The Walking Drugged

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Disclosure Statement

I have no financial relationships with any commercial interest related to the content of this activity
Call Center 2015

- 47,406 total calls
- 44% Children < 6 y.o.
- 25% from Health care providers
Hennepin Regional Poison Center Staff

- Pharmacists / Certified Poison Specialist
Chanhassen Class of 2016

2013 Dylan Turcotte: Heroin

2014 Macalob Bartram: Heroin

2015 Alex Snyder: DTP? Synthetic

2014 Carver County, Davis Colley: Synthetic cannabinoid contributed
Overdose Deaths in the US vs. Motor Vehicle Crash Deaths 2014

Overdose Deaths in the United States (2014)

2014 Traffic fatalities
32,675

Overdose Deaths
41,749

Source: National Center for Health Statistics, Centers for Disease Control and Prevention

*NHTSA’s Fatal Analysis Reporting System (FARS)
Reason Why We are Here Today

Information from CDC
OD Fatalities in MN

MDH Report
MN 2015
572 Died from OD
411 Died from MVC

Since 2000
~ 5000 died from OD
### Costs of Substance Abuse

Abuse of tobacco, alcohol, and illicit drugs is costly to our Nation, exacting more than $700 billion annually in costs related to crime, lost work productivity and health care.**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Health Care</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>$130 billion</td>
<td>$295 billion</td>
</tr>
<tr>
<td>Alcohol</td>
<td>$25 billion</td>
<td>$224 billion</td>
</tr>
<tr>
<td>Illicit Drugs</td>
<td>$11 billion</td>
<td>$193 billion</td>
</tr>
</tbody>
</table>

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### Prescription/Over-the-Counter vs. Illicit Drugs

*The percentage of 12th graders who have used these drugs in the past year.*

<table>
<thead>
<tr>
<th>Drug</th>
<th>12th Graders (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adderall</td>
<td>6.8%</td>
</tr>
<tr>
<td>Vicodin</td>
<td>4.8%</td>
</tr>
<tr>
<td>Tranquilizers</td>
<td>4.7%</td>
</tr>
<tr>
<td>Cold Medicines</td>
<td>4.1%</td>
</tr>
<tr>
<td>OxyContin</td>
<td>3.3%</td>
</tr>
<tr>
<td>Ritalin</td>
<td>1.8%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>35.1%</td>
</tr>
<tr>
<td>K2/Spice (&quot;synthetic marijuana&quot;)</td>
<td>5.8%</td>
</tr>
<tr>
<td>MDMA/Ecstasy</td>
<td>3.6%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>2.6%</td>
</tr>
<tr>
<td>LSD</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

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After marijuana, prescription and over-the-counter medications account for most of the top drugs abused by 12th graders in the past year.

The National Institute on Drug Abuse is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports most of the world’s research on the health aspects of drug abuse and addiction. Fact sheets on the health effects of drugs of abuse and information on NIDA research and other activities can be found at www.drugabuse.gov.
Colorado Experience

Marijuana and Traffic Fatalities

Percent of All Traffic Deaths That Were Marijuana Related*

*Percent of All Fatalities Where the Operators Tested Positive for Marijuana

The Legalization of Marijuana in Colorado

The Impact

Volume 4
September 2016

Rocky Mountain High Intensity Drug Trafficking Area
www.rmhiidta.org
**MJ Kinetics**

**Smoked**

- **Onset:** Seconds to Minutes
- **Peak Effects:** 15-30

**Ingested**

- **Onset:** 30-90 minutes
- **Peak:** 1-6 hours*

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*Clin Pharmacokinet 2003;42[4]:327

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P450 Cytochrome

11-hydroxy-THC
1<sup>st</sup> THC Death

March 11, 2015

- 19 y.o. male ingested 1/6<sup>th</sup> of a MJ infused cookie (65mg THC total)
- 30-60 minutes “not feeling any effects”. Ingested the rest of the cookie
- 3.5 hours after taking the first bite he jumped to his death
- Drug Screen revealed THC in his system 7.2 ng/mL
Shatter is smooth, clear and solid. It is the purest and most potent form. This can result in over 80 percent THC.

Budder or Wax THC percentages in the 70s. It has a creamy consistency from being whipped.

Honey oil or butane hash oil – can retain a full flavor profile, however, THC levels tend to be less consistent.
3/25/15 Stearns County: 2 men, 18 and 19, were charged with third-degree murder in Stearns County on allegations that a fire that started while making wax killed an 85-year-old woman.

Advantages:
- Easy to hide
- High THC content
- Can be “Vaped”
- Low Smell

UPDATE
- One plead guilty to aiding & abetting 3rd degree murder: 7 years in prison
- Other plead guilty: 7 months in jail & 25 years probation
MJ labs causing Explosions Nationwide

9/27/16: Explosion in the Bronx killing a FDNY Battalion Chief.

- Propane/Butane powering CO2 generators for accelerated MJ plant growth
- Precipitating hash oil from MJ extractors using butane while heating the precipitant
MJ Ingestion Case Study

Omaha, NE: Aug 2016

53 y.o. male’s wife calls 911

Unknowingly ate 4 brownies made by son w/ MJ

Crawling on floor using profanities and calling the cat “Bitch”
Synthetic Cannabinoids (SC)

There is no clear Toxidrome for Synthetic Cannabinoids

Common Adverse effects of **Early** SC’s
- Anxiety
- Tremors
- Nystagmus
- Hallucinations
- N/V
- Palpations
- Paranoia

Serious Adverse effects of **Newer** SC’s
- Excited Delirium
- Seizures
- Cardiotoxic
- Kidney Failure
- Psychosis
- Coma/Death
### Synthetic Cannabinoids

There were 38 synthetic cannabinoid identifications in the third quarter of CY 2016. 5F-UR-144, AB-CHMINACA, and FUB-AMB accounted for approximately 53% of the synthetic cannabinoid identifications during the reporting period.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identifications</th>
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<tbody>
<tr>
<td>SDB-005</td>
<td>1</td>
</tr>
<tr>
<td>MAM2201</td>
<td>2</td>
</tr>
<tr>
<td>JWH-018</td>
<td>2</td>
</tr>
<tr>
<td>THU-2201</td>
<td>2</td>
</tr>
<tr>
<td>MDMB-FUBINACA</td>
<td>2</td>
</tr>
<tr>
<td>FUB-PB-22</td>
<td>2</td>
</tr>
<tr>
<td>AB-FINACA</td>
<td>3</td>
</tr>
<tr>
<td>AB-FUBINACA</td>
<td>3</td>
</tr>
<tr>
<td>NM2201</td>
<td>9</td>
</tr>
<tr>
<td>MAB-CHMINACA</td>
<td>7</td>
</tr>
<tr>
<td>5F-MDMB-PINACA</td>
<td>7</td>
</tr>
<tr>
<td>5F-AMB</td>
<td>7</td>
</tr>
<tr>
<td>FUB-AMB</td>
<td>14</td>
</tr>
<tr>
<td>AB-CHMINACA</td>
<td>15</td>
</tr>
<tr>
<td>5F-UR-144</td>
<td>18</td>
</tr>
</tbody>
</table>

The number of 5F-UR-144 identifications increased significantly over the course of the third quarter of 2016, with 11 identifications in the first six months and 18 identifications in the third quarter alone.

Dea.emerging.trends@usdoj.gov
SC Morbidity/Mortality

Source:
NEJM 373;2 Jul 9,2015

- N=810
- Mar 2012 – Jan 2015
- Deaths = 23 or 3%

16 different SC homologs identified in the study
Opioids

OD Effects

- CNS depression
- Respiratory depression
- Miosis
- Hypothermia
Over 249,000,000 prescriptions for opioids were written in 2013—enough for every adult in America to have a bottle of pills

SOURCE: CDC
Adulterated Oxycodone

Research Chemical U-47700 in Counterfeit Oxycodone Pills

In March 2016, law enforcement officers in Lorain County, Ohio, seized 500 pills that visually appeared to be oxycodone. The pills were blue and had “A215” markings, consistent with 30 milligram oxycodone pills (see Figure 5). Laboratory analysis indicated that the pills did not contain oxycodone, but were instead the research chemical U-47700. U-47700 is an unscheduled synthetic opioid not studied for human use that has caused at least 17 overdoses and several deaths in the United States. Although counterfeit opioid pill traffickers currently use fentanyl, it is likely that other synthetic opioids will be utilized if fentanyls become inaccessible, or if market preferences shift to other substances.

Figure 5: Counterfeit Oxycodone Pills Containing U-47700.

Source: Lorain County, Ohio, Sheriff’s Office
CDC Reports Increase in Fentanyl adulterated Opiates

2013-2014

426% Increase of seized Drugs testing (+) for fentanyl

Data from 27 states

Increase in number of deaths from Fentanyl & Synthetic opioids 79%

No increase in Rx of Fentanyl during this period
Rx Pain Reliever Sources

Womens Woes

2010-2013 (CDC**)
- Women's Heroin deaths increased from 0.4 to 1.2/100,000

1999-2010 (CDC*)
- 48,000 Women died of Rx Pain Reliever OD's

1999-2014 (CDC)
- Middle aged-white woman
  - Opiate OD's up >400%
  - 54,000 deaths from Benzo OD
  - OD's from Black & Hispanic deaths from Opiates/Benzo declining during this time period


Ohio 9/16/16 Heroin OD

http://launch.newsinc.com/share.html?trackingGroup=91103&siteSection=WDAF&videoId=31421855
The Jump from RX Opioids to Heroin

Painkillers And The Heroin Market
A growing number of people are using heroin in recent years, in part because it can be cheaper and easier to find than opioid painkillers purchased on the black market. Most heroin users were first hooked on prescription opioids, which generated $11 billion in 2010 for the pharmaceutical industry.

Substance abuse treatment facilities admissions by primary drug

4 out of 5 new heroin users have abused painkillers.

A Cheaper High
$30 can buy one oxycodone pill on the street in New York...
or six hits of heroin.

*2012 data for Mississippi, Pennsylvania, and West Virginia are not available.

Sources: SAMHDA, Los Angeles Times, Frost & Sullivan

THE HUFFINGTON POST
Heroin

Bayer heroin bottle.

- From 1898 to 1910 heroin was marketed as a non-addictive morphine substitute and cough medicine for children!
The Perfect Addiction?

- **Intense euphoria in seconds**
  - Addicts prefer heroin and morphine over hydromorphone, fentanyl, oxycodone, meperidine
  - Short acting

- **Rapid tolerance**
  - First time 5-10mg/day titrating up to hundreds mg/day

- **Terrible withdrawal**
  - Within first day
Minnesota Treatment

**Methadone**
- 15 Clinics Statewide
- ~6000 Patients

**Suboxone**
- Dr can dispense after 8 hour course
- 128 Certified in MN
- Previously manage 100 Patients, now 275
Routes

- Snort
- Chasing the Dragon
- Injection
- Skin popping
- Smoking
In the News

3/25/16: Minneapolis PD reports 5 heroin OD’s this day. Called “Bad Batch” of heroin.

Spring 2016: North Central MN (Brainerd area) 7 deaths & > 12 non-fatal OD’s. Report = just more pure heroin vs adulterated
# MN Heroin Deaths

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016 (Jan-Sep)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hennepin</td>
<td>8</td>
<td>22</td>
<td>37</td>
<td>56</td>
<td>51</td>
<td>48*</td>
<td>49</td>
</tr>
<tr>
<td>Anoka</td>
<td>5</td>
<td>13</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>21#</td>
<td></td>
</tr>
<tr>
<td>Dakota</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>30*</td>
<td></td>
</tr>
<tr>
<td>Scott</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>9*</td>
<td></td>
</tr>
</tbody>
</table>

*Numbers obtained from the Hennepin County Medical Examiners Office
#Stats obtained from the Anoka County Medical Examiners Office
OPIOIDS/ ANALGESICS

Fentanyl accounted for approximately 70% of the opioid identifications. Of the 90 identifications, fentanyl was found as the only controlled substance in 30% of the identifications and with heroin in 40% of the identifications. Furanyl fentanyl was the next most prominent opioid identified, accounting for approximately 10% of the identifications. Furanyl fentanyl was the only active substance reported in 50% of these identifications.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyryl fentanyl</td>
<td>1</td>
</tr>
<tr>
<td>4-Fluoroisobutyrylfentanyl</td>
<td>1</td>
</tr>
<tr>
<td>4-ANPP</td>
<td>1</td>
</tr>
<tr>
<td>Valeryl fentanyl</td>
<td>2</td>
</tr>
<tr>
<td>Carfentanil</td>
<td>2</td>
</tr>
<tr>
<td>U-47700</td>
<td>8</td>
</tr>
<tr>
<td>Acetylfentanyl</td>
<td>10</td>
</tr>
<tr>
<td>Furanyl fentanyl</td>
<td>14</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>50</td>
</tr>
</tbody>
</table>

The number of identifications of fentanyl with other active substances increased significantly over the course of the third quarter. This combination represented 17% of the fentanyl identifications in the first six months of 2016 and 30% of the fentanylidentifications in the third quarter alone. This includes substances like alprazolam, quetiapine, and other fentanyl-related compounds.

Dea.emerging.trends@usdoj.gov
Novel Synthetic Opioids
W15

- 5.4x more potent than Morphine
- Unique structure unrelated to almost all other opioids
- NMS Labs can test for
W18

- Discovered in 1981
- Used as an anesthesia agent in large animals. No recent history of human use
- 1000x more potent than morphine
MT45

- Opioid analog discovered in the 1970’s by Dainippon Pharm
- Recreational use associated with hearing loss and unresponsiveness
- Onset/Duration: Similar to Norco
AH7291

- Discovered in the 1970’s by Allen & Hanburys Pharma
- Selective for the MU receptor
- 80% potency of morphine when taken orally
Developed by Upjohn in the 1970’s

7.5x Potency of Morphine in animals. No studies in humans

NMS labs can detect

Detected in 16 deaths in 2016

Onset: 15 min; Duration 5-7 hours

Known as “Pink” or “Pinky” on the street
Acetyl Fentanyl

- Analog of Fentanyl
- 5-15x more potent than Heroin
- 2013 Rhode Island = 14 deaths
- 2013 Pennsylvania = 50 deaths
- Not technically Schedule 1 in the US
- Onset 7-10 minutes, Duration 3-4 hours
Butyrfentanyl

- Analog of Fentanyl
- ¼ the potency of Fentanyl
- Not directly scheduled in the US.
- Onset 15-30 minutes, Duration 90-180 minutes
Furranyl Fentanyl (FuF)
Sufentanil

Developed by Janssen Pharmaceutical in 1974

5-10x more potent than Fentanyl, 500x more potent than morphine

Available as a transdermal patch in Europe
Carfentanil

Wildnil

- Develop by Janssen Pharmaceuticals 1974
- Large animal anesthetic
- 10,000 more potent than morphine
- Used in gas form by Russians in 2002 Moscow Theater Chechen hostage crisis 40 Terrorists killed & 130 Hostages died
Other Trends

- Loperamide HCl
- Urban indications
  - Withdrawal
  - Abuse
- Unadvertised adverse effects
  - QRS widening/QTc Prolongation
Other Trends

Counterfeit Xanax & Oxycodone contain Fentanyl

• Xanax G3722
  “Bars”
Natural Opiate Alternative?

Kratum (Mitragyna speciosa)

- May agonize Mu opiate receptors
- Low dose: Stimulant
- Medium-High Dose: Sedation
Naloxone Status Update
As of 22Jun, 2016

• 47 States and Dist. Of Columbia changed laws to enable easier prescribing and dispensing and/or changed “Good Samaritan” laws to summon aid without legal repercussion*

*https://www.networkforphl.org/_asset/qz5pvn/naloxone-_FINAL.pdf
Steve's Law 8/1/14

- Allows 1st Responders & lay public to administer naloxone

- Provides immunity to those reporting someone having a drug OD even if drugs are present
Resurrection

How it works

A prescription nasal spray called naloxone, sold under the name Narcan, can counteract the effects of an overdose of heroin or other opioids. Narcan can also be injected.

An overdose
When receptors in the brain are overwhelmed by an opioid, like heroin, the receptors slow, then stop the body's ability to breathe.

The reversal
Naloxone has a stronger attraction to the brain's receptors and displaces the opioids long enough to allow breathing to resume.
Intra-Nasal

2mg intranasal

Used by EMT/EMR/Law Enforcement in MN
Naloxone Recall

Nov. 4th 2016

• Teleflex Medical announces recall of MAD 300 nasal atomizer

• Not producing mist reliably
“Rummler Kit”

Contents:

• 2 syringes
• 2 vials 0.4mg Naloxone

Available through Emergency Rooms
Evzio

- Auto-injector

- 0.4mg Naloxone delivered IM

- Provides step by step audible instruction

- ~$500, but covered by most insurance
Adapt Pharma

- FDA approval
  - 19NOV15
- 4mg single use
- In Rhode Island, mandatory to be in all High Schools
Lay Person Opiate Reversal

CDC MMWR Feb 2012 Vol 61(6)

1996-2010

15 States & D.C.

53,032 trained to provide naloxone

10,171 reversals reported
Bath Salts

Zombie Attack
The Truth Behind The Bath Salts Craze
Synthetic Cathinone

- MDMA/MAMA (Ecstasy)
- Bath Salts
  - Alpha PVP (Flakka)
  - Ethylone
  - MDPV
  - Mephedrone (Meow Meow)
  - Methylone
  - BZP (Party Pills)
  - Many more
- 2C’s: 2C-b, 2C-e, 2C-I
3rd Qtr 2016

CATHINONES

DIBUTYLONE WAS THE MOST COMMONLY IDENTIFIED CATHINONE, ACCOUNTING FOR APPROXIMATELY 25% OF THE IDENTIFICATIONS.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH-PVP</td>
<td>1</td>
</tr>
<tr>
<td>Methylone</td>
<td>1</td>
</tr>
<tr>
<td>Dimethylone</td>
<td>1</td>
</tr>
<tr>
<td>4-Chloro-a-PPP</td>
<td>1</td>
</tr>
<tr>
<td>4-CMC</td>
<td>1</td>
</tr>
<tr>
<td>Pentyline</td>
<td>2</td>
</tr>
<tr>
<td>3-CMC</td>
<td>2</td>
</tr>
<tr>
<td>α-PVP</td>
<td>3</td>
</tr>
<tr>
<td>Ethylone</td>
<td>4</td>
</tr>
<tr>
<td>4-Chloro-α-PVP</td>
<td>5</td>
</tr>
<tr>
<td>N-Ethylpentyline</td>
<td>8</td>
</tr>
<tr>
<td>DIBUTYLONE</td>
<td>10</td>
</tr>
</tbody>
</table>

Dea.emerging.trends@usdoj.gov
Molly

Composition of Molly Seizures in the New York Division
October 2009 - September 2013

- 4-MEC: 13%
- MDMA: 13%
- Methylene: 20%
- Non-Controlled (unspecified): 41%
- Other: 13%
Cocaine

> 80% cut with Levamisole

- Old Vet dewormer
- Causes as an unintended side effects leukopenia (Low White Blood cells)
Acid, LSD, or NBOMe?

Analog of 2C-i/2C-c = 25C NBOMe

Street Names

- N-Bomb
- Smiles
- Acid

-Mistaken for LSD/Acid (Blotter)

-Very Potent (16x more than parent compound) 50-250 mcg are purported dosages

2 deaths confirmed in Grand Forks ND June 2012

2 Deaths MN 2014
Drugs of Abuse Websites

www.erowid.org

www.oopiophile.org

www.knowthedangers.com

www.thepoisonreview.com
Questions?

Kirk.hughes@hcmed.org