

**Serious non-fatal and fatal opioid overdose events
in a cohort of hospital patients seen by an
addiction consultation service:
Secondary analysis of the NavSTAR trial**

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Research Team and Collaborators

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- The UMMC Addiction Consultation team

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- NIDA R01DA037942

Trial Registration

- NCT 02599818



Background

- **North America is experiencing a crisis of drug overdose deaths.**
- **In the USA, over 100,000 people died of drug overdoses in a 12-month period.**
 - Opioids (primarily illicit fentanyl) are responsible for most overdoses.
- **Substance use disorders are associated with high utilization of hospital services.**
 - Avoidable hospitalization is a driver of high healthcare costs in the USA.
 - Hospitalization as a ‘reachable moment’ for intervention.

- **The current study examined (a) fatal and (b) serious non-fatal opioid overdose events in a cohort of hospital patients enrolled in a clinical trial of a Patient Navigation intervention.**
 - Secondary analysis of the Navigation Services to Avoid Rehospitalization (NavSTAR) trial.

Preventing Hospital Readmission for Patients With Comorbid Substance Use Disorder

A Randomized Trial

Jan Gryczynski, PhD; Courtney D. Nordeck, BA; Christopher Welsh, MD; Shannon G. Mitchell, PhD; Kevin E. O'Grady, PhD; and Robert P. Schwartz, MD

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NavSTAR study overview

- Randomized trial of Patient Navigation services to link hospitalized medical/surgical patients to services and reduce hospital readmissions.
 - NavSTAR vs. Treatment-as-Usual (TAU)
 - Large urban academic hospital with an addiction consultation service

Inclusion/Exclusion Criteria

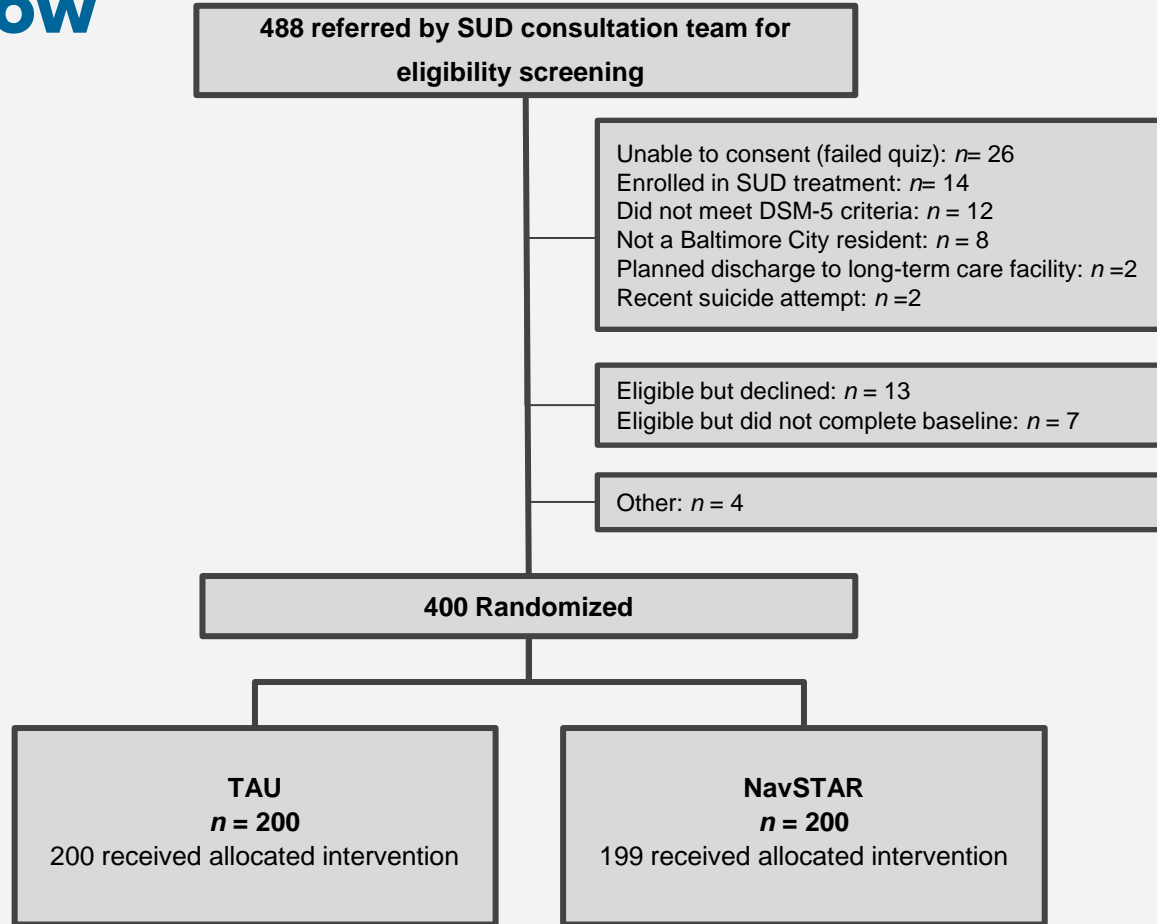
Inclusion

- DSM-5 criteria for opioid, cocaine, and/or alcohol use disorder
- Age 18 or older
- Willing and able to provide informed consent

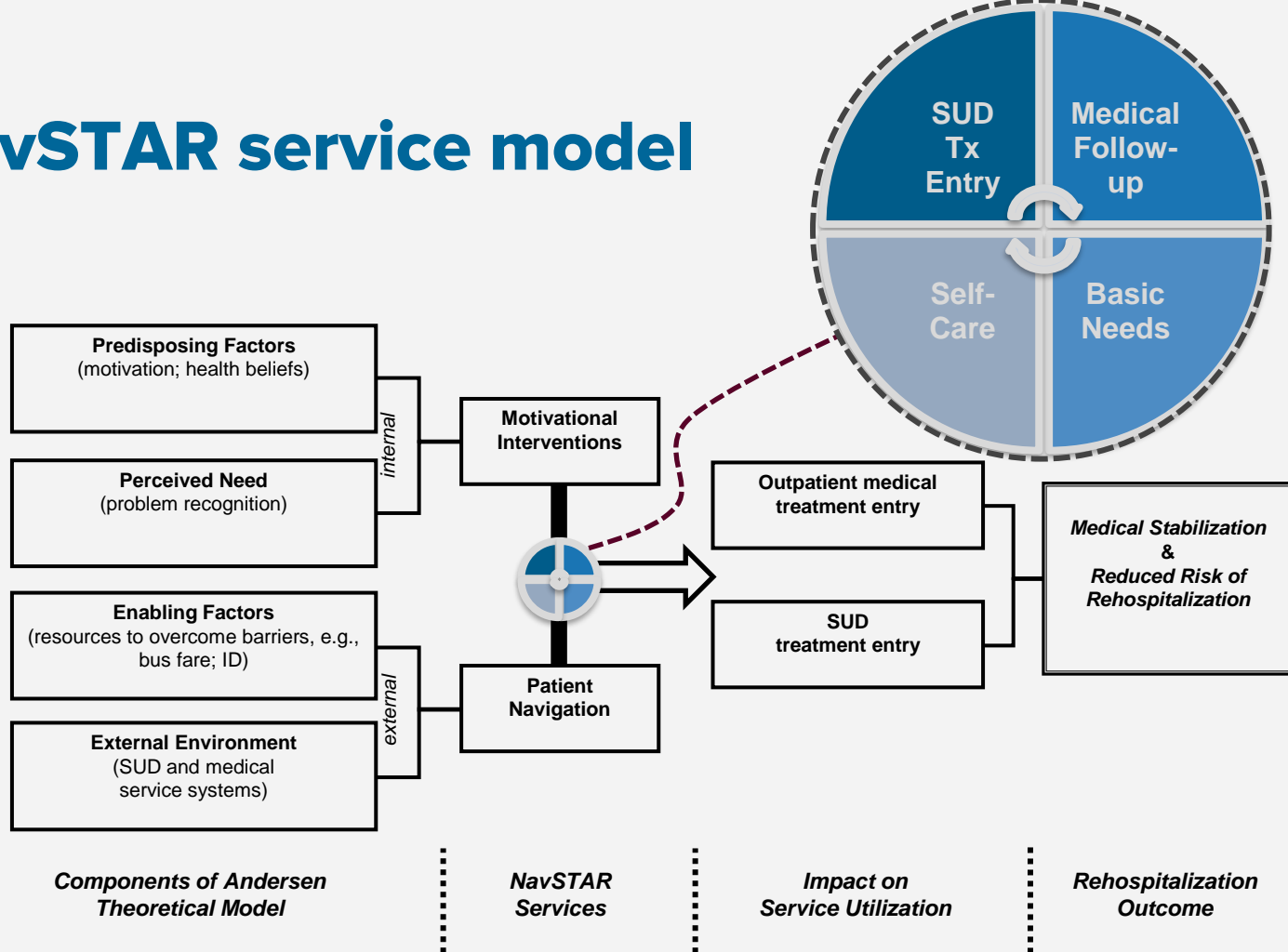
Exclusion

- Currently in SUD treatment
- Non-Baltimore City resident
- Pregnant, or current hospitalization for labor & delivery
- Planned discharge to long-term inpatient care (e.g., hospice)
- Hospitalized for suicide attempt

Study Flow

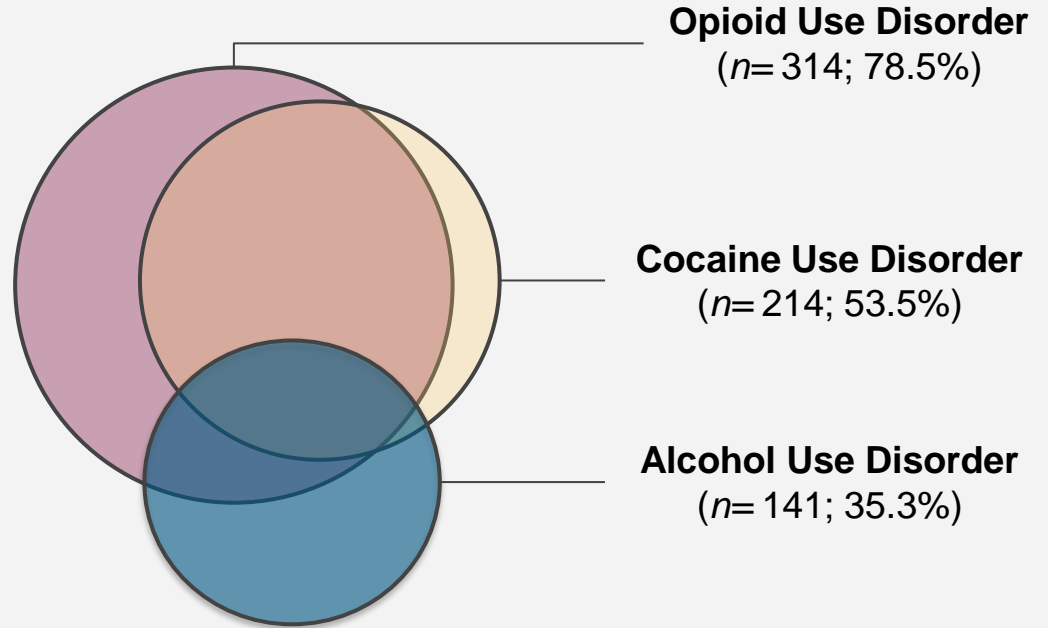


NavSTAR service model



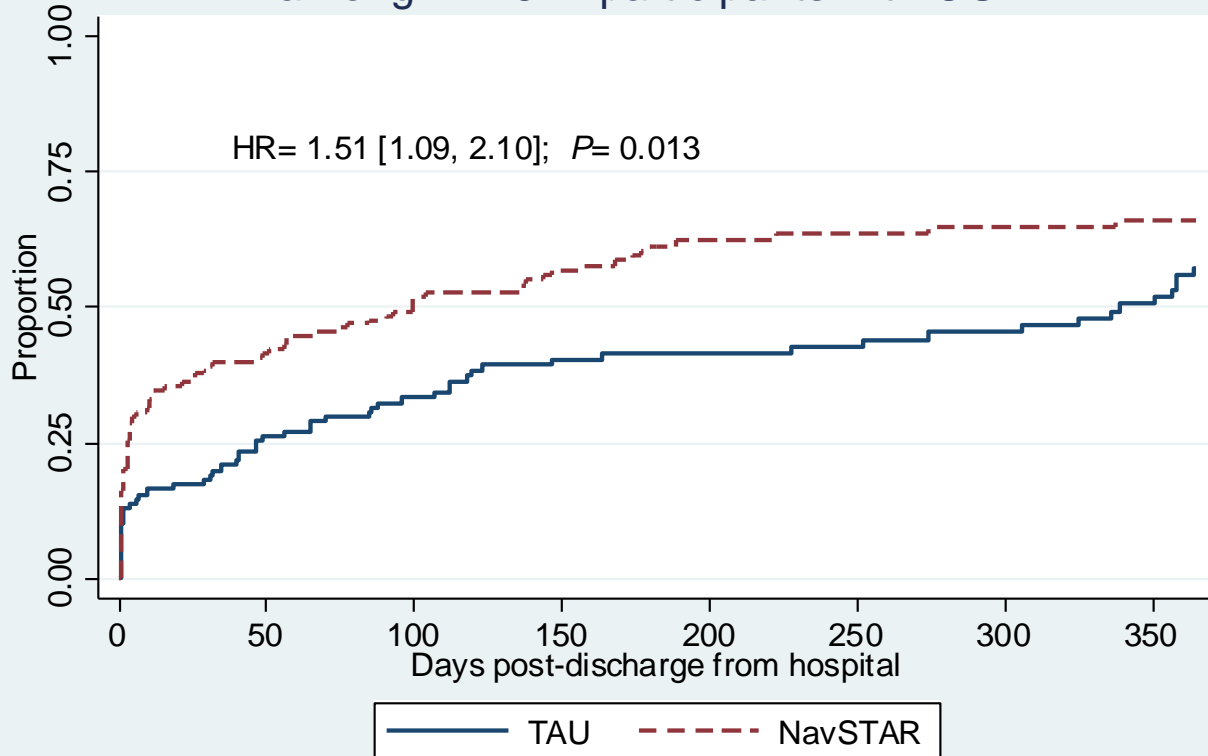
Participant Characteristics (N= 400)

- Mean (SD) age= 45.1 (12.3)
- 43% Female
- 56% Black race
- 43% Homeless



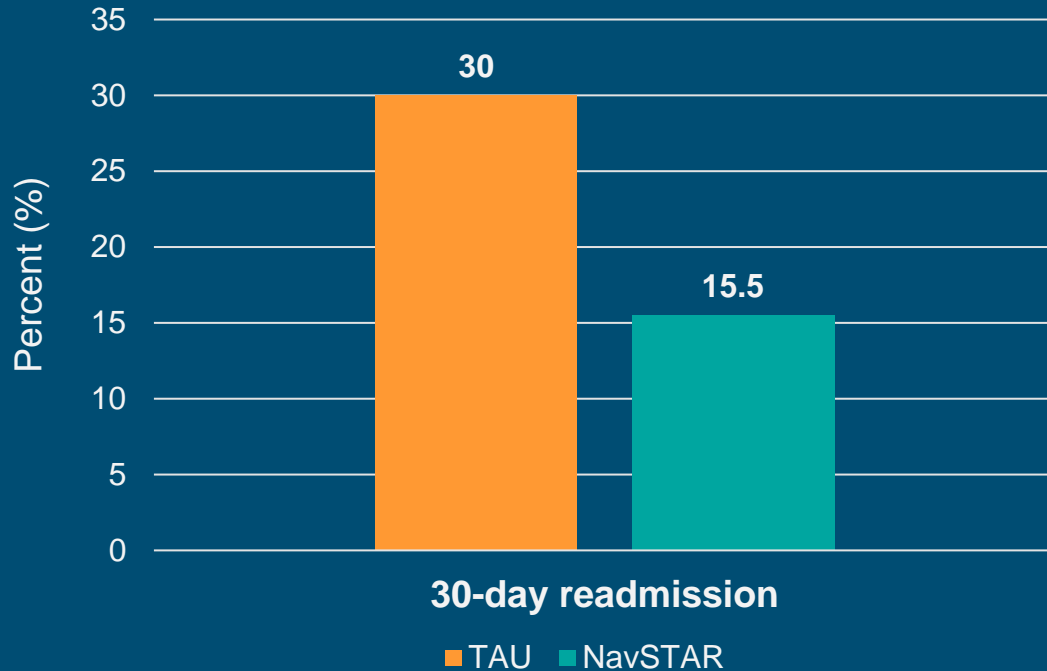
Linkage to MOUD treatment (methadone, buprenorphine, or extended-release naltrexone)

Time to MOUD treatment entry
among $N=314$ participants with OUD



- **Participants in the NavSTAR Patient Navigation arm saw better linkage to MOUD treatment post-discharge compared to participants in the TAU arm.**
- **The treatment linkage effect was immediate.**
- **Differences continued to persist over time.**

30-day inpatient readmissions (1 or more readmissions within 30 days post-discharge)



OR = 0.43

95% CI = [0.26, 0.70]

***P* < 0.001**



Patients being discharged from hospital with comorbid opioid, cocaine, or alcohol use disorders

Randomized

Patient navigation services



Usual care



Hospital readmission over 12 months

6.1/1000 person-days

HR 0.74 (95% CI 0.58-0.96)

8.1/1000 person-days

Overdose Outcomes

| | <u><i>Fatal</i></u> | <u><i>Serious Non-Fatal</i></u> |
|---------------------|---|---|
| Definition | Cause of death is opioid overdose, determined by Medical Examiner | Opioid overdose requiring hospital Emergency Department visit |
| Data Sources | State death certificate records | Regional Health Information Exchange (all area hospitals) |
| Time Frame | 3.3-5.5 year follow-up | 1 year follow-up |

Analysis

- **Dependent variables: (a) serious non-fatal and (b) fatal opioid overdose**
 - **(a) Logistic regression (no vs. yes)**
 - **(b) Proportional hazards Cox regression (survival analysis)**
 - Intervention variable: Study arm (NavSTAR vs. TAU)
 - Control variables: Participant sex (male vs. female), race (white vs. non-white), age (in years), and (in the long-term death analysis) prior non-fatal overdose.

Results

- In the first year post-enrollment, there were:
 - **122 non-fatal opioid overdose events requiring hospital care**
 - Experienced by 63/400 (15.8%) of participants
 - **17 fatal opioid overdoses** (4.3% of the sample)
- Over the longer-term follow-up (3.3-5.5 years post-enrollment), there were:
 - **52 fatal opioid overdoses** (13% of the sample)

Results

| | Serious Non-Fatal Overdose (1 year) Logistic Regression No vs. Yes (1 or more event) Odds Ratio [95% CI] | Fatal Overdose (3.3-5.5 years) Cox Regression Time-to-Event Hazard Ratio [95% CI] |
|---|---|--|
| Female Sex (ref= Male) | 1.45 [0.82, 2.56]; <i>P</i> = 0.20 | 1.21 [0.68, 2.14]; <i>P</i> = 0.51 |
| Non-White Race (ref= White) | 0.92 [0.51, 1.69]; <i>P</i> = 0.80 | 0.63 [0.35, 1.16]; <i>P</i> = 0.14 |
| Age (years) | 1.00 [0.98, 1.03]; <i>P</i> = 0.76 | 1.01 [0.98, 1.04]; <i>P</i> = 0.43 |
| NavSTAR Intervention (ref= TAU) | 0.50 [0.29, 0.88]; <i>P</i>= 0.017 | 0.74 [0.42, 1.30]; <i>P</i> = 0.29 |
| Prior Serious Non-Fatal Overdose (ref= No) | - | 1.75 [0.92, 3.31]; <i>P</i> = 0.087 |

Results Summary

- Participants in the NavSTAR arm were less likely than TAU participants to experience non-fatal opioid overdose requiring acute hospital care.
 - **Odds Ratio= 0.50 [95% CI= 0.29, 0.88]; P=0.017**
- There were no significant differences between study arms on fatal overdose.
- No significant differences by participant race, sex, or age ($P_s > 0.10$).
- The association between non-fatal opioid overdose and subsequent fatal overdose did not reach statistical significance (HR=1.75 [0.92, 3.31]; $P= 0.087$).

Discussion

- Opioid overdose events were common in this sample of hospital patients with comorbid substance use disorders.
- This indicates a high level of need for harm reduction and treatment linkage services.
- The NavSTAR Patient Navigation intervention reduced the likelihood of serious non-fatal opioid overdose, but did not impact fatal opioid overdoses.

Discussion

- **Strengths include the RCT design, linkage to objective records, and long-term follow-up.**
- **Limitations include recruitment from a single site, and a relatively small sample.**
- **Future research directions:**
 - Large, multi-site RCT
 - Implement and scale up Patient Navigation services in hospitals; emphasis on overdose prevention

Thank you!

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