Effective Treatment of Opioid Addiction: Addressing the Epidemic of Prescription Opioid and Heroin Abuse and Overdose Deaths

Aleksandra Zgierska, MD, PhD, DFASAM
UW School of Medicine & Public Health
Wisconsin Academy of Family Physicians
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Goals
- Addiction as a chronic brain disease
- Treatment = prevention of harms
  - effective public health strategy to address opioid epidemic
- Dose of reality:
  - why is treatment underutilized..?

Addiction as a chronic brain disease

- Addiction = primary chronic brain disease affecting multiple brain circuits (reward, motivation, learning, memory, control over behavior)
- adverse effects on mental & physical health
- impact on the families, communities

Brain: drugs affect dopamine pathways

Drugs of abuse target the brain’s pleasure center

Dopamine receptors: reward pathways

- PET images: depletion of the brain’s DA receptors by drugs of abuse
- normalize with long-term recovery
What is Addiction?

• Addiction = loss of control over drug use in spite of harm
• presence of physical dependence (tolerance; withdrawal) is not necessary to diagnose addiction…

What is Addiction?

• Addiction = health problem
• Not just a social problem
• Not just a moral problem
• Not just a criminal justice problem
• Addiction = not a desired state
  • it is a serious disease
  • genetics → crucial role

Addiction: most severe disorder

Spectrum of Psychoactive Substance Use

Casual/Non-problematic Use
- recreational, casual or other use that has negligible health or social effects

Chronic Dependence
- Use that has become habitual and compulsive despite negative health and social effects

Beneficial Use
- use that has positive health, spiritual or social impact:
  - e.g. medical pharmaceuticals; coffeine to increase alertness; moderate consumption of red wine; sacramental use of ayahuasca or peyote

Abuse
- use that begins to have negative consequences for individual, family, or society:
  - e.g. impaired driving; binge consuming; harmful routes of administration

Problematic Use

A Public Health Approach to Drug Control in Canada Health Officers Council of British Columbia. October 2005

National epidemic: prescription opioid abuse

• Prescription opioid abuse is the fastest growing drug problem
• Prescription opioids are a gateway to heroin

Prescription opioid epidemic

Opioid Pain Relievers Driving Increasing Trend of Drug Overdose Deaths in Wisconsin

Source: Wisconsin Department of Health Services, Office of Health Informatics
Opioids Combined with Other Drugs Can Be Fatal
Wisconsin, 2011-2015 (Combined) – Courtesy of DHS

<table>
<thead>
<tr>
<th>Drug Combinations</th>
<th>Count (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid only</td>
<td>50.4% (n=1,409)</td>
</tr>
<tr>
<td>Opioid + alcohol</td>
<td>10.4% (n=291)</td>
</tr>
<tr>
<td>Opioid + benzo</td>
<td>24.8% (n=693)</td>
</tr>
<tr>
<td>Opioid + cocaine</td>
<td>5.3% (n=148)</td>
</tr>
<tr>
<td>Opioid + benzo + alcohol</td>
<td>4.4% (n=124)</td>
</tr>
<tr>
<td>Opioid + benzo + cocaine</td>
<td>2.8% (n=79)</td>
</tr>
<tr>
<td>Opioid + alcohol + cocaine</td>
<td>1.4% (n=38)</td>
</tr>
<tr>
<td>Opioid + benzo + alcohol + cocaine</td>
<td>0.5% (n=13)</td>
</tr>
</tbody>
</table>

Wisconsin, 2011 - 2015 (Combined) – Courtesy of DHS

Untreated addiction can be fatal
American Society of Addiction Medicine (ASAM) 2011

- Unless treated, addiction is progressive, can lead to disability or premature death.

Untreated addiction opioid overdose deaths every 16 minutes in the US...

CDC Dec 2016 overdose death data

Wisconsin 2015

878 drug overdose deaths
2-3 deaths per day

CDC/NCHS, National Vital Statistics System, Mortality

Opioid Overdose-Related Deaths by County
Wisconsin 2013-2015
DHS data

Increase in Opioid Use Disorder in Wisconsin
Based on the Hospital Discharge Data Only

Treatment = prevention of harms: effective public health strategy to address opioid epidemic
Addiction is treatable!

- but only if the patient is treated...
- Strong relationship between treatment duration & intensity and success
  

- Chronic, complex disease model
  - long-term treatment
  - multi-modal approach to address both addiction and its consequences
  - individualized approach is crucial

  NIDA 2012, Principles of Drug Addiction Treatment

Components of Comprehensive Treatment

Overdose prevention: Naloxone

- Blocks opioid receptors, reverses overdose
- saves lives

Methadone / Buprenorphine Maintenance

- ↓ illicit opioid use and its consequences by occupying opioid receptors long-term → blocks withdrawal and cravings

- crucial for the treatment of pregnant women to ↓ adverse fetal outcomes

Naloxone Overdose Prevention

Overdose prevention:

- Naloxone: Blocks opioid receptors, reverses overdose
- saves lives

Medication-Assisted Treatment (MAT) for Opioid Dependence

- Methadone (only licensed programs)
  - full agonist of μ-opioid receptors
  - oral to take daily
- Buprenorphine (any certified physician)
  - partial agonist: Suboxone®, Subutex®
  - sublingual to take daily
- Naltrexone (any clinician)
  - antagonist
  - oral-Revia® (daily); injectable-Vivitrol® (monthly)

Comparison of Relapse Rates Between Drug Addiction and Other Chronic Illnesses

Relapse rates for drug-addicted patients are compared with those suffering from diabetes, hypertension, and asthma. Relapse is common and similar across these illnesses (e.g., adherence to medication). Thus, drug addiction should be treated like any other chronic illness, with relapse serving as a trigger for renewed intervention.

Naltrexone Maintenance

- Blocks opioid receptors & their ability to work (“can’t get high”)
- FDA-approved for both opioid and alcohol addiction
- No diversion, non-addictive
- Not recommended in pregnancy, but if needed, can be used

Medications for opioid addiction = treatment, not a ‘new addiction’

- Patient is...
  - not in withdrawal
  - not intoxicated
  - not craving
  - not seeking / using

- Many experience ↑ mood and ↓ anxiety

Most report feeling ‘normal’ again and having their lives back!

Medications TREAT Opioid Addiction

- ↓ drug use
- ↓ deaths
- ↓ criminal activity
- ↓ risk / spread of HIV
- ↓ cost
  - ↑ retention-in-treatment
  - ↑ engagement in work / social roles
  - ↑ pregnancy / child outcomes

Medications TREAT Opioid Addiction: ↓ Mortality

- Study in Sweden among persons with IV heroin addiction and on buprenorphine maintenance (Kakko 2003)
- one-year mortality in those who continued buprenorphine treatment = 0%
- one-year mortality in those who stopped buprenorphine treatment = 20%

Agonist Medications Decrease Heroin OD

<table>
<thead>
<tr>
<th>Agonist Treatment Reduced Heroin OD Deaths</th>
<th>Buprenorphine Reduced Heroin OD France 1995-1999 (75% reduction)</th>
</tr>
</thead>
</table>

Improving Treatments for Addiction: Naltrexone Trial in CJ Populations

- Participants: parolees/probationers with opioid addiction
- all volunteers – received either
  - Monthly injections of extended release naltrexone for 6 months
  - Community treatment, including methadone or Suboxone (encouraged)

Relapse Frequency

Overdoses in 78 weeks:
- Control: 7
- Naltrexone: 0

Lee et al. NEJM March 31, 2016.

Courtesy of Nora Volkow, 2016 ASAM Conference
Both methadone and buprenorphine improve outcomes in pregnancy

- Crucial for the treatment of pregnant women
  - mother: ↓ impact of addiction; ↓ overdose
  - fetus: ↓ low birth weight; ↓ premature birth; ↓ fetal death; ↓ spontaneous abortion
  - child: ↓ long-term effects of maternal drug use (e.g., infections -- HIV, hepatitis)
    ↑ home environment and stability

Methadone maintenance (MM)

- birth outcomes of mothers treated with MM: comparable to those in a general obstetrical population
  Kreek MJ, 2000
  - ↓ maternal drug use, ↓ overdoses
  - ↓ pre-term births
  - ↑ intrauterine growth, birth weight
  - ↑ reduction with higher dose of methadone
  - ↑ adherence to prenatal care
  Bums L, 2004; Goler NC, 2008

MAT and pregnancy

- Avoid abruptly stopping opioids during pregnancy:
  opioid withdrawal → can lead to premature birth, fetal distress and death
- Avoid stopping MAT during pregnancy:
  majority of women relapse within a year after stopping MAT
Pregnancy makes a difference: it enhances recovery outcomes

- % women who did not use drugs at 1 year after entering treatment:
  - pregnant upon entry: 65.7%
  - non-pregnant upon entry: 27.7% (p<0.0005)


Treatment needs to be individually-tailored

- Treatment needs to match individual clinical and social circumstances
  - failed one medication → consider another one
  - requiring opioids for pain → no naltrexone
  - pregnant women → methadone / buprenorphine
    - opioid withdrawal can harm (even be fatal) to fetus
  - high risk of diversion or non-adherence → injectable naltrexone

Dose of reality:
why is treatment for opioid use disorders underutilized..?

Barriers to Treatment

Improving Implementation of MAT

- % Treatment Programs Offering FDA-approved SUD Medications
- % OTP patients receiving methadone, buprenorphine, or vivitrol

Knudtson et al., J Addict Med 2011.

2012 NS-SATSS Data, SAMHSA

Courtesy of Nora Volkow, 2016 ASAM Conference

Barriers to Treatment

Why they didn’t seek treatment when they knew they needed it.

- Not ready to stop
  - 37.5%
- Could not afford
  - 37.5%
- Possible negative effect on job
  - 25%
- Concern about negative opinions of others
  - 12.5%
- Not knowing where to go to treatment
  - 0%
- No program having type of treatment needed
  - 0%

www.narccon.com; National Survey on Drug Use and Health
Stigma of addiction and its treatment is a major barrier to seeking help

Reduce Barriers to Treatment

- Reduce the stigma of addiction
  - education; treat addiction like other chronic diseases
  - treat instead of criminalizing addiction
- Improve patient readiness to treatment
  - education
  - primary care-based screening and interventions

Reduce Barriers to Treatment

- Increase screening & treatment capacity
  - ↓ insurance-based barriers
  - ↑ # treatment providers
  - ↑ primary care-based interventions
    - screening / education
    - buprenorphine (licensed physicians)
    - naltrexone (any prescriber)

Injectable Naltrexone: suitable for primary and specialty care

- Injectable naltrexone – works for 1 month
  - no diversion, no skipping doses
  - effective (for selected patients)

Reduce Barriers to Treatment

- Legislative and public health efforts: essential to change attitudes and promote treatment
  - naloxone kits; Med-Drop boxes; education
  - state-level legislation and funds
    - HOPE bills
    - WI Act 292: opposed by medical societies
  - “smart policing” (↓ arrest, ↑ treatment)

Addiction treatment saves lives and is cost-effective

- Addiction treatment is cost-effective
  - $1 for treatment = $4 - $7 gained by ↓ drug-related crime, theft, criminal justice costs, and ↑ productivity
  - ↓ mortality, morbidity, suffering

NIDA 2012, Principles of Drug Addiction Treatment
NGA Paper: Reducing Prescription Drug Abuse, Feb 2014
Conclusions: Medication Assisted Treatment (MAT) for Opioid Addiction
- MAT improves individual and societal outcomes in opioid addiction.
- MAT with psychosocial treatment is often better than psychosocial treatment alone.
- Long-term management of addiction (chronic disease model) is crucial.

Conclusions: Medication Assisted Treatment (MAT) for Opioid Addiction
- MAT enables the patients to re-integrate into the society and live productive lives
- MAT is NOT "substituting" one addiction for another
- MAT is an extremely important public health strategy for reducing harms of opioid addiction

Thank you!
Aleksandra.Zgierska@fammed.wisc.edu

We can make a substantial public health impact by investing in the prevention and treatment of addictive disorders.

For more information about the opioid crisis in WI and the ways we can curtail it:
Wisconsin Society of Addiction Medicine
Monthly drop-in teleconferences (4th Thu)
Annual conference (Sept 21-22, 2017; Madison, WI)