Teen Brain Development
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Overview
At the conclusion of this session, participants will be able to:
- Describe basic brain development in adolescents
- Describe basic adolescent development across physical, emotional and cognitive tasks
- Discuss normal adolescent risk taking and impulsive behavior

Brain Basics – Development
A message comes into a brain cell, the cell does its work and sends the message on to other brain cells.

Brain Basics – Plasticity
- Critical Periods – for some aspects of brain development, timing is critical. Important abilities will be lost or diminished if they don’t develop at the right time.
- Childhood experiences impact how the brain develops.
- Negative early childhood experiences can result in developmental delays.
- Don’t confuse a youth’s age with his or her developmental level.

Brain Basics – Plasticity
- Activity-dependent changes:
  - Experiences cause changes in the brain, for better or worse
  - This is why we practice behaviors – the more we repeat things the stronger the brain connections.
  - A single, powerful experience can affect our brain for life.
  - Repeated smaller experiences can also change our brain.
  - This is why there is always hope that youth can get better with new, positive experiences.

Brain Basics – Development
- The brain is an amazing organ that controls most of the things we do. As the brain develops it focuses on different areas of functioning:
  - First – Physical life functions (breathing, heart rate, blood pressure)
  - Next – Emotional (happiness, anger, attachment)
  - Last – Thinking (planning, impulse control)
Adverse Childhood Experiences:
(Felitti, 2002)

It's just a phase, they'll grow out of it???

Teenage Brain Development
- Adolescence changes begin around ages 10-13.
  - Physical Appearance (puberty)
  - Emotions (feelings and identity)
  - Thinking (planning and impulse control)
- We usually identify adolescence as starting when we see physical changes. Though less obvious, these physical changes will be followed by changes in emotional expression and thinking.
- But the changes in thinking aren't in place until the early 20's.

What Science Tells Us About the Brain
- Functioning of the frontal lobes is not at adult levels.
- Why is that important?

Cognitive Development
- Science has taught us that the part of the brain that develops most during adolescence is the prefrontal lobe, which controls:
  - Complicated decision-making
  - Thinking ahead
  - Planning
  - Comparing risks and rewards

Cognitive Development
- This new science has also taught us that the prefrontal lobe is still developing and maturing through adolescence and into the early 20's.
- What does this suggest?
Cognitive Development

- It suggests that
  - Because the brains of teenagers are not yet fully developed, some of their behaviors may result from immaturity.
  - Recall your teenage behavior: did you do anything that could have gotten you stopped by police?
  - Would you deal with that same situation differently now as an adult?

Cognitive Development

- If a four-year-old child doesn’t follow signs posted on a bus do we hold them responsible?
  - No, because we realize they are not yet capable of reading.
  - Even though teenagers start to look like adults, they are still limited by their cognitive development.
  - Don’t confuse physical development with emotional or cognitive development.

Cognitive Development

- So, what are some of the types of thinking that will change between adolescence and adulthood?
  - Self-control
  - Short-sightedness
  - Susceptibility to peer pressure

Impulsivity Declines with Age

Sensation-Seeking Declines with Age

Preferences for Risk Peaks in Mid-Adolescence
Risk Perception Declines and Then Increases After Mid-Adolescence

Short Sightedness
- Teens focus
  - More on gains, and
  - Less on loss
- Teens focus
  - More on what they will get right now, and
  - Less on what might happen in the future
- But, we know from the new brain research that the teenage brain will continue to mature and that, over time, teens will begin to think more like adults.

Future Orientation Increases with Age

Older Individuals Are More Willing to Delay Gratification

With Age, Longer Time Spent Thinking Before Acting

Susceptibility to Peer Pressure
- Looking for affiliation
- Social approval and risk
- When you were a child, most of your world revolved around home and family. When did that start to shift to your peers?
- When did you stop telling your parents everything you did with your peers?
With Age, Individuals Become More Resistant to Peer Influence

Peers Increase Risky Driving Among Teenagers and College Students but Not Adults

Summing Up Cognitive Development

- Adolescents are less able to control impulses and more driven by the thrill of rewards
- Adolescents are more short-sighted and oriented to immediate gratification
- Adolescents are less able to resist pressure from peers

Trauma

- New field of research focusing on the impact of early adverse experiences on youth

Trauma's Impact on the Brain

- Disruption in Neural Development can include:
  - Failure to expose youth to appropriate experiences at the critical times (Neglect)
  - Overwhelming the brain's alarm system (Abuse)

Normal Brain Development
Disrupted Brain Development From Childhood Neglect

Alarm System as a Survival Mechanism
- Extreme or frequent threats can damage the alarm system
- With trauma, the alarm system is too easily triggered and too slow to shut down

Traumatic Response Styles
- Fight
- Flight
- Dissociation
  - Nonresponsive
  - Self-Mutilation
  - Passing Out

Trauma and Triggers
- After Trauma
  - Youth is on Constant Alert
  - Youth may overinterpret signs of danger
  - Youth overreacts to normal situations

So, What Can Adults Do to Help Adolescents?
- Brain Plasticity – Youth brains develop based on what they experience
- Adolescence can be a time of positive experiences
- Adults can help teenagers develop strengths
  - Calming and self-regulation skills
  - Assertiveness rather than aggression
  - Problem-solving skills

System Reponses
- Science doesn’t tell us where to draw these age lines
- BUT the policies chosen should at least be compatible with the scientific evidence
- AND policies chosen should also reflect costs of erroneously severe reactions and punishments vs erroneously lenient ones