Back to School Workshop

2024-25 School Nurse Program

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BEST CHILDREN'S HOSPITALS U.S.News RANKED IN 9 SPECIALTIES 2023-2024

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2024-25 Annual Diabetes Back-to- School Workshop

Disclosures

Purpose / Objectives:

- List elements of effective diabetes management in school.
- Discuss roles of student, parent or guardian and medical provider in diabetes management in school setting.
- Discuss new technologies available in managing diabetes.
- Identify access routes to resources including Children's Mercy Hospital Diabetes team.
- Evaluate effective nutrition management for students with diabetes.
- Identify stages of independence in diabetes care.
- Discuss accommodations available to students in the school setting.
- Discuss Suicide and Mental Health Needs in Students with Diabetes

Contact Hours: *No nursing contact hours are given for this presentation.*

Disclosure: No *conflicts of interest were identified by the planning committee, faculty, authors and reviewers for this program.*

Children's Mercy Kansas City is an approved provider of continuing nursing education by the Midwest Multistate Division, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

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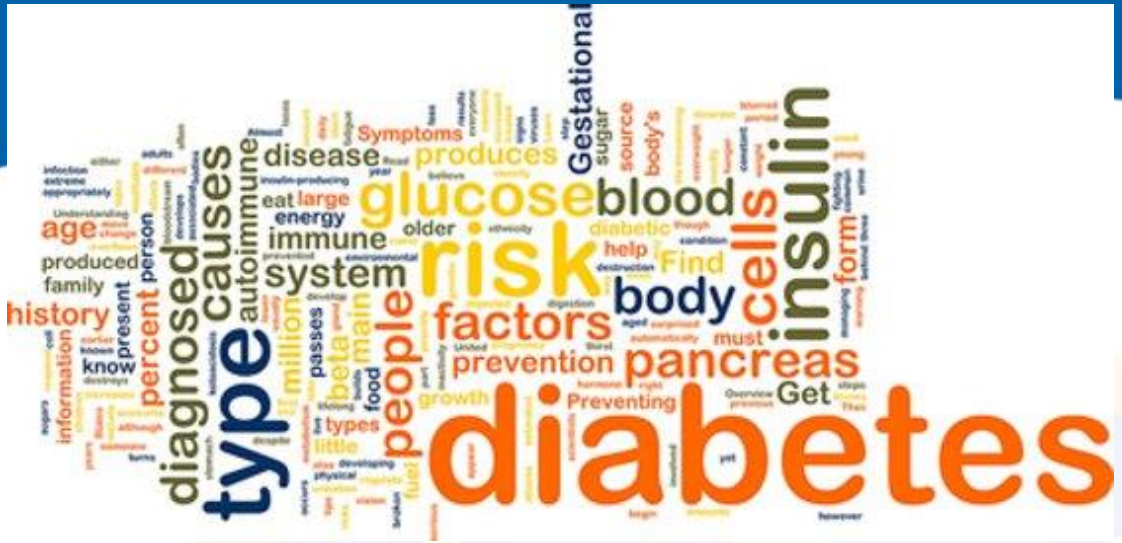
Diabetes Management in School Setting



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What is Diabetes?

- Diabetes is an autoimmune disease in which the body does not produce or properly use insulin. This results in high blood glucose levels.
- Two Types
  - ✦ Type 1 Diabetes (T1DM) (insulin destruction)
  - ✦ Type 2 Diabetes (T2DM) (Insulin overproduction leading to insulin deficiency)

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Type 1 Diabetes

- Auto-immune process
- Treatment:
  - Requires insulin
  - No sugary drinks; otherwise no diet restrictions; we do encourage healthy food choices and foods in moderation but not restricting carbs.
- Beta cells in the pancreas no longer produce insulin
- Honeymoon phase shortly after diagnosis with the introduction of insulin (the diabetic's own ability to produce insulin improves)
- There is nothing they did to cause this/ nothing that could have been done to prevent it.

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Type 2 Diabetes

- Insulin resistant
- The body still produces insulin but does not work effectively
- Treatment:
  - Oral/IM medication (metformin, Victoza, Liraglutide, etc)
  - May or may not be on insulin depending on how well blood glucose is managed.
- Lifestyle modifications such as carb restriction and exercise are primary treatment modalities-weight loss highly encouraged.

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Insulin

- Insulin is the "key“ to unlocking the cell; allowing glucose to enter and be used as energy
- Without enough insulin, the glucose cannot enter the cells to be used for energy, resulting in hyperglycemia. If untreated can result in DKA
- Methods of getting insulin:
  - Insulin pen (MDI)
  - Syringe & vial
  - Insulin pump

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Types of Insulin

- **Rapid acting (Meal time)– Novolog, Humalog, Apidra, or Fiasp**
  - Onset of action is 15 minutes (Fiasp onset is within 5 minutes)
  - Peaks in 1-2 hours
  - Lasts 3-5 hours
  - Given for carbohydrate intake using insulin:carbohydrate ratio (ICR)
  - Used for hyperglycemia and ketone corrections
  - Used in insulin pumps for both basal and bolus

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Types of Insulin

Long Acting – Lantus or Levemir or Tresiba or Basaglar

- Usually given once/day (Levemir given BID)
- Onset of action is 1-2 hours
- Does not have a peak ("background insulin")
- Lasts about 24 hours
- If missed, can result in hyperglycemia for the next 24 hours.
- Do not mix with other insulin; but can be given at the same time when bolusing for meal dose

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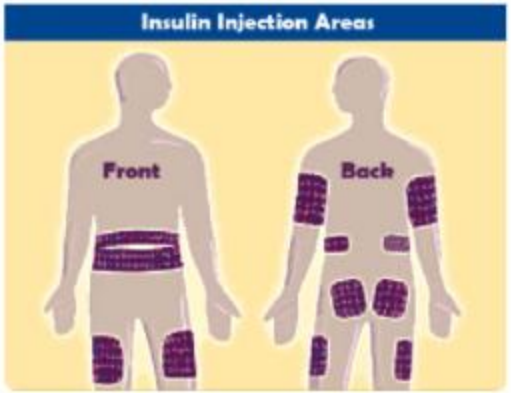
Injection & Infusion Sites

- Use an area of the body with adequate subcutaneous tissue (fat) to assure proper absorption.
- *__Rotation of sites__ is important in preventing lipohypertrophy/fatty scar tissue. If site is hard/ lumpy it will not absorb insulin properly.
  - Back of arms
  - Sides of legs
  - Hips/buttocks
  - Flank area
  - Abdomen staying 1-2 inches away from navel.



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Insulin Facts

- Opened Insulin does not need to be refrigerated
- Do not freeze or allow above 85 degrees
- Opened insulin should be discarded in 30 days
- Write the opened date on the vial/pen
- Unopened insulin is good in the refrigerator until the listed expiration date
- If traveling or if insulin will be out of room temperature environment for extended time, use insulated gel pack to keep insulin cool.
- Where you are comfortable, your insulin is comfortable.

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Hypoglycemia

- Blood glucose values <70
- Can occur if too much insulin is given or if not enough food is eaten
- Can be a dangerous condition because glucose is the major energy/fuel source for the brain
- NEVER leave a child experiencing hypoglycemia alone; have student escorted to health room, or school nurse should go to student

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Hypoglycemia- 15/15 Rule

- Give 15 grams of fast acting carbohydrate (without insulin). Wait 15 minutes, then recheck BG. If BG still under 70, repeat 15/15 rule
- If the child is refusing to eat, administer one packet of glucose gel or cake icing orally in cheek and rub in to absorb quickly.
- If the child is unconscious or having a seizure, turn child to the side to maintain an open airway and administer glucagon if ordered (Call 911/parents)
  - If Glucagon is given will need to be conservative with corrections doses for the next 24 hours.
- When in doubt; treat as a low BG; always have snacks available

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Hypoglycemia snacks

- 15 grams of simple carbohydrates without giving insulin
  - 4 ounces of juice (sugary liquids work the quickest)
  - 15 skittles, 2 rolls of Smarties, 4 starburst
  - 4 glucose tablets
  - 4 ounces of regular soda
  - fruit snacks (1 packet Welch's is 16 carbs)
  - cake gel/honey packet
- May need a follow up snack if it will be >30 minutes until next meal.
  - 15 gram snack containing fat without giving insulin; such as crackers and cheese or peanut butter, chocolate milk, ice cream, yogurt, etc.

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Types of Hypoglycemia

Mild:

- Shaky
- Weak
- Tired
- Hungry
- Irritable
- Unable to think clearly

Treatment:

15 grams of fast acting carbohydrate

Moderate:

- Pale
- Needing help treating low blood glucose
- Difficulty concentrating or following conversation
- Seems “distant” or confused
- Poor coordination(legs feel weak, difficulty walking)
- Slurred speech, difficulty cooperating

Treatment:

Glucose gel, cake gel

Severe:

- Seizure
- Become semiconscious or unconscious
- Have altered mental status

Treatment:

Glucagon, Call 911

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Treating Severe Low Blood Glucose

Administer only if seizing, unconscious, or if directed by endocrinologist

Glucagon:

1. combine liquid from syringe into powder vial
2. Mix thoroughly
3. Draw Solution into Syringe
4. Administer into muscle (top of leg or buttocks)

Baqsimi:

1. Hold Device between fingers and thumb. do not push plunger yet.
2. Insert tip gently into one nostril until fingers touch the outside of the nose
3. Push Plunger firmly all the way in. Dose is complete when green line disappears

Gvoke:

- Administer into subcutaneous tissue

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Hyperglycemia

- Blood glucose level >240mg/dl
- Check for ketones (blood or urine)
- Administer additional insulin as ordered –refer to school orders for dosing
- Make sure the child is well hydrated. Give sugar free fluid (water is preferred)
- Contact parents/legal guardians if **moderate or large** ketones are present
- If unable to reach parent/guardian call CMH diabetes team (get ROI from parents at the start of the school year or at diagnosis) 816-960-8803 and press urgent option.
- Recommended to have back up option of short acting insulin refrigerated for student in case of pump failure.

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Treating Hyperglycemia

- Refer to the school orders to see if the student has an ISF (Correction factor) or if they are using a chart for corrections (such as newly diagnosed patients)
- If BG is > 240 check ketones.
- If ketones are negative, trace, or small give extra insulin before meals, by **adding correction dose (using ISF) to your meal dose**
- Make sure it has been AT LEAST 3 hours since your last insulin injection before giving a correction.
- If on insulin pump, enter BG (and carb count if they are going to eat) into pump and pump will calculate correction dose

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Treating Hyperglycemia:
New diagnosed patient chart

- Blood glucose is over 200 and ketones are **negative, trace, or small**
- Give extra insulin before meals, by adding correction dose to your meal dose
- Make sure it has been AT LEAST 3 hours since your last insulin injection before giving a correction

Toddler Age

Blood sugar (mg/dL)	Insulin (units)
225-299	0.5
300-374	1
375-449	1.5
450+	2

School Age (5-10 years of age)

Blood sugar (mg/dL)	Insulin (units)
225-299	1
300-374	2
375-449	3
450 and above	4

Adolescents (11 and up)

Blood sugar (mg/dL)	Insulin (units)
200-249	1
249-299	2
300-349	3
350-399	4
400-449	5
450-499	6
500 and above	7

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Moderate or Large Ketones at School

- Reasons for ketones:
  - Missed doses (not enough insulin, bad/failed pump site, missing long acting insulin-(was this taken at home last night?)
  - Illness/going long periods without eating or not eating carbs - causing starvation ketones
- Additional rapid acting insulin is required; check school orders for ketone dose. (DO NOT USE REGULAR CORRECTION CHART: this is used only for negative/trace/small ketones)
- If student is eating, dose for carbs in addition to the moderate or large ketone dose.
- If student is on an insulin pump, **moderate or large ketone dose must be given as a SQ injection and pump site must be changed**

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Moderate or large ketones: What to do

- Student needs 8 oz. of sugar free fluids every hour; water is best
- **Recheck BG and ketones every 2 hours** until ketones resolve.
- If Ketones are not improving or getting worse; call parents/may need to send home or parents may decide to take to ED.
- Students with moderate/large ketones should not participate in physical activity
- Student may remain at school with ketones unless he/she is vomiting or ill.
- If unable to reach parents and have ROI on file, call CMH Diabetes Team

*** School/work excuses: It is our policy that we only provide school excuse note if the clinic has been called on the day of the illness, or the patient has been seen in clinic. Typical reasons granted: Moderate or large ketones with vomiting.**

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Insulin is required to get rid of ketones

- Small or Trace Ketones
  - Give correction using ISF or chart and push fluids
- Moderate Ketones
  - Give 10% of Total Daily Dose as an injection. Change the pump site and push fluids. Recheck ketones and BG in 2 hours.
- Large Ketones
  - Give 20% of Total Daily Dose as an injection. Change the pump site and push fluids. Recheck ketones and BG in 2 hours.

****Total Daily Dose** = all insulin taken in 1 day (rapid acting + long acting)

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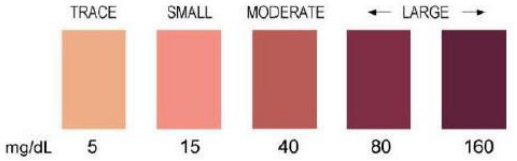

CHECK KETONES IF:

Blood glucose (BG) is higher than 240, or
you feel sick, with any fever, stomachache, vomiting, diarrhea no matter what your blood glucose number is.

BG 70 – 130 **Ketones:** Negative, trace, or small amounts	**BG higher than 130** **Ketones:** Negative, trace, or small amounts	**BG less than 240** **Ketones:** Moderate or large	**BG higher than 240** **Ketones:** Moderate or large
No action needed now. Drink sugar-free fluids. Monitor ketones and BG every 2 hours if you still feel sick.	Give a correction dose if it has been more than 3 hours since last dose of fast-acting insulin. (This can be given via pump.) (BG-120)/Insulin sensitivity factor (ISF)	Follow 15/15 rule to get BG above 240. Once BG is higher than 240, recheck ketones. Go back to top of chart and follow directions. Drink sugar-free fluids.	Give dose based on Total Daily Dose (TDD). See calculations in **blue** box below. Drink sugar-free fluids. **If on a pump, change pump site and inject insulin dose.

Ketone Dosing

Moderate or large ketone doses must be given via injection – not through insulin pump.

Calculate Total Daily Dose:

Breakfast	_____	units
Lunch	_____	units
Dinner	_____	units
Basal dose	_____	units
Total	_____	**units**

Moderate Ketones:
Give 10% of Total Daily Dose: _____ units fast-acting insulin (Humalog, Novolog, lispro, aspart, other _____)

Large Ketones:
Give 20% of Total Daily Dose: _____ units fast-acting insulin (Humalog, Novolog, lispro, aspart, other _____)

After Dosing:
- Start back at the top of this page.
- Recheck BG and ketones every 2 hours.
- Drink at least 8 ounces of water or sugar-free fluids per hour.

If ketones have not cleared after 4 hours, call the Diabetes Team.

Diabetes Team
Monday – Friday, 8 a.m. to 4:30 p.m. **Call (816) 960-8803 (Option 2 "Diabetes" > Option 2 "Urgent")**
After hours, weekends and holidays **Call (816) 234-3188**

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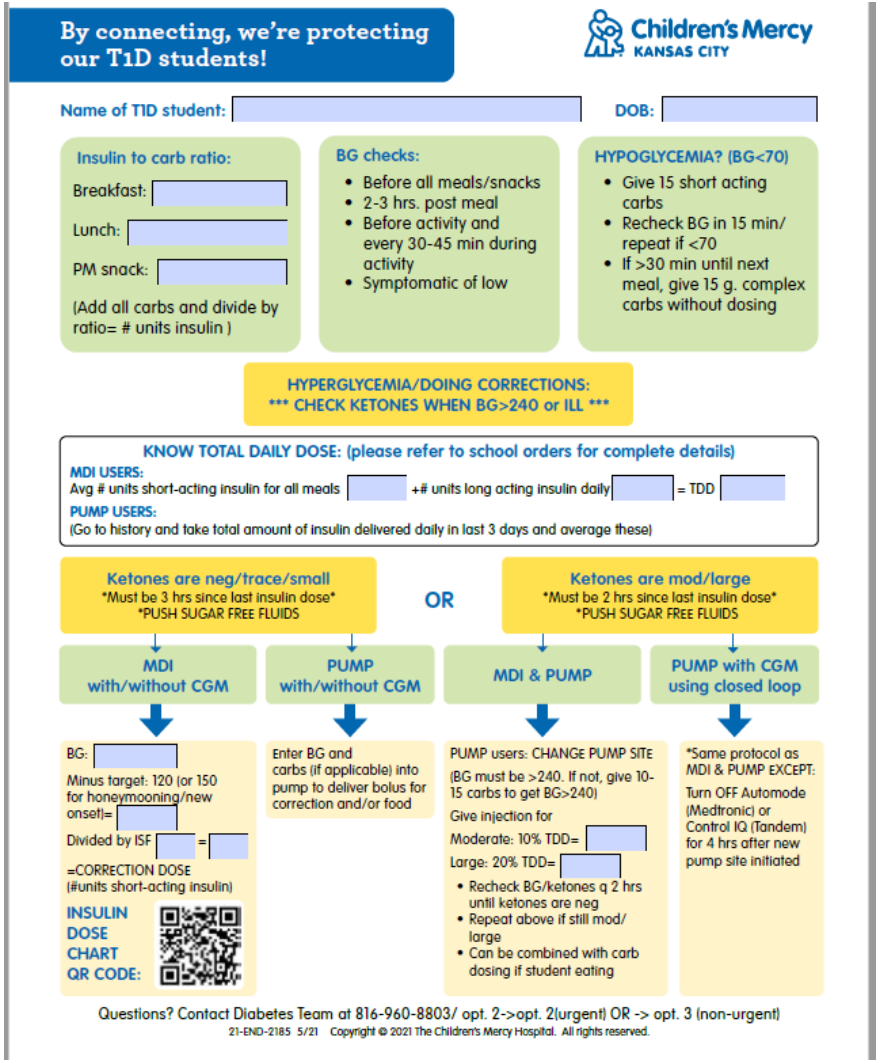
School Nurse algorithm page to customize to your T1D student:

- Fillable areas for:
  - ICR
  - Total daily dose
  - Enter BG and calculate correction dose for negative/trace/small ketones
  - Calculate correction dose for moderate/large ketones based on TDD
  - QR code can be used to create insulin dose chart for student.
    - Enter ICR
    - Enter target
    - Enter ISF

To access this document, go to https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:28bf36d8-cdb9-4c59-a75d-4f67595bab1d



By connecting, we're protecting our T1D students!

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Name of T1D student: _____ DOB: _____

Insulin to carb ratio:
Breakfast: _____
Lunch: _____
PM snack: _____
(Add all carbs and divide by ratio= # units insulin)

BG checks:
- Before all meals/snacks
- 2-3 hrs. post meal
- Before activity and every 30-45 min during activity
- Symptomatic of low

HYPOGLYCEMIA? (BG<70)
- Give 15 short acting carbs
- Recheck BG in 15 min/ repeat if <70
- If >30 min until next meal, give 15 g. complex carbs without dosing

HYPERGLYCEMIA/DOING CORRECTIONS:
*** CHECK KETONES WHEN BG>240 or ILL ***

KNOW TOTAL DAILY DOSE: (please refer to school orders for complete details)
MDI USERS:
Avg # units short-acting insulin for all meals _____ +# units long acting insulin daily _____ = TDD _____
PUMP USERS:
(Go to history and take total amount of insulin delivered daily in last 3 days and average these)

Ketones are neg/trace/small
Must be 3 hrs since last insulin dose
*PUSH SUGAR FREE FLUIDS

OR

Ketones are mod/large
Must be 2 hrs since last insulin dose
*PUSH SUGAR FREE FLUIDS

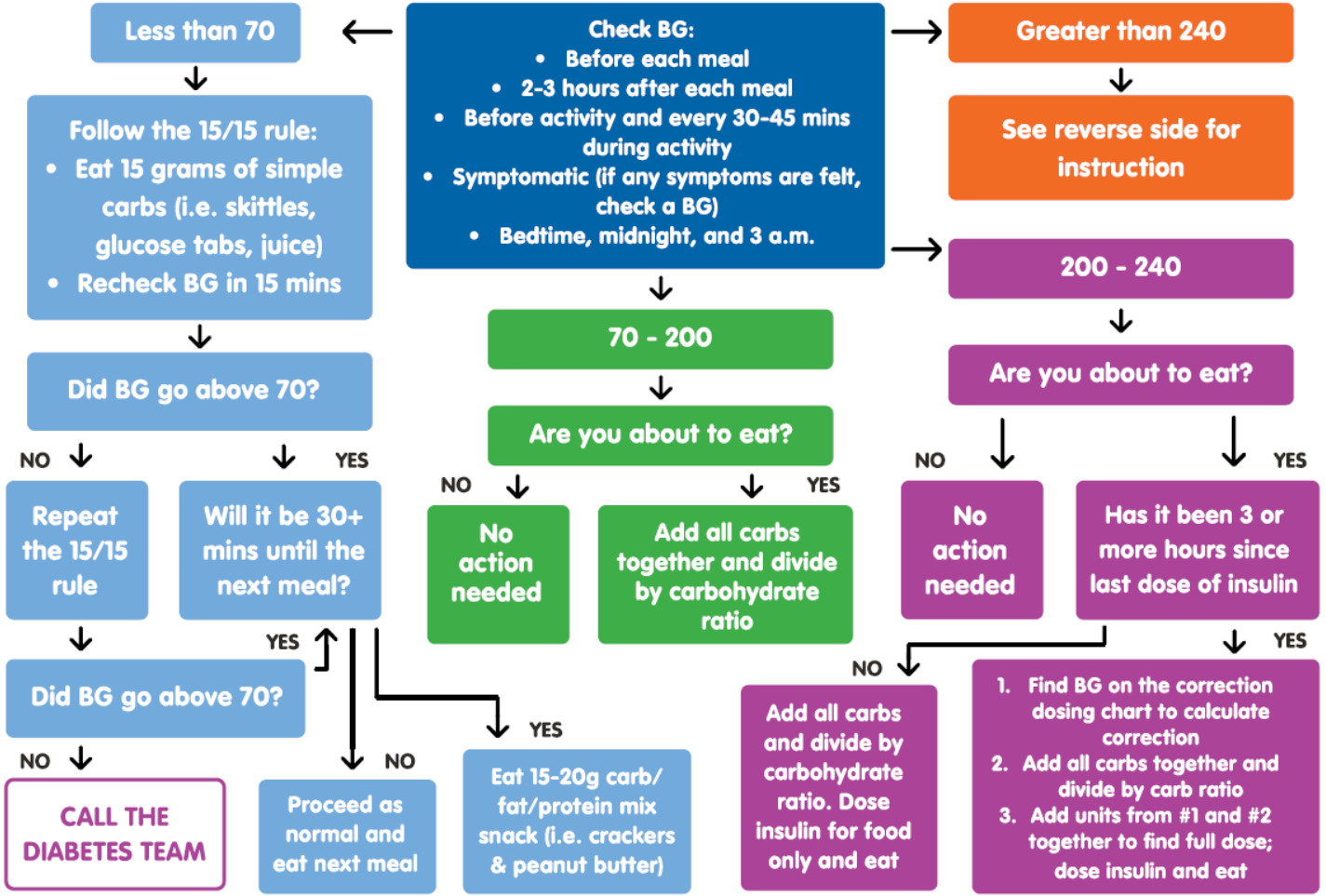
MDI with/without CGM
BG: _____
Minus target: 120 (or 150 for honeymooning/new onset)= _____
Divided by ISF _____ = _____
=CORRECTION DOSE (#units short-acting insulin)
INSULIN DOSE CHART QR CODE:

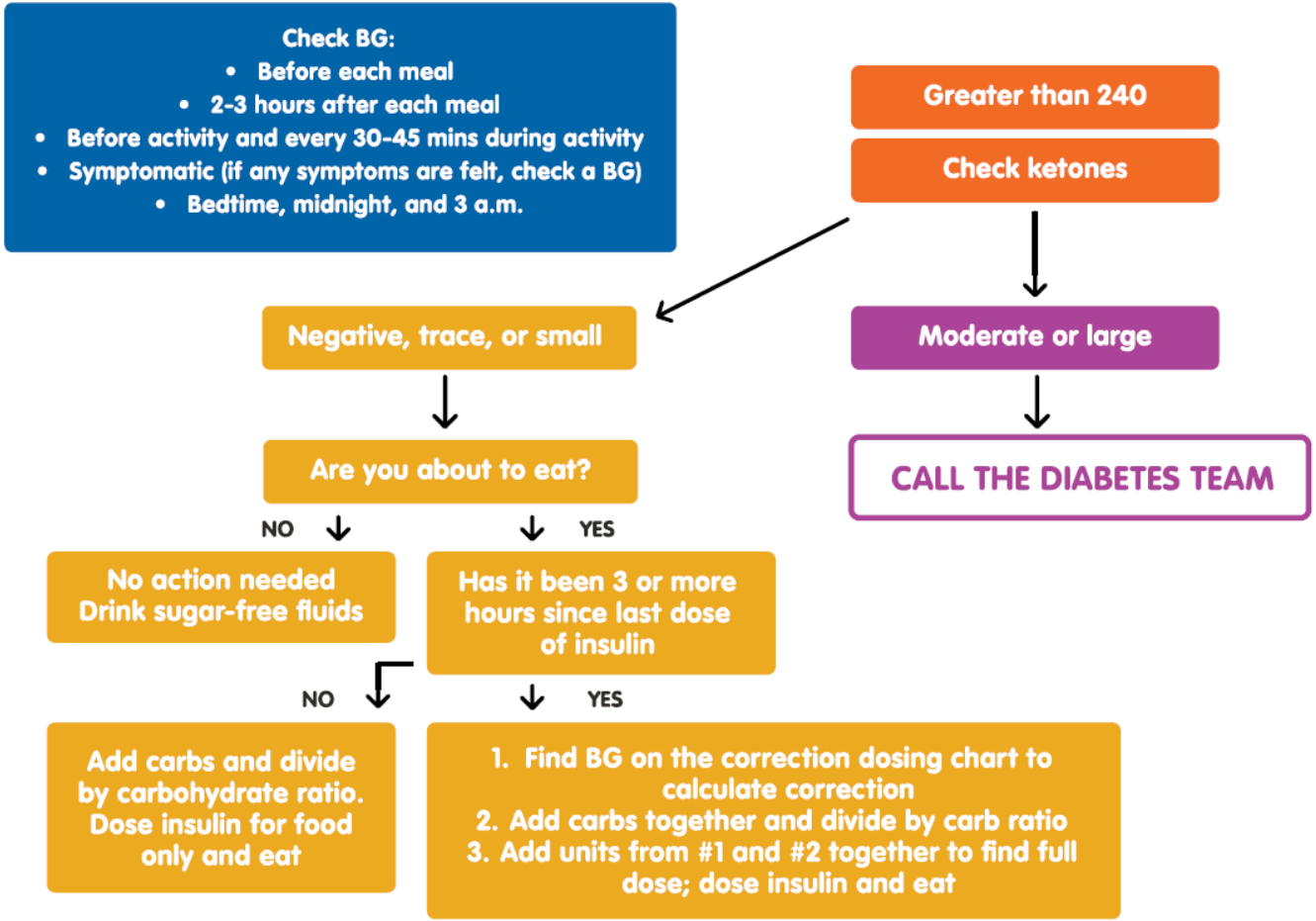
PUMP with/without CGM
Enter BG and carbs (if applicable) into pump to deliver bolus for correction and/or food

MDI & PUMP
PUMP users: CHANGE PUMP SITE
(BG must be >240. If not, give 10-15 carbs to get BG>240)
Give injection for
Moderate: 10% TDD= _____
Large: 20% TDD= _____
- Recheck BG/ketones q 2 hrs until ketones are neg
- Repeat above if still mod/ large
- Can be combined with carb dosing if student eating

PUMP with CGM using closed loop
*Same protocol as MDI & PUMP EXCEPT:
Turn OFF Automode (Medtronic) or Control IQ (Tandem) for 4 hrs after new pump site initiated

Questions? Contact Diabetes Team at 816-960-8803/ opt. 2->opt. 2(urgent) OR -> opt. 3 (non-urgent)


Check BG:
• Before each meal
• 2-3 hours after each meal
• Before activity and every 30-45 mins during activity
• Symptomatic (if any symptoms are felt, check a BG)
• Bedtime, midnight, and 3 a.m.
Less than 70
Follow the 15/15 rule:
• Eat 15 grams of simple carbs (i.e. skittles, glucose tabs, juice)
• Recheck BG in 15 mins
Did BG go above 70?
NO
YES
Repeat the 15/15 rule
Will it be 30+ mins until the next meal?
YES
Did BG go above 70?
NO
CALL THE DIABETES TEAM
NO
Proceed as normal and eat next meal
YES
Eat 15-20g carb/ fat/protein mix snack (i.e. crackers & peanut butter)
70 - 200
Are you about to eat?
NO
No action needed
YES
Add all carbs together and divide by carbohydrate ratio
Greater than 240
See reverse side for instruction
200 - 240
Are you about to eat?
NO
No action needed
YES
Has it been 3 or more hours since last dose of insulin
NO
Add all carbs and divide by carbohydrate ratio. Dose insulin for food only and eat
YES
1. Find BG on the correction dosing chart to calculate correction
2. Add all carbs together and divide by carb ratio
3. Add units from #1 and #2 together to find full dose; dose insulin and eat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• Bedtime, midnight, and 3 a.m.
Greater than 240
Check ketones
Negative, trace, or small
Moderate or large
Are you about to eat?
CALL THE DIABETES TEAM
NO
YES
No action needed
Drink sugar-free fluids
Has it been 3 or more hours since last dose of insulin
NO
YES
Add carbs and divide by carbohydrate ratio. Dose insulin for food only and eat
1. Find BG on the correction dosing chart to calculate correction
2. Add carbs together and divide by carb ratio
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Reviewing blood glucose

- Review blood glucoses regularly (such as weekly)
- Look for patterns; is there a pattern after 3-5 days
  - what time of day is the pattern occurring?
  - Is it related to PE, recess, food choices, stress, anxiety, etc.?
  - Inform the parent and or CMH CDE if you are seeing patterns at school; may need insulin adjustments
- Do adjustments need to be made to the insulin regimen or to self-management behaviors; such as dosing before instead of after meal, does the student need supervision with injections, are they entering BG and carb counts into the pump correctly?

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Insulin adjustments

- Generally make 1 adjustment at a time then wait 3-5 days to re-evaluate
- Start with reviewing the before breakfast BG/fasting
  - If morning BG is above or below target; changes are made to Lantus dose (if on MDI or to basal dose if on pump)
- Next compare the pre and post meal numbers to assess the ICR
  - If BG drops or rises more than 40mg/dl 2-3 hours after the meal from premeal BG, then ICR would need to be changed.
  - Higher ICR = less insulin given; lower ICR more insulin.

- Correction factor is adjusted when
  - multiple corrections are needed to bring BG into target (decrease ISF)
  - hypoglycemia occurs commonly after corrections (increase ISF)

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Goals of Diabetes Management

- Keep blood glucose in target range (70-130) 70% of the time
- Minimize fluctuation in blood glucose readings
- Hemoglobin A1C 7.5% or less (7.0% or less for >age 18)
- Prevention of long term complications
- Ensure optimal growth and development
- Maximize quality of life and independence
- Teach self-management of diabetes care. Parents are able to make insulin adjustments on their own.

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School Orders

- Questions about school orders?
- They will include;
  - Type of therapy; injections or pump
  - ICR (insulin to carb ratio)
  - Type of insulin
  - ISF (correction factor and instructions on how to use)
  - Ketone management, including doses for moderate and large ketones
  - TDD (total daily dose)
  - Hyperglycemia and hypoglycemia treatment (action plan)
  - ROI on the last page; have parent/legal guardian sign and faxed back to CMH Diabetes Team

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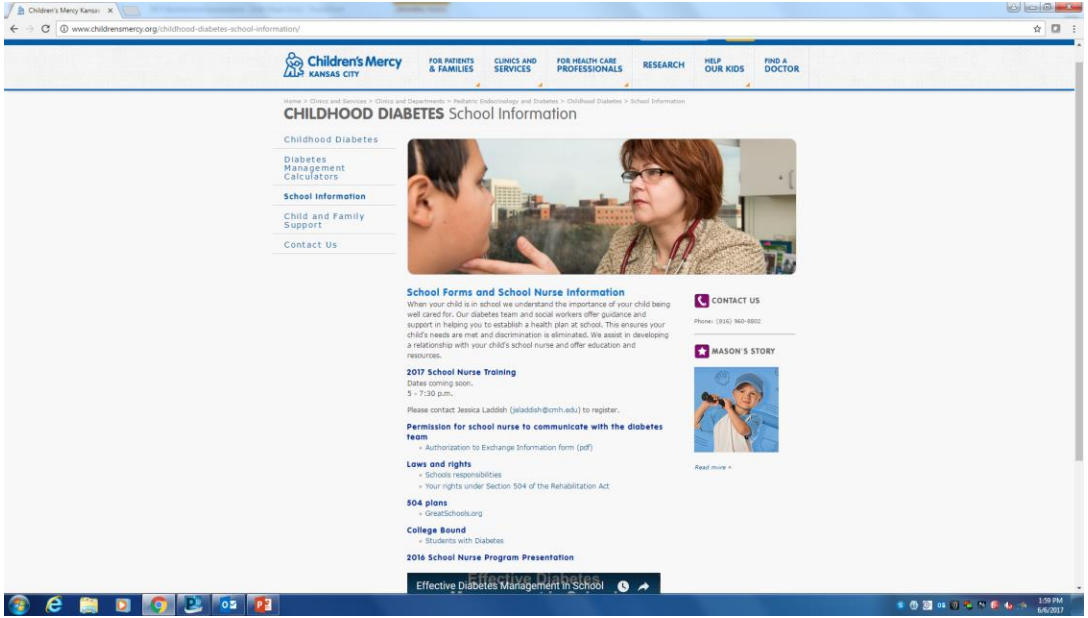
Access to diabetes team-CMH website



>Childrensmercy.org-> search for endocrine/diabetes-childhood diabetes center->school information->2024-25 back to school workshop

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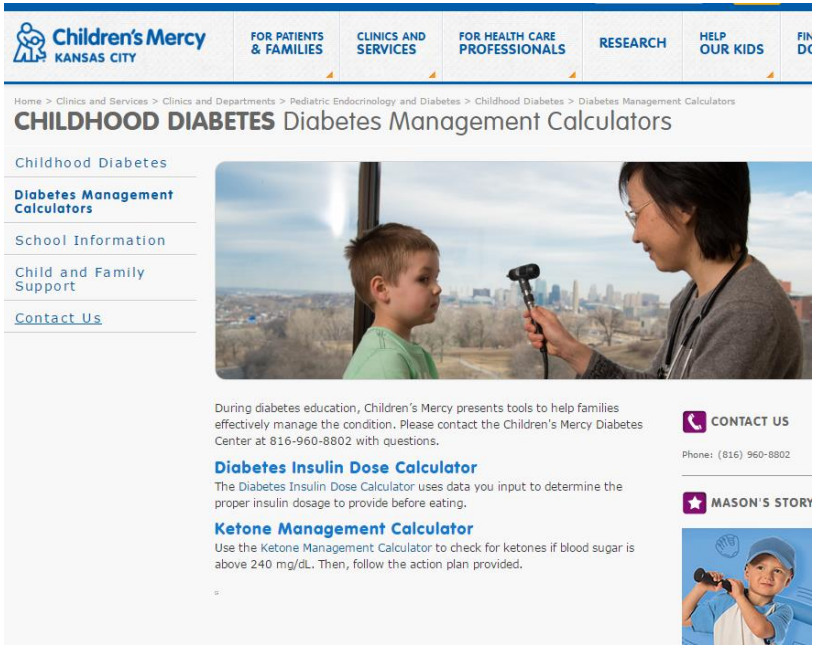
What's online?

- **Diabetes Team website:**
- Blood glucose monitoring instruction video
- Diabetes management calculators
  - Insulin Dose Calculator
  - Ketone Management Calculator
- School information
- Child and Family Support
- Contact Us



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CMH Patient Portal

- For parents/caregivers
- View lab results
- Send messages to the Diabetes team or doctor
- View clinic notes
- View upcoming appointments
- Parents can print school orders or we can fax directly to school nurse.
    - Once they are signed you can find School orders:"View your health records" >"Clinical notes"> "Diabetes school orders"
- Parents can request to join portal by emailing ROI@cmh.edu

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Dinobetes Digest

Check out what you'll find in this newsletter below:

- Patient Spotlight
- Clinician Spotlight
- Dietitian-Approved Recipe
- How to Get Involved
- Clinic Corner

Here are a few example snippets from the newsletter that is sent to Type 1 families at Children's Mercy. If you'd like to receive it, please scan this QR code to share your email with us!

Diabetes Caregiver Education
JDRF Office KCMO | Nov. 12 | 2-5 p.m.

Community organizations JDRF and Kids with Courage are teaming up to offer a training session at the JDRF Office in KCMO from 2-5 p.m. on Sunday, Nov. 12. Great for family, friends, babysitters and more! To sign up or learn more, click the button below.

Learn more

Where to find more information

www.diabetes.org

www.childrenwithdiabetes.com

www.jdrf.org

CMH CDE's: phone: 816-960-8803/ fax:816-302-9906

- Option 2: non urgent
- Option 3: urgent (student is vomiting/has moderate or large ketones, or has low blood glucose not responding to treatment.

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Resources

- Children's Diabetes Center

http://www.childrensmercy.org/ Search Diabetes>Endocrinology and Diabetes>Clinical Services>Diabetes Team

- American Diabetes Association Safe at School Campaign

http://www.diabetes.org/living-with-diabetes/parents-and-kids/diabetes-care-at-school

- National Diabetes Education Program

http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=97#main

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Diabetes Technology

Disclosures

Medtronic

dexcom®

TANDEM® DIABETES CARE

FreeStyle Libre

omnipod®

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Diabetes Device Technology

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Continuous Glucose Monitoring (CGM) Systems

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Continuous Glucose Monitoring Systems

- Glucose is measured continuously
  - Freestyle Libre (original) only measures blood glucose when reader is passed by sensor
- Can directly observe trends in glucose
- Can observe effects of exercise, food choices on blood glucose
- Can limit finger stick glucose readings
- No finger sticks required (Calibration) Dexcom G6, G7, Freestyle Libre,Libre 2, Libre 2+ or Libre 3

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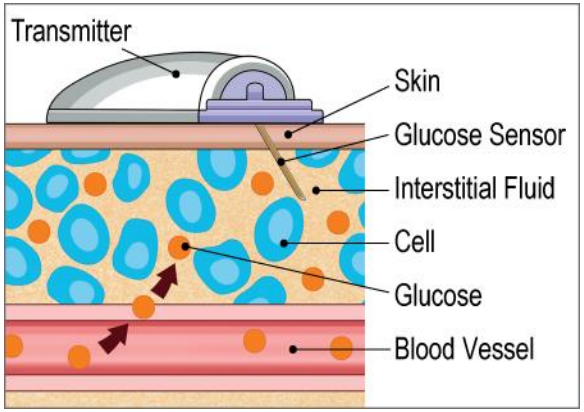
How do sensors work?

- A sensor is placed and a tiny filament (wire-like probe) is placed beneath the skin
- Measures glucose in the interstitial fluid (fluid between the cells)
- Worn for 7-14 days
- Calibration (if required): performed at regular intervals to give the sensor a "starting point" and keep data accurate
  - Freestyle Libre, Freestyle Libre 2 and Dexcom G6- No calibrations required
  - Guardian Connect- Calibrate every 12 hours



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CGM Gives More Data

- A lot can happen between finger sticks
- A blood glucose reading can't tell you which way the BG is headed and how fast

If you saw this number, what would you do?

If you saw this instead, would you do something differently?

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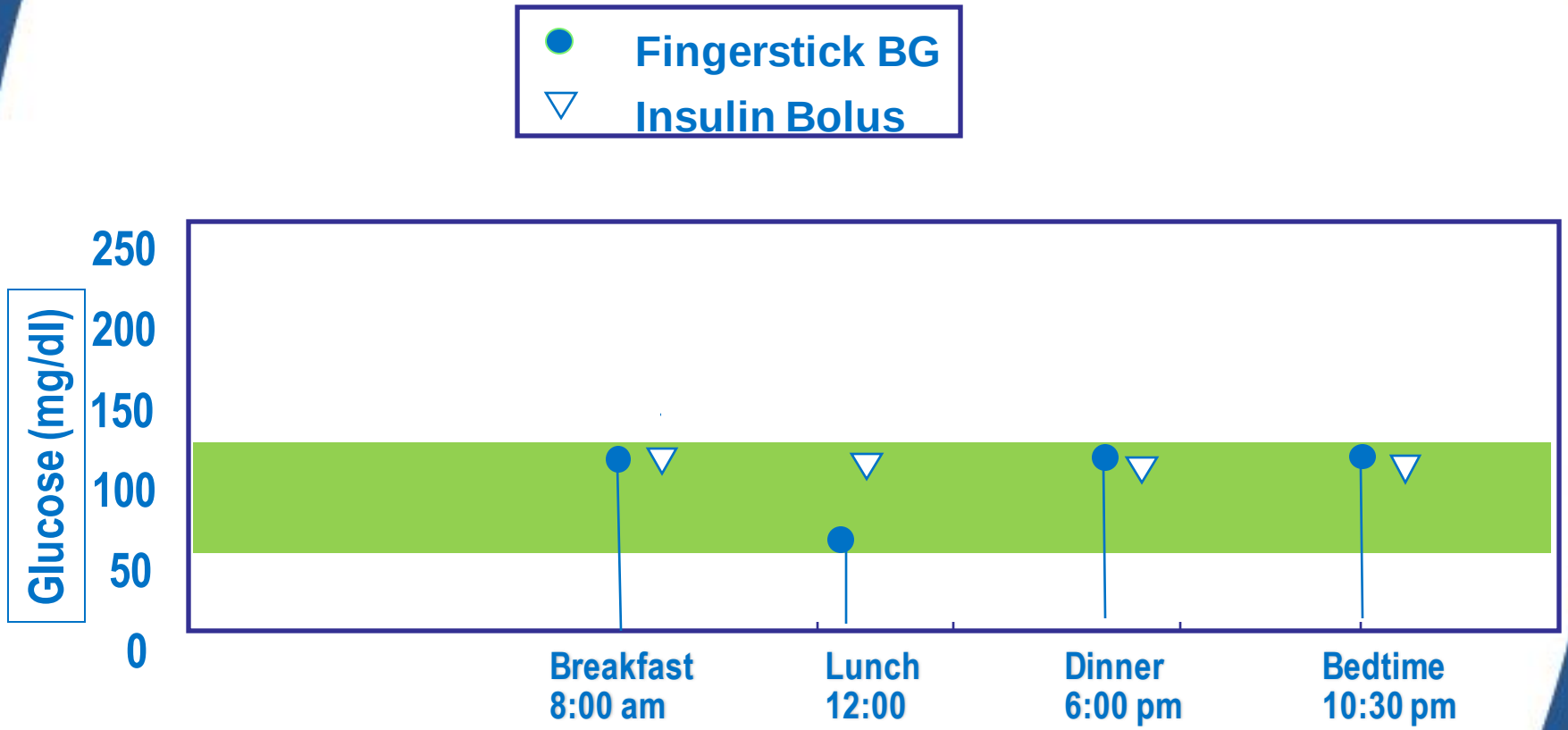
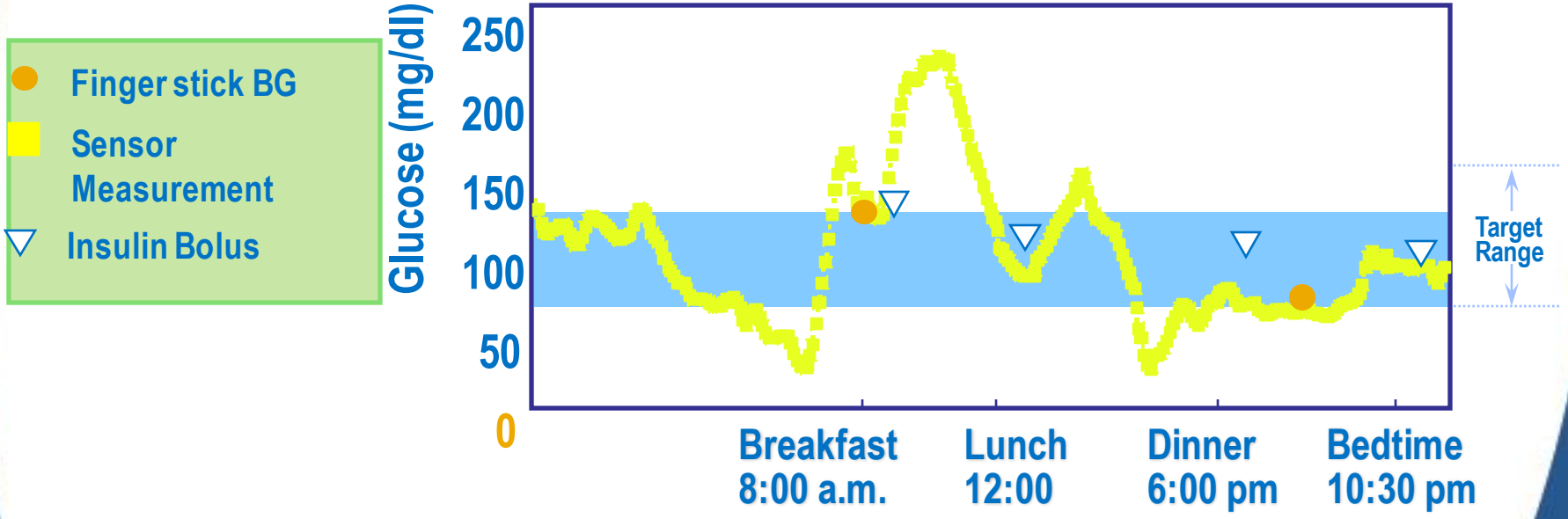
Daily Patient Log



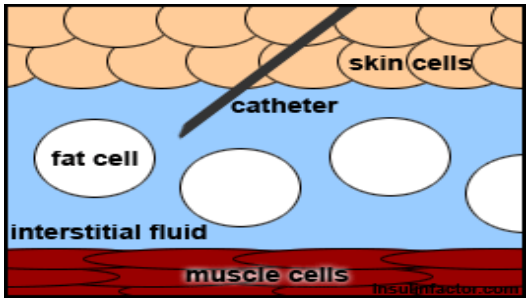
Daily Patient Log

with Sensor Data



CGM BG vs Meter BG

- It is very rare for the meter and the CGM to have the EXACT same number
- If they are different, the glucose may be changing
- Only check calibration when blood glucose is stable
- Pay attention to the trend as opposed to the actual number.



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Dexcom G6

- Stand-alone CGM
- Able to dose using CGM data
- No finger sticks required
- 10-day wear
- 2 hour warm up period with start of new sensor
- Has alarms for lows and highs
- Data sent directly from transmitter to phone or receiver
  - If sent to smart device, data can be followed from iPhones or Android phones.

*Can integrate with OP5, Tslim X2 or Tandem Mobi

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Dexcom G7

- Stand-alone CGM
- Able to dose using CGM Data
- No finger sticks required
- 10-day wear
- 30 minute warm-up period with start of new sensor
- Has alarms for lows and highs
- Two part system (transmitter and sensor one part ,receiver second part)
- Data sent directly from sensor to apple or android device, Garmin devices, or receiver

* Can integrate with Tslim X2, Tandem Mobi and OP5 (coming soon)

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Freestyle Libre

- Stand alone CGM
- Must swipe in order to view data
- No fingersticks required
- Can scan with receiver or iPhone app (iPhone 7 or newer)
- Able to dose based off CGM reading
- No calibration required
- 14 day wear
- No alarms for blood glucose levels out of set range

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Freestyle Libre 2

- Stand- alone CGM
- Can scan with receiver (Awaiting FDA approval for phone app)
- Continuous Glucose Monitoring
- Able to dose using CGM data
- No finer sticks required
- 14-day wear
- Has alarms for highs or lows

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Freestyle Libre 3

Stand-alone CGM

Do NOT have to scan

Able to dose using CGM data

No finger sticks required

One-hour warm up period with start of new sensor 14 day wear

2 part system (sensor/transmitter & phone)

Updates glucose readings every minute

Can only use with phone at this time

Has alarms for highs and lows

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Freestyle Libre 2+

- For use with or without the Tslim X2 pump
- No fingers sticks required
- One - hour warm up period with start
- 2 -part system (sensor/transmitter & Tslim X2 pump
- 15- day wear
- Has alarms for highs and lows

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Medtronic Guardian Connect

- Stand alone CGM
- Calibration (finger stick) required every 12 hours
  - **NOT** FDA approved to dose without fingerstick
- 7-day wear
- High/Low alarms
- Data sent directly from transmitter to Apple Device. (patient must have apple device)
  - If sent to Apple device, data can be followed from up to 5 iPhones or Android phones

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Inpen

- Smart pen (not a pump) paired to a phone or tablet app
- Has a bolus calculator in App based on ratios, correction factors and target BG.
- App can confirm if student took insulin.
- App has BG and bolus reminders that can be used.
- Insulin pen is used just like a traditional pen.
- Calculations can be done as normal if student does not have a phone or forgot it that day. Doses will be tracked in App once pen is back in proximity with phone/tablet.

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Insulin Pumps

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How insulin pumps work

- Basal Insulin:
  - Basal Rate: constant flow of background insulin
    - Replaces your long acting insulin
    - An Insulin pump continuously gives rapid acting insulin in small doses: Example: If on shots and you take 24 units of Lantus, you would receive 1 unit of fast acting insulin per hour on an insulin pump for your background insulin. The basal rate can be adjusted to deliver different rates of flow throughout the day or night.
- Bolus Insulin:
  - Bolus: dose given with meals, snacks, or glucose correction
  - Will calculate precise dose needed by entering BG and or grams of carbohydrates
  - Insulin delivered accurately with no extra injections
  - No fear of stacking insulin (giving insulin too close together)

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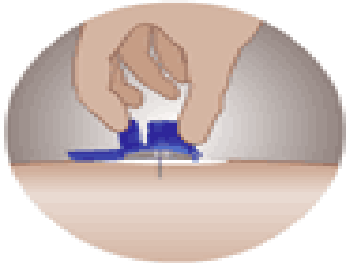
How the Insulin Pump Works

Reservoir: Filled with enough fast acting insulin to last 2-3 days

Infusion set: Small plastic tube or steel needle that goes from the pump and attaches to *the* skin



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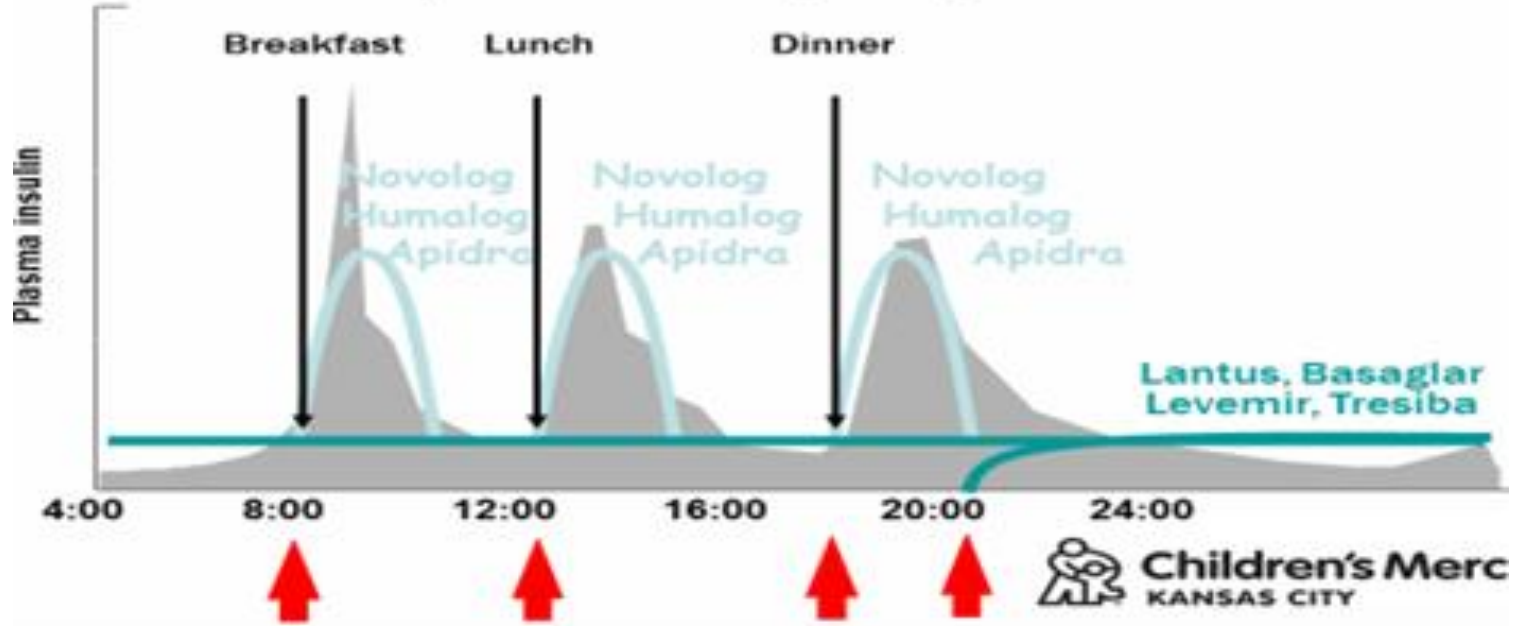
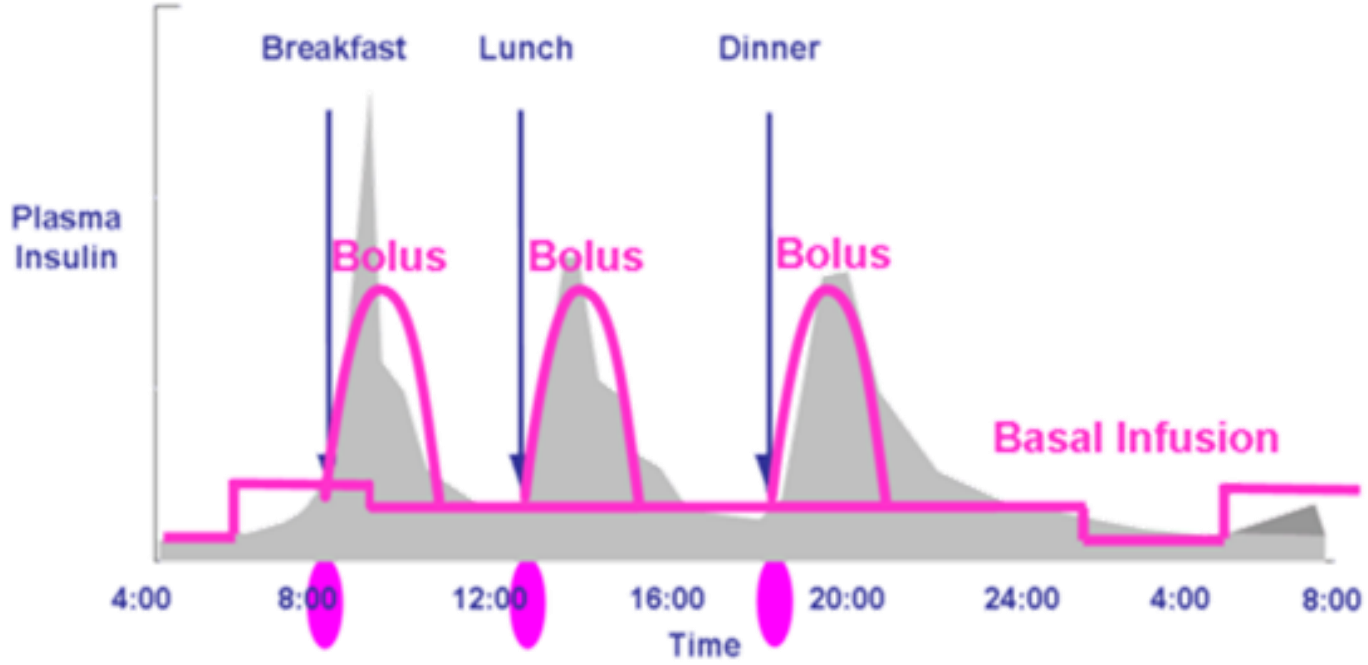
Profile of Individual on Multiple Daily Injections



Profile of individual on a pump



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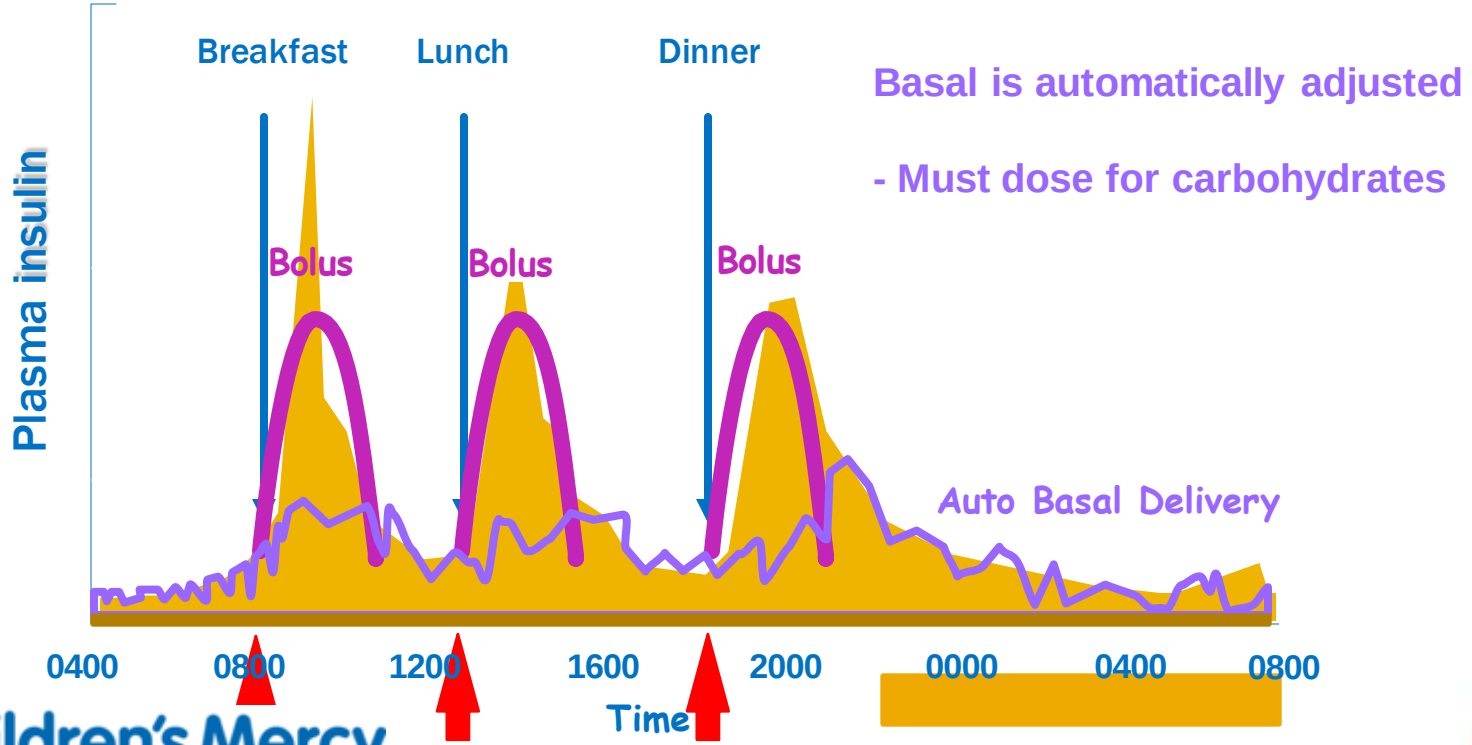
Profile of Individual on Hybrid Closed Loop System



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Wearing a pump at school

What to know about insulin pumps at school

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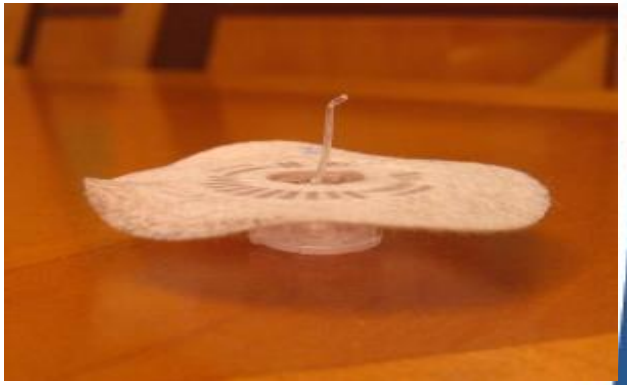
Hyperglycemia

- Check for ketones >240 or if sick
- If negative, trace or small ketones: Insulin pumps have the ability to calculate a correction bolus to reduce a high blood glucose
- If moderate or large ketones: treat through injection
- DKA can develop in 4-6 hours if delivery is interrupted by kinks/ bad sites, battery failure, empty reservoir



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Hypoglycemia

- Treat using 15/15 rule
- Pumps can be disconnected for sports and exercise.
- If on hybrid closed loop system with sensor; basal rates will be adjusted or stopped automatically if a low is sensed.
- Basal rates can be adjusted to protect against lows before and after exercise
- Temp basal rates can be used

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Tandem Tslim x2

- Touch screen display
- Can integrate Dexcom G6 or G7
- Missed bolus alert- can be set
- Rechargeable battery/USB port
- Upgradeable software
- Pump can have an integrated Dexcom G6 or G7 or Freestyle Libre 2+ readings
- No calibrations (finger sticks) needed- 2 hours warm up period when Dexcom G6; 30 minutes with Dexcom G7
- Adjusts basal rates every 5 minutes as needed
- Gives a correction bolus as needed – 1 correction bolus per hour as needed

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Tandem Mobi Pump

- Full control of pump via iPhone only to start
  - Device does not have to have data (just connect to WiFi and hold Bluetooth capability)
- Can integrate with Dexcom G6 and G7 CGM
  - Able to dose using CGM data with no calibrations
  - Control IQ
- Wireless charger
  - 3-5 day battery life
- Small pump with 5-inch tubing and a sleeve or clip
- Watertight: 8 ft for up to 2 hours
- 4- year warranty: NOT disposable
- “Find my pump” feature available
- Minimum fill: 30 units
- Holds up to 200 units

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Tandem Control IQ

with X2 or Mobi pumps

- BG > 180: Delivers an automatic correction if BG is predicted to be greater than 180 mg/dL (corrections given once an hour if needed)
- BG 160-180: Increased Basal insulin if BG is predicted to be greater than 160 mg/dL (can adjust basal rates every 5 minutes if needed
- BG 112.5-150: Maintains current basal settings
- BG 70-112.5: Decreases basal insulin if BG is predicted to be less than 112.5 mg/dL
- BG < 70: Stops basal insulin if BG is predicted to be less than 70 mg/dL
- Features:
  - Sleep activity: set to a blood glucose goal of 110-120
  - Exercise Activity: sets a narrower and higher range of BG goal of 150 to reduce likelihood of blood glucose drop after exercise

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Insulet
Omnipod Dashand Omnipod 5

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Omnipod DASH

- No tubing
- Touch screen display
  - Bluetooth pod: data can be sent to cloud without uploading
  - Calorie king in bolus calculator
- Secondary iPhone Apps
  - "Display" lets user see their data
    - Includes "find my PDM" feature
  - "View" lets caregivers view data
- Must have PDM to give bolus
- Minimum insulin fill: 85 units
- Holds up to 200 units insulin

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Omnipod 5

- No tubing
- For Use with a Dexcom G6 (G7 coming soon) sensor
  - **Can be controlled with thePDM if it has a compatible smart phone**
  - **Can NOT use as the same time as a Dexcom receiver**

- Must be within 5 feet of the app or controller for boluses, edits, status
- Touch screen display
- Controller powered by plugging into a USB

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Medtronic 630G

- Pump can be integrated with Guardian Link transmitter
  - does not replace finger sticks, but limits them to a minimum of 2/day
  - Suspends insulin when low BG is predicted and restarts once BG is rising
- Waterproof
- Powered by an AA battery

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Medtronic 670G

- **Auto mode-** adjusts basal rate every 5 minutes when integrated with Medtronic Guardian sensor
  - Pump may exit auto mode for extreme hyperglycemia or sensor malfunction
  - Does not replace finger sticks, but limits them to 2 BGs/day
  - You MUST still bolus for food
  - If treating moderate or large ketones; pump site will need to be changed; after giving ketone dose via injection will need to exit auto mode for 3 hours. After 3 hours resume auto mode .
- Several Modes: Pump only, Pump + CGM, or Auto mode

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Medtronic 770G

- Can be integrated with the Medtronic Guardian sensor
- Does not replace finer sticks, but limits them (minimum 2 BG's/ day)
- Auto Mode adjusts basal every 5 minutes
- A temporary exercise target of 150 mg/dl can be set
- Must be 2 years old and use at least 8 units per day
- Alerts can be sent to up to 5 people
- Uploads to Carelink Cloud every night
- Several Modes: Pump only, Pump and CGM, and Auto Mode

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Medtronic 780G

- Can be integrated with the Medtronic Guardian 4 sensor and transmitter
- Finger sticks are required to start SmartGuard no- additional finger sticks are required
- Meal detection technology with autmoatic adjustemnts & corrections every 5 minutes
- Extended infusion sets can be worn up to 7 days
- Alerts can be sent up to 5 people

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Helpful links: Insulin Pumps

- **Medtronic 670 School nurse guide:**
  - https://www.medtronicdiabetes.com/res/img/670g/MiniMed-670G-System-School-Nurse-Guide.pdf
- **Tandem (T-Slim) guide with videos and instruction sheet**
  - https://www.tandemdiabetes.com/support/product-training
  - https://www.tandemdiabetes.com/landing-pages/back-to-school
- **Omnipod Caregiver guide**: https://www.omnipod.com/sites/default/files/inline-files/CaregiverGuide.pdf
- **Omnipod Dash Quick Start Guide**
  - https://www.omnipod.com/sites/default/files/media/documents/18419-ENG-AW%20-%20Guide%2C%20Quick%20Start%2C%20Omnipod%2C%20Dash%20Rev%20C%20rmb031419.pdf
- **Omnipod Dash Quick Glance Guide:**
  - https://www.omnipod.com/sites/default/files/media/documents/41134-USA-ENG%20AW%20Rev%20A%2009_18%20DASH%20Podder%20Quick%20Glance%20Guide%20%206443r5.pdf

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Helpful Links: CGM/ InPen

- Dexcom
  - https://provider.dexcom.com/education-research
- Libre user guide and videos
  - https://www.freestyle.abbott/us-en/support/overview.html
- InPen User guide:
  - https://support.companionmedical.com/article/56-user-guide-inpen

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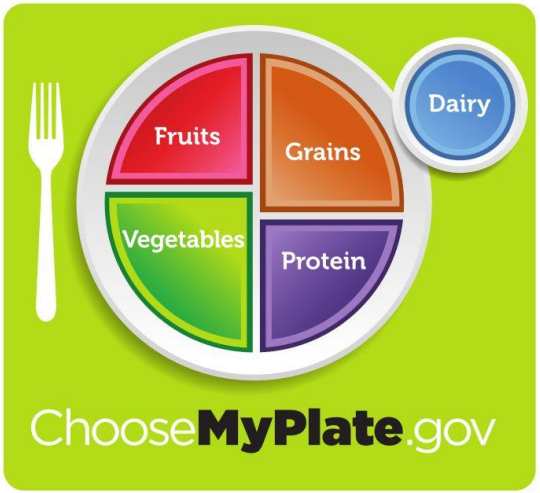
Nutrition Management



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BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 10 SPECIALTIES 2015-16

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

Carbohydrate counting

- Must count grams to determine insulin dose
- Ratio = amount of carbs per unit of insulin
  - ie. 1:15 -1 unit short acting insulin for every 15 grams
- Insulin needs to be given BEFORE eating
- Accuracy is IMPORTANT

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What Foods Contain Carbohydrate?

High in carbohydrate

- Breads, Cereals, Grains, Starchy Veggies, Beans
- Fruit, juices
- Milk/Yogurt
- Sweets

Low in carbohydrate

- Non-starchy vegetables
- Meat/Proteins
- Fats
- Free Foods

Remember to count them all both high and low!

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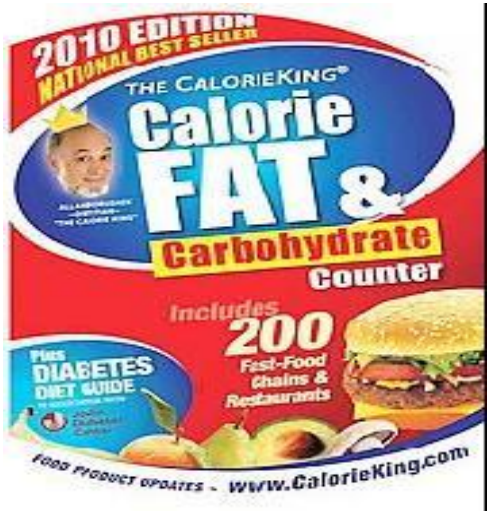
Where Can I Find Carbohydrate Information?



- School District website
- Food Service Director
- Food Labels
- ‘Calorie King’ book
- Websites
- Phone applications

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School Lunch

• Chicken nuggets (4)	10gm
• Honey mustard (1)	7gm
• Potato smiles (4)	16gm
• Steamed broccoli	2gm
• Fresh baby carrots	6gm
• Pears	20gm
• Chocolate milk	26gm
TOTAL	87 grams

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Calculating Insulin Dose

1) Student decides what they will eat/ won't eat
2) Use resource to count carbohydrates
3) Use ratio to calculate dose (or enter carbs into pump)
   - If 1:15, 87/15 = 5.8 units
   - If ratio is 1:12, 87/12 = 7.25 units
4) If on MDI round to nearest whole unit (ie 6 and 7)

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Scenario 1

- Johnny was given 4 units short acting insulin for a 60 gram meal but reports to you that he didn't eat his potatoes. His Pre- lunch BG was 102.

What should be done???

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What is the best answer?

1) Give him apple juice immediately
2) Offer him a carton of milk or slice of bread
3) Check his BG immediately
4) Nothing

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Physical activity

- Effects on BG varies
- Increased intensity ie. soccer usually will decrease BG
- Increased competiveness may increase BG
- Some may experience delayed hypoglycemia- as much as 12-24 hours after activity
- Children with PE/recess before lunch are at greater risk for hypoglycemia

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Rule of Thumb

- AVOID physical activity with moderate or large ketones
- May need carbs without insulin for every 30 minutes of vigorous activity
- Check BG before and after activity to determine strategy for glucose control

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Scenario 2

Sara is frequently coming to nurse's office after PE class with BG less than 70

What should you do?

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What is the best answer?

1) Snack before PE

2) Change previous meal ratio

3) If on pump - Change basal rate, use temporary basal, or disconnect pump

4) All of the above

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Recommendations

- First treat the low

  - 15 grams fast acting carb and re-check BG in 15 minutes

- Notify parents that this is a pattern

What are strategies to prevent these lows?

Snack before PE

Temporary basal rate

Change meal ratios

Disconnect pump

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Frequently Asked Questions

- How many carbohydrates should my kids have per day?
  - Minimum of 130gm/day, but the number can vary
  - More than a number we encourage healthy eating
- Is it possible to consume too few carbohydrates?
  - Yes. Carbohydrates are needed to fuel your brain and are important for growth.
- Should we be restricting carbohydrates to control high blood glucose?
  - Never withhold a meal or snack because glucose is high
  - Dose for the carbohydrates in the meal/snack + add a correction dose of insulin for the high blood glucose

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Carbohydrate Daily Amounts

- Is there a minimum required?
  - *130 grams per day at least*
  - *½ of calorie needs*
  - *Needs vary: age, growth spurts, activity level, puberty*
- Carbs should NOT be restricted, but do encourage healthy eating

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Healthy Eating

- Eat a variety of foods
- Eat healthy sources of carbohydrates
  - Whole grains
  - Fruits and vegetables
- Eat a **RAINBOW** of **fruits** and **vegetables** each day!
  - Each color contains different nutrients
  - Choose whole fruit instead of juice
- Drink water more often
- Eat a healthy breakfast every day

Psychosocial Needs at School

Heather Feingold MSW, LSCSW, LCSW
Lara Simon, MSW, LSCSW,LCSW, CDCES

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MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

Stages of Independence

- Elementary
- Middle School
- High School

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Elementary (6-12 years)

Developing Skills (athletic, artistic, social)
Self esteem begins relating to peer group

Diabetes Management Priorities

- Making diabetes routine flexible for school/peer activities
- Child begins learning long- and short-term benefits of good diabetes control

Family issues with type 1 diabetes management

- Parent to maintain involvement with diabetes cares, while allowing for self-care skill building
- Continue to educate school and other caregivers
- Normalize child's feelings

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Diabetes Responsibility in Elementary School

- Annual meeting with school RN and family to establish plan of care
- Utilize school nurse for all diabetes care
- Most capable of testing blood sugars independently
- Some can draw and administer shots or deliver insulin via a pump
- Start to recognize and treat hypoglycemia
- Most can make own food choices and some can count carbohydrates
- Adult may need to remind child to go to nurses' office at lunch or other meal/snack times

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Middle School (12-15 years)

Managing body changes and self identity

Diabetes Management Priorities

- Managing increased insulin needs due to puberty
- Diabetes management/blood sugar control becomes more difficult
- Weight and body image concerns

Family issues with type 1 diabetes management

- Renegotiating parents and teen roles
- Learning coping skills
- Preventing diabetes related family conflict
- Monitoring for signs of eating disorders, depression and risky behaviors

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Diabetes Responsibility in Middle School

- Annual meeting with school RN and family to establish plan of care
- Recommend that student checks in with school nurse prior to lunch or as needed
- Most capable of doing injections/blood sugar checks
- Most capable of carb counting (some may still need assistance)
- Consider allowing child to check blood sugar in classroom to minimize missed class time

High School

Establishing sense of identity

Diabetes Management Priorities

- Begin discussing transition issues
- Integrating diabetes into new lifestyle

Family issues in type 1 diabetes management

- Support transition into independence
- Learning skills to self-manage
- Preventing diabetes related family conflict
- Monitoring for signs of depression, eating disorders and risky behaviors

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Diabetes Responsibility in High School

- Annual meeting with school RN and family to establish plan of care
- Some teens may still need RN oversight to ensure adherence
- Teen does all/most care in classroom
- Trust is essential! Trust is earned!

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Special Education Accommodations at School

Goals for School Diabetes Care

- Identify students with a disability and provide a medically safe environment for them
- Provide students with diabetes the same access to educational opportunities and school-related activities as their peers
- Work with parent/caregiver and student to support transition to independence
- School should provide an adult who is available to recognize signs and symptoms of low blood glucose and other diabetes emergencies at all school sponsored groups
- Availability of at least 2-3 trained personnel and/or a school nurse
- Access to immediate routine and emergency treatment
- Self-management and self-possession anywhere, anytime for mature and capable students
- Full participation in all school-sponsored activities
- To keep students with diabetes in sufficient control to enable to them to learn, play and participate in classes and extracurricular activities

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Qualifications for a 504 Plan

- All public school and private schools (including religious school) that receive federal financial assistance
- Students qualify due to a potential deficit in learning during episodes of hypoglycemia or hyperglycemia
    - Diabetes can potentially limit one or more major life activity: caring for oneself, walking, seeing, hearing, learning or working

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Missouri State Laws

- Allows trained volunteers to provide diabetes care including blood glucose monitoring and insulin and glucagon administration
- Permits students to self-manage in the school setting and to carry needed diabetes supplies and equipment

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Kansas State Laws

- Department of Health Guidelines state that students are allowed to self-manage their diabetes
- Department of Health Guidelines state that insulin may be delegated as long as the delegatee is not calculating dosage (calculating carbs to determine insulin dose is NOT considered dose calculation).
- Nurse Practice Act permits trained non-medical personnel to provide emergency care as long as it is documented in the student's nursing care plan.

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Navigating the 504 Process

- School or parent/guardian may initiate
- CMH Diabetes School orders state we strongly recommend a 504 plan for students with diabetes. A letter of referral is not needed due to this statement
- An evaluation for eligibility under 504 should be conducted by school staff knowledgeable about the child
- Sample 504 Plans specific to diabetes care available here:
  - Children With Diabetes
  - American Diabetes Association

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CMH Recommended Accommodations

- Snacks are parents/caregivers' responsibility to provide
- Patients can participate in physical activity and sports BUT there must be a diabetes-trained personnel present at all times!
- Eating should be allowed whenever and wherever necessary, including in the classroom, eating lunch with peers, and allotting adequate time to finish eating
- Allowing for extra trips to the bathroom or water fountain when needed
- Absences should be counted as “excused” for medical appointments and sick days when necessary
  - We do provide letters to verify if requested by a parent/guardian
- Alternative time for exams if student is experiencing low/high BG’s
  - Recommend using the Stop Clock Testing method
  - Exams should not be taken if blood sugar is above 240mg/dl (with moderate to large ketones) or below 70mg/dl

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Additional Considerations

- Students should not have any penalties if time is needed for diabetes management.
- The student should be allowed to ride bus with diabetes supplies, administer insulin or check blood sugar on the bus, and eat a snack if needed
- Students with Continuous Glucose Monitors (CGMs) may require access to a personal cell phone or school WIFI to monitor blood glucose levels
- Please allow adequate time for
  - Make up work/tests
  - To check blood sugars and give insulin
  - To finish lunch
  - To participate in physical education based on blood sugar
  - A buddy to accompany student to nurse during hypoglycemia episodes

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Implementing Mental Health Screens at CMH

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What's Been Implemented So Far?

- October 2013 – Implemented suicide screening at one diabetes clinic location
  - All patients 12 and over received screening at every visit
- Fall of 2016 – Depression, Anxiety, and Eating Concerns screening was implemented in one diabetes clinic location at CMH
  - All patients 12 and over received screening at every visit
- January 2018 – Extended Depression, Anxiety, and Eating Concerns screening to all diabetes clinic locations
  - All patients 12 and older receive once per year

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The Future of Mental Health Screening at CMH

- Diabetes team looking to extend Depression, Anxiety, and Eating Concerns screening to our outreach clinic locations
- By the end of 2018 – Suicide screening will be implemented hospital wide at CMH
  - All patients 12 and older
  - Patients will receive screenings at different intervals depending on visits to ambulatory clinics, ED/UCC, or inpatient admissions
  - Diabetes clinic patients will continue to receive at every visit

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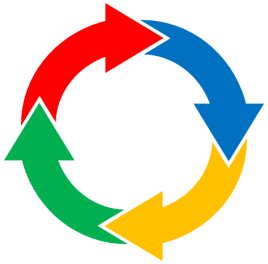
Challenges Faced

- Identifying more patients with diabetes who need mental health assistance
- Limited number of mental health providers who are familiar with diabetes care at CMH and in the community
- More mental health problems = more problems with diabetes care



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Mental Health in Students with Type 1 Diabetes

Anna Egan, PhD, ABPP, Licensed Psychologist
Professor of Pediatrics, UMKC-SOM
&
Gail Robertson, PhD, ABPP, Licensed Psychologist
Assistant Professor of Pediatrics, UMKC-SOM

November 26, 2023

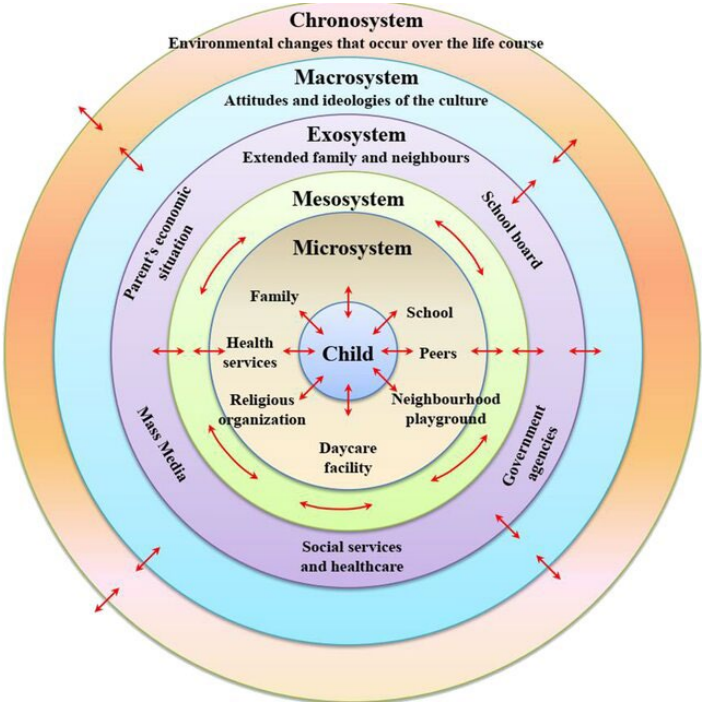
Conflict of Interest

We have no actual or potential conflict of interest in relation to this program/presentation.

Goals & Objectives

- Identify mental health symptoms that youth with diabetes may experience (e.g., irritability, sadness, worry, distraction)
- Detect unhealthy coping behaviors in children with diabetes
- Recognize options for intervening at school
- Describe resources available to children and families

Bronfenbrenner's Ecological System's Model



- Bronfenbrenner's theory demonstrates the interrelated influences on child development.
- Awareness of the systems that children live in can help us understand the differences in the way children may act in different settings.
- Bronfenbrenner proposed that many of these interactions are bi-directional: how children react to people in their microsystem will also affect how these people treat the children in return.

Overview

- Management of and adjustment to diabetes is impacted by the child, their experiences, and their environment.

- To have well-controlled diabetes, one must have:
  - Continuous monitoring (bg, carb ingestion, exercise)
  - Math skills (carb counting, dosing, correction)
  - Problem solving skills (responding to variations in bg)
  - Flexibility (stopping plans and addressing bg or symptoms)
  - Support (from parents, school personnel, friends, medical)

- Problems in these areas or other stressors can result in impact functioning in multiple domains for kids

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Common Psychosocial Issues

- Developmental Grief and Adjustment
- Diabetes Distress or Burnout
- Low Socioeconomic Status
- Food insecurity
- Lack of access to T1D supplies
- Systemic barriers to health care
- Poor Family Communication
  - Parent/Child Conflict
  - Parent/Parent Conflict
  - Divorce or Separation
  - Inequitable division of T1D management responsibilities.
- Substance use or abuse in child or parent
- Cognitive dysfunction in child or parent

Common Mental Health Issues impacting T1D

- Depression & Suicidal Ideation
- Anxiety, including Generalized Anxiety Disorders, Needle Phobia, Obsessive Compulsive Disorder, etc.
- Neurocognitive Functioning and Attention Deficit Hyperactivity Disorder (ADHD)
- Eating Disorders: Anorexia, Bulimia, Diabulimia

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Depression and Suicidal Ideation

- Youth with T1D have higher rates of depression than the general population

- Adolescents with T1D experience higher rates of suicidal ideation and suicide attempts than those without T1D

Butwicka et al., 2015; Fuller-Thomson & Sawyer, 2009; Pompili et al., 2014; Reynolds & Helgeson, 2011

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Depression & T1D Management

- Youth with T1D & depressive symptoms have:
  - Less frequent self-monitoring of blood glucose (SMBG)
  - Impaired glycemic control
  - More frequent hospitalizations for acute T1D complications (e.g., severe hypoglycemia, diabetic ketoacidosis)

Corathers et al., 2013; Hilliard et al., 2011; Hood et al., 2006; Jaser, 2010; Lawrence et al., 2006; McGrady et al., 2009; Stewart et al., 2005.

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Depression & T1D Management

- Depression in adolescents with T1D is associated with:
  - Poor long-term outcomes (both medically and in mental health)
  - Increased risk for long-term complications
  - Repeat T1D-related hospitalizations

- Elevated depressive symptoms relate to lower quality of life and increased suicidal ideation in youth with T1D

Bryden et al., 2001; Corathers et al., 2013; Duru et al., 2016; Garrison et al., 2005; Hilliard et al., 2011; Lawrence et al., 2012

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Suicide Risk (in T1D)

- Research shows current risk of suicidal ideation to be between 8-13% for last 3-12 months and 26% for lifetime.

- Unique concern for T1D—insulin is needed to survive, but it means easy access for intentional overdosing.

Suicide Risk: Screening

Columbia Suicide Severity Rating Scale (CSSRS or Columbia) - 3 questions

- **Have you wished you weren't alive anymore?**

  -Assessing thoughts?

- **Have you had thoughts about killing yourself?**

  - Assessing plans?

- **Have you ever done anything to try to kill yourself?**

  – Assessing Actions?

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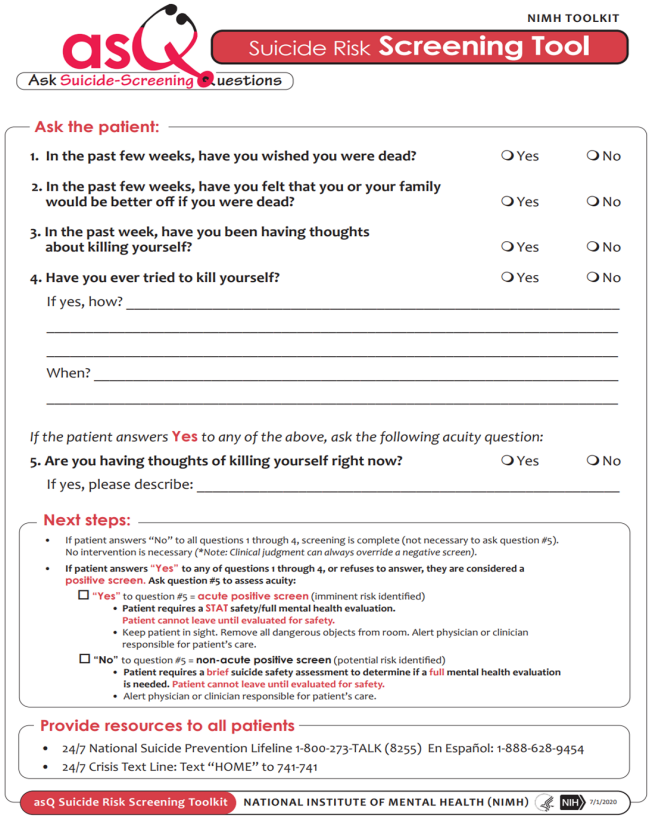
ASQ Screener

ASQ will provide you with more information about:

- Passive suicidal ideation (wishing to be dead/feels as though they are better off dead)
- Active suicidal ideation (thoughts of killing oneself)
- Suicide attempt history (including method use and time frame of attempt)



NIMH TOOLKIT

asQ Suicide Risk Screening Tool

Ask Suicide-Screening Questions

Ask the patient:

1. **In the past few weeks, have you wished you were dead?** ❍ Yes ❍ No
2. **In the past few weeks, have you felt that you or your family would be better off if you were dead?** ❍ Yes ❍ No
3. **In the past week, have you been having thoughts about killing yourself?** ❍ Yes ❍ No
4. **Have you ever tried to kill yourself?** ❍ Yes ❍ No

   If yes, how? _____

   When? _____

If the patient answers Yes to any of the above, ask the following acuity question:

5. **Are you having thoughts of killing yourself right now?** ❍ Yes ❍ No

   If yes, please describe: _____

Next steps:

- If patient answers "No" to all questions 1 through 4, screening is complete (not necessary to ask question #5). No intervention is necessary (*Note: *Clinical judgment can always override a negative screen).*
- **If patient answers "Yes" to any of questions 1 through 4, or refuses to answer, they are considered a positive screen. Ask question #5 to assess acuity:**
  - ☐ "Yes" to question #5 = **acute positive screen** (imminent risk identified)
    - **Patient requires a STAT safety/full mental health evaluation. Patient cannot leave until evaluated for safety.**
    - Keep patient in sight. Remove all dangerous objects from room. Alert physician or clinician responsible for patient's care.
  - ☐ "No" to question #5 = **non-acute positive screen** (potential risk identified)
    - **Patient requires a brief suicide safety assessment to determine if a full mental health evaluation is needed. Patient cannot leave until evaluated for safety.**
    - Alert physician or clinician responsible for patient's care.

Provide resources to all patients

- 24/7 National Suicide Prevention Lifeline 1-800-273-TALK (8255) En Español: 1-888-628-9454
- 24/7 Crisis Text Line: Text "HOME" to 741-741

asQ Suicide Risk Screening Toolkit NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH) NIH 7/1/2020

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Critical Information for Screening

- Prior to screening:
  - Have a plan for what to do based on the results
  - Have clinical cut-offs for positive screens accessible to healthcare providers
  - Have a Screener Action Plan developed based on each score, including:
    - When and how to continue to monitor mood/behavior at school
    - Who to contact about results (parent/caregiver, counselor, etc.)
    - When to seek emergency treatment

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Anxiety in T1D

- Children and adolescents with T1D have a 26-32% lifetime prevalence of anxiety disorders
- 13.4% of youth with Type 1 Diabetes reported anxiety regarding their hemoglobin A1c and 17% reported anxiety with blood glucose monitoring.

Herzer & Hood, 2010; Buchberger et al., 2016; Nguyen et al., 2020

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Neurocognitive Functioning

- Having T1DM is associated with poorer performance in the following areas:
  - visual-spatial ability, memory, IQ (full scale, performance, & verbal)
  - motor speed
  - Writing & reading
  - sustained attention

- Factors associated with increase difficulty:
  - Length of time since diagnosis
  - Diagnosis before age 5
  - Metabolic control
  - Co-morbid psychological diagnoses
  - Number of hypoglycemic episodes

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Executive Functioning

- Two domains of executive functioning:
  - Behavioral Regulation—the ability to inhibit, shift, and sustain emotional control
  - Metacognition—the abilities to initiate, plan, organize, & monitor, and working memory

- These skills are necessary for:
  - insulin management
  - bg monitoring
  - monitoring of dietary intake
  - adjustment of activity level

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ADHD & Executive Functioning

- Parental report of problems with child executive functioning is associated with elevated HbA1c
- Problems with child executive functioning is associated with poor T1D management
- Better child executive functioning is associated with better adherence and management

Vloemans et al., 2019; Bagner et al., 2007; McNally et al., 2010

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Disordered Eating Behavior

Up to 38% of youth with T1D experience disordered eating behaviors

Disordered eating behaviors in youth with T1D are associated with:

- Higher BMI and insulin resistance
- More depressive symptoms
- More episodes of DKA
- Poorer quality of life

10-20% of youth with T1D are estimated to have used insulin manipulation for weight loss (diabulimia)

- Rates are approximately 2 times higher in females than males
- Can be easily missed by parents and diabetes providers

Jones et al., 2000; Hanlan et al., 2015; Mannucci et al., 2005 Nip et al., 2019; Peterson et al., 2015; Winston. 2020

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Identifying Problems

- Possible reasons for problems at school:
  - Difficulty adjusting to diabetes diagnosis (even if they have been diagnosed for years)
  - Lack of understanding about diabetes management
  - Real/perceived
    - interference with peer/social functioning
    - lack of support from school personnel
    - interference with school functioning
  - Pre-existing or recently developed concerns with behavior, fear/anxiety, mood difficulties
  - Issues the child brings from home/community that is not known to the school personnel

Common Presentations

- Aggressive (Physically or verbally lashing out when asked to perform a diabetes task)
- Argumentative (“I don’t need to go to your office, I can check my BG at my locker”)
- Avoidance
  - Of the nurse or diabetes management (“I forgot to check my BG before lunch”)
  - Of class (always in the nurse’s office; “I’m not feeling well again, I need to check my BG”)
- Dismissive (“I don’t care what my BG is”)
- Lying (“My BG is 128”, but a review of the meter shows it is 428)
- Refusing (“You can’t make me check”)
- Upset/Frustrated (“I hate diabetes”)
- Parent involvement (over or under involvement) (parent needs to be notified of everything or parent can’t be reached for anything)

What does healthy adjustment look like?

- Low incidence of dramatic/extreme changes in mood or behavior
- Use of coping strategies (writing, reading, talking, exercise, etc.)
- Open communication (acknowledges frustrations, sadness, and/or worries)
- Seeking support and/or asking for help

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Coping

- Coping strategies are methods (thoughts or actions) a person uses to deal with stressful situations and reduce overall distress.
- All people use coping strategies; some strategies are just more “helpful” than others

- When does coping become unhealthy or unhelpful
  - It is interfering with functioning in a prominent area
  - It is causing distress
  - It can be contributing to immediate or long-term health concerns

Treatment/Intervention

- What can you do to help?
  - Match expectations to the individual child's abilities (expectations may be lower than same age peers or younger peers)
  - Identify problems early, with both internal and external reasons
  - Set reasonable goals and build upon them once children are successful
  - Develop a collaborative relationship--If something isn't working, ask for input from the child (or others)
  - If you see concerns, talk to someone about it: the child, parent, or teacher/counselor

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Treatment/Intervention

- Other Interventions:
  - Incorporate psychological diagnoses or behavior plan into 504 plan (have accommodations prepared)
  - Psycho-educational assessment or formal IEP may be needed, particularly when educational goals are impacted or comorbidities present
  - Therapy (Individual/Family) and/or Medication
  - Hospitalization

Managing Behaviors

- Set reasonable goals and build upon them once children are successful
  - Make goals specific, measurable, achievable, results-focused, and time- bound (SMART)
  - Example, if the goal was initially: “Check your bg at school” change it to: “Check your bg in the nurse’s office at school, every day, 20 minutes before lunch”
  - Put the goal in writing, monitor it with a chart, acknowledge small progress and have rewards for making progress that hold value to the child/teen

- Develop a collaborative relationship--If something isn’t working, ask for input from the child (or others)
  - Most kids will tell you what they need
  - The argumentative kids will tell you all the reasons the things you suggest won’t work, but often (not always) are more cooperative when they are asked to help problem solve or when a discrepancy in their behavior is noted

Managing Behaviors

- What is generally NOT helpful:
  - lecturing (they won't listen, it damages the working relationship, parents and/or doctors may have already tried that approach unsuccessfully)
  - Pointing out long-term consequences of behavior (children/adolescents think in the here and now; neither fear nor shame change longterm behavior for most people)
  - Ignoring it (the problem often won't go away and often will worsen)

Resources

- Support groups (JDRF)
- Websites (ADA, Children with Diabetes)
- Therapy options (parent can contact insurance; local community health agency)
- Suicide prevention numbers (988; Trevor Project: 866-488-7386)

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