

## PEDIATRIC TRACK

### DIABETES IN ADOLESCENCE



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MAY 11, 2019 | THE WESTIN DOWNTOWN DENVER

**E**MPOWERING **P**ATIENTS  
**I**NDIVIDUALIZED **C**CARE

## CONFLICT OF INTEREST

**Ohman-Hanson:** I have nothing to disclose.

**Fay-Itzkowitz:** I have nothing to disclose.



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## ACKNOWLEDGEMENT

Slides adapted with permission from **Brigitte Frohnert, MD**  
(*Barbara Davis Center for Childhood Diabetes*)



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## GOALS/OBJECTIVES

- Metabolic changes during puberty
- Pubertal hormones: impact on diabetes control
- Beyond hormones: what else is going on that can impact diabetes management?
- How can you navigate this time more successfully?

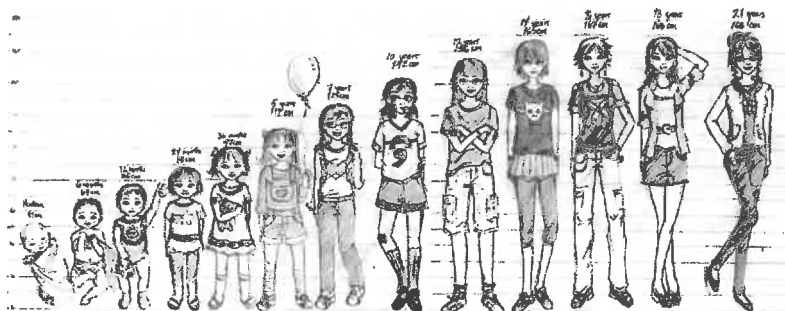


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## GROWING UP COMES WITH MANY CHANGES



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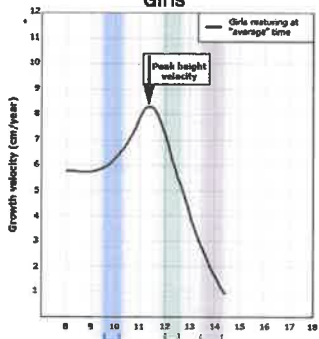
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### TYPICAL PUBERTAL EVENTS

#### Girls



Growth velocity (cm/year)

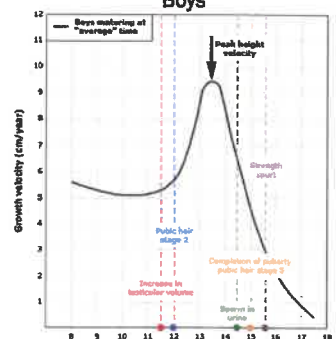
Girls maturing at "average" time

Age, years

Breast development Menarche Completion of puberty

Peak height velocity

#### Boys



Growth velocity (cm/year)

Boys maturing at "average" time

Age (years)



Increase in testosterone volume Pubic hair stage 2 Completion of puberty/pubic hair stage 5 Shave in under

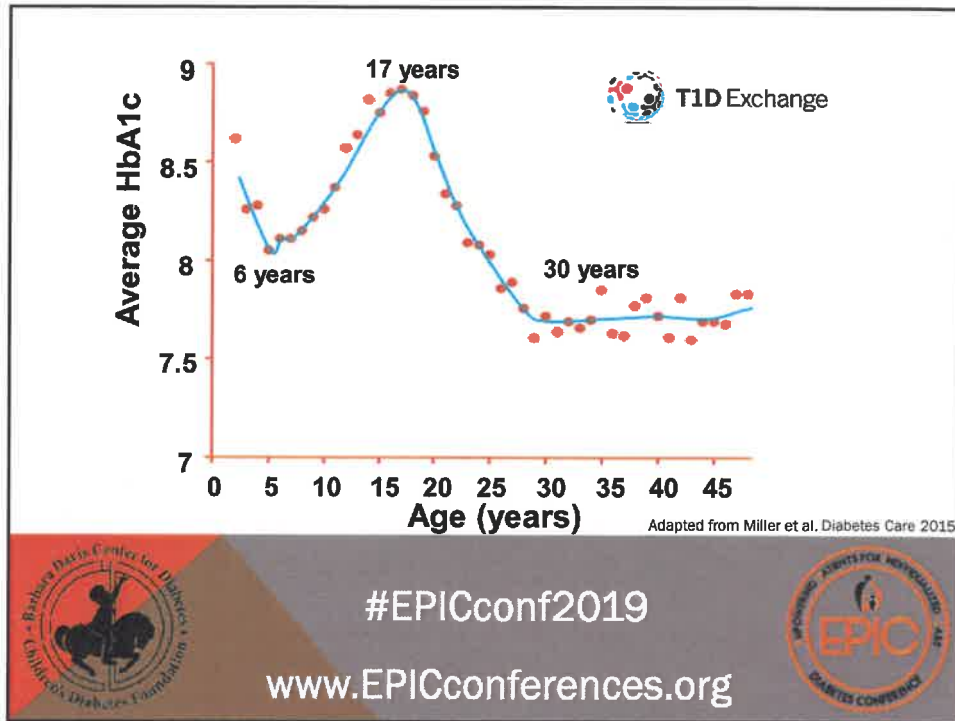
Peak height velocity

UpToDate

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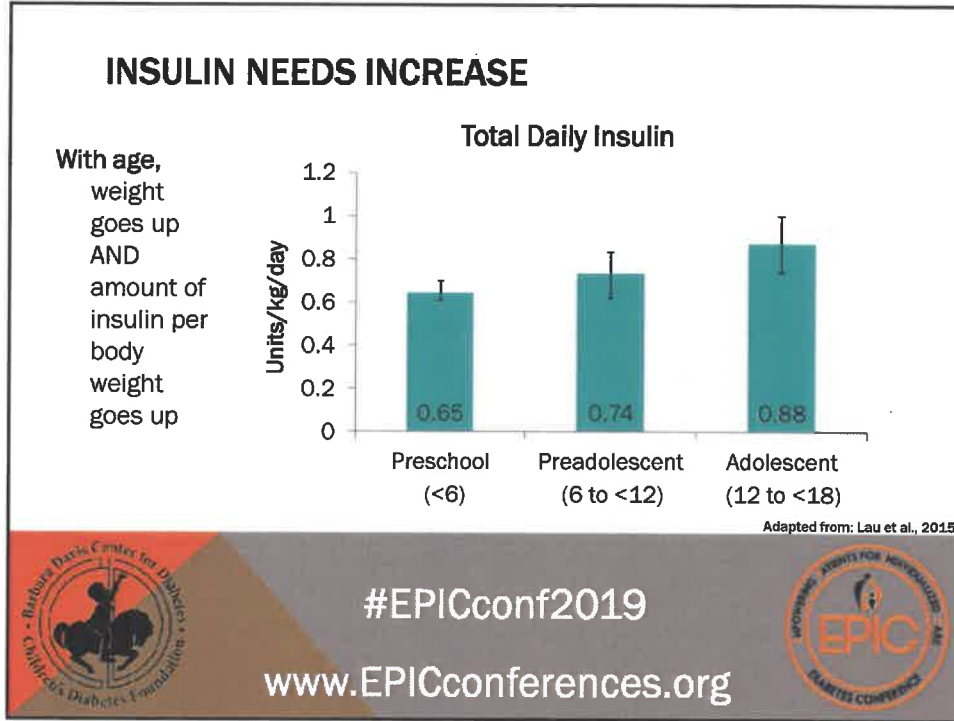


**WHAT IS HAPPENING?**

- Insulin needs are increasing
  - Body size
- Puberty (Hormones)
  - Insulin resistance
  - Blood glucose variability
- You have/are a teenager
  - And everything that comes with it

→ **Maintaining diabetes control becomes even more difficult!**

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### OH, THE HORMONES!

**Puberty hormones:** glucose variability and insulin resistance

- Estrogen / Progesterone
- Testosterone (androgens)
- Growth hormone

**Stress hormones:** cause release of glucose from the liver

- Cortisol
- Epinephrine (adrenaline)



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# Insulin resistance

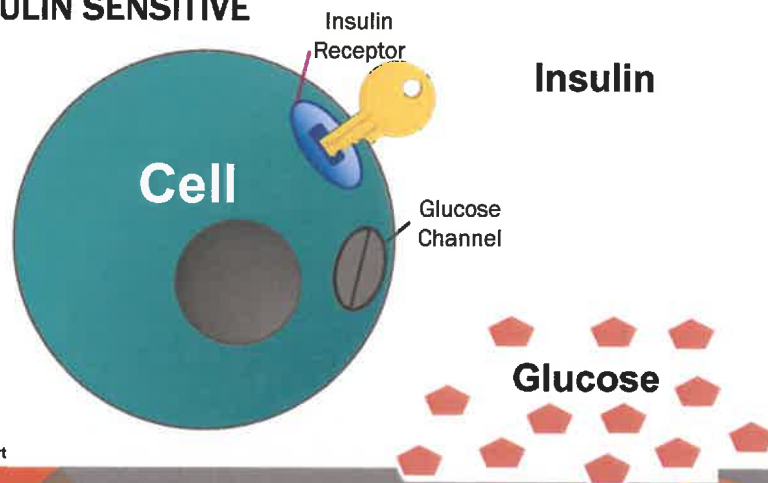


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## INSULIN SENSITIVE



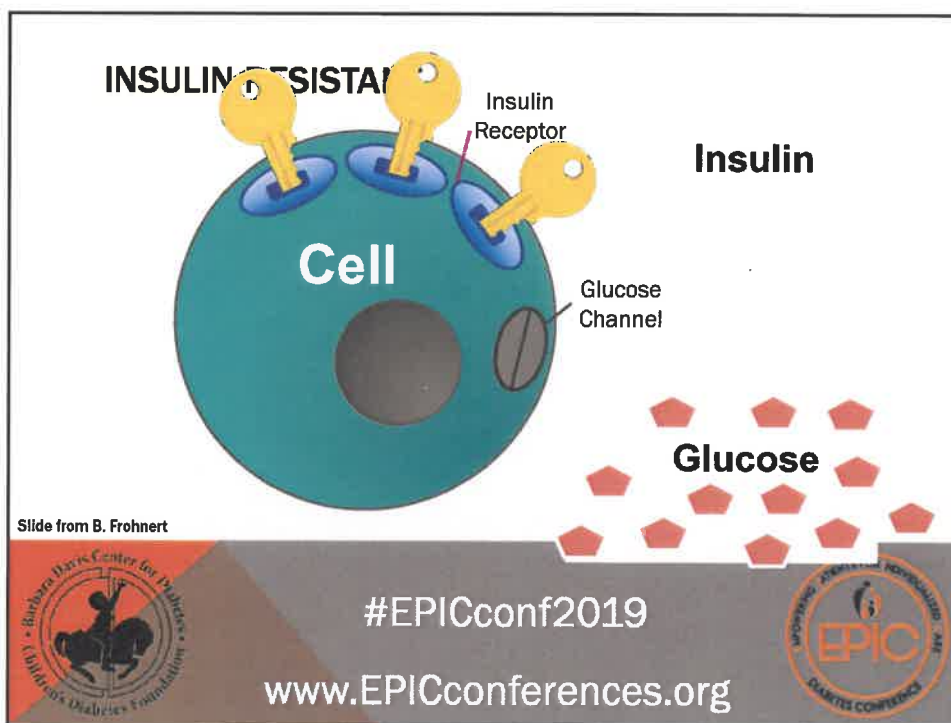
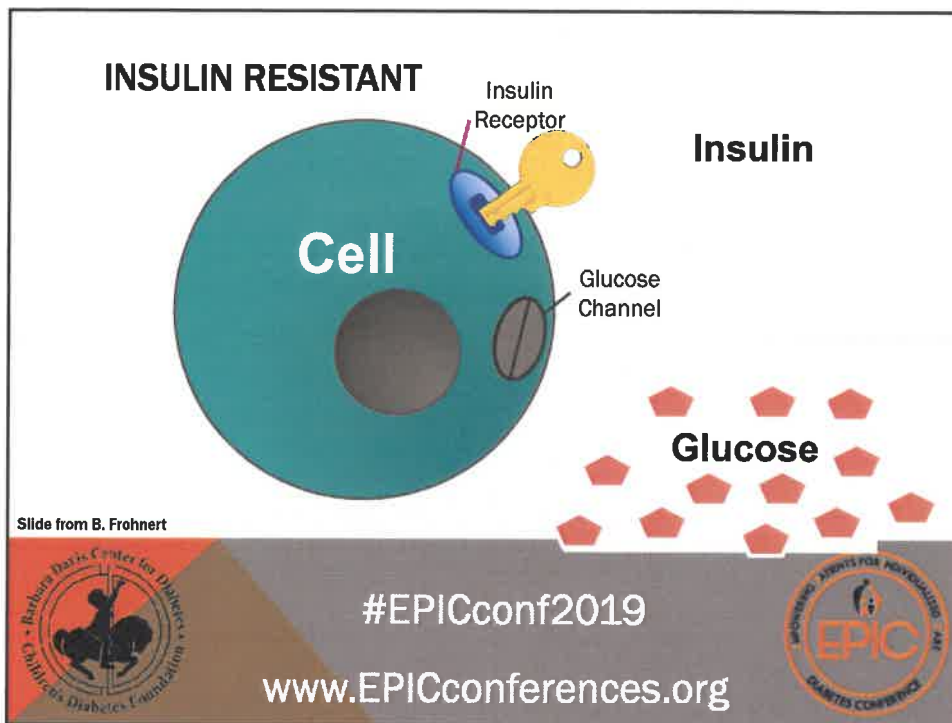
Slide from B. Frohnert



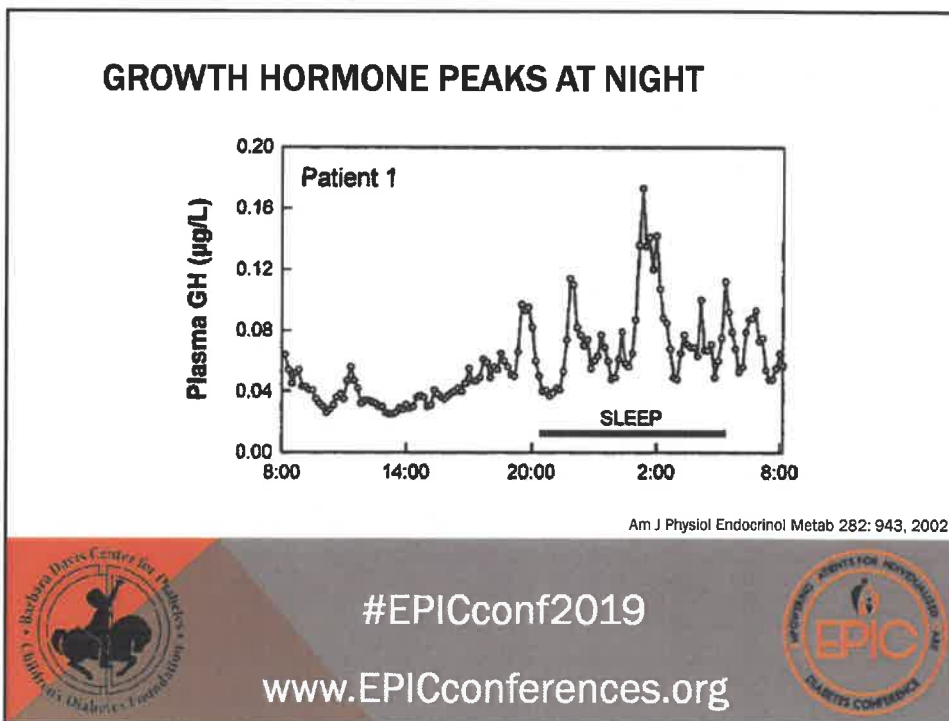
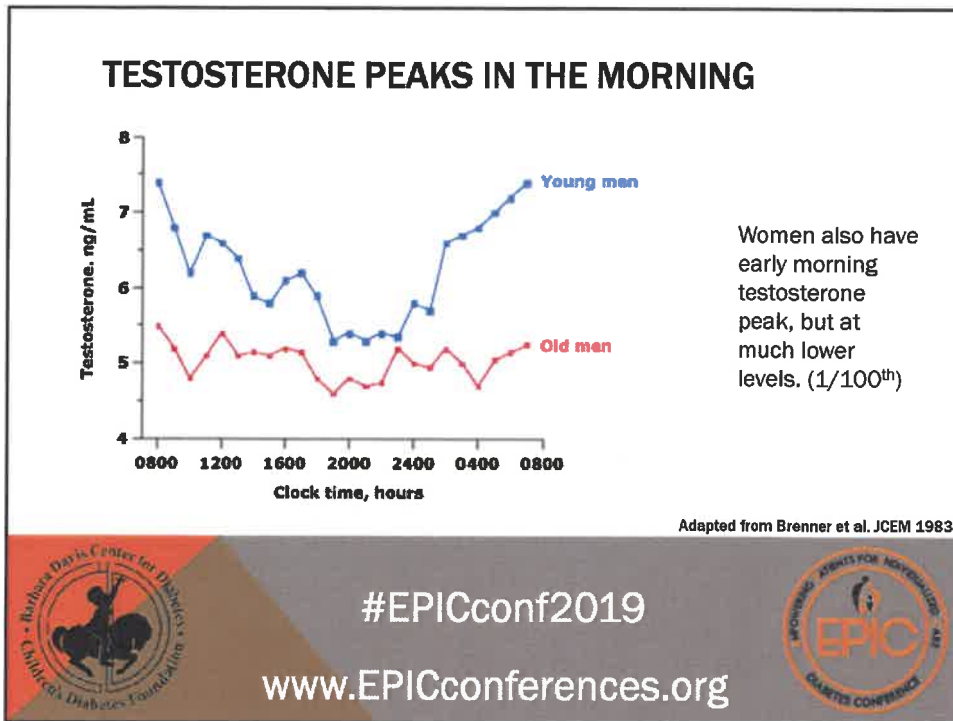
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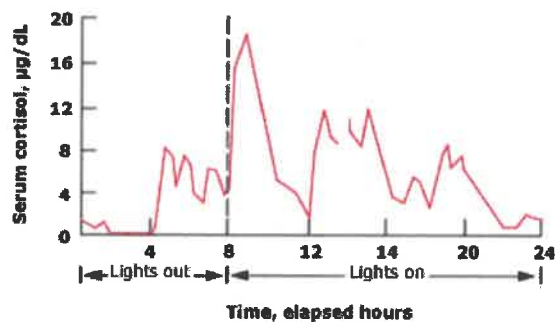








### CORTISOL PEAKS IN THE MORNING



From UpToDate

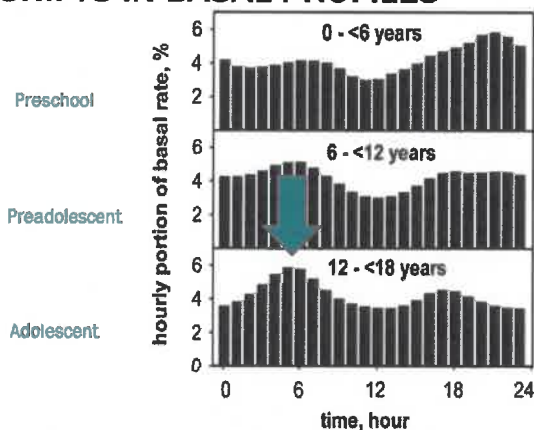


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### SHIFTS IN BASAL PROFILES



- With age, timing of peak basal rate moves from evening to morning.

Adapted from Bachran et al., 2012



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## SO, WHAT CAN YOU DO?

Be prepared for change

Be flexible (every child is different, diabetes is different  
in every child)



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## GATHER DATA!

- Overall numbers/trends (outgrown doses?)
- Overnight trends (basal needs)
- Exercise → glucose pattern



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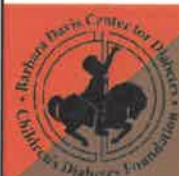
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## STAY INVOLVED!

### Be present:

- It's not just THEIR diabetes, it's the family's diabetes
- Everyone's lives are busy
  - Find a time each day to watch at least one BG check or one insulin dose
- Take on some of the "grunt work" of diabetes:
  - Be in charge of AM glucose check
  - Be in charge of long-acting insulin injection
  - Offer a "diabetes vacation day"
    - Caregiver does all BG checks, counts all carbs, gives all injections.



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## BE A TEAM PLAYER

### Allow teen to make choices:

*"I am going to help make sure you are checking BG regularly.  
How would this work best for you?"*

- Text message?
- Post-it note?
- Delegating reminders to sibling/friend?
- Alarm on smart phone?
- Leave meter out at night?



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## AUTONOMY

Engage teen in decisions

- What is working well?
- What are the problem areas?
- What do you think might help?
- Medical visits:
  - Allow teen to answer questions first
  - Encourage teen to have time alone with provider to communicate needs



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## CHILD FIRST, DIABETES SECOND

- Talk to your child/teen about something OTHER than diabetes
- First question is NOT “what is your number?”
- Numbers aren’t “*bad*”: they are information for a decision (More insulin? Less insulin? Change in plan?)



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## IT'S OK TO SET LIMITS AND EXPECTATIONS

### IF YOU ARE GOING OUT YOU NEED TO:

- Tell me where you are going
- Tell me who you are with
- Be home by \_\_\_\_
- Check your BG when needed
- Give insulin when needed
- Have your supplies with you

### IF YOU ARE DRIVING YOU NEED TO:

- No texting while driving
- No driving while under the influence
- Abide by traffic laws
- Check BG before driving
- Keep snack in car
- Wear medical alert ID



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## IT'S OK TO GIVE CONSEQUENCES

Stay calm

This is not a punishment for diabetes – this is life

Praise is motivational! So are rewards.

Everyone can be grumpy when:

Hungry

Tired

Not being heard

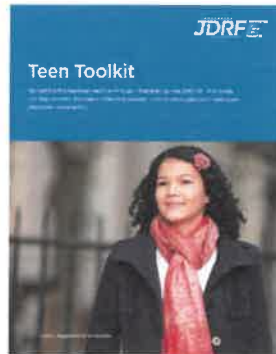


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## RESOURCES



<http://www.jdrf.org/t1d-resources/>



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## QUESTIONS AND DISCUSSION



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