Preventing Hypoglycemia

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Goals

- Review research
- Define value of neuroglycopenic cues
- Understand how to use neuroglycopenic cues in clinical practice
- Learn the driving rules of the road
Definitions

- Hypoglycemia
  - BG level < 70 mg/dL

- Severe hypoglycemia
  - Symptoms that are severe enough to require assistance from another person

History of Research

- Beginnings at University of Virginia
- Impact of the DCCT
- Results of parent-child studies


Most Common Symptoms of Hypoglycemia

- Trembling
- Pounding heart
- Difficulty concentrating
- Lack of coordination

- Symptoms may differ between low BG episodes
- Symptoms differ for different people
- Hypoglycemia unawareness may develop


Gonder-Frederick LA, Cox DJ, Julian DM, Clarke WL. Hypoglycemia Awareness Anticipation and Treatment Training, University of Virginia, 1999:121-139.

Other Common Neuroglycopenic Symptoms

- Fuzzy thinking
- Slight confusion
- Trouble talking
- Dizzy or lightheaded
- Unusual fatigue or sleepiness
- Visual problems
- Feeling “heavy” in arms or legs
Most Common Causes of Hypoglycemia

- Taking too much insulin
- Delaying eating
- Delaying treating

Most Common Mistakes

- Incorrectly treating
- Over-treating lows
- Over-estimating lows
- Underestimating highs

Best Advice

- Treat immediately
- Treat appropriately
Research: Risk Factors Associated with Hypoglycemia

- Male
- Duration of diabetes
- History of severe hypoglycemia
Risk Factors Associated with Hypoglycemia

Low BG Breeds More Low BG

- 50% higher risk for next 24 hours
- 25% higher risk for next 48 hours
- Autonomic symptoms are significantly depressed for next 72 hours; recent low BG inhibits ability to recognize next low BG

Nighttime Facts and Risk Factors

- 50% lows occur while asleep
- Going to sleep with BG <100 increases risk
- Average episode of nocturnal hypoglycemia ~ 86 minutes
Thinking & Performance Cues: Neuroglycopenia

- BG primary fuel of brain
- Brain sputters with low fuel
- Neuroglycopenia disrupts thinking and coordination

Advantages of Neuroglycopenic Symptoms

Symptoms

- never go away
- start at BG level 65 mg/dL
- are observable in performance
Why Should We Worry?

- Potential for physical injury
- Traumatic consequences for family
- Possibility of brain injury
Examples: Common Informal Mental Performance Cues

- Following directions
- Doing simple arithmetic
- Making change
- Following conversations
- Thinking of the correct word
- Having difficulty reading
- Having difficulty concentrating
Examples: Informal Gross Motor Performance Cues

- Walking quickly and turning
- Walking
- Climbing stairs
- Standing up
- Bending over at the waist
- Dancing
Examples: Informal Fine Motor Performance Cues

- Writing a check or addressing an envelope
- Hammering a nail or turning a screw
- Unlocking a door
- Typing
- Tying a knot, shoelace, or tie
Examples: Formal Performance Cues

- Doing a tongue twister
- Mental subtraction by 3s
- Thinking of words that begin with a certain letter of the alphabet
- Flipping a dime
Driving Performance Cues

- Difficulty steering in a straight line
- Driving slower than usual to compensate for bad driving
- Difficulty finding your way
- Running stop signs or red lights
- Tailgating
- Stopping too soon before a stop line or a parked car
- Other drivers honking at you

Rules of the Road

- If you think you might be low, CHECK BG before starting the car
- If you are low while driving, STOP immediately
- TREAT immediately
- WAIT to continue driving until BG rises