A MORE DANGEROUS “HERO IN”: EMERGING PATTERNS IN THE HEROIN OVERDOSE EPIDEMIC

Dan Ciccarone, MD, MPH
Professor, Family and Community Medicine
University of California, San Francisco
OBJECTIVES

EPIDEMIOLOGY

- Describe demographic differences in prescription opioid- and heroin-related overdose
- Describe regional differences in prescription opioid- and heroin-related overdose
- Describe changes in heroin supply
  - Evidence for contamination/adulteration

QUALITATIVE

- Relate stories of heroin adulteration:
  - National
  - Case study: Baltimore (preliminary)
HEROIN IN TRANSITION ("HIT") STUDY

NIH: National Institute of Drug Abuse
- DA037820
- Multi-methodological study: quantitative and qualitative aims
  - New heroin source-forms and how they are perceived and used
  - Emerging patterns in consequences of use
    - Heroin supply flows
DATA ANALYZED:

- Nationwide Inpatient Survey (NIS)
  - Stratified sample of approximately 20% of US community hospitals representing 5 to 8 million hospital admissions annually?
  - States included in the NIS represent about 95% of the US population
  - All payer data (Medicaid, Medicare, Private Insurance and uninsured)
  - Years 1993 to 2013
  - ICD-9 codes for opiate (not heroin) and heroin overdoses
- Jay Unick, U. of Maryland, lead
HEROIN IN TRANSITION ("HIT") STUDY

QUALITATIVE:
- Rapid Assessment Project
  - "Hot spot" study with ethnographic and qualitative methodologies
    - 3-4 cities per year
    - Preliminary findings: Baltimore
    - Sarah Mars, PhD, lead

SUPPLY:
- Data sources: DEA: STRIDE (FOIA), Heroin Signature Program, Domestic Monitoring Program, NFLIS
NIS: Opioid OD hospitalizations: 1993-2013

Apogee reached?
TRENDS IN HEROIN USE AND CONSEQUENCES

Unfortunately:

• Heroin use and consequences are up
• Rise is concurrent with the later stages of the opioid misuse epidemic
NIS: Heroin Overdose Admissions, 1993-2012:
- Sharp rise, doubling since 2005
ARE THESE THE SAME EPIDEMICS?

• Opioid “push”:
  • Intertwining of population at risk¹
  • Stories of initiation: “Every never…”²

• How does the heroin epidemic differ from the earlier opioid misuse epidemic?
  • Comparisons by age, ethnicity, gender and region

¹UNICK, ET AL. INTERTWINED EPIDEMICS: NATIONAL DEMOGRAPHIC TRENDS IN HOSPITALIZATIONS FOR HEROIN- AND OPIOID-RELATED OVERDOSES. PLOS ONE 2012
²MARS, ET AL. “EVERY ‘NEVER’ I EVER SAID CAME TRUE”: TRANSITIONS FROM OPIOID PILLS TO HEROIN INJECTING. IJ DP 2013
NIS: OVERDOSE RATES (1993-2012) BY AGE GROUP:

HOD: 20-34 y.o.

OPOD: 45-59 y.o.
CONVERGENCE IN HOD/OPOD RATES: 20-34 YEAR OLDS
NIS: OVERDOSE RATES (1993-2012) BY ETHNICITY:

**HOD**: White and African American

**OPOD**: White and Native American
AGE AND GENDER DISPARITIES

Opioid at-risk

Heroin at-risk
NIS: OVERDOSE RATES (1993-2012) BY GEOGRAPHIC REGION:

OPOD: Even - South
Good News: West

HOD: Northeast and Midwest!!
Summary: Opioid “Push”

• Timing of opioid and heroin curves: +/-
• Key convergences by ethnicity
• Symmetrical converging curves in 20-34 yo age groups
• Surveys of recent heroin initiates report prior opioid dependency
• Demographic differences can be explained by risker sub-population
• Exception: Midwest
Heroin patients in treatment: first opiate of abuse

- 75% of the 2000 cohort of heroin tx pts started with an prescription opioid

Cicero TJ, Ellis MS; Surratt HL; Kurtz SP. The Changing Face of Heroin Use in the United States: A Retrospective Analysis of the Past 50 Years. JAMA Psychiatry. Published online May 28, 2014.
Heroin “Pull”

- US heroin seizures are up ~100%, 2009-14

Illicit Poppy Cultivation in Mexico

Heroin Seizures, Southwest Border: 2000-2013

- SW heroin seizures up 4-fold

HEROIN TYPES: SOURCES - FORMS

"Black Tar" Heroin: Mexican

Brown powder Heroin: Colombian/SWA

White powder Heroin: SEA
HEROIN SOURCES OVER TIME

Source: Heroin Signature Program. Reported in the 2015 National Drug Threat Assessment Summary; DOJ, DEA, 2015
HEROIN OF UNKNOWN SOURCE

Source: Domestic Monitoring Program. Reported in the 2015 National Drug Threat Assessment Summary; DOJ, DEA, 2015
A MORE DANGEROUS “HEROIN”

• Fentanyl laced heroin
• Novel Mexican heroin?
• Other synthetic opioids
• Case study: Baltimore
FENTANYL LACED HEROIN

- Fentanyl laced heroin and heroin laced fentanyl and just plain fentanyl (and fentanyl analogues):
  - NFLIS (2015): Fentanyl reports increased by 300% from the late 2013 to early 2014
  - Clandestinely-produced fentanyl, not diverted pharmaceutical fentanyl*
  - 30-40x stronger than heroin by weight
  - DEA and CDC 2015 warnings
  - Sources: Mexico and China (fentanyl analogues)
  - Analogous: Levamistole as adulterant for cocaine

*National Heroin Threat Assessment Summary, DEA, 2015
NFLIS: Fentanyl

- Testing seized drugs
- Highest rise in rates in NE and MW
  - Recent relative to earlier rises in heroin overdose

**Figure 3** NFLIS regional trends in fentanyl reported per 100,000 persons aged 15 or older, January 2009–June 2014

**National Forensic Laboratory Information System.**
MEXICAN-SOURCED HEROIN: CHANGES

• Mexican opium/heroin production has grown while Colombian production is down 40%

• Explanations for rising HOD in Midwest (in addition to fentanyl):
  • Strong suspicion of more purified product coming from Mexico
    • Rise in heroin with unknown DEA “signature”
      • Colombian mimic?
      • DEA: Mexican white heroin

• Explanation for rising HOD in New England:
  • Distribution innovations: Dispatch*
  • A market is any place with lower competition (think Vermont)
  • High purity heroin going to small cities: Gary, Madison, Memphis, Minneapolis, Cleveland

* Sam Quinones: Dreamland: The true tale of America’s opiate epidemic (2015)
SYNTHETICS

• In addition to fentanyl there are reports of:
  • Fentanyl analogues:
    • Acetyl fentanyl
    • Butyryl fentanyl
    • Furanyl-fentanyl
    • Parafluoro-fentanyl
  • Novel synthetics:
    • M-15, M-18
    • U47700
    • Others...

Sources: various. National Drug Early Warning System (NDEWS) listserv alerts
BALTIMORE: HEROIN

- Estimated number of injection drug users: ~19,000
- Doubling of heroin overdose deaths 2010-2014
- Dramatic rise in fentanyl-related deaths late 2013 to 2014

ETHNOGRAPHIC WORK

• Heroin scene:
  • “Old school:” Open street dealing, branded heroin, free samples (“tastes”!)
    • Two types: “raw” and “scramble”

• Decayed infrastructure:
  • City on the mend but...
  • Abandoned buildings, deserted streets and alleyways make convenient venues for drug injection
BALTIMORE: “HEROIN” (FIELD WORK 11/15, 3/16)

• High quality:
  “The best stuff I've ever used is the stuff I’m using now“
  - 28 yo from Ohio, using heroin x 8 years

• Chemical feel/”taste”
  Q: How does the heroin you are using now feel?
  A: “Its kinda like [heroin]. It gets me well. But it is also tastes chemically”
  - 60+ yo using over 30 years

• Fentanyl contamination: likely; other synthetics possible
  • Sometimes sold as is; sometimes desired; however effect short-lasting and users know this
  • Some fear/concern; some old-timers are doing “tester shots” which is unusual
BALTIMORE: “SCRAMBLE”

• Old term but a new form
  • White powder heroin – unique
  • Mixed locally;
    • contains multiple powders; mixing problem!
  • in contrast to “raw” heroin: not as powerful but better “rush”

• Highly variable:
  • Wide range in price, volume
  • Color changes: white to concrete grey, colored speckles or white sparkles
  • In solution: clear to ice-tea colored
  • Effect: good rush, duration of effect 0.5 – 12 hours
    • Unpredictable!

• Growing in popularity and market share
The novel entry of Colombian-sourced heroin increased HOD rates; 1993-1999

New increases:
- New forms of Mexican-sourced heroin?
- Fentanyl(+) adulteration
- Wider distribution models
- Intertwined with opioid pill epidemic
FINAL THOUGHTS: MULTIPLE PATHWAYS

- Opioid to heroin transitions:
  - High dependency
  - Opioid restrictions?

- Heroin as initial drug of choice:
  - New England, Mid-Atlantic and Midwest: New market strategies; expanded supply;
  - New products that we don’t understand
  - Fentanyl but it can’t explain everything as it hits later than the rises seen in heroin OD
    - Testing bias?
FINAL THOUGHTS: CHALLENGES

• Better surveillance:
  • Public health forensics: “contaminated lettuce”
    • Heroin and fentanyl products
    • Synthetics are the new reality eg NPS, cannabinoids
  • Use patterns and consequences

• Harm reduction responses:
  • Naloxone: 2 decades of community peer use
  • Technological and policy innovations

• Expanding MAT:
  • Only 3% of DEA registered physicians are buprenorphine prescribers
FINAL THOUGHTS: CHALLENGES

- **Supervised injection facilities:**
  - Growing intervention worldwide
  - Best evidence from “Insite” in Vancouver:
    - Decreased: OD, hospitalizations, infections
    - Increased: uptake of medical and substance treatment
    - Stem out of crises – like the one we have now
- **Challenges:**
  - Wrap-around services
  - Canada and Europe not like US:
    - Stigma may bedevil
    - Persons at risk may not use, communities may not allow; culture at large may not be ready
  - Legal and political issues
ACKNOWLEDGMENTS

Heroin in Transition study:
- Jay Unick, PhD, University of Maryland
- Sarah Mars, PhD, UCSF
- Jeff Ondoscin
- NIH/NIDA funding: R01DA037820

Jon E. Zibbell, PhD, CDC

Baltimore City Health Dept.
- Mishka Terplan
- Derrick Hunt, Jeffrey Long and NEP staff

NDEWS: Erin, Kathy and Marwa. - Eric Wish

Maryland Department of Health and Mental Hygiene
- Michael Baier

Philippe Bourgois, PhD

Drug Enforcement Administration

Photo credits: Fernando Castillo, Dan Ciccarone
QUESTIONS?