Fighting Fentanyl: the latest battle in the War on Drugs

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January 26, 2016

Disclosure

- I have no conflicts of interest.

Objectives

- Review the following:
  - Opioids and opioid receptors
  - Fentanyl facts
  - Clinical features of opioid poisoning
  - Management of opioid poisoning
  - Take home naloxone programs
  - Prevention

Case 1

- 20 y.o. male
- 1800-1900: out with friends, drank ethanol, snorted oxycodone
- Last seen awake 0200
- Unrousable in AM → paramedics called
- Comatose on paramedic arrival → cardiac arrest → intubated, epi given

Case 1

- Admitted to ICU
- Course in hospital:
  - Kidney failure
  - Heart failure
  - Dialysis started
- Died same day of ICU admission
- Urine toxicology: positive for fentanyl and cocaine

Case 2

- 45 y.o. male
- Covers himself with 200 fentanyl patches
- Becomes unconscious, falls on his dog
- Wakes up 3 days later
  - still laying on his dog
  - dog dead
- EMS called

Case 2

- O/E: GCS 6-8, fever, hypotensive
- Intubated, transferred to ED
- Sequelae:
  - Admitted to ICU
  - Renal failure → dialysis
  - Rhabdomyolysis
  - Compartment syndrome → amputation L arm → fungal infection to same
- Survived

Opioid Receptors

- There are three main opioid receptor subtypes:
  - Mu (μ)
  - Kappa (κ)
  - Delta (δ)
- Each major opioid receptor has a unique anatomical distribution in the brain, spinal cord, and the periphery

μ -Receptor Effects

- Analgesia (supraspinal, spinal, peripheral)
- Euphoria
- Respiratory depression
- Bradycardia
- Gastrointestinal dysmotility
- Physical dependence
- Pruritus

κ Receptor Effects

- Analgesia (spinal)
- Miosis
- Dysphoric and psychotomimetic effects

δ Receptor Effects

- Analgesia (supraspinal and spinal)
- Cough suppression

Opioid prescriptions

- Canada: 2nd largest per capita consumer of prescription opioids
- Ontario, 1991-2007: oxycodone prescriptions increased 850%
- USA, 1997-2007: opioid prescriptions increased 700%
- USA, 1997-2007: number of grams of methadone prescribed increased by 1200%

Dhalla et al. CMAJ 2009 Dec 8;181: 891-896

Boyer. NEJM 2012;367:146-55

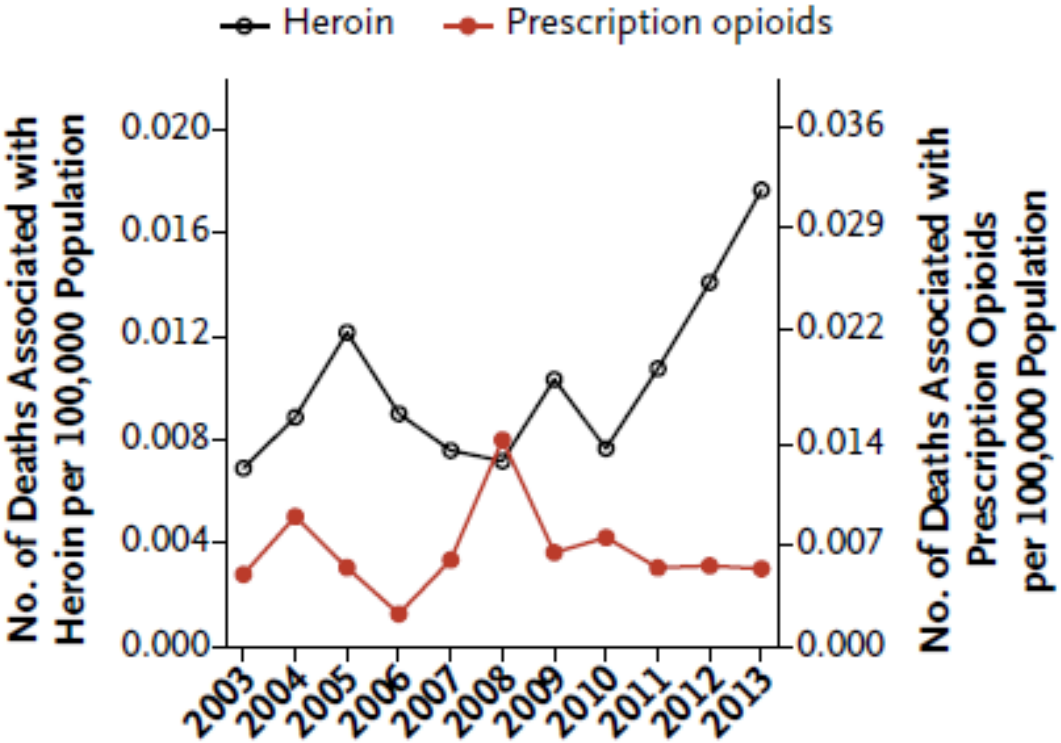


Figure 3. Rates of Death Associated with Heroin and Prescription Opioids, 2002–2013.

Shown is the rate of death associated with prescription opioid drugs (RADARS Poison Center Program) and with heroin (National Poison Data System, American Association of Poison Control Centers), with adjustment for population.

Dart et al, NEJM Jan 15, 2015

What The Fentanyl?

Background

- Opioid analgesic
- 100 times more toxic than morphine
  - 100 mcg = 10 mg morphine
- Abused as heroin substitute
- Controlled substance most often abused by anesthetists

Other fentanyls

- Alpha methyl fentanyl
  - “China White”
  - Orange County 1979
- 3-methyl fentanyl
  - “Tango and Cash”
  - New York City 1992
- Carfentanil
  - Moscow counterterrorism response 2002
- “W series of opioids”
  - 100-1000X more toxic than fentanyl

Kinetics

- Absorbed IM, IV, PO, intrathecally, intranasally or transdermally
- Rapid onset of action (seconds-minutes)
- Duration of action 0.5- 2.0 hours (IV)
- Available forms (pharmaceutical): lozenge, patch, IV

The patch

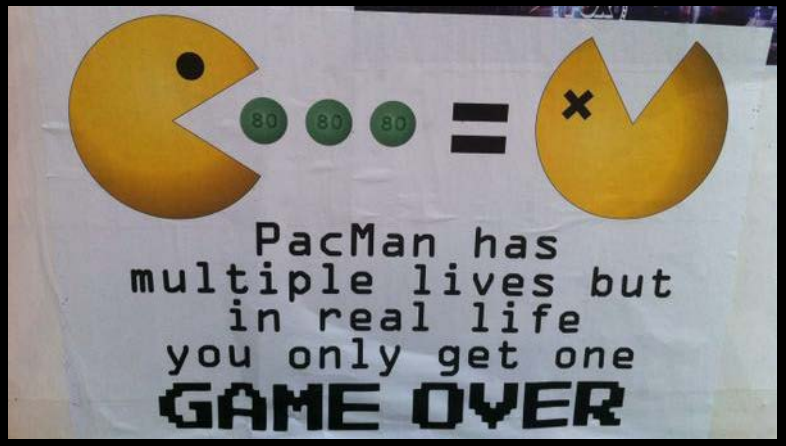
- For chronic pain
- Abused by eating, smoking, injecting
- Substantial amounts of drug remain on used patches (50% after 72 hours)
- Case reports of drug abusers removing patches from dead bodies

The pill

- Green (primarily), sometimes white or pink
- CDN 80 markings
- Made to look like oxycodone 80 mg tablets
- Sources in Calgary
  - Fentanyl powder imported from China
  - Domestic clandestine labs (Lower Mainland BC, Calgary)

Street names

- Greenies
- Green beans
- Beans
- Green apples
- Apples
- Shady 80’s
- Fake oxy
- Oxy



In Calgary, fentanyl has been cut with caffeine, heroin and horse tranquilizers.

You never know what you're getting.

#FentanylKills

CALGARY POLICE SERVICE

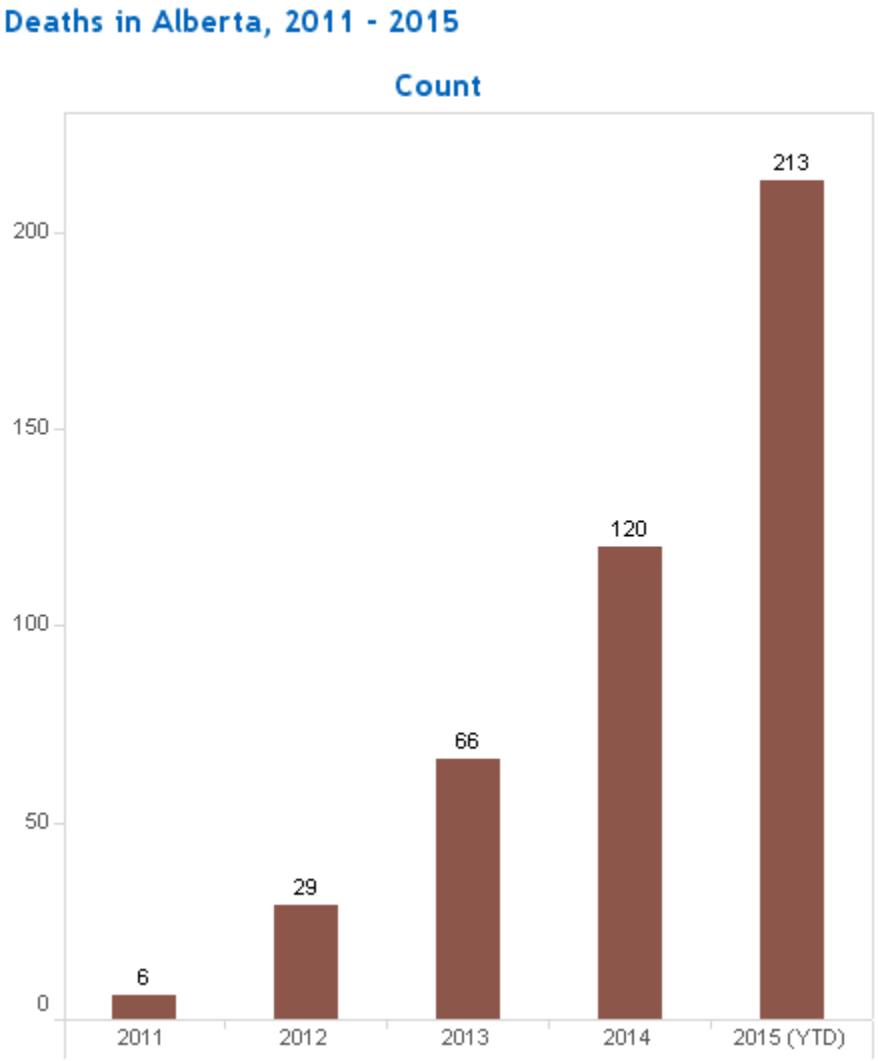
2/3 of Calgary's fentanyl overdoses happen in suburban communities.

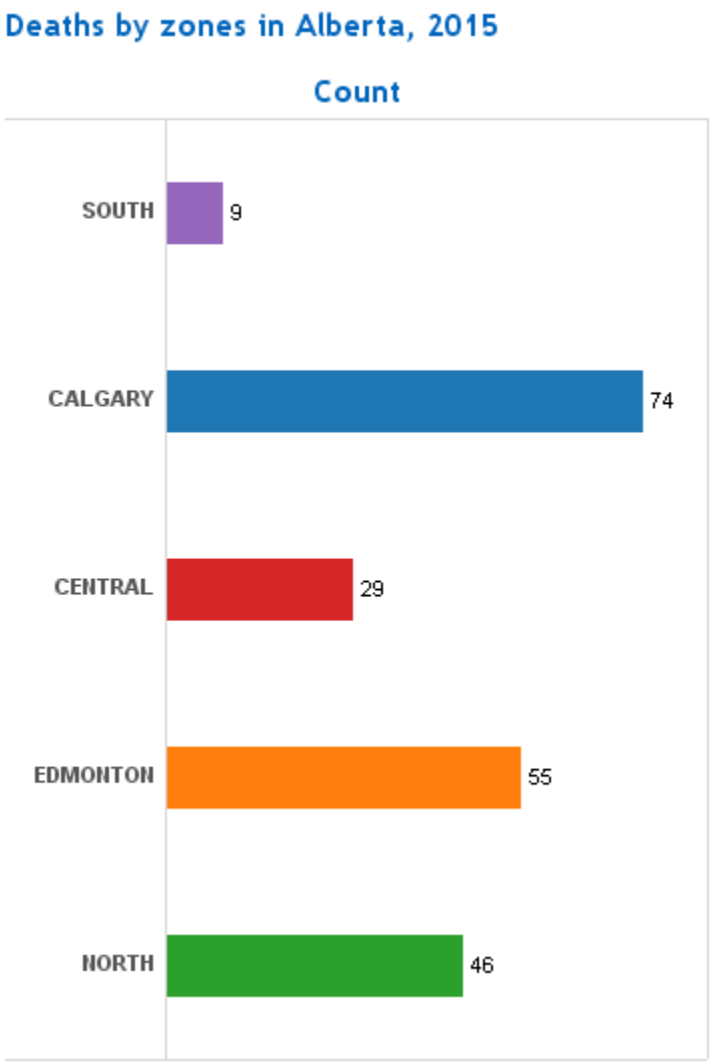
Have you talked to your children?

#FentanylKills

CALGARY POLICE SERVICE

Fentanyl fatalities in Alberta





Opioid overdose: Clinical features

SLOW OR NO BREATHING

BLUE LIPS AND NAILS

NO MOVEMENT (CANNOT WAKE THEM)

CHOKING OR THROWING UP

GURGLING OR SNORING SOUNDS

PUPILS ARE TINY

COLD AND CLAMMY SKIN

SEIZURE

Management

ABCDEFG's of toxicology

- **A**irway
- **B**reathing
- **C**irculation
- **D**econtamination
- **E**limination
- **F**ind an antidote
- **G**eneral management

Naloxone

- Opioid antagonist
- IM, IV, SC, endotracheal, intralingual, inhalational
- Only 10% absorbed via PO / SL routes
- Dose: 0.04 to 0.4 mg IV in adult, 0.1 mg/kg IV in peds
  - May repeat Q 2-4 min up to max. 10 mg
  - If no response after 10 mg, search for alternative diagnosis

Naloxone

- Reverses effects at opioid receptors
- Duration of action 20-90 minutes
- Elimination half life 60-90 minutes
- May need repeat dosing as naloxone wears off before most opioids do
- Continuous infusion may be preferred to ongoing repeat bolus dosing

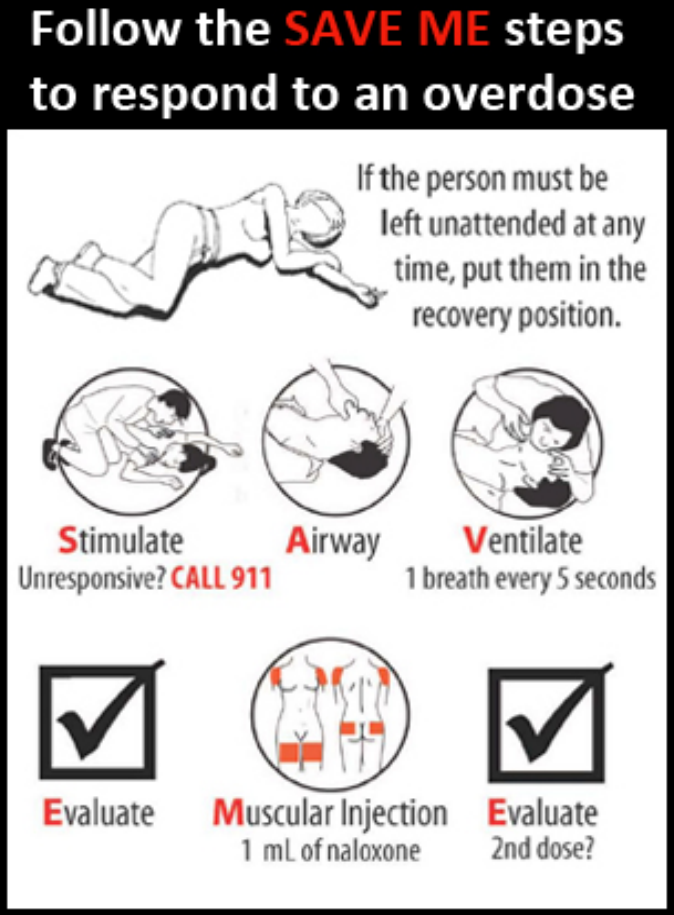
Prevention

- Physicians
  - Safe opioid dosing
  - Prescription monitoring programs
  - “Opioids to go” - ED/Urgent Care universal policy
  - http://nationalpaincentre.mcmaster.ca/opioid/
- Manufacturers
  - Honest marketing
  - Fund objective prescribing information programs
- Patients
  - Education about effects of opioids

First Do No Harm: Responding to Canada’s Prescription Drug Crisis

Take home Naloxone (THN) program

Responding to an opioid overdose



Stimulate – call 911

Airway

Ventilation (rescue breathing)

Evaluate the situation

Muscular injection of Naloxone

Evaluate again (continue rescue breathing)

If you ever have to leave the person alone, put them in the recovery position

THN in Alberta: Update

- Virtual ECC developed October 2015
- THN kits purchased by AHS and Alberta Health
- Train the trainer modules developed
- Working with licensing bodies on prescribing
- Health Canada proposal to make naloxone OTC for opioid-induced respiratory depression
- Kits dispensed to multiple sites province-wide
- Need to determine who trains the patient/caregiver in different zones
- January 25, 26, 27, 29: AHS-sponsored Fentanyl/THN learning sessions for AHS employees

www.drugsfool.ca

Take home points

- Variable content of non-pharmaceutical fentanyl
  - Xylazine, heroin, caffeine, phenacetin, oxycodone
- Fentanyl and other opioids: small pupils, decreased respiratory rate, decreased level of consciousness
- Treatment: ABCDEFG / SAVE ME
- Naloxone may be life-saving
- Embrace harm reduction approach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