

TODDLERS WHO OVERDOSE

Understanding and addressing the danger of opioid ingestions in our young patients

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OBJECTIVES



- Describe recent trends in opioid exposures among young children, nationally and locally.
- Identify indications for sending testing for opioid exposure in young children.
- Identify strategies to mitigate risk of opioid ingestions in young children.



CASE 1: MANY MOONS AGO:

- 3-year-old presented to CHOP unresponsive
 - Had been playing outside earlier
 - Went to sleep in bed with his mother, sibling
 - Didn't awake in the morning
- Comatose, GCS 3, No external injuries
- SCAN Consult: Could this be accidental suffocation?
- Multiple Consults without clear etiology until Toxicology results
- Child died



CASE 2

- 1 y.o. female brought to ED after being discovered to have put a relative's suboxone in her mouth.
 - Minimally, responsive to painful stimuli
 - Pinpoint pupils, respiratory depression
 - Received naloxone x6 doses
 - Admitted to PICU for closing monitoring



RISK FACTORS

Child Risk Factors:

- Peak age 1-4
- Boys > girls
- Hyperactivity
- Oral behaviors
- Pica

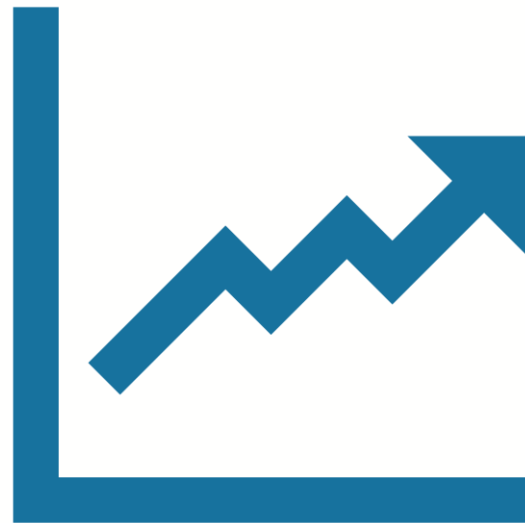


Poison Risk Factors:

- Palatability
- Ease of access
- Attractiveness



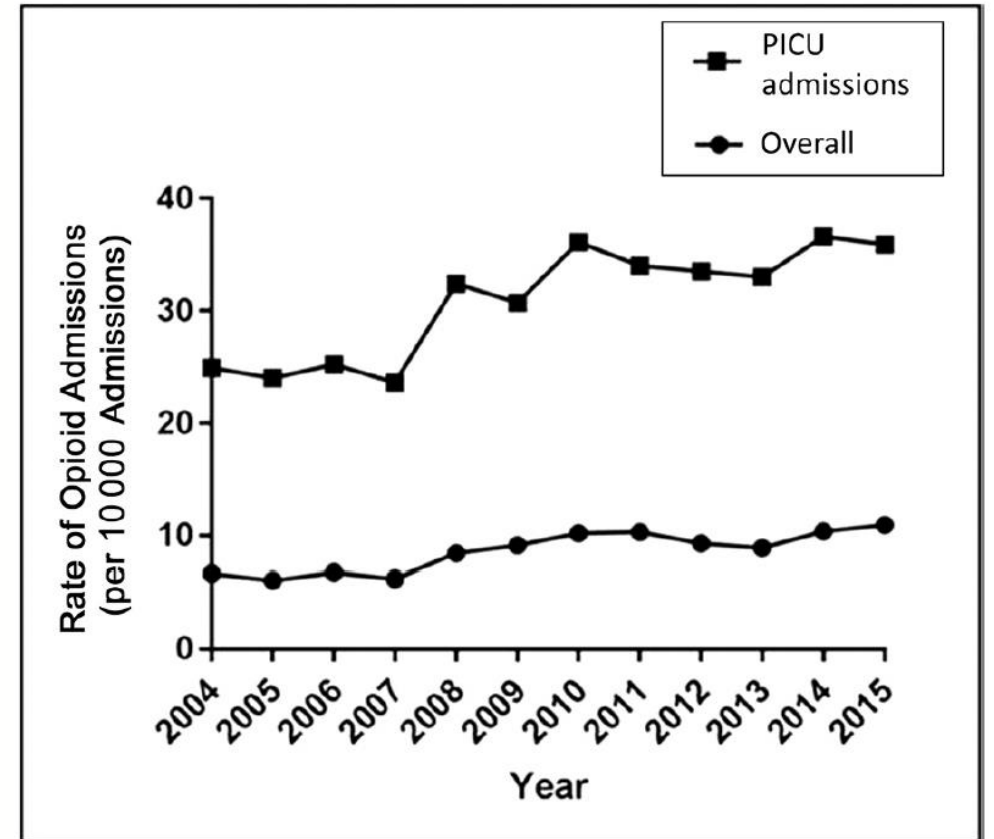
TRENDS IN PEDIATRIC OPIOID RELATED HOSPITALIZATIONS AND DEATHS



OPIOID HOSPITALIZATIONS 2004 - 2015

31 Pediatric Hospitals

- **3647** opioid hospitalizations
- **43%** required PICU care
- **34%** children 1-5 y.o.
- **2X** increase in number of PICU admissions from 2004-2015



Kane JM, Colvin JD, Bartlett AH, Hall M. Opioid-Related Critical Care Resource Use in US Children's Hospitals. *Pediatrics*. 2018;141(4):e20173335

BUPRENORPHINE INGESTIONS

BUPRENORPHINE

- Prescription opioid with lower maximum effect and lower risk of abuse or misuse.
- FDA approved for the treatment of opioid dependence (alone or in combination with naloxone).
- AAP recommends pediatricians consider offering medication-assisted treatment to their adolescent and young adult patients with severe opioid use disorders or discuss referrals to other providers for this service.

Buprenorphine Exposures Among Children and Adolescents Reported to US Poison Control Centers. Sara Post, Henry A. Spiller, Marcel J. Casavant, Thitphalak Chounthirath, Gary A. Smith. *Pediatrics* Jul 2018, 142 (1) e20173652; DOI: 10.1542/peds.2017-3652
Committee on Substance Use and Prevention. Medication-assisted treatment of adolescents with opioid use disorders. *Pediatrics*. 2016;138(3):e20161893pmid:27550978

PEDIATRIC BUPRENORPHINE EXPOSURES REPORTED TO POISON CONTROL CENTERS

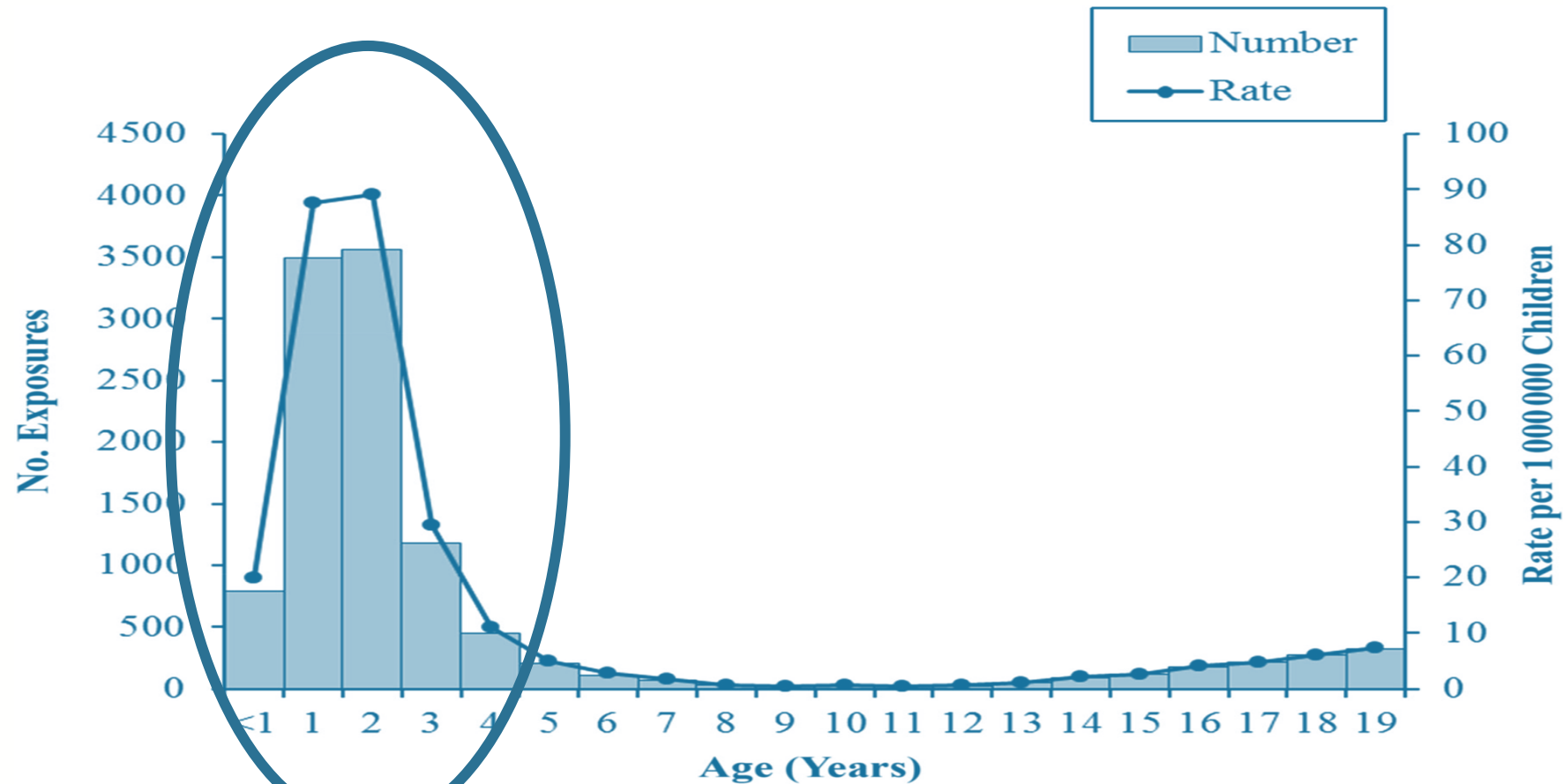
From 2007 to 2016:

- 11 275 children and adolescents ≤ 19 years old exposed to buprenorphine
- 89.2% unintentional
- 86.1% among children < 6 years old
- 11.1% adolescents

Among children < 6 years old

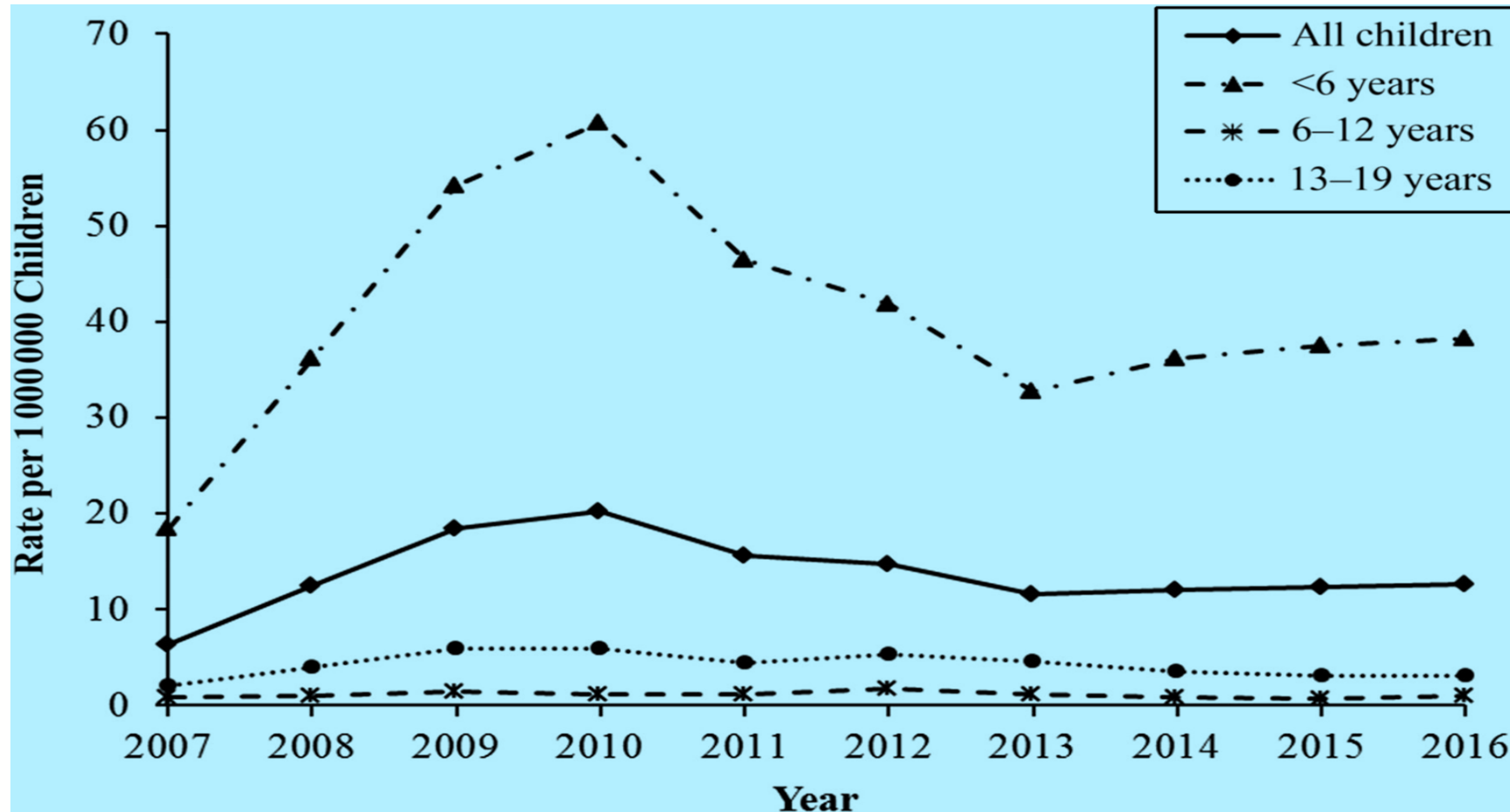
- 48.1% of buprenorphine resulted in hospital admission
- 21.4% in a serious medical outcome.

NUMBER AND RATE OF BUPRENORPHINE EXPOSURES BY CHILD AGE: 2007–2016



Sara Peet et al. Pediatrics 2018;142:e20173652

ANNUAL RATE OF BUPRENORPHINE EXPOSURES AMONG CHILDREN: 2007–2016



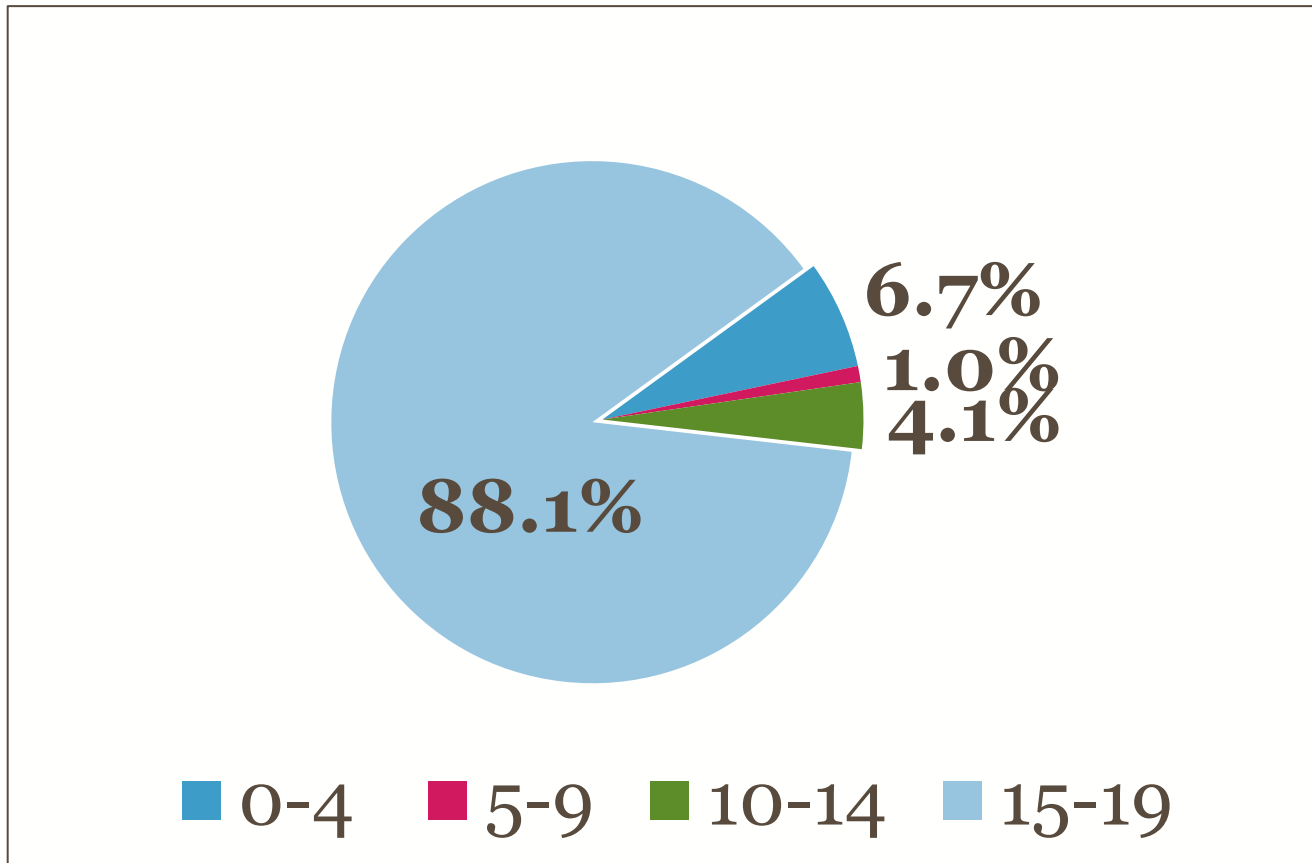
Sara Post et al. Pediatrics 2018;142:e20173652

PEDIATRIC DEATHS

PEDIATRIC DEATHS FROM PRESCRIPTION AND ILLICIT OPIOIDS, 1999-2016

- 8986 pediatric deaths
- ♂ > ♀
- Non-Hispanic white > black and Hispanic
- 73% prescription opioids
- 38% in home / residential setting

PEDIATRIC DEATHS FROM PRESCRIPTION AND ILLICIT OPIOIDS, 1999-2016



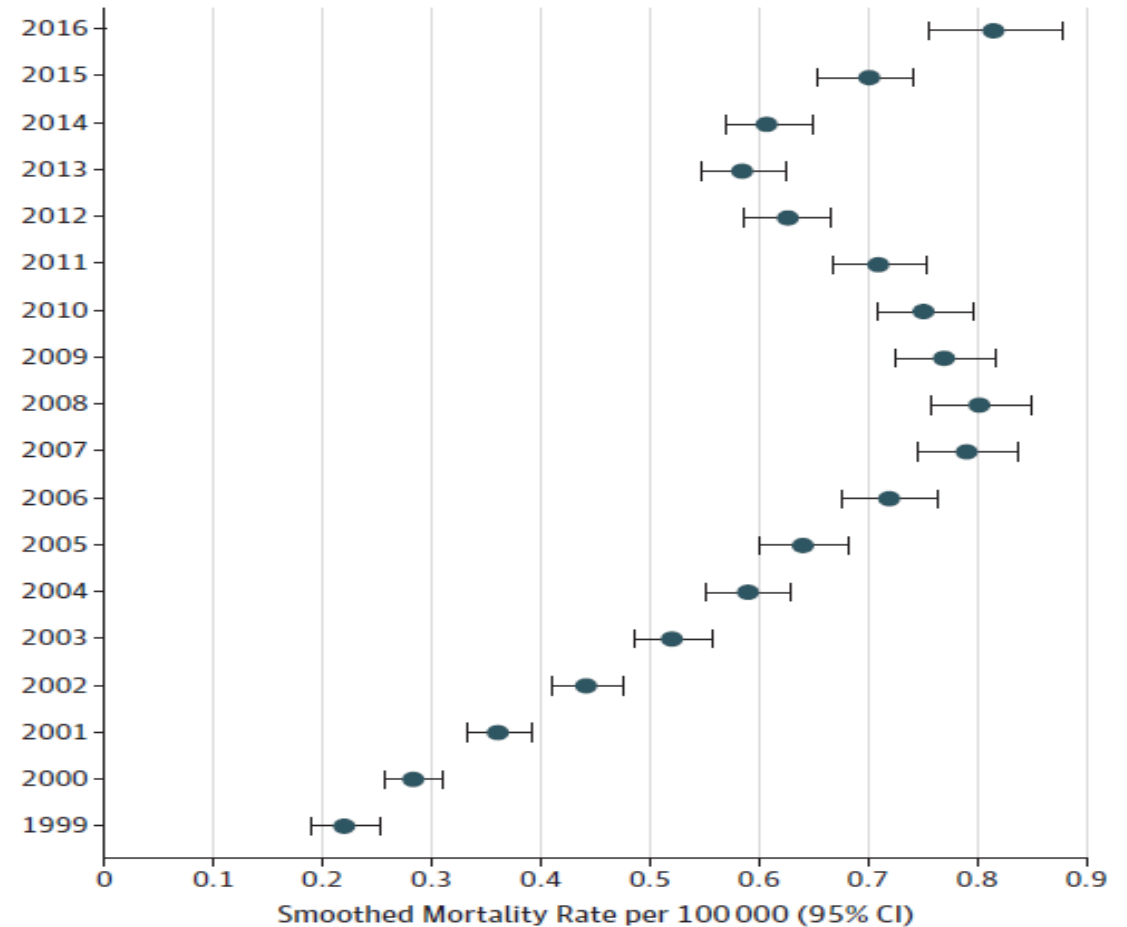
- **6.7% (605)** children 0-4 y.o.
 - 25% attributed to homicide

Gaither JR, Shabanova V, Leventhal JM. US National Trends in Pediatric Deaths From Prescription and Illicit Opioids, 1999-2016. JAMA Netw Open. 2018 Dec 7;1(8):e186558

PEDIATRIC DEATHS FROM PRESCRIPTION AND ILLICIT OPIOIDS, 1999-2016

From 1999 to 2016 the annual estimated mortality rate for all children and adolescents:

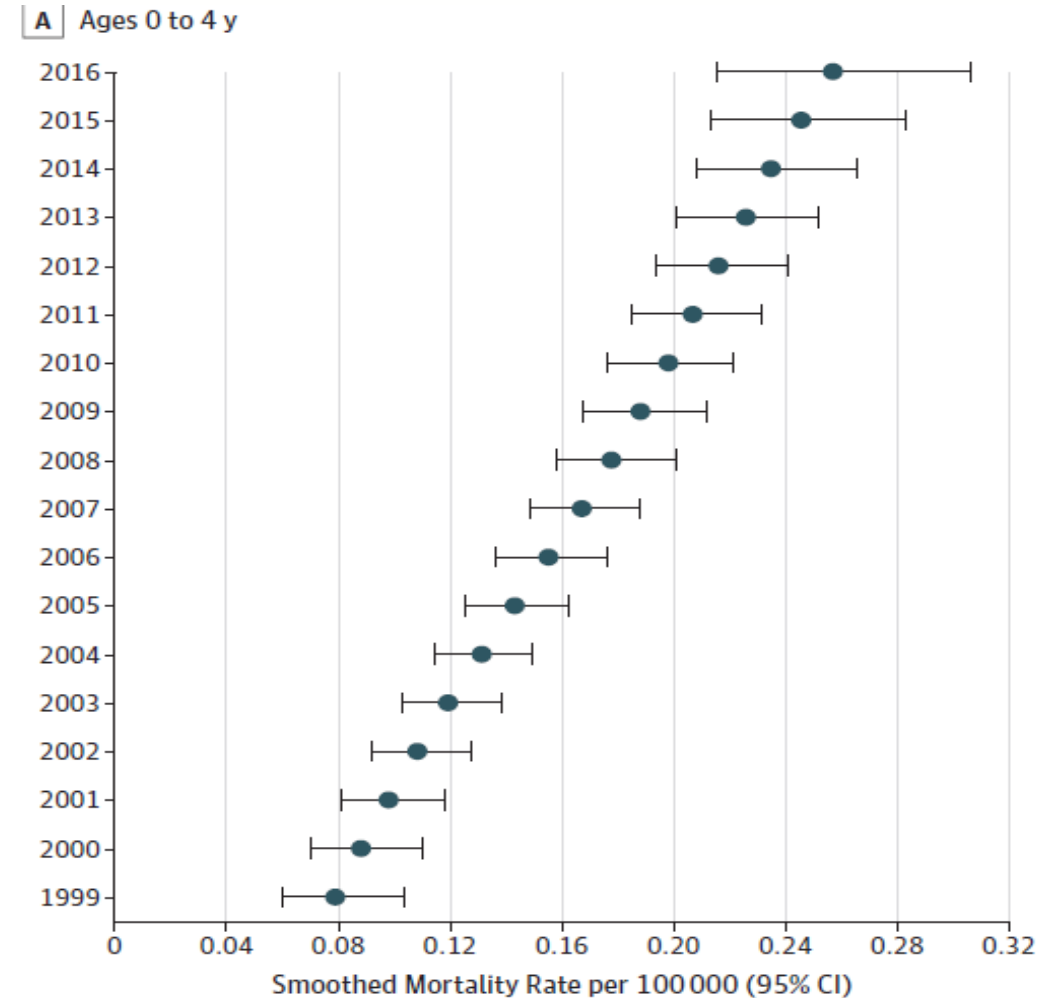
- Increased **268%**
- 0.22 (95% CI, 0.19-0.25) to 0.81 (95% CI, 0.76-0.88) per 100,000.



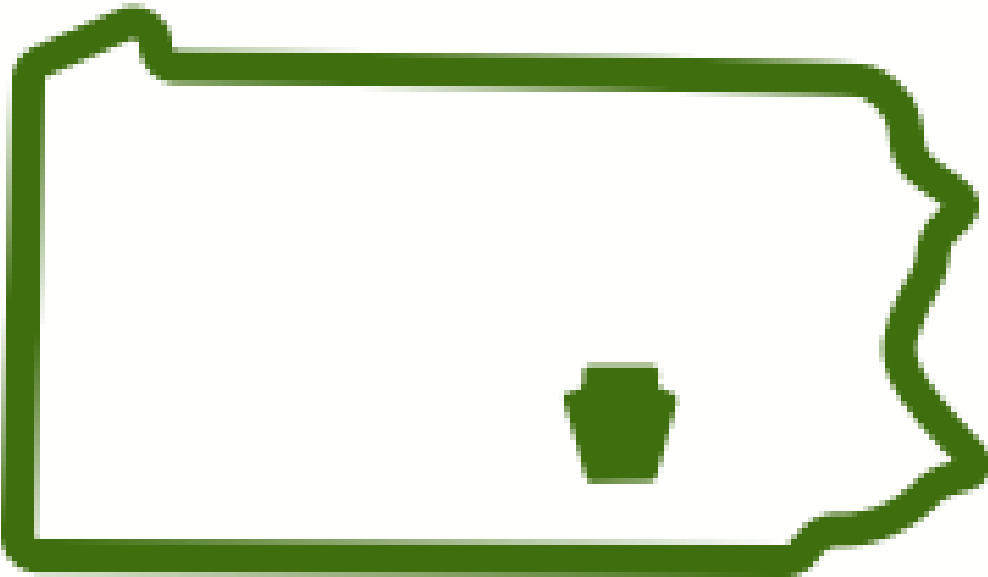
PEDIATRIC DEATHS FROM PRESCRIPTION AND ILLICIT OPIOIDS, 1999-2016

From 1999 to 2016 the annual estimated mortality rate for children 0 to 4 y.o.:

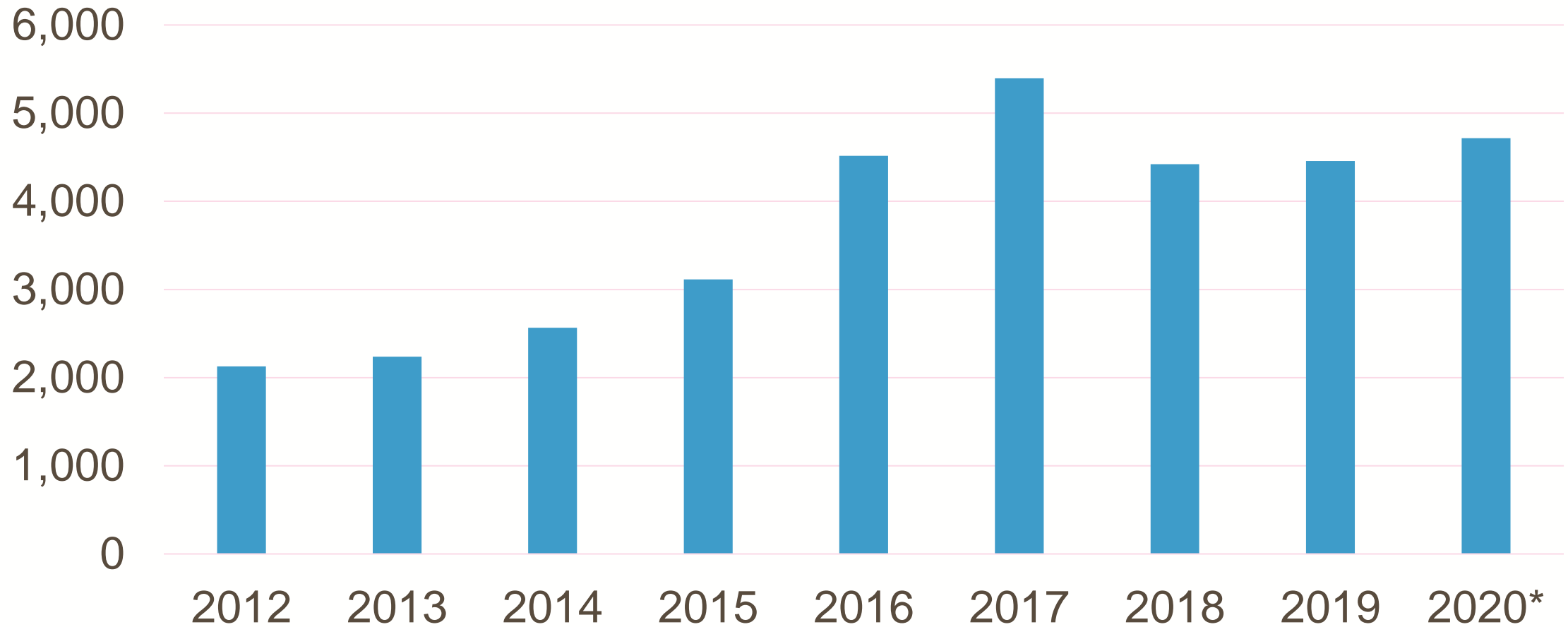
- Increased **225%**
- 0.08 (95%CI,0.06-0.10) to 0.26 (95%CI, 0.22-0.31) in 2016



WHAT ABOUT PENNSYLVANIA?



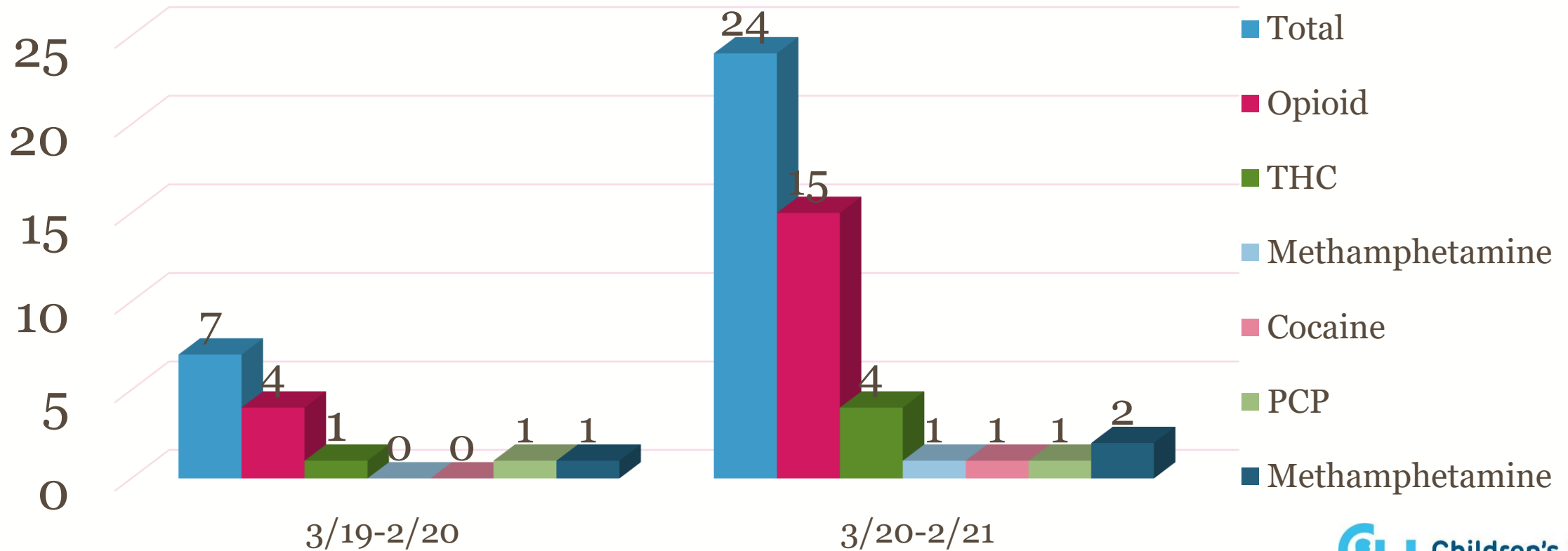
PA ESTIMATED ACCIDENTAL & UNDETERMINED DRUG OVERDOSE DEATHS 2012 – CURRENT



<https://data.pa.gov/Opioid-Related/Estimated-Accidental-and-Undetermined-Drug-Overdos/m3mg-va8e>

CHOP: OPIOID & ILLICIT SUBSTANCE INGESTIONS

Opioid & Illicit Substance Ingestions
(age <5 y.o.)



PEDIATRIC OPIOID HOSPITALIZATIONS AT CHOP DURING COVID (3/20-2/21)

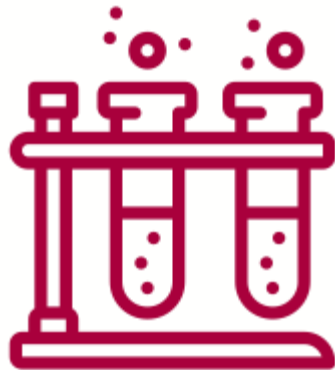
- During COVID pandemic, admissions have increased:
- **3.75 x** for opioid ingestions
- **3.3 x** for opioid and other illicit substance ingestions

Types of opioids

- **73% fentanyl** (+/- other substances)
- **20% buprenorphine**
- **20% other**



TESTING FOR OPIOIDS: WHEN & HOW



PITFALLS AND PEARLS

- Pitfall:
 - Patients with an opioid toxidrome can have a negative drug screen and/or comprehensive drug screen
 - How?
 - UDS may not include synthetic Opioids (just tests for Opiates – i.e. heroin, morphine, codeine)
 - UDS may include synthetic opioids (e.g. fentanyl) but patient may have ingested a novel synthetic opioid
 - Patient may have actually ingested clonidine!
- Pearl:
 - Consult toxicology/poison center on these cases
 - send a urine drug screen and comprehensive serum drug screen on all cases
 - OR at least preserve a urine specimen and serum specimen for testing

PEARLS AND PITFALLS

- Pitfall:

- Patient with an altered mental status and a positive urine drug screen may not be opioid toxic or have taken a drug of abuse
- How?
 - Dextromethorphan → false+ PCP
 - Diphenhydramine → false+ opiates, methadone, PCP, TCA's
 - Diltiazem → false+ LSD

- Pearl:

- A toxicology consult / Poison Center call is a must for positives UDS
 - History and Physical could identify anticholinergic toxidrome and immediately suggest an ingestion of Cold Medication ingestion
 - Comprehensive drug screen can elaborate and confirm (reports out much later)

STRATEGIES FOR MITIGATING RISK OF OPIOID INGESTION AND HARM



SAFE PRESCRIPTIONS AND STORAGE

- Prescription drug monitoring program
- Mandatory physician education
- Childproof containers for legally dispensed medications
- Safe home storage



RESOURCES FOR FAMILIES (AAP)

- Medication Safety Tips For Families
 - <https://www.healthychildren.org/English/safety-prevention/at-home/medication-safety/Pages/Medication-Safety-Tips.aspx>
- How to Safely Dispose of Old Medicines
 - <https://www.healthychildren.org/English/safety-prevention/at-home/medication-safety/Pages/How-to-Safely-Dispose-Old-Medicines.aspx>
- The Opioid Epidemic: How to Protect Your Family
 - <https://www.healthychildren.org/English/ages-stages/teen/substance-abuse/Pages/The-Opioid-Epidemic.aspx>



RESOURCES FOR FAMILIES

- Pennsylvania Poison Control Centers
 - 24-hour, toll-free, multilingual hotline: **1-800-222-1222**
 - Resources for families: poisoning prevention, addiction research treatment, safe disposal and more.
 - Advocacy, education, and more.
- The Poison Control Center (PCC) at Children's Hospital of Philadelphia
 - <https://www.chop.edu/centers-programs/poison-control-center>
- Pittsburgh Poison Control Center
 - <https://www.upmc.com/Services/poison-center>



BE SAFE:

Dispose of Unused Medicines

Keep your family safe by cleaning out your medicines.
Has a bottle expired? No longer in use? It's time to toss.



Use this checklist to stay on track!

What You Should Be Checking:

- | | |
|---|--|
| <input type="checkbox"/> Pain relievers | <input type="checkbox"/> Heart medicines |
| <input type="checkbox"/> Prescription medicines | <input type="checkbox"/> Cold medicines |
| <input type="checkbox"/> Antibiotics | <input type="checkbox"/> Vitamins |

Check Your Entire Home:

- | | |
|------------------------------------|-----------------------------------|
| <input type="checkbox"/> Bathrooms | <input type="checkbox"/> Kitchens |
| <input type="checkbox"/> Bedrooms | <input type="checkbox"/> Closets |



Drug Take-Back Sites

Visit takebackday.dea.gov to participate in a drug take-back day or find a list of year-round disposal sites near you.

No internet? No problem! Give the Poison Control Center at CHOP a call at 800-222-1222 and we'll find the information for you.



Home Disposal, in Three Steps

1. Mix the medicine with something you wouldn't want to eat, like coffee grounds, used tea or kitty litter.
2. Put the mixture in a container and **seal it**.
An empty margarine tub works great. Get creative!
3. Throw it away. Easy and safe!



Food and Drug Administration (FDA) Flush List

The FDA has a list of about 15 dangerous medicines that should be flushed. To view the list, search online for "FDA Flush List." Make sure the link you click is from the website [fda.gov](https://www.fda.gov).



CASE REPORT



Reversal of Pediatric Opioid Toxicity with Take-Home Naloxone: a Case Report

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Abstract

Background Take-home naloxone, an opioid antagonist, has become part of a multimodal approach to curbing opioid-related mortality. However, there is little information about the utility of take-home naloxone in pediatric patients. We report a case of opioid toxicity after exposure to methadone in a pediatric patient, which was successfully reversed with take-home naloxone.

Case A previously healthy 22-month-old girl ingested an unknown amount of liquid methadone. The child became progressively somnolent. The mother administered intranasal naloxone at home with reversal of somnolence. The patient presented to the emergency department and had recurrence of symptoms. The patient was placed on a naloxone infusion and discharged from a tertiary care facility, uneventfully, 2 days after ingestion.

Results To our knowledge, we report the first case of pediatric opioid toxicity reversed by take-home naloxone. In the setting of rising opioid-related mortality, providers and public health officials should consider expanding access of take-home naloxone for children at high risk for opioid overdose.

NALOXONE

- Medication designed to rapidly reverse opioid overdose.
- Opioid antagonist: binds to opioid receptors and can reverse and block the effects of other opioids.
- Can very quickly restore normal respiration to a person whose breathing has slowed or stopped as a result of overdosing with heroin or prescription opioid pain medications.
- <https://www.drugabuse.gov/drug-topics/opioids/opioid-overdose-reversal-naloxone-narcan-evzio>



HOME NALOXONE INFO SHEET



Certified by the American Association of Poison Control Centers



Naloxone (Narcan®) – Carrying It Can Save a Life!

Updated Oct 29, 2020

What is naloxone (say nah-lock-soan)?

- Naloxone is a medicine that can be sprayed into a person's nose to save them from a drug overdose.
- It works to reverse "opioid" drugs like heroin, fentanyl, oxycodone, Percocet, and others.

How can you get naloxone?

- In Pennsylvania, naloxone should be available at any pharmacy and does not need a prescription.
- In Delaware, you can also get naloxone without a prescription – check with your pharmacy.
- Most insurance covers its cost with a co-pay of less than \$40.
- If you live in Philadelphia, and cannot afford naloxone at your pharmacy, you can get it mailed to you for free by going to this website: <https://nextdistro.org/philly>.

Who should carry naloxone?

- Anyone who loves someone who is struggling with drug use
- Anyone who lives with someone taking long-term opioid pain medicines
- Anyone who has opioid medicines in a home with curious young children
- Anyone who works in a public place where drug overdoses may happen (libraries, train stations, etc)
- Anyone who just wants to be prepared to help somebody after a drug overdose

How do you give naloxone?

Naloxone spray training video
(English)



<https://nextdistro.org/intranasaltraining>

Naloxone spray training video
(Spanish)



<https://nextdistro.org/intraining-es>

24-hour hotline
1-800-222-1222

2716 South Street, 7th Floor, Philadelphia, PA 19146-2305
Administration 215-590-2003 • Fax 215-590-4419
www.poisontcontrol.chop.edu

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QUESTIONS?