

# Harm reduction behaviors are associated with carrying naloxone among patients on methadone treatment.

Zofia Kozak<sup>1</sup>, Daniel Ciccarone<sup>2</sup>, Johannes Thru<sup>3,4,5</sup>, Thomas Cole<sup>1</sup>, Alexander Pappas<sup>1</sup>, Aaron D. Greenblatt<sup>1</sup>, Christopher Welsh<sup>1</sup>, Mark Yoon<sup>1</sup>, Donald Gann<sup>1</sup>, Erin Artigiani<sup>6</sup>, Eric Wish<sup>6</sup>, Annabelle M. Belcher<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Department of Psychiatry

<sup>2</sup>University of California, San Francisco, Department of Family and Community Medicine

<sup>3</sup>Johns Hopkins University, Bloomberg School of Public Health, Department of Mental Health

<sup>4</sup>Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

<sup>5</sup>La Trobe University, Centre for Alcohol Policy Research

<sup>6</sup>University of Maryland, College Park, Center for Substance Abuse Research



## Background:

- Despite widespread availability of naloxone, U.S. opioid overdose rates continue to rise.
- The “Cascade of Care” (CoC) is a public health approach that identifies steps in achieving specific outcomes.
- Previous reports have used the CoC framework to identify gaps in naloxone carry among individuals with opioid use disorder (OUD). We extended this framework to treatment-seeking populations with OUD, a population that may be more inclined to participate in harm reduction behaviors.
- We hypothesized that rates of naloxone carry would be higher in treatment-seeking individuals, and particularly, in those who regularly practice other forms of harm reduction.

## Methods:

- Patients recruited via convenience sampling from an urban methadone program to complete a survey.
- We assessed naloxone familiarity, availability, obtainability, training and possession (previously identified CoC domains), as well as naloxone carry rates, demographics, and harm reduction behaviors.
- A multivariate logistic regression model was used to examine the association of naloxone carry with various individual-level factors.

## Results:

- The sample (n=97) was majority male (59%) with a mean age of 48 (SD=12), 27% had college education or higher, 64% indicated injection drug use, and 84% reported past naloxone training.
- 100% of participants endorsed familiarity with naloxone, but only 42% regularly carried naloxone.

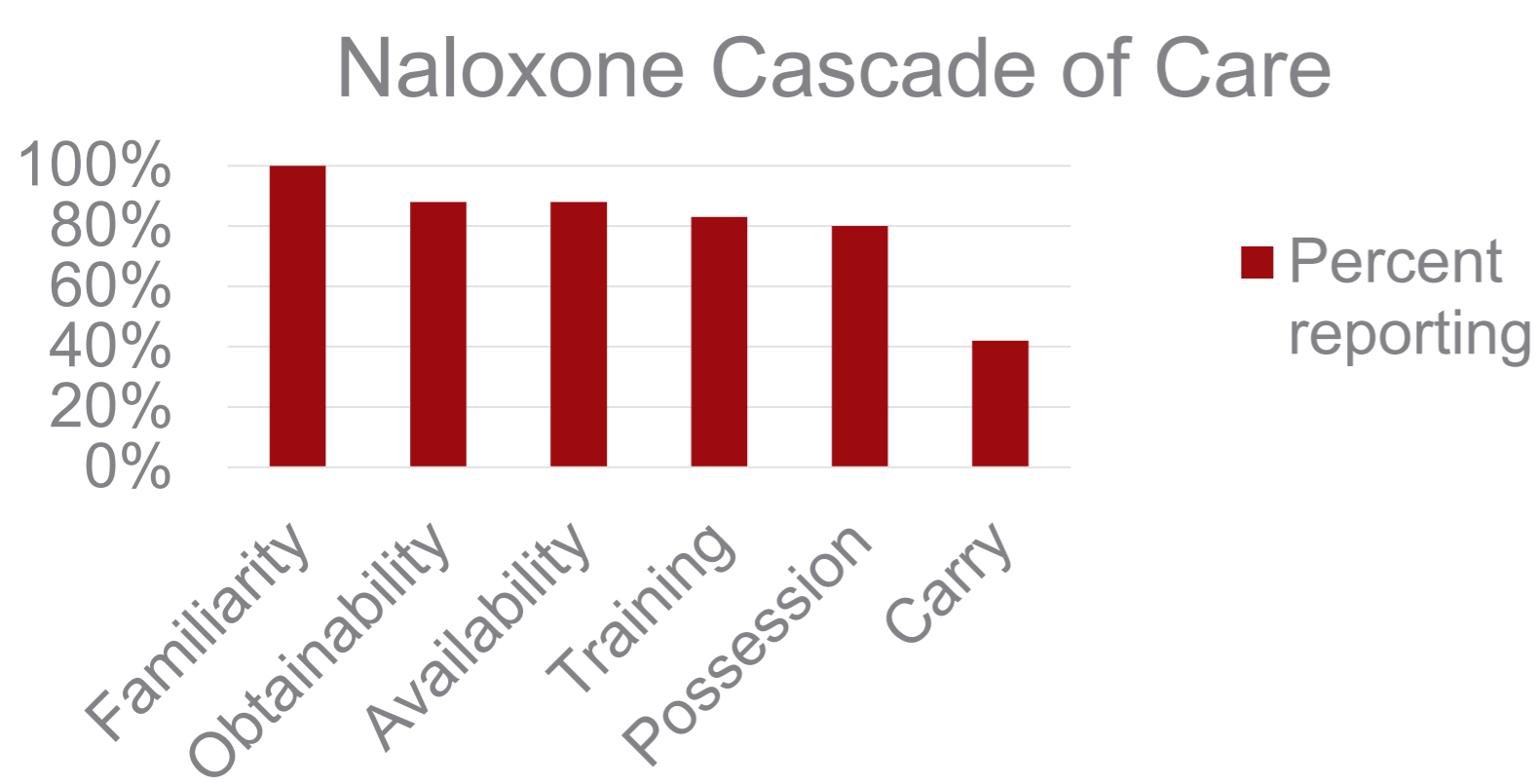


Figure 1. Naloxone Cascade of Care (CoC) (N=97)

## Results (cont'd)

- The following were independently associated with carrying naloxone (aOR, 95% CI): White race (2.94, 1.02-8.52), college education (8.11, 1.76-37.47), and total number of self-reported harm reduction behaviors (1.45, 1.00-2.11).

Factor	aOR	95% CI	p-value
High school/GED (vs less than HS/GED)	3.71	0.93, 14.74	0.063
College education (vs less than HS/GED)	8.11	1.76, 37.47	0.007
Race (White vs other)	2.92	1.02, 8.52	0.046
Injected drugs (Yes vs No)	1.68	0.57, 4.94	0.342
Ever received naloxone training (Yes vs No)	3.72	0.90, 15.49	0.071
Total harm reduction behaviors (per HR increase)	1.45	1.00, 2.11	0.049

Table 1. Association between various patient characteristics and reported carrying of kit based on a multivariable logistic regression model (N=97)

## Conclusion:

- Even in seemingly perfect conditions for naloxone distribution, we found low rates of carry among methadone-treated participants.
- Methadone programs provide ample opportunities for naloxone interventions, which should target racial/ethnic minorities, individuals with lower education, and those who have not received naloxone training.
- The spectrum of harm reduction behaviors should be explicitly encouraged among these populations in order to enhance naloxone carry.

Disclosures of interest: None

Funding: National Institutes of Health (NIH)/National Institute on Drug Abuse (NIDA) U01DA038360-05S4 (PIs: Wish, Belcher). National Center for Advancing Translational Sciences (NCATS) 1UL1TR003098.

