Heroin

- H, Smack, Dope, Junk
- Can be purchased as a white powder – “White China” or a dark resin – “Black Tar”
Opiates

• Derived from the opium poppy

• Morphine: Used as a painkiller in hospitals

• Codeine: Common cough suppressant

• Heroin
Synthetic Opioids

• Have similar chemical structures to opiates
• Often prescribed for pain management for surgery, chronic pain,
• Vicodin, OxyContin, Fentanyl
• NOT Heroin
U.S. Drug Scheduling System

Schedule I
- No accepted medical use, high potential for abuse
  - LSD, Marijuana, Ecstacy

Schedule II
- Accepted medical use, high potential for abuse
  - Cocaine, Morphine, Oxycontin

Schedule III, Schedule IV, Schedule V
- All have accepted medical use, with increasingly lower potential for abuse
  - Codeine, Xanax, Cough Syrups
How illegal is Heroin?

• Schedule I drug
• Illegal to make, sell, or possess with intent to sell
  – Includes counterfeit heroin or mixtures
• In California, it is illegal to be in possession of any amount, **even if just for personal use**

100 grams of Heroin has a street value of $200,000
What makes Heroin so much worse than other opiates, like morphine and codeine?
Heroin vs. Morphine

- Heroin enters brain much more easily and faster than morphine.
- When injected or smoked, leads to an intensely pleasurable and euphoric “rush”.
- The “Rush” makes heroin much more addictive.
Short-term effects of Heroin

Central
- Euphoria
- Alternately alert and drowsy state

Mouth
- Dryness

Skin
- Warm flushing

Respiratory
- Slowed breathing

Muscular
- Weakness

The Perfect “Whatever” Drug
Long Term Effects

- Pure Heroin
  - Tolerance
  - Dependence
- Street heroin only has **30-50%** actual heroin
  - Cutting agents can poison user when smoked or injected
- Sharing Needles
  - Bacterial/fungal infections leading to abscesses
  - Collapsed veins
  - Increased risk for HIV/Aids and Hepatitis
Heroin Addiction and Crime

- Average heroin addict spends about $150/day on their addiction
- Increasing tolerance to the drug means this amount keeps getting larger
- Burglary, Armed Robbery, Prostitution
Withdrawal

• Starts 6-24 hours after drug use stops
• Diarrhea
• Vomiting
• Sweating
• Insomnia
• Pain
• Depression/anxiety
Overdose

• Heroin slows down breathing, so taking too much can slow down breathing enough to be lethal
• Wide range of purity of street heroin makes it easy to take more than intended and overdose
• If someone stops taking heroin for a while and starts again, using the same amount of heroin they used to take could kill them because their tolerance has been lowered

Bradley Nowell, lead singer of Sublime - died in 1996 from a Heroin overdose at 28 years old
Jim Morrison
So how does it work?
The Neuron

Dendrite

Cell Body (Soma)

Axon

Axon Terminal
The Synapse

- Where two neurons meet

Axon Terminal

Neurotransmitters

Dendrite

Receptors

Signal
Dopamine and Reward

• Neurons that use the neurotransmitter **Dopamine** are part of our body’s natural reward system

• Food, sex, water all activate this system

• Our body’s way of getting us to repeat the activity
The Opioid System and Analgesia

- Our body also has a pain-relief system – that uses **Opioid** Neurotransmitters
- During times of pain, our body releases **endorphins**, which bind to **Opioid receptors** and diminish the pain – “Runner’s High”
Normally...

No Dopamine Release

Dopamine Receptors

No feelings of Reward
With Heroin...

Heroin binds to Opioid Receptors, leading to a blockage of GABA and decreased release of Dopamine. This results in Intense Euphoria and Reward, leading the user to want the drug again and again...
Is Heroin Addiction treatable?
Treatment Options

- Replacement Therapy
  - Drugs that prevent Withdrawal symptoms

- Relapse Prevention
  - Drugs that prevent user from getting high

- Counseling/Therapy
  - Narcotics Anonymous

- The most effective treatment combines medications with counseling

- Relapse rate for heroin addicts is 95%
However, recovery is still possible....
Josh Hamilton
Heroin Safety

- Needle Exchange Programs
- Naloxone
  - Heroin overdose antidote
- Safe Injection sites
  - Not available in the US
Questions?