

**Welcome**  
**2015**  
**OEAP Annual Resource  
Conference**



*Understanding Substance Abuse:  
Current Trends in Treatment and Recovery*

**September 15, 2015**  
**State Fire Marshal Training Academy**

**Neurotransmitters Made Easy: Chemistry,  
Mood and Addiction**

**Learner's Guide**

**Presenter: Brad Lander, Ph.D.**  
**The Ohio State University, Talbot Hall**

•Understanding Addiction: Squirrel Logic

Understanding Addiction:  
Squirrel Logic

Brad Lander PhD, LICDC  
Clinical Director / Psychologist

Talbot Hall - Addiction Medicine at The Ohio State University  
Wexner Medical Center



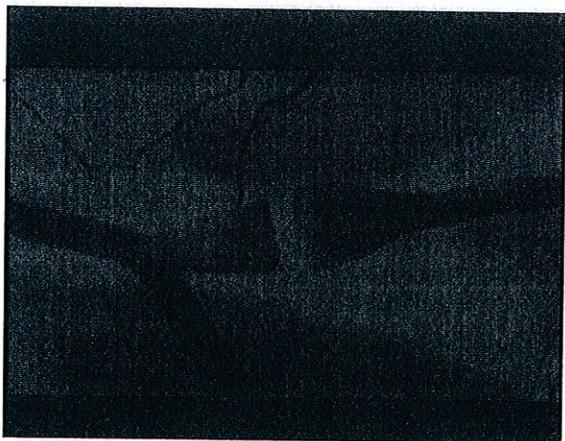
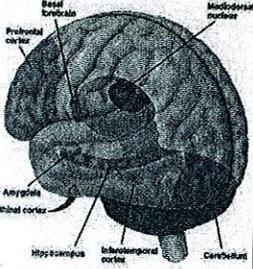
1. The greatest problem we have working with alcoholics and addicts is our own beliefs and expectations
2. The addict is always doing the best he/she can

A View of Behavior

1. All behavior comes from the brain
2. The brain is chemical
3. **Chemistry follows LAWS of physics/math**

Behavior

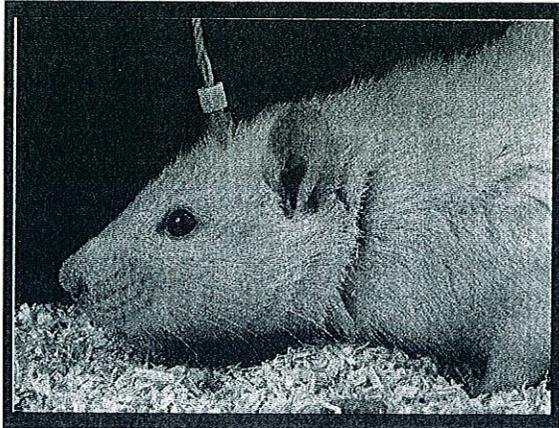
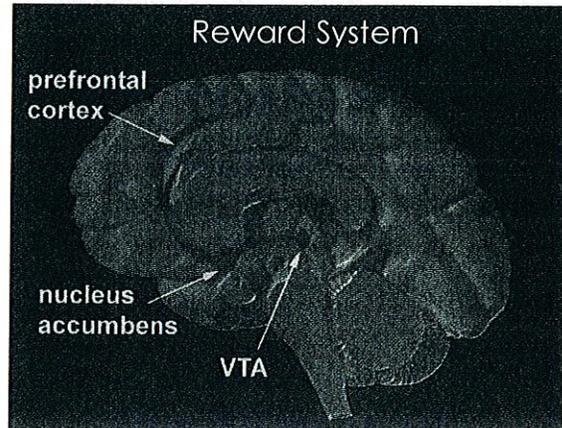
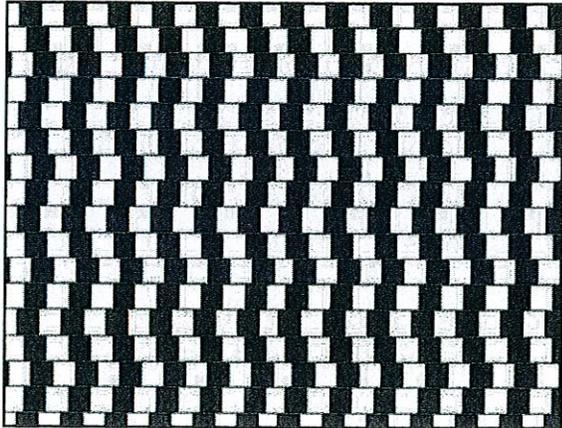
- Thought
- Emotion
- Senses
- Movement
- Memory
  - Immediate Recall
  - Short Term
  - Long Term



So...

**IF...** All behavior → brain **AND**  
The brain is chemical **AND**  
Chemistry follows laws of Mathematics...

**THEN:** All behavior follows the LAWS of mathematics



Function of The Reward Pathways

In animals (including humans) the reward pathways are activated by:

- Food
- Water
- Sex

The Pleasure Principle

The brain is built to repeat any behavior that stimulates this part of the brain

*"If it feels good, it must be good for me."*

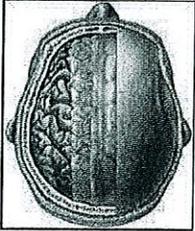
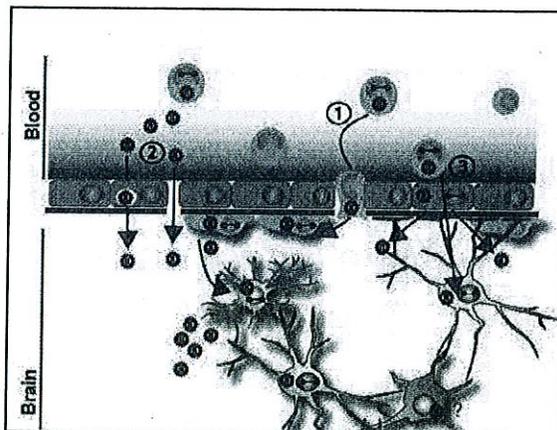
*... and it must be repeated*

**The Effects of Alcohol/Drugs on Behavior**

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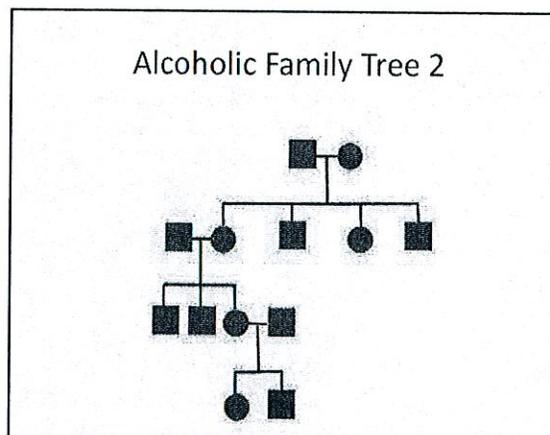
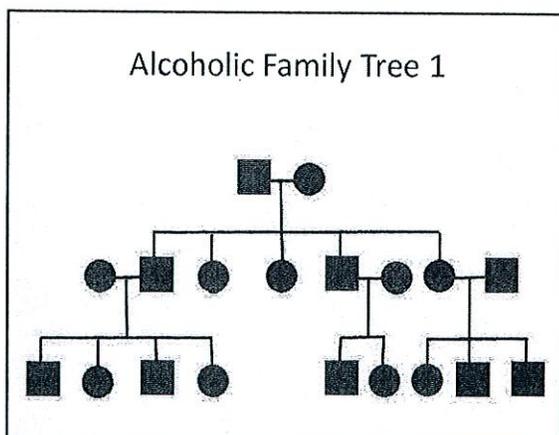
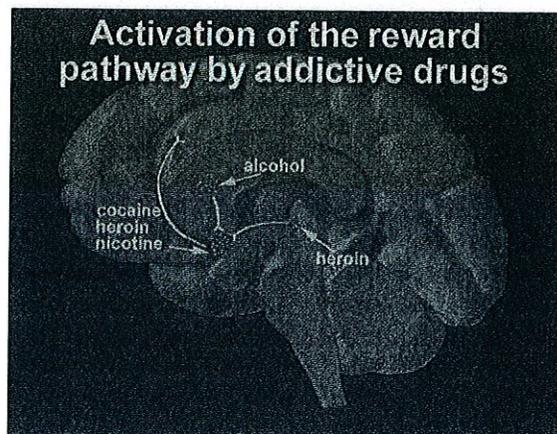
### Brain Protection

- Brain protected by bone (skull)
- Fluid layer protects against shocks
- Blood-brain barrier

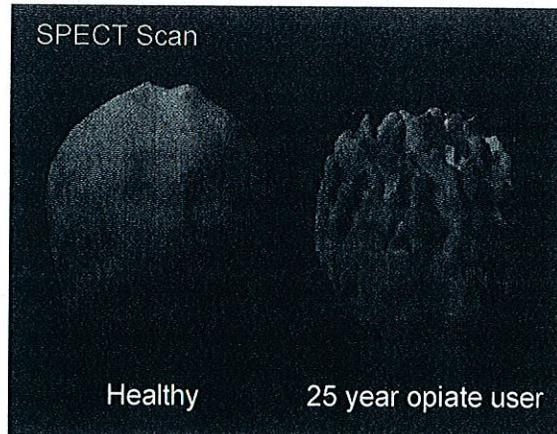
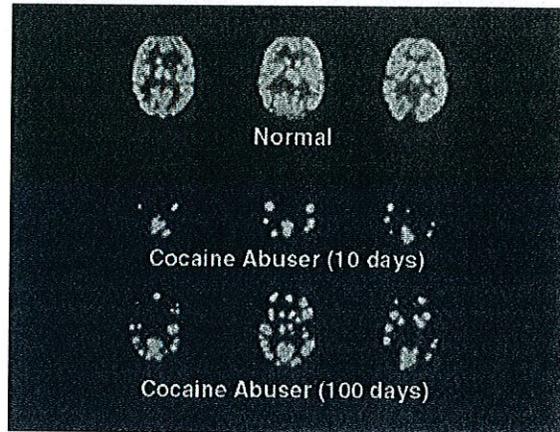
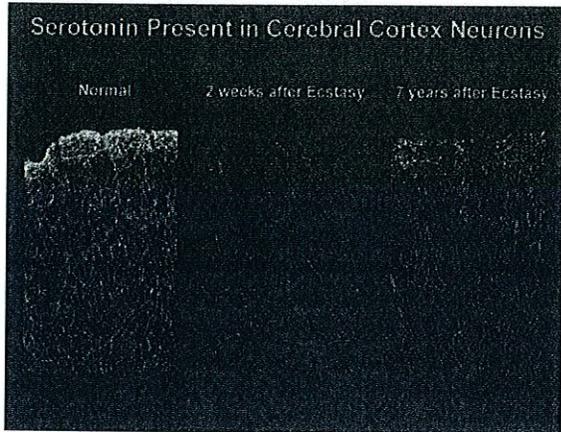
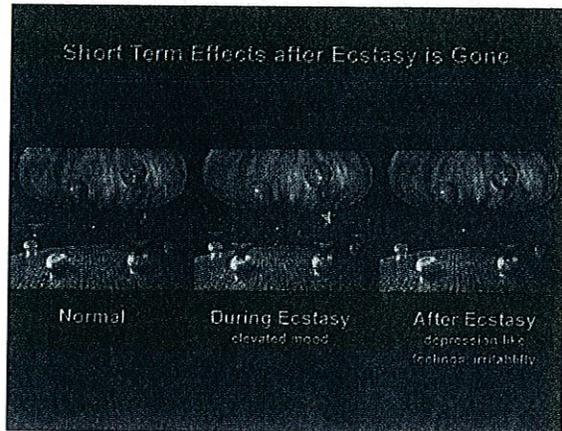
### Let's Take a Drink

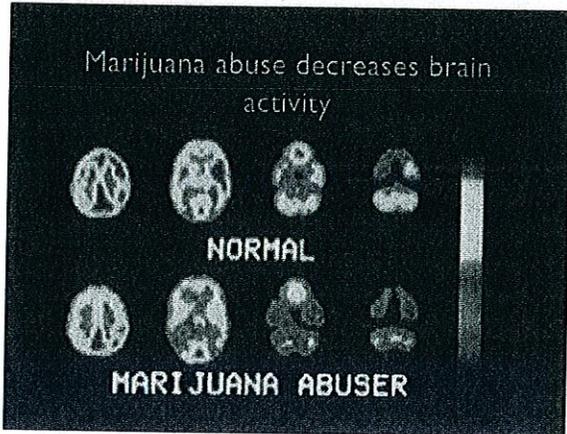
- **Thought**
  - Logic, Judgment, Prediction, Decision-making
- **Emotion**
  - Anger, Fear, Elation, Sadness
- **Senses**
- **Movement**
- **Memory**



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Neurotransmitter Replacement  
OR  
“The law of no free lunch”



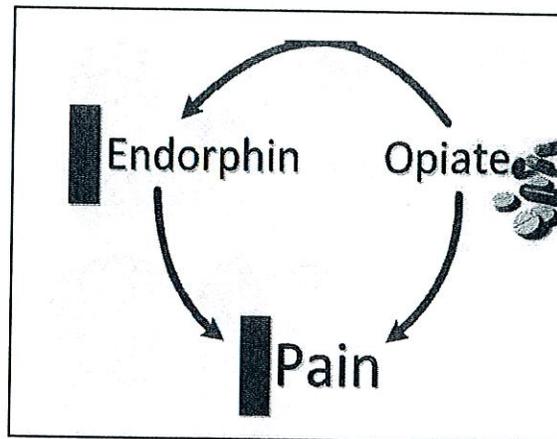
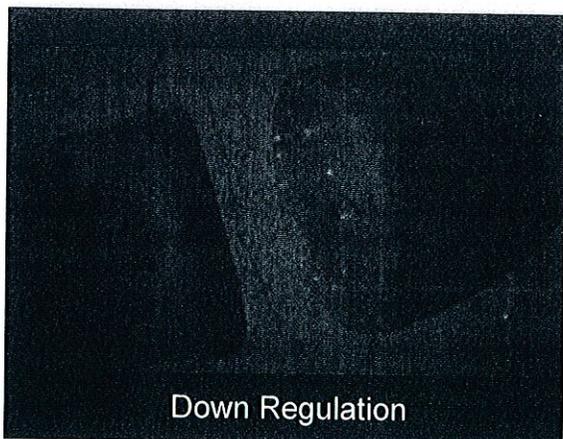


### Neurotransmitter Imbalances

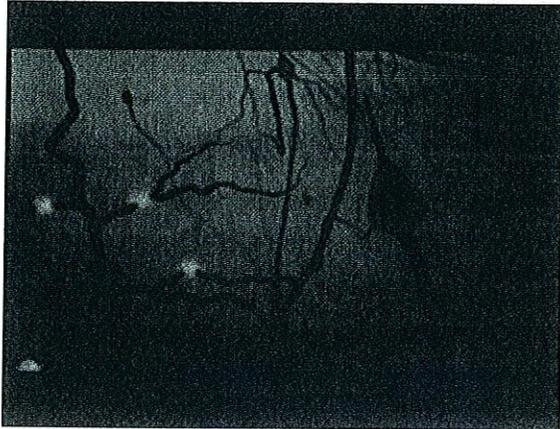
Imbalances of...	Results in:
Serotonin	Depression/Eating DO
Dopamine	Schizophrenia
Norepinephrine	Anxiety/Depression
Glutamate	OCD/PTSD
GABA	Anxiety/Panic

# ADDICTION

- ### Brain Shape (Design)
- ## Factors
1. DNA
  2. Oxygen & Nutrients
  3. Environment



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Adaptation To Drug

- Consistent drug use is a "new environment" - adaptation occurs
- The reward system is "re-engineered"
- The drug takes on the properties of the activities that naturally create sensations of pleasure (food, water, sex)

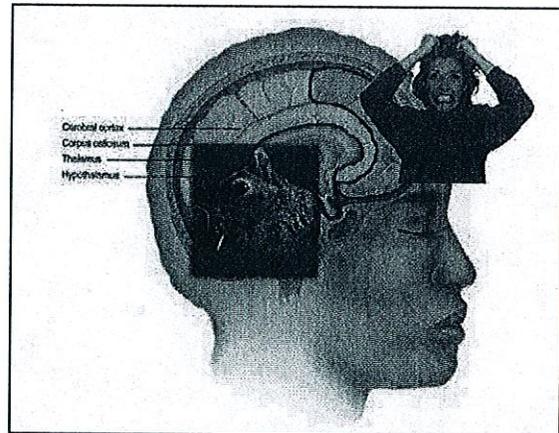
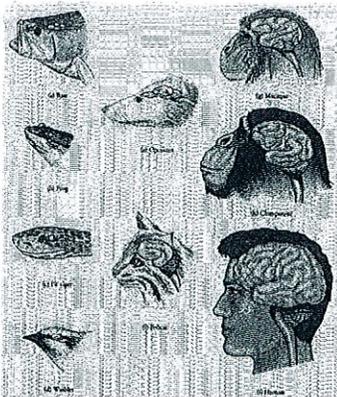
ASAM Definition

- The American Society of Addiction Medicine (ASAM) - August 2011
- Defines Addiction as a "Chronic Brain Disease"

*"Addiction is a primary, chronic disease of brain reward, motivation, memory and related **circuity**."*

- Must be treated, managed and monitored over a person's lifetime
- As a **chronic disease**, periods of relapse are a common feature of addiction [however] the return to drug use is **not** inevitable
- In addiction there is a significant impairment of executive functioning that manifests itself in problems with perception, learning, impulse control, compulsivity and judgment

The Evolution of the Cerebrum\*



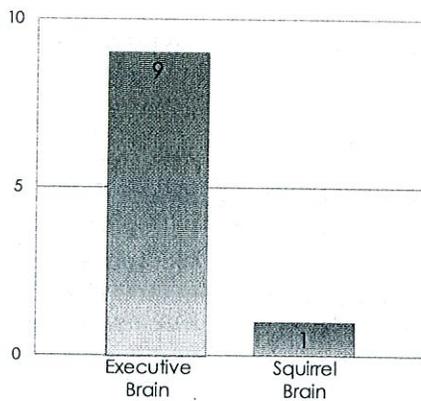
### The Adolescent Brain

- Major growth occurs in the PFC between ages 13 - 26
- Adolescents can become addicted 5x faster than adults
- People who start using as teenagers have immature PFC's



## RECOVERY PROCESS

(Now that we know this, what do we do?)



### Brain Distress

In distress, the most intricate and sophisticated areas of the brain are affected first.

### Prefrontal cortex

### Loss of PFC Power

- **Fatigue**
- **Unbalanced glucose levels**
- **Stress**
- **Pain**
- **Illness**
- **Alcohol / drug use**

### Empowering The Midbrain

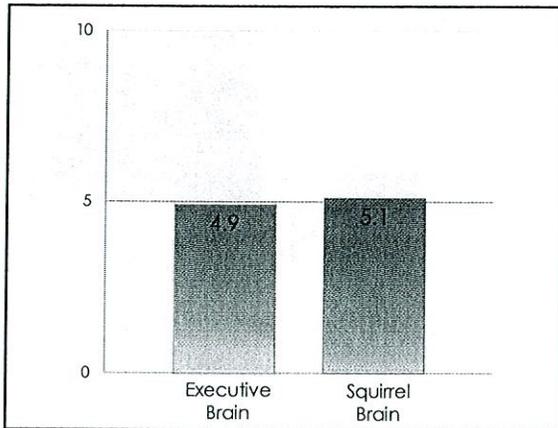
## EXPOSURE

Contact with anything associated with use:

- People
- Places
- Things



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### Goals of Treatment

- Cessation and abstinence from all dopamine-surging chemicals
- Brain chemistry stabilization
- Empowerment to steer behavior with the prefrontal cortex
- Eliminate/reduce environmental triggers
- Enhance neuroadaptation to recovery
- Become comfortable with not using

### Post Acute Withdrawal (PAWS)

- Withdrawal-like symptoms occur intermittently in the early stages of recovery
- They are made worse by stress but may arise at unexpected times and for no apparent reason
- They may last for a day or for weeks

### Symptoms of (PAWS)

- Inability to think clearly
- Memory problems
- No energy
- Emotional overreactions or numbness
- Sleep disturbances
- Physical coordination problems
- Stress sensitivity
- Increased sensitivity to pain
- Muscle aches

### Treatment Tasks

#### Physical Stability

- Sleep
- Balance blood sugar
- Exercise
- Relaxation/meditation



### Mental/Neural Strengthening

- Develop new neural pathways
- Learn recovery skills
- Counseling
- Quit smoking



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### Counseling

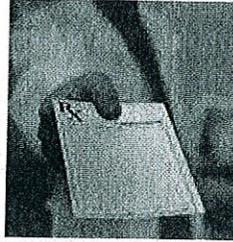
- Therapy makes structural/ chemical changes to the brain

### Environmental Management

- Safe place to live
- Triggers lists
- Management plan



### Acute Pain Management

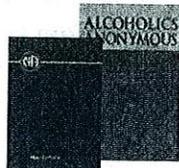


- Acute injury
- Surgery
- Illness
  - Pancreatitis
  - Sickle Cell crisis

### Immersion into sober activities with sober people

### 12-step activity

- Meetings
- Sponsor (guide)
- "Extracurriculars" such as dances, pot lucks, conferences, etc.
- Online meetings/resources



### Quit Smoking



- Nicotine depletes serotonin
- The seriousness of suicidal behavior is directly correlated with amount of cigarette smoking
- Recovery rates for non-smokers is double that of smokers regardless of when the smoking stopped

### Medication-Assisted Treatment

- Comprehensive Maintenance
  - Medication plus counseling and support services
- Medical Maintenance
  - Daily Medication only
- Detoxification
  - Short-term - 5-10 days
- Medically Supervised Withdrawal
  - Long-term taper - 6 weeks to 2 years

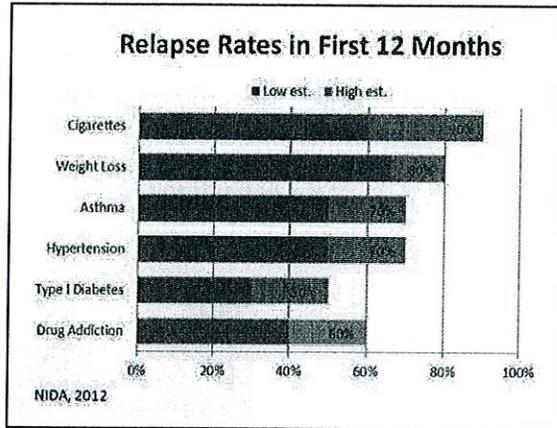
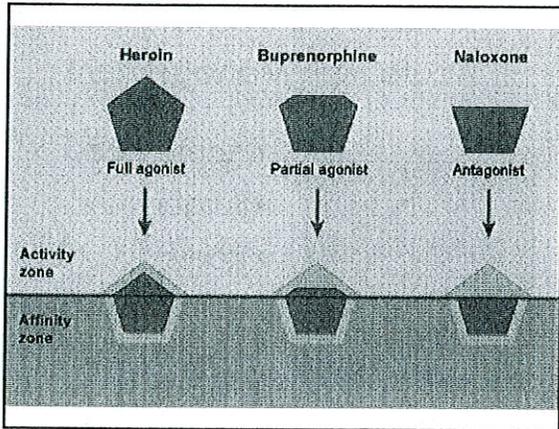
### Alcohol

Acamprosate (Campral)  
Naltrexone (Revia, Vivitrol)

### Opiates

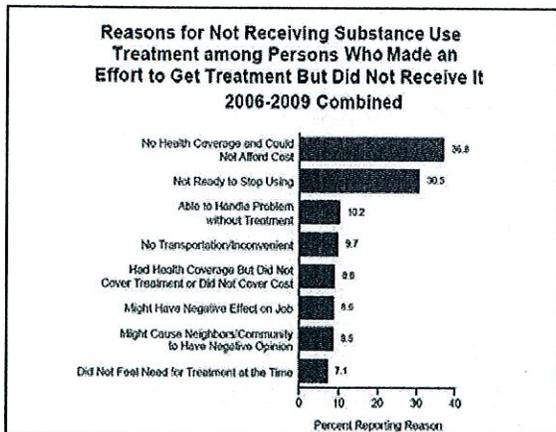
Partial agonists (Buprenorphine Suboxone, Subutex)  
Full agonist (Methadone)  
Antagonist (Naltrexone, Revia, Vivitrol)

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- ### Factors Predicting Treatment Success
- Support from family and friends
  - Adequate medical insurance or financial resources
  - Pressure to stay in treatment
    - Criminal justice system, child protective services, family, employer
  - Motivation to change
  - Adequate lengths of treatment: the longer a client is engaged, the better the outcomes

- ### Coerced treatment
- Evidence shows that substance abuse treatment for people that are court ordered to treatment equally effective as for voluntary participants
  - "Pressure" to stay in treatment helpful to the patient's long-term success



2015 Addiction Studies Institute

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