Opioids:
The Brain and Body

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Outline:

- Biology of Substance Use Disorders
- Medication Assisted Treatment
- Crystal Run Healthcare Initiatives
- The Whole Person Medical Model

Learning Objectives:

- Understand the Neuroanatomy of Substance Use Disorder
- Provide an overview of Medication Assisted Treatment and how patient's response to treatment
- Emphasize positive secondary outcomes of treating Opioid use disorders.

Disclosure of Conflicts of Interest

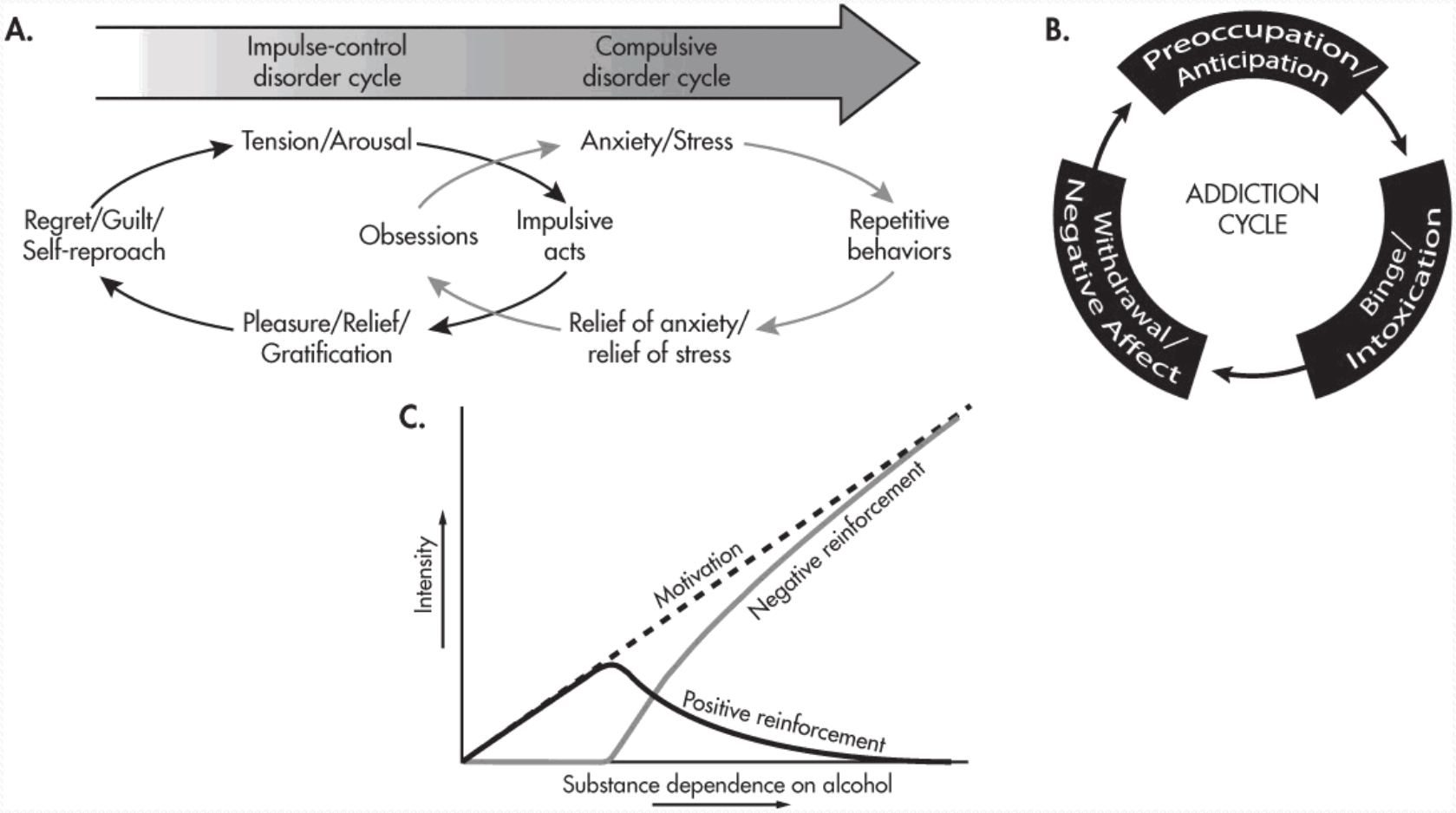
- “I have no relevant financial or professional relationships to disclose”

What is Substance Use Disorder?

Substance use is a chronically relapsing disorder characterized by (DSM V)

1) compulsion to seek and take a drug
2) loss of control in limiting intake
3) emergence of a negative emotional state (e.g., dysphoria, anxiety, irritability) when access to the drug is prevented

What is Substance Use Disorder?



Biology of Substance Use Disorders

- Current neurobiological research strives to understand the neuroadaptive mechanisms within specific neurocircuits

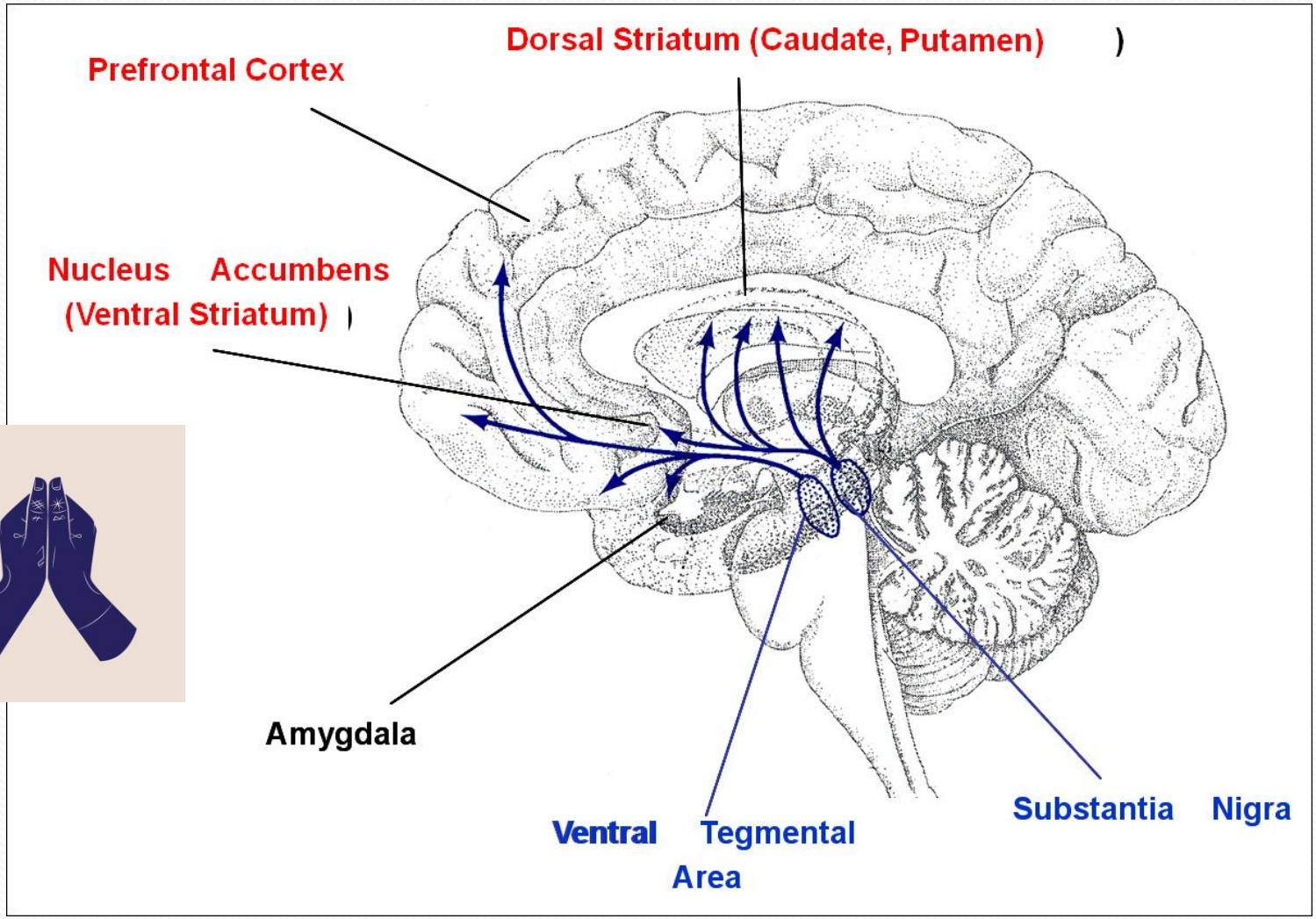
- Much of the research comes from animal models

Biology of Substance Use Disorders

- "Reward Centers of the Brain"

- Location
  - Mesocorticolimbic dopamine system
  - Basal forebrain and ventral striatum (nucleus accumbens)

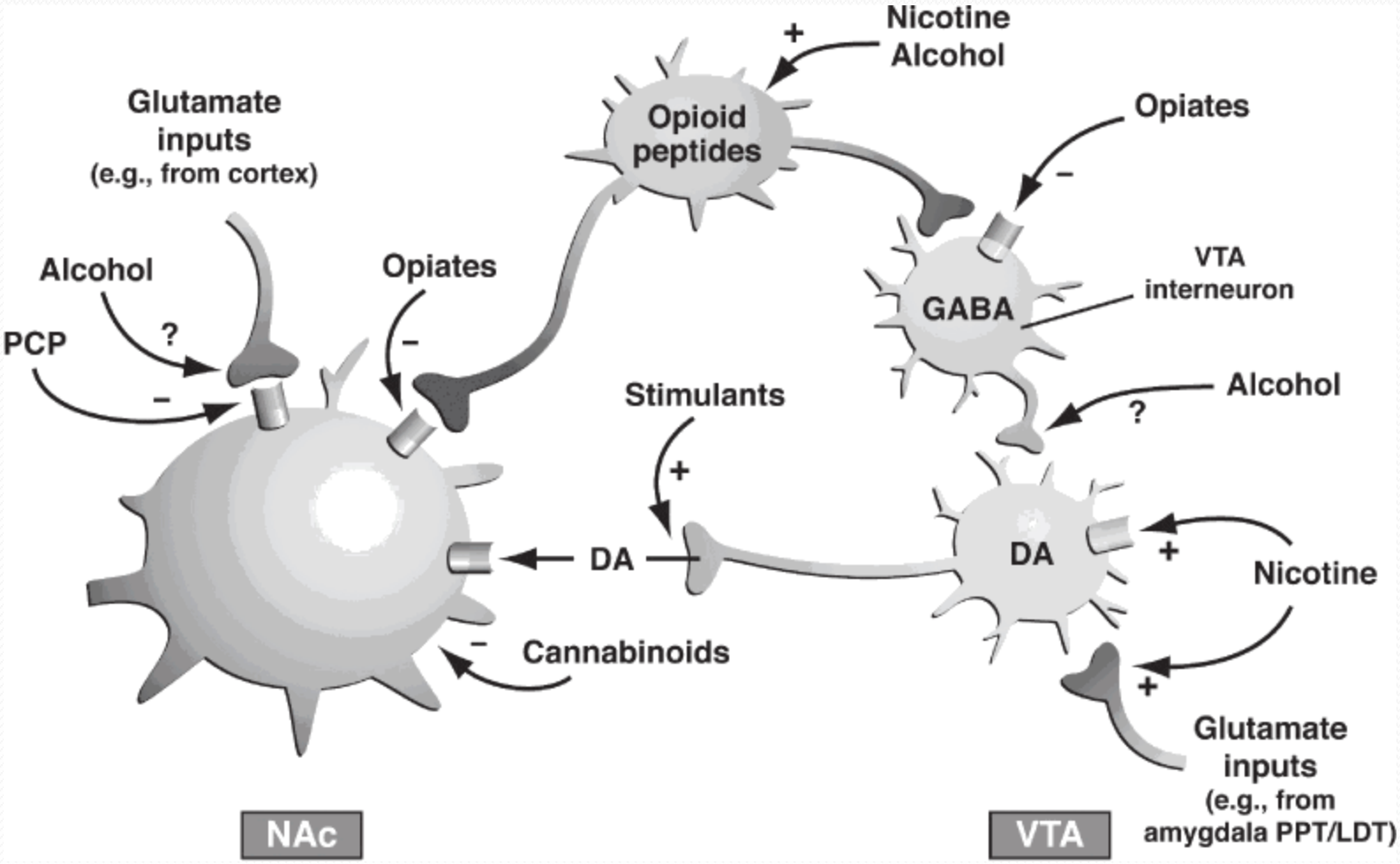
Biology of Substance Use Disorders



Biology of Substance Use Disorders

- Neurotransmitters
  - As the neural circuits for the reinforcing effects of drugs with dependence potential have evolved, the role of neurotransmitters and neuromodulators has also evolved, and five of these systems have been identified to play a role in the acute reinforcing effects of drugs, including
    - **Dopamine**
    - opioid peptides
    - γ-aminobutyric acid (GABA)
    - serotonin
    - endocannabinoids

Biology of Substance Use Disorders



Biology of Substance Use Disorders

- Opioid Receptors
  - There are three types of opioid receptors, μ, δ, and κ (referred to as MOPR, DOPR, and KOPR, respectively).
  - Genetics of these receptors was decoded in the 1980's.

Biology of Substance Use Disorders

- Biology, genetics, social determinates, cognitive schemas, etc.

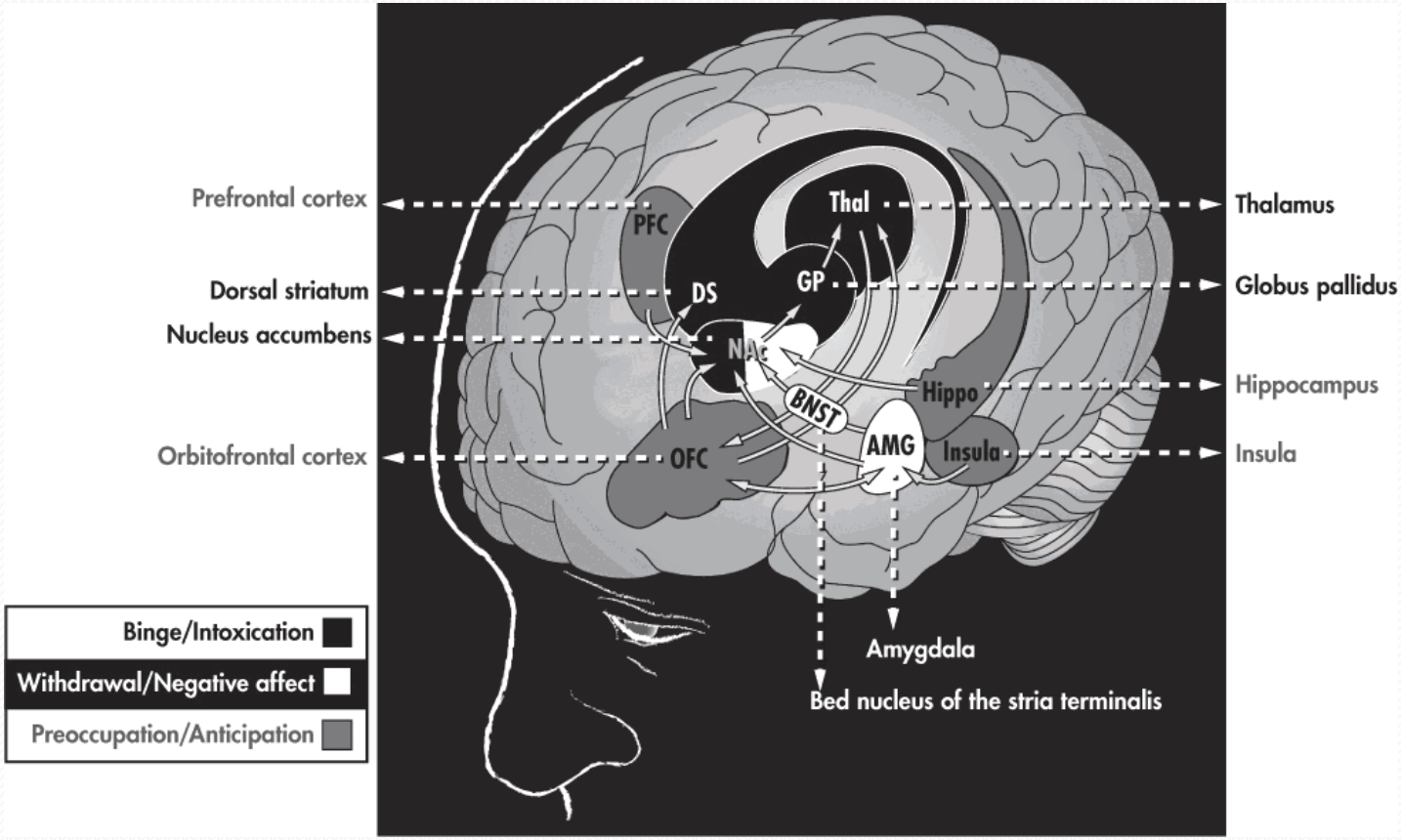
- Neuroadaptation - A within-system neuroadaptation can be defined as one in which "the primary cellular response element to the drug would itself adapt to neutralize the drug's effects; persistence of the opposing effects after the drug disappears would produce the withdrawal response"

Biology of Substance Use Disorders

- Individual differences in the prefrontal cortical control of incentive salience may represent a key mechanism to explain individual differences in the vulnerability to substance use, and excessive attribution of incentive salience to drug-related cues may lead to excessive drug intake, compulsive behavior, and relapse.
    - ? could be the reason why certain cognitive behavioral therapies are not effective ?

Biology of Substance Use Disorders

- Why is substance use difficult to treat?



Medication Assisted Treatment

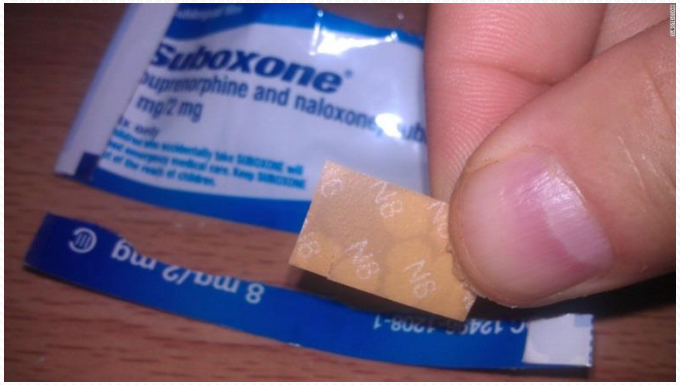
- Use of medications, in combination with counseling and behavioral therapies, to provide a whole-patient approach to the treatment of substance use disorders.
- Research shows that when treatment of substance-use disorders occurs with a combination of medication and behavioral therapies it has the most success.

Medication Assisted Treatment

- Methadone
  - Opioid agonist
  - A standard form of Medication Assisted Treatment for decades
  - Treatment programs are Federally regulated and have to be certified by SAMSHA (nearest programs are in Newburgh and Kingston)

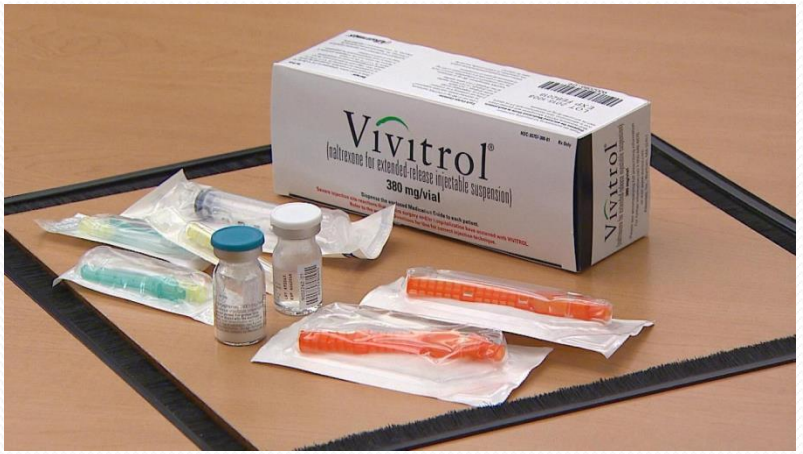
Medication Assisted Treatment

- Buprenorphine/Naloxone (Suboxone)
  - Buprenorphine is a partial opiate agonist (Mu) and has a receptor occupancy profile that decreases the potential for overdose and Naloxone is an opioid antagonist. This combination prevents diversion of the drug and intravenous injection.

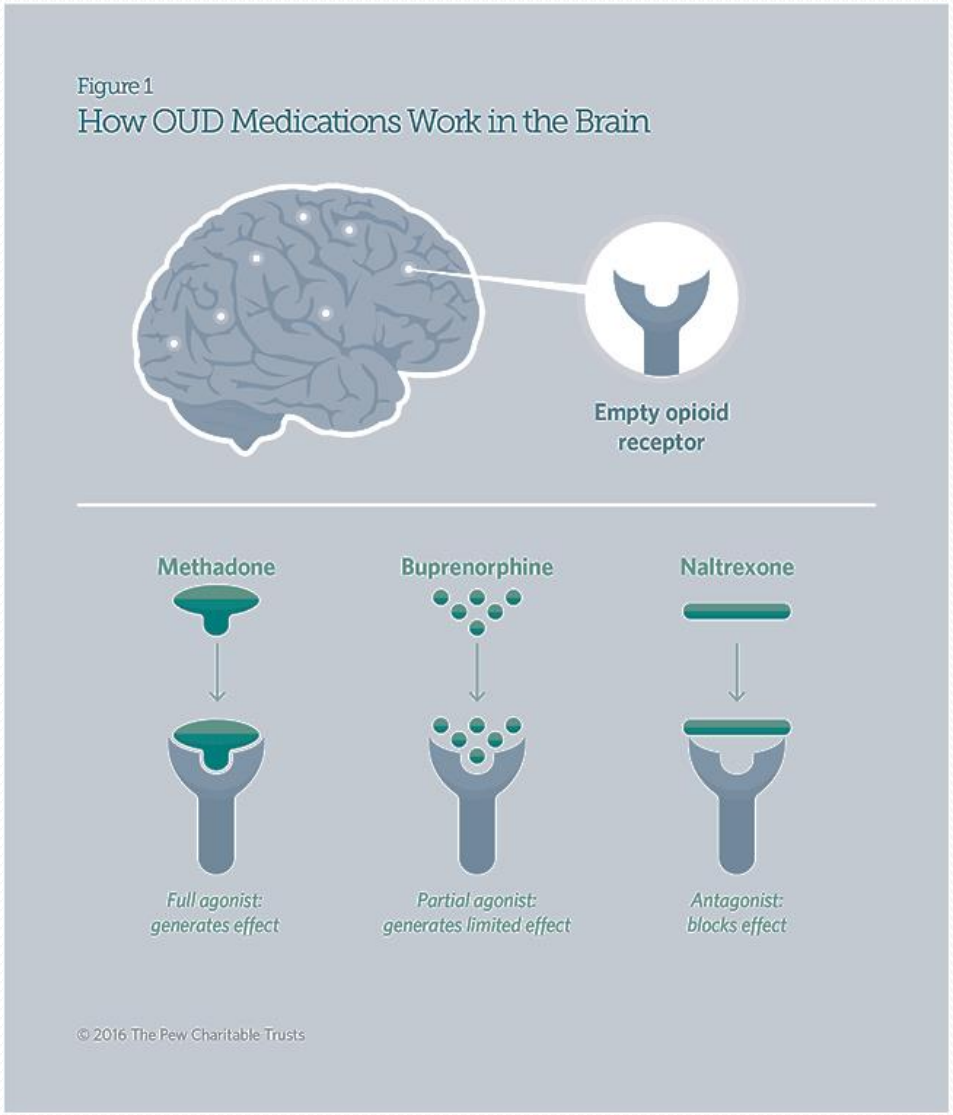


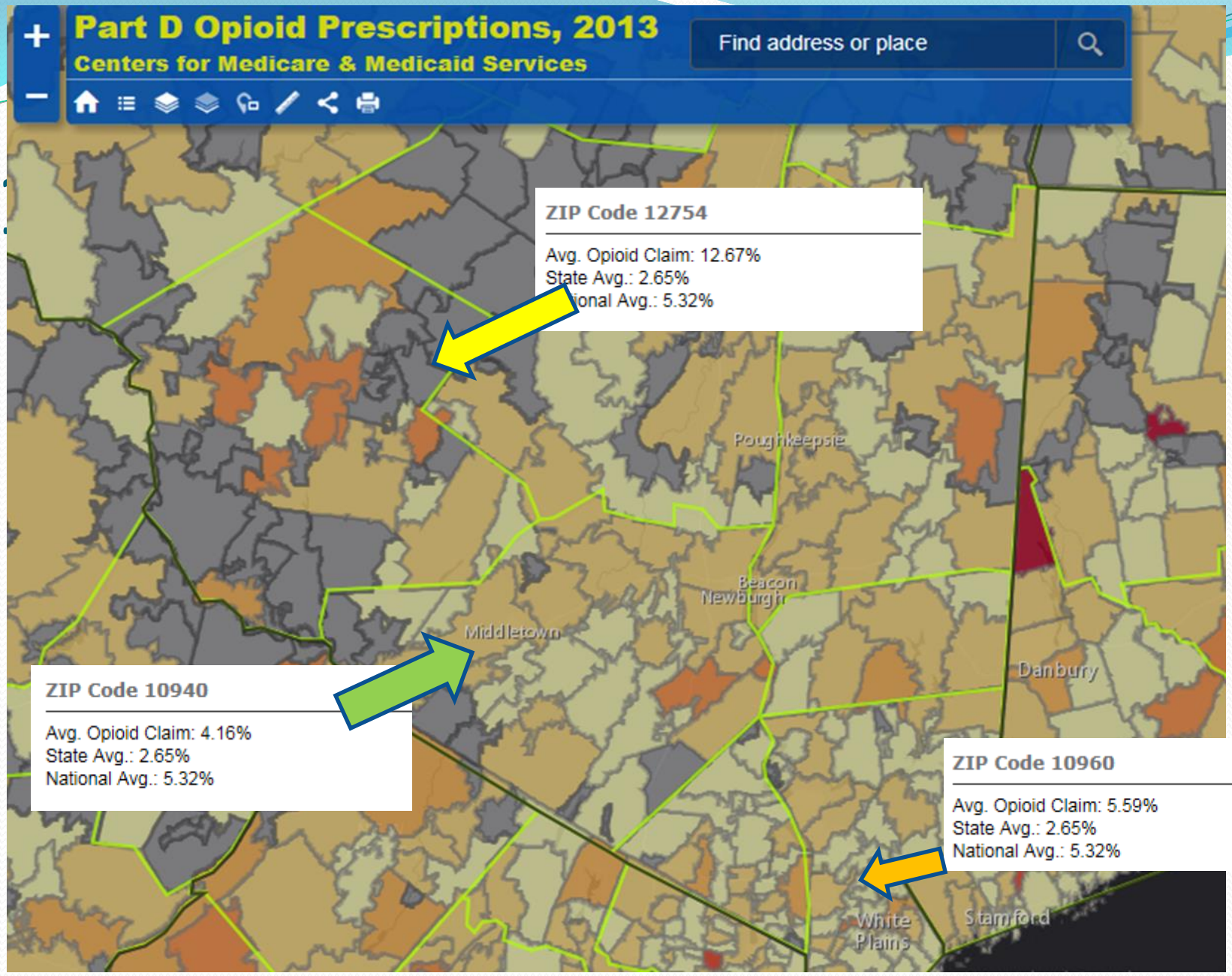
Medication Assisted Treatment

- Naltrexone
  - Opioid antagonist with the highest affinity for the Mu receptor. Naltrexone blocks the effects of opioids by competitive binding at opioid receptors.
  - Oral (daily) and Injection (every 4 weeks)
  - Administered in a variety of locations



Medication Assisted Treatment




Part D Opioid Prescriptions, 2013
Centers for Medicare & Medicaid Services
Find address or place
ZIP Code 12754
Avg. Opioid Claim: 12.67%
State Avg.: 2.65%
ional Avg.: 5.32%
Poughkeepsie
Beacon
Newburgh
Middletown
Danbury
ZIP Code 10940
Avg. Opioid Claim: 4.16%
State Avg.: 2.65%
National Avg.: 5.32%
ZIP Code 10960
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State Avg.: 2.65%
National Avg.: 5.32%
White
Plains
Stamford

Crystal Run Healthcare Initiatives

- Education
- Resources
- Programs

Crystal Run Healthcare Initiatives

- **SBIRT**
  (Screen, Brief Intervention, Referral, Treatment)

Questions to ask:

1. "How many times in the past year have you used an illegal drug or used a prescription medication for non-medical reasons?" If asked to clarify the meaning of "nonmedical reasons," the interviewer should add, "for instance, you used it because of the experience or feeling it caused."

2. "Has your drug use caused you any trouble?"

3. "On a scale from 0 to 10, where 0 is *not at all* and 10 is *the most*, how ready are you to change these risky behaviors"

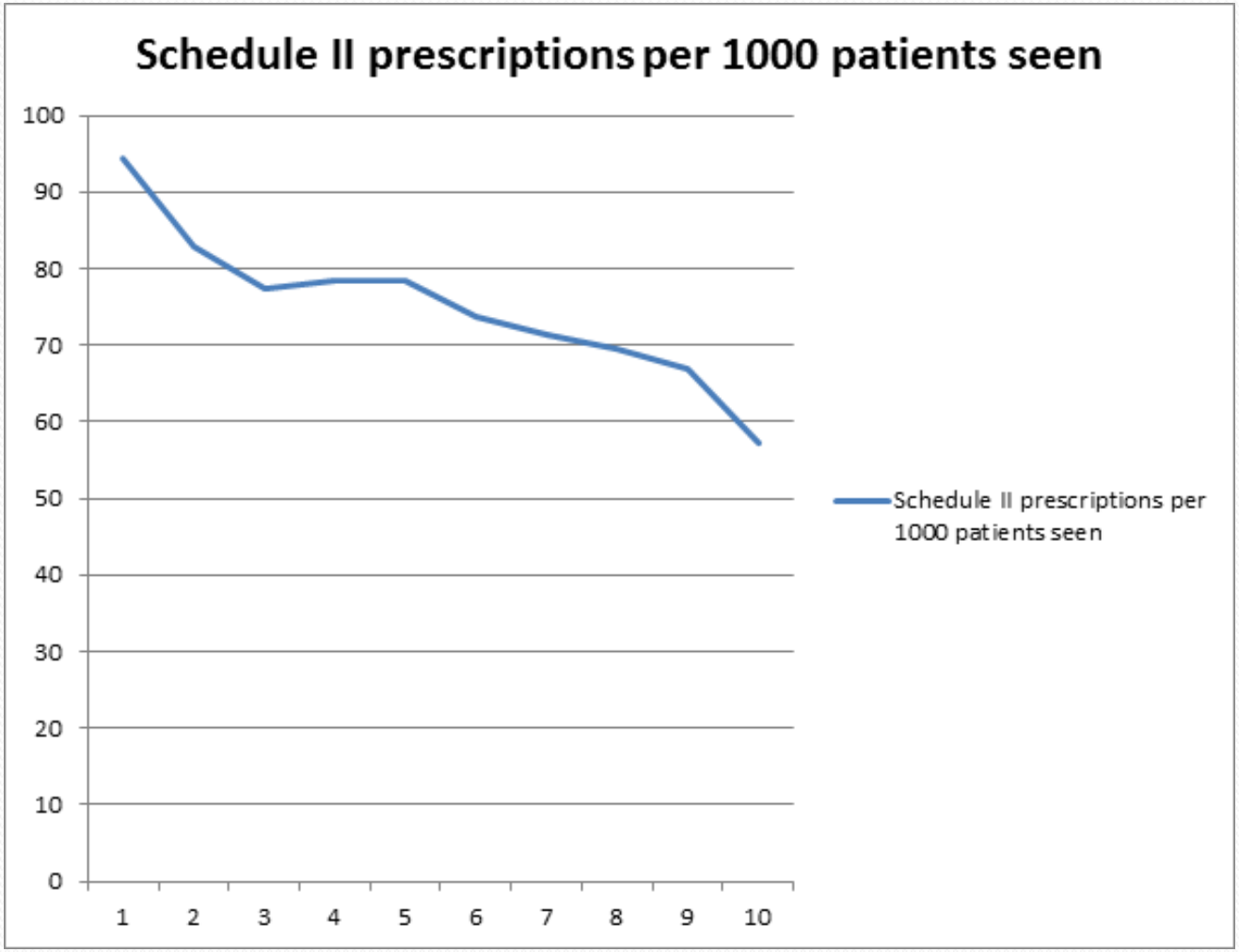
4. Non-judgmental summary statement – "So, what I have heard you say insert summary of above and that you are ready or not ready to make some changes in your life."

Crystal Run Healthcare Initiatives

Pharmacy Program

- In an effort to improve communication between providers and patients about the risks and benefits of opioid therapy for chronic pain and to improve the safety and effectiveness of pain treatment we will be reaching out to you regarding specific patients on chronic opioid regimens
- Team based approach – Patient, Provider, and Pharmacists
- A Crystal Run Healthcare Pharmacist will reach out to the patient to arrange an office visit to initiate a taper schedule. If the patient has risk factors they will also be able to screen for substance use disorders and refer for treatment.

Crystal Run Healthcare Initiatives



CRHC 2017 prescribing patterns

Crystal Run Healthcare Initiatives

- Medication Assisted Treatment Program
  - 4 Providers - 1 Psychiatrist, 1 PCP/Addiction Medicine, and 2 Ob/GYNs
  - Locations – Sullivan, Orange, and Rockland Counties
  - Treatment Team partners – Catholic Charities

  - Establish medical care

Crystal Run Healthcare Initiatives

- Medication Assisted Treatment Program

National average 10-70%

  - Outcomes

<u>90 days in program</u>	
Number of referrals	94
Average days from referral to initial	18
% of patient not interested in progr	33
Number of Active Patients	15
% patient in program after 30 days	66.6
Average age	36
% patient seen by PCP w/in 30 days	86
Number of patients d/c from progr	1
<u>12 month in program</u>	
Number of referrals	247
Average days from referral to initial	15
% of patient not interested in progr	26
Number of Active Patients	28
% patient in program after 30 days	70
% patient in program after 6 months	42
Average age	35
% patient seen by PCP w/in 30 days	85
Number of patients d/c from program b/c of contract violation	2

Crystal Run Healthcare Initiatives

- The future -
  - OPtIon Team
    - Population Stratification
    - Improve access to non-opioid treatments
    - Evidence Based prescribing
    - Episodes of care – Fractures, Acute Pain, Chronic Pain, etc.

The Whole Person Medical Model

- The estimated expense to society of opioid addiction nears $20 billion annually, yet the cost of treating an individual addicted to opioids is only $4,000 per year. If every opioid-dependent person in the United States received treatment, $16 billion would be saved every year.

- Opioid abusers incurred annual *medical costs* that were **$14,054 to $6650 higher** than nonabusers in patients with private insurance or Medicaid beneficiaries (Comorbid conditions)

The Whole Person Medical Model

- **1 out of 5** patients with non-cancer pain or pain-related diagnoses are prescribed opioids in office-based settings
- Primary care providers account for about half of opioid pain relievers dispensed
- Prescribing rates are highest among **Pain medicine (49%), Surgery (37%), and Physical medicine/rehabilitation (36%).**

The Whole Person Medical Model

- **Women** are more likely to use prescription opioids than men.

- Older adults (aged 40 years and older) are more likely to use prescription opioids than adults aged 20 – 39.

The Whole Person Medical Model

- Annual Exam
- Screening Tests (Colonscopy is the most frequently missed exam)
- Population Specific Testing
  - HIV
  - Hepatitis B and C
  - Tuberculosis
  - Syphilis
  - Chest X-ray if history of IV drug use

The Whole Person Medical Model

- Hepatitis C
  - 60-80% risk of being infected with HCV after 5 years of IV drug use
  - The average cost of initial phase Hep C treatment is $1850/yr, while late phase is $6000/yr. Hep C from substance use is diagnosed approximately 20 years earlier then non-substance use Hep C.
  - Average lifetime cost for Hep C is $64,000/pt with highest estimated cost being $320,000
  - If 20 years is an estimate for developing late stage Hep C complications then a rough lifetime healthcare savings for CRHC MAT patients would be $512,000 ($2.56 million).

The Whole Person Medical Model

- Justice System
  - Average US per year cost of drug related incarceration is $44,000 and 10 days is the typical stay.
  - Orange County – each drug related case in 2016 cost $2,330.

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Thank you for your time and efforts to address this local and national epidemic