Opioid Epidemic Overview
Past, Present, and Future

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Disclosures

- None

Objectives

- **By the end of this talk**
  - Discuss the current state of the Opioid Epidemic at the national and local levels
  - Discuss evidence for MAT and available medications
  - Highlight the Opioid Epidemic in the Criminal Justice System
  - Discuss evidence supporting MAT in the Criminal Justice System

Case: 30-YEAR-OLD

- 30 yo male started using pills obtained from his parents at age 14. Once the supply ran out, he transitioned to using heroin, first sniffing then using intravenously at age 17.
- Since then, he has been uninsured with intermittent odd jobs. He is unable to afford outpatient substance use/mental health treatment.
- Multiple incarcerations 2/2 drug related crimes. Has bought Suboxone intermittently on the street for years to avoid injecting heroin.

Case

What are opioids?

- "Natural", referred to as "opiates"
  - Derived from opium poppy
  - Morphine, codeine, opium
- Synthetic (partly or completely):
  - Semisynthetic: heroine, hydrocodone, oxycodone
  - Fully Synthetic: fentanyl, tramadol, methadone
- **"Opioid" refers to:**
  - **both "natural" and synthetic members of this drug class**

Terminology

What are the effects from opioid use?

All of these drugs have significant potential for causing "addiction", or Opioid Use Disorder

They also share common effects, depending on the dose:

- Pain relief (analgesia)
- Cough suppression
- Constipation
- Sedation (sleepiness)
- Respiratory suppression (slowed breathing)
- Respiratory arrest (stopping breathing)
- Death

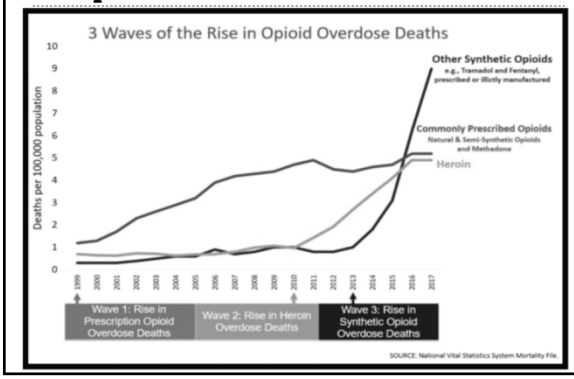
Effects of Opioids

Opioid Use History and Policy

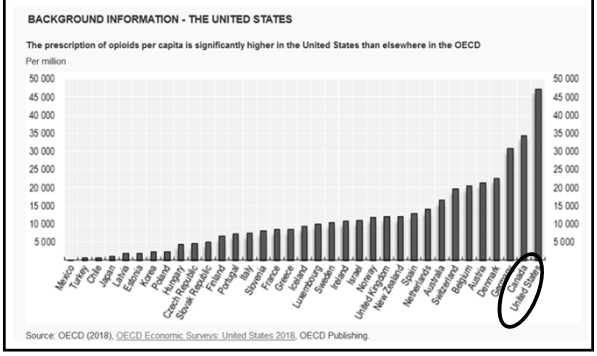
- Early-Mid 19th Century
  - Addiction among Civil War Veterans
  - Isolation of Morphine from Opium
  - Introduction of the Hypodermic syringe
- Harrison Narcotics Tax Act of 1914
- NIDA created in the 1970s
- DATA 2000 Waiver
- CARA 2016, CDC Chronic Pain Guidelines
- Synthetics Trafficking and Overdose Prevention (STOP) Act of 2017
- SUPPORT for Patients and Communities Act of 2018

History and Policy

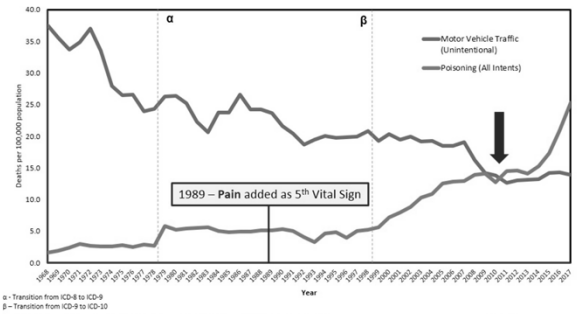
"Triple Wave"



Global Perspective



Poisoning death rates are higher than traffic crash death rates in N.C.



α - Transition from ICD-8 to ICD-9
β – Transition from ICD-9 to ICD-10

Technical Notes: Rates are per 100,000 residents, age-adjusted to the 2000 U.S. Standard Population
Source: Death files, 1968-2016, CDC WONDER
Analysis by Injury Epidemiology and Surveillance Unit

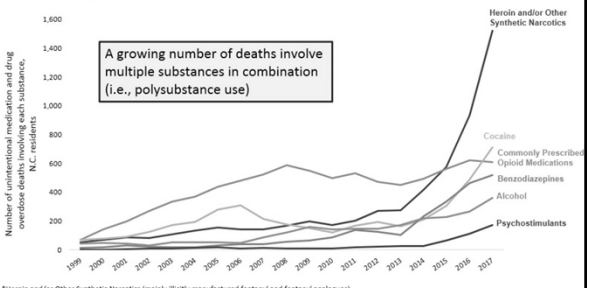
North Carolina Injury & Violence PREVENTION Branch

In 2017, over 6 North Carolinians died each day from unintentional medication or drug overdose.

Technical Notes: Unintentional medication and drug overdose: X40-X44; Limited to N.C. residents
Source: Deaths-N.C. State Center for Health Statistics, Vital Statistics, 2017
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

Unintentional overdose deaths involving illicit opioids* have drastically increased since 2013

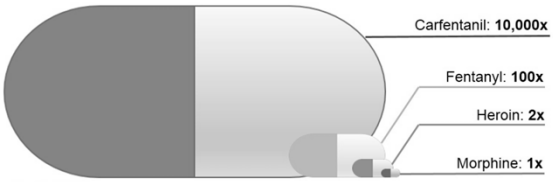


*Heroin and/or Other Synthetic Narcotics (mainly illicitly manufactured fentanyl and fentanyl analogues)

Technical Notes: These counts are not mutually exclusive; if the death involved multiple substances it can be counted on multiple lines; Unintentional medication, drug, alcohol poisoning: X40-X45 with any mention of specific T-codes by drug type; limited to N.C. residents
Source: Deaths-N.C. State Center for Health Statistics, Vital Statistics, 1999-2017
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

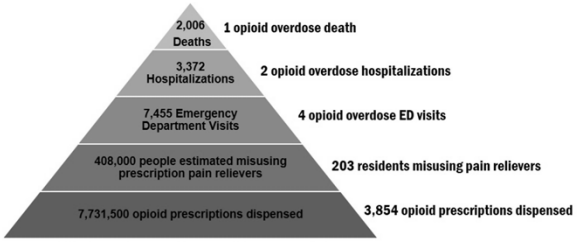
With unprecedented availability of cheap heroin and fentanyl… **MORE PEOPLE ARE DYING**



Opioid Potency

North Carolina Injury & Violence PREVENTION Branch

For every opioid overdose death, there were nearly 2 hospitalizations and 4 ED visits due to opioid overdose

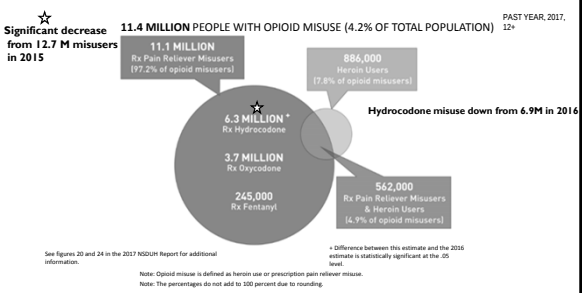


N.C. Overdose Pyramid

Technical Notes: Deaths, hospitalizations, and ED data limited to N.C. residents; includes all intents, not limited to unintentional
Source: Deaths-N.C. State Center for Health Statistics, Vital Statistics, 2017/ Hospitalizations- North Carolina Healthcare Association, 2017/ED-NC DETECT, 2017/ Misuse-NSDUH, 2015-2016 applied to 2017 population data/Prescriptions-CSRS, 2017 Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

Opioid's Grip: Millions Continue to Misuse Prescription Pain Relievers



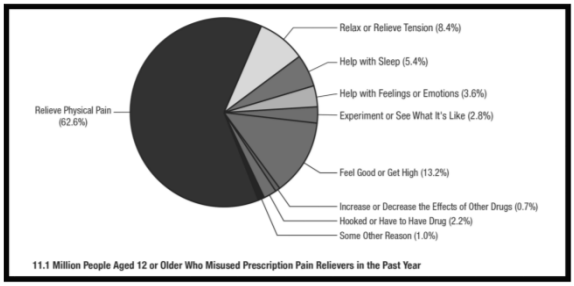
See figures 20 and 24 in the 2017 NSDUH Report for additional information.

+ Difference between this estimate and the 2016 estimate is statistically significant at the .05 level.

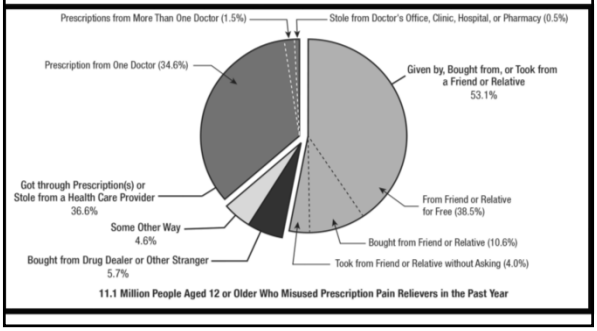
Note: Opioid misuse is defined as heroin use or prescription pain reliever misuse.
Note: The percentages do not add to 100 percent due to rounding.

▷ *Misuse Pain Relievers*

Main Reason for the Most Recent Prescription Pain Reliever Misuse among People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year: Percentages, 2017



Source Where Pain Relievers Were Obtained for Most Recent Misuse among People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year: Percentages, 2017



Infant and Toddlers: Exposure to Potent Opioids

'The Pills Are Everywhere': How the Opioid Crisis Claims Its Youngest Victims

Increasingly, parents and the police are encountering toddlers and young children unconscious or dead after consuming an adult's opioids.

- **"One Pill Can Kill"**
- **Several** potent opioid cases in North Carolina including pills such as oxycodone, oxymorphone, prescriptions like methadone and fentanyl patches and illicit drugs such as heroin, fentanyl, and fentalogs including carfentanil

Infants and Toddlers

NC Opioid Epidemic Trends

- **900%** increase in Hepatitis C cases[1]
- **13 fold** increase in endocarditis (heart valve infection)[2]
- **4 fold** increase in sepsis[2]
- **1000+%** increase in newborn hospitalizations[3]
- 31 active Syringe Exchange Programs in 45 counties[4]
- 7 counties w/ Law Enforcement Assisted Diversion (LEAD)[5]

1. NC Electronic Disease Surveillance System, 2000-2016, Analysis by NC DPH Epidemiology Section, Communicable Disease Branch
2. NC State Center for Health Statistics. Hospital Discharge Dataset, 2010-2015, Analysis by NC Epidemiology Section, Communicable Disease Branch
3. NC State Center for Health Statistics, Hospital Discharge Dataset, 2004-2017, Birth Certificate records, 2004-2017; Pregnancy Risk Assessment Monitoring System (PRAMS). N.C. 2016
4. NCDHHS, Division of Public Health, NC Harm Reduction Monthly Updates, January 2019 Data
5. NC Harm Reduction Coalition, NC Harm Reduction Monthly Updates, January 2019 Data

North Carolina Trends

The N.C. Opioid Action Plan (N.C. OAP)

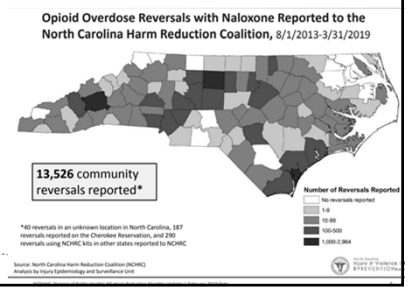
- **Create a coordinated infrastructure**
- **Reduce oversupply of prescription opioids**
- **Reduce diversion of prescription drugs and flow of illicit drugs**
- **Increase community awareness and prevention**
- **Make naloxone widely available and link overdose survivors to care**
- **Expand treatment and recovery oriented systems of care**
- **Measure our impact and revise strategies based on results**

HHS-5 Point Response

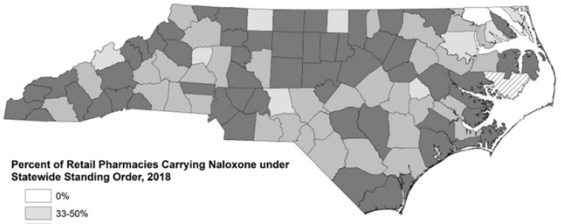
1. **Better** addiction prevention, treatment, and recovery services
2. **Better** data
3. **Better** pain management
4. **Better** targeting of overdose reversing drugs
5. **Better** research

Naloxone

- Naloxonesaves.org (standing order)
- N.C. Good Samaritan/Naloxone Access Laws



Increase community prevention: Over 85% of retail pharmacies dispense Naloxone under Standing Order



Percent of Retail Pharmacies Carrying Naloxone under Statewide Standing Order, 2018

- 0%
- 33-50%
- 51-75%
- 76-100%
- No pharmacies in county

Source: Injury and Violence Prevention Branch, December 2018
Analysis by Injury Epidemiology and Surveillance Unit

North Carolina Injury & Violence PREVENTION Branch

NCDHHS, Division of Public Health | Core Overdose Slides | January 2019 30

Opioid Use Disorder

Most effective treatment is Medication Assisted Treatment

Pharmacotherapy for Addiction

How does Medication-Assisted Treatment help?

- Provides **physiological** and **psychological** stabilization that can allow recovery to take place.
  - Prevents withdrawal
  - Diminishes/eliminates cravings
  - Blocks the euphoric effect

How does it work?

Is MAT Effective for Opioid Addiction?

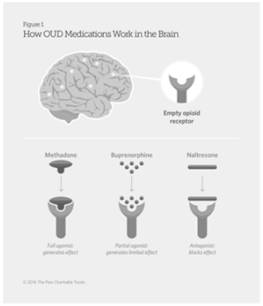
- **Decreases**:
  - Illicit use, death rate[1]
  - HIV, Hep C infections[2-4]
  - Crime[5]
- **Increases**:
  - Social functioning and retention in treatment[6-7]

1.Kreek J, SubstAbuse Treatment 2002
2.MacArthur, BMJ, 2012
3.Metzger, Public Health Reports 1998
4. K. Page, JAMA IM, 2014
5.Gerstein DR et al, CALDATA General Report, CA Dept of Alcohol and Drug Programs, 1994
6. Mattick RP et al, Cochrane Database of Systematic Reviews, 2009
7. Mattick RP et al, Cochrane Database of Systematic Reviews, 2014

Evidence for MAT

FDA Approved MAT for Opioid Use Disorder

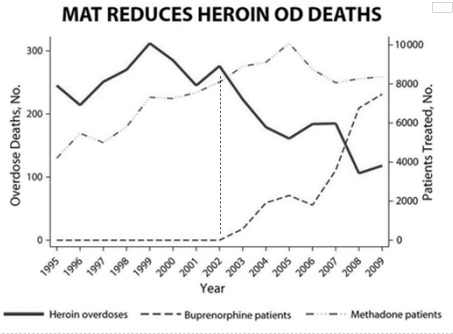
- Methadone
- Buprenorphine
- Naltrexone (*PO, IM)



Pharmacotherapy for Addiction

SAMHSA, TIP Series 63, 2018

Treatment of Opioid Use Disorder is Effective

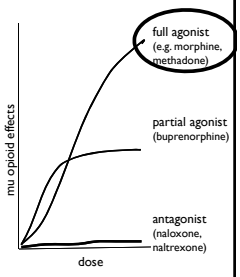


Treatment is Effective

R Schwartz, Am J Public Health, 2013

Methadone

- Full Mu receptor agonist
- Long-acting, half-life 24-60 hrs
- Prevents withdrawal symptoms, including craving, without the opioid euphoria if targeted at "right" dose, generally 80-120 mg/day
- Dangerous in overdose and when combined with other sedative medications (EtOH + benzodiazepines)



Methadone

Opioid Treatment Programs (OTPs)

- Methadone can only be prescribed in a federally-regulated OTP when used for treatment of addiction
- Directly observed therapy
- Exposure to others with addiction
- No longer referred to as "Methadone clinics"

Opioid Treatment Programs

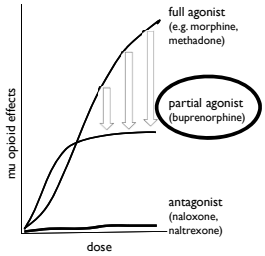
Salsitz, Mt Sinai J of Medicine, 2000

Buprenorphine

Long acting
- half-life ~ 24-36 Hours

Partial agonist at mu receptor
- Comparatively minimal respiratory suppression and no respiratory arrest when used as prescribed

High affinity for mu receptor
- *blocks* other opioids
- *displaces* other opioids
  - can precipitate withdrawal



Buprenorphine

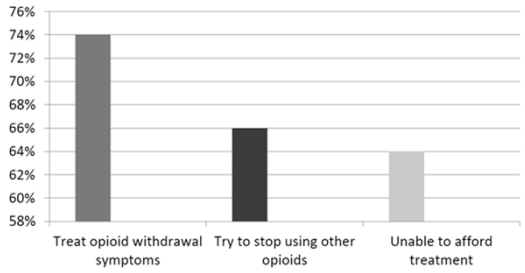
SAMHSA, 2018
Orman & Keating, 2009

Buprenorphine Formulations for OUD Quiz#1

Content	Route	Products	Available Doses	Equivalent Dose to 8mg Buprenorphine
With Naloxone	Sublingual	Film (suboxone)	2mg Bup/0.5mg Nx 4mg Bup/1mg Nx 8mg Bup/2mg Nx 12mg Bup/3mg Nx	8mg
		Tablet - Generic	2mg Bup/0.5mg Nx 8mg Bup/2mg Nx	
	Sublingual	Tablet - (Zubsolv®)	1.4mg Bup / 0.36mg Nx 2.9mg Bup / 0.7mg Nx 5.7mg Bup / 1.4mg Nx 8.6mg Bup / 2.1mg Nx 11.4mg Bup / 2.6mg Nx	5.7 mg
	Buccal	Film (Bunavail®)	2.1mg Bup / 0.3mg Nx 4.2mg Bup / 0.7mg Nx 6.3mg Bup / 1mg Nx	4.2mg
Mono-product	Sublingual	Tablet - Generic	2mg Bup 8mg Bup	8mg
	Implant	probuphine	74.2mg (Four implants for six-months in one arm)	74.2 mg
	Injection	sublocade	100mg, 300mg (Once-monthly injection)	300 mg: First dose 100mg: Steady state dose

Buprenorphine Formulations

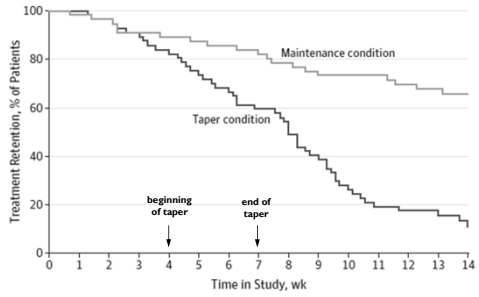
Reasons for Illicit Use of Buprenorphine



Bazazi, J Addict Med 2011

Reasons for Illicit Use

Buprenorphine: Maintenance vs. Taper



Maintenance vs. Taper

Fiellin et al., 2014

Naltrexone

Long acting

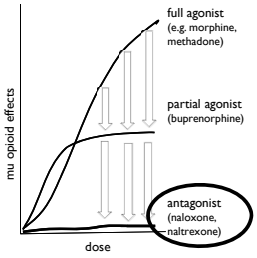
- half-life:
  - Oral ~ 4 Hours
  - IM ~ 5-10 days

Full Antagonist at mu receptor

- Competitive binding at mu receptor

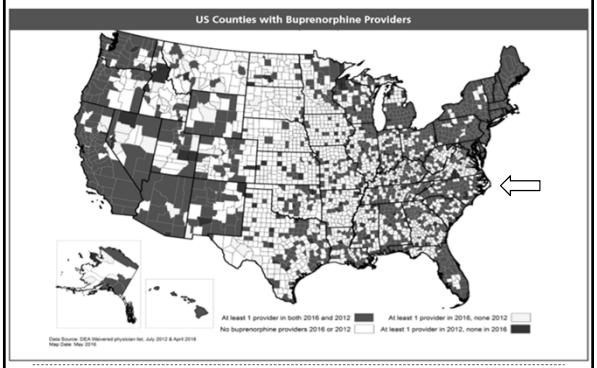
Formulations

- *Tablets: Revia®: FDA approved in 1984*
- *Extended-Release intramuscular injection: Vivitrol®: FDA approved in 2010*



Naltrexone SAMHSA, 2018

Changes in Physician Supply to Prescribe Buprenorphine



Physicians Prescribing Buprenorphine Andrilla, WWAMI RHRC, 2017

Myths and Realities of Opioid Use Disorder Treatment.

Myth	Reality	Possible Policy Response
Buprenorphine treatment is more dangerous than other chronic disease management.	Buprenorphine treatment is simpler than many other routine treatments in primary care, such as titrating insulin or starting anticoagulation. But physicians receive little training in it.	Amend federal buprenorphine-treatment eligibility requirements to include training completed during medical school and require training during medical school or residency. Add competency questions to U.S. Medical Licensing Examination and other licensing exams.
Use of buprenorphine is simply a "replacement" addiction.	Addiction is defined as compulsively using a drug despite harm. Taking a prescribed medication to manage a chronic illness does not meet that definition.	Public health campaign to reduce stigma associated with addiction treatment, similar to past campaigns (e.g., HIV) that provided education and challenged common myths.
Detoxification for opioid use disorder is effective.	There are no data showing that detoxification programs are effective at treating opioid use disorder. In fact, these interventions may increase the likelihood of overdose death by eliminating tolerance.	Advocacy from professional physician organizations to educate federal and state agencies and policymakers about evidence-based treatment and the lack of evidence for short-term "detoxification" treatment.
Prescribing buprenorphine is time consuming and burdensome.	Treating patients with buprenorphine can be uniquely rewarding. In-office inductions and intensive behavioral therapy are not required for effective treatment.	Develop and disseminate protocols for primary care settings that emphasize out-of-office induction and treatment.
Reducing opioid prescribing alone will reduce overdose deaths.	Despite decreasing opioid prescribing, overdose mortality has increased. Patients with opioid use disorder may shift to the illicit drug market, where the risk of overdose is higher.	Develop a national system of virtual consultation for physicians to reach addiction and pain specialists who can support treatment of patients with suspected opioid use disorder.

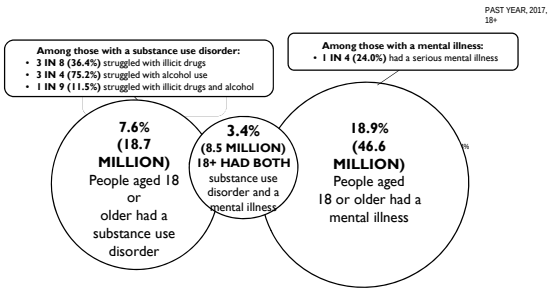
Myths and Realities Wakeman, NEJM, 2018

Behavioral Health's Role in OUD Treatment

- Optional psychosocial treatment should be offered in conjunction with pharmacotherapy
- A patient's decision to refuse psychosocial treatment/absence of available treatment should not preclude or delay MAT.
- Refusing psychosocial services should not generally be used as rationale for discontinuing current MAT.

Behavioral Health's Role

Mental Health and Substance Use Disorders in America



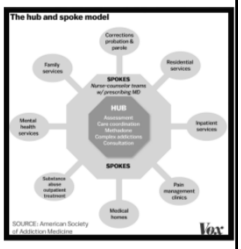
See figures 40, 41, and 54 in the 2017 NSDUH Report for additional information.

Psychiatric Disorders and Opioid Addiction

Disorder	Prevalence		References
Major Depression	Lifetime	38-56%; 20-50%	Havard et al, 2006; Nunes et al, 2004
	Current	16-30%; 10-20%	
		19.8% males; 31.1% females	Darke et al, 2009
Anxiety Disorders	Lifetime	13.2-24.5%	Rounsaville, 1982
PTSD	Lifetime	11-20%; 40%	Villagomez, 1995; Darke et al, 2004
Bipolar Disorder		<5%	Fudala & Woody, 2002
Psychotic disorders		<5%	Fudala & Woody, 2002
Borderline PD		46%	Darke et al, 2004
Antisocial PD		20-50%; 72%	Fudala & Woody, 2002; Darke et al, 2004
ADHD		5.22%	Arias et al, 2008

OTP vs. Office Based Treatment

- Several factors are considered when deciding whether office based is appropriate for the patient:
  - Logistics: Can patient adhere to appointment and drug testing recommendations?
- Factors leading to higher level of care
  - Increased infrastructure
  - Daily monitoring



OBOT Level of Care

Evidence Based Conclusions: Opioid Use Disorder Treatment

- Detox alone is seldom the treatment of choice for opioid addiction but is appropriate in some clinical situations.
- Medication assisted treatment (MAT) has consistently demonstrated better long-term outcomes than no MAT.
- Buprenorphine and naltrexone have some significant advantages in terms of safety profile over methadone.

Conclusions

NC Opioid Epidemic and Criminal Justice Involvement

- From 2000-2015, 1,329 people died of opioid overdose after release from NC State Prisons
- First 2 weeks post release from NC State Prisons Death Rate vs. general population:
  - Heroin Overdose -> 74x greater
  - Any Opioid Overdose -> 40x greater

NC Opioid Epidemic and Criminal Justice Involvement

Prevalence of Substance Use Disorders in the NC Prison System

- NC Prison survey data 2016-2017
  - 71% had Substance Use Disorder
  - 50% or higher have Opioid Use Disorder

NC Opioid Epidemic and Criminal Justice Involvement

MAT and the Criminal Justice Population

It Works

NC Opioid Epidemic and Criminal Justice Involvement

The Rhode Island Experience

- Rhode Island has a single campus where all people incarcerated in prison and jail are located
- All prisoners were screened for Opioid Use Disorder
- Prisoners on MAT prior to arrest continued on MAT
- Prisoners with OUD not previously treated were offered MAT prior to release AND post-release.
- 896 participated, they chose:
  - 40% Suboxone
  - 59% Methadone
  - 1% Vivitrol (Naltrexone)

The Rhode Island Experience

Outcomes of RI Program

- 63% on MAT prior to incarceration and continued
- 37% were initiated during incarceration
- 72% Continued post-release
  - 95% of those previously on MAT
  - 32% of those started during incarceration

61% Reduction in Opioid Overdose Deaths

Outcomes

National Sheriff's Association

- October 2018 released recommendations and guidance on Jail Based MAT
- Highlighted Programs:
  - Sacramento County Jail, CA
  - Middlesex Jail, MA
  - Snohomish County Jail, WA
  - Rhode Island Correctional Institution

NC Opioid Epidemic and Criminal Justice Involvement

Barriers to MAT Implementation

- Stigma and misunderstanding of MAT
- Hesitancy of implementation in Correctional facilities
- Lack of knowledge and experience with MAT in Correctional facilities
- Lack of Community treatment programs especially for uninsured patients

Barriers to MAT

Opportunities in North Carolina

- Pilot launched with NC DHHS and DPS using Vivitrol injections prior to release for prisoners with OUD
- State Wide Opioid and Prescription Drug Abuse Advisory Committee moving toward dissemination of best practices for Jail MAT

Opportunities in NC

Jail MAT pilots in Durham and Orange

- Strong support from:
  - Sheriff Birkhead: Durham County
  - Sheriff Blackwood: Orange County
- Collaboration between Health Departments, County Jails, Local Mental Health Providers, Local Drug Treatment Programs and Safety Net Clinics

Jail MAT Pilots

Jail MAT Pilot Objectives

- **Objective #1**:
  - Treat all pregnant women using opioids with Suboxone or Methadone
- **Objective #2**
  - Continue Suboxone for people incarcerated that are on Suboxone from an MAT program
- **Objective #3** (once we work out 1+2)
  - Start Suboxone on all people with OUD prior to release and continue MAT post-release

Jail MAT Pilots

30 yo: Case Continued

- Most recently spent 3 months in a county jail. While incarcerated used Suboxone, cocaine and amphetamines which were relatively easy to obtain.
- Upon release did not want to go back to IV heroin use. Came to clinic in opioid withdrawal desiring treatment with Suboxone, would have used heroin if he was not able to be seen. Initiated on Suboxone, doing well, not using any other substances at this time and in job training.

Case Continued

References

- Mattick, R. P., Breen, C., Kimber, J., & Davoli, M. (2014). Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. Cochrane Database of Systematic Reviews, 2014(2), 1–84.
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