Using GoToWebinar — (Live Participants Only)

- Control Panel
- Audio (phone preferred)
- Asking Questions
- Polling Questions
- Follow-up Email

Webinar Learning Objectives

1. Identify the three primary layers of the brain and their essential functions
2. Explain the basic processes and structures involved in the disease of addiction
3. Understand how neurobiology informs effective intervention and promotes recovery

Webinar Presenter

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“Dr. Dave” Janzen was born into a family system with generations of addiction. Years later, as an ordained Presbyterian Minister, he discovered that the most troubled and troublesome persons he encountered in ministry were those whose families had also been affected by addiction. When he moved into counseling after 20 years of pastoral ministry, his undergraduate studies in psychobiology and behavioral psychology, along with post-graduate studies in marriage & family therapy, evolved into a practice focused on helping addicted individuals and their families overcome the challenges of addiction. Dr. Janzen practices as an Interventionist and Recovery Coach in the Atlanta, Georgia area.

This is not:

- A graduate/medical school course in neurobiology
- A thorough review of current in-depth research
  - Though I seek constantly to be informed by this research
- A discussion of ASAM, DSM, or ICD criteria
  - Necessary for professional assessment and treatment
  - Confusing for clients and families
- A discussion for the evolution/creation debate
- Also not training for home brain surgery

This is:

- A broad overview of brain structures and processes
- A presentation of images and metaphors to be used by mental health professionals and peer specialists:
  - For your own understanding
  - To inform choices in clinical practice
  - To educate clients
  - To coach families in supporting recovery

Audience Polling Question #1

I am ______ in my understanding of the brain’s structures and its processes in addiction and recovery.
ASAM Definition of Addiction

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

ASAM Definition, cont’d.

Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one’s behaviors and interpersonal relationships, and a dysfunctional emotional response.

Like other chronic diseases, addiction often involves cycles of relapse and remission.

Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.

Progression to Addiction, then to Recovery

- The progress of addictive disease moves control of choices and behaviors
  - From the “higher” (i.e., most recently evolved) cortex
  - Down to the more primitive, “reptilian” regions
- Intervention seeks to begin the recovery process
  - By engaging supportive relationships
  - To activate the cortex
- Recovery seeks to bring healing and regain control
  - Back up into the cortex

Medusa - Bernini

The Myth of Medusa

- From Greek Mythology
  - A beautiful priestess of Athena
  - Tryst with Poseidon, cursed by Athena
- Rings true through the ages because of the power of reptilian behavior
- Association of reptilian with frightening, deceptive, and deadly
- Including many major religions
- And some ex-partners

Addiction and Reptilian Behavior

Most families that have had to deal with the impact of addiction
- Report “S/he has become a different person.”
- “We want our old _____ back”
- Confirmation that some of their behavior is:
  - Reactive
  - Hostile
  - Defensive

It’s an opportunity to ask, “Would you like to know why?”
- And, “Would you like to know what to do about it?”
Audience Polling Question #2
I currently educate about what is happening in the brain in regards to addiction

Addiction is a Process
- Begins with choices (mostly)
- Some stories of nearly instantaneous addiction
- Becomes compulsion
- Chemical addiction and behavioral addiction have many of the same underlying structures and processes
- These processes move decision-making control
  - From the higher brain
  - Into the more primitive, reptilian brain

Intervention and Recovery is a process
- About moving the control for decision-making back into the higher brain
- While managing the powerful influences of the more primitive brain
- We do not yet have a “cure”
- We can manage symptoms and promote recovery

It’s All About that Brain

It’s All About The Neurons
- Density
- Complexity
- Ratio
- 2-3% of body mass
  - Uses 15-20% of calories
- Organic network of each neuron with the whole brain
Two Modes Of Communication

1) Along the neuron
   - From the nucleus down to the axon terminals
   - Electrical impulses signal instructions to release NT

2) Between neurons
   - Neurochemical
     - Neurotransmitters: serotonin, norepinephrine, dopamine, glutamate, GABA, etc.
     - Other neuropeptides

The Brain’s 3 Layers

1) Upper Layer: Cerebral Cortex
2) Mid-Brain/Limbic System
3) Brainstem:
   - Survival
   - Reactive
   - “Reptilian”
   - “Snakes on a Brain”

Cerebral Cortex

- Our most-recently-evolved region of the brain
- The most significant difference compared to the brains of other species on the planet
- Sperm Whale – 17 lbs. of brain, most dedicated to musculoskeletal management
- Human brain – 3 lbs.
- Human brain has far more neurons, highest ratio of cerebral cortex to body mass & rest of brain of any species
- The Cortex is dedicated to integrating sensory & reflective information related to our social nature
- Cortex is most like a “social computer”

Relationship To Our Development As “Human”

500,000 years ago, started using tools
50,000 years ago, started using fire
   - Allowed migration to colder regions
   - Cooking food made more calories available
   - More calories made larger “calorie hog” brains possible

Nevertheless, ancestors always near extinction
- Exposure
- Starvation
- Disease
- Competition
Our social nature put us at the top of the food chain. Massive processing is required for:
- Language
- Tone of voice and facial expression
- Social group cues of Hierarchy, Threat, Nurture
- Social interaction with the environment
- Hunting/gathering
- Security
- Shelter
- Technology – knowledge & skill accumulation/sharing

The Cortex as “Social Computer”

- Emotional and sensory processing and response
- The primary feeling and reacting centers
- Many separate structures for self and species preservation
  - Amygdala – Fear, Rage & reactivity with environmental cues
  - Hippocampus – Memory and Spatial interaction; Patterns
  - Hypothalamus – Endocrine, Sexual, and Autonomic control
    - Temperature regulation
    - Appetite and Craving
  - Hypothalamus also outputs limbic processes to the rest of the brain
- Found in the earliest mammals and since

The Mid-Brain, Limbic System

- So-called because it’s as far as reptiles evolved
- Reptiles don’t nurture their young
- Reptiles are purely reactive creatures
- Includes the Brainstem and Cerebellum (coordination)

The Reptilian Mind

- Natural Rewards
  - Food
  - Water
  - Sex
  - Nurture
  - (Air)

The Reward Pathway

- Prefrontal cortex
- Nucleus accumbens
- VTA
• All Human pleasure has one mechanism
• The release of Dopamine by neurons in the Nucleus Accumbens (and the VTA)
• Intensity is determined by:
  o The speed of Dopamine release
  o The number of cells releasing, and their amount released
  o The time Dopamine spends on receptors and in the Neural Synapse
• With repeated use, Glutamate (a neurotransmitter associated with learning) is released
• This generates an association (behavioral memory); so that experience becomes motivation, leading to intense craving
• Permanent association with natural rewards

• Peer use/pressure & experimentation
  o Earlier starts increase likelihood of addiction
  o Desire to “fit in,” to feel “normal”
• Co-occurring disorders (self-medication)
  o Some COD in majority of instances
  o Depression/Bi-Polar, ADHD, Anxiety, Personality Disorders, PTSD
• Family/Marital Trauma and/or Conflict

• Brain only functions “normally” in the presence of the drug/behavior
• Repeated use overworks & damages neurotransmitter systems
• Without drug/behavior, significant physiologic withdrawal symptoms occur
• Continued use becomes is about avoiding withdrawal symptoms
• By this point, drug/behavior has made a permanent connection with the reward pathway & the primitive (reptilian) brain
• Early abstinence is experienced as life-threatening by the reptilian mind
**Dependence**
- Dependence is the physiological condition
- Addiction is the compulsive response to dependence
- Loss of control in limiting use
- Example: returning Vietnam Veterans
- These distinctions are not part of the ICD or DSM clinical diagnosis or treatment criteria, “Substance Use Disorder” dimensions
- This is to help clients/families make their own choices in response to presenting problems

**Addiction**
- Because addiction “lives” in the “reptilian mind”
  - Or, as I like to call it, “Snakes on a Brain”
- Results in reptilian behavior
- Quitting feels like dying in the primitive brain
- Defensiveness, denial, reactivity
  - Are not about you
  - It’s about the disease defending itself
  - Like a rattlesnake

**E.g., “Why Is (My Kid) Acting That Way?”**
- How Does This Inform Choices?
  - Families Can:
    - Think strategically for outcomes
    - Collaborate to manage reactivity
    - Set common family goals for well-being
    - Don’t take the AI’s actions personally
  - Instead of tussling over who’s right/wrong
  - Instead of reacting, choose to respond
  - Instead of focusing on the addicted individual as a “problem to be fixed”
  - It’s not about you!

**Intervention & Treatment**
- When an addicted individual can’t or won’t stop
  - Intervention may be necessary
  - Why professionals?
- Different Models
- Part of the Continuum of Care

**What Is An Intervention?**
- Marshalling resources to manage resistance
  - Leveraging significant relationships
  - Overwhelming the Addicted Individual with love
- Crucial moment/opportunity
  - Not just for detox/rehab
  - Recovery is for everyone involved
- Continuum of care for at least a year
  - For the Addicted Individual
  - For the family & significant others
Job #1: Managing Reactivity

- Because dependence/withdrawal lives in the “reptilian mind”
  - “Snakes on a Brain”
  - Reactivity is a defense mechanism
- Reactivity is contagious!
- Cats metaphor
- Expect reactivity to emerge
- Prepare to manage reactivity

The Intervention Team

- Highly reactive family members may be asked
  - To not participate
  - To only write a letter
- Pre-intervention orientation & coaching
  - Educate about the brain disease of addiction
  - Focus on the problem of reactivity
  - Get confirmation from each member of the team that they:
    - Understand the issue
    - Commit to remain calm

Guidelines For All Intervention Meetings

- Review group goals & ground rules
- Monitor group for signs of reactivity
  - Posture, tone of voice, facial expressions
  - Watch out for Hijackers
- Monitor self!
- Take breaks
- Keep the tone respectful and loving
- Focus on building value in relationships

Family Follow-up

- Homeostasis
- Coaching to encourage, not enable
- Try to identify “family rules,” patterns
- Job #1: Identify & manage reactivity
- Transactional Analysis training
  - P – A – C
  - Parent/Adult/Child communication dynamic
  - Move from “You…” to “I…” messages

The Recovery Message

Involves entire Intervention Team in building the message
  - Use the Rec. Msg. to keep team on track
  - Avoid Red Herrings
  - Helpful in preventing a hijacking of the process

I use the SAMHSA recovery definition as a starting place
  - Works for Psychiatric Interventions (Bi-polar, psychotic pts.)
  - Works for everyone involved

Recovery Definition (SAMHSA)

A process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential.
Keep Mind Management Moving UP

• Addiction is a process
  o Involves the whole brain
  o “Resides” (is most active in) the more primitive brain
• Progression of the disease is “down”
  o From choice to compulsion
• Behavioral control moves from Prefrontal Cortex
• To compulsive drives of the reptilian/limbic
• Choice surrenders to over-riding demands of the reptilian mind

Movin’ On Up…

• Recovery is also a process
• Progression of recovery is “up”
  o Returning behavioral control to Cortex
• Learning to manage emotions
• Respond rather than react
• Peer groups (AA, NA, Smart Recovery, etc.)
• Healthy relationships re-engage Cortex
  o Activate the “Social Computer”

This Is Why:

• Confrontation seldom provides lasting benefits
• Also why the recovery groups work
  o Few stories of recovery in isolation
• Sponsors, meetings, recovery friends
• Healthier family functioning is not optional
• Motivational Interviewing works
• Spirituality helps
  o Looking beyond self is “higher brain” activity

Parable of the Two Wolves

• Young Brave in distress about inner conflict
• Counsel of a tribal Elder
  “You have two wolves within you, fighting for your soul;”
• “One is good and one is evil.”
• “Which wolf will win?”
• “Whichever one you feed!”

Links to More Information

Dave Janzen: www.motiventionist.com
Images, public domain: http://tayloredge.com/reference/Science/Drugs disrupt neurotransmitter course:
http://science.education.nih.gov/supplements/nih2/addiction/guide/lesson3-1.htm
Harvard’s guide on how addiction impacts the brain:
http://www.nationaladdictionhelp.info/brain.html
NIDA, Drugs, Brain, and Behavior: The Science of Addiction:
www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain
NIDA’s curriculum for High School students, “The Brain: Understanding Neurobiology Through Addiction”:
NCSI news site: http://www.nationalcsinews.com
McGill University, “The Brain from Top to Bottom”:
http://www.neuro.mcgill.ca/Units/UBN/AboutUBN/UBN_Unit_www_Site/ubn2_4.html
Dartmouth’s Neuroscience online course, ch.11 on the Limbic System:
www.dartmouth.edu/~rswenson/NeuroSci/chapter_9.html
Transactional Analysis, original source information:
www.ericberne.com/transactional-analysis/

THANK YOU

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