OPIOID OVERDOSE 101

End Mass Overdose, Inc.

Naloxone Certification
Mass Housing
Conference 2016

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Opioid Epidemic

259 million

- The number of prescriptions written for painkillers in 2012

  That's enough for ***every*** American adult to have one bottle of pills

15.3 million

- Number of people aged 12 and older who used prescription drugs non-medically in 2014

47,055

- Number of fatal drug overdoses in the United States in 2014 used prescription drugs non-medically in 2014
  - 18,893 due to prescription painkillers
  - 10,574 related to heroin

(CDC, Opioid Painkiller Prescribing, 2014; CDC, National Center for Health Statistics, National Vital Statistics System, Mortality File, 2015)

Opioid Epidemic

1,526

- Number of opioid overdose deaths in **Massachusetts** in 2015

46

- Number of people who die **every day** from prescription painkiller overdose in the United States

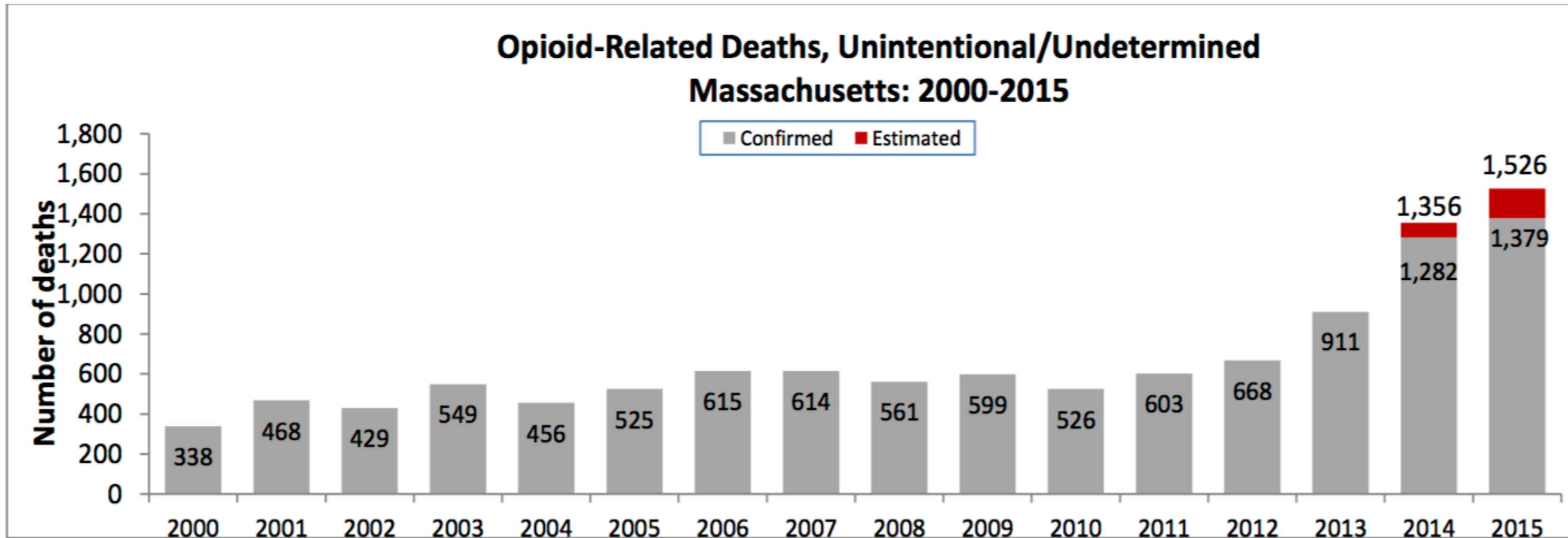
77

- The percentage of opioid overdose deaths in 2013 that happened *outside* of medical settings, the majority (56%) occurring in homes

Per CDC Vital Statistics, majority of opioid overdoses between 1999 and 2013 in the US:

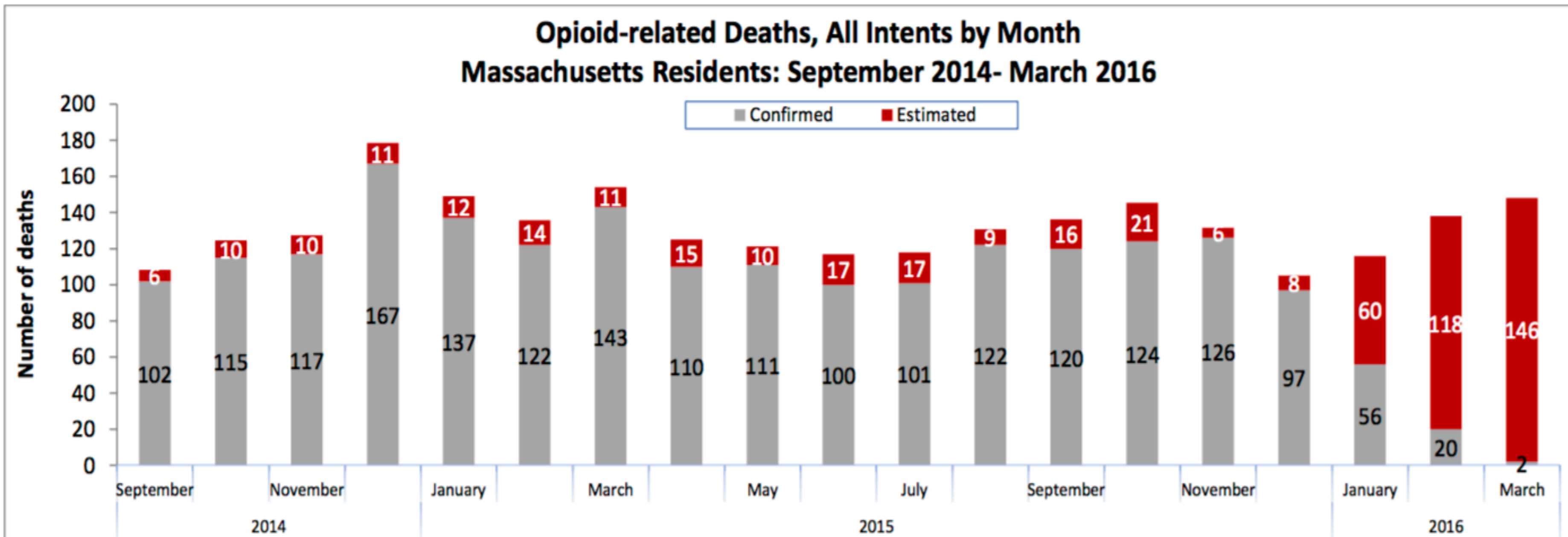
- Ages **25 to 54; White** (non-Hispanic); **Men**

Opioid Epidemic Massachusetts



Source: Registry of Vital Records and Statistics, MDPH (Jan 2016)

Opioid Epidemic Massachusetts



Source: Registry of Vital Records and Statistics, MDPH (May 2016)

Overdose Epidemic Massachusetts

Number of Unintentional[1] Opioid[2]- Related Overdose Deaths by County, MA Residents: 2000-2015[3]

Massachusetts Department of Public Health, Office of Data Management and Outcomes Assessment — Posted: MAY 2016

County	Year of Death															
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014[3]	2015[3]	Total 2000-2015
Barnstable	12	17	17	14	16	17	19	29	21	20	19	15	22	40	53	65	396
Berkshire	2	3	0	2	3	9	1	8	3	8	3	6	15	21	28	30	142
Bristol	37	56	60	80	67	75	79	61	78	66	74	76	92	111	138	146	1296
Dukes	1	0	1	0	0	2	0	3	1	1	0	0	0	1	5	5	20
Essex	41	58	44	74	61	73	83	85	52	69	48	54	85	111	208	207	1352
Franklin	5	2	1	5	3	4	6	4	2	2	4	6	8	9	11	16	88
Hampden	30	36	34	44	26	33	42	38	43	45	46	42	51	68	61	94	734
Hampshire	5	5	4	10	8	2	9	12	10	9	10	9	10	28	25	17	173
Middlesex	56	76	77	102	96	109	106	101	104	113	90	118	106	142	277	293	1966
Nantucket	0	0	0	0	0	0	0	1	0	1	1	0	0	1	1	1[4]	6
Norfolk	24	39	34	36	37	49	46	53	67	64	55	59	65	79	124	144	976
Plymouth	22	24	27	42	24	35	47	49	45	46	39	60	54	83	117	151	865
Suffolk	44	79	75	93	73	62	106	101	67	91	60	79	82	105	145	179	1441
Worcester	59	73	55	47	42	55	71	69	68	64	77	79	78	112	163	177	1289
TOTAL DEATHS	**338**	**468**	**429**	**549**	**456**	**525**	**615**	**614**	**561**	**599**	**526**	**603**	**668**	**911**	**1,355[5]**	**1,526**	**10,743**

[1] Unintentional poisoning/overdose deaths combine unintentional and undetermined intents to account for a change in death coding that occurred in 2005. Suicides are excluded from this analysis.
[2] Opioids include heroin, opioid-based prescription painkillers, and other unspecified opioids.
[3] Please note that 2014-2015 death data are preliminary and subject to updates. Case reviews of deaths are evaluated and updated on an ongoing basis. A large number of death certificates have yet to be assigned final cause-of-death codes. These counts are based on the estimates rather than confirmed cases. Data updated on 03/31/2016.
[4] Numbers and calculations based on values less than 5 are suppressed for years in which the death file is not yet closed if they are based on pending cases. The 1 death listed in Nantucket County in 2015 is a confirmed opioid overdose death.
[5] In 2014, there was also 1 death of an MA resident whose city/town of residence was not known.

Source: Registry of Vital Records and Statistics, MDPH (May 2016)

Opioid Epidemic Massachusetts

Unintentional Opioid Overdose Death Rates by County, January 2013- December 2015

Essex
Franklin
Middlesex
Berkshire
Hampshire
Worcester
Suffolk
Norfolk
Hampden
Plymouth
Bristol
Barnstable
Dukes
Nantucket

Opioid Overdose Death Rate
By County, per 100,000 people

- NA
- 9.3 - 14.4
- 14.5 - 16.4
- 16.5 - 19.5
- 19.6 - 24.0

State Rate: 17.7 (Jan. 2013- Dec. 2015)

Notes:
1. All data updated on 03/31/2016. Unintentional poisoning/overdose deaths combine unintentional and undetermined intents. Cases were defined using the International Classification of Disease (ICD-10) codes for mortality using the following codes in the underlying cause of death field: X40-X49, Y10-Y19. All multiple cause of death fields were then used to identify an opioid-related death, using the following ICD-10 codes: T40.0, T40.1, T40.2, T40.3, T40.4, and T40.6.
2. Opioids include heroin, opioid-based prescription painkillers, and other unspecified opioids.
3. Please note that 2014 and 2015 death data are preliminary and subject to updates.
4. Rates computed for smaller counties (populations <10,000) are likely to vary significantly from year to year.
5. Low rates of unintentional opioid overdose deaths in a county should not be taken as an indication that there is no opioid abuse problem in that community.
6. County level opioid overdose death rates are computed by averaging the number of opioid-related deaths between January 2013 and December 2015 by the estimated population in the community in that same time period. County is based on county of residence for the decedent.
7. The rate is expressed as a value per 100,000 residents.

Source: Registry of Vital Records and Statistics, MDPH (May 2016)

End MASS Overdose

What is an opioid?

Opiate versus Opioid

- **Opiate:** a natural substance derived from the opium poppy plant
- **Opioid**: a synthetic substance that acts on the opioid receptors to produce opiate-like effects

The term "opioids" refers to the entire family, including natural opiates and their semi-synthetic and synthetic relatives

- *Natural*: morphine, codeine
- *Semi-synthetic*: heroin (diacetylmorphine)
- *Synthetic*: fentanyl, methadone, mepiridine

RX pills →Heroin

According to the CDC, 45% of people who used heroin were addicted to painkillers first

End MASS Overdose

Opioids

- Heroin
- Hydrocodone (Vicodin)
- Hydromorphone (Dilaudid)
- Morphine
- Methadone
- Oxycodone IR/ER (Oxycontin, Percocet)
- Oxymorphone (Opana)
- Fentanyl
- Buprenorphine (Suboxone, Subutex, Butrans)
- Codeine (Tylenol#3)
- Tramadol
- Diphenoxylate (Lomotil)

NOT Opioids

- Cocaine, Crack
- Methamphetamine
- Benzodiazepines (Valium, Klonopin, Xanax)
- Non-BZD hypnotics (Ambien)
- Alcohol
- Stimulants (Adderall, Ritalin)
- Marijuana
- MDMA (Molly, Ectasy)
- Gabapentin (Neurontin)
- Sedatives (barbiturates)
- Psychedelics (LSD, peyote)

The Basics: Opioid Pharmacology

How do opioids work?

- All opioids are Central Nervous System (CNS) depressants. Opioids attach to opioid receptors in the brain, spinal cord, GI tract, and other organs

Mechanism of Action

- Mu (μ) opioid receptors: analgesia, euphoria, respiratory depression, decreased GI motility, physical dependence, miosis
- Delta (δ) opioid receptors: analgesia, physical dependence
- Kappa (κ) opioid receptors: analgesia, sedation, depression, miosis

Major indications for Medical Use

- Pain relief- reduce perception of pain in the brain
- Cough- suppress cough reflex in the brain (codeine)
- Diarrhea- suppress GI motility (diphenoxylate)

End MASS Overdose

Basic Opioid Pharmacology

- **Opioid Overdose**: acute condition due to excessive exposure to opioids
  - Normal breathing mechanism: the drive for respiration increases as levels of oxygen decrease and carbon dioxide increase in the blood
  - Opioid-present breathing mechanism: opioids bind to receptors and suppress the respiratory center and drive in the brain
    - Result: breathing mechanism does not respond to low levels of oxygen in the blood; normal breathing mechanism is dysfunctional

The difference between life and death depends on breathing and oxygen

Basic Opioid Pharmacology

Opioid Overdose

- User ingests opioids→ opioids attach to receptors in the brain responsible for breathing and suppress respiratory drive→ user's breathing slows→ user becomes unresponsive→ respiratory depression→ hypoxia
- Lack of oxygen (oxygen starvation) affects vital organs, including the heart and brain, leading to organ damage, coma, and **death**
- Within **3-5 minutes without oxygen brain damage starts** to occur

Intervention is key! *This process is rarely instantaneous. Even if victim experiences an overdose immediately after drug ingestion, proper response can reverse the overdose.*

Signs of Opioid Overdose

- Blue skin tinge- typically lips and fingertips
- Limp body
- Pale face
- Pulse (heartbeat) slow, erratic, or not there at all
- Vomiting
- Passing out, heavy "nodding" off
- Awake, but unable to talk
- Choking, gurgling, snoring sounds, the "Death Rattle"
- **Breathing is slowed, irregular, or stopped completely**
- **Unresponsive**
- **Miosis (pinpoint pupils)**

Tip: if someone is making unfamiliar sounds while "sleeping," try rousing the person. Many bystanders think a person is snoring when they are in fact overdosing

Naloxone

What is naloxone?

- CVI prescription that reverses the effects of opioids
- Opioid antagonist with greatest affinity for the mu receptor
- It acts by competing for the mu, kappa, and sigma opiate receptor sites in the CNS

How long does it take naloxone to work?

- Onset of action: immediately or up to 8 minutes
  - Rule of thumb: re-administer if minimal or no response in **2 minutes**
- Duration of action: the effects last 30 to 90 minutes
  - Rule of thumb: **60 minutes**

Can naloxone be used to reverse all overdoses?

- NO! Only effective in overdoses involving **opioids**.
- It has no effect in the absence of opioids. Will not reverse an overdose from pure cocaine, benzodiazepines, alcohol, etc.

How to Respond to an Overdose

1. Assess the situation
   - Identify if the person is responsive, arousable, and breathing
   - Attempt to stimulate the person
2. Administer naloxone
3. Rescue breathing (if needed)
4. Victim observation
   - Call 911, stay until helps arrives
   - Ensure victim receives medical attention

Assessing for Responsiveness/Breathing

Strategies to stimulate the person:

- Yell their name
- Sternal rub
- Knuckle rub under the nose
  - Preferred method if chest is inaccessible or chest injury is suspected

Opioid overdoses occur over time

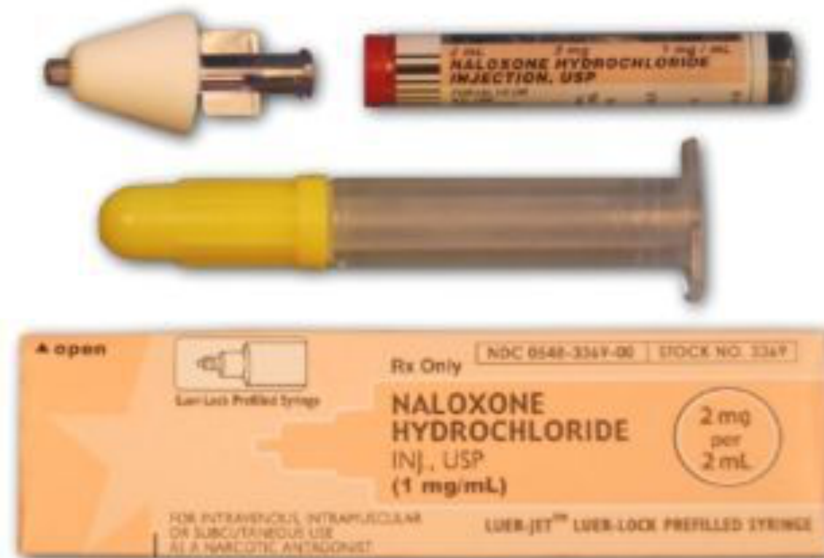
- If an overdose is suspected, stay with the person because he/she may become unresponsive and require help later.

RESCUE BREATHING

1. Make sure nothing is in person's mouth.
2. Tilt their head back, lift chin, pinch nose shut.
3. Give 1 slow breath every 5 seconds until they start breathing.

Opioid Overdose Response

How to Administer Intranasal Naloxone with atomizer device



How to Administer Intranasal Naloxone

1. Remove two yellow caps and one red/purple cap
2. Attach nasal atomizer (spray device)

   Screw it onto the top of plastic delivery device
3. Gently screw pre-filled medicine vial into delivery device
4. Spray half of the medicine (1 ml) up one nostril and spray the other half (1 ml) into the other nostril
5. If there is minimal or no response in 2 to 3 minutes, administer second dose of naloxone
6. Rescue breathing until help arrives

End MASS Overdose

How to Administer Intranasal Naloxone

How to Give Nasal Spray Naloxone

SYRINGE

1 Pull or pry off yellow caps

NALOXONE

2 Pry off red cap

3 Grip clear plastic wings.

4 **Gently** screw capsule of naloxone into barrel of syringe.

5 Insert white cone into nostril; **give a short, vigorous push** on end of capsule to spray naloxone into nose: **one half of the capsule into each nostril**.

Push to spray.

6 If no reaction in 2-5 minutes, give the second dose.

HARM REDUCTION COALITION
22 WEST 27TH ST, NEW YORK, NY 10001 (212) 213-6376
harm reduction COALITION

How to Administer Intranasal Naloxone

- https://www.youtube.com/watch?v=Jis6NIZMV2c
  - Narcan Nasal Spray Demonstration, Boston Herald video. Demonstrator Sarah Mackin, Program Manager at the Boston Public Health Commission

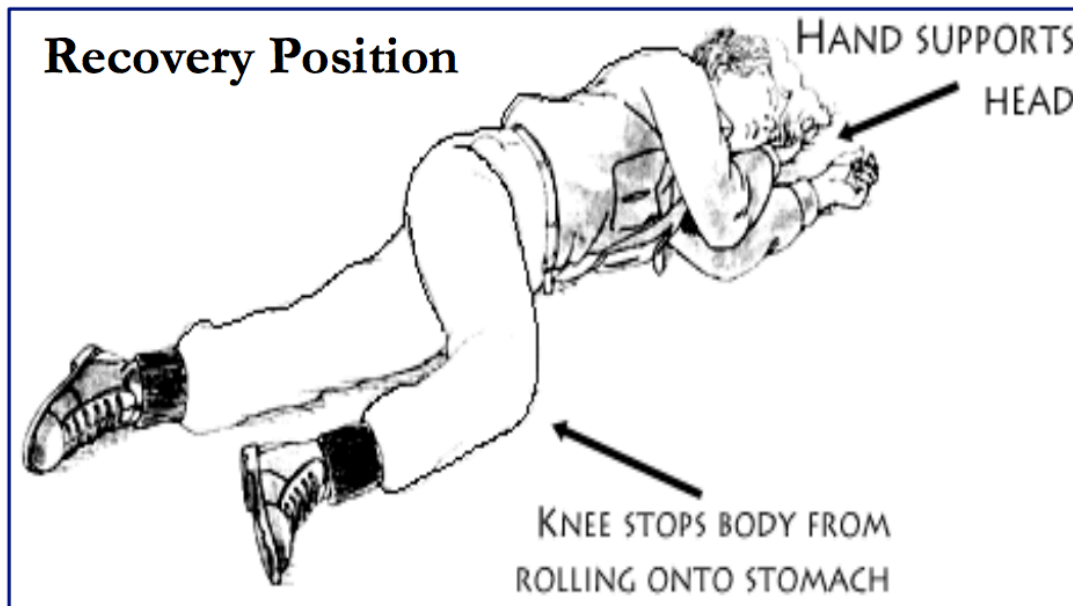
How do I remember this quickly?

SCARE ME

- **S**timulate
- **C**all 911
- **A**dminister naloxone
- **R**escue Breathing (if needed)
- **E**valuate. Give 2nd dose if needed
- **M**ove person to recovery position
- **E**valuate again. Stay until help arrives

Recovery Position

- Place victim in the recovery position
    - Lay person on their side, body supported by a bent knee, with face turned to side. Critical if unable to stay until help arrives
- Overdosing victims can die because they choke on their own vomit (aspiration) rather than the overdose itself



Commonly Asked Questions

#1 Question: What is the difference?

Intoxication "high" versus Overdose

HIGH	OVERDOSE
Relaxed muscles Normal skin tone	Pale, clammy skin Blue lips, fingertips
Slowed or slurred speech Normal breathing	Not speaking Infrequent or no breathing
Sleepy looking Drowsy, but arousable	Deep snoring, gurgling Not arousable
Responsive to stimuli including yelling, sternal rub	Not responsive to stimuli
Normal heartbeat	Slow or irregular heartbeat

What should I NOT do in an overdose?

Do **NOT**:

- Put the person in a bath
- Induce vomiting
- Make the person drink something
- Put ice down the pants/crouch area or give a cold shower
  - Cooling down the core body temperature slows the heart rate and breathing rate, which increases the risk of shock and heart arrhythmia
- Try to stimulate person in a harmful manner
  - Punching, kicking, burning bottoms of feet
  - Person may respond to painful stimuli but it will not reverse the overdose
- Inject the person with anything (saltwater, milk)
  - It will not work and wastes valuable time. Also, every injection increases the risk of a bacterial and/or viral infection

Troubleshooting with Naloxone

Lost or Broken Atomizer

- Call 911 and administer without atomizer. Perform rescue breathing until help arrives.
- Squirt / pour naloxone solution directly into the nose. Remember the atomizer only makes the solution a spray

Broken Naloxone Vial

- If vial is broken during assembly/ unable to screw vial into the syringe to atomize solution, call 911 and administer.
- Directly pour solution into victim's nasal cavity. Do not try to divide dose if vial is cracked/broken, pour whatever remains into one nostril
- Do not pour naloxone solution into the victim's mouth.

- ***Bioavailability***! Intranasal administration= direct absorption into the blood stream, avoids gastrointestinal destruction and hepatic first pass metabolism

Troubleshooting with Naloxone

Nose Bleed

- Call 911 and administer. Perform rescue breathing until help arrives
- Substantial nasal bleeding may interfere with absorption, but give naloxone regardless

Expired Naloxone

- Call 911 and administer. Perform rescue breathing until help arrives
- Naloxone's full efficacy is not guaranteed beyond the expiration date but it will **not hurt** the person and may provide some benefit

Incorrect Administration

- Administered full dose of naloxone into one nostril
- Do not panic. Wait 2 minutes, if minimal or no response, administer a 2nd dose correctly.

Commonly Asked Questions

Can naloxone be used to reverse <u>all</u> overdoses?

- <u>NO</u>! Only effective in overdoses involving **opioids**.
- Always administer regardless. Most overdoses are due to polysubstance use. If the person is not breathing, it will not hurt to administer naloxone
- Worst case scenario, naloxone will simply do nothing, but in best case scenario, it will save a life.

Can naloxone reverse an overdose involving buprenorphine products?

- Yes, but not as well.
- Risk of limited efficacy. <u>Larger or repeat doses may be required</u> due to buprenorphine's long duration of action and slow rate of dissociation from opioid receptors

End MASS Overdose

Commonly Asked Questions

What if it wears off or doesn't work? Can I give multiple doses of naloxone?

- **Yes**. Long acting opioids last longer than 30-90 minutes. Thus, several doses may be required

After an overdose is reversed, should the victim go to the hospital?

- **Yes**. Victim should be observed for up to 6 hours to ensure s/he does not go back into an overdose when naloxone wears off
- If victim refuses to go to hospital, bystander should observe him/her

What if the victim is wearing a fentanyl patch?

- Remove patch with covered hands. Use gloves or sleeves to prevent absorption. After patch removal, call 911 and administer naloxone.

Commonly Asked Questions

Can the intranasal naloxone be assembled in advance?

- The shelf life of the assembled prefilled syringe is only 2 weeks.
- Recommendation: may attach atomizer to syringe in advance, but do not uncap and insert naloxone vial until ready to administer

Can naloxone be administered to pregnant women?

- **Yes.** Pregnancy category C
- Note: risk of life-threatening opioid withdrawal may occur in physically dependent neonates

Can naloxone be administered to someone under age 18?

- **Yes**

Commonly Asked Questions

Can I keep naloxone in my car? Where can it be stored?

- Store at room temperature between 59-77°F (20-25°C). May only be stored for short periods between 39-58 and 78-104°F. Protect from light
- Recommendation: keep vial in original orange packaging to protect from light

Can naloxone hurt someone?

- Serious side effects are very rare. The most common side effect is opioid withdrawal-like symptoms since naloxone ejects opioids from their receptors.
- Risk of withdrawal symptoms increases with larger doses, repeat doses, and depth of a person's drug dependency.
- Common opioid withdrawal symptoms: irritability, nervousness, aches, sweating, runny nose, flushing, diarrhea, nausea, vomiting

Commonly Asked Questions

Can naloxone get you high?

- **No**. Naloxone cannot get someone high. It has no potential for abuse or dependency. It has no effect in the absence of opioids

Can naloxone cause an overdose?

- **No**. Larger doses may cause symptoms of opioid withdrawal

Can I develop a tolerance to naloxone? Will naloxone work on someone who has previously used it?

- **No** you cannot develop tolerance to naloxone. It can be used in every opioid overdose situation regardless of previous uses.
- People may respond to naloxone differently each time, but this is likely due to the type or combo of drugs ingested, how old the naloxone is, and how it has been stored.

Common Legal Questions

- Prescriber immunity from criminal prosecution for prescribing, dispensing or distributing naloxone to a layperson: **YES**. MGL c. 94C § 19
- Layperson immunity from criminal liability when administering naloxone? **YES**. MGL c.94C § 34A
- Can I carry naloxone? Law removes criminal liability for possession of naloxone (possession w/out a RX)? **YES**. MGL c.94C § 34A
- Third party prescribing allowed: **YES**

Common Legal Questions

- Good Samaritan Law: **YES**. 94C, § 34A

Immunity from being charged or prosecuted for possession of a controlled substance if evidence for the charge was gained as a result of the seeking of medical assistance during an overdose

- *Goal: to reduce the fear of calling 911*

- Does not protect a person from being charged with trafficking, distribution, or possession with intent to distribute

Most fatal overdoses are polysubstance. Due to this complexity, an overdose is a medical emergency. Call 911

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