The Neurobiology of Addiction & Trauma: *Intricate Links*

Presented by: Carol Ackley, LADC

AMA Stated Alcoholism was a Disease in 1956

- Equal opportunity disease
- No one is immune
- Some people are much more vulnerable

Drug and Alcohol Use Interfere with Primary Survival Pathways in the Brain

- Automatic
- Semi-Automatic
- Voluntary
Endorphins vs. Morphine

Dopamine vs. Cocaine

Neurotransmitters

- Endorphins/Enkephalins
- Serotonin
- Norepinephrine
- Dopamine
- Acetylcholine
Addictive Disease

- Progressive
- Chronic
- Fatal
Addictive Disease

- Full Remission
- Harm Reduction
- Prevention

Re-Stabilize Brain Chemistry

- Abstinence
- Nutrition
- Stress Prevention

Vulnerability to Addictive Disease

50% - 60% GENETIC
40% - 50% ENVIRONMENTAL

- Early Onset of Use
- Chemical Environment
- Adverse Childhood Experiences
- Poor Nutrition
- High Stress Levels
- Inadequate Coping Skills
- Chronic Illness
- Grief & Loss
Critical and Interrelated Issues

- Addiction
- Mental Health
- Trauma
- Physical Health
- Crime

Spiral of Trauma, Addiction, Recovery and Healing

Transformation

Trauma and Addiction (constriction)

Recovery and Healing (expansion)

Facts About Trauma

- Trauma is pervasive
- The impact of trauma is broad and can touch all life domains
- The impact of trauma is often deep and life-shaping
- Violent trauma is often self-perpetuating
- Trauma is insidious and especially affects the most vulnerable among us
- Trauma affects the way people approach potentially healthy and supportive relationships
- Trauma often occurs in the service context itself
Changes in Understanding:
The Centrality of Trauma

- Imprisonment
- Homelessness
- Violence and Trauma
- Addiction
- Mental Health Problems

Levels of Violence

- Childhood
- Adolescence
- Adult
- Street (Workplace and Community)
- Consumer Culture and Media
- War
- Planet
What Does the Prevalence Data Tell Us?

- Many people with trauma histories have overlapping problems with mental health, substance abuse, physical health and are victims or perpetrators of crime
- Victims of trauma are found across all systems of care

Changing the Question

“What is wrong with you?”
to
“What has happened to you?”
Two Kinds of Suffering

- Natural
- Created

Definition of Trauma

The exposure must result from one or more of the following scenarios in which the individual:

- directly experiences the traumatic event
- witnesses the traumatic event in person
- learns that the traumatic event occurred to a close family member or close friend
- experiences first-hand repeated or extreme exposure to aversive details of the traumatic event (not through media, pictures, television or movies unless work-related)
Definition of Trauma

The disturbance, regardless of its trigger, causes significant distress or impairment in the individual’s social interactions, capacity to work, or other important areas of functioning.

(It is not the physiological result of another medical condition, medication, drugs or alcohol.)

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Definition of Trauma

The diagnostic manual used by mental health providers (DSM-IV-TR) defines trauma as, "involving direct personal experience of an event that involves actual or threatened death or serious injury, or threat to one’s physical integrity; or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate."

(American Psychiatric Assoc. [APA] 2000, pg 463)

Definition of Trauma

“The person’s response to the event must involve intense fear, helplessness or horror (or in children the response must involve disorganized or agitated behavior).”

(American Psychiatric Assoc. [APA] 2000, pg 463)
Definition of Trauma

Trauma occurs when an external event overwhelms a person’s physical and psychological coping mechanisms or strategies.

(Van der Kolk, 1989)

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Traumatic Events

Trauma can take many forms:

- Emotional abuse
- Sexual or physical abuse – including
- Domestic violence, assault, and rape
- Catastrophic injuries and illnesses
- Extremely painful and frightening medical procedures
- Witnessing violence, such as a parent harming another parent

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Traumatic Events

- Automobile accidents
- Mugging and burglary
- Witnessing murder
- Abandonment (especially for small children)
- Loss of a loved one (even of a pet)
- Personal betrayals

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**Traumatic Events**

- Immigration
- Natural disasters
- Human trafficking
- Kidnapping
- Combat & other experiences of war
- Terrorism
- Torture
- Intergenerational (cultural) trauma

**Historical Trauma**

- Across generations
- Massive group trauma

Examples include: Native Hawaiians, Native Americans, African Americans, Holocaust Survivors, Japanese Internment Survivors

**Definition of Toxic Stress**

Toxic stress is a strong, unrelieved experience that can adversely affect healthy development, particularly in a child. Without caring adults to buffer children, the unrelenting stress caused by extreme neglect, poverty, or abuse can weaken the developing brain and have long-term consequences on both physical and mental health.

(National Scientific Council on the Developing Child 2007)
Relentless Stress
- Poverty or Near Poverty
- Severe Injury
- Illness in Close Family
- Incarceration
- Parenting Alone
- Multi-challenged Children
- Multigenerational Caregiving
- Hunger
- Racism
- Sexism
- Domestic Violence
- Chronic Illness
- Mental Illness
- Bullying

Toxic Stress, Trauma and Children
- Stress of adversity is toxic to the development of the brain
- Important consideration with children
  - Emotions – dysregulation
  - Behavior – unmanageable
  - Relationships – lack of connection, trust

ACE Study
(Adverse Childhood Experiences)
Before age 18:
- Recurrent and severe emotional abuse
- Recurrent and severe physical abuse
- Contact sexual abuse
- Emotional neglect
- Physical neglect
ACE Study (Adverse Childhood Experiences)

Growing up in a household with:

- Both biological parents not being present
- Your mother being treated violently
- An alcoholic or drug-user
- A mentally ill, chronically depressed, or family member attempting suicide
- A family member being imprisoned

(N = 17,000)

Women 50% more likely than men to have a score of 5 or more.

If a male child has six or more "yes" answers, his risk of becoming an IV drug user increases by 4,600% compared to a boy with a score of zero.

(Felitti & Anda, 2010)
Link Between Childhood Trauma and Adult Outcomes

Those with ACE score of 6 are 30 times more likely to have attempted suicide.


Childhood Traumatic Events: Effects on Mental Health

- 980% increase in odds of a mental health diagnosis with exposure to 7 CTEs
- 500% increase in Alcoholism with 4 or more CTEs

Messina & Grella, 2005

Adverse Childhood Experiences are Underlying Factors For:

- Chronic depression
- Suicide attempts
- Serious and persistent mental health challenges
- Addictions
- Victimization of rape and domestic violence

(Ann Jennings, Ph.D)
ACE Study
(Adverse Childhood Experiences)

Chronic Health Conditions
• Heart disease
• Autoimmune diseases
• Lung cancer
• Pulmonary disease
• Liver disease
• Skeletal fractures
• Sexually transmitted infections
• HIV/AIDS

Adverse Childhood Experiences

Death

Birth

History

Adverse Childhood Experiences

Adoption of High Risk Behaviors

Social, Emotional and Cognitive Impairments

Disrupted neurodevelopment

Adverse childhood experiences

Cultural and Social systems of oppression

Historical trauma - Spurious/Emotional

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Trauma’s Impact on the Brain & Body

Person experiences trauma
Brain and body become overwhelmed; nervous system is unable to return to equilibrium

Trauma goes untreated; person stays in “stress response” mode
Cues continue to trigger trauma (e.g., loud voices, searches, cell extractions)

Person reacts to trauma cues from a state of fear

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Scott Musgrave, MSPT
Trauma and the Brain

• Trauma disrupts the chemistry of the brain and can predispose people to alcohol and drug use, eating disorders, self-injurious behavior and mental health problems

• When trauma occurs in childhood, it can have lasting effects on brain development

Trauma and the Brain: The Limbic System

• Stores highly charged emotional events, positive and negative

• Processes the sense of smell directly

• Is the center of bonding and social connectedness

• Sets emotional tone, attitude, shading

• Tags events as internally important

• Controls appetite and sleep cycle

• Modulates libido (sexual desire)

• When the limbic system is less active, you experience calm and a more positive attitude

Trauma and the Brain: The Limbic System

• When the limbic system is inflamed (i.e., as a result of trauma or stress), you experience more negativity, hyperarousal and/or depression

• The limbic system in women is proportionately larger than in men, providing them with increased ability to bond and experience and express emotions

• This also makes women more susceptible to depression and other emotional imbalances

• When the fear response is triggered, it is powerful and immediate
Trauma and the Brain: Neurotransmitter Disruption During the Stress Response

Serotonin (responsible for emotional stability and homeostasis)
- When this system is disrupted, people experience depression and have a tendency to repeat maladaptive behaviors. This can also cause sleep and appetite irregularities

Dopamine (responsible for drive and pleasure rewards)
- Disruption of this neurotransmitter can create low motivation, avoidance, or hyper-arousal

Opioid Peptides (endogenous pain relievers)
- Disruption of this neurotransmitter can create a pain sensitivity, low pain tolerance, or numbing

Disruption of these systems can become chronic

The disruption of these messaging systems in the brain creates some of the symptoms of PTSD and are also involved in the addictive response.

Post-Traumatic Stress Disorder

- Re-experiencing the event through nightmares and flashbacks
- Avoidance of stimuli associated with the event (for example, if a woman was raped in a park, she may avoid parks, or if she was assaulted by a blonde man, she may avoid men with blonde hair)
- Estrangement (the inability to be emotionally close to anyone)
Post-Traumatic Stress Disorder

- Numbing of general responsiveness (feeling nothing most of the time)
- Hyper-vigilance (constantly scanning one’s environment for danger, whether physical or emotional)
- Exaggerated startle response (a tendency to jump at loud noises or unexpected touch) (DSM – IV)

Symptoms of Trauma

- Hyper-Arousal
  - This is the most common reaction
  - It includes difficulty breathing (panting, shallow, rapid), increased heart rate, cold sweats, muscular tension, tingling, racing thoughts, worry
- Constriction
  - This alters breathing, muscle tone and posture
  - It constricts blood vessels in the skin, arms, legs, and internal organs, and tenses muscles

Hyper-arousal and constriction describe a physical response

Symptoms of Trauma

- Dissociation
  - Your mind disconnects from the event or physical reality of what is happening
  - This is a mind-body split
  - This feels like “losing time” and can include loss of memory
- Denial
  - This is like dissociation only not as severe
  - A woman ignores or fails to acknowledge a feeling or situation or acts as though it is unimportant

Dissociation and denial are part of the psychological response
Gender and Abuse

Childhood:
- Girls and boys at equal risk from family members and people they know

Adolescence:
- Young men at risk from people who dislike or hate them. Boys at greater risk if they are gay, young men of color, or gang members.
- Young women at risk from lovers or partners—people to whom they are saying, “I love you.”

Adulthood:
- Men at risk from combat or being victims of crime
- Women at risk from those they love

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Sexual Assault Graph

Differences in Risk

- 1 in 4 women and 1 in 8 men experience psychological abuse from a partner
- 38% of female homicides are committed by male partner; 6% of male homicides by female partner
- 1 in 5 women will be raped in their lifetime compared to 1 in 71 men

(Brieding, Chen & Black, 2014; World Health Organization, United Nations Development Programme, and United Nations Office on Drugs and Crime, 2014; Black, Basile, Breiding, Smith, Walters, Merrick, Chen & Stevens, 2011)
Interpersonal Violence
(Intimate Partner Violence – IPV)

Of all these forms of trauma, women are at greater risk of interpersonal abuse than men.

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How Men Respond to Trauma

• Men are expected to handle their pain ‘stoically’ and alone.
• If men feel pain, they aren’t supposed to acknowledge it, and certainly not ask for help, for this would reinforce the feeling of a ‘lack of masculinity’
• There can be a feeling based on the notion that ‘men’ aren’t supposed to be victims in the first place. … there is no way to see men as “victims” and still as men.
(Ruiters, K and Shefer, T: The Masculine Construct in Heterosex – Agenda Vol. 37)

How Men Respond to Trauma

• The path to manhood is paved by emotional trauma
• For most men, ignoring/denying pain is to be a man
• Men suffer abuse suffer alone with the abuse which leads many to becoming abusers
• Male abuse victims tend to identify with the abuser as a means of reclaiming personal power and attempting to secure safety
Triggers

A trigger is an external stimulus that sets off a physical or emotional reaction in a person. The stimulus can be a sight, a sound, a smell, a person, a place, a behaviour, or anything that reminds you of the traumatic event.

Process of Trauma

- **Traumatic Event**: Overwhelms the physical and psychological coping skills
- **Response to Trauma**: Fight, Flight or Freeze
- **Sensitized Nervous System**: Altered state of consciousness, Body sensations, Numbing, Hyper-vigilance, Hyper-arousal, Collapse
- **Psychological and Physical Distress**: Current stressors, Reminders of trauma (triggers), Sensations, Images, Behavior, Emotions, Memory

- **Emotional and/or Physical Responses**:
  - **Retreat**: Isolation, Dissociation, Depression, Anxiety
  - **Harmful Behavior to Self**: Substance use disorders, Eating disorders, Deliberate self-harm, Suicide attempts
  - **Harmful Behavior to Others**: Aggression, Violence, Raging, Threats

- **Physical Health Issues**: Lung disease, Heart disease, Autoimmune disorders, Obesity

Healing from Trauma

- The physical symptoms of PTSD are within manageable limits
- The person is able to bear feelings associated with traumatic memories
- The person has authority over their memories (that is, their memories don’t limit what they do; they choose what to do, instead of being immobilized in some areas)
- The memory of trauma is linked with feelings

*Harvey 1998, 2007*
Healing from Trauma (cont.)

• Damaged self-esteem is restored (for example, a rape survivor realizes that the rape did not occur because she was a “bad” woman)
• Important relationships have been reestablished
• The person has reconstructed a system of meaning and belief that encompasses the story of the trauma (for instance, she understands that the rape was not caused by her and that some men use power and control to get what they want)

Harvey 1996, 2007

Resilience (cont.)

Although some people are more naturally resilient, a way to develop resilience is in working through the emotions and effects of stress and painful events.

Resilience develops as people develop better coping skills.

It also comes from supportive, caring relationships with others.

Trauma-Informed Services

• Take into account the impact of trauma on a person’s thinking, feelings, and behaviors
• Avoid triggering trauma reactions and/or re-traumatizing an individual

(Harris & Falke, 2001)

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Trauma-Informed Services

- Adjust the behavior of counselors, other staff, and the organization to support each person’s coping capacity
- Allow survivors to manage their trauma symptoms successfully so that they are able to access, retain, and benefit from services

(Harris & Fallot, 2001)

Core Principles of Trauma-Informed Care

- Safety (physical and emotional)
- Trustworthiness
- Choice
- Collaboration
- Empowerment

(Falot & Harris, 2008)

Safety

- Physical and Emotional
- Eye contact; consistency; explanations; procedure to report abuse

(adapted from Falot & Harris, 2008)
Trustworthiness

• Clarity, Consistency, and Boundaries
• Following through; modeling openness; maintaining appropriate boundaries; and making tasks clear

Choice

• Consumer Choice and Control
• Emphasizing individual choice and control; informed consent

Collaboration

• Collaborating and Sharing Power
• Solicit input; acknowledge insights about her/himself; explain options

(adapted from Fallot & Harris, 2008)
Empowerment

- Recognizing strengths, building skills
- Teaching skills; provide tasks where a person can succeed

Becoming Trauma Informed

Creates a Culture Shift

A Culture Shift:
Scope of Change in a Distressed System

- Involves all aspects of program activities, setting, relationships, and atmosphere (more than implementing new services)
- Involves all groups: administrators, supervisors, direct service staff, support staff, and clients (more than service providers)
- Involves making trauma-informed change into a new routine, a new way of thinking and acting (more than new information)
A Trauma-Informed Environment

• Educate staff members about the pervasive effects of trauma on the brain and body
• Incorporates an understanding of the impact of violence and abuse on people into all offender-management and program services
• Establishes both physical and emotional safety in order to prevent re-traumatization, an increase in eating disorders, self-harm, management problems, failure to engage in program services, relapse, recidivism, and poor program outcomes

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A Trauma-Informed Environment

• Eliminates unnecessary triggers and identifies triggers for each individual
• Creates an atmosphere that is respectful of the person and their need for safety, respect, and acceptance
• Strives to maximize a person’s ability to make safe choices and exercise control over their life

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A Trauma-Informed Environment

• Strives to be culturally competent – to understand a person’s culture and how that affects their life experiences, their view of the world, and their behavior
• Uses “universal precautions” and assumes that every person may be a trauma survivor

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Key Elements
(Staff and Clients)

• Learn what trauma/abuse is
• Understand typical responses
• Develop coping skills

Becoming Trauma Informed

• Vicarious Trauma and Work-related Stress
• Trauma-Informed Environment for Staff
• Self-care

Impact on Staff

You can be affected indirectly by trauma

This process has several names:
• Vicarious trauma
• Compassion fatigue
• Secondary post-traumatic stress
• Burnout
Vicarious Trauma

Can occur when you hear about and see the effects of trauma on the lives of others.

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Compassion Fatigue

Can cause:
- Errors in judgment
- Detachment from work
- Signs of secondary post-traumatic stress disorder, such as:
  - Intrusive thoughts
  - Hyper-vigilance
  - Avoidance

(Figley, 2002)

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Burnout

Usually characterized by:
- Lack of enthusiasm
- Sense of stagnation
- Feelings of frustration
- Apathy toward your job and the people there

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Burnout

Burnout also happens to people who continually struggle with moral or ethical dilemmas at work, such as when there are workplace policies and/or practices that are in opposition to the person’s values and what the person knows is the right thing to do.

(Bruch & Parmelee, 2011)

Trauma-Informed Environment for Staff Members

Physical and emotional safety
- Ensuring the staff’s physical safety and looking out for the staff’s emotional safety. This includes attending to work-life balance

Trustworthiness
- Maximizing the trustworthiness of the system, including making the staff’s tasks, obligations, and benefits clear and making policies and procedures clear and consistent

(Fallot & Harris, 2006)

Choice
- Enhancing staff members’ choices and control

Collaboration
- Emphasizing employee involvement and maximizing collaboration and the sharing of power with staff members

Empowerment
- Prioritizing staff empowerment and employee growth and development programs

(Fallot & Harris, 2006)
Five factors to promote healing of the brain:

Social Connectivity
Exercise
Education
Diet
Sleep

Social Connectivity
Being in connection and relationship with others

Exercise
Thirty minutes a day can make a big difference

Education
Learn something new each day

Diet
The food we eat either nourishes or starves our brain

Sleep
Our brains and our bodies need to rest and regenerate each day

You owe yourself one hour a day of self-maintenance. It can include reading, writing, yoga, exercise, dancing, meditation, painting, or whatever, but you owe it to yourself. One hour, 1/24 of your day. That is less than 5%. It matters, it really does. Make it count.

Sarah Brouhard
Core Values of Trauma-Informed Services

- Physical and Emotional Safety
- Trustworthiness
- Choice
- Collaboration
- Empowerment

(Fallot & Harris, 2006)

Changing the Question

“What is wrong with you?”
to
“What has happened to you?”

What Makes a Difference?

- Creating a safe environment
- Listening to her/his story
- Empathy
Sanctuary

Crisis = Danger & Opportunity

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