Opioid Use Disorder: A Chronic Disease

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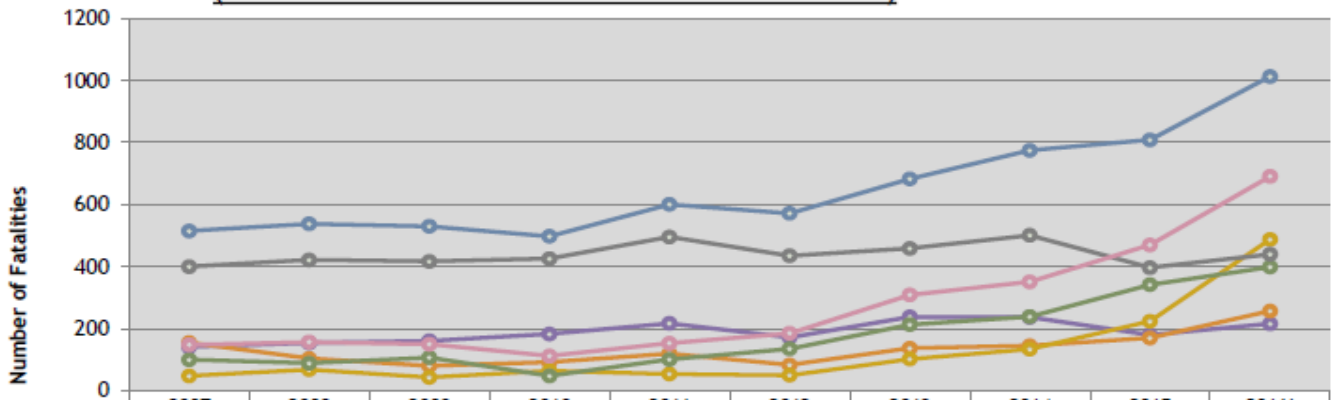
Objectives:
attendees will understand…

- The opioid epidemic as a preventable public health crisis: what can we do to turn the tide?
- The opioid use disorder as a chronic, medical disease, that is bio-psycho-social-spiritual in development & treatment
- Introductory information regarding the neurobiology of addiction (specifically, the opioid use disorder)
- Medication Assisted Treatment: why it works for so many persons with an opioid use disorder
- Recovery requires behavioral health interventions and relapse prevention/health promotion supports, case management – community linkages, social/spiritual supports and family engagement
- One size does not fit all – there are many paths to recovery!

The Opioid Epidemic: drug overdose = leading cause of accidental death in the US (CDC)

ALL DRUGS

Total Number of Fatal Drug Overdoses Drug Name/Category and Year of Death, 2007-2016
(Data for 2016 is a Predicted Total for the Entire Year)

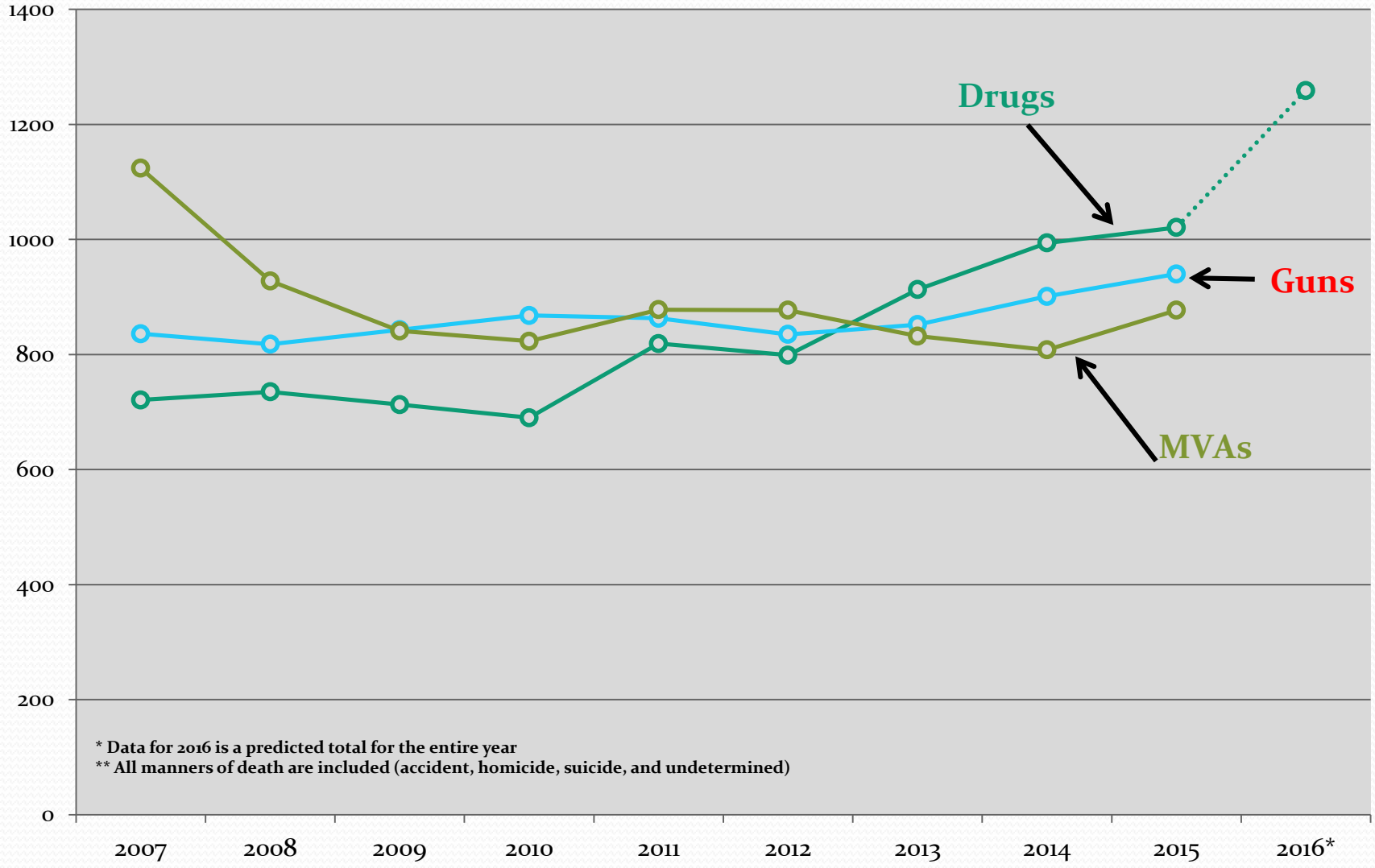


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Benzodiazepines	141	154	161	183	217	172	238	237	180	216
Cocaine	155	104	80	92	120	83	137	145	170	257
Fentanyl	48	68	43	64	54	50	102	134	224	488
Heroin	100	89	107	48	101	135	213	239	342	399
Prescription Opioids (excluding Fentanyl)	400	422	417	426	496	435	459	501	397	440
All Opioids	515	538	530	498	601	572	683	775	809	1013
Heroin and/or Fentanyl	148	157	150	112	153	185	309	351	470	691

[1] Deaths may be represented in more than one category due to groupings of drug categories (e.g. heroin)
[2] 'All Opioids' include heroin, prescription opioids, and opioids unspecified
[3] 'Opioids Unspecified' are a small category of deaths in which the determination of heroin and/or one or more prescription opioids cannot be made due to specific circumstances of the death. Most commonly, these circumstances are a result of death several days after an overdose, in which the OCME cannot test for toxicology because the substances have been metabolized out of the decedent's system.
[4] Historically, fentanyl has been categorized as a prescription opioid because it is mass produced by pharmaceutical companies. However, recent law enforcement investigations and toxicology results have demonstrated that several recent fentanyl seizures have *not* been pharmaceutically produced, but illicitly produced. This illicit form of fentanyl is produced by international drug traffickers who import the drug into the United States and often, mix it into heroin being sold. This illicitly produced fentanyl , especially fentanyl mixed with heroin, has been the biggest contributor to the significant increase in the number of fatal opioid overdoses in Virginia.
[5] Illicit and pharmaceutically produced fatal fentanyl overdoses are represented in this analysis. This includes all different types of fentanyl analogs (acetyl fentanyl, furanyl fentanyl, etc.)
[6] Fatal opioid numbers have changed slightly from past reports due to the removal of fentanyl from the category of prescription opioids, as well as the addition of buprenorphine, levorphanol, meperidine, pentazocine, propoxyphene, and tapentadol added to the list of prescription opioids.

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Top 3 Methods of Death by Year, 2007-2016



The Opioid Epidemic: A Preventable Public Health Crisis

Turning the tide – addressing supply problem

Schuchat etl al (2017) JAMA pointed to relationship between the increase in the daily average MME prescribed per person in the US (quadrupled from 1999 – 2010) and an increase in the prevalence of opioid use disorders and opioid overdose deaths.

Reducing the supply of pain medication through policy changes in medical field:

- Requiring physician use of Prescription Monitoring Programs followed by decreases in level of prescriptions for opioids
- Hospital systemic changes on prescribing policies endorsed by major hospital associations (VHHA)
- Physician/pharmacist educational programs/CDC guidelines
- Surgeon General Murthy's White Paper – letter to all physicians

Diversion control measures are built into our state's regulations around the use of medication assisted treatment – to address the concerns over misuse of MAT.

Where do most people get their opioids?

- National surveys show that pain pills are most often obtained from family members and friends (our medicine cabinets).
- Communities can help reduce the supply through events like "Take Back Day" sponsored by prevention coalitions
- Lock up your medicines at home!
- Find collection boxes in your community: Carilion is going to increase the number of sites where you can return your unused medications – be on the lookout for such sites!
- Help educate the community about the perils of pain pills – We all need to BE AWARE: pursue pain management alternatives, resist the offers of prescriptions.

Communities Can Address the Social Determinants Affecting the Disease

- Your rapid rehousing efforts matter!
- Disease manifestation is a matter of:

  Genetics + Environment (+ Agent)

  A genetic predisposition to addiction is not sufficient for developing the disease: exposure to opioids is needed.

  Key Risk Factor: traumatic life experiences, low self-efficacy, loneliness (isolation).

  YOUR WORK ADDRESSING HOMELESSNESS IS AN IMPORTANT PART OF THE PICTURE FOR TURNING THE TIDE OF THIS EPIDEMIC.

Overdose Prevention Outreach

- Downstream prevention – preventing overdose deaths
  - Make Naloxone available!
  - Blue Ridge Behavioral Healthcare offers REVIVE Trainings FREE to the public Health Department will be providing FREE Narcan if you complete REVIVE.

    We are trying to get Naloxone into the hands of every household with pain pills in their medicine cabinets!

    Our Commissioner of Health, Dr. Levine, has issued a standing order, a prescription for every Virginian to have access to Naloxone.

    Children, our pets, other loved ones are overdosing on these dangerous medicines. Lock up medicines: yes - the buprenorphine products too!

SBIRT: early identification

Early identification of problematic use of any substance will help prevent the development of the disease: SBIRT trainings are available.

- Screen everyone! AUDIT-C plus a drug misuse question
- Brief interventions using motivational interviewing are especially effective at the early stages of problematic substance use.
- Referral to Treatment will be more effective using motivational interviewing and when possible: peer recovery specialists with lived experience.
- Dave and I are offering SBIRT trainings – email us!

Reduce the Stigma!

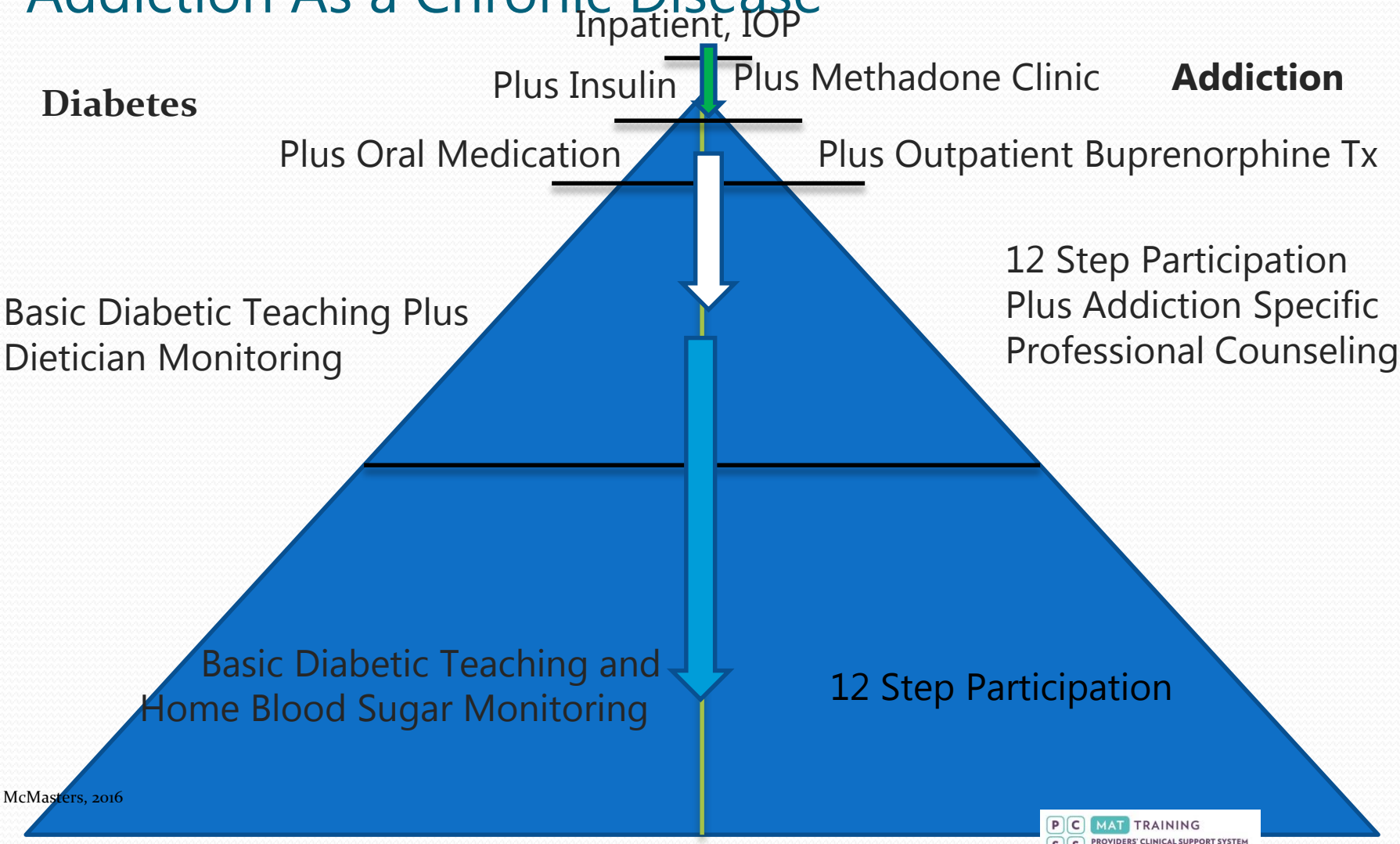
- Stigma keeps people from getting treatment.
- Opioid use disorders know no zip codes –
  - The epidemic is affecting every neighborhood!

No one can think their family is immune just because … we all need to be aware of how this disease can develop.

The bio-psycho-social-spiritual model helps us understand that the loss of control, which defines addiction, goes beyond voluntary choices – cravings are very physical experiences, the disease is chronic and difficult to manage. Recovery requires a multidisciplinary approach: all of us working together.

Next – let's look at addiction as a chronic disease.

Addiction As a Chronic Disease



McMasters, 2016

PCSS MAT TRAINING
PROVIDERS' CLINICAL SUPPORT SYSTEM
For Medication Assisted Treatment

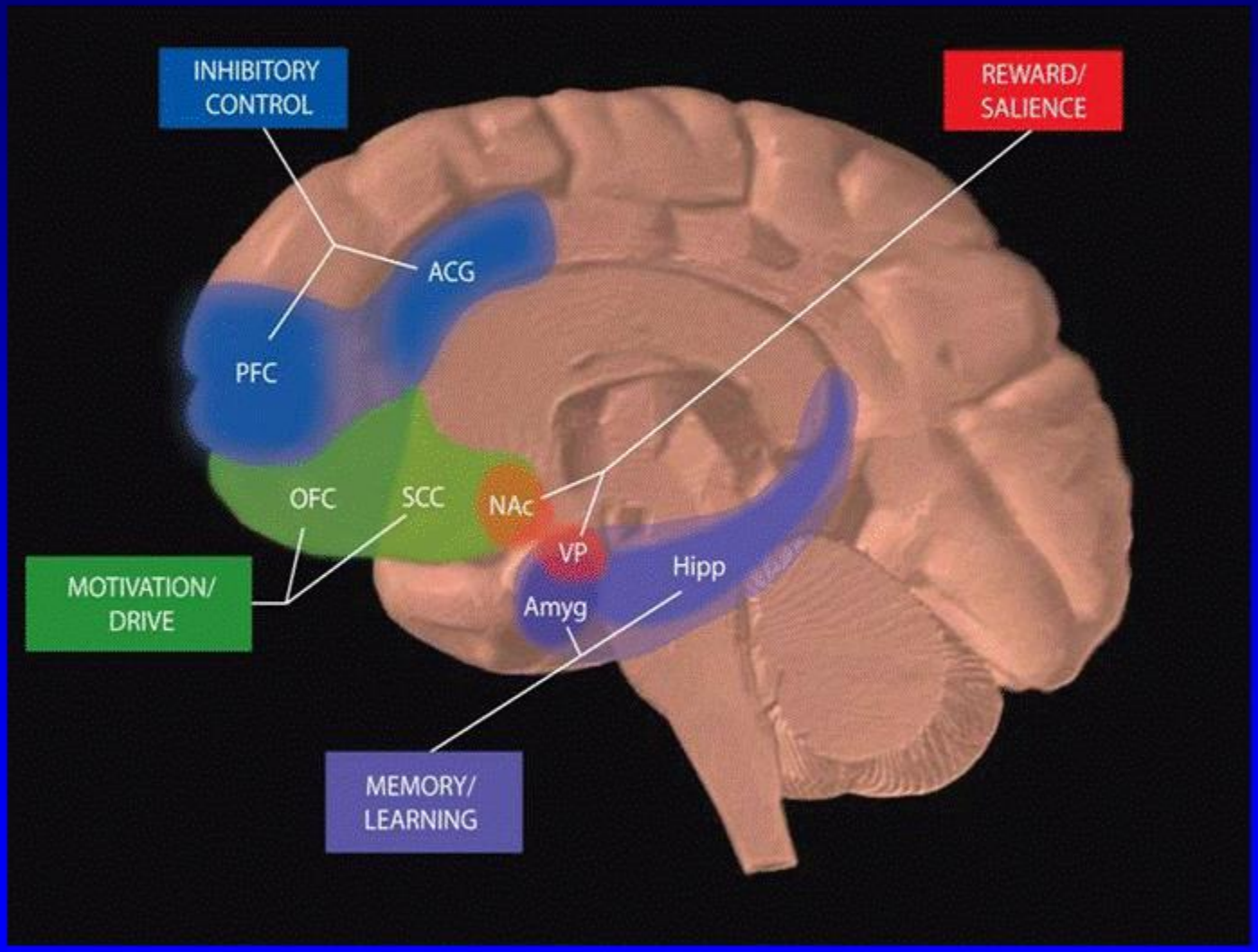
Neurobiological factors

- Opioids stimulate nerve bodies in the Ventral Tegmental area that produce dopamine
- Neurons project electrochemical messages to the nucleus accumbens (NA) ,where they release the dopamine across the synaptic gaps
- This release of dopamine results in pleasure and satisfaction, which becomes the “wanting” or craving sensation.

Relevant Brain Structures in mid-brain and prefrontal cortex (PFC)

- Nucleus accumbens (NA): in the reward center affecting motivation and pleasure seeking activities (the GO center)
- Amygdala: stores emotional memories: our pleasurable and aversive (traumatic) experiences
- Prefrontal cortex: used in the complex processing of information, making judgments, controlling impulses, foreseeing the consequences of one's action, setting goals and plans (the brain's brakes: the STOP center)

Circuits Involved In Drug Abuse and Addiction



All of these brain regions must be considered in developing strategies to effectively treat addiction

NIDA

DSM-V Substance Use Disorders

A pathological pattern of behavior related to the use of the substance in the past year; there are 11 criteria that fit into four groupings (used to diagnose any type of addiction including opioid use disorders):

- Impaired control
- Social impairment
- Risky use
- Pharmacological criteria

Impaired Control

1. The individual may take the substance in larger amounts or for longer periods of time than originally intended.

2. The individual is unsuccessful in cutting down or regulating the use of the substance.

3. The individual spends a great deal of time using the substance, looking for the substance, or recovering from the effects of the substance.

4. The cravings sensation that drives use

Social Impairment

5. Recurrent use of the substance may result in a failure to meet important obligation at work, school, or at home.

6. Patient continues to use the substance in spite of social or interpersonal problems.

7. Important social, occupational or recreational activities are given up due to the use of the substance.

Risky Use of the Substance

8. Continuous use of the substance in dangerous situations.

9. Continuous use of the substance in spite of psychological or physical problems, which are caused or exacerbated by the use of the substance.

Pharmacological Criteria

10. Tolerance: When more and more of the substance is needed to obtain the same effect, or the effect is reduced with continuous use of the same amount.

11. Withdrawal: A syndrome which occurs when the content of the substance in the blood or tissues decreases in an individual, who has been using the substance in large amounts for a long period of time.

Severity Levels

- Mild: 2 to 3 criteria
- Moderate: 4 to 5 criteria
- Severe: 6 or more

Substance intoxication

- Reversible substance-specific syndrome due to recent ingestion/exposure
- Significant maladaptive behavior or psychological changes due to effects of substance on the central nervous system
- Not due to a general medical condition or another mental disorder

Withdrawal: Signs and Symptoms

- Opposite to direct pharmacological effects of drugs
- Same symptoms with substance in a given pharmacological class(reversal occurs with cross tolerant drug)
- Variable in onset, duration, and intensity
- Dependent on

  -Agent used

  -Duration of use

  -Degree of neuroadaptation

  -Half life and active metabolites

Opioid use

- Long used for pain (for 6000 yrs)
- Increased potency has increased physical and psychological dependence
- Opiates are naturally occurring substances derived from poppy plant
- Opioids = natural or synthetic substances (umbrella term that includes opiates)
- Use of prescription pain killers (oxycodone, percocets, vicodin) and heroin has increased in 10 years leading to the current epidemic

Heroin

dope, horse, smack, tar

- Chemical: diacetylmorphine
- Heroin today is almost 7 times stronger than in 70s, more addictive; effective when inhaled – no longer has to be injected to create the desired spike in sensation – reduces the stigma of using heroin.
- Half-life of 30 minutes, duration of action 4-5 hrs

  active metabolites, including **Morphine** .
- More lipid soluble than other opioids, allowing it to rapidly cross the blood-brain barrier (within 15 to 20 seconds).
- Cheap – relative to pain pills sold on the street.

Medication Assisted Treatment

- Full agonist: Methadone
- Partial agonist, partial antagonist:

  Suboxone (buprenorphine + naloxone) Subutex (monoproduct=buprenorphine only)
- Full antagonists: Naloxone, Naltrexone, Vivitrol

Medications must be accompanied by counseling, care coordination, and community support such as 12 step programs.

Methadone, Full Agonist

- Only obtained from specially licensed treatment centers, such as the Roanoke Treatment Center.
- Very successful at retaining patients with addiction.
- Methadone maintenance programs have reduced crime, infections, and improved patient functioning.
- Methadone maintenance is the standard of care for opiate addicted pregnant women.
- Maybe treatment of choice for severely addicted individuals.
- Maybe especially effective for patients with severe chronic pain and addiction.

Problems with Methadone

- When starting treatment with Methadone, patient must go to the treatment center everyday.
- Often patients stand in long lines of addicted people every morning to obtain their medicine.
- Methadone requires a significant out-of-pocket expense. Often this is not fully reimbursed by insurance plans.
- When Methadone is given at doses above 100mg a day, the QTC maybe prolonged (health risk).
- Methadone maintenance is often associated with low testosterone.
- Patients on methadone often have a glazed appearance.
- Studies have demonstrated more cognitive impairment as compared with Suboxone.
- Methadone clinics have varying levels of counseling.

Suboxone, Buprenorphine-naloxone

- Buprenorphine is a partial agonist, thus has both some opioid euphoria, but also acts as a opioid blocker.
- Buprenorphine adheres strongly to MU receptors at the nerve sites, thus **blocking the receptors** on the nerve cells where heroin or other opioids would adhere and activate a reaction.
- Buprenorphine has a slow disassociation from the receptor, thus allowing it to remain on the receptor for several days giving a prolonged protective effect.
- Buprenorphine has a low opioid antagonistic action, thus, when it is taken too soon after methadone or other opioids, it will cause withdrawal. Someone must already be in withdrawal to be started on buprenorphine.

Buprenorphine formulations

- Subutex is buprenorphine alone, more often abused, sold at a high price on the black market (the “street”)
- Subutex can now only be prescribed during pregnancy, due to new Board of Health regulations, unless someone has a severe allergic reaction to the naloxone with is in Suboxone.
- Suboxone films: Combination of buprenorphine and naloxone which is in an individual child proof package.
- Suboxone tablets: Generic Suboxone and is often required by insurance companies due to its lower cost.
- Naloxone (present in Suboxone in combination with the buprenorphine) is not absorbed, when taken sublingually, and protects against injecting the medicine. Naloxone is activated only through the IV administration and will block the fast absorption of the buprenorphine that someone may be seeking when injecting the product.

Suboxone: buprenorphine + naloxone

- Prescribed from doctor's office, avoiding standing in long lines with other addicts and can have their personal life less disrupted.
- Protects against a heroin/opioid overdose, as a blocker
  (some drugs, such as fentanyl, which still present an overdose risk)
- Has less cognitive impairment than methadone.
- Produces a mild opiate high, as a partial agonist (activating some pleasure sensation).
- Prevents cravings for heroin/opioids and treats withdrawal

- Creates a dependence on buprenorphine (dependence ≠ addiction)
- Tapering is a long process
- Research supports long term use of Suboxone for achieving recovery: a high level of functioning and improved control over avoiding harmful substances and avoiding death
- Has less impact on the QTC; has less drug X drug interactions than methadone.
- Suboxone should be started either in the hospital or while sitting in a doctor's office, where they can be **observed taking their first dose**.
- Must be in withdrawal when starting their first dose, or they will experience severe withdrawal and will probably never try it again.

Suboxone Maintenance

- Treat addiction as we treat adult-onset diabetes.
- If we can help people with diabetes change their behavior, lose weight, and exercise, we could stop their medication.
- If we can help addicted patients to change their behaviors and maladaptive thinking patterns, they will be able to taper off their Suboxone or Methadone.
- Often behaviors,however, are hard to change and we must maintain the medication.
- If a patient relapses on eating too much sugar, we intensify therapy.
- If our addicted patients have “dirty” or “positive” urines, we require them to attend more counseling sessions or more 12 step meetings, or consider residential programs or intensive outpatient counseling.

Opioid antagonists

Naloxone

- Works only when given IM, IV or intranasally, **not** when orally ingested.
- Is quick and short acting (as short as 30 minutes).
- Is used to revive /reverse overdoses.

Naltrexone

- Works when orally ingested, pill form lasts for 24 hours
- Naltrexone XR (brand name Vivitrol) is long acting
- Given IM once a month, injection must be intramuscular
- Effective at curbing cravings

Naltrexone, Vivitrol: full blockers

- Naltrexone is a pure antagonist (fully blocks MU receptors).
- Naltrexone is given orally, Vivitrol is the long acting form which is given IM once a month.
- Patients must be clean for 7 to 10 days before starting Naltrexone.
- Patients must be motivated to benefit from this treatment.
- One should monitor liver enzymes during this treatment.
- The injection is given in the gluteal muscle, and is described as painful.
- Might consider this treatment for opioid addicted patients who have detoxed and tolerate naltrexone. The injection could be given as the patient leaves the detoxification facility.
- Naltrexone (especially Vivitrol) has been found to be highly effective at reducing cravings for opiates.

Naltrexone, Vivitrol: full blockers

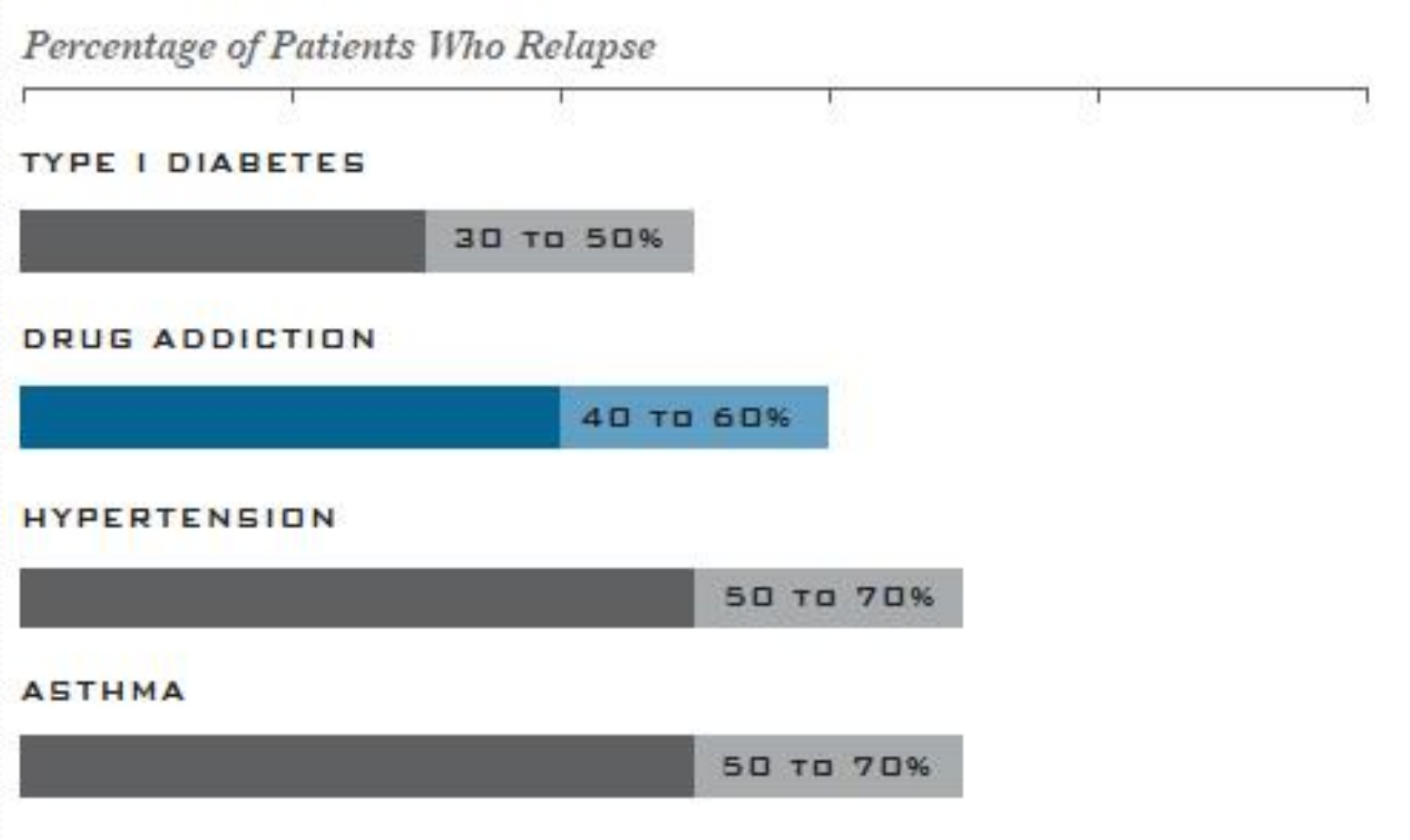
- The patient does not experience any positive feeling with this medication, as an antagonist.
- When taking Naltrexone, patient is protected from a drug overdose, should they relapse.
- Vivitrol is very expensive ($1,300 dollars per shot) but is becoming more reimbursable, as insurance companies realize its potential.
- It is so effective at curbing cravings and protecting from overdose, it is being ordered by some judges for all inmates with a history of an OUD, upon release from prison.

Naltrexone is most effective when combined with counseling, case management, and community support, such as 12 step programs, or spiritual programs. The XR format has been found to be more effective in treatment than the daily pill format, due to medication compliance challenges.

Treatment considerations

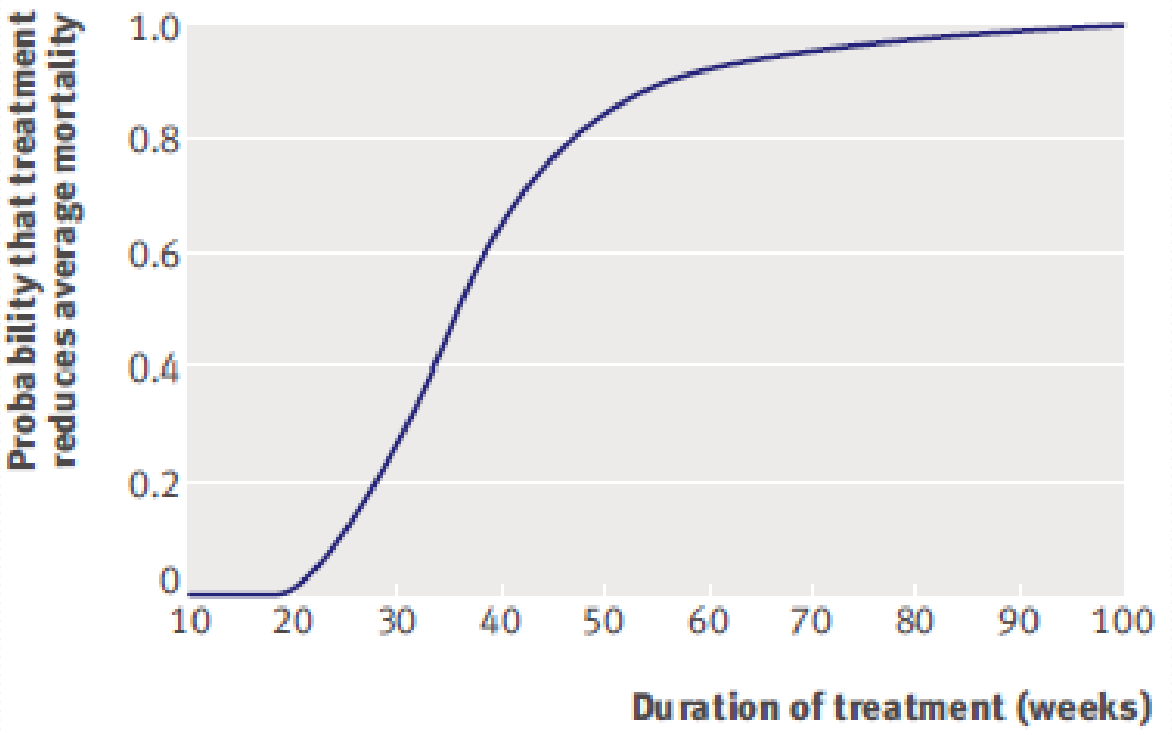
- Heroin/opioid addicts should be screened for HIV and hepatitis A, B, and C.
- Vaccination for hepatitis A and hepatitis B should be given to those with negative serologies.
- These sequelae of the opioid use disorder can be prevented when we get people into treatment – they are the reason harm reduction efforts are focusing on needle exchange programs.
- SW Virginia is seeing a serious spike in hepatitis.

Substance use disorder (SUD)s are a chronic illness; relapses are to be expected with chronic diseases.



Keeping patients in treatment: relapses notwithstanding…

Probability That Treatment Reduces Overall Mortality: N= 5277



Cornish, R et al. (2010) British Medical Journal. 341: 5475
Study was conducted in the United Kingdom; treatment = MAT

Retain patients

Minimize withdrawal symptoms and cravings

Stabilize Health: Biological, Psychological, Social, Financial, Spiritual

Provide medical, social and psychological treatment

Improve Functional Status

Improve Socioeconomic Status – social determinants

Achieving long term recovery

- Behavioral health: cognitive behavioral therapy + psychoeducation about addiction
- Emotional regulation + replacing distorted thinking with productive, healthy thoughts + awareness leading to behavioral change (reinforced: contingency management)
- Case management: environmental factors (triggers, stressors, destabilizing influences) need to be addressed
- Community/social/spiritual supports for recovery
- Family engagement in treatment and recovery

Stigma steals treatment option from substance use treatment sufferers

- Stigma stains the lives of all persons with addiction
- ESPECIALLY our patients with an opioid use disorder
- MORE SO if they are receiving medication assisted treatment …
- Community supports are withheld: AA and NA officially state that a person's medications are outside the purview of the 12 steps; if a medication is needed to be healthy it should be exempt from consideration
- We need to think of recovery as including the use of medications

Thank you!
Questions???

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