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How Baseline Housing Status Impacted Outcomes in Complex Patients Seen at a Healthcare for the Homeless Clinic

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"Vegas"

- Multiple medical admissions in the last 6 months
- Congestive heart failure
- Chronic/severe soft tissue infections
- Traumatic brain injury
- Bilateral below the knee amputations
- PTSD, significant carceral and racial trauma
- Psychosis
- Stimulant use disorder
- Chronically houseless
- Not well-engaged with primary care

Housing as a Social Determinant of Health

- Persons experiencing homelessness have high barriers to receiving primary care
  - Lower access to primary care
  - Difficulty adhering to medications
  - High use of ED and hospital services (vs. primary care)

Assessment and Plan Problem # 1:

Homelessness unspecified (ICD-V60.1) [ICD10-Z59.00]

D[redacted] is unable to engage re: meds or medical issues, as he is focused on surviving while sleeping outside in his wheel chair. [redacted]

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(Kushel, JAMA 2001 & Reid, Vittinghoff, Kushel, Journal of Health Care for the Poor and Underserved, 2008)

A-ICU Models

NS LATEST POPULAR SEARCH THE NEW YORKER

MEDICAL REPORT JANUARY 24, 2011 ISSUE

THE HOT SPOTTERS

Can we lower medical costs by giving the neediest patients better care?

By Atul Gawande

If Camden, New Jersey, becomes the first American community to lower its medical costs, it will have a murder to thank. At nine-fifty on a February night in 2001, a twenty-two-year-old black man was shot while driving his Ford Taurus station wagon through a neighborhood on the edge of the Rutgers University campus. The victim lay motionless in the street beside the open door on the driver's side, as if the car had ejected him. A neighborhood couple, a physical therapist and a volunteer firefighter, approached to see if they could help,

In Camden, New Jersey, one per cent of patients

California Health Care Foundation

OUR WORK THE CHCF BLOG GRANTS INVESTMENTS EVENTS MEDIA SEARCH

PUBLICATION

How Ambulatory Intensive Caring Units Can Reduce Costs and Improve Outcomes

Home Based Primary Care (HBPC)

HBPC

HOME BASED PRIMARY CARE

Hands on Care for Our Veterans

Veterans Health Administration

INDIANA UNIVERSITY

GRACE TEAM CARE™

Original Investigation | Health Care Reform FREE

March 14, 2011

The Effect of Guided Care Teams on the Use of Health Services

Results From a Cluster-Randomized Controlled Trial

Chad Boult, MD, MPH, MBA; Lisa Reider, MHS; Bruce Leff, MD; et al

» Author Affiliations | Article Information

Arch Intern Med. 2011;171(5):460-466. doi:10.1001/archinternmed.2010.540

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Study Setting: Central City Concern's Old Town Clinic

- Federally Qualified Health Center (FQHC) Healthcare for the Homeless program site in Portland, OR
- Integrated primary and behavioral health care, pharmacy, specialty mental health, substance use disorder treatment services
- 5,000+ patients yearly

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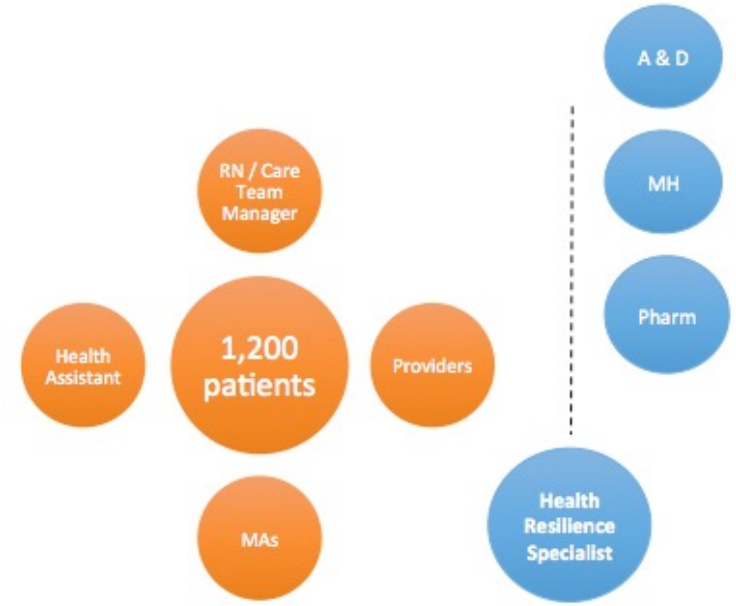
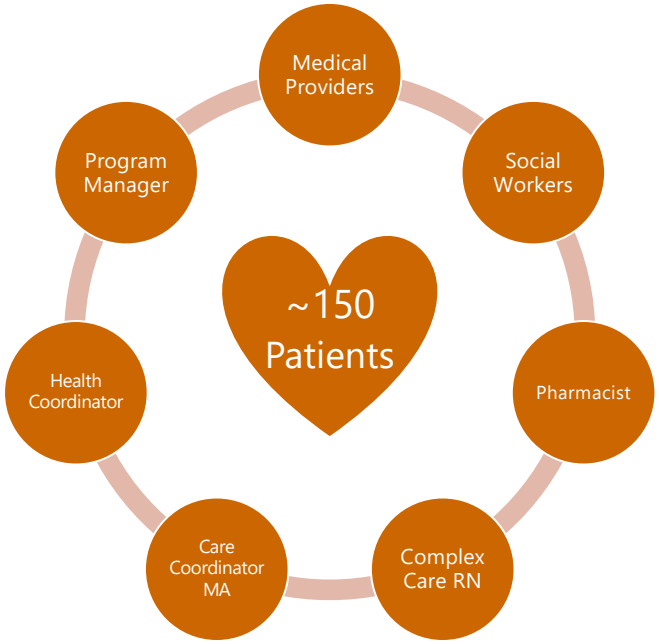
“Usual Care” vs. Summit A-ICU

“Usual Care”



Summit Team



Summit team room

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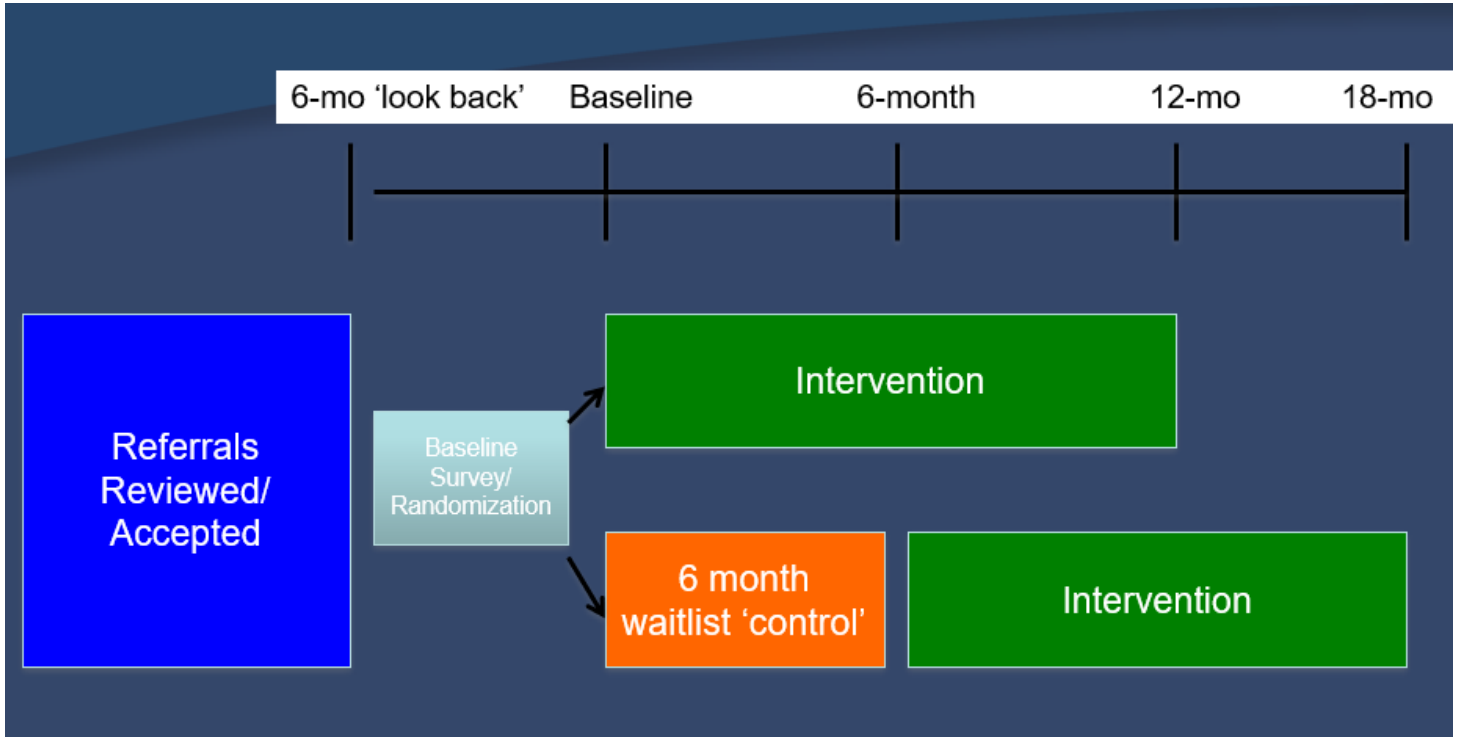
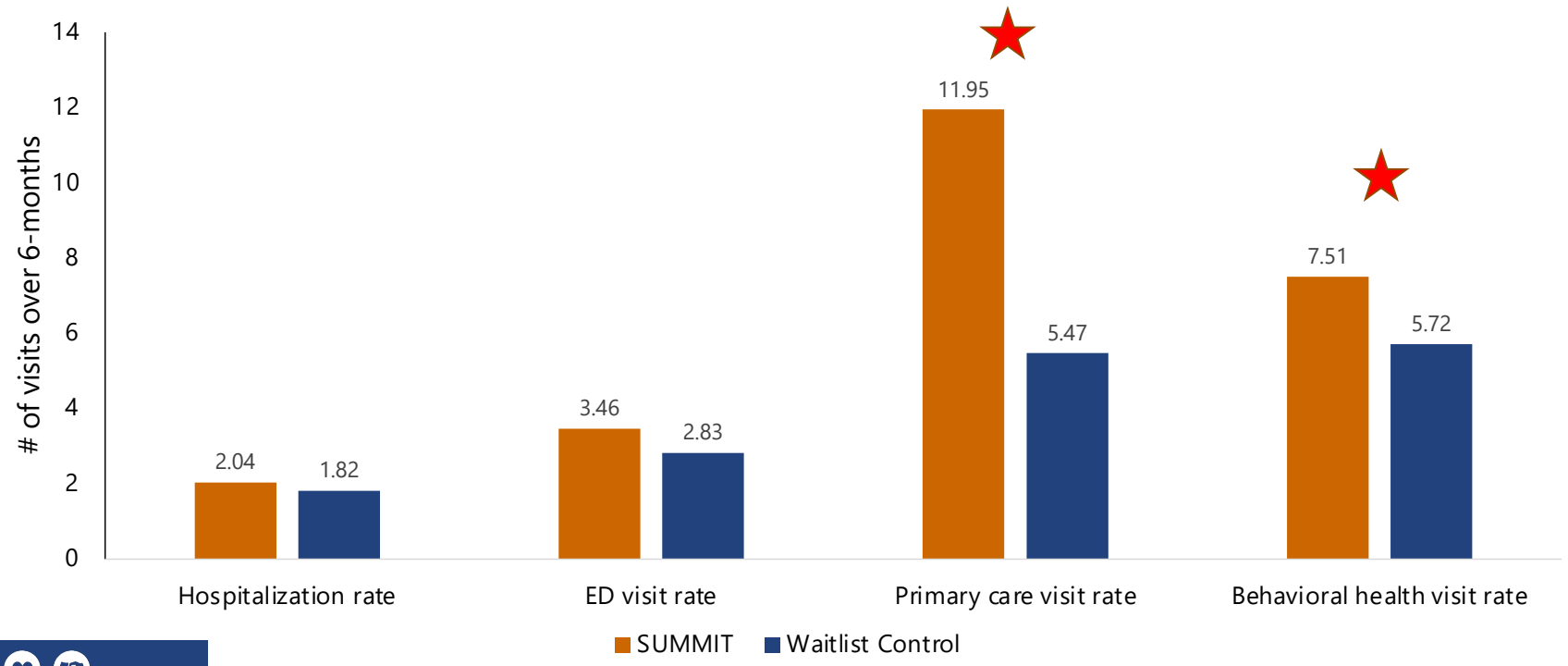
Study Design: Wait-list Control



Mixed Results from SUMMIT Trial



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Research Gaps & Study Objective

- Unclear if A-ICUs can change trajectories for those with stable or unstable housing situations
  - Might inform next steps in improving services, intervention design, etc.

- We assessed how **housing status at baseline** impacted utilization and patient experience outcomes of patients enrolled in Summit, a recently completed trial of an A-ICU care model in an urban healthcare for the homeless site

Primary Predictor:

Housing Instability

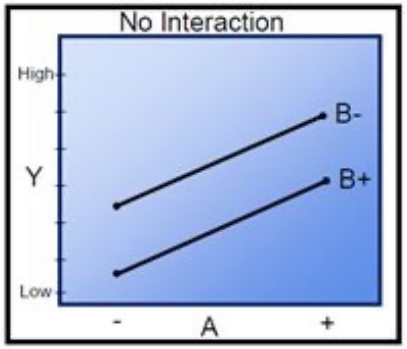
Which of this Describes your Current Residence?	Unstable Housing
Sleeping outside	X
Place not meant for habitation (e.g. car, abandoned building)	X
Shelter	X
Transitional Housing	X
Subsidized alcohol and drug free housing (ADF)	
Market-rate ADF	
Subsidized permanent housing	
Market rate permanent housing	
Staying with friends and family	
Motel/Hotel	X
Residential treatment program	X
Nursing facility or Assisted Living Facility*	X

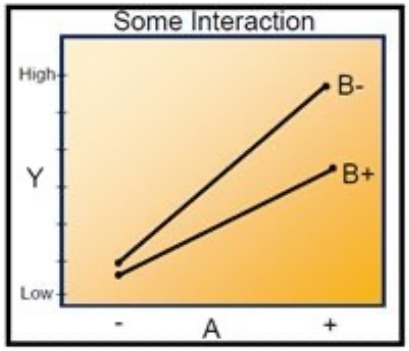
6 Month Hospitalization Rates & Interaction Analyses

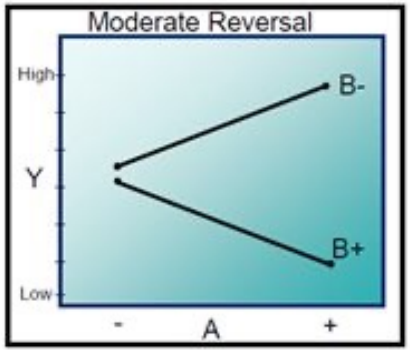
- Used administrative data to calculate 6-month utilization prior and post enrollment in study
- Used a general linear model (regression) analysis to conduct the analysis
- We assessed for interaction between Summit and Unstable Housing (Summit*UnstableHousing) with threshold for significance <0.20

Methods: What is interaction?

- Usually studies report "average" effect of treatment on an outcome
  - Ex: COVID-19 vaccines and AVERAGE OVERALL reduction in hospitalization and serious illness
- But what if certain groups were impacted differently?
  - Ex: Older people had more reductions in hospitalization/serious illness than younger people







"The significance of Interaction Plots in Statistics"
https://www.datasciencecentral.com/the-significance-of-interaction-plots-in-statistics/

Results: Demographics of Summit

Unstably housed people were:

- Younger
- More cognitive impairment
- More active alcohol use

	Total	Stable housing	Unstable housing	p-value
	N=156	N=79	N=77	
Treatment Arm:				0.26
Usual Care	78 (50.0%)	43 (54.4%)	35 (45.5%)	
SUMMIT	78 (50.0%)	36 (45.6%)	42 (54.5%)	
Female	53 (34.9%)	29 (38.2%)	24 (31.6%)	0.39
Age (years)	**55.2 (9.6)**	**56.9 (8.4)**	**53.3 (10.3)**	***0.02**
Cognitive Impairment	**62 (40.3%)**	**25 (32.1%)**	**37 (48.7%)**	***0.04**
Black/African American	20 (12.8%)	9 (11.4%)	11 (14.3%)	0.64
Hispanic/Latino	5 (3.2%)	1 (1.3%)	4 (5.2%)	0.21
Native American/Native Alaskan	20 (12.8%)	9 (11.4%)	11 (14.3%)	0.64
White	120 (76.9%)	63 (79.7%)	57 (74.0%)	0.45
Presence of Opioid Use Disorder	43 (27.6%)	22 (27.8%)	21 (27.3%)	0.94
Current Alcohol Problem	**32 (20.6%)**	**11 (14.1%)**	**21 (27.3%)**	***0.04**
Depression	82 (53.2%)	39 (49.4%)	43 (57.3%)	0.32
Elixhauser AHRQ Index				0.18
<0	58 (38.2%)	29 (36.7%)	29 (39.7%)	
0	4 (2.6%)	0 (0.0%)	4 (5.5%)	
1-4	38 (25.0%)	20 (25.3%)	18 (24.7%)	
>=5	52 (34.2%)	30 (38.0%)	22 (30.1%)	
Hospitalization Rate	2.8 (4.9)	2.2 (3.0)	3.4 (6.2)	0.12
SF-12: Physical Health Composite	27.1 (9.2)	25.8 (9.3)	28.4 (9.0)	0.08

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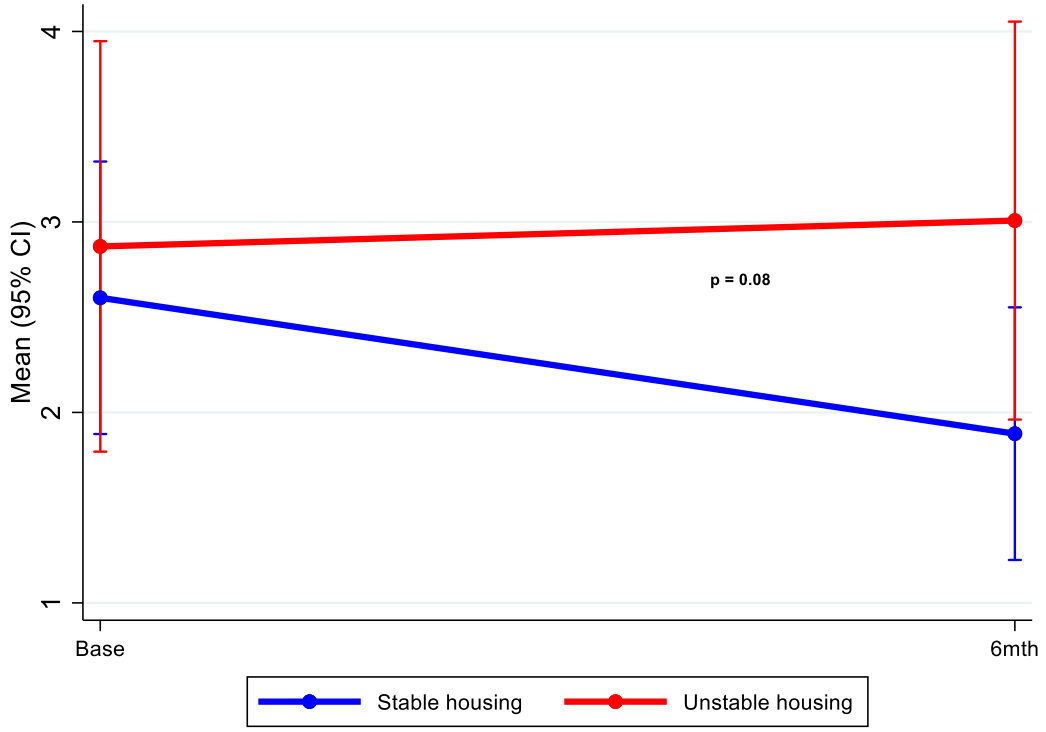
Results: Change in Hospitalization Rates (adjusted for arm)

Patients in usual care, regardless of housing status, had similar hospitalization rates.

Summit patients with unstable housing did not see a significant change in hospitalization rates.

Summit patients with stable housing saw a significant decrease in hospitalizations.



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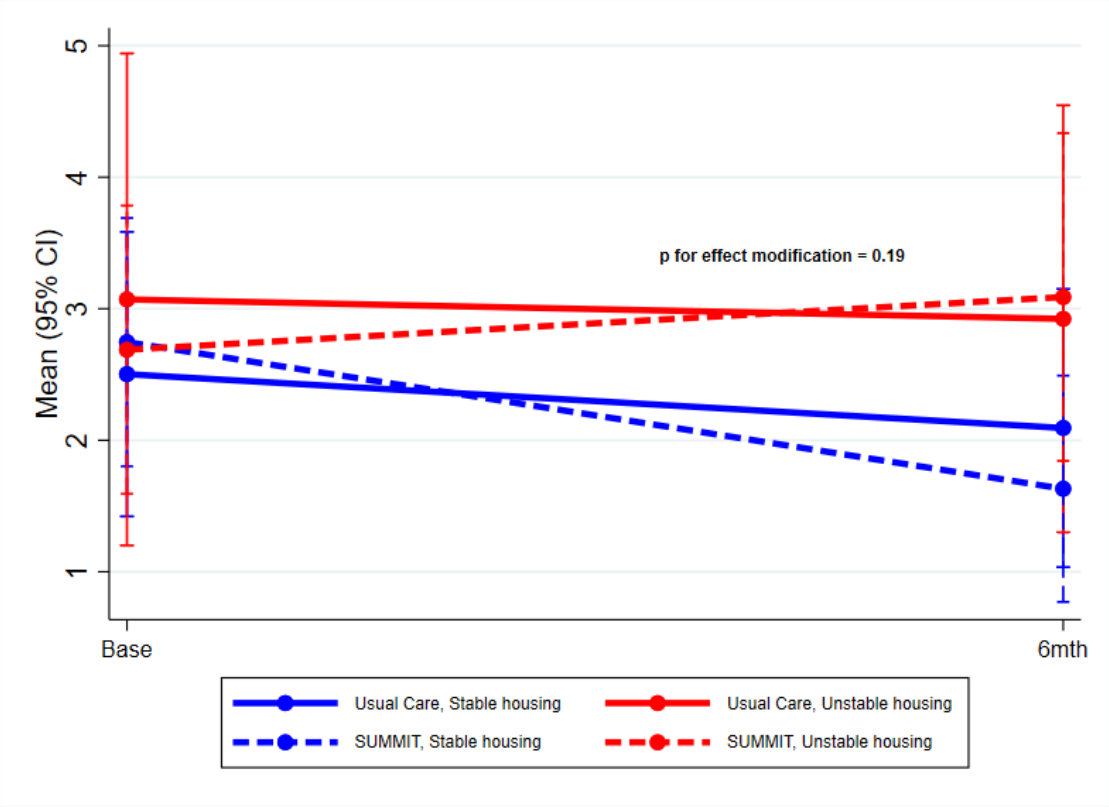
Change in Hospitalization Rates



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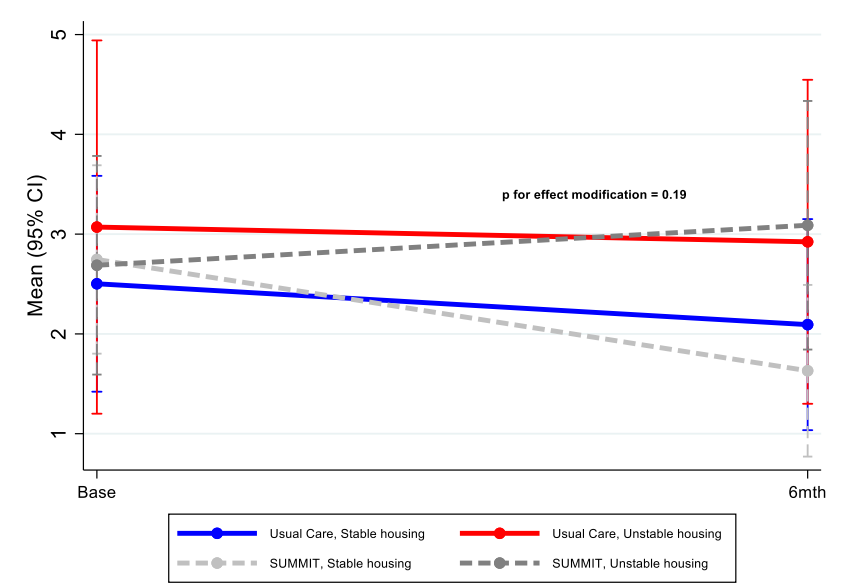

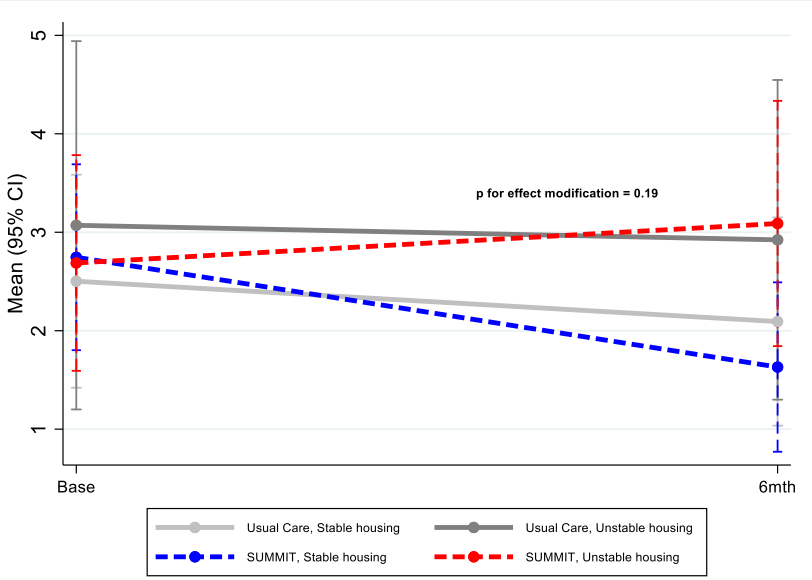

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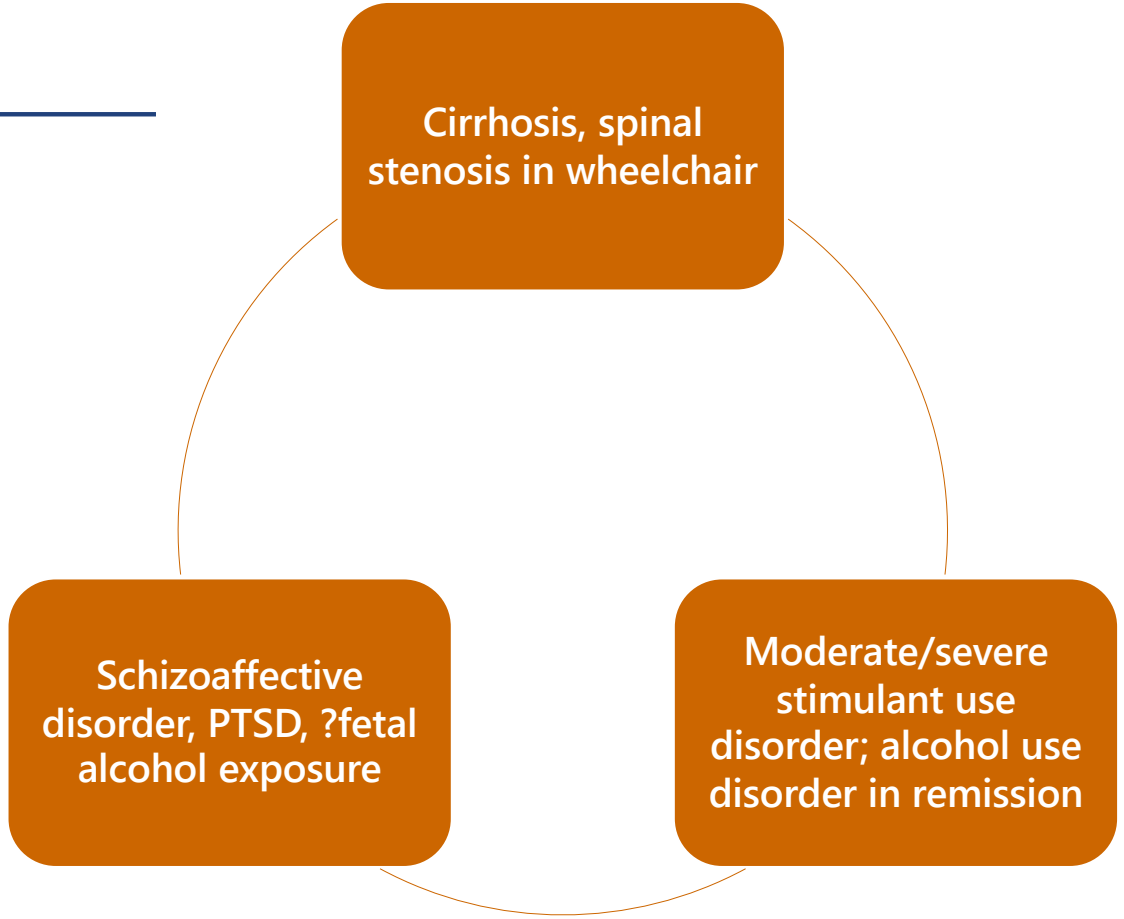
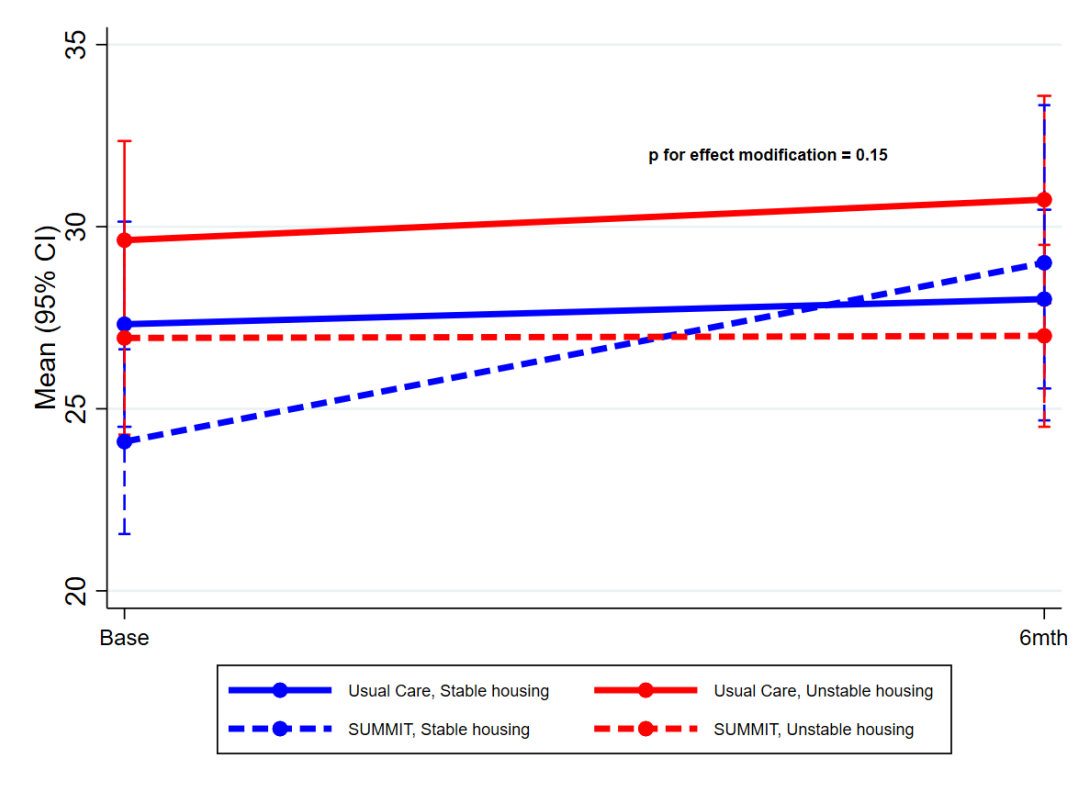
"Velma"

64 y/o woman



SF-12 Change from baseline and 6 months



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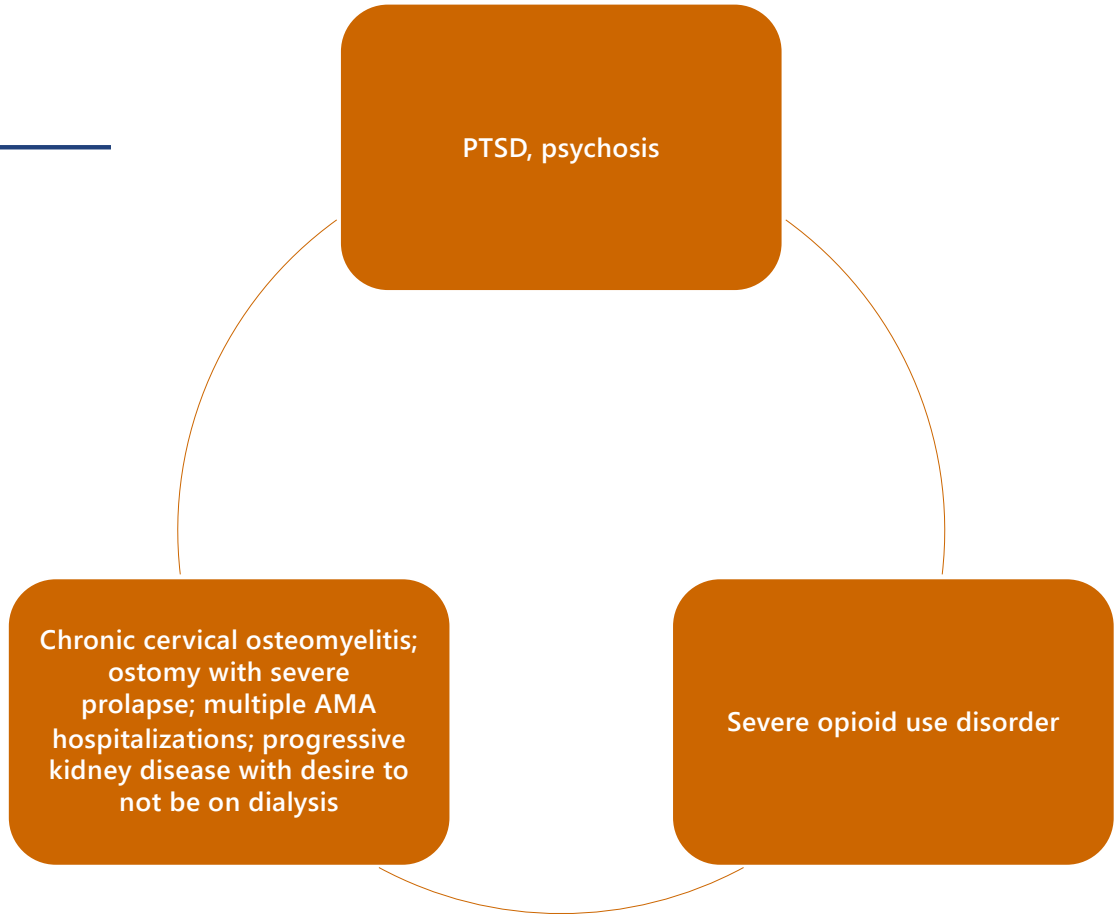
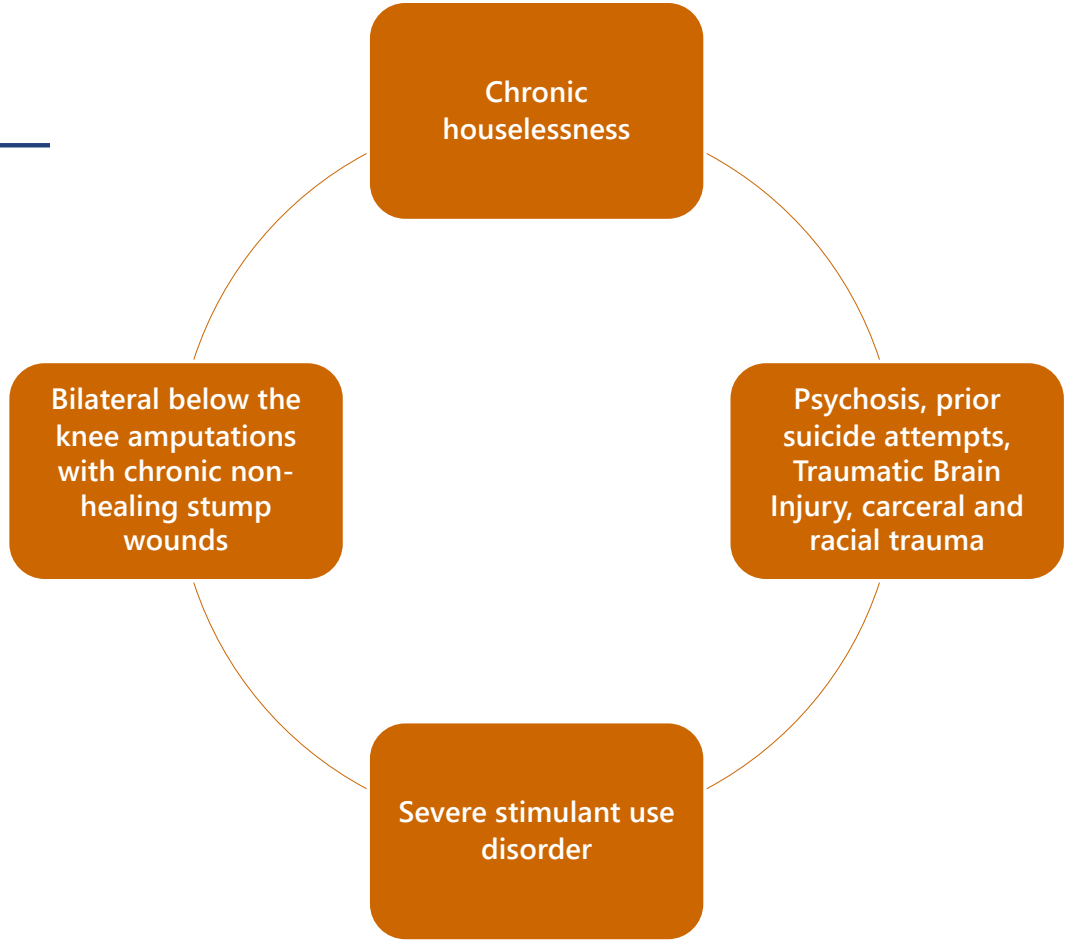
"Wolf"

63 y/o man



"Vegas"

44 y/o man



Conclusions

- We found evidence that housing status modified the impact of Summit AICU on hospitalization outcomes

- Compared to patients who lacked housing immediately prior to enrolling in Summit, patients who were stably housed appeared to experience decreases in 6-month hospitalization rates and improved quality of life

"Housing First" - not just keys

- Velma
  - Housing churn and a lack of training and resources to appropriately care for a complex population
- VVolf
  - Reduced access to appropriate resources even in a housing-first model
- Vegas
  - A total lack of appropriate support combined with worsening mental health and medical conditions resulting in compounding traumas

Implications: Housing First, And…

- Creating *stable* housing for medically complex patients should be prioritized in conjunction with intensive primary care programs to improve outcomes
  - Having **secure housing FIRST** may promote ability to engage with Summit

- May explain some of the results we saw in our trial – **housing is so important** it may override any medical interventions we provide

- Utilization may not be the best short-term metric of care quality for A-ICU teams supporting medically complex patients with unstable housing (sometimes this is needed care)

Acknowledgements

- We would like to acknowledge the staff, team members, and patients at Central City Concern & Old Town Clinic

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Questions?

- Eileen Vinton
  - eileen.vinton@ccconcern.org
- Brian Chan, MD, MPH
  - chanbri@ohsu.org


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Housing as a Social Determinant of Health

- Persons experiencing homelessness have high barriers to receiving primary care
  - Lower access to primary care
  - Difficulty adhering to medications
  - High use of ED and hospital services (vs. primary care)

Assessment and Plan Problem # 1:

Homelessness unspecified (ICD-V60.1) [ICD10-Z59.00]

D[redacted] is unable to engage re: meds or medical issues, as he is focused on surviving while sleeping outside in his wheel chair. Summit SW and ADS worker met with him today and he has HLOC pending. As of Friday he will get a hotel room to stay in until housing is secured.
-gave patient a hop card for bus passes

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(Kushel, JAMA 2001 & Reid, Vittinghoff, Kushel, Journal of Health Care for the Poor and Underserved, 2008)

Limitations

- Study was not powered to detect significant differences in primary outcome between subgroup
- Definitions of “unstable housing” vary – welcome input from this group on how we should measure and assess unstable housing
- Other factors might explain differences seen between groups (confounding)
- Single site experience in a well-resourced HCH clinic

Implications

- May explain some of the "negative" results we are seeing with intensive primary care interventions – **housing is so important** it may override any medical interventions we can provide
- Having **secure housing FIRST** may promote ability to engage with Summit

	Unstable Housing			Stable Housing			X^2_1; p-value for three-way interaction
	SUMMIT	Usual Care	SUMMIT – Usual Care	SUMMIT	Usual Care	SUMMIT – Usual Care	
Outcomes	WG Change	WG Change	BG Change (95% CI)	WG Change	WG Change	BG Change (95% CI)	
Hospitalization Rates	0.40 (0.66)	-0.15 (0.43)	0.55 (-0.99, 2.09)	-1.12 (0.34)**	-0.41 (0.28)	-0.71 (-1.58, 0.17)	1.73; 0.19
Behavioral Health Visits	4.02 (2.53)	0.42 (0.81)	3.60 (-1.60, 8.81)	7.23 (2.02)**	-1.44 (1.47)	8.68 (3.79, 13.57)	1.91; 0.17
SF-12: Physical Health Composite	0.06 (1.67)	1.11 (1.38)	-1.06 (-5.30, 3.19)	4.91 (2.21)*	0.69 (1.52)	4.22 (-1.03, 9.48)	2.12; 0.15
SF-12: Physical functioning	-2.42 (1.93)	1.48 (1.79)	-3.90 (-9.06, 1.26)	4.18 (2.12)*	-0.12	4.20 (-1.40, 9.81)	3.99; 0.046
SF-12: Emotional Role limitation	0.49 (2.78)	7.22 (3.40)*	-6.73 (-15.33, 1.88)	3.16 (2.74)	-3.92 (2.46)	7.08 (-0.15, 14.31)	5.72; 0.02

Case Study Formative Analysis

- After quantitative analysis conducted we met with team to describe findings and assess contextual factors about how housing impacted care delivery and outcomes
- Probed for details using stories of Summit successes and cases where team struggled to meet needs of unhoused patients
- Identified 3 examples of Summit patients

Methods

- Referral Criteria
  - Connected to primary care
  - 1+ hospitalizations
  - 2+ uncontrolled medical conditions **or** 1+ medical and a substance use or mental health diagnosis
- Detailed baseline questionnaires
  - Assessed psychosocial measures, including housing status at time of survey and ever
- Following survey, patients were randomized to start with Summit or remain with their existing team for 6 months, then join Summit

Description of Summit A-ICU: Staffing

- Co-located multidisciplinary team (goal 200 patients)
  - 2 addiction board certified physicians (1 FTE)
  - 2 care coordinator MAs (2.0 FTE)
  - 2 behavioral health outreach workers (2.0 FTE)
  - 1 complex care RN (1.0 FTE)
  - 1 clinical pharmacist (1.0 FTE)
  - 1 team manager (1.0 FTE)
  - 3 QI/research (1.0 FTE)

Summit Core Activities

- Comprehensive patient assessment w/ social work, physician, and care coordinator (120 minutes)
- Ability to conduct outreach visits
- Flexible appointment scheduling/"walk-in" support
- Multi-disciplinary weekly panel management
- Co-appointments with physician
- Transitions of care protocols for admitted patients

Referral Criteria for Summit A-ICU

- >1 hospitalization in last 6 months
- 1+ of following medical conditions:
  - CKD III+
  - CHF
  - COPD group C/D
  - Diabetes with A1c >8
  - ESLD
  - Osteomyelitis/severe soft tissue infection
- Mental health disease
- Substance use disorder
- Multiple missed appointments