Dual Diagnosis Treatment Services at Stanley Street Treatment and Resources

Understanding Psychopharmacology
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Examples

- Studies show that at least 70% of patients with a mental illness also have a substance abuse disorder. aka:
  - Co-occurring
  - Co-morbid
  - Concurrent
  - Coexisting

Term “dual diagnosis” is a misnomer
Examples

- **Schizophrenia**
  - 47% of patients with schizophrenia have an alcohol or drug disorder
  - CNS depressants such as alcohol & benzodiazepines have a sedating effect and decrease the intensity and volume of auditory hallucinations
  - Psychostimulants such as cocaine and methamphetamine increase hallucinations and increase the likelihood of violent behavior & suicide
Examples

Bipolar Disorders

- Bipolar: 61% of patients with BPAD have an alcohol or drug disorder
- Alcohol, amphetamines and cocaine are most widely used, depending upon the current mood.
  - In a manic episode, cocaine or amphetamines can be deadly
  - When depressed, alcohol will increase the depression and increase suicidality
Examples

- Depressive Disorders:
  - In 30-60% of patients with depressive symptoms, alcohol is the cause
  - 76% of patients in detox exhibit moderate to severe depression
  - By 28 days of abstinence, the % has dropped to 8%
Examples

- NEJM Journal Watch:
  - 10 yr study of 500 heavy alcohol drinkers identified as heavy drinking at least 16 days per month
  - 74% men, mean age 37.6
  - Mental health questionnaires done every 2 years
  - **Conclusion**: alcohol consumption is strongly influenced by mental illness

  - *NEJM Journal Watch March 19, 2015*
Accurate Assessment is Key

- Substance use **causes** psychiatric symptoms and **mimic** psychiatric disorders
  - Stimulants cause signs and symptoms similar to mania, panic, delirium and delusional disorders
  - Hallucinogens evoke symptoms similar to psychotic disorders such as Schizophrenia
Accurate Assessment

- Substance abuse can **induce** the development, **trigger** the re-emergence, or **exacerbate** the severity of psychiatric disorders:
  - Alcohol has been associated with first breaks of Schizophrenia
  - Stimulants have been associated with the precipitation of a Bipolar disorder
Accurate Assessment

- Substance abuse can **mask** psychiatric symptoms and disorders:
  - Patients **self-medicate** distressing psychiatric symptoms or to relieve uncomfortable side effects of medications
    - Alcohol and drugs counteract negative symptoms of Schizophrenia such as apathy & social withdrawal
    - Stimulants may counteract sexual side effects of psychotropics
Pharmacotherapy

- Starts in the brain
Key Concepts

- Dependence
- Addiction
- Rebound
- Relapse
Dependence

- Physiological state of *neuroadaptation* produced by repeated administration of a drug

- Necessitates continued administration and increasing doses to prevent withdrawal (*tolerance*)
Addiction

- A *behavioral* pattern of drug abuse characterized by:
  - Overwhelming compulsive use
  - Alteration in brain functioning
  - Activation of the Pleasure pathway

*Addiction is about avoiding relentless and unremitting despair*
Rebound & Relapse

- **Rebound**
  - Occurs after discontinuation of a drug
  - Similar to original symptom drug is used to treat, but more frequent and severe than the original

- **Relapse**
  - Reoccurrence of disease symptoms upon discontinuation of an effective medical treatment
  - Can be in relapse without using
The Chemical Brain

1899 – a Spanish neuroscientist drew this remarkable diagram of a pigeon brain:
The Chemical Brain

- For decades the concept of the brain and central nervous system was of electrical communication, resembling a telephone system with trillions of miles of intricately crisscrossing wires.

- This implied that the brain was “hard wired” from birth and stayed that way forever.

- The 1990’s were called the Decade of the Brain, and research found how incorrect this concept really was.
The Chemical Brain

- Communication between the brain and central nervous system is fluid, malleable and ever changing.

- Each “wire”, is called a **neuron**, and consists of a **cell body**, an **axon** resembling a tail, and **dendrites**, which look like the branches of a tree.

- The space between these branches is called the **synaptic gap, or cleft**

- **Receptors**: the sites of drug action
NEURONS
Receptors

- For a chemical to work in the body, something must “receive” it.

- Called receptors, they are the binding sites, or ports, for all chemicals.

- Formerly thought of as a “lock to a key”
Receptors

- A typical neuron has millions of receptors on its surface.
- They function as scanners.
- Waiting for the right chemical to swim by and bind with it.
- Receptors are in constant, rhythmic motion as they respond to chemical cues.
Receptors

- Binding occurs in one of three ways:
  - **Full agonists** – occupy the receptor and activate the receptor 100%
  - **Partial agonists** – occupy the receptor, but activate only to a set point (40–60%) or ceiling
  - **Antagonists** – occupy the receptor and blocks both full & partial agonists- but do not activate

- **Key concept**: Once created, receptors are never reabsorbed, but remain dormant when not in use – they light up like a Christmas tree with one beer, one pill, one cigarette
Receptors

Efficacy relative to endogenous agonist
Chemical Brain

- **Neurotransmitters** are the “ferry boats” that cross the synaptic gap.
  - They are chemical messengers which either **excite** or **inhibit** the receiving cell.
Neurotransmitters

- help determine if the cell will send a message down its axons to the cells with which it communicates.
Neurotransmitters

- Initially thought to be several dozen
- Now thought to be several hundreds to several thousands
Neurotransmitters

Classic neurotransmitters include:
- Serotonin
- Norepinephrine
- Dopamine
- GABA (gamma-aminobutyric acid)
- Glutamic acid
- Acetylcholine
Neurotransmitters

- Serotonin (5-HT)
  - The feel good neurotransmitter. It helps control the regulation of mood, appetite, sleep, temperature, sexual arousal and the sensation of pain.
The Serotonin Neuron

serotonin

serotonin receptor
The Serotonin Neuron

transporter
Neurotransmitters

- Norepinephrine (NE)
  - Primarily involved in control of alertness including the ‘fight or flight’ response and wakefulness.
  - Also called noradrenalin
Neurotransmitters

- **Dopamine (DA)**
  - This transmitter is involved in movement, attention, learning, and pleasure
  - It is the primary chemical in the “Pleasure Pathway”.

\[
\text{Chemical Structure of Dopamine (DA)}
\]
Dopamine “Pleasure” Pathway

- High levels of dopamine in the brain produces:
  - agitation and irritability
  - aggressiveness, paranoia
  - hallucinations and bizarre thoughts & behavior similar to schizophrenia
  - activates a feedback loop, which desensitizes pleasure and the cravings start anew
  - Dopaminergic functioning can now be seen on PET scan (single-photon emission computed tomography)
Monoamine Hypothesis (The Big Bang Theory)

- Formulated in the 1960’s
- Postulates that symptoms of depression were caused by the underactivity of the amines: serotonin, norepinephrine, and dopamine
- Symptoms were relieved in only one third of the patients treated, leading to the development of the glutamate theory
Glutamatergic System

GABA
Glutamate
Acetycholine
Neurotransmitters

■ GABA

- Involved in regulation of anxiety, sleep, seizure activity and muscle relaxation.
- are the primary binding sites for Benzodiazepines, Barbiturates and Alcohol.
- Major **Inhibitory** chemical
Neurotransmitters

- Glutamic acid (NMDA)
  - Plays essential role in memory & learning.
  - Has opposing effects from GABA
  - Major excitatory chemical
Neurotransmitters

- Acetycholine (ACh)
  - Both inhibitory and excitatory effects on smooth muscles
    - Decreased heart rate
    - Relaxes eye muscles
    - Slows GI tract
    - Neurotransmitter associated with Alzheimer’s and myasthenia gravis
Opioid Peptides

- Primary peptides:
  - Beta **Endorphins**: the body’s naturally occurring opiates
  - Dynorphin
  - Met-enkephalin
  - Leu-enkephalin
  - Kyotophin
Pathophysiology

- **Alcohol**
  - Opens the floodgates and initially releases **Serotonin, Endorphins** and **Dopamine**, then
  - **Glutamate** (excites, causing euphoria) then
  - **GABA** (inhibits, causes sedation)
Benzodiazepines

- Receptor binding site located on the same protein molecule as GABA
- Thought to be how GABA modulates anxiety, and prevents seizures
Benzodiazepine abuse

- No class of anti-anxiety (anxiolytic) medication has demonstrated the:
  - potent **broad spectrum** activity
  - **rapid onset** of action
  - **abuse potential** of benzodiazepines.
Psychostimulants

- Cocaine prevents **dopamine** reuptake extending the firing of the postsynaptic neurons
- Experienced as increased energy, mental alertness and sexual arousal
Psychostimulants

- Methylenedioxymethamphetamine (MDMA, Ecstasy, Molly)

MDMA releases all stored Serotonin at once:
- flooding the synapse
- overwhelming the receptors
- disabling the body’s ability to control temperature
- can result in death
Short Term Effects after Ecstasy is Gone

Normal

During Ecstasy
   elevated mood

After Ecstasy
   depression-like
   feelings, irritability
Psychostimulants

- Methamphetamine (MA) has a similar effect as cocaine, plus
  - rapid heart rate, elevated blood pressure and body temperature, dilated pupils and irreversible damage to blood vessels in the brain (stroke)
  - Psychosis is a common long term complication.
Psychostimulants

- Tetrahydrocannabinol (THC, Cannabis, Marijuana)
  - Binds to specialized cannabinoid receptors that control memory, concentration time, depth perception and coordination of movement
Hallucinogens:
- Lysergic acid
- PCP
- Ketamine
Hallucinogens

- Lysergic acid (LSD)

  Binds to **Serotonin** receptors causing rapid mood swings, delusions and visual hallucinations
Hallucinogens

- **PCP (Angel Dust)**
  - Interferes with functioning of Glutamate and causes release of Dopamine
  - Mimics schizophrenia with delusions and mental turmoil.
Hallucinogens

- **Ketamine** (Special K)
  - interferes with functioning of **Glutamate** and causes release of **Dopamine**
  - used as a general anesthetic in humans and animals.
  - creates a dream like state, hallucinations, delirium and potentially fatal respiratory depression
Hallucinogens

Researchers at the National Institute of Mental Health are studying the effects of Ketamine:

- To determine if blocking the Glutamate neurotransmitter, which accounts for approximately 60% of the brain’s neuron’s, will provide a “jump start” in the treatment of depression.
- 71% of patients responded to IV Ketamine within 24 hours, comparable to response rates of up to 8 weeks with conventional antidepressants.

• *Current Psychiatry, 2007*
Hallucinogens

- Recent Ketamine studies indicate:
  - Psychotropic side effects are of major concern
    - Hallucinations
    - Paranoia
    - Dissociation
    - Abuse potential

Hallucinogens

- **GHB** *(Gamma-hydroxybutyrate)*
  - Acts as an inhibiting neurotransmitter similar to **GABA**
  - GHB intoxication resembles alcohol or a sedative-hypnotic intoxication, such as a benzodiazepine
  - Known as the date rape drug
Psychotropics

Classification of Drugs
Antidepressants

First antidepressant was discovered serendipitously during the treatment of tuberculosis in the 1950’s

- Iproniazid, a non-selective, irreversible monoamine-oxidase inhibitor was noted to make some patients “inappropriately” happy (possibly manic).
- withdrawn in 1961 related to the high incidence of hepatitis
- as a result of this, less hepatotoxic MAOI’s were developed as the first class of antidepressants
Antidepressants

Monoamine Oxidase Inhibitors (MAOI’s)

- Parnate (tranylcypromine)
- Nardil (phenelzine)
- EMSAM (selegiline)
  - Transdermal patch

Side effects:
- drug interactions
- weight gain
- hypertensive crisis
Antidepressants

Tricyclic Antidepressants (TCA’s): same neurotransmitters, thought to be a safer class of medications than MAOI’s

Imipramine (tofranil)
Amitryptyline (elavil)
Desipramine (norpramin)
Nortriptyline (pamelor)
Clomipramine (anafranil)
Doxepin (sinequan)
Side effects

Symptoms include:

- Dry mouth
- Constipation
- Sedation
- Sexual dysfunction
- Hypotension
- Weight gain
- Cardiac arrhythmias
  - Can be fatal in OD
Serotonin Reuptake Inhibitors

SSRI’s

- Prozac (fluoxetine)
- Zoloft (sertraline)
- Paxil (paroxetine)
- Luvox (fluvoxamine)
- Celexa (citalopram)
- Lexapro (escitalopram)
- Viibryd (vilazodone)
Viibryd

- In addition to blocking serotonin reuptake:
  - Has a moderate effect on dopamine and norepinephrine reuptake blocking
  - Increased benefit for those with both depression and anxiety, DSM-5 refers to as “anxious distress.”
Side effects

- Sexual dysfunction
- Gastrointestinal upset
- Sleep problems
- Emotional numbing
- Discontinuation syndrome
- Serotonin Syndrome
  - “SHIVERS”
Serotonin Syndrome – “Shivers”

- **Shivering**
- **Hyper reflexes & sudden jerking of muscles**
- **Increased temperature**
- **Vital sign instability** – elevated heart rate and respirations, labile BP
- **Encephalopathy** - agitation, confusion, delirium
- **Restlessness and in coordination**
- **Sweating** – an autonomic response to excessive serotonin stimulation
Serotonin and Norepinephrine Reuptake Inhibitors - NSRI’s

- Effexor (venlafaxine)
- Pristique (desvenlafaxine)
- Cymbalta (duloxetine)
- Fetzima (levomilnacipran)
Fetzima

- Reuptake of Norepinephrine is more potent than of serotonin
- Increased benefit on pain
- Increased benefit on cognitive functioning:
  - Concentration
  - Motivation
  - Social functioning
Side effects

- Sexual dysfunction
- Gastrointestinal upset
- Sleep problems
- Headaches
- High blood pressure
- Rare liver failure
Atypical Antidepressants

- Desyrel (trazodone)
- Wellbutrin (bupropion)
- Serzone (nefazodone)
- Remeron (mirtazapine)
- Brintellix (vortioxetine)
Side effects

- Trazodone: sedation, dry mouth, priapism
- Wellbutrin: agitation, insomnia, seizures, abuse potential
- Serzone: GI upset, liver failure
- Remeron: sedation, weight gain
- Brintellix: GI upset
Brintellix

- Serotonin stimulator rather than a reuptake inhibitor
- Increased benefit for depressed patients with cognitive deficits:
  - Slowed thoughts processes
  - Memory impairment
  - Especially the elderly
Key Points

- Antidepressants are effective specifically for unipolar depression.

- Antidepressants may trigger a manic episode in bipolar depression.
Mood Stabilizers

FDA approved:
- Lithium
- Depakote (valproate)
- Tegretol (carbamazepine)
- Lamictal (lamotrigine)

Non FDA approved:
- Trileptal (oxcarbazepine)
- Topamax (topiramate)
- Neurontin (gabapentin)
Side effects

- **Lithium**: weight gain, sedation, tremor, polydipsia, polyuria, hypothyroidism, renal insufficiency, cardiac block, seizure
  - mechanism of action unknown – alters neuronal transport of sodium

- **Depakote**: GI upset, weight gain, hair loss, sedation, liver abnormalities, acute pancreatitis, decreased platelets necessary for blood clotting
  - mechanism of action unknown: thought to increase GABA and inhibit Glutamate
Side Effects

- **Tegretol**: GI upset, ataxia, decreased white blood cells, Stevens-Johnson rash (potentially fatal)
  - mechanism of action: unknown

- **Lamictal**: headache, tremor, dizziness, serious skin rash, Stevens-Johnson syndrome
  - mechanism of action: inhibits sodium channels and decreases presynaptic glutamate
Side effects

- **Trileptal**: sedation, hyponatremia
  - Mechanism of action: alters sodium channels

- **Topamax**: weight loss, cognitive impairment, kidney stones
  - Mechanism of action: augments GABA, antagonizes glutamate receptors

- **Neurontin**: sedation, ataxia, dizziness, urinary incontinence during sleep, abuse potential
  - Mechanism of action: modulates excitatory neurotransmitter release
Novel Anticonvulsants

- **Felbatol (carbamate):**
  - aplastic anemia risk

- **Gabitril (tiagabine):**
  - not effective anticonvulsant or mood stabilizer
  - potential benefit on anxiety
  - mechanism of action: inhibits GABA reuptake

- **Keppra (levetiracetam):**
  - well-tolerated.
  - potential as a mood stabilizer
  - mechanism of action: unknown
Novel Anticonvulsants

- **Lyrica** (pregabalin): now approved for Fibromyalgia, most common widespread pain condition in US.
  - life-threatening swelling of face, mouth and neck (angioedema)
  - potential for abuse
  - mechanism of action: reduces neurotransmitter release

- **Zonegran** (zonisamide):
  - renal stones
  - weight loss
  - mechanism of action: stabilizes neuronal membranes, blocks sodium and calcium channels
Anticonvulsants – common SE’s as a class

- Sedation
- Headache
- Blurred vision
- Anorexia or
- Weight gain
- Nausea

- Rash (SJS)
- Blood dyscrasias
  - Aplastic anemia (body stops making blood cells)
  - Decreased white blood cells
  - Elevated serum creatinine and blood urea nitrogen
Key Points

- **Lithium** is the only psychotropic
  - proven to prevent **suicide** and prolong life
  - the only mood stabilizer not an anticonvulsant

- **Neurontin** appears to have benefit as an anti-anxiety drug
  - not effective in the treatment of acute mania
  - suicides have been reported
  - abuse potential and deaths reported when used with other drugs
Neuroleptics – Antipsychotics
Traditional

- Classified as to strength of blockade at the **dopamine** receptors
- **Thorazine** (low)
- **Mellaril** (low)
- **Trilafon** (mid)
- **Stellazine** (mid)
- **Haldol** (high)
- **Prolixin** (high)

- Formulations:
  - by mouth
  - immediate release injection
  - decanoate (long acting) injection
Side Effects as a class

- Parkinsonian extrapyramidal symptoms (EPS): rigidity, tremor, involuntary muscle contractions (dopamine blockade)
- Anticholinergic symptoms: dry mouth, constipation, weight gain (acetylcholine blockade)
- Cognitive Impairment
- Tardive Dyskinesia (TD) – learn AIMS (Abnormal Involuntary Movement Scale)
- Neuroleptic Malignant Syndrome (NMS) - “Fever”
Side Effects as a class

- **Akathisia** – Greek for “inability to sit”
  - Feeling of unease
  - Inner restlessness
  - Compulsive need to move
  - Repetitive movements primarily of the legs
  - Linked with suicidal ideation and behavior
  - Difficult to assess as symptoms overlap with mania, psychosis, depression with anxious distress and ADHD
  - Too often akathisia is missed and the medication causing it is increased rather than decreased or discontinued
Neuroleptic Malignant Syndrome (NMS) “Fever”

- **Fever** – hyperthermia is considered the hallmark of NMS and predicts poor prognosis
- **Encephalopathy** – abrupt and unexpected confusion and disorientation
- **Vital sign instability**
- **Enzyme elevation** – extreme creatinine phosphokinase (CPK) increases caused by rhabdomyolysis
- **Rigidity** – generalized muscle rigidity described as “lead-pipe”
Neuroleptics

Atypicals

- Clozaril (clozapine)
- Seroquel (quetiapine)
- Zyprexa (olanzapine)
- Risperdal (risperidone)
- Geodon (ziprasidone)
- Abilify (aripiprazole)
- Latuda (lurasidone)

**Benefits:**
- Less akathisia (inner restlessness)
- Less EPS (movement disorder)
- Less Tardive Dyskinesia (irreversible movement disorder)

**Class Side Effect:**
- Metabolic dysregulation (elevated glucose)
- Dyslipidemia (elevated lipids such as cholesterol)
Side Effects - Atypicals

- **Clozaril:**
  - seizures
  - life threatening decrease in white blood cells
  - myocarditis (inflammation of the heart muscle)

- **Zyprexa:**
  - elevated lipids
  - type 2 diabetes
  - weight gain
  - available tabs, IM, dissolving tabs (Zydis) and in combination with Prozac (Symbyax)
Atypical Antipsychotics

- **Risperdal:**
  - prolactin elevation
  - movement disorders
  - available in tabs, IM (Consta), extended release (Invega)

- **Seroquel:**
  - QT prolongation (heart arrhythmia) in OD
  - elevated lipids
  - weight gain
Atypical Antipsychotics

Third generation atypicals:

■ Geodon:
  - QT prolongation (fatal cardiac arrhythmia)
  - movement disorders

■ Abilify:
  - akathisia (which presents as worsening psychosis)
  - recent reports of TD

■ Latuda:
  - sedation
  - pregnancy category B (the only category B)
Key Points

- All antipsychotics are effective in controlling psychotic symptoms caused by an excess of dopamine.

- All antipsychotics can cause movement disorders by blocking dopamine.

- The Atypicals:
  - treat acute mania without any worsening of depression
  - may also have antidepressant effects
    - Abilify approved to augment antidepressants
    - Seroquel and Latuda approved for bipolar depression
Novel Medications

- **Strattera (amoxetine)** – classified as a SNRI
  - used to treat ADHD/ADD.
  - major side effects: high blood pressure and elevated liver enzymes
  - mechanism of action: inhibits **norepinephrine** reuptake

- **Provigil (modafinil)** – classified as an anti-narcoleptic
  - used to treat daytime sedation of narcolepsy, obstructive sleep apnea and shift work sleep disturbance
  - non-addictive
  - major side effects: headache, anxiety
  - mechanism of action: inhibits **dopamine** reuptake
Sleep Medications (New)

- **Ambien (zolpidem)**
  - major side effects: depression, suicidal ideation, aggression, sleep-related behavior (e.g., driving, eating), prolonged impairment
  - mechanism of action: Benzo receptor agonist

- **Lunesta (eszopiclone)**
  - major side effects: same
  - mechanism of action: Benzo receptor agonist

- **Rozerem (ramelton)**
  - major side effects: same but including hallucinations and behavioral disturbances
  - mechanism of action: melatonin receptor agonist
Sleep Medications (New)

- **Sonata (zaleplon)**
  - major side effects: same with amnesia and withdrawal symptoms if abruptly discontinued after prolonged use
  - mechanism of action: Benzo receptor agonist

- **Belsoma (suvorexant) – 1st in class**
  - major side effects: same as above with addition of abnormal dreams, sleep paralysis, hypnogogic hallucinations, and cataplexy symptoms (sudden muscle weakness accompanied by full conscious awareness)
  - mechanism of action: suppresses wakefulness as an orexin antagonist
Sleep Medications (Traditional)

- **Benadryl** (diphendyramine)
  - Advil PM
  - Aleve PM
  - Tylenol PM
- **Vistaril** (hydroxyzine)
- **Melatonin** (hormone which helps regulate sleep and wake cycles)
- **Amitriptyline**
- **Benzodiazepines**
- **Doxepin**
- **Remeron**
- **Seroquel**
- **Thorazine**
- **Trazodone**
Medication Assisted Therapy

- **Naltrexone** - an **opioid antagonist**
  - appears to reduce or eliminate the pleasure associated with alcohol consumption by blocking opiate receptors
  - major side effects: abdominal pain, cramps, nausea, vomiting and an elevation in liver enzymes
  - used for both alcohol and opiate dependency
  - contraindicated with mod – severe liver impairment
Medication Assisted Therapy

- **Vivitrol** (IM Naltrexone) – monthly injection
  - major side effects: nausea, headache & fatigue
  - significantly less elevation in liver enzymes
  - contraindicated for acute hepatitis or liver failure
  - used for both alcohol and opiate dependency
  - studies showed improved treatment compliance with monthly injection versus daily pill
Medication Assisted Therapy

- **Campral** (acamprosate)
  - approved for the treatment of alcohol abuse
  - mechanism of action obscure.
  - thought to restore balance between **Glutamate** (excitation) and **GABA** (inhibition).
  - hoped to decrease cue-related drinking behavior
  - side effects: nausea, diarrhea
Medication Assisted Therapy

Methadone (dolophine)

- full agonist at the opiate receptor
- designer opiate
- equal potency and duration to morphine
- harm reduction when taken by mouth
- when abused by taking IV, the liver is by-passed, the blood brain barrier is quickly crossed, and a rapid euphoria, or rush, results
Medication Assisted Therapy

- Excess Methadone is stored in the liver and time released over 24 hours.
- 70 mg daily is considered the blockade dose, preventing withdrawal.
- Brain scans since 2000 confirm long-term damage and dysregulation in essential physiological systems.
Medication Assisted Therapy

- Methadone
  - Dysregulation in:
    - Response to stress and pain
    - Gastrointestinal function
    - Immune function
    - Neuroendocrine function
    - Endorphins are displaced and cannot carry out their normal role as the body’s natural opiates

- Methadone myths include:
  - gets in your bones and “never comes out”
  - harder to kick than Heroin
  - just a substitute for Heroin
Medication Assisted Therapy

- Despite the limitations of Methadone it is the treatment of choice by CSAC for opiate dependent pregnant women:
  - harm reduction
  - close monitoring of pregnancy with daily clinic visits and consultations with obstetrician
  - less stress on the fetus: decreased premature deliveries, safer withdrawal, less time hospitalized
Medication Assisted Therapy

- Buprenorphine (Suboxone / Subutex)
  - a designer opiate
  - acts as a partial agonist at the mu receptor and as an antagonist at the kappa receptor
  - binds to and kicks off any other opiate on the receptor for up to 72 hours
  - prevents other opiates from activating the receptors
  - has a ceiling, or set point, producing a 40-60% effect compared to the 100% effect of Heroin, Oxycontin, Demerol, Morphine, Fentanyl
  - can be abused but euphoria is less
Medication Assisted Therapy

- **Buprenorphine (Suboxone / Subutex)**
  - Suboxone (Buprenorphine / Naloxone) was designed to prevent injection because of the added effect of naloxone
  - Subutex can be injected
  - may not be strong enough for high end Heroin abusers
  - both are being sold on the streets to buy Heroin
  - use for pain management is increasing as a safer alternative to opiates such as Oxycontin
Questions
Bell, S. et al. (2015). Heavy Drinking and Mental Health Problems: Which Comes First. Alcohol Clinical Research (e-pub)


Epocrates Rx: Athenahealth Pub

References