Transitional Age Youth: Brain Development and the Impact of Trauma

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Objectives

1. Provide an overview of the brain anatomy and functioning for transitional age youth
2. Increase awareness of the uniqueness of this population
3. Provide an understanding of what is considered a trauma event
4. Identify the potential impact of Trauma on brain development
What is Trauma?

- Traumatic event a person experiences, witnesses or is confronted with actual or threatened death or serious injury or threat to the physical integrity of oneself or others.
  - Private or public experiences
  - Single and Complex/Chronic

American Psychiatric Association DSM-IV
The most “severe” violence is not necessarily that which wounds most deeply. Impact varies between cultures and individuals. Only the person him/herself can judge. Changes a person’s view of the world.
Trauma is Personal

- Not necessarily the event itself that causes trauma
  - Thoughts
  - Feelings
  - Beliefs
  - Experience surrounding the event
Why the Focus?

- Trauma is pervasive
- Impacts all areas of functioning
- "Do No Harm"
- Significant factor in a wide range of problems
  - Physical Health
  - Behavioral Health
Mentally Ill: 97% of homeless women with SMI have experienced severe physical and sexual abuse.

Children/Youth: est. 3 million children & adolescents in the US are exposed to serious traumatic events each year.

Transgenerational: Caregivers reported being exposed to an average of 7 traumatic events.

Juvenile Justice: 93% of children in detention report exposure to trauma.

Adults: 60% of adults report having at least 1 adverse childhood experience.

Child Welfare: Rates among adults who were formerly placed in foster care was found to be 2x as high as rates as in US War Veterans.

Corrections: A study of 100 men incarcerated, 59% reported some form of childhood sexual abuse prior to puberty.

Military: PTSD occurs in about 11-20% of Veterans of the Iraq and Afghanistan wars.

Substance Use: Children of parents with SUD are 3x more likely to be abused and 4x more likely to be neglected.
Brain Development

Brain at Birth

- 25% the size of the adult brain in weight and volume (less than 1lb)
- Nearly the same number of neurons as adult brain (100 billion)
- 50 trillion synapses (connections between neurons)
- Brain stem and lower brain well developed (reflexes), higher regions more primitive
MAJOR REORGANIZATION

- Complex changes are taking place during adolescence and young adulthood.
- New intense emotions are surfacing
- Frontal lobe isn’t fully developed until late 20’s or even early 30’s
  - Must rely on emotional center to make decisions
Growing Older

- Number of neurons are in place
- Number of synaptic connections from childhood to adolescence
- Unused connections are pruned
- Used synapses are strengthened
Synaptic Density

At Birth  6 Years Old  14 Years Old

[Neuronal images showing synaptic density at different ages]
Effects of Early Experience on Development

Brain Architecture and Skills are Built in a Hierarchical “Bottom-Up” Sequence

- Neural circuits processing basic information are wired earlier than those processing more complex information
- Higher circuits build on lower circuits
- Brain Plasticity and the Ability to Change Behavior Over Time
Impact of Trauma on Brain Development

- More Stimulation the Better…right?

- Yes, but…
  - When stimulation comes from chronic trauma it strengthens connections to the trauma emotional response
  - Reduces the size of the cortex
    - Memory, attention, language
Impact on the Brain

- If there is danger, the “thinking” brain shuts down, allowing the “doing” brain to act.

- Traumatized children experience changes in brain structures, neurochemistry & genetic expression.
Trauma impacts on nervous system

Traumatic Event!

Stuck on “High” Hyper-arousal

Hyperactivity
Hypervigilance
Mania
Anxiety & Panic
Rage

Stuck on “Low” Hypo-arousal

Depression
Disconnection
Exhaustion/Fatigue
Numbness

Normal Range Window of Tolerance

Slide by Elaine Miller-Karas & L. Leith(c)2007
Key Concepts of TRM
Changing the Question

- What is wrong with you?
  - I am aggressive
  - I am depressed
  - I am an alcoholic

- What happened to you?
  - I am a survivor of trauma
Resources

- National Children’s Traumatic Stress Network
  - www.nctsn.org/nccts
- National Center on PTSD
  - www.ncptsd.va.gov/facts/specifcics
- Helping Traumatized Children Learn
- Substance Abuse and Mental Health Services Administration (SAMHSA)
  - http://www.samhsa.gov/
Questions