

Hyperinsulinism & Diabetes

When blood sugar is high

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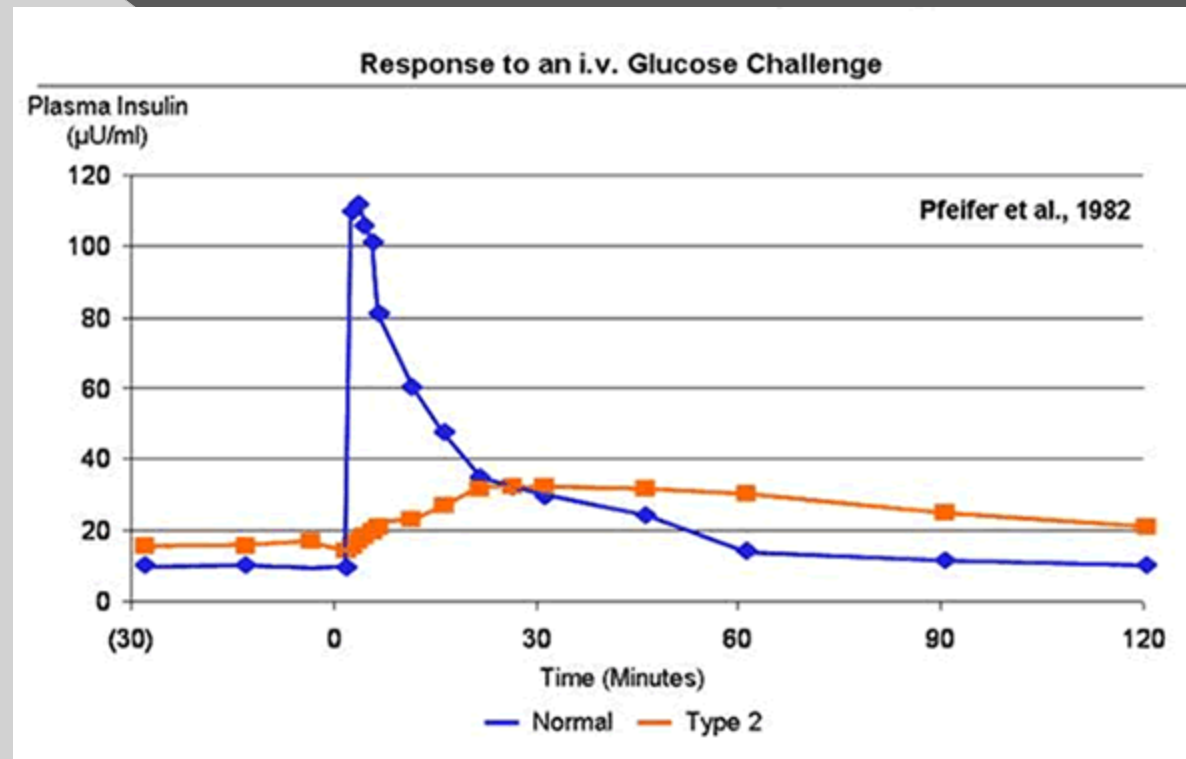
In France: 2/2012

Beltrand, J. et.al

- ◉ 105 patients after pancreatectomy followed for metabolic outcomes
- ◉ Incidence of diabetes is very high in young adolescence for those who had near-total pancreatectomies (diffuse disease)
- ◉ Need for insulin varies from patient to patient

Pancreas insulin production

- Basal insulin
- Bolus insulin
- First-phase insulin response



Diagnosing Diabetes

- Years spent checking for lows
- FBG ≥ 126 mg/dl
or
- HbA1c $> 6.5\%$

A1c %	3 Month Average Blood sugar
4.0	65
4.5	83
5.0	100
5.5	118
6.0	135
6.5	153
7.0	170
7.5	187
8.0	204
8.5	222
9.0	240
9.5	258
10.0	275
10.5	293
11.0	310
11.5	328
12.0	345

DIABETES CARE, VOLUME 25, NUMBER 2, FEBRUARY 2002

Blood sugar monitoring

- Check fasting blood sugars
- Check blood sugars 2 hours after eating



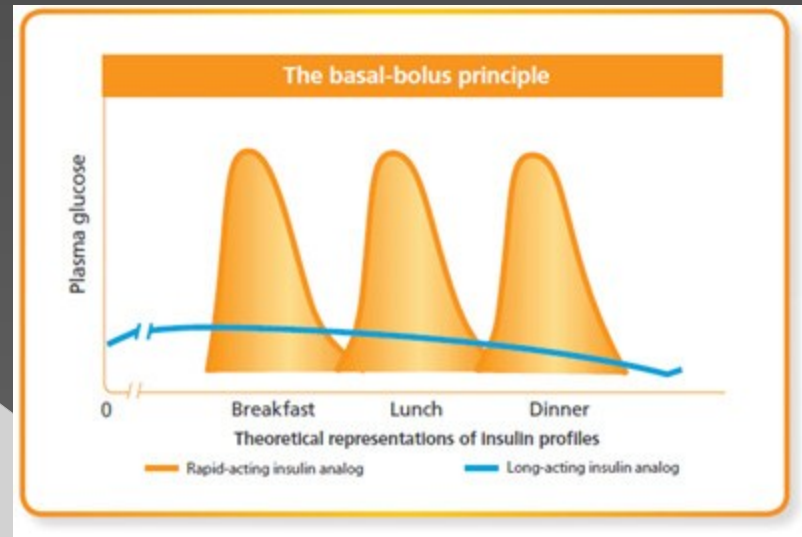
Adding insulin: Basal

- ◉ Basal insulin
- ◉ Lantus
- ◉ Levemir
- ◉ Basal insulin through an insulin pump



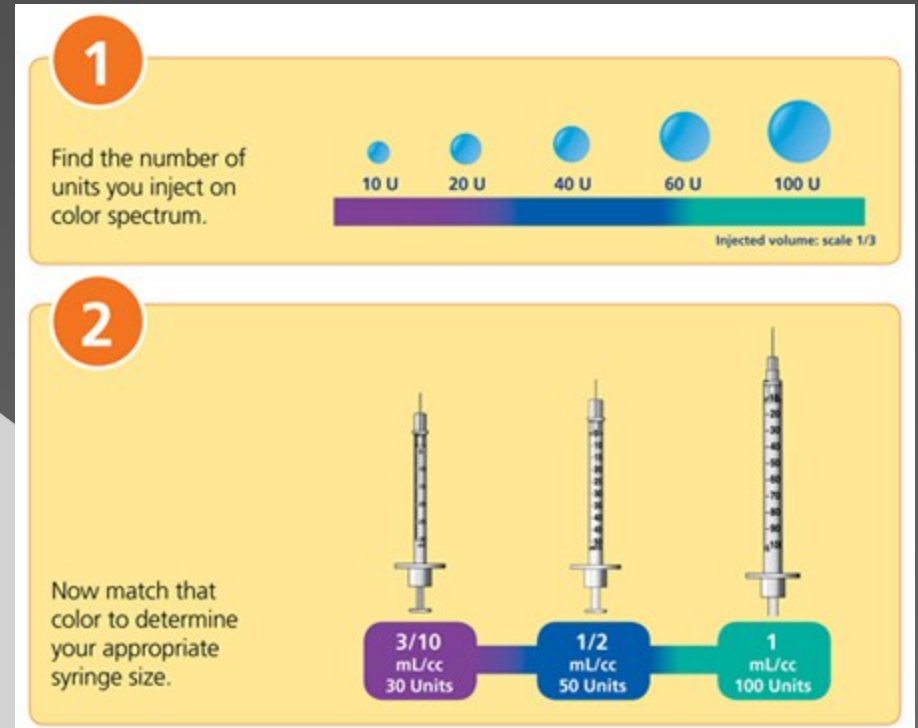
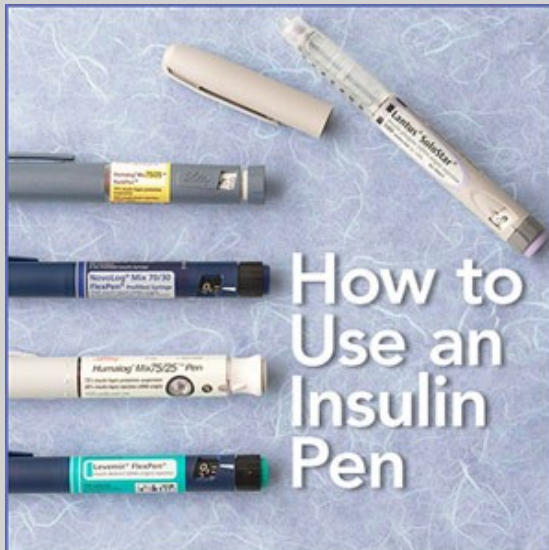
Adding insulin: Bolus

- Bolus Insulin
- Humalog
- Novolog
- Apidra
- Bolusing through a pump



Measuring insulin

- Syringes
- Pens
- Insulin pumps



Carbohydrates

- Carbohydrates need to match insulin
- Using an insulin:CHO ratio
- Carbohydrates to treat low blood sugars



Correcting blood sugars

- Using insulin for correction
- Correction ratios
- Sliding scales



Blood sugar testing for insulin management

- ◉ When to test
- ◉ How many times per day to test
- ◉ When to adjust

The screenshot shows the 'Glucose Buddy' app interface on an iPod touch. At the top, the status bar displays 'iPod', signal strength, and the time '11:13 PM'. The app header includes a 'Glucose Buddy' button, an 'Add Log' button, and a 'Save' button. Below the header, there are four tabs: 'Glucose' (selected), 'Meds', 'Food', and 'Activity'. The main content area shows a log entry for 'Dec 21, 2009 11:12 PM' with a 'Notes' field containing 'Hello from GB!' and a 'BG (mg/dL)' field with the value '120'. At the bottom, there is a list of meal times: 'Before Break...', 'After Breakfast', 'Before Lunch' (highlighted), 'After Lunch', and 'Before Dinner'. To the right of this list is a numeric keypad with buttons for digits 1-9, 0, and a red 'Del' button.

Blood sugar trends

- Look at time of day
- Look at how quickly numbers are corrected
- Goal: blood sugars <150 most of the time



Diabetes in Control obtained permission to reprint from artist Theresa Garner (source: DIABETease).

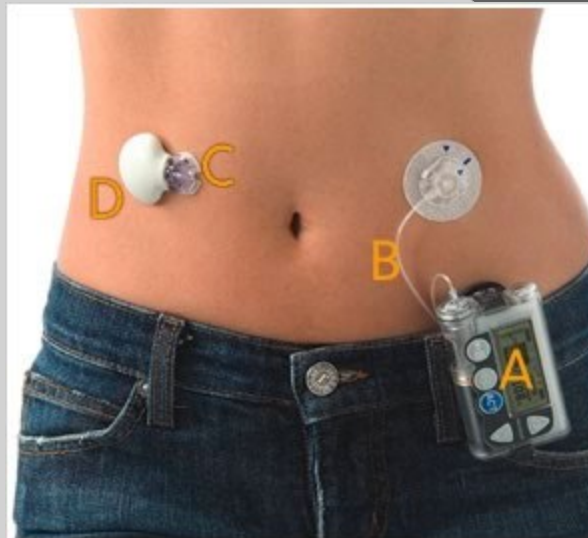
Blood sugar testing

- Meters
- CGM



Insulin Pumps

- Basal Insulin
- Bolus Insulin
- Connection with CGM



Hypoglycemia











- Treat with 15 grams of CHO
- Re-check in 15-20 minutes
- Glucagon Injection
 - > For severe lows
 - > Inject into a muscle



Complications: hypoglycemia (Low Blood Glucose)

Causes: Too little food, too much insulin or diabetes medicine, or extra exercise.

Onset: Sudden, may progress to insulin shock.

SYMPTOMS			
			
SHAKING	FAST HEARTBEAT		
			
SWEATING	ANXIOUS	DIZZINESS	HUNGER
			
IMPAIRED VISION	WEAKNESS FATIGUE	HEADACHE	IRRITABLE

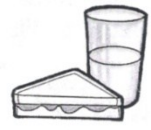
WHAT CAN YOU DO?



Drink 1/2 glass of orange juice or skim milk, or eat several hard candies.



TEST BLOOD GLUCOSE
If symptoms don't stop, call your doctor.

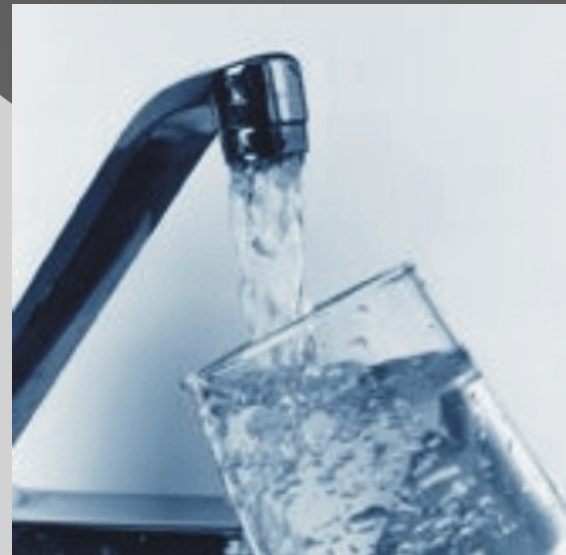


Within 30 minutes after symptoms go away, eat a light snack (a 1/2 peanut butter or meat sandwich and a 1/2 glass of milk).

Treatment may vary with different medications.

Hyperglycemia

- ◉ Correcting blood sugar quickly
- ◉ Fluids
- ◉ Illness
- ◉ Anxiety/stress



Blood sugar goals

- Hemoglobin A1c <7%
- Age/developmental goals:
 - > 0-6 <8.5%
 - > 6-12 <8.0%
 - > 13-18 <7.5%

