

# Hospitalizations for Infective Endocarditis Among Individuals Using Opioids in Philadelphia, 2008-2015

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Northeast Epidemiology Conference  
October 20, 2017



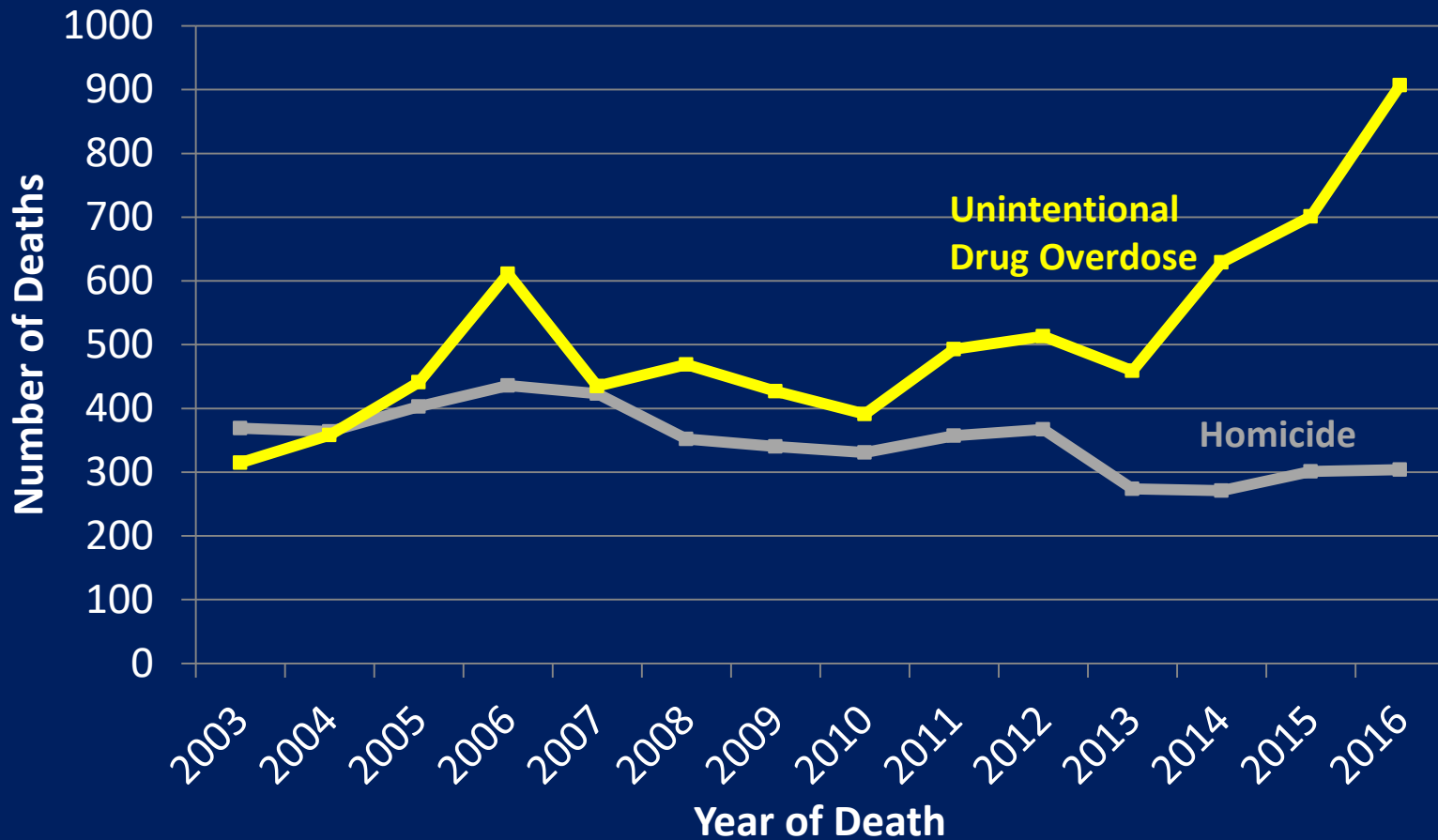
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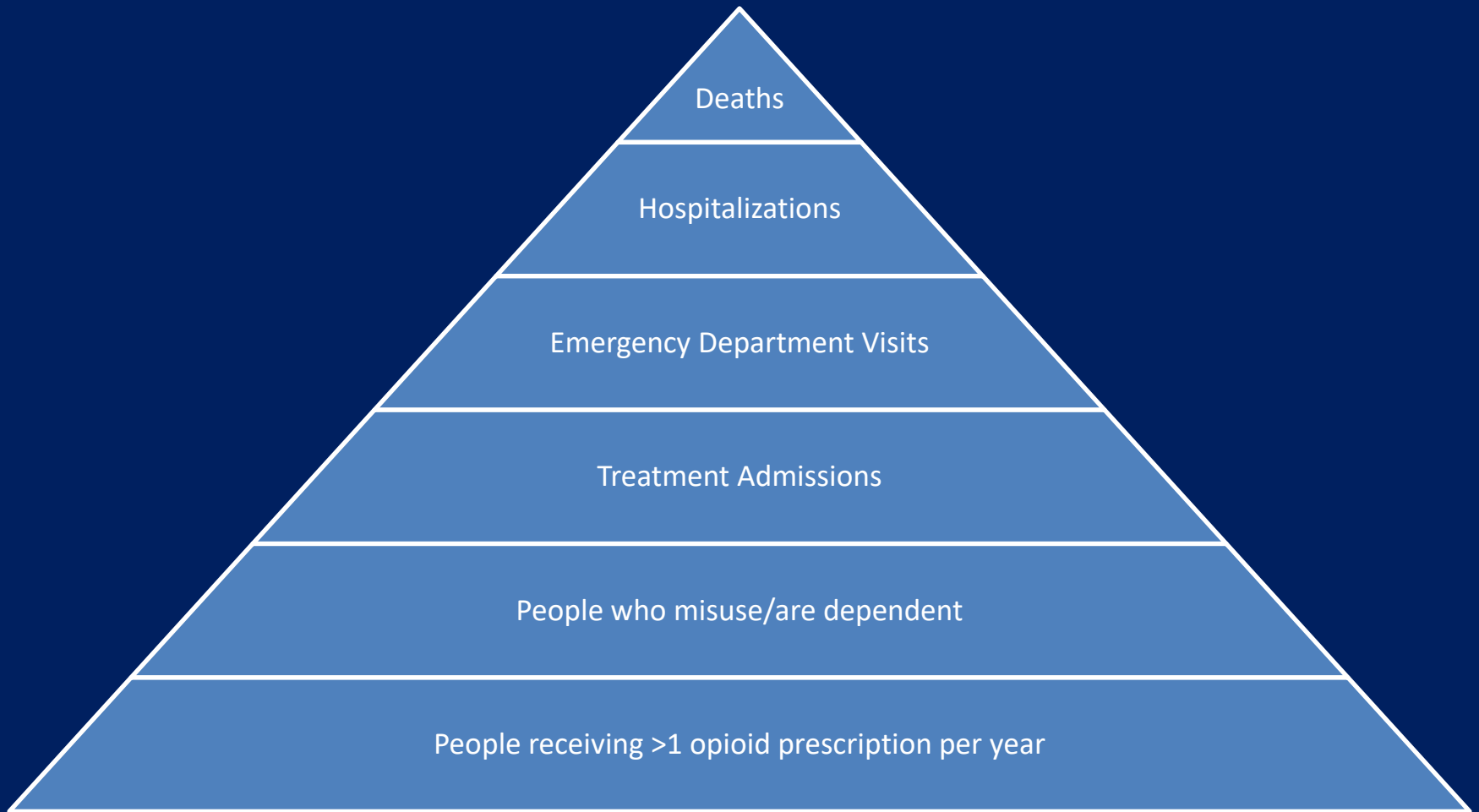
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# Background

Number of unintentional drug overdoses and homicides – Philadelphia, 2003-2016

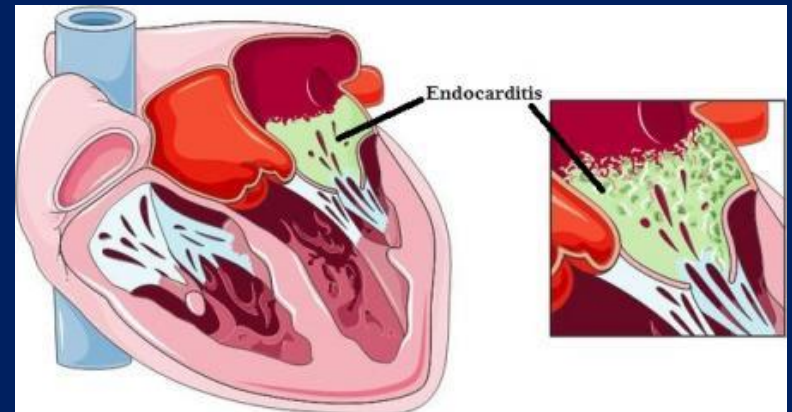


# Overdose Deaths are Tip of the Iceberg



# Infective Endocarditis (IE)

- Infection caused by bacteria that enter bloodstream and settle the lining of the heart's chambers or valves
- Risk factors:
  - Congenital heart defects
  - Acquired valve abnormalities
  - Injection drug use



# Infective Endocarditis (IE) & Injection Drug Use (IDU)

- IE is a potentially fatal consequence of IDU
- ~16% of IE in North America attributed to IDU
- Estimated that between 5% and 20% of PWID have had IE
- People with IDU related IE have worse outcomes than non-IDU related IE
  - Higher mortality
  - Increased frequency of repeat IE

# Infective Endocarditis (IE) & Drug Use

- Mechanism:
  - Direct injection of bacteria into the blood stream
  - Bacteria spread from skin and soft tissue infections into bloodstream
- Causes:
  - Drug solution may contain particulate matter (i.e. talc) that damage cardiac valves
  - Poor injection hygiene
  - Injecting with unsterile equipment
  - Injecting contaminated drug solutions

# Purpose

To assess trends in rates of infective endocarditis among individuals using opioids in Philadelphia

# Methods

- Inpatient hospitalization discharge records for Philadelphia and surrounding counties
  - Pennsylvania Health Care Cost Containment Council (PHC4)
- Philadelphia Residents Only
- Time period: 2008-2015
- Limited to those between 15-64 years old
- Looked for endocarditis and opioid poisoning, dependence, or abuse related diagnoses
- Co-infection with:
  - HIV
  - HCV
  - HBV





Indicator	ICD-9-CM	ICD-10-CM
Endocarditis	421.0 421.1 421.9 424.9	I33.0 I33.9 I38 I39
Opioid overdose or dependence	304.00 – 304.03 304.7 305.00 – 305.03 965.00 965.01 965.02 965.09 E850.0 – E850.2	F11 T40.0X[1-4] T40.1X[1-4] T40.2X[1-4] T40.3X[1-4] T40.4X[1-4] T40.60[1-4] T40.69[1-4]
HIV	042 V08 079.53 795.71	B20 Z21 B97.35
HCV	070.41 070.44 070.51 070.54 070.70 070.71 V02.62	B17.1 B18.2 B19.2 Z22.52
HBV	070.2 070.3 V01.61	B16 B18.0 B18.1 B19.1

# Results

- 2552 cases of IE
  - **604 (23.7%) had co-occurring opioid use diagnoses**
- Co-infection with opioid use and IE
  - 46.7% with Hepatitis C
  - 6.1% with HIV
  - 2.8% with Hepatitis B



# Rate of Co-occurring Opioid Use and Endocarditis (per 100,000 Philadelphia residents)



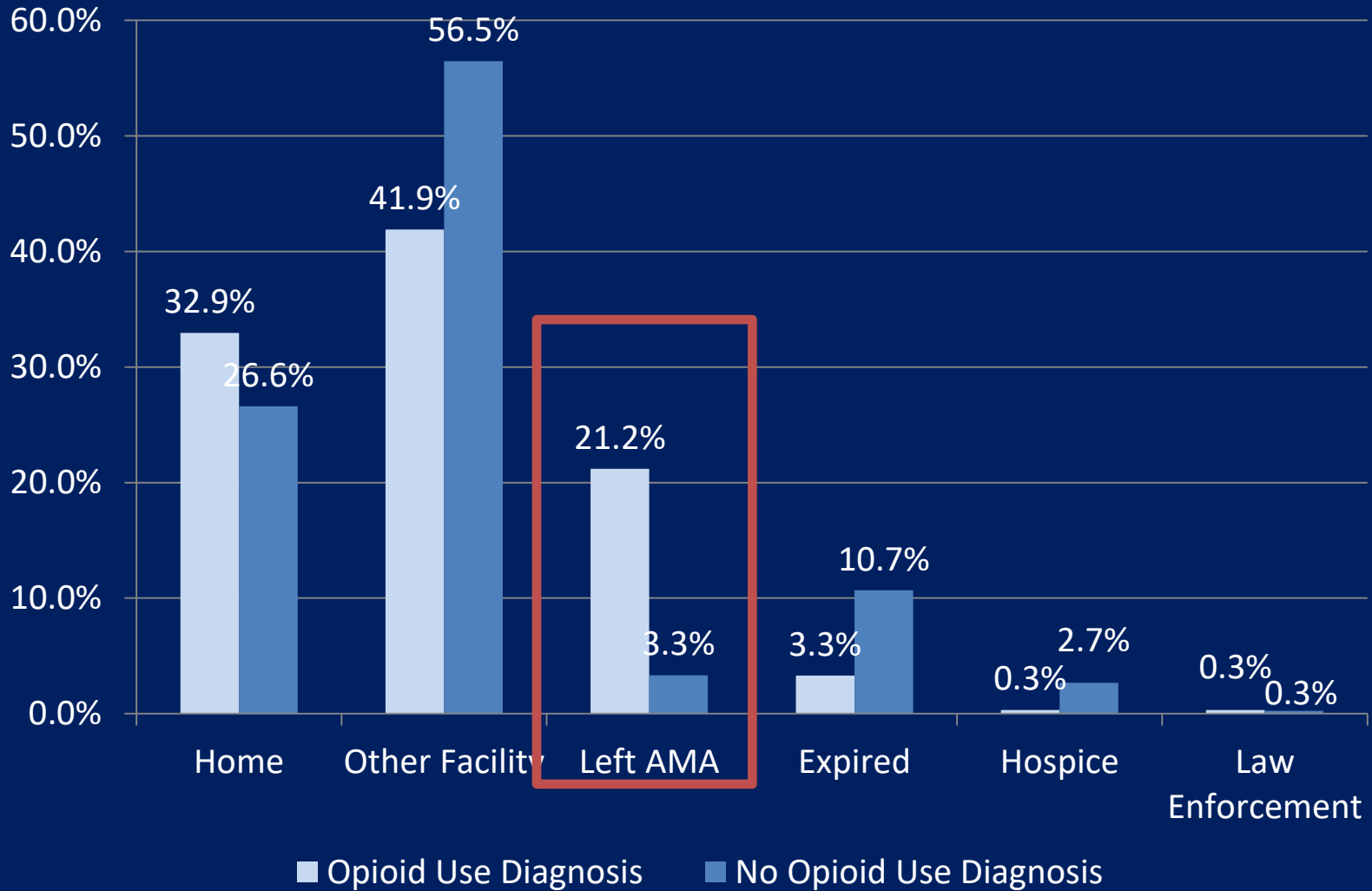
# Demographics of IE

	Opioid Use Diagnosis (N=604)	No Opioid Use Diagnosis (N=1948)
<b>Age</b>		
15-17	0%	0.2%
18-24	12%	4%
25-34	37%	9%
35-44	26%	17%
45-54	15%	34%
55-64	10%	35%
<b>Sex</b>		
Male	53%	60%
Female	47%	40%
<b>Race/ethnicity</b>		
White, non-Hispanic	59%	30%
Black, non-Hispanic	20%	57%
Hispanic	7%	5%
Other	11%	5%
Unknown	2%	3%
<b>Insurance Payer</b>		
Private	6%	22%
Public	90%	76%
Self-Pay/Charity	4%	2%
Unknown	0.2%	0.5%

## IE and Opioid Use Diagnosis

- Greater for those between ages of 25-44 years
- Equally distributed between males and females
- Greater for white, non-Hispanic Individuals
- Greater for those with public insurance

# Discharge Status for IE



# Limitations

- Reliant upon hospital discharge records
  - ICD-9-CM/ICD-10-CM coding subject to misclassification or coding errors
  - Patients may not have disclosed drug use during stay
  - Can't identify a causal association between opioid use and endocarditis
  - Can't distinguish route of drug administration (i.e. oral, injection, insufflation)
  - Only generalizable to people who seek care in Philadelphia and surrounding county hospitals

# Harm Reduction Prioritization

- Needle and syringe exchange programs
- Education on safe injection practice



# Thank you!

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This study/report was supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded through the Centers for Disease Control and Prevention (CDC) Cooperative Agreement Number 1U38OT000143-04 by the Substance Abuse and Mental Health Services Administration.

