The Opioid Epidemic

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With acknowledgements to

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Goals

- Review history of opium and opioids
- Understand most overdose episodes feature more than one drug
- Learn the causes of today's opioid epidemic
- Understand the role of prescribers and patients

Drug OD Deaths in U.S.

- 1990 9,000
- 2000 17,000
- 2010 38,000
- 2015 52,000
- 2016 64,000 (23% increase in one year)

- 75% of drug OD deaths involve opioids (prescribed or illegal).
- JAMA: in 2016 20% of suicides in which opioids involved in age range of 24-35

Hot off the press!

- From Opioid Watch: Latest Stats Show A Record 200 Overdose Deaths Per Day
- 136/200 or 68% are dying of opioid overdoses
- 72,855 people likely died of drug overdose during the 12-month period ending November 30, 2017—a rise in 13.2 percent over the previous 12 month period
- 49,466 of those death involved at least one opioid

#1 Cause of Death in U.S. from ages 15 to 50

- Drug OD deaths in 2016: 64,000
- Vietnam total deaths (1965-1975) 58,000
- MVA deaths in 2016 40,000
- HIV deaths in peak year (1995) 47,000
- Gun deaths in peak year (1993) 39,000
- CT MVA Deaths in 2016 306
- CT Drug OD Deaths in 2016 917
- % of CT deaths who are white 75%

It's not JUST an opioid crisis

- Most ODs are combined overdoses
- Most common drugs include Cannabis, Methamphetamine, Benzodiazepines and Alcohol
- For every kilogram of heroin seized by law enforcement, 15 kilograms of Methamphetamine are seized.

In Perspective

- 2.1 million people carry the diagnosis of opioid use disorder
- 18 million people carry the diagnosis of other SUDS
- Some believe the root of the problem is "recreational pharmacology—using chemicals that stimulate the brain reward system
- Some believe people use drugs because they are intolerant of discomfort, either physical or emotional or both

Morbidity versus Mortality

- Opioids get the press because overdoses, particularly those with Fentanyl analogs are often fatal
- Use of methamphetamine induces a variety of mental health disorders, which may be persisting

Co-occurring Disorders

- Patients with OUD have a higher prevalence of psychiatric disorder than the general population
- Somatic symptoms and panic/anxiety are most common
- Unfortunately, the literature does not support psychotherapy as particularly efficacious
- Simultaneous treatment of both classes of disorder demonstrates the best outcome

Patient History of drug use depends on where you are seen

- Patients seen in residential rehab in detox are usually (mostly) honest about their drug histories in hopes they will get a more robust detox experience. Many will claim they have a mental illness and most are on psychotropic drugs.
- Patients seen in psychiatric venues will deny or minimize their drug use histories and will claim "self-medication". "I was bipolar WAY before meth!"

What is the motivation?

- A "compensation neurosis" AKA malingering for benefits
- A disability check is a livelihood for some
- The need to stay mentally ill is a barrier to recovery

History of Opioid addiction through the years

- Opium was described by the ancient Sumarians over 3000 years ago. First documented cultivation over 4000 years ago.
- Romans warned of opioid addiction
- "Opium" is Greek for "poppy juice".
- The hypodermic syringe was perfected in 1853
- 1804 Morphine was isolated from raw opium. It was named after Morpheus, the god of dreams

History of Opium

- Opium poppy: Dried opium latex ~12% morphine
- 4,000 B.C.: First known cultivation and use
- Variety of medical uses over the ages
  - Treatment of pain
  - Calming irritable infants
  - Cough suppressant
  - Diarrhea treatment
  - Tranquilizer

Medical Uses of Opioids over the ages

- Treatment of pain
- Cough suppressant
- Antidiarrheal
- Tranquilizer
- Calming agent for irritable infants

Recreational Uses

- 1300's in Ottoman Empire
- 1600's in China
  - Opium mixed with tobacco, then smoked
  - Much stronger smoked than taken orally
  - Addiction first recognized and described
- 1729: Opium outlawed in China
- 1840's: Two Opium Wars over opium imports from India (British colony) into China
  - British vs. Chinese: British won both wars
  - Result: Unrestricted importing of Indian opium into China

Result: Chinese Opium Use

- Widespread opium use by Chinese (opium dens)
- 1905: 25% of Chinese males regular opium users

Opioids in U.S.

- Civil War: Opium and Morphine widely used for injuries
- Morphine addiction: "The soldier's disease"
- Late 1800's: Chinese immigrants came to U.S.
- First opium dens in San Francisco and New York
- 1870's: Opium dens outlawed, went underground, persisted until WWII

Opioid Derivatives

- Developed by pharmaceutical companies in U.S. and Europe
  - Morphine (1804)
  - Codeine (1832)
  - Diacetylmorphine (Heroin) 1898
  - Hydrocodone (1920)
  - Hydromorphone (1924)
  - Oxycodone (1927)
  - Methadone (1937)

Heroin

- Generic name: Diacetylmorphine
- Patented by Bayer as "Heroin" in 1898
- Marketed as "**non-addicting**, treatment for morphine addiction"
- 1906: Approved by AMA as replacement for Morphine
- 1914: 200,000 heroin addicts in NYC
- 1914: Harrison Narcotics Act: Outlawed non-medical use of Heroin
- 1924: Heroin outlawed for medical use

1900's to 1980's

- Opioids prescribed only for acute, severe pain
- Not used for chronic pain
- Vast majority of opioid addicts: Heroin addicts primarily in inner cities
- No "opioid epidemic"

The Opioid Epidemic Begins: 1996

- FDA approvals for Purdue Pharmaceuticals drugs
  - 1984 MS Contin for terminal cancer pain
  - 1990 OxyContin for terminal cancer pain
  - **1996 OxyContin for non-cancer pain**
    - Purdue aggressive marketing to doctors: "Pain is undertreated:
    - **Marketed as "under 1% addicting"**
    - No good published studies
- 2007: Purdue pleaded guilty of false marketing, $635 million fine pain
- 2017: Multiple cities and states now suing Purdue and other drug companies

The "Under Treated Pain" Movement

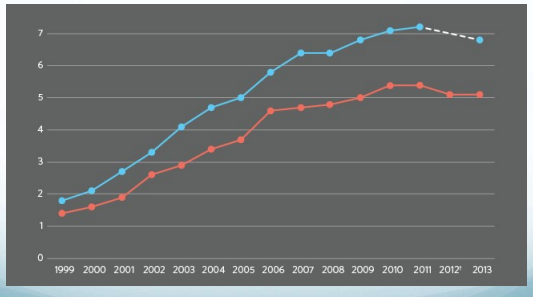
1996 Purdue begins marketing to MD's:
- "Pain is under treated"
- "Oxycontin is not addicting"

2000 JCAHO pain scale:
- 0 to 10 scale
- The 5th vital sign
- JCAHO: Must address any pain over 0

2000's Patient satisfaction surveys
- "Did the provider adequately control your pain?"
- Provider compensation affected by patient satisfaction surveys

2016 Patient satisfaction becomes a hospital Core Measure ($$)

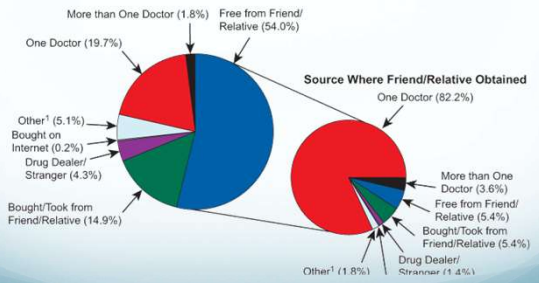
Opioid Prescriptions and OD Deaths



U.S. Way Off the Bell Curve

- 5% of world's population
- 80% of world's prescribed opioids
- The Opioid Epidemic is an **American epidemic.**

Where do Patients Get Their First Opioids?



Who Prescribes Opioids?

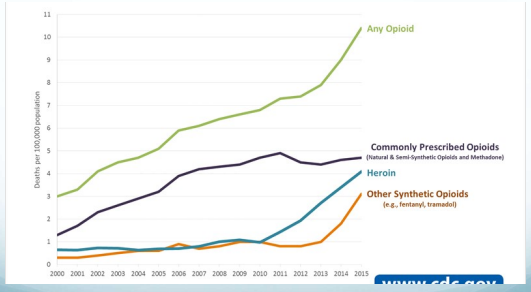
(In decreasing total volumes)

- Primary care providers (over 50% of total volume)
- Orthopedists
- Physiatrists
- Pain specialists
- Emergency physicians
- General Surgeons
- Neurologists
- Dentists

Dramatic Increases in Heroin and Fentanyl Deaths

- Chronic opioid therapy causes:
  - Hyperaesthesia (Increased pain sensitivity)
  - Need for increasing doses for same pain relief or euphoria
- Results:
  - Patients request increasing doses/frequency
  - Prescribers taper opioids down, cut patients off
  - Patients start "doctor shopping" or buying opioids illegally
  - Cheapest opioids per strength and cist: Heroin +/- Fentanyl
  - Dramatic increase in Heroin and Fentanyl deaths

All Opioid OD Deaths



Stronger, More Dangerous Opioids

- **Buyers don't know what they're buying.**
  - Old heroin Columbian, ~10% purity
  - New heroin Mexican, ~40% purity
- Fentanyl:
  - Synthetic opioid made in chemistry labs
  - Smuggled from Mexico and China
  - 20 to 30 times strength of Heroin
  - Sometimes added to Heroin or stamped into pills
  - Unknown amounts mixed in heroin or pills, so high risk of overdoses

Comparing Opioid Strengths

- Morphine recognized as "gold standard" for treatment of moderate to severe pain.
- MME = Morphine Milligram Equivalent
- One MME = Analgesic effect of 1 mg. of Morphine
- Strength of other opioids can be compared to Morphine via MME's

MME's of Some Opioids

Tramadol 1 mg	0.1 MME
Codeine 1 mg	0.15 MME
Morphine 1 mg	**1.0 MME**
Hydrocodone 1 mg	1.0 MME
Oxycodone 1 mg.	1.5 MME
Hydromorphone 1 mg.	3.0 MME
Heroin 1 mg.	3 – 4 MME
Fentanyl 1 mg	50 – 100 MME
Carfentanyl 1mg	10,000 MME

"Fentalogs"

- Over 40 different formulations, or modifications of the core Fentanyl molecule are psychoactive, easy to manufacture and are highly potent

More MME's/day = Greater Addiction Risk

- < 30 MME's per day — Fairly low risk
- > 60 MME's per day — Higher risk
- > 90 MME's per day — Much higher risk

- **Any MME's per day, short-term to long-term, have some risk of leading to addiction.**

How Many MME's Per Day Are Prescribed?

Tylenol #3 q6	18
Tramadol 50 mg q6	20
Vicodin 1 q6	30
Percocet 1 q6	30
Vicodin 2 q4	60
Percocet 2 q4	90
Oxycodone 10 q4	90
Oxycontin 60 bid	180

Opioids Use's 3 Phases

- **Early phase**: 2-7 days
- **Middle phase:** One week to three months
  - Desire for more pain relief or high leads to repeated use
  - Often, patient requests for increasing MME's/day
  - Increasing patient dependency/addiction risk
- **Late phase**: Three months and beyond
  - Dependent or addicted patients
  - Prescription drug seeking, doctor-shopping
  - Buying opioids illegally
  - Escalating OD deaths from prescription or illegal opioids

Lots of Attention Given to Late Phase

- Patients already dependent or addicted
- Why? Addiction and deaths are headline-grabbers.
- Results:
  - Lots of media, government, healthcare org's attention
  - More funding for treatment of addicts
  - Prescribers tapering or cutting off opioids
  - Lots of Suboxone prescribed
  - ER visits
  - Rehab programs
  - Jails
  - OD Deaths

But Insufficient Attention to First and Middle Phases

- **Early phase:** < One week of opioids
- **Middle phase:** One week to three months of opioids
- **Where future opioid addicts are made.**

Mopping the Floor vs. Turning off the Faucet

Need to Turn Off the Faucet

- **80% of new heroin addicts begin with prescription opioids.**
- 69% of first-time users get prescription opioids from a friend or relative (leftover pills).
- Every opioid prescription (even for a few days) has some risk of leading to addiction.
- Education of providers and public needed to **minimize all opioids whenever possible.**

Dramatic Reductions in Opioid Prescribing Needed

- To return to 1995 levels of opioid prescribing (before today's Opioid Crisis), an 80% reduction in prescribed opioids per patient will be needed.
- **Without dramatic reductions in prescribing of opioids, we will create more NEW opioid addicts than we have resources to treat.**
- The "Opioid Faucet" is prescription opioids. We all can control it.

What Can We Do?

- **Opioids only for severe, acute pain,** not mild or moderate pain
- Are pain meds really needed? Try ice, heat, elevation, Ace wraps, stretching, physical therapy
- If meds are needed, request non-opioids (Tylenol, Advil, Motrin, Aleve).
- Ask if the prescription contains opioids. Avoid opioids if not severe pain.
- If opioids needed for **severe** pain, ask for low doses of tramadol or hydrocodone (Vicodin), not Oxycodone (Percocet) or Dilaudid.
- Ask for a low number of pills, just 10 to 12 (not 20 or more) for just 2-3 days.

What Else Can We Do?

- Stop opioid meds ASAP: Transition to OTC meds or no meds.
- Educate re the risks of addiction, esp. with teens and young adults.
- Discard leftover pills when no longer needed. (police departments)
- Avoid benzodiazepines (Valium, Ativan, etc.), sleep meds, alcohol with Opioids

Opioids for Chronic Pain?

- Controversial
- **No good studies show long term improved pain scores with chronic opioids.**
- If needed, minimize MME's per day. (Higher MME's = Higher Addiction Risk)
- If absolutely needed: One prescriber only.
- With doctor, attempt tapering down, try to get off.

Can Opioids be Reduced?

- USA 15% reduction from 2010 to 2015.
  - Still 3 times 1999 opioid prescribing rates in U.S.
  - Still 4 times opioid prescribing rates in Europe
- Middlesex Hospital and Hartford Hospital ED's: 50% reductions in last five years
- We control the faucet.
- We're in this together. To end the opioid epidemic, all prescribers, healthcare workers, **and patients** need to understand that we must dramatically reduce opioid prescribing.

Treatment of OUD

- The majority of patients with OUD who are in treatment are in Methadone maintenance at closely supervised clinics
- MAT (Medication Assisted Treatment) using Buphrenorphine products is rapidly gaining traction and is increasing use in outpatient settings.
- The 3 drugs approved for use in OUD are:
  - Naloxone (Vivatrol)
  - Methadone
  - Buprenorphine (Subutex and other formulations)

Treatment of OUD

- Length of treatment? It varies
- Besides medication, what else helps? Lots of things can help. Social support, counselling, housing and other "wrap around" services
- What about prognosis or outcome? That varies too. Management of OUD is philosophically the same as the approach to any other chronic disease.
- There is always hope!