



A department of Maine Medical Center

Injections and Infections: Understanding Harm Reduction in Maine

Governor's Office Seminar Series

September 4, 2020

Kinna Thakarar

 @kinnathakarar

Assistant Professor of Medicine

Maine Medical Center/Tufts University School of Medicine

Primary Care | Cardiovascular | Women's Health | Pediatric Specialty Care
Neurology | Otolaryngology | Urology | Hospital Medicine | Surgical Care
Neurosurgery & Spine | Orthopedics | Endocrinology & Diabetes | Pediatrics




Maine Medical Center
MaineHealth

Disclosures

No personal financial relationships with commercial interests relevant to this presentation.

NIH funding: U54 GM115516 Northern New England Clinical and Translational Research network

Outline

- Epidemiology of injection drug use (IDU)-
associated infections
- Harm reduction overview
- Rural HeART study
- COVID-19 study
- Discussion



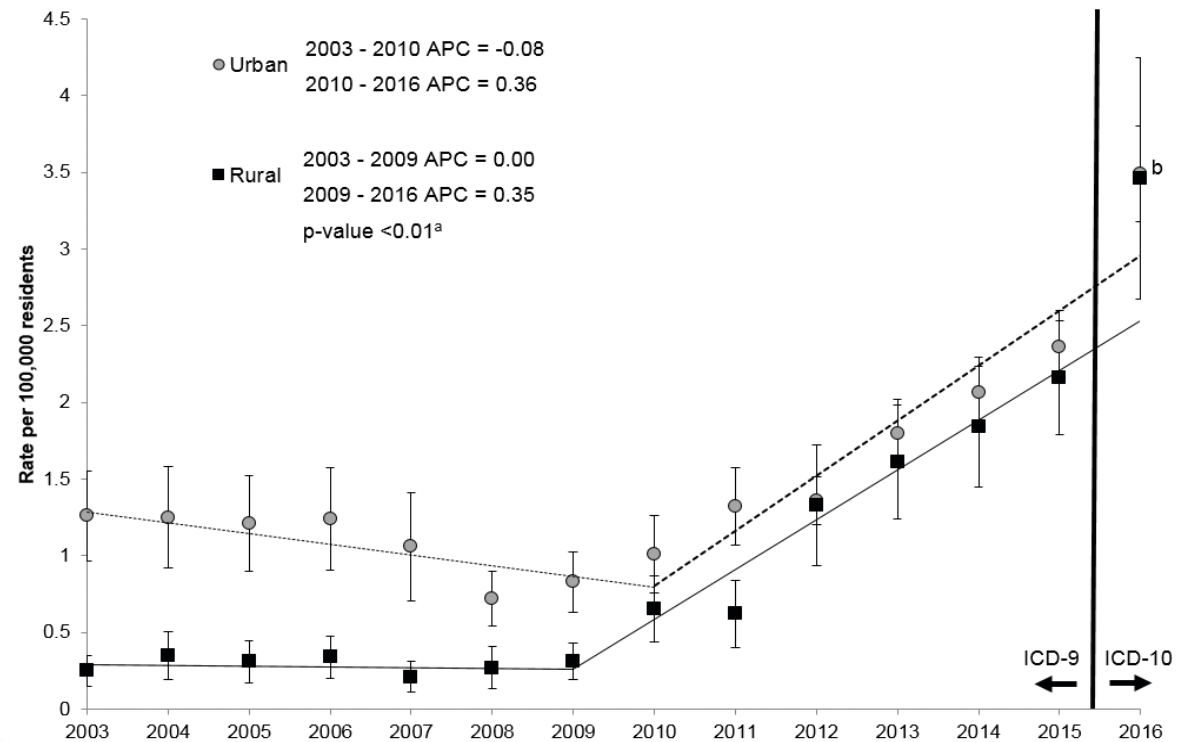
Rising rates of hospitalizations for bacterial infections in setting of drug use

	2002 N=36,523,831	2012 N=36,484,846
	Number	Number
Opioid dependence	301,707	520,275 ¹
Opioid dependence with infection	3,421	6,535 ¹
Endocarditis	2,077	3,035 ²
Osteomyelitis	458	985 ¹
Septic arthritis	729	1,940 ¹
Epidural abscess	411	1,085 ¹

¹p<0.01 ²p<0.001

Opioid-associated infective endocarditis (IE) rising in rural areas

Rural	Urban
0.28 → 3.86 per 100k	1.26 → 3.49 per 100k

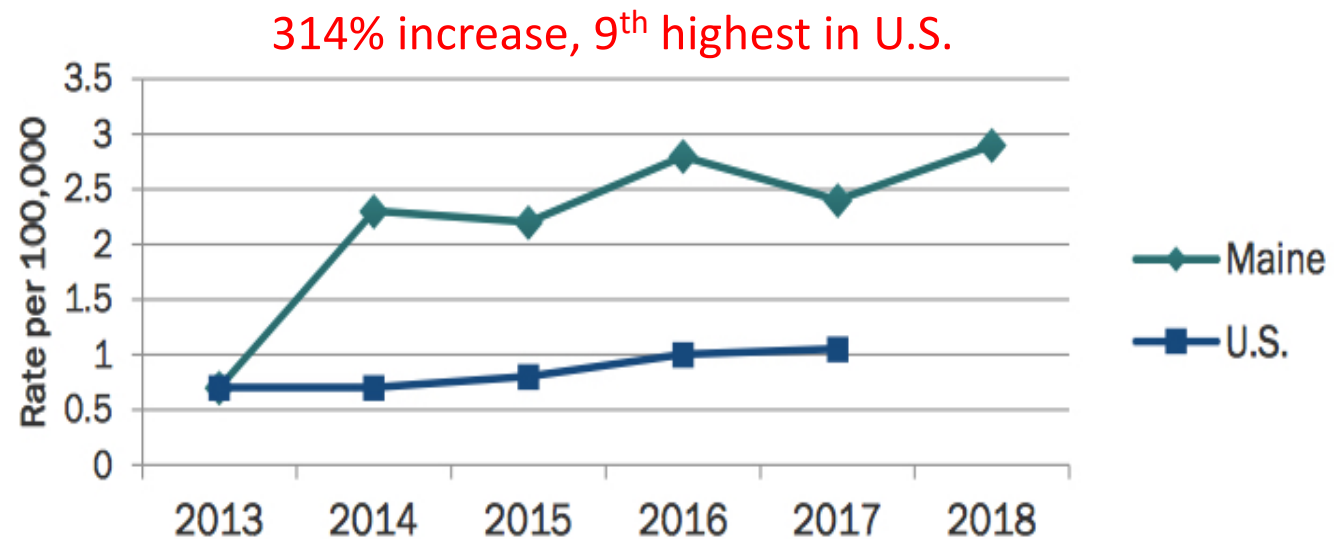


Treatment of infective endocarditis is expensive

	IDU-associated IE N=42	Non-IDU-associated IE N=65	p value
Total hospital charges (median)	\$149,131.16 (range 16,282.03- 630,151.20)	\$80,903.13 (range 16,901.96 – 736,327.53)	0.08
Amount paid by insurance	\$174,573 (range 16,282-630,151,20)	\$80,903 (range 16,902-736,327)	0.03

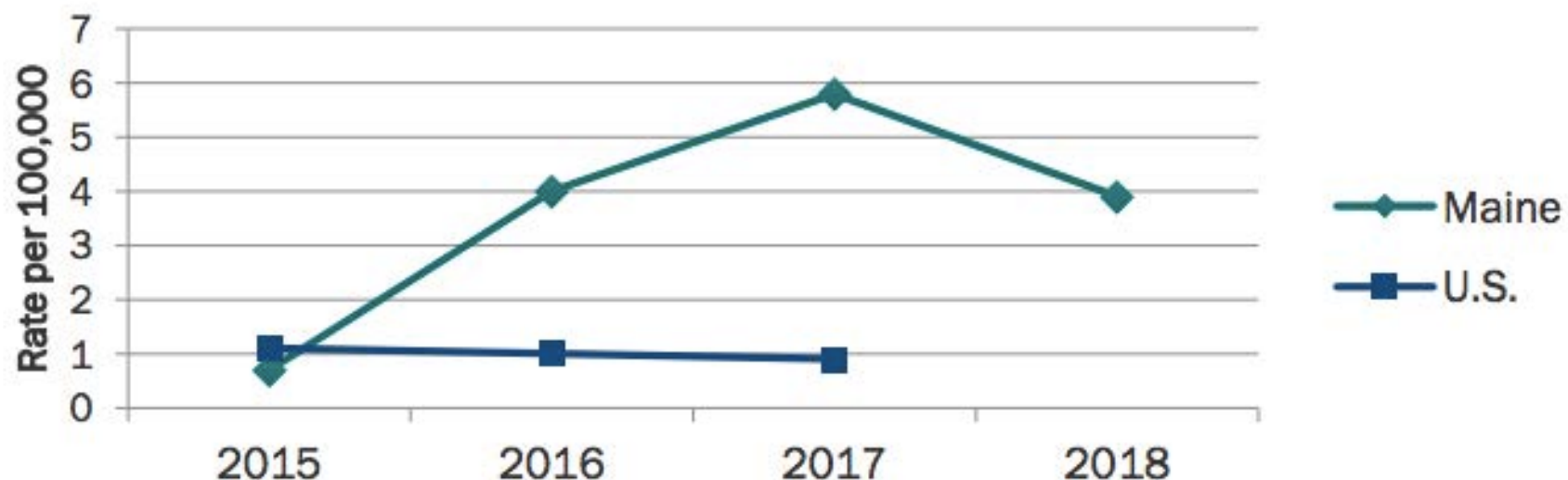
- Median charge of **\$105,401** for six uninsured patients with IDU-associated IE
- Total charges for IE hospitalizations among patients with IDU-associated IE: **\$414,886** paid by MMC and **\$5,101,759** paid by Medicaid over 3 years

Rate of acute hepatitis C cases increasing in Maine



Rate of acute hepatitis B cases increasing in ME (9th highest in US)

457% increase



Outline

- Epidemiology of injection drug use (IDU)- associated infections
- Harm reduction overview
- Rural HeART study
- COVID-19 study
- Discussion





Naloxone Distribution



Needle Exchange



Peer Support & Community Mobilization

HARM REDUCTION

*a philosophy
and
an approach*

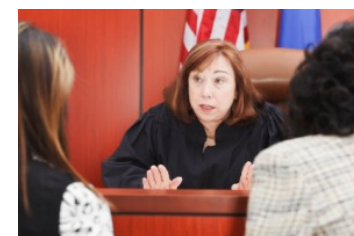
“ Harm reduction refers to a range of services and policies that lessen the adverse consequences of drug use and protect public health. Unlike approaches that insist that people stop using drugs, **harm reduction acknowledges that many people are not able or willing to abstain from illicit drug use, and that abstinence should not be a precondition for help.**¹



Low Barrier Drop-In



Supervised Injection Facilities

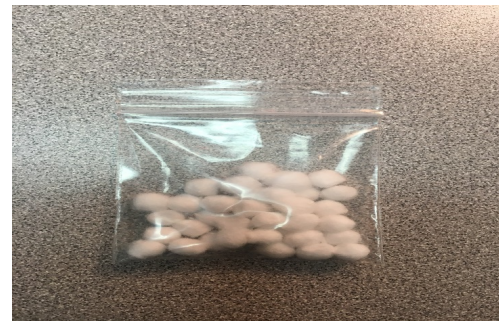


Legal Support & Policy Reform

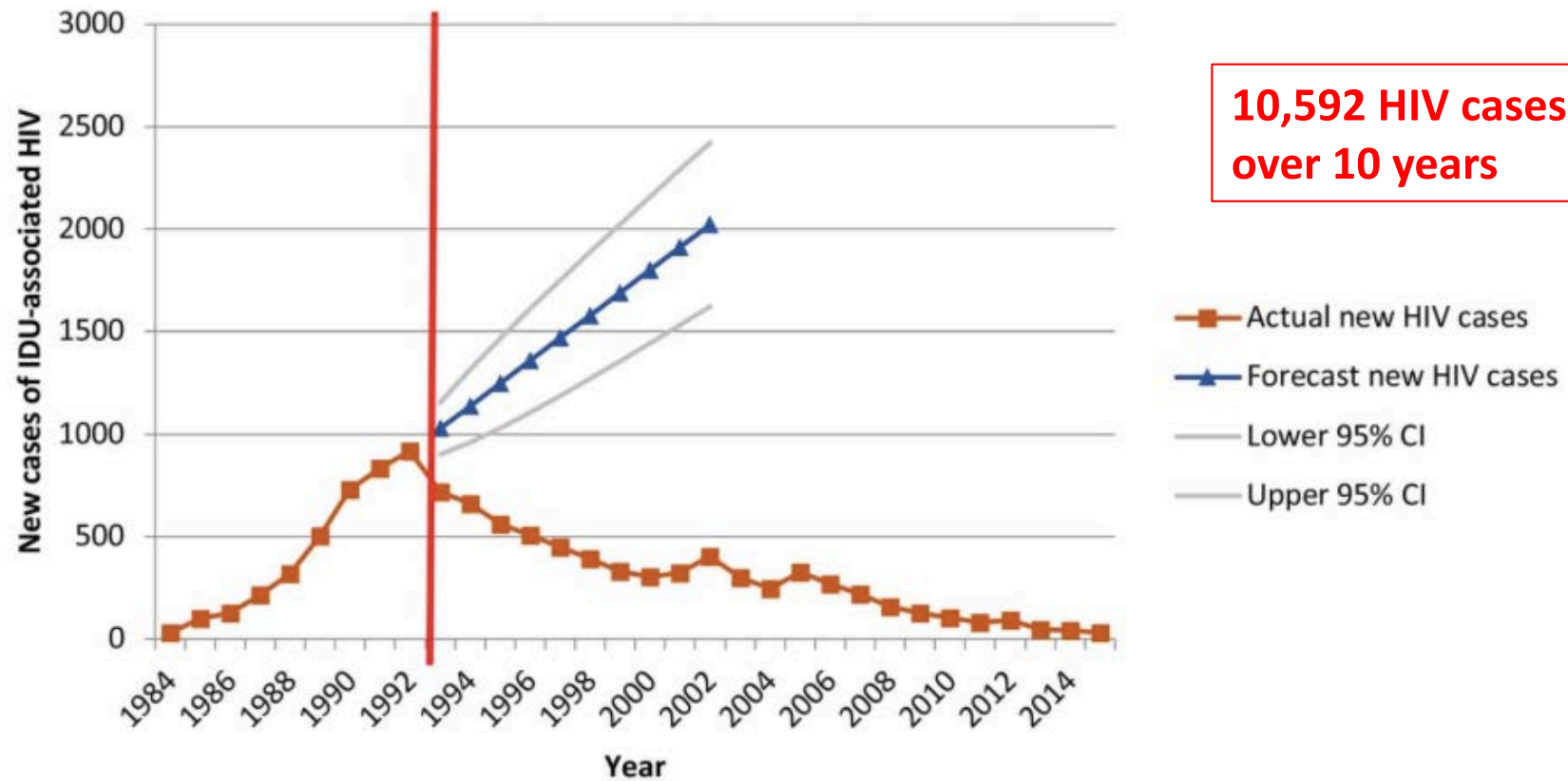
¹ Open Society Foundations: “What is harm reduction?” <https://www.opensocietyfoundations.org/explainers/what-harm-reduction>

Syringe Services Programs (SSPs)

- effectively counsel clients about safe injection techniques
- reduce the transmission of infections
- deliver overdose prevention/education, vaccinations
- facilitate referrals for medication treatment for opioid use disorder (MOUD)



HIV cases averted by SSP legalization



10,592 HIV cases averted over 10 years

Regulatory barriers: vary by state

- One for one needle exchange
- Drug paraphernalia laws

Maine: guilty of trafficking: 1+ hypodermic apparatuses
guilty of furnishing: 11+ hypodermic needles
possession of 11+ hypodermic needles

Supervised Injection Facilities (SIFs)

WHAT IS A SIF?

A legally sanctioned facility where people who use injection drugs can inject pre-obtained drugs under medical supervision



WHY SIFs?

1. Reduce overdose mortality

2. Reduce infections

3. Reduce costs

4. Reduce drug use and increase treatment uptake

Maine Medical
PARTNERS

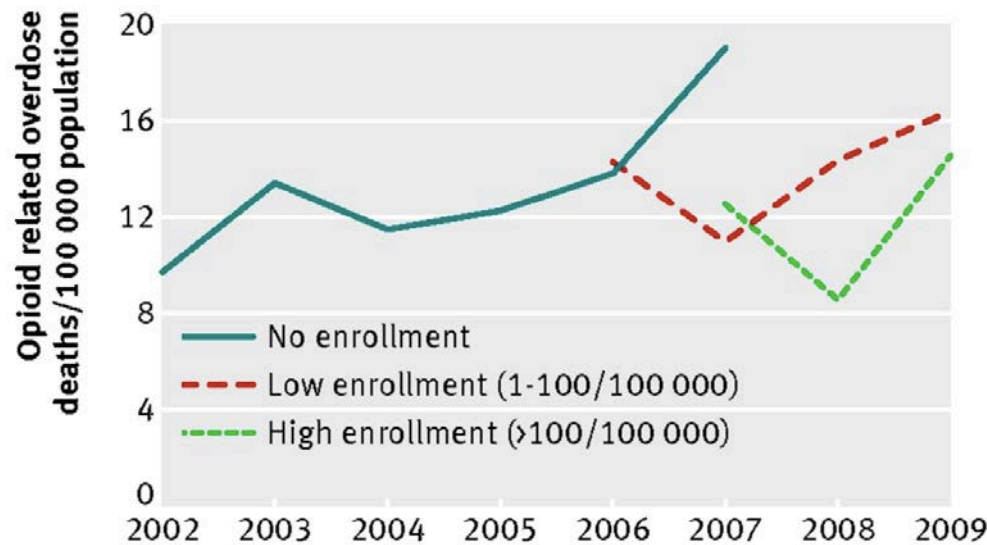
A department of Maine Medical Center

Marshall, B. et al, *Lancet* 2011
Bayoumi *CMAJ* 2008
Stoltz J-A *J of Public Health* 2007

Wood et al, *Am J Public Health* 2006
Wood E *Subst Abuse Treat Prev Policy* 2006
Kilmer *RAND Corporation* 2018

Naloxone distribution

- Cost-effective, rapidly acting, and non-addictive opioid antagonist with minimal adverse side effects
- Effective when distributed in the hands of people who use drugs



Outline

- Epidemiology of injection drug use (IDU)-
associated infections
- Harm reduction overview
- Rural HeART study
- COVID-19 study
- Discussion



Rural HeART

- **R**ural **H**arm reduction **A**ccess and **R**egional **T**rends
- Infectious disease and substance use disorder syndemic



IIDSA

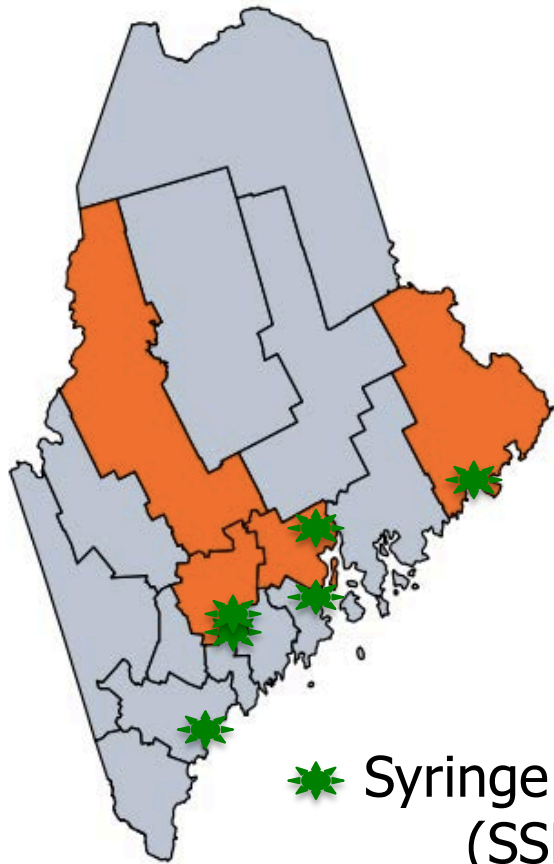
hivma

Infectious Diseases and Opioid Use Disorder (OUD)

March 2018

Infectious Diseases (ID) and HIV clinicians are increasingly concerned about the role of the opioid crisis in increasing the incidence of infectious diseases. Physicians report that up to 25-percent to 50 percent of their inpatient hospital consultations are for infections in patients who inject drugs. Failing to prevent and treat the infections and the addiction leads to increased deaths and to severe public health consequences.

Rural areas of Maine at risk



- 9th highest rates of acute HCV and HBV
- ~10% HIV cases injection drug use-related
- 9th highest rate of drug overdose deaths

★ Syringe service programs (SSPs)

Specific Aims

- Primary Aim(s): characterize knowledge, attitudes, and practices regarding safe injection techniques
- Secondary Aim(s): identify the factors predicting syringe service program (SSP) utilization and uptake of other harm reduction services offered/facilitated by SSPs

Anticipated outcomes

- Provide new information about utilization of SSPs by PWID in Maine and identify potential barriers
- Hypothesis: distance from SSP will be an important predictor of SSP utilization

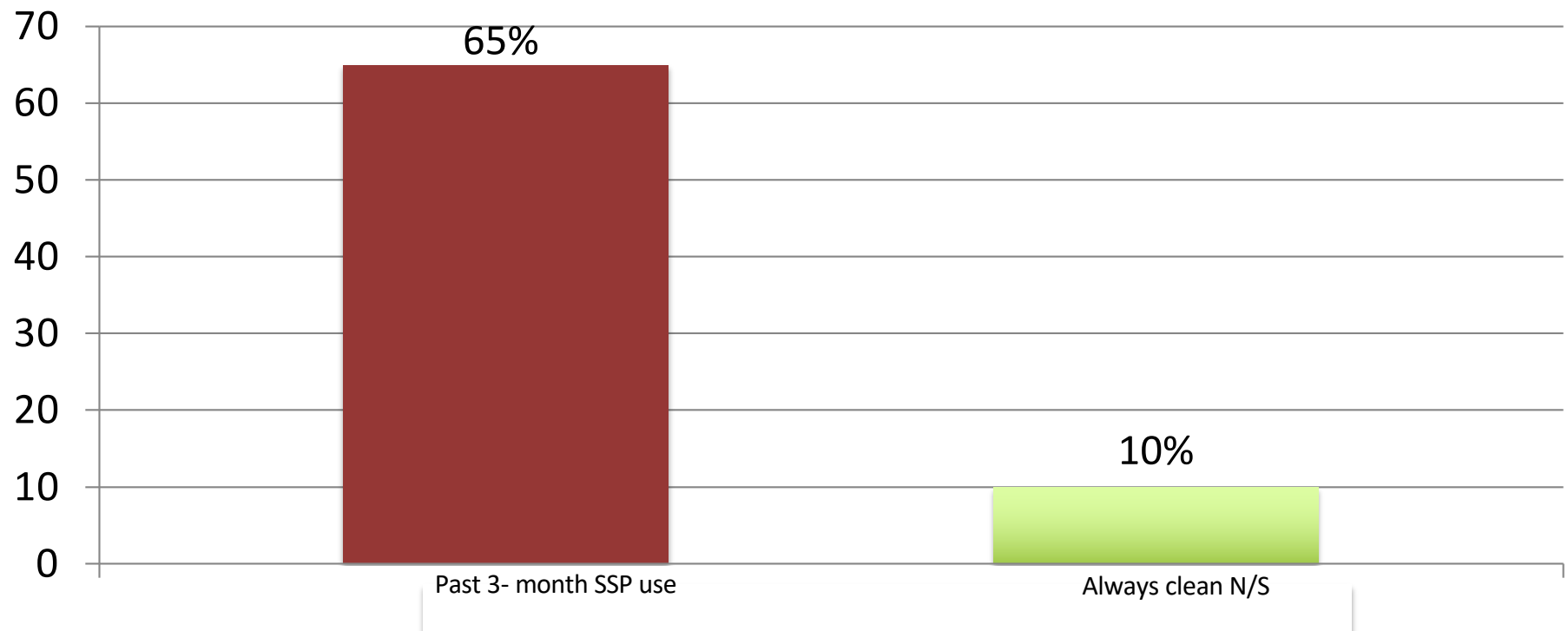
Study design

- Participants hospitalized with IDU-associated infections
- Four study sites:
 - Maine Medical Center, MaineGeneral Medical Center, Eastern Maine Medical Center, and Penobscot Bay Medical Center
- Over an 18-month period, enrolled a convenience sample of 101 inpatients
- Patient survey and electronic health record data collection

Outcome Measures

- Primary outcome measures
 - SSP utilization
 - Uptake of clean needles/syringes
- Secondary outcome measures include uptake of:
 - Clean drug equipment
 - Naloxone
 - MOUD

Main outcomes: Past 3-month SSP utilization and clean needles/syringes (N/S)



Results: Demographics

Young,
white
women;
majority
>10 miles
from SSP

	Overall n=101	SSP n=65	No SSP use n=36
Female	56 (55%)	41 (63%)	15 (42%)
Median age (SD)	35 (7)	34 (8)	26 (6)
Caucasian	96 (95%)	61 (94%)	35 (97%)
Insurance*			
Medicaid	59 (60%)	39 (61%)	20 (59%)
Medicare	6 (6%)	6 (9%)	0
Commercial	5 (5%)	2 (3%)	3 (9%)
Uninsured	25 (26%)	14 (22%)	11 (32%)
History of incarceration*	90 (89%)	61 (94%)	29 (81%)
Homeless*	46 (46%)	36 (55%)	10 (28%)
Small/Isolated rural*	18 (18%)	5 (7.7%)	13 (36%)
>10 miles from SSP*	57 (57%)	28 (44%)	29 (81%)

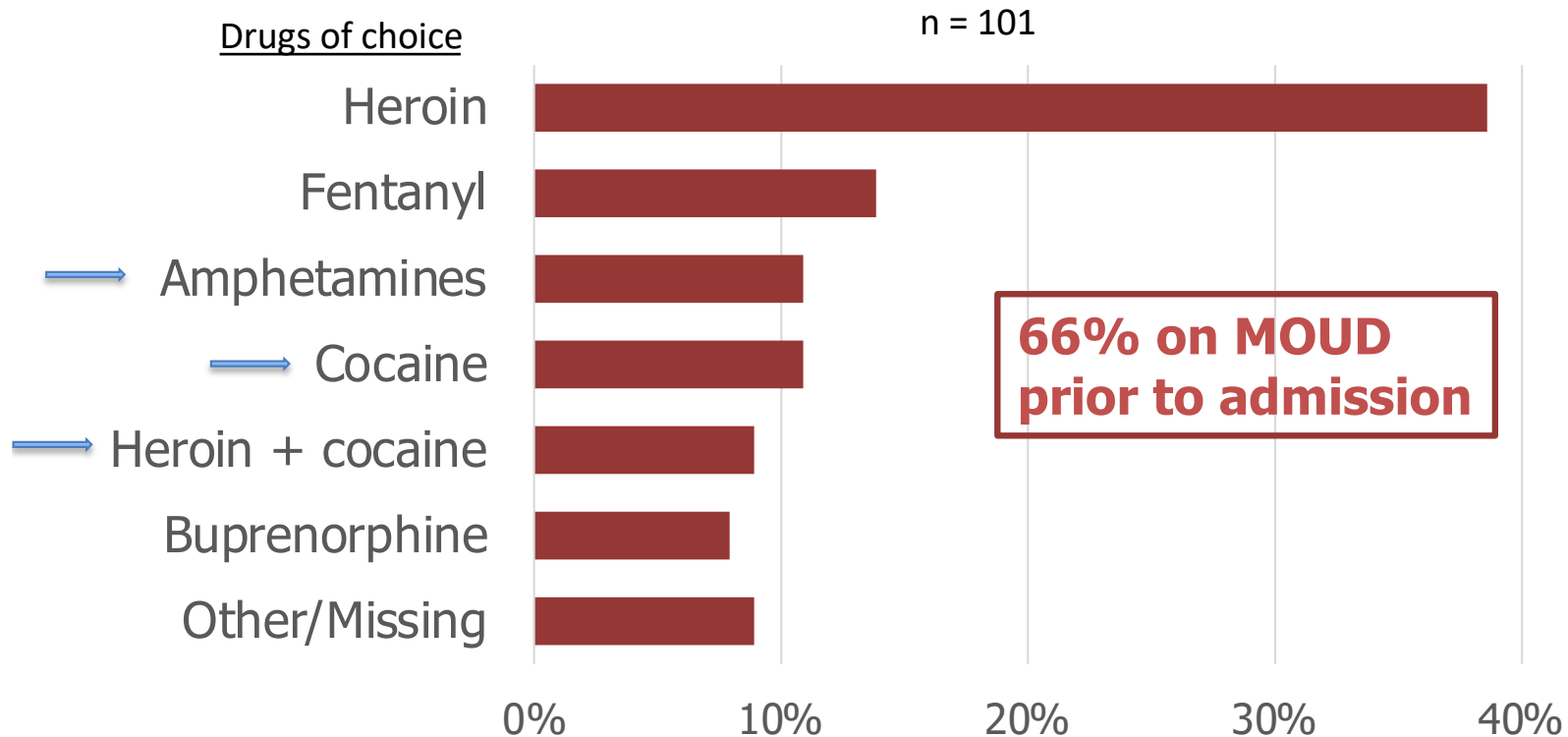
MOUD, naloxone, clean drug equipment uptake higher with SSP use

Table of Secondary Outcomes

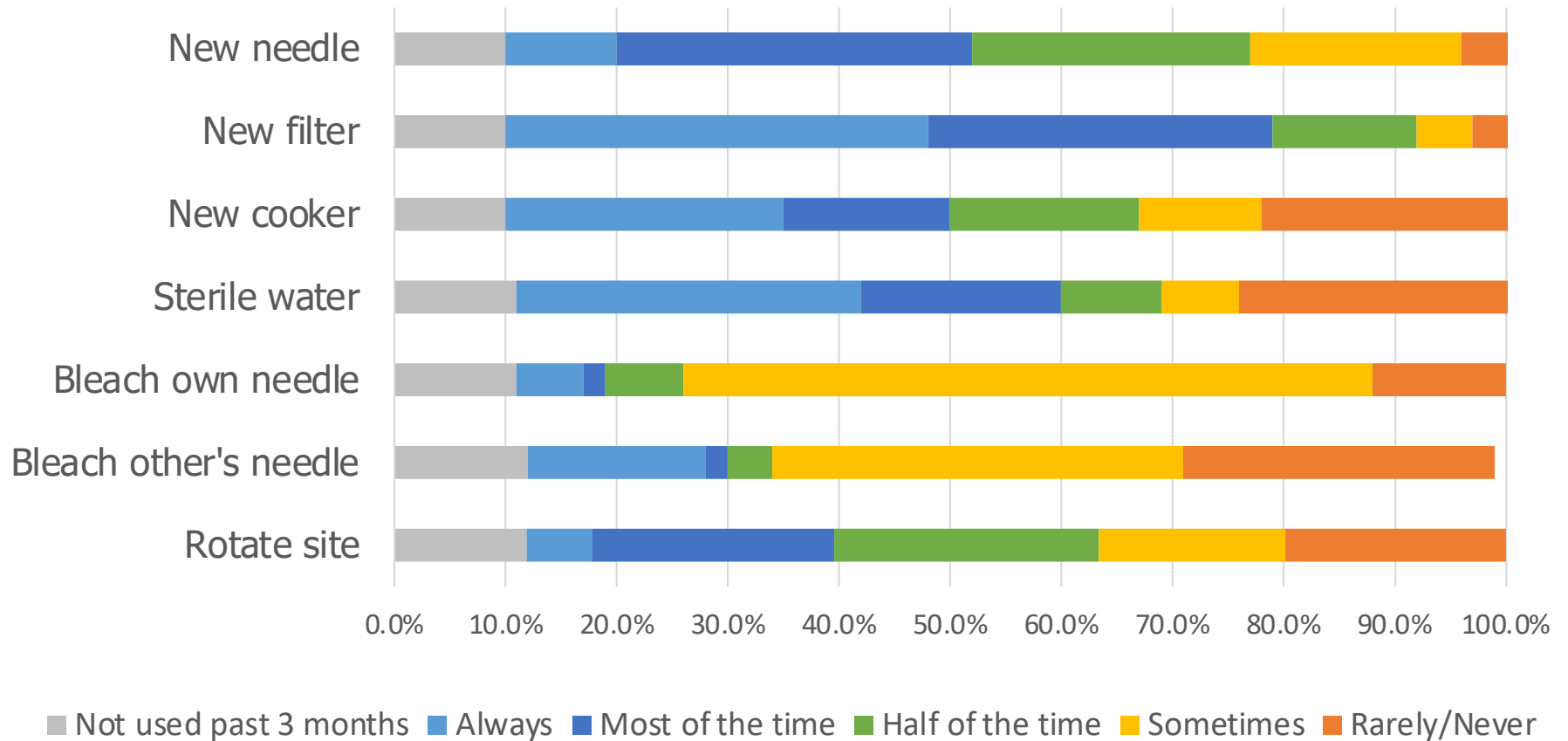
	Overall n=101	SSP n=65	No SSP use n=36
MOUD uptake	67 (66%)	46 (71%)	21 (58%)
Naloxone uptake	48 (48%)	36 (55%)	12 (33%)
Clean drug equipment			
• Always	5 (5%)	3 (4.6%)	2 (5.6%)
• Always or most of the time*	24 (24%)	20 (30%)	4 (11%)

*Chi-square test p<0.05

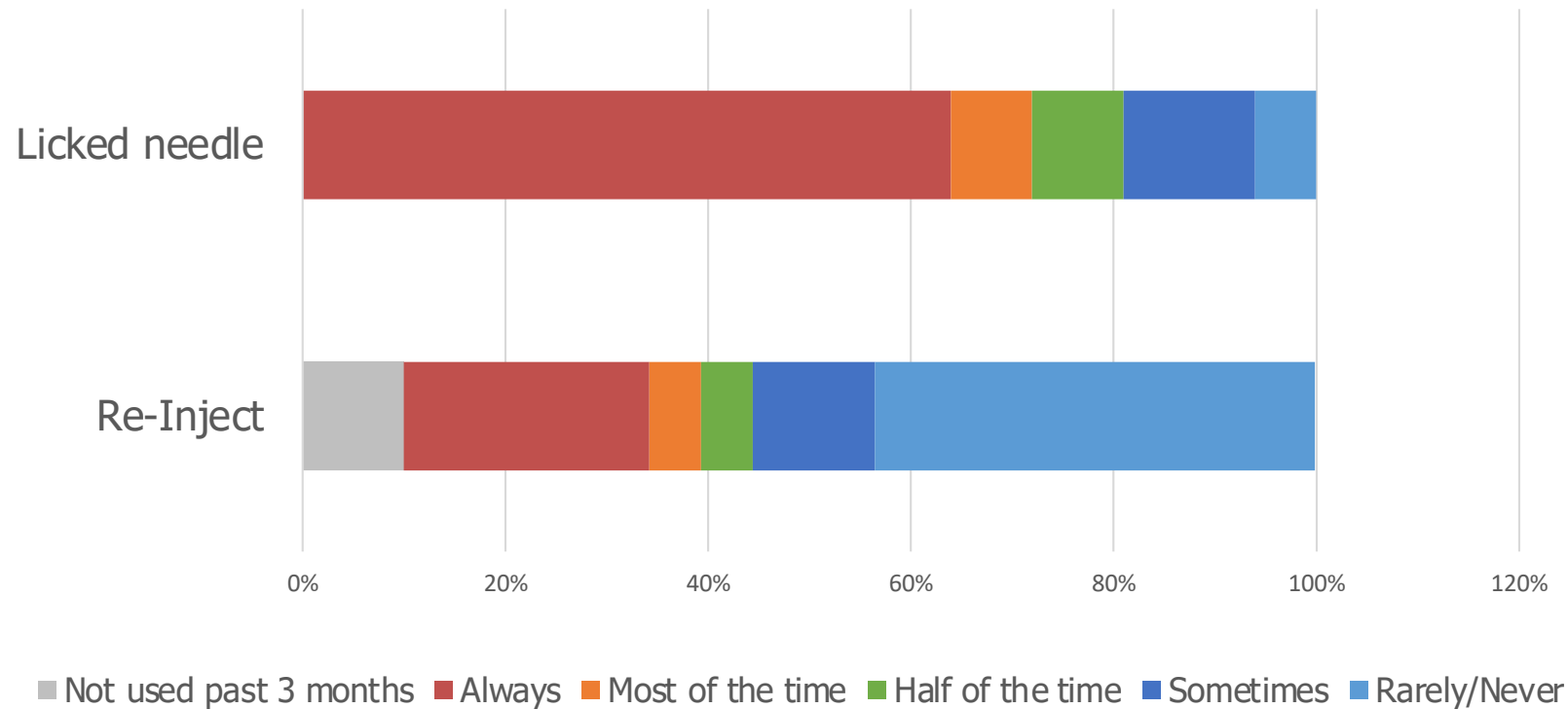
Injecting opioids, but also stimulants



Injection Practices

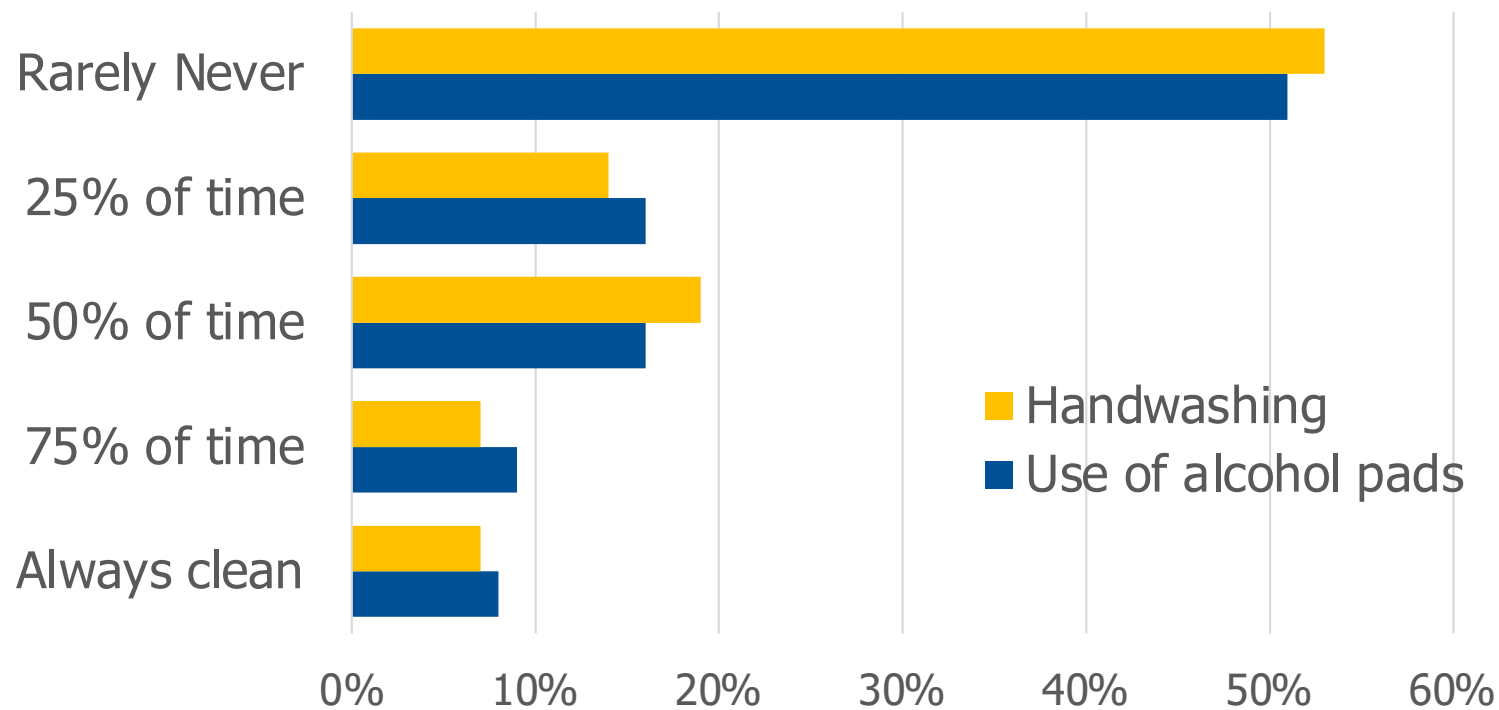


Injection Practices



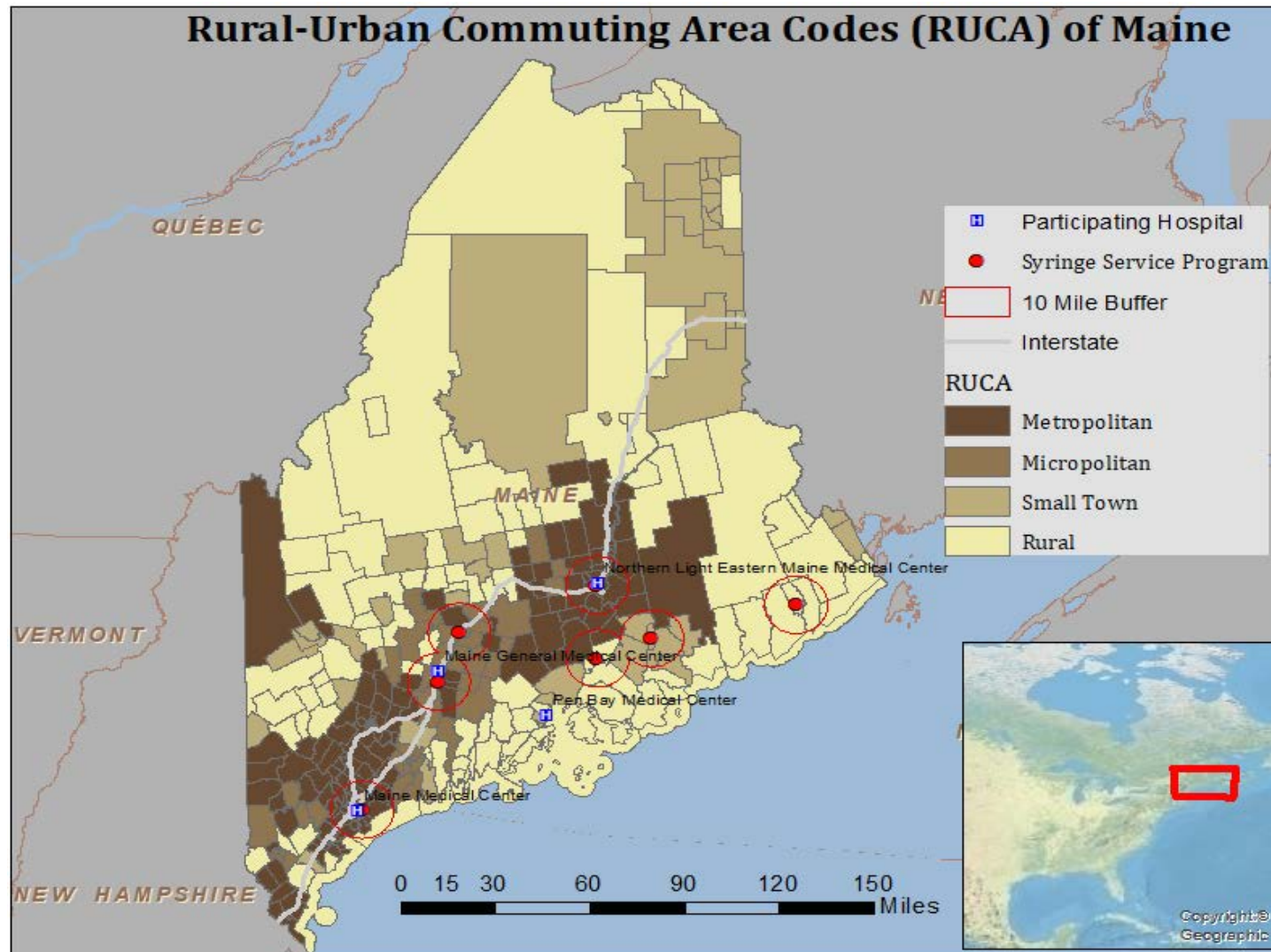
Bacterial Infections Risk Scale (BIRSI)

- BIRSI-7 median score 4.0 (min 0, max 7)



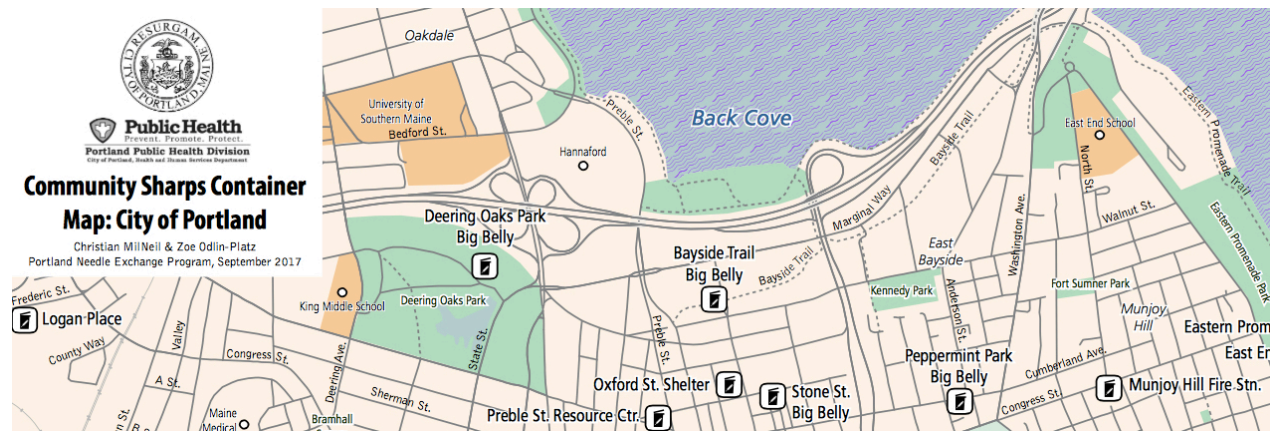
Syringe Acquisition

- 36% used SSP regularly
- 54% trouble accessing SSP
- 57% live > 10 miles from SSP



Syringe disposal

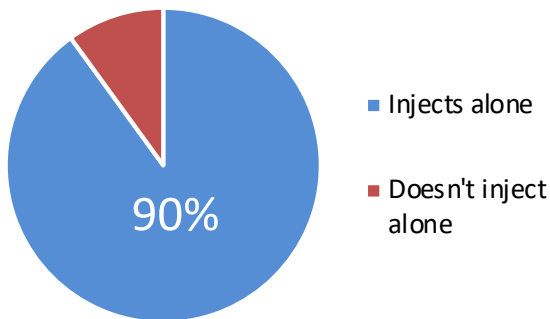
- 70% kept needles to reuse on themselves
- 30% disposed of needle in trash
- 27% returned needle to SSP



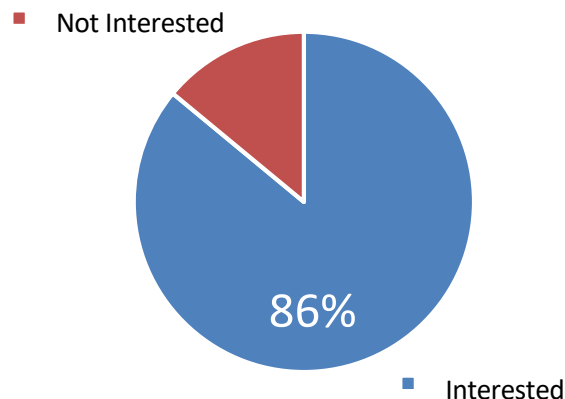
Overdose Risk and Prevention

- 48% participants naloxone uptake
 - Most received naloxone from SSP

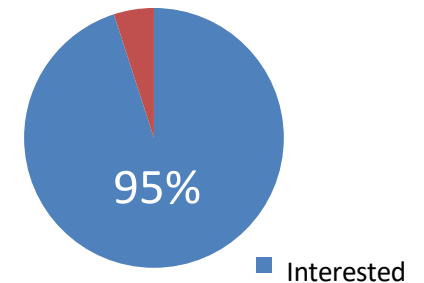
Injects Alone



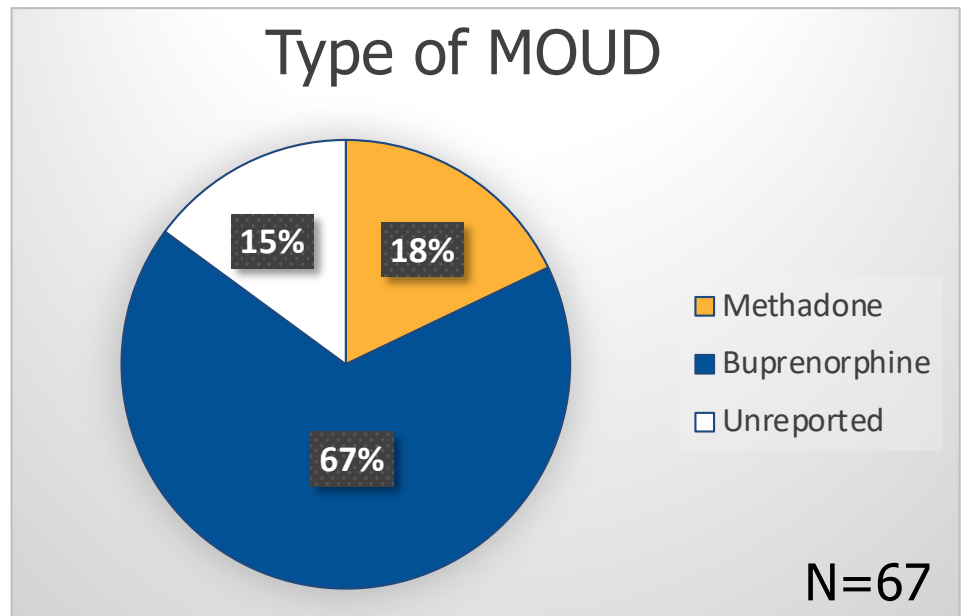
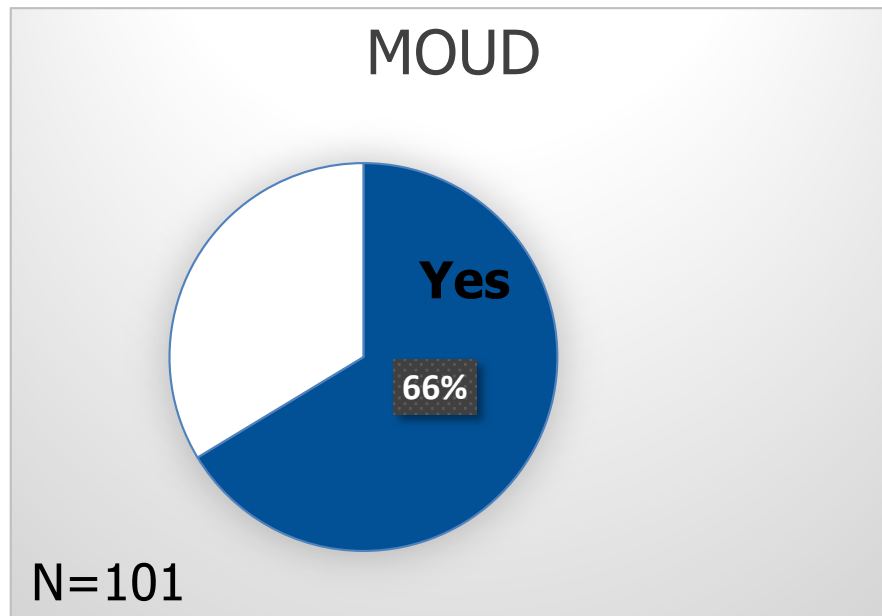
Support SIFs



Interested in mobile harm reduction units

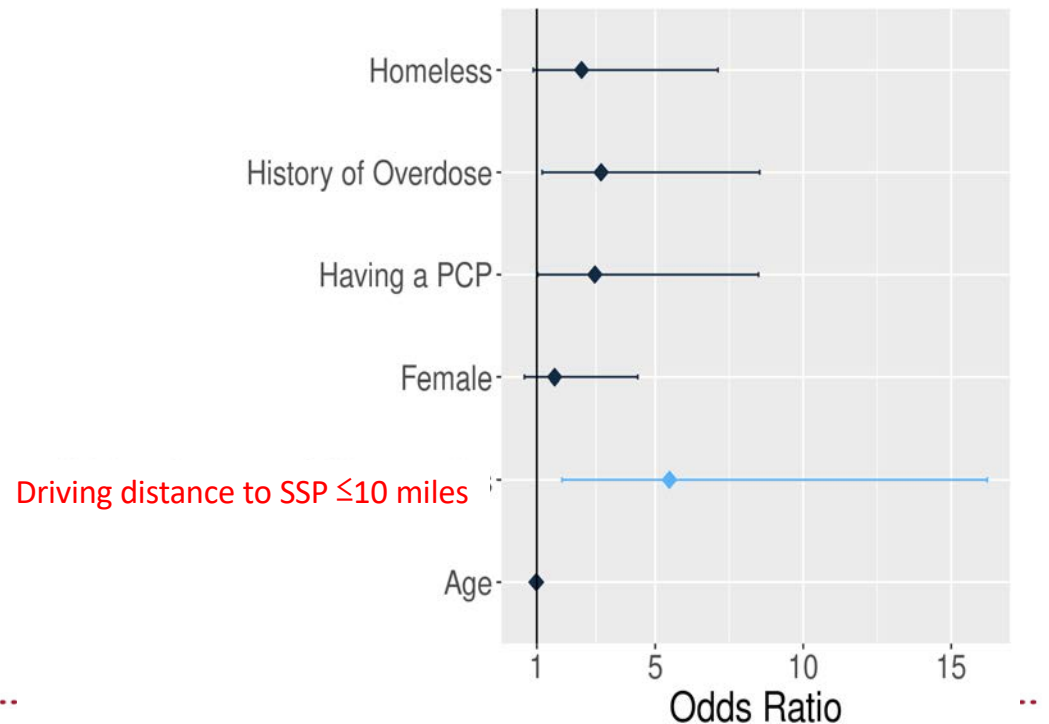


Uptake of Medication for Opioid Use Disorder (MOUD)



Distance is a barrier to accessing syringe service programs (SSPs) in Maine

People who inject drugs were **5.5x** more likely to use SSP if they lived within 10 miles of an SSP



Study Conclusions

- Unsafe injection practices common
 - Specific behaviors/techniques where more counseling could be helpful, access to clean equipment an issue
- Lack of consistent SSP utilization
 - Distance is a significant barrier

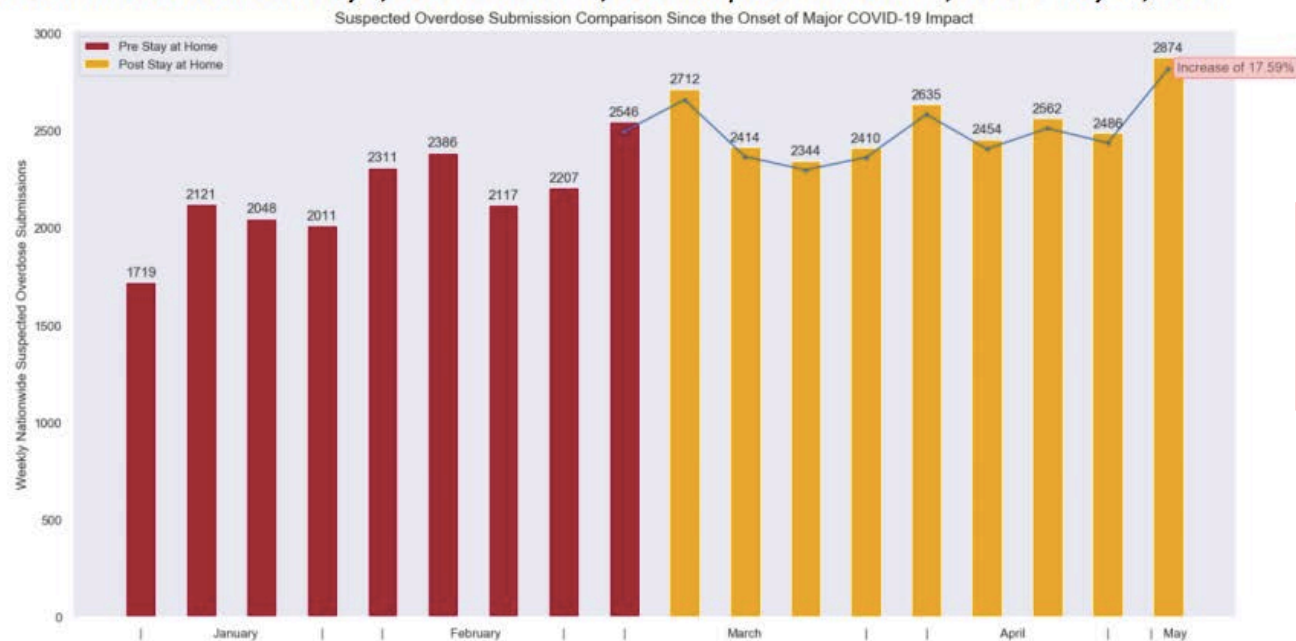
Outline

- Epidemiology of injection drug use (IDU)-
associated infections
- Harm reduction overview
- Rural HeART study
- COVID-19 study
- Discussion



Overdoses among PWID during COVID-19

Figure 2: ODMAP submissions January 1, 2020 to March 18, 2020 compared to March 19, 2020 to May 19, 2020



18% increase in overdoses nationally

Specific aims

Aim 1: Understand effects of social distancing on overall health for PWID with a particular focus on

- 1) **facilitators and barriers to accessing harm reduction** and substance use disorder treatment services during the COVID-19 pandemic
- 2) lessons learned from service delivery during the COVID-19 pandemic.

Aim 2: Examine differences in acute care utilization and patient outcomes in hospitalized PWID at Maine Medical Center before and after statewide social distancing measures were implemented

Study design

- Mixed-methods approach to understand the effects of social distancing on PWID

Aim 1

- 28 semi-structured interviews with stakeholders including PWID, community partners , providers
- interviewed key informants until thematic saturation reached

Harm reduction services during COVID-19

Facilitators

- Relaxed policies
- Mobile outreach
- Mail delivery of drug equipment

Barriers

- Decreased capacity
- Physical barriers
- Decreased privacy

*“In the state of Maine, the current permanent rules, the legislation mandates that these programs do operate on a **one-for-one exchange** basis which means every syringe that I can give I have to receive a used one. **That's something that got lifted with the executive order temporarily, and that we're fighting to maintain after COVID** because we feel really, really strongly that we cannot go back to the old rules. That would just be really, really devastating for us. ”*

*“I have seen a lot of abscesses and cellulitis, directly linking to injection drug use, andthere have been patients that have been **reusing supplies** for weeks on end.”*

Themes

- 1) Exacerbating current problems: stigma, domestic violence, food insecurity, homelessness
 - ***“I use a lot more...it’s a lot harder because of stress...even going into a public place, using a bathroom when you haven’t bought food there, they look at you like you’re the devil...”***
 - ***“It's almost like a luxury in a way to be able to...think about COVID and stay safe”***
 - ***“I have a lot more things to be afraid of than COVID-19 on a day-to-day basis.”***

*“I think..it..brings me back to the point of how in America, we need to have true harm reduction and really start to look at things like safe consumption sites and more...services, even for active folks. And I think, in other cities and states, at times they have police officers have access to clean syringes for consumers. And I think we could have done better if we had been a little more progressive in our harm reduction approach and been a little bit more like other countries have and really truly be focused on reducing the spread of illnesses and reducing overdose....**So I think, as with a lot of things we've learned through COVID, you've seen a lot of these things shake out, whether it's kids that can't eat unless they're at school or all these social issues that we've ignored for a long time are really now, they got a microscope on them. And I think it would be a disservice to all of us if once this is over with, if we don't really look hard at these issues and go back to the drawing board.**”*

Themes

2) Resilience/commitment

*“I think really it's been pretty amazing to just see how **resilient** people have been, and to really kind of find these creative ways to connect.”*

COVID-19 Study Conclusions

- Several facilitators and barriers to accessing harm reduction services in Maine identified
- Exacerbation of underlying issues that need to be addressed: stigma, domestic violence, homelessness

Outline

- Epidemiology of injection drug use (IDU)- associated (IDU) infections
- Harm reduction overview
- Rural HeART study
- COVID-19 study
- Discussion



Discussion/Take home points

- Harm reduction is a social justice movement
 - Encompasses non-judgmental, practical strategies to mitigate negative consequences from drug use
- Expansion of SSP's, including mobile units
- Consideration of supervised injection facilities
- Maintain relaxed policies (elimination of one to one needle exchange, allow secondary peer exchange, mail delivery of equipment)
- Change policies – reduce criminalization of drug use

Resources

- 1) [Operational SSP's in Maine](#)
- 2) [Federal and State Action Needed to End the Infectious Complications of Illicit Drug Use in the United States: IDSA and HIVMA's Advocacy Agenda](#)
- 1) [American Society for Addiction Medicine COVID-19 guidelines](#)
- 2) [Harm Reduction Coalition COVID-19 guidance](#)
- 3) [Harm Reduction Services to Prevent and Treat Infections in People Who Use Drugs](#)

Acknowledgements

Study participants

Funding: U54 GM115516 from the National Institutes of Health for the Northern New England Clinical and Translational Research network

Maine Medical Center

Debra Burris, RN
Terilee Gerry, RN
Kim Murray, MPP
Robert Smith, MD
Lee Lucas, RN PhD
Jenny Carwile, PhD
Nitysari Sankar, OMS II
Michael Kohut, PhD
Rebecca Hutchinson, MD
Kathleen Fairfield, MD, MPH DrPH
Rebecca Bell, MS IV
Hannah Loeb, MS III

Pen Bay Medical Center

Cheryl Pinsky, MD MPH
Caroline Knight, RN

Maine General Medical Center

Timothy Borelli, DO
Kate Bessey, NP

Eastern Maine Medical Center

Robert Pinsky, MD
Krysta Anderson

UNH

Kerry Nolte PhD, RN

UVM

Stacey Sigmon, PhD

Tufts University

Alysse Wurcel, MD
Tom Stopka, PhD
Scott Sughrue

References

- Phillips, K. T., & Stein, M. D. (2010). Risk practices associated with bacterial infections among injection drug users in Denver, Colorado. *Am J Drug Alcohol Abuse*, 36(2), 92-97. doi:10.3109/00952991003592311
- Ramirez V, Carwile J, Craig W, Thakrar K. Cost analysis of infective endocarditis in the setting of the opioid epidemic. JMMC. 2019.
- Thakrar K, Connolly K, Lucas F.L, Powers S, Andrews E., DeMatteo C, Mooney D, Sorg M, Cohen M, Valenti A. Mortality, morbidity, and cardiac surgery in Injection Drug Use (IDU)-associated versus non-IDU infective endocarditis: The need to expand substance use disorder treatment and harm reduction services PLoS One. Nov 2019
- Nenninger K, Carwile J, Ahrens K, Armstrong B, Thakrar K. Rural-Urban Differences in Hospitalizations for Opioid Use-Associated Infective Endocarditis in the United States, 2003-2016. OFID 2020.
- Springer S, Wurcel A, Barocas J, Nijhawan A, Thakrar K, Lynfield R, Hurley M, Snowden J, Thornton A, del Rio C. Reducing the Infectious Consequences of Substance Use Disorders: An Urgent Call to Action from the Infectious Disease Society of America (IDSA) and HIV Medicine Association (HIVMA). JID. 2020.
- Walley, A. Y., Xuan, Z., Hackman, H. H., Quinn, E., Doe-Simkins, M., Sorensen-Alawad, A., Ozonoff, A. (2013). Opioid overdose rates and implementation of overdose education and nasal naloxone distribution in Massachusetts: interrupted time series analysis. *BMJ*, 346, f174. doi:10.1136/bmj.f174
- Des Jarlais DC, McKnight C, Goldblatt C, Purchase D. Doing harm reduction better: syringe exchange in the United States. *Addiction*. 2009;104(9):1441-1446
- Coalition HR. Principles of harm reduction <https://harmreduction.org/about-us/principles-of-harm-reduction/>. Accessed March 10, 2020.
- Beletsky L, Davis CS, Anderson E, Burris S. The law (and politics) of safe injection facilities in the United States. *American journal of public health*. 2008;98(2):231-237.
- Kilmer B, Taylor J, Caulkins JP, et al. *Considering heroin-assisted treatment and supervised drug consumption sites in the United States*. RAND; 2018.
- Palepu A, Tyndall MW, Leon H, et al. Hospital utilization and costs in a cohort of injection drug users. *Cmaj*. 2001;165(4):415-420.
- Bayoumi AM, Zaric GS. The cost-effectiveness of Vancouver's supervised injection facility. *CMAJ*. 2008;179(11):1143-1151.
- Thakrar K, Nenninger EK, Agmas W. Harm reduction services to prevent and treat infections in people who inject drugs. Complications of Opioid Use and Other Substance Use Disorders. *Infect Dis Clin North Am*. Cambridge, MA. September 2020
- Pinkerton SD. How many HIV infections are prevented by Vancouver Canada's supervised injection facility? *Int J Drug Policy*. 2011;22(3):179-183.
- Platt L, Minozzi S, Reed J, et al. Needle and syringe programmes and opioid substitution therapy for preventing HCV transmission among people who inject drugs: findings from a Cochrane Review and meta-analysis. *Addiction*. 2018;113(3):545-563.

Thanks!

- Questions? kthakarar@mmc.org, @kinnathakarar

Supplemental slides

	Street	Recommended/safe
Cooker	Spoon, bottle cap, soda can	Pharmacy or SSP cookers
Solution	Spit, puddle/pond water, tap or bottle water, toilet (tank better than bowl)	Sterile water or saline from SSP
Filter	Cigarette butts, lint, Q-tips, cotton balls, tampons	Dental pellets
Tourniquets	Belt, socks, condoms, gloves	Rubber/elastic tourniquets
Acid	Vinegar, lemon/lime juice	Vitamin C powder
Skin cleaner	None	Alcohol pads

Injection sites, risk of re-using needles

