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Five Theories of Addiction

Prescription Guidelines




Wayne McElhiney, DDS
Director, Wellness Committee
Tennessee Dental Association

Top 15 Drugs in # of Rx's for 2012

Drug	# millions of Rx's
1. Hydrocodone	136.0
2. Simvastatin	96.6
3. Lisinopril	88.6
4. Levothyroxine	74.1
5. Amlodipine	62.1
6. Omeprazole (Rx)	59.3
7. Azithromycin	55.3
8. Amoxicillin	53.8
9. Metformin	48.4
10. Hydrochlorothiazide	48.1
11. Alprazolam	47.8
12. Furosemide	42.1
13. Lipitor*	40.5
14. Zolpidem	39.4
15. Metoprolol	37.8

Note: No branded drug in the top 10. Lipitor fell from #7 in 2009 to #12 for 2010 and #13 for 2011.




<http://www.imshealth.com/> April 2012

Overdose deaths

- 6 X more people die from Rx overdose than all others combined
- According to CDC Tenn ranks third in nation for Rx drug abuse and 12th in deaths due to opioids
- There were 1,263 confirmed deaths in Tenn last year directly due to overdoses

Prescribing of Controlled Substances to Oneself

- Practitioner may self-prescribe Schedule IV drugs only in an emergency.
- Prescribing, providing, or administering Schedule II and III drugs to oneself is prohibited.
- Staff



Heroin

- Has become increasingly the drug of choice for young people in American Suburbs
- Epidemic prescription painkiller abuse has opened the path toward the cheaper street drug
- Most people using heroin begin with prescription painkiller such as OxyContin, Percocet or Vicodin

Drugs of Abuse

- ▶ Opiates
- ▶ Alcohol
- ▶ Marijuana
- ▶ Herion
 - ▶ Herion + Fentanyl
- ▶ Cocaine
- ▶ Holy Trinity
- ▶ N2O2
- ▶ Benzo's



Personal Impairment ADA Principles of Ethics and Code of Professional Conduct

- ▶ It is unethical for a dentist to practice while abusing controlled substances, alcohol or other chemical agents which impair their ability to practice
- ▶ Dentists with first-hand knowledge that a colleague is practicing dentistry when so impaired have an *ethical* responsibility to report such evidence to the professional assistance committee of a dental society

Dentist Impairment

- ▶ ADA definition:

"The inability to practice dentistry with reasonable skill and safety to patients

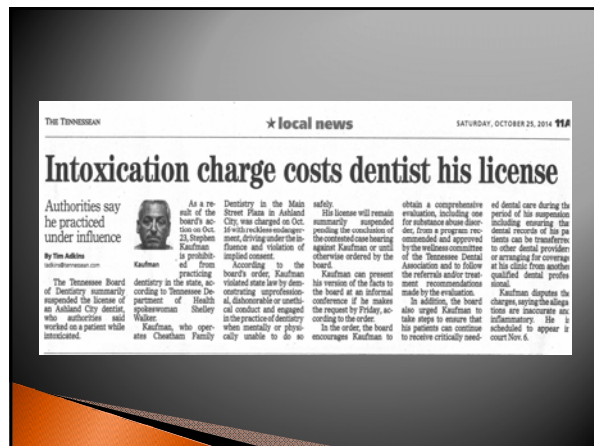
by reason of physical or mental illness, including deterioration through the aging process, the loss of motor skills, or the excessive use or abuse of alcohol and/or other drugs."

DOS Loss of skills

Dentists, a special population?

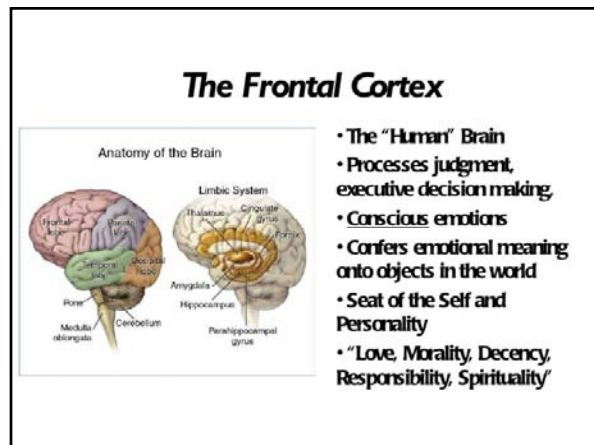
- ▶ Personality traits:
 - Self-reliance, independence, perseverance, stubbornness → minimize the problem, self-treatment
 - Intellectual sophistication → hide the problem well
 - Obsessive-compulsive traits – self-doubt, guilt, excessive sense of responsibility
 - Idealistic beliefs, perfectionist behavior, and high academic rank



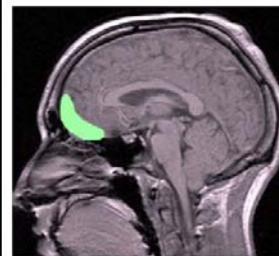


Addiction is a disorder of ...

- | | |
|-----------------|----------------------|
| 5. ... CHOICE | (motivation) |
| 4. ... STRESS | (anti-reward system) |
| 3. ... MEMORY | (learning) |
| 2. ... PLEASURE | (hedonic system) |
| 1. ... GENES | (vulnerability) |



Orbitofrontal Cortex (OFC)



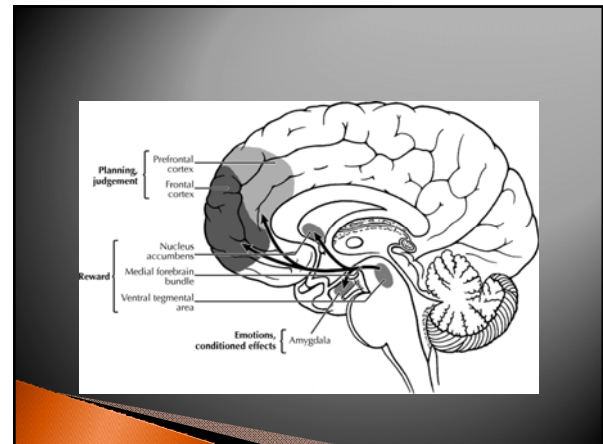
- Decision-making guided by rewards
- Integrates sensory and emotional information from lower limbic structures
- Flexible assignment of value to environmental stimuli to motivate or inhibit choices & actions
- Self-monitoring and social responding

Genetic Vulnerability

- Genetic difference determine "low responders" vs. "high responders" to the effects of alcohol (low responders more likely to become alcoholics)
- There are genetic differences in how people respond to methylphenidate (Ritalin) injections (some like it, some don't care) implying different vulnerabilities
- For addicts, drugs really do "feel" different than they do to non-addicts

Addiction is a disorder of ...

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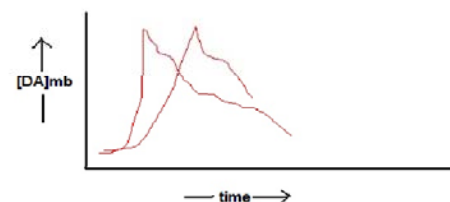
Dopamine Circuit

- The *brain* changes during addiction
- All drugs of abuse activated a pleasure pathway in the brain, *The Dopamine Reward*
- Reinforces pleasurable behavior
- Connected to areas that control *memory, emotions, motivation*
- Eventually DC becomes blunted..tolerance

Addiction Neurochemical #1: Dopamine

- All drugs of abuse and potential compulsive behaviors release Dopamine
- Dopamine is first chemical of a pleasurable experience - at the heart of all reinforcing experiences
- DA is the neurochemical of saliency (it signals survival importance)
- DA signals reward prediction error
- Tells the brain this is "better than expected"

Drugs cause Dopamine Surges in the midbrain reward system



Family

- ▶ A family is a place where minds come in contact with one another. If these minds love one another, the home will be as beautiful as a flower garden. But if these minds get out of harmony with one other it is like a storm that plays havoc with the garden "The Buddha"

DDS Trauma in Childhood

Substance Use Disorder

- ▶ Childhood trauma appears to be causal of the substance abuse and chemical dependency
- ▶ Also, childhood trauma appears to be causal of several other disorders including: sexual abuse, PTSD, anxiety disorders, dissociative disorders, somatization disorders sexual problems difficulty handling feelings, low self-esteem multiple co-morbidity

Dan Brown

Brain Changes: Plasicity

- ▶ **Experiences, thoughts, and actions** change brains
- ▶ Not just simply increases or decreases in brain chemicals
- ▶ Experiences and behaviors linked to increase sizes of brain regions, key proteins, even brain cells themselves
- ▶ A study of Monks
- ▶ Behaviors, thoughts and experiences have residual effects on brain functions

Omar Manejwala, M.D.

Behavioral/Environmental Model

- ▶ Studies have shown that Environmental factors can change brain chemistry as surely as drug use or heredity
- ▶ Environmentally induced **emotional memories**⁽¹⁾ have a lifelong influence on people (LeDoux 1996, McGaugh 2003)
- ▶ Many studies, supported by scans that show brain function, suggest that physical/emotional stress resulting from **abuse, anger**, peer pressure, especially if occurs in **childhood**, causes people to seek, use and sustain their continued dependence on drugs.

(Enoch, 2010; Schroeder, Holahan, Landry 2000)

Implicit Memory

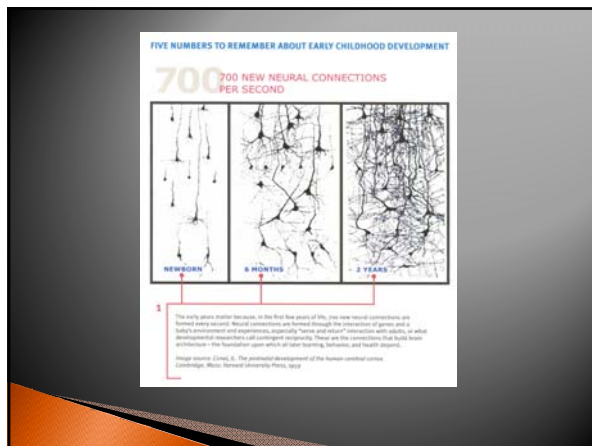
- ▶ Harnesses the brain's capacity to generalize from experience
- ▶ Construct mental models from repeated events
- ▶ The Brain summarizes similar events into one prototypical representation known as a *Schema*

Daniel Siegel, MD.

Interpersonal Sensitivity

- ▶ Feeling Inferior
- ▶ Easily Hurt
- ▶ Seeing others as unfriendly or unsympathetic
- ▶ Easily annoyed by or critical of others
- ▶ Not good enough
- ▶ Don't deserve better

RDH A doormat



Encoding

- ▶ Neurons that fire together becomes ENCODED
- ▶ The more these neural clusters fire, the more likely they are to fire together in the future

Six domains of Implicit Memory

- ▶ Perception
- ▶ Emotion
- ▶ Bodily sensation
- ▶ Behavior
- ▶ Mental Models
- ▶ Priming
 - Like basic puzzle pieces of the mind
 - Foundation how the past continues to influence the present

Self Expression

- ▶ At early age, encouraged to discover our own natural interests and preferences.
- ▶ To express our own emotions
- ▶ Allowed to be playful, uninhibited, enthusiastic
- ▶ Standards are reasonable
- ▶ If family discourages self-expression, punished or felt guilt when expressed needs
- ▶ Parents feelings or needs take precedence
- ▶ Made to feel powerless, shamed when you play
- ▶ Work and achievement emphasized over fun
- ▶ Parents are not satisfied unless you perform **PERFECTLY**
 - DDS abused, abundant

Abandonment

- ▶ All Children are terrified of abandonment
- ▶ This fear begins at the age of six months
- ▶ To the child, abandonment by its parents is the equivalent of death
- ▶ Children abandoned either psychologically or in actuality, enter adulthood lacking any deep sense the world is a safe and protective place

Abandonment

- ▶ A Loss on one's authentic self: ceasing to exist psychologically as you truly are
 - Physical
 - Emotional
 - Neglect of basic dependency needs:
 - Self Value
 - Sociality
 - Structure
 - Security
 - Stroking
- ▶ Toxic Shame

Emotions

One word to describe the emotions of an addict

FEAR

FEAR ---Not being accepted, security.. How you feel about yourself

Fear → anxiety → depression = **anxious misery**

J. Groper, Florida Recovery Center

Emotions

- Suppressing emotions don't make them go away
- They just come back as personality disorders
 - RDH molested/troubled

Childhood Trauma

- More than half of Tennessee residents experienced childhood adversity
- One in five experienced three or more adverse childhood moments
 - 31% Separation/divorce
 - 19% Violence between adults
 - 18% Exposure to mental illness
 - 14% Physical abuse
 - 11% Incarceration
 - 31% Substance abuse
 - 12% Sexual abuse

Tenn Department of Health

Severity of Ones's Mental Illness

- Directly determined by the severity of parental deprivation in childhood
 - Psychoses*: experienced extremely poor parenting in the first 9 months of life
 - Character disorders*: adequate care as infants, but very poor care from 9 months to 2 years
 - Neuroses*: adequate care early childhood, but poor parenting after two, but before age of five or six

M. Scott Peck, M.D., "Road Less Traveled"

Addiction is a disorder of ...

- GENES (vulnerability)
- PLEASURE (hedonic system)
- MEMORY (learning)
- STRESS (anti-reward system)
-

Toxic Stress Response

- Child experiences strong, frequent, prolonged adversity
 - Physical or emotional abuse
 - Chronic neglect
 - Caregiver substance abuse
 - Exposure to violence
- This kind of prolonged activation can disrupt the development of brain architecture

Continued Toxic Stress

- ▶ Has a cumulative toll on child's physical and mental health—**for a lifetime**
- ▶ The more adverse experiences in childhood, the greater the likelihood of developmental health problems:
 - Heart disease
 - Diabetes
 - Substance abuse
 - Depression

• RDH Significant depressive experience

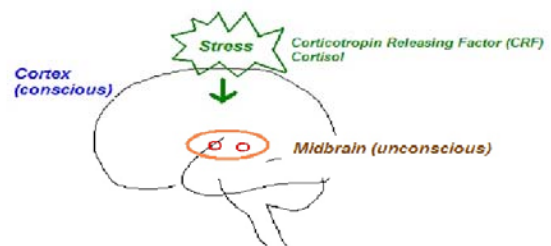
Addiction

- ▶ Any process used to avoid or take away intolerable reality
- ▶ Whatever mood—alters our chronic pain will take precedence over everything else
- ▶ Addictions from the outer layer of our defenses against **toxic shame**

Addiction

- ▶ Addiction, as compared to abuse, is a biological disorder with a genetic basis whereby the *motivational priorities of the mind* become permanently altered.
- ▶ Abuse is any inappropriate or non-medical use of a substance

STRESS : a major player in addiction & relapse



**We all face stress, yes . . .
But we don't all:**

- Face the same **severity** of stress
- Face the same **pattern** of stress
- Have the functioning **coping mechanisms**
- Come to the table with the **same brain**

CHRONIC, SEVERE STRESS = \uparrow CRF

and \uparrow CRF = \downarrow DAD2 receptors

and \downarrow DAD2 receptors = Anhedonia

Anhedonia: Pleasure “deafness”

(the patient is no longer able to derive normal pleasure from those things that have been pleasurable in the past)

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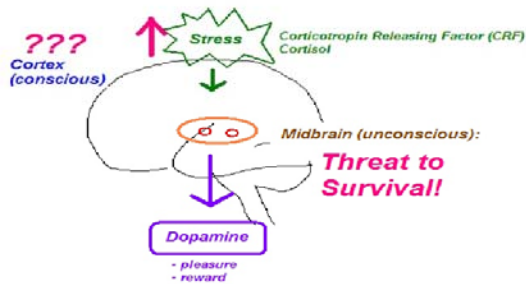
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Workaholics don't play well with others

- ▶ A workaholic is not a 'team player'.
- ▶ They have a high need for **control** and therefore feel that their way of doing the job is the best way.
- ▶ They often pretend to listen to other's opinions and then they usually do it their way.
- ▶ They will not delegate well and will continually add to their plate.
- ▶ This combination makes them **resentful**, **irritable** and **highly judgmental** as no one can live up to their standard of work.

The Dopamine System changes in conditions of severe, chronic stress



Anhedonia: Pleasure “deafness”

- The patient is no longer able to derive normal pleasure from those things that have been pleasurable in the past
- Addiction is a stress-induced “hedonic dysregulation”

Addiction is a disorder of ...

5. ... CHOICE (motivation)
4. ... STRESS (anti-reward system)
3. ... MEMORY (learning)
2. ... PLEASURE (hedonic system)
1. ... GENES (vulnerability)

Why the “Choice Argument” fails ...

- It fails to take into account **CRAVING**
- The “Choice Argument” measures addiction only by the addict's external behavior
- It ignores the inner suffering of the patient
- You don't actually have to have drug use for the defective physiology of addiction to be active
- The addict cannot choose to not *crave*

Addictive Cravings

- ▶ Are **SHAME based** phenomena
- ▶ Shame, the profound sense that "I am broken"
- ▶ I am worthless
- ▶ A devastation force
- ▶ It consumes joy, peace, contentment
- ▶ Renders a person worse than sick
- ▶ It renders them unable to believe that things could be any other way.....
- ▶ **SHAME DESTROYS HOPE**

Shame/Guilt

- ▶ Shame makes us feel bad for the sake of feeling bad
- ▶ Guilt makes us feel bad in order to learn, change and grow
- ▶ Shame tells us that we are inherently unworthy
- ▶ We are unfit to be a full part of humanity
- ▶ We are *less than* and there is nothing we can do to change it **Shame**..something wrong with YOU and nothing you can do about it
- ▶ You are inadequate, defective
 - DDS found biological father

Cravings

- ▶ A strong desire that, if unfulfilled, produces a powerful *physical* and *mental* suffering
- ▶ At the heart of all **addictive** and **compulsive** behaviors and your brain tricks you into repeating **self-destructive patterns**
- ▶ In 1939, AA described "strange mental twist" or "curious mental phenomenon"
- ▶ They learned that changing behavior affects both *intensity* and *frequency* of cravings

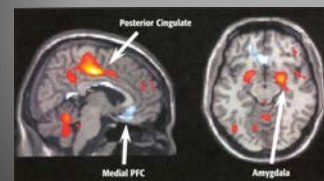
Cravings

- ▶ Cravings originate in the brain
- ▶ Behaviors can and do change the brain
- ▶ Our **experiences, actions and thoughts** produce changes in areas of the brain that are responsible for craving, choice and decision making and have residual effects on brain function

Cravings and Addiction

- ▶ In addition to powerful brain mechanisms underlying reward that play a role in craving and addiction
- ▶ There is a complex relationship between **emotions, memory and craving**
- ▶ **Emotions** affect **memory**, memories affect emotions and both affect cravings
- ▶ Cravings affect working memory, especially **visuospatial memory**
- ▶ **A memory that records what you see and your orientation** to your environment

When Craving Is Triggered



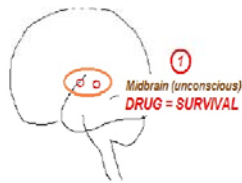
Dr. Edythe London, UCLA

Addiction Part One:

- *Mis*perception of the hedonic aspects of the drug

And

- Attribution of survival salience to the drug on the level of the unconscious



Addiction Part Two:

- The drug takes on personal meaning
- The addict develops an emotional relationship with the drug
- The addict derives their sense of self and exerts agency through the drug



Definition of Addiction:

Addiction is a dysregulation of the midbrain dopamine (pleasure) system due to unmanaged stress resulting in symptoms of decreased functioning, specifically:

1. Loss of control
2. Craving
3. Persistent drug use despite negative consequences

How did my Brain get this way

- You honestly believed you could indulge only on weekends
- Your chemical of choice seems like a good friend—until you needed it everyday
- The Rx's your doctor wrote only a temporary fix
- How did it get to this point —DDS one Loritab
- Chemicals can actually change the structure of your brain
- A complex process known as neuroplasticity

DDS progression

Our personalities Deepen dissatisfaction

- We Are:
 - Intelligent
 - Caring
 - Sensitive
 - Inquisitive

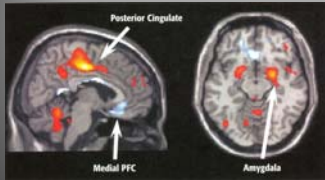


We Are Also:

- Type A
- Competitive
- Perfectionist
- Safety Seeking
- Compulsive
- Work addicted



When Craving is Triggered



Dr. Edythe London, UCLA

Perfectionism

- ▶ Perfectionism is a vulnerability factor for depression, burnout, anxiety and suicide, Professional boundary violations, Substance abuse
- ▶ A character trait of most dentists and physicians.
- ▶ Perfectionism is **NOT** a healthy pursuit of excellence.

Compulsivity

- ▶ Med student selection is biased towards compulsive personalities and medical education enhances the behavior
 - Gunderson L. Physician Burnout. Annals of Internal Medicine, 2001; 135:145-148

Obsessive compulsive personality disorder

- ▶ A pervasive pattern of preoccupation with orderliness, perfectionism, mental and interpersonal control, at the expense of flexibility, openness, and efficiency, beginning in early adulthood and present in a variety of contexts as indicated by four of the following criteria:

To Feel Normal

- ▶ Most people are not seeking **reward**---they are seeking **relief**
- ▶ The overwhelming biological process in addictive craving is really a complex set of desperate, survival-based drives to feel **NORMAL**
- ▶ Normal is complicated, but it's at least in part related to the dopamine receptor density in the Nucleus Accumbens
- ▶ Concept neuroscientists call DOWNREGULATION