The Opioid Epidemic in Delaware: A Perspective from the Hospital

Erin Booker, LPC
Corporate Director Behavioral Health
Christiana Care Health System
March 1, 2018
Overview

1. Addiction and Opioids
2. Disturbing Trends
3. Prevention
4. Treatment
5. Christiana Care’s Response
   - Opioid Withdrawal Pathway
   - Project Engage
Case: Susan

- 64 yo grandmother admitted with angina
- Had successful angioplasty and placement of a LAD stent
- Post procedure developed diaphoresis, gooseflesh, and nausea. Nurse noted dilated pupils and called a peer counselor
Opioids

Heroin, morphine, oxycodone, hydrocodone, hydromorphone all interact on the Mu receptor

- Relieve pain
- Euphoria
- Dependence/withdrawal with repeated use
- Addiction
Heroin - Diacetylmorphine

- 1874, C.R. Wright synthesizes diacetylmorphine by boiling anhydrous morphine alkaloid with acetic anhydride searching for non-addictive morphine substitute
- 1898-1913 The Bayer Company produces commercially as a cough suppressant
- Heroisch = hero in German
Why So Popular?

More Exposure = More addiction
Addiction: an Acquired Brain Disease

- Repeated drug use in vulnerable patients
- Reward and motivational circuits involved
- Compulsive drug seeking, use, and craving despite harmful consequences
Opioid Withdrawal

- With dependence, brain mal adapts
- Collection of reproducible symptoms when opioids are removed – PRIMAL MISERY
- Highly motivating
Prescription Drug Epidemic

• 1996, release of extended-release oxycodone
• 2000, Joint Commission on Accreditation of Healthcare Organizations defines standards of care requiring assessment and treatment of pain
• Increased access to opioids through more prescribing
  – Pharma aggressively markets to physicians *
  – Pill mills **
• Less perceived harm or stigma

** Sam Quinones, Dreamland: The True Tale of America's Opiate Epidemic, 2015

The relentless marketing of pain pills. Crews from one small Mexican town selling heroin like pizza. The collision has led to America’s greatest drug scourge.

The True Tale of America’s Opiate Epidemic

DREAMLAND

SAM QUINONES
Prescription Drug Epidemic

Supply side efforts reduced availability and increased cost of prescription opioids.

- Heroin is cheaper.
- Heroin is easier to get.
- Heroin is easier to inject.
- Heroin is purer than ever.
- Heroin is now more acceptable.

Adapted from “Heroin. How did we get here?”
Matthew Ellis, 4th Annual Addiction Medicine Symposia, CCHS, August 30, 2016
Opioid Use Disorder in Young Adults

2002-14 National Survey on Drug Use and Health

- “Emerging adults 37% increase in the odds of having an opioid disorder, and young adults doubled their odds from 11% to 24%.
- 4X and 9X increase over time in the odds of heroin use among emerging adults and young adults who used opioids without a medical prescription”
Fentanylys

Counterfeit 30mg Oxycodone Containing Fentanyl.

Counterfeit Oxycodone Containing U-47700.

Source: DEA
Researchers estimate that stopping concurrent opioid and benzodiazepine prescribing could reduce overdose related ED and inpatient admissions by 15%.

How the Epidemic of Drug Overdose Deaths Ripples Across America

By HAEYOUN PARK and MATTHEW BLOCH  JAN. 19, 2015

Overdose deaths per 100,000

2003  2004  2005  2006

2007  2008  2009  2010

2011  2012  2013  2014
National Death Rate Increasing

- 12.3 per 100,000 population in 2010 to 16.3 in 2015.
- Death rates increased in 30 states and DC.
- During 2015, 52,404 persons died from a drug overdose.
- 33,091 (63.1%) involved an opioid.
- Death rates for natural/semisynthetic opioids, heroin, and synthetic opioids other than methadone increased by 2.6%, 20.6%, and 72.2%, respectively.
In Delaware

Estimated population = 900,000
• 90,000 alcohol/drug disordered*
• 9,000 opioid dependent
• Only 10% in treatment**, ***

* 2004-2005 NSDUH data
** Wright et al. 2007
*** Delaware Department of Health and Social Services (DHSS), Division of Substance Abuse and Mental Health, 2007
Overdose in Delaware

- 80% overdose deaths polypharmacy
- 83% had presence of prescription drug
- 35% fentanyl
- 29% heroin
1. “providing prescribers with the knowledge to improve their prescribing decisions and the ability to identify patients' problems related to opioid abuse
2. reducing inappropriate access to opioids
3. increasing access to effective overdose treatment
4. providing substance-abuse treatment to persons addicted to opioids.”
Overall Strategy - Prevention

• Prevention
  – Reduce access
    • Responsible prescribing
    • Interdiction
  – Increase perceived harm
  – Reduce harm
Death rates from opioid overdose were reduced in 19 communities where overdose education and naloxone distribution was implemented.
Narcan Use in Delaware 2016
Treatments

• Outpatient
• Inpatient
• Drug-free
• Medication-Assisted Treatment (MAT)
• Fellowship – Narcotics Anonymous
## FDA-Approved Anti-Opioid Agents

<table>
<thead>
<tr>
<th>Agent</th>
<th>Dose</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine sublingual film, tablets</td>
<td>PO: 2 mg, 8 mg film and tablets</td>
<td><strong>Initial</strong>: 2–4 mg (Increase by 2–4 mg)</td>
</tr>
<tr>
<td>(generic)</td>
<td></td>
<td><strong>Daily</strong>: ≥8 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Max</strong>: 24 mg/day</td>
</tr>
<tr>
<td>Methadone tablets/liquid (generic)</td>
<td>PO: 5 mg, 10 mg, tablets; 10 mg/mL liquid</td>
<td><strong>Initial</strong>: 10-30 mg (Reassess in 3–4 hours; add ≤10 mg PRN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Daily</strong>: 60-120 mg(^a)</td>
</tr>
<tr>
<td>Naltrexone XR injection (Vivitrol(^®))</td>
<td>IV/IM: 380 mg in 4 cc</td>
<td><strong>Every 4 weeks</strong></td>
</tr>
<tr>
<td>Naltrexone tablets (generic)</td>
<td>PO: 50 mg</td>
<td><strong>Daily</strong>: 50 mg (May give 2–3 daily doses at once on M–W–F.)</td>
</tr>
</tbody>
</table>

\(^a\)orally or sublingually

Gastfriend, MD. “Medication-Assisted Treatments (MAT) for Opioid Use Disorder”, 4th Annual Addiction Medicine Symposium, Delaware, August, 2016
- Dolophine – Germany 1937
- Rockefeller University 1965
- More effective than non-pharmacological approaches in retaining patients in treatment and in the suppression of heroin use as measured by self report and urine/hair analysis (6 RCTs, RR = 0.66 95% CI 0.56-0.78)

Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. Cochrane Database of Systematic Reviews 2009
MMT: Impact on Treatment & Heroin Use
During the 6 Mos. Post-release From Prison ± MMT (N=141)

C = Counseling Only (N=70)
C+M = Counseling & Methadone Started in Prison (N=71)


Gastfriend, MD. “Medication-Assisted Treatments (MAT) for Opioid Use Disorder”,
4th Annual Addiction Medicine Symposium, Delaware, August, 2016
Relapse to intravenous drug use after methadone maintenance treatment for 105 male patients who left treatment.

Buprenorphine

Synthetic opioid with unique properties that make it an effective and safe medication.

- Partial opioid agonist, "Ceiling Effect"
  - Limited respiratory depression
- Slow dissociation from receptor
  - Long duration of action
  - Milder withdrawal
- Sublingual dosing

**Suboxone**

Blocks other opioids, reduces overdose risk

- Long duration of action
- Milder withdrawal

• Sublingual dosing
Reducing Overdose Deaths- MAT

Baltimore – Schwartz

- Longitudinal series analysis of archival data 1995-2009
- 4x expansion of Methadone and Buprenorphine services* associated with 62% reduction of overdose deaths


*sharpest drop from 2007 to 2008 associated with doubling of buprenorphine access
Reducing Overdose Deaths- MAT

Mortality risk during and after opioid substitution treatment: systemic review and meta-analysis of cohort studies – Sordo et.al. BMJ, April 2017

- 19 cohorts, n =122,885 treated with methadone 1.3-13 years and 15,831 treated with buprenorphine 1.1-4.5 years
- Being in MAT significantly reduced mortality risk
- Induction onto methadone and stopping both most dangerous
- **Methadone**: all cause mortality 11.3 vs 36.1/1000 person yrs overdose mortality 2.6 vs 12.7 (5x reduction)
- **Buprenorphine**: all cause mortality 4.5 vs 9.5 (2x reduction) overdose mortality 1.4 vs 4.6 (3x reduction)
Benefits of MAT

Risk Factors for Relapse and Higher Costs Among Medicaid Members with Opioid Dependence or Abuse: Opioid Agonists, Comorbidities, and Treatment History.
Clark et.al. J Subst Abuse Treat, May 2015

- Medicaid claims 52,278 Massachusetts beneficiaries 2004-10
- Being in MAT reduced risk relapse 50% vs behavioral tx
- Longer in treatment the lower the risk of relapse
- MAT expenditures/month $155-233 lower than behavior tx
MAT Reduces Relapse Compared to Behavioral Treatment Alone

Injectable Naltrexone

- 380mg IM injection monthly
- Double-blind, placebo-controlled, randomized, 24-week trial of 250 Russian patients with opioid dependence disorder
  - **Confirmed abstinence** was 90.0% vs 35.0% in the placebo group (p=0.0002).
  - **Opioid-free days** 99.2% vs 60.4% (p=0.0004)
  - **Decreased craving** (p<0.0001).
  - **Better retention** was over 168 days vs 96 days (p=0.0042)

Summary: Benefits of MAT

• Facilitates retention in drug treatment*
• Reduces heroin use*
• Reduces relapse**
• Reduces overdose deaths and overall mortality***

* Mattick, RP., Cochrane Database Syst Rev. 2009
* Gordon, MS et al., Addiction, 2008
** Clark et.al. J Subst Abuse Treat, May 2015
***Sordo et.al. BMJ, April 2017
“But Dr Horton, I don’t want my son trading one addiction for another”
Hospitals Aggregate the Addicted

- Doors are always open
- Substance use disorders are common and severe*
- High dosages of heroin/fentanyl
- IVDA instead of inhaled
- Early medical sequelae
- Increasing OD rate

* Saitz, JGIM, 2006; Bertholet, JGIM, 2010
• Wilmington/Christiana Hospitals - 1,100 beds
• 173,857 ED visits (22nd in the nation)
• 53,621 admissions (22nd in the nation)
CCHS prior to 2008

- No in-house ETOH/SUDs screening or treatment except small SBIRT for trauma service only
- No standardized withdrawal treatment protocols or monitoring
- Social Work consult for referral
- Clinical Nihilism was common
Opioid Withdrawal is a Safety Issue

Poorly addressed opioid withdrawal negatively impacts:
1. ability to address acute serious health consequences of addiction
2. ability to engage and transition into community-based drug treatment
### Opioid Withdrawal

<table>
<thead>
<tr>
<th>Last Dose Signs and Symptoms</th>
<th>8 - 12 hr</th>
<th>12 - 14 hr</th>
<th>18 - 20 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacrimation</td>
<td>Yawning</td>
<td>Dilated Pupils</td>
<td>Rhinorrhea</td>
</tr>
<tr>
<td>Dilated Pupils</td>
<td>Restless Sleep</td>
<td>Anorexia</td>
<td>Irritability</td>
</tr>
<tr>
<td>Sweating</td>
<td>Goosflesh</td>
<td>Muscle Spasms</td>
<td>Anxiety</td>
</tr>
<tr>
<td>Restlessness</td>
<td>Increased Heart Rate</td>
<td>Abdominal Cramping</td>
<td>Chills &amp; Hyperthermia</td>
</tr>
<tr>
<td>Anorexia</td>
<td>Increased BP</td>
<td>Tremors</td>
<td>Low Back Pain</td>
</tr>
<tr>
<td>Gooseflesh</td>
<td>Body Aches</td>
<td>Sneezing</td>
<td>Chills &amp; Hyperthermia</td>
</tr>
<tr>
<td>Muscle Spasms</td>
<td>Insomnia</td>
<td>Nausea &amp; Vomiting</td>
<td>Sneezing</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Diarrhea</td>
<td>Lacrimation</td>
<td>Abdominal Cramping</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Abdominal Cramping</td>
<td>Nausea &amp; Vomiting</td>
<td>Sneezing</td>
</tr>
</tbody>
</table>

### Clinical Pathway Integration Analysis

**Exceptional Experience**

**Opioid Withdrawal**

#### Caring Behaviors

<table>
<thead>
<tr>
<th>Item</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance toileting</td>
<td>-44.6%</td>
</tr>
<tr>
<td>Call bell help</td>
<td>-16.3%</td>
</tr>
<tr>
<td>Courtesy of Doctors</td>
<td>-16.2%</td>
</tr>
<tr>
<td>Courtesy of Nurses</td>
<td>-11.5%</td>
</tr>
<tr>
<td>Describe med side effects</td>
<td>-7.8%</td>
</tr>
<tr>
<td>Doctor listen</td>
<td>-7.5%</td>
</tr>
<tr>
<td>Doctors explain</td>
<td>-7.5%</td>
</tr>
<tr>
<td>Nurse Explain</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Nurse listen</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Staff do everything to help with pain</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Tell what new med was for</td>
<td>-1.8%</td>
</tr>
</tbody>
</table>

#### Clinical Excellence

<table>
<thead>
<tr>
<th>Item</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Controlled</td>
<td>-40.1%</td>
</tr>
<tr>
<td>Talk about help at home</td>
<td>-36.1%</td>
</tr>
<tr>
<td>Told symptoms to watch for</td>
<td>-15.4%</td>
</tr>
</tbody>
</table>

#### Global

<table>
<thead>
<tr>
<th>Item</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Hospital 0-10</td>
<td>5.3%</td>
</tr>
<tr>
<td>Recommend Hospital</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

#### Operational Efficiency

<table>
<thead>
<tr>
<th>Item</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room quiet at night</td>
<td>0.3%</td>
</tr>
<tr>
<td>Room/bathroom cleanliness</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

% difference in question score Opioid Withdrawal patient vs Acute Medicine Service Line patient
Negative Impact on the Health System

Costly

- Inordinate spending without addressing the root cause
- Inpatient stays are the primary cost drivers
- Expensive revolving door
  - higher use of ER (2.3x), inpatient care (6.7x)**
  - Increased AMA, readmissions***
- Opiate Abusers cost additional $14-20,000/patient/yr compared to non-users****

* Saitz, JGIM, 2006; Bertholet, JGIM, 2010
** Stein, J Sub Abuse, 1993
*** Hwang, 2003; Jankowski, 1977; Chan, 2004; Walley 2012
****White, 2005
Rising Opioid-related Inpt and ED Visits

Figure 1. National rate of opioid-related inpatient stays and emergency department visits, 2005–2014

Rate of Stays/Visits per 100,000 Population

- Inpatient stays
- ED visits

Year

Inpatient stays
- 136.8
- 164.2
- 159.0
- 165.7
- 181.4
- 197.1
- 207.8
- 210.4
- 213.7
- 224.6

84.1% cumulative increase
5.7% average annual growth rate

ED visits
- 89.1
- 91.8
- 82.6
- 94.1
- 107.4
- 117.5
- 131.2
- 146.8
- 166.2
- 177.7

99.4% cumulative increase
8.0% average annual growth rate

Abbreviation: ED, emergency department

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), HCUP Fast Stats, Opioid-Related Hospital Use (http://www.hcup-us.ahrq.gov/faststats/landing.jsp) based on the HCUP National (Nationwide) Inpatient Sample (NIS) and the HCUP Nationwide Emergency Department Sample (NEDS)
Drug-related Endocarditis 2010-15 in NC
Impact on CCHS 2014-7

- Rates of endocarditis, spinal and bone infections are increasing
- Each requires 6 week hospitalization for IV ABX via PICC line
- Anticipate 6216 bed days used

*CCHS Finance 2014*
CCHS Response to the Opioid Epidemic

• 2016: Behavioral Health partnered with Acute Care Service Line
• Inpatient Medical Service
  – Screening and Identification of admitted patients
  – Rapid treatment of withdrawal by medical team
  – Inpatient initiation of drug abuse treatment
  – Addiction Medicine Consultation Service
  – Referral to community-based care using Project Engage
• Special pathway for pregnant women
• Outpatient
  – Medication-assisted treatment
Opioid Withdrawal Clinical Pathway

- Opioid Withdrawal Risk Assessment (OWRA)
  Yes to either question prompts patient for next screening process.

<table>
<thead>
<tr>
<th>Information obtained from</th>
<th>Patient</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Have you used heroin or prescription pain medications other than what was prescribed in the last week?
  - Yes
  - No
  - Refused
  - Unable to respond

- Do you get sick if you can't use heroin, methadone or prescription pain medications?
  - Yes
  - No
  - Denies Use
  - Refused
  - Unable to respond
Project Engage

- Since 2008, 2000 patients/yr in the Inpt hospital, ED and outpt clinics
- Imbedded Peer counselor from local drug treatment program
- Bedside peer-to-peer intervention using Motivational Interviewing
- Partnering with a Social Worker for rapid discharge planning
Addiction Medicine Consult Liaison

- Initially started to assist with opioid pathway adoption at both hospital sites.
- One full-time physician and Nurse Practitioner.
- Project Engage peer counselors/Social Worker partnering are critical.
- Goals: Patient care and provider support.
### Opioid Withdrawal Clinical Pathway Results

#### 7 months of performance

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Medical Service Admissions</td>
<td>34,503</td>
<td></td>
</tr>
<tr>
<td>Total Medical Service Admission Screened</td>
<td>24,748</td>
<td>72</td>
</tr>
<tr>
<td>Total Screened positive</td>
<td>767</td>
<td>3.1</td>
</tr>
<tr>
<td>Showing opioid withdrawal COWS &gt; 8</td>
<td>173</td>
<td>.7</td>
</tr>
</tbody>
</table>

- 22.5% of screen + have opioid withdrawal
- 49.7% of patients in Opioid Withdrawal (COWS>=8) receive bup/naloxone
- Estimate identifying 300+ opioid use disordered patients a year not engaged in treatment
- Value Institute partnering on validation study
Early Outcomes from Addiction Medicine CL

- 53/86 (62%) asked to remain on agonist therapy and transition to community care
  - Only 27/86 refused
  - 4/86 already in care
  - 12/86 ama, rest into nursing homes or ICU
- 10/27 (37%) who refused, signed out AMA vs 4% accepting
- 41/53 (78%) successfully attended their initial appt
- 29/40 (71%) retained at least 1 month at the community program
- 180 patients, 2/3 requesting MAT of which 63% remain in MAT at one month
Outcomes Limited by Quality of the Continuum
Delaware's heroin babies: Starting life in withdrawal

James Fisher, The News Journal
Modified from Zadzielski, 2017
Office-Based Opioid Treatment

1. Addiction Medicine, Psychiatry, Individual and Group Counseling, Care management

2. Referrals from inpatient services and medical group

3. Since January, 2016, approximately 100 patients (Ages 20 to 75) treated with extended release naltrexone or buprenorphine/naloxone

4. New OB/Addiction Medicine/Peds clinic opened in October
Case: Susan

- 64 yo grandmother with angina s/p stent with opioid withdrawal-like symptoms per nurse
- Initially denied drug use until withdrawal worsened
- Met with Project Engage, admitted inhaling 3-4 bundles of heroin a day with her husband for last 2 years. Initially started with oxycodone, cut off from RX for overuse
- Spending $1800/month - greatly ashamed
- Primary motivation: “just want to be normal again.....wake up in the morning and drink a cup of coffee with my husband.”
Case: Susan

- Inducted onto Suboxone 16mg with good response
- Very sensitive to withdrawal > stigma but nurses on board and team worked hard to comfort her
- No showed post discharge follow-up at the Suboxone clinic. (we were very angry)
  - Shared her buprenorphine with her husband, ran out and relapsed
- Numerous efforts to reach out and eventually re-inducted her and her husband.
- They continue in outpt care, are doing well.
- This Christmas, spent time with their grandchildren and.....
Summary

1. Addiction as a dangerous debilitating brain disease
2. Disturbing trends with heroin use and death
3. Prevention, use of intranasal Naloxone
4. Treatment: methadone, buprenorphine, injectable naltrexone, counseling, support
5. Christiana Care’s Response
   • Opiate Withdrawal Pathway
   • Project Engage
   • Outpatient care
Questions?