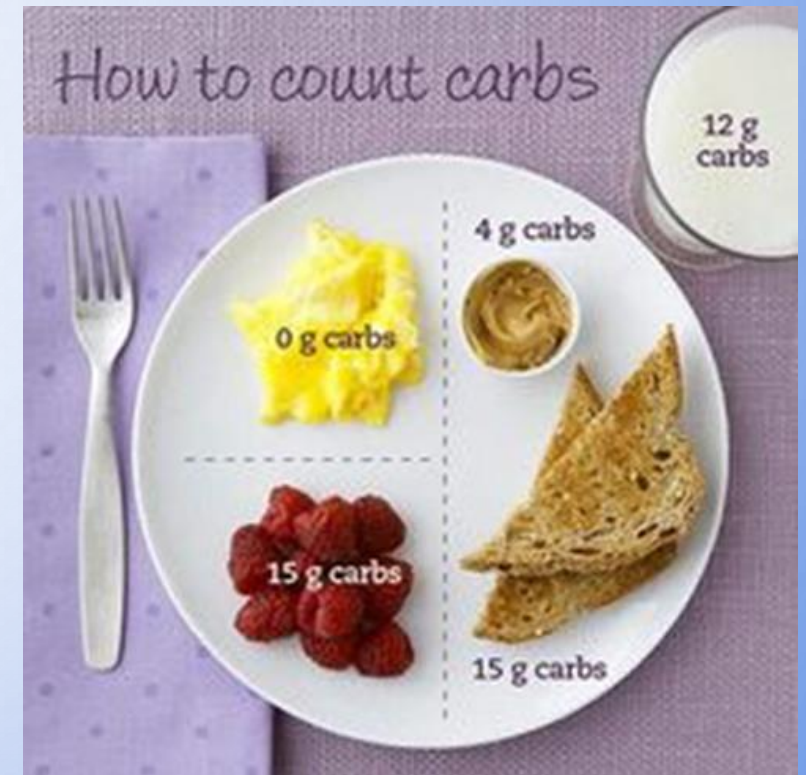
BUT WHAT ABOUT SLIDING SCALES?

- SOME STUDENTS, INSTEAD OF CALCULATIONS, USE SLIDING SCALES.
- IN SLIDING SCALES, A SET NUMBER OF CARBS IS ASSUMED TO BE EATEN AT EACH MEAL AND THE DOSE INCREASES WITH INCREASING BLOOD GLUCOSE.

Blood glucose (mg/dL)	Insulin (units)
61-150	0
151-200	3
201-250	5
251-300	8
301-350	10
351-400	12
>400	15 ^a
^a Physician should be contacted.	

SO... HOW DO WE COUNT CARBS?

- CARB COUNTING IS COVERED IN THE BE PHYSICALLY HEALTHY, EAT RIGHT, KNOW YOUR A1CS, TAKE YOUR MEDICATION (BEAT) DIABETES TRAINING.
- A FEW QUICK REMINDERS:
 - IF THE STUDENT IS EATING THE DOE MEAL, THE CARB COUNTS ARE LISTED ON THE SCHOOL FOOD WEBSITE:
 - [HTTPS://WWW.OPT-OSFNS-ORG/SCHOOLFOODNY/RESOURCES/MENUNUTRITIONINFORMATION.PDF](https://www.opt-osfns.org/schoolfoodny/resources/menunutritioninformation.pdf)
 - IF THE STUDENT IS BRINGING LUNCH – PARENT'S CAN WRITE THE CARB COUNT ON THE BROWNBAG, OR PUT A NOTE INSIDE THE LUNCH BAG; AND/OR YOU CAN ESTIMATE PORTION SIZES AND USE WEBSITES, SUCH AS CALORIE KING OR MY FITNESS PAL, TO CALCULATE THE CARB COUNT.
 - FOR PACKAGED FOODS, CHECK THE PACKAGE LABEL.



HOLIDAY AND BIRTHDAY PARTIES IN SCHOOL

- IT IS OK TO OCCASIONALLY EAT CUPCAKES AND PIZZA!
- COUNT THE CARBS AND GIVE INSULIN!

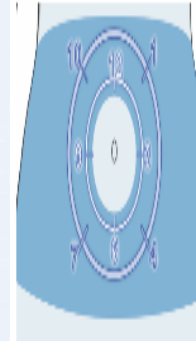
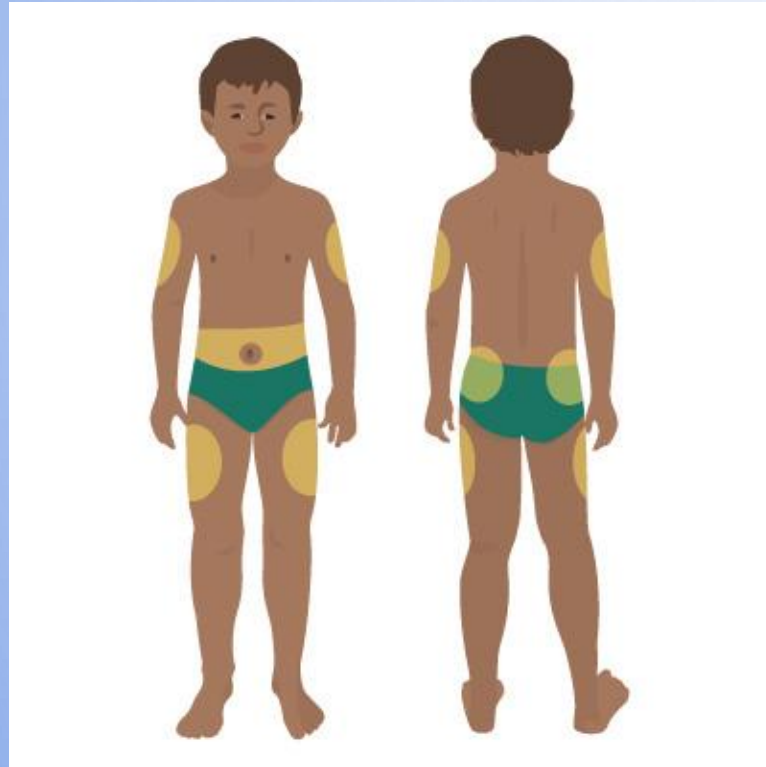


~40 CARBS



~60

INSULIN ADMINISTRATION



"Clock" Rotation

Visualize an imaginary clock drawn around your belly button. Rotate sites by starting at the 12 o'clock position and then rotating clockwise to 3 o'clock, 6 o'clock, and so on.



"M" or "W" Rotation

Imagine an "M" or "W" on either side of your belly button. Start at the end of one letter and proceed through the letter, rotating to each intersection.

Discuss site rotation with parents and students

INSULIN PUMPS



Medtronic



Omnipod

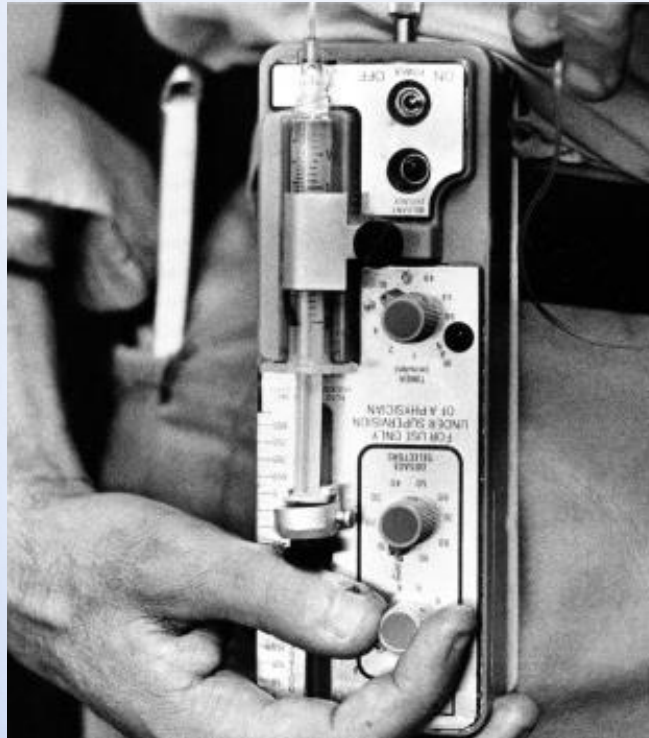
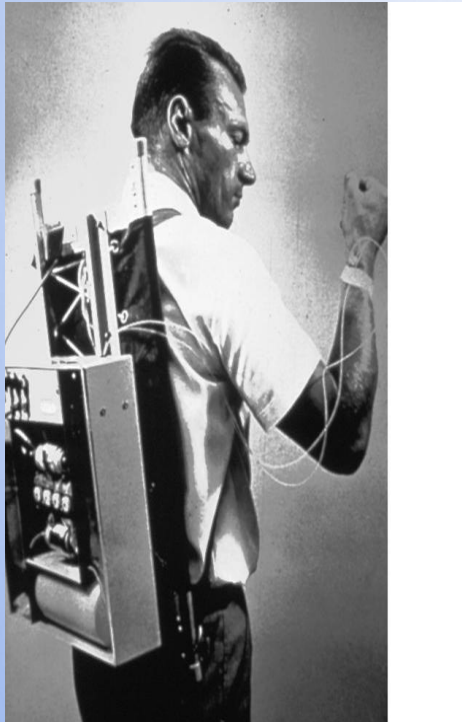


Tandem

Insulin pumps:

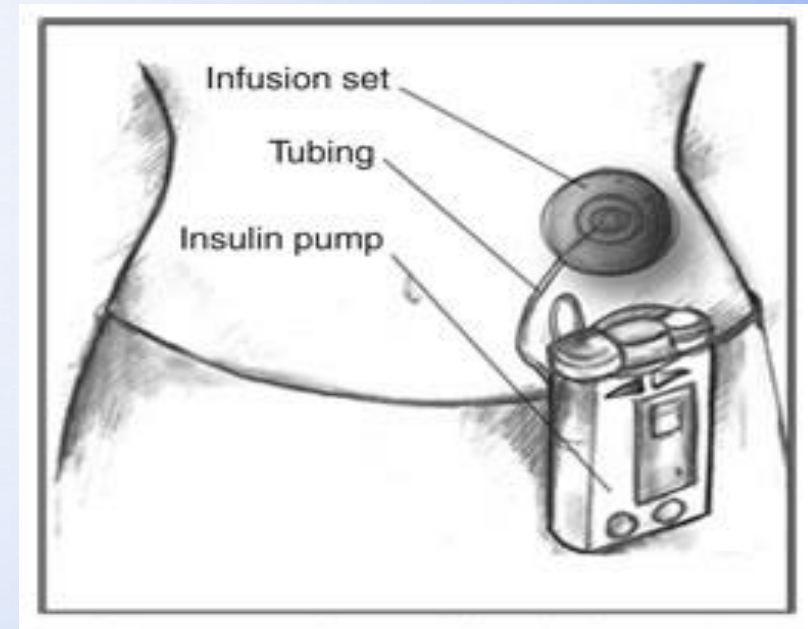
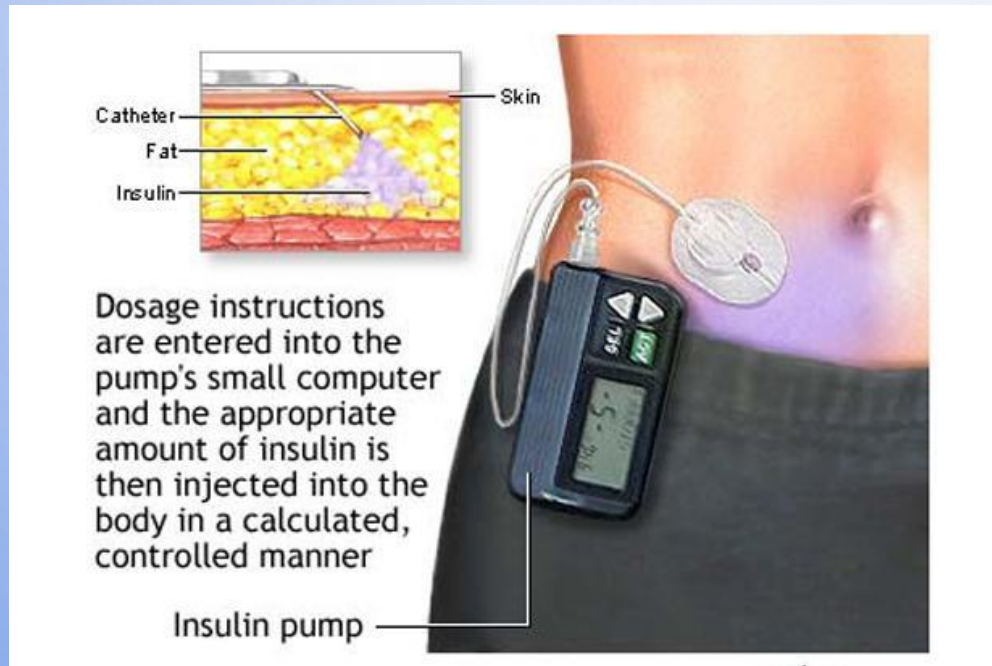
- Deliver subcutaneous rapid acting insulin:
- Continuously as a **basal** (background insulin)
- **bolus** doses (quick release for carb coverage or correction)
- Many benefits

THE INSULIN PUMP- ITS COME A LONG WAY!



PARTS OF THE PUMP

- PUMP (OR PDM)
- RESERVOIR
- INFUSION SITE



PUMP SITES

- FAMILIES INSERT AND CHANGE PUMP SITES WITH A NEEDLE. THE NEEDLE RETRACTS LEAVING A SMALL PLASTIC CANNULA UNDER THE SKIN FOR INSULIN DELIVERY
- PUMP SITES SHOULD NOT HURT OR HAVE LEAKING INSULIN
- IF A PUMP SITE COMES OUT, A NEW PUMP SITE MUST BE PLACED. CONTACT THE PARENT. FOLLOW THE DMAF FOR INSULIN ADMINISTRATION BY SYRINGE/PEN IF NEEDED.
- SOME PERSONS WITH PUMPS MAY DISCONNECT FOR SHOWER, SWIMMING. HOWEVER, EXTENDED DISCONNECTION PLACES CHILD AT SIGNIFICANT RISK FOR DKA.
- THE DMAF MAY INCLUDE THESE INSTRUCTIONS IF DISCONNECTION IS NECESSARY
- IN PUMPS, INFUSION SITES NEED TO BE CHANGED EVERY 2-3 DAYS.
- OSH STAFF DO NOT CHANGE INFUSION SITES

INSULIN PUMP FAILURE

- QUICKER TO DEVELOP KETONES AND DKA IF PUMP SITE OR PUMP NOT WORKING BECAUSE ONLY RAPID ACTING INSULIN IS USED
- IF BG HASN'T DECREASED 2 HRS AFTER CORRECTION – PUMP FAILURE
 - USUALLY DUE TO FAULTY PUMP SITE
- IMPORTANT TO GIVE CORRECTION VIA SYRINGE/PEN
- MUST CHECK KETONES, IF POSITIVE, FOLLOW PROTOCOL FOR RISK FOR DKA
- STUDENT/PARENT WILL NEED CARTRIDGE/RESERVOIR AND POD)
 - ☐ Follow Pump recommendation for bolus dose (If not using Pump recommendation, round dose DOWN to nearest 0.1 unit).
 - ☐ For bG > _ _ _ mg/dL that has not decreased _ hours after correction, consider pump failure and notify parent.
 - ☐ For suspected pump failure: DISCONNECT pump; give insulin by syringe or pen.

NEW TECHNOLOGY

NEW TECHNOLOGY

- THE FIRST CLOSED LOOP PUMP HAS RECEIVED FDA APPROVAL.
 - MEDTRONIC MINIMED 670G PUMP
 - THIS PUMP IS PAIRED WITH THE GUARDIAN 3 CGM
 - THE PUMP ADJUSTS THE BASAL RATE OF INSULIN BASED ON THE CGM READINGS
 - CARB COVERAGE AND CORRECTION DOSES STILL NEED TO BE ENTERED.
- THIS PUMP IS APPROVED FOR THOSE 7 YEARS OLD AND UP.



NEW TECHNOLOGY

Tandem Diabetes Control-IQ!

- Tandem Diabetes Care's much-anticipated Control-IQ system for automated insulin delivery (AID) is FDA approved.
- Second FDA approved closed looped system.
- Control-IQ combines Tandem's touchscreen insulin pump with the popular Dexcom CGM (continuous glucose monitor)
- Smart algorithm that auto-adjusts basal rates for both high *and* low blood sugars, but also allows for automatic corrections for unexpected highs to get the user back in range.



THE NEW TECHNOLOGY



- SMART INSULIN PENS TRACK THE INSULIN GIVEN AND CALCULATES INSULIN ON BOARD SIMILARLY TO A PUMP. THEY CAN GIVE DOSING RECOMMENDATIONS.

NovoPen 6
and
NovoPen
Echo Plus –
NovoPen
Echo is FDA
approved



DMAF ADDENDUM: PARENTAL INPUT

PARENTAL INPUT ORDERS

- PARENTAL INPUT ORDERS MEANS THAT THE CHILD'S DOCTOR HAS GIVEN PERMISSION FOR THE PARENT TO SUGGEST AN ADJUSTMENT TO THE CALCULATED INSULIN DOSE AND **IF** THE SCHOOL NURSE AGREES WITH THE PARENTS SUGGESTION AND JUSTIFICATION, AND IT FALLS WITHIN THE PARAMETERS ALLOWED BY THE PHYSICIAN, THE NURSE MAY IMPLEMENT THAT ADJUSTMENT.
- THIS DOES NOT MEAN THAT PARENTS CAN GIVE MEDICATION ORDERS TO A NURSE.

PARENTAL INPUT ORDERS (CONT)

- THE SCHOOL NURSE MUST DOCUMENT:
 - 1) THAT THE PARENT REQUESTED AN ADJUSTMENT AND HOW MUCH, UP OR DOWN
 - 2) THE PARENT'S STATED JUSTIFICATION FOR THE ADJUSTMENT
 - 3) IF YOU, THE NURSE, AGREE WITH THE ADJUSTMENT JUSTIFICATION AND DOSE – USING NURSING JUDGEMENT; OR THAT YOU DON'T AGREE AND WHY
 - 1) IF YOU DON'T AGREE, DOCUMENT YOUR ATTEMPT TO CONTACT THE PROVIDER - IF YOU REACH THE PROVIDER BE SURE TO DOCUMENT THE OUTCOME OF THAT CALL.
 - 4) THE CALCULATED INSULIN DOSE, THE ADJUSTMENT IF ANY (HOW MANY UNITS INCREASE OR DECREASE): THE TOTAL

PARENTAL INPUT - SCENARIO #1

- 8 YO MAT HAS A DMAF WITH LUNCH ORDERS FOR INSULIN CALCULATED USING CARB COVERAGE PLUS CORRECTION DOSE. HIS ORDERS ARE: TARGET = 120; LUNCH I:C = 20 ; LUNCH ISF = 30.
- HE HAS PARENTAL INPUT ORDERS ALLOWING THE PARENT TO SUGGEST AN INSULIN ADJUSTMENT OF 50% UP OR DOWN.
- THAT MORNING MAT'S MOTHER CALLED YOU AND REQUESTED THAT YOU REDUCE THE LUNCHTIME INSULIN BY 1 UNIT AS MAT'S CLASS HAS TRACK AND FIELD ACTIVITIES THAT AFTERNOON
- AT LUNCHTIME MAT HAD A BG VALUE OF 150MG/DL AND PLANS TO EAT A LUNCH WITH 40 GMS OF CARBS.
 - CARB COVERAGE = $40/20 = 2$ UNITS; CORRECTION DOSE = $(150-120)/30 = 1$ UNIT --- TOTAL DOSE = $2+1 = 3$ UNITS
- MOM REQUESTED AN ADJUSTMENT. HOW MUCH INSULIN DO YOU GIVE MAT?

PARENTAL INPUT - SCENARIO #1 ANSWER

- MAT'S CALCULATED DOSE IS 3 UNITS FOR LUNCH.
- MOM REQUESTED AN ADJUSTMENT DOWN BY 1 UNIT. HER JUSTIFICATION IS INCREASED ACTIVITY THAT AFTERNOON.
- IS THIS A REASONABLE JUSTIFICATION TO REDUCE INSULIN? – YES.
- IS THE SUGGESTION WITHIN THE PARAMETERS ALLOWED BY THE PHYSICIAN'S ORDER? – YES
 - PARAMETER IS UP OR DOWN BY 50% - 50% OF 3 UNITS IS 1.5 UNITS. 1 UNIT IS < 1.5 UNITS.
- THE NURSE GIVES MAT **2 UNITS** OF INSULIN AT LUNCH (3 UNITS – 1 UNIT = 2 UNITS)
- THE NURSE DOCUMENTS THE PARENTAL INPUT, JUSTIFICATION, NURSING JUDGEMENT AGREEMENT, CALCULATED DOSE, ADJUSTMENT AND TOTAL DOSE GIVEN.

PARENTAL INPUT - SCENARIO #2

- MIA IS A 12 YO WITH T1D. HER DMAP HAS ORDERS FOR PARENTAL INPUT UP OR DOWN BY 25%. HER LUNCHTIME INSULIN IS CALCULATED USING A SLIDING SCALE.
- THAT MORNING MIA'S FATHER CALLS AND ASKS YOU TO ADJUST HER LUNCHTIME INSULIN DOWN BY 1 UNIT BECAUSE MIA HAS EXAMS THAT AFTERNOON WHICH ALWAYS CAUSES HER TO BE STRESSED AND RAISES HER BG.
- WHEN MIA COMES IN FOR LUNCH HER BG IS 120 MG/DL. HER SLIDING SCALE CALLS FOR 3 UNITS OF INSULIN.
- DAD REQUESTED AND ADJUSTMENT. HOW MUCH INSULIN DO YOU

PARENTAL INPUT - SCENARIO #2 ANSWER

- MIA'S SLIDING SCALE DOSE IS FOR 3 UNITS OF INSULIN.
- DAD REQUESTED AN ADJUSTMENT DOWN BY 1 UNIT. HIS JUSTIFICATION IS EXAM INDUCED STRESS WHICH CAUSES MIA'S BG LEVEL TO RISE.
 - THE NURSE CAN DISCUSS WITH DAD WHY ONE WOULDN'T WANT TO GIVE LESS INSULIN IF THE BG IS EXPECTED TO RISE.
- IS THIS A REASONABLE JUSTIFICATION TO REDUCE THE INSULIN? – NO. MIA'S BG RISES WHEN SHE IS STRESSED BY EXAMS, SHE MIGHT NEED MORE INSULIN, NOT LESS.
- IS THE SUGGESTION WITHIN THE PARAMETERS ALLOWED BY THE PHYSICIAN'S ORDERS? – NO. THE PHYSICIAN ALLOWED AN ADJUSTMENT OF UP TO 25% UP OR DOWN, THIS REQUEST IS FOR AN ADJUSTMENT OF 33% DOWN.
- THE NURSE DOES NOT AGREE WITH THE PARENT'S SUGGESTION. AND THE PARENT'S SUGGESTION IS OUTSIDE OF THE RANGE ALLOWED.
- THE NURSE CALLS THE PHYSICIANS OFFICE FOR FURTHER INSTRUCTIONS, BUT CAN NOT SPEAK TO THE PROVIDER RIGHT AWAY. THE NURSE LEAVES A MESSAGE AND THEN GIVES MIA THE 3 UNITS OF INSULIN PER THE SLIDING SCALE.

RIGHTS OF STUDENTS WITH DIABETES: ADA & SECTION 504

Section 504 and the Americans with Disabilities Act are federal antidiscrimination laws that protect children with disabilities.

They are particularly important for children with:

Disabilities that may require modification to the physical environment: Blindness/low vision, disabilities affecting mobility

Disabilities that require medication administration during school: diabetes, AD/HD, severe allergy, asthma, epilepsy, cerebral palsy, HIV.

Any student with a disability, including diabetes, is entitled to Section 504 services and accommodations and needs a written Section 504 Plan signed by a school administrator and the parent that lays out what services and accommodations they will receive.

DOE has a template 504 Plan for diabetes that includes the most common accommodations.

RIGHTS OF STUDENTS WITH DIABETES: ADA & SECTION 504

Common Accommodations and Services for Students with Diabetes:

- Section 504 Plan – crafted by 504 Team, lays out all services and accommodations a student will need at school and school-related activities, such as:
 - Training adults (including teachers, coaches, afterschool activity leaders) with responsibility for students with diabetes in diabetes care, glucagon
 - Carrying supplies, water, snacks, fast acting glucose, phone or smart watch
 - Accommodations for testing (“stop-the-clock”, access to phone/watch to monitor BG)
 - Paraprofessional or other trained staff to assist with BG monitoring, ketone checks, or supervise insulin administration
 - Transportation accommodations
- Diabetes-related care must be provided in the “least restrictive environment.”
 - This is a student-specific test that must consider the amount of time the student misses classroom instruction and activities, the long-term health risks of not treating highs or lows quickly, and the needs and preferences of the student and parent
 - For most students, this means receiving care in the classroom or wherever they are

ROLE OF THE SCHOOL NURSE IN ADA & SECTION 504

1. **Know** who the Section 504 Coordinator is in your school
2. **Refer** all students with diabetes to the Section 504 Coordinator, including a referral to parent *and* identification of student to 504 Coordinator, to ensure all students with diabetes have a written Section 504 Plan
3. **Participate** in Section 504 meetings to provide nursing expertise
4. **Train** staff identified in Section 504 Plan
5. **Raise** any issues relating to DOE's provision of services to the Section 504 Coordinator, e.g.:
 - a. Requests for field trip nursing services
 - b. 504 Meeting not yet held/504 Plan not in place
 - c. Student spending lots of time in the nurse's office (might need additional services)

OSH Diabetes Care Management Professional Development

Join a Professional Organization:

National Association of School Nurses:

American Diabetes Association: <https://professional.diabetes.org/>

T1D Advocacy Groups:

JDRF's (Juvenile Diabetes Research Foundation): <https://www.jdrf.org/t1d-resources/living-with-t1d/school/>

- Upcoming virtual Type One Summit- September 26, 2020

Beyond Type 1: <https://beyondtype1.org/>

Med-IQ

Earn Diabetes care management CEs- <https://clinical.med-iq.com/>

Quick Review

- Type 1 Diabetes onset is often abrupt, especially in children.
- Remain alert to students with recent onset of bladder control issues
- CGM'S measure the glucose in the interstitial fluid.
- Insulin pumps deliver subcutaneous rapid acting insulin continuously.
- Basal (background insulin) bolus doses (quick release for carb coverage or correction).
- Follow DMAF orders and wait at least 3 hours prior to next insulin dosage- this will prevent insulin stacking.
- The school nurse can cover a Student's carbohydrate intake even if it is less than 3 hours.
- Students with Diabetes can attend birthday parties, nurses should cover the carbohydrates.
- **CALL 911** if glucagon is given, Student is unconscious and no glucagon order, severe hypoglycemia, student is unable to take p.o. and no glucagon order.
- Parental input orders mean that the child's doctor has given permission for parents to suggest an adjustment to the calculated insulin dose.
- Only the nurse can administer nasal glucagon (Baqsimi⁶⁷)
- Nurses Should participate in Section 504 meetings.
- Diabetes-related care must be provided in the "least restrictive

OSH Diabetes Care Management Professional Development

Diabetes Care Related Companies with great education resources

Tandem: <https://www.tandemdiabetes.com/>

Medtronic: <https://www.medtronicdiabetes.com/home>

Omnipod: <https://www.myomnipod.com/>

Novolog: <https://www.novologpro.com/>

Dexcom: <https://www.dexcom.com/>

Freestyle Libre: <https://www.freestylelibre.us/>

Gvoke: <https://www.gvokeglucagon.com/>

Baqsimi: <https://www.baqsimi.com/>



In the words of a parent of a child living with diabetes:

“I feel more confident in sending my child to school knowing that he will be well taken care of in the event he has a low blood sugar. I am grateful to the school nurse and volunteers who are looking out for my son.”

QUESTIONS?

