Unhealthy Alcohol Use:
Assessing Multi-Level Factors and Practices Related to Treatment Receipt

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Unhealthy alcohol use is consequential and on the rise

- Links to **liver disease, cancer, heart disease, acute conditions**, etc.

- **178,000** annual alcohol-attributable deaths in the U.S. in 2020-2021 (CDC)
  - **29% increase** from 2016-2017

- **11%** of adults reported indicators of past-year alcohol use disorder (SAMHSA)

Treatment for unhealthy alcohol use is severely underutilized

- **Less than 20%** of adults with alcohol use disorder report ever receiving treatment (Grant, et al.)

- **8%** of adults with alcohol use disorder received treatment in **past year** (SAMHSA, 2023)

- Treatment often sought for **alcohol-related medical problems** vs. alcohol use

Conceptual Framework:
Multi-Level Health Outcomes Framework (MHOF)
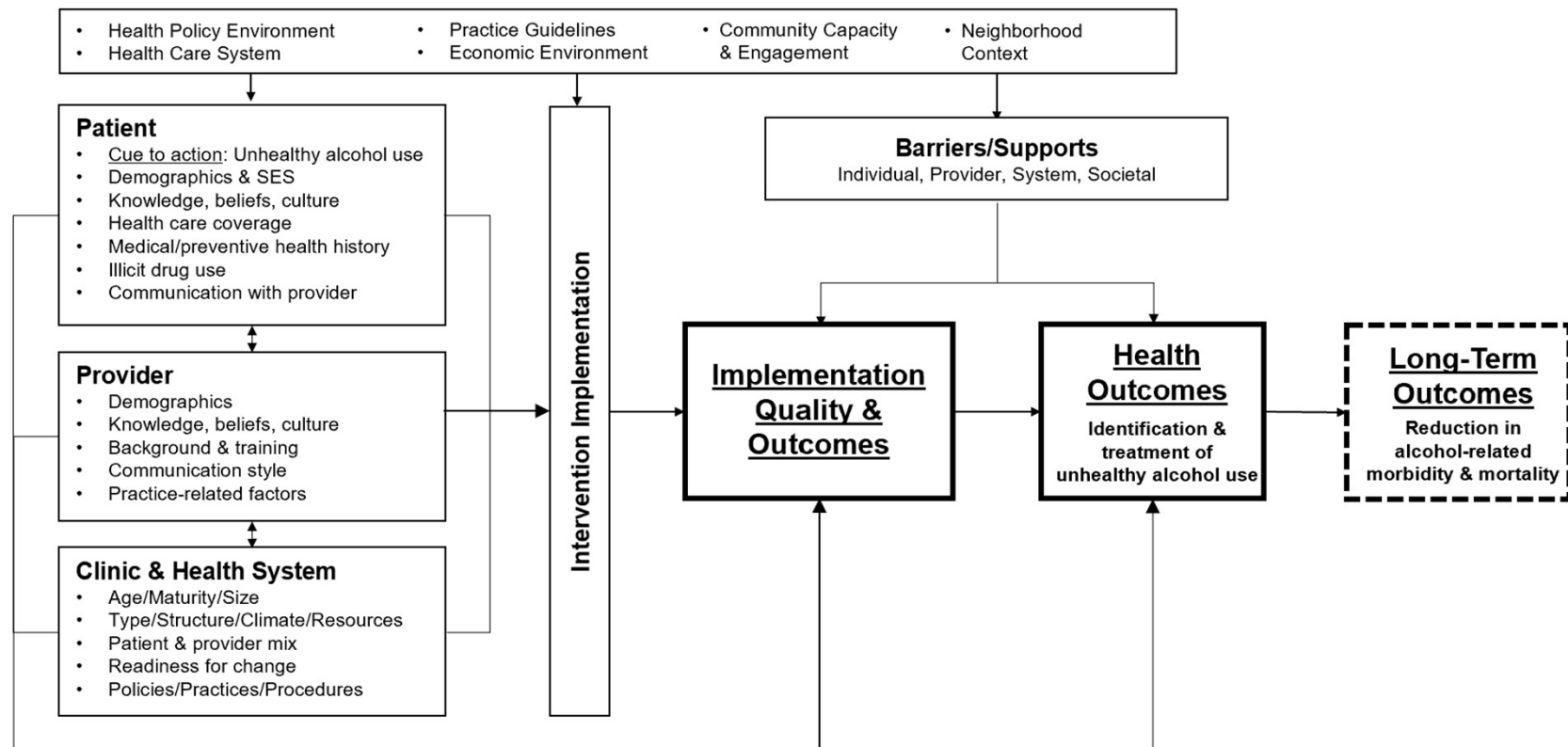
Adapted from Bastani, et al., UCLA, 1990-2022.

US Guidelines for Alcohol Use − Standard Drink

12 fl oz of regular beer = 8–10 fl oz of malt liquor or flavored malt beverages such as hard seltzer (shown in a 12 oz glass) = 5 fl oz of table wine = 3–4 fl oz of fortified wine (such as sherry or port; 3.5 oz shown) = 2–3 fl oz of cordial, liqueur, or aperitif (2.5 oz shown) = 1.5 fl oz of brandy or cognac (a single jigger) = 1.5 fl oz shot of distilled spirits (gin, rum, tequila, vodka, whiskey, etc.)

about 5% alcohol | about 7% alcohol | about 12% alcohol | about 17% alcohol | about 24% alcohol | about 40% alcohol | about 40% alcohol

Each drink shown above represents one U.S. standard drink and has an equivalent amount (0.6 fluid ounces) of "pure" ethanol.

Source: National Institute on Alcohol Abuse and Alcoholism (NIAAA)

US Guidelines for Alcohol Use - Current

Not exceeding guidelines for moderate alcohol use

Exceeding alcohol guidelines

Binge drinking

Heavy alcohol use

	Not exceeding guidelines	Exceeding guidelines	Binge drinking	Heavy alcohol use	
Women	<8 weekly or <4 daily drinks	8+ weekly or 4+ daily drinks	4+ drinks within 2 hours	4+ drinks within 2 hours	NIAAA / SAMHSA definitions
Men	<15 weekly or <5 daily drinks	15+ weekly or 5+ daily drinks	5+ drinks within 2 hours	5+ drinks within 2 hours	

5+ times per month

Alcohol Use Disorder: Experience of ≥ 2 of 11 problems as a result of alcohol use (DSM-5)

US Guidelines for Alcohol Use - Forthcoming
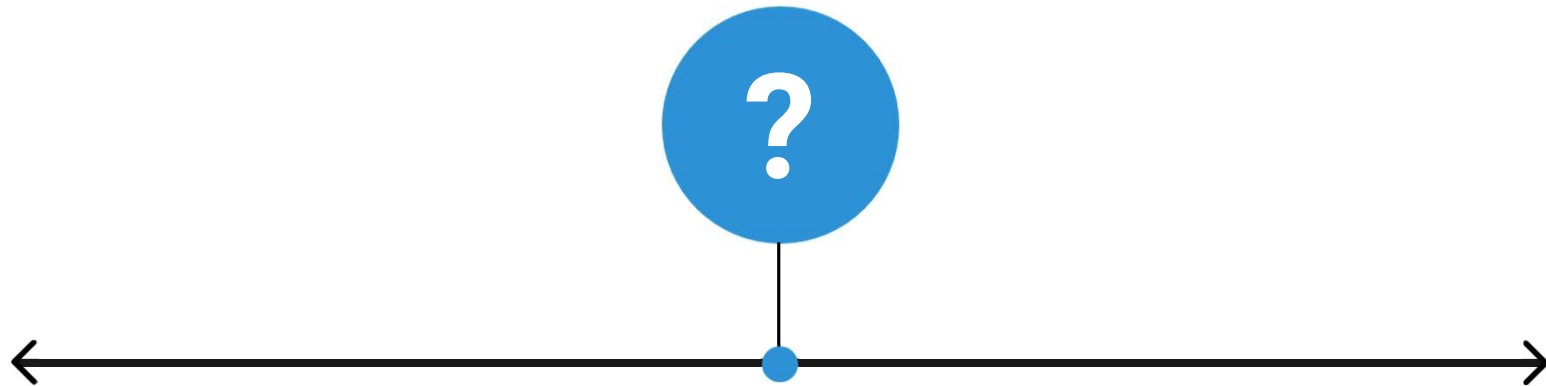
- HHS & USDA will update US guidelines for alcohol use in 2025

- Independent panel of scientists currently reviewing evidence to inform development of guidelines

Study 1:
Factors Related to Receipt of Help for Alcohol Use:
Extending the Focus of Treatment to the Continuum of Unhealthy Alcohol Use

Multi-Level Health Outcomes Framework. Adapted from Bastani, et al., UCLA, 1990-2022.

Study team / co-authors: Nadereh Pourat, PhD, Elizabeth Bromley, MD, PhD, Rajat Simhan, MBA, MS, CHFP, PMP, Roshan Bastani, PhD, Beth Glenn, PhD
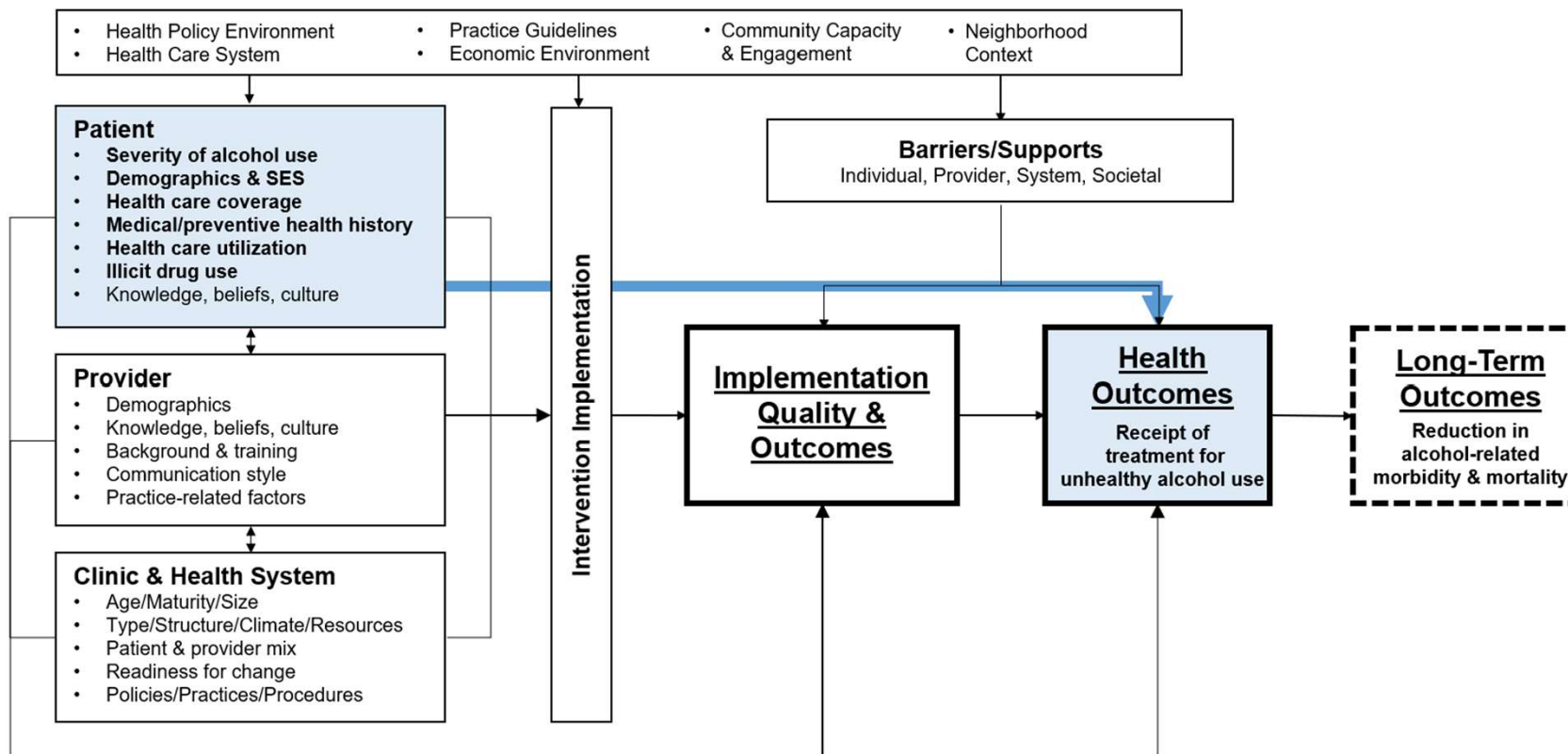
Data Source: NESARC-III

National Institute on Alcohol Abuse and Alcoholism

National Epidemiologic Survey on Alcohol and Related Conditions-III
2012-2013

36,309

non-institutionalized adults in U.S. completed **face-to-face, cross-sectional** survey

60.1%

response rate, with **population-based sampling**, and **oversampling** of specific groups

SUBSTANCE USE DISORDERS

assessed via **DSM-5** (Diagnostic and Statistical Manual of Mental Disorders, 5th Edition) criteria

US Guidelines for Alcohol Use - Current

Regular (≥ monthly) engagement

Not exceeding guidelines for moderate alcohol use

Exceeding alcohol guidelines

Binge drinking

Heavy alcohol use

	Not exceeding	Exceeding	Binge	Heavy
Women	<8 weekly or <4 daily drinks	8+ weekly or 4+ daily drinks	4+ drinks within 2 hours	4+ drinks within 2 hours
Men	<15 weekly or <5 daily drinks	15+ weekly or 5+ daily drinks	5+ drinks within 2 hours	5+ drinks within 2 hours

5+ times per month

NIAAA / SAMHSA definitions
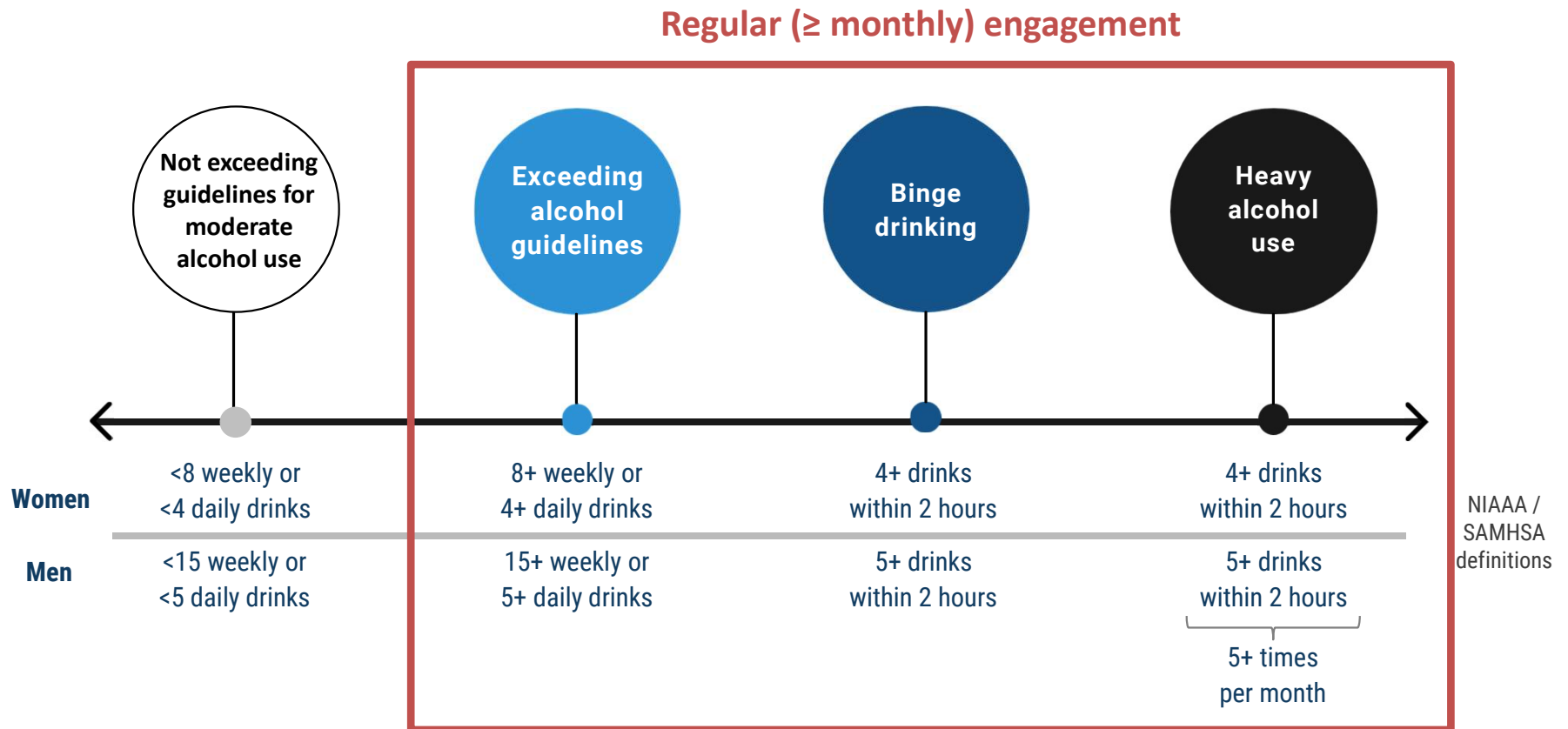
Alcohol Use Disorder: Experience of ≥ 2 of 11 problems as a result of alcohol use (DSM-5)

Factors Related to Receipt of Help for Alcohol Use:
Extending the Focus of Treatment to the Continuum of Unhealthy Alcohol Use

Sample: n=6,467 adults regularly exceeding U.S. alcohol guidelines, engaging in binge drinking, or heavy drinking

Research Question	Analysis
What are the characteristics of individuals who regularly engage in unhealthy alcohol use, and how do characteristics differ between different patterns of unhealthy alcohol use?	Weighted descriptive and bivariate analysis
What are the individual-level factors associated with receiving help* for unhealthy alcohol use in the prior year?	Weighted multivariable logistic regression

*Receipt of help from wide range of sources: support groups (e.g., AA), medical provider or clinic, rehabilitation program, detoxification clinic, ER, inpatient services, social services, religious organization, therapeutic community, crisis center, employee assistance program

Results:
Unhealthy Alcohol Use

17% (projected 40 million U.S. adults)

regularly engaged in unhealthy alcohol use

76% regularly exceeded US guidelines

without meeting criteria for binge drinking (14%)
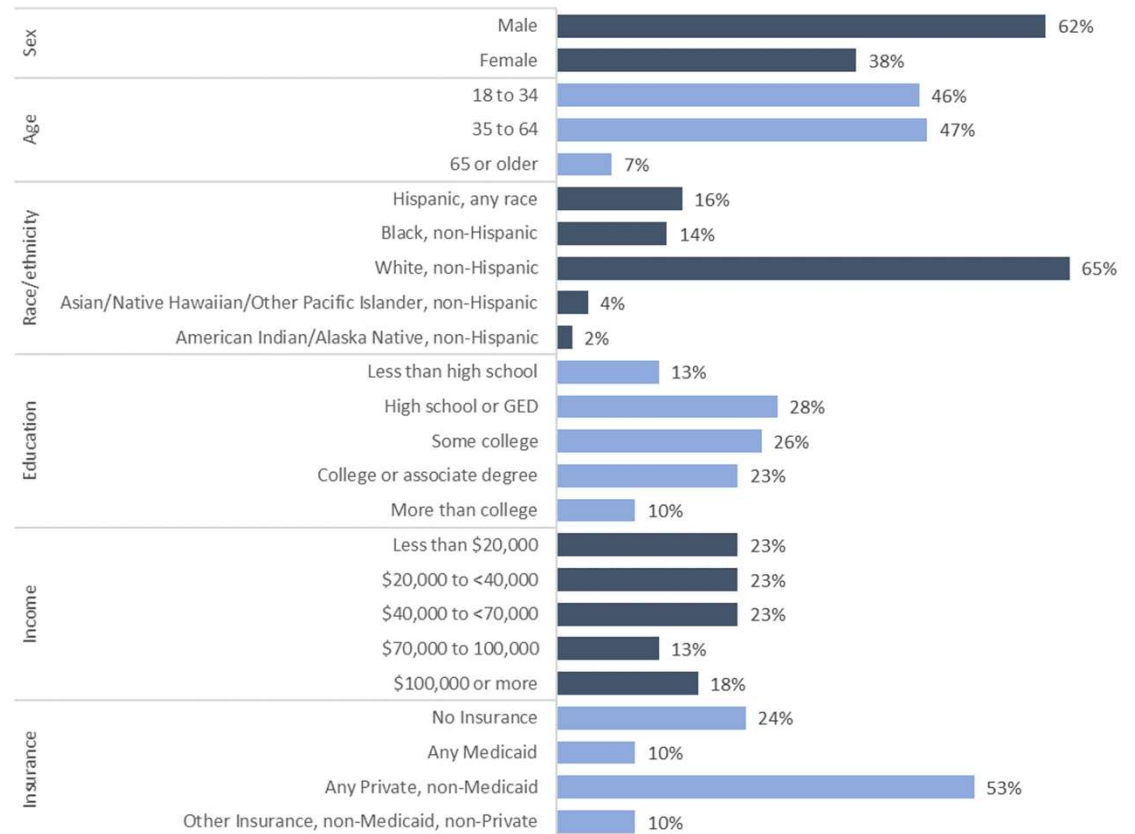or heavy alcohol use (11%)

53% met AUD criteria

with increasing prevalence from those regularly
exceeding guidelines (48%) to heavy alcohol use (80%)

Results:
Unhealthy Alcohol Use

Majority of U.S. adults regularly engaged in unhealthy alcohol use were:

- Male
- Less than age 65
- White, non-Hispanic
- High school educational attainment
- Household income < $70,000
- Privately insured

Results:
Alcohol-Related Treatment

5% (Over 2 million U.S. adults projected)

reported receiving help for alcohol use in past year
- 4% among those exceeding guidelines to 16% among those regularly engaging in heavy alcohol use

Factors associated with lower receipt of help

Race/ethnicity (compared to White, non-Hispanic individuals)
- Black or African American individuals (OR: 0.68)
- Asian, Native Hawaiian, Other Pacific Islander individuals (OR: 0.40)

Factors associated with greater receipt of help

- Age 35 to 64 (OR: 1.48, ref: age 18 to 34)
- More than college education (OR: 2.80, ref: less than high school)
- Medicaid (OR: 2.08, ref: no insurance)
- Liver disease (OR: 7.57, ref: no liver disease)
- Acute healthcare utilization (OR: 1.56, ref: none)
- Number of alcohol-related problems (OR: 1.46)

Challenges

1 **Availability of comprehensive data sources on alcohol use**

2 **Lack of direct measure of receipt of help linked to alcohol use data**

3 **Variation in definitions and thresholds for unhealthy alcohol use**

4 **Low prevalence of receipt of help across different sources**

Study 2:
Assessing the Relationship Between Behavioral Health Integration and Alcohol-related Treatment and Outcomes
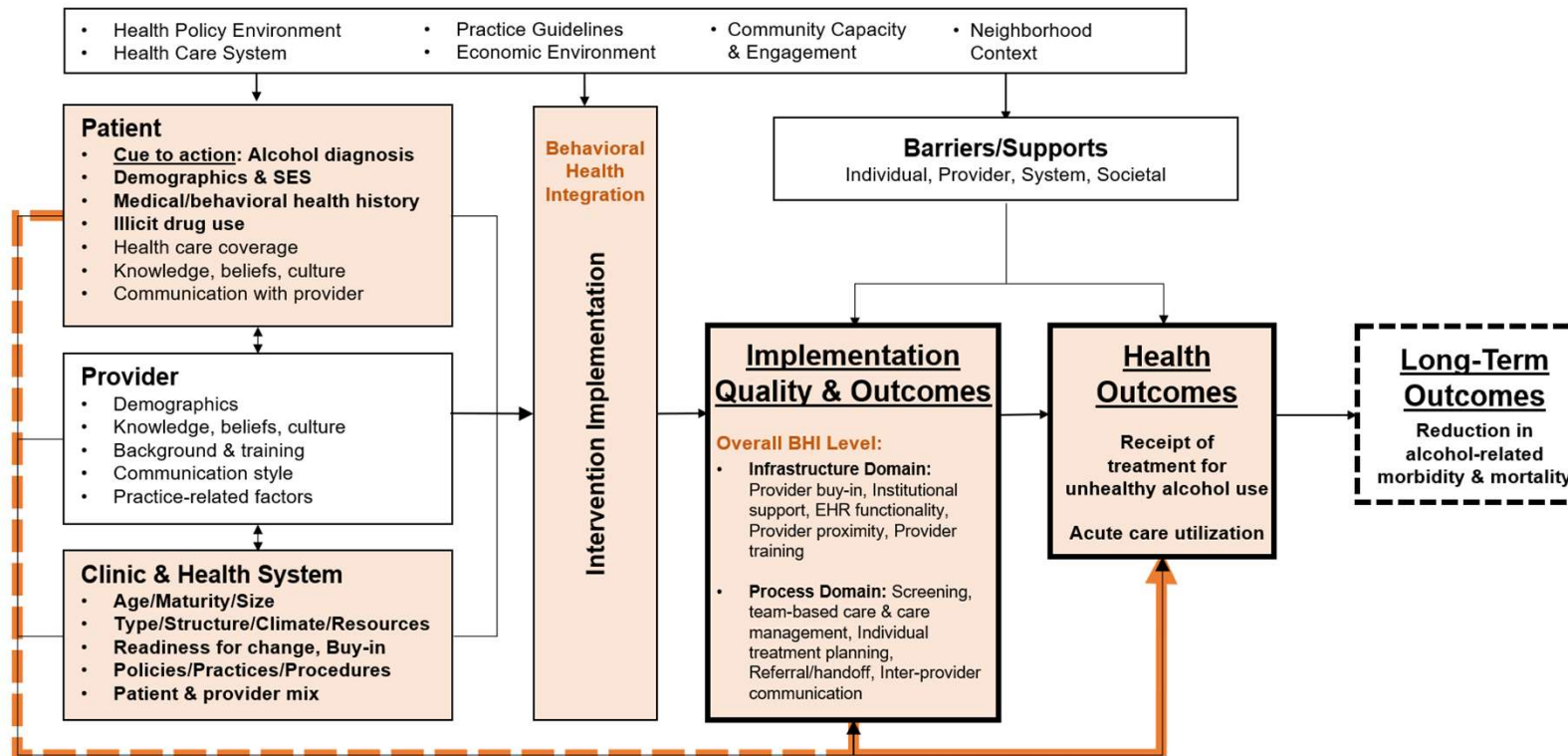
Multi-Level Health Outcomes Framework. Adapted from Bastani, et al., UCLA, 1990-2022.

Study team / co-authors: Nadereh Pourat, PhD, Elizabeth Bromley, MD, PhD, Rajat Simhan, MBA, MS, CHFP, PMP, Weihao Zhou, MS, Xiao Chen, PhD, Roshan Bastani, PhD, Beth Glenn, PhD

Methods

Data Source: Medicaid claims from 17 designated public hospitals obtained from program evaluation of Public Hospital Redesign and Incentives in Medicaid (PRIME) Program (Pourat, et al.)

Sample: n=6,196 patients with index alcohol-related diagnosis

Research Question	Analysis
What is the relationship between BHI level in the PRIME program with *receipt of alcohol-related care*?	Multilevel logistic regression, controlling for patient-level covariates
What is the relationship between BHI level in the PRIME program with *utilization of acute care*?	

Timeline of Data Collection

Mar 2019 - Feb 2020
Patient-level
alcohol-related
services captured via
Medicaid claims data

May 2018 - Feb 2019
Index
alcohol-related
diagnosis

| 2016 | 2017 | 2018 | 2019 | 2020 |

Program
start

April - May 2018
Hospital-level
Behavioral Health Integration
measured via
Key Informant Survey

COVID-19 pandemic
disrupts care &
program ends

Behavioral Health Integration (BHI)
Primary Independent Variable

1 Minimal collaboration

2 Basic collaboration at a distance

3 Basic collaboration on-site

4 Close collaboration on-site

5 Close collaboration approaching integrated practice

6 Full collaboration in integrated practice

PRIMARY CARE — Integrated Care — BEHAVIORAL HEALTH CARE

BHI

Infrastructure

PROVIDER BUY-IN	PCPs and BHPs are involved in planning for, are supportive of, and are champions of BHI within the organization.
INSTITUTIONAL SUPPORT	BHI is prioritized, integrated into the mission, and supported by resources and personnel time.
EHR INTEGRATION & FUNCTIONALITY	There is a single EHR with shared PC and BH records that supports care coordination, panel management, and decision support.
PROXIMITY OF PCPS & BHPS	PCPs and BHPs (i.e., psychiatrists, licensed & unlicensed BHPs) provide care within the same primary care settings.
PROVIDER TRAINING	Providers receive regular training in team-based care, behavioral health screening and referral protocols, warm handoffs, and motivational interviewing.

Process

SCREENING PRACTICES	There is systematic use, monitoring, and feedback on screening for depression, anxiety, and substance use within primary and emergency care settings.
TEAM-BASED CARE & CARE MANAGEMENT	PCPs and BHPs utilize processes for case management, motivational interviewing, medication-assisted treatment, and panel management for patients with behavioral health conditions.
USE & DISSEMINATION OF INDIVIDUALIZED TREATMENT PLAN	Joint individualized treatment plans are developed by PCPs and BHPs, shared with patients, and include non-medical interventions.
REFERRAL METHODS & MONITORING	There is systematic use, monitoring, and feedback on referrals and warm handoffs for patients with behavioral health needs in primary and emergency settings.
INTER-PROVIDER COMMUNICATION & MEETINGS	PCPs and BHPs regularly engage in pre-visit planning, case conferences, quality improvement planning, and formal and informal meetings.

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Source: Pourat N, Tieu L, Martinez AE. Measuring Behavioral Health Integration in Primary Care. Popul Health Manag. 2022 Dec;25(6):721-728.

Results: Medicaid Claims Data

Patient Characteristics

Among 6,196 patients with an index alcohol-related diagnosis:

68%
Male, racial/ethnic minority
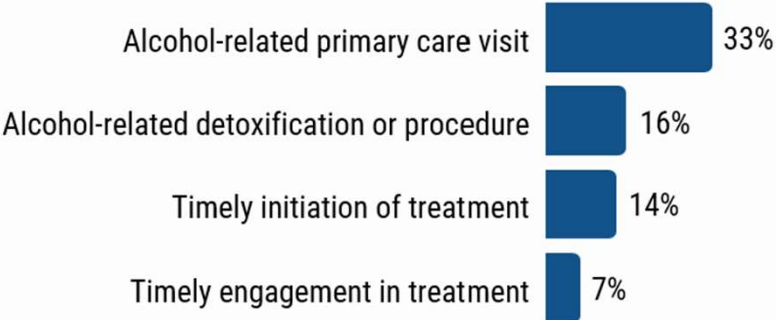
30%
Non-alcohol liver disease diagnosis
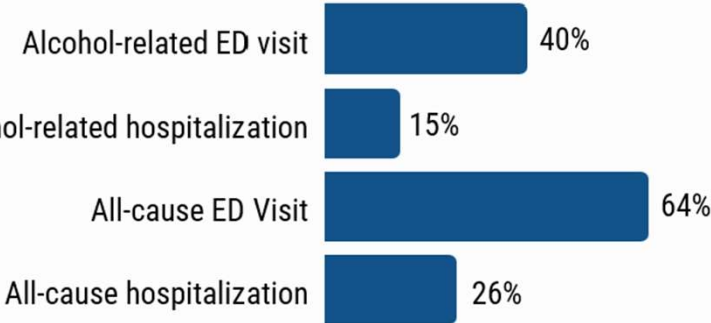
18%
Preferred language other than English

33%
Non-alcohol substance use diagnosis

Outcomes

Appropriate Care Outcomes

Outcome	
Alcohol-related primary care visit	33%
Alcohol-related detoxification or procedure	16%
Timely initiation of treatment	14%
Timely engagement in treatment	7%

Acute Care Outcomes

Outcome	
Alcohol-related ED visit	40%
Alcohol-related hospitalization	15%
All-cause ED Visit	64%
All-cause hospitalization	26%

BHI Level

Infrastructure

- Provider buy-in
- Institutional support
- EHR integration & functionality
- Proximity of PCPs and BHPs
- Provider training

Process

- Screening practices
- Team-based care & care management
- Use & dissemination of individualized treatment plan
- Referral methods & monitoring
- Inter-provider communication

Results: BHI Level and Outcomes

Overall BHI Level

was *not associated* with receipt of appropriate care outcomes (PC visit, detox/procedure, initiation, engagement), but was associated with higher likelihood of all-cause hospitalization (OR: 1.22, 95% CI 1.01 - 1.48)

BHI Infrastructure Domain

was associated with greater odds of alcohol-related detoxification or procedure (OR: 1.86, 95% CI 1.14 - 3.05) and all-cause hospitalization (OR: 1.25, 95% CI 1.01 - 1.55)

BHI Process Domain

was *not associated* with receipt of appropriate care or acute care outcomes

Results: BHI Themes and Outcomes

BHI Theme	Alcohol-related Primary Care Visit	Alcohol-related Detoxification or Procedure	Timely Initiation of Treatment	Timely Engagement in Treatment	Alcohol-related ED Visit	Alcohol-related Hospitalization	All-cause ED Visit	All-cause Hospitalization
Provider Buy-in		+	+					
Institutional Support								
EHR Integration & Functionality	+					+		
Proximity of PCPs and BHPs		+						
Provider Training								
Screening Processes								
Team-Based Care & Care Management	+							
Use and Dissemination of Individualized Treatment Plan								
Referral Processes								
Inter-provider Communication							+	+

Challenges

1 **Burden of collecting organizational data**

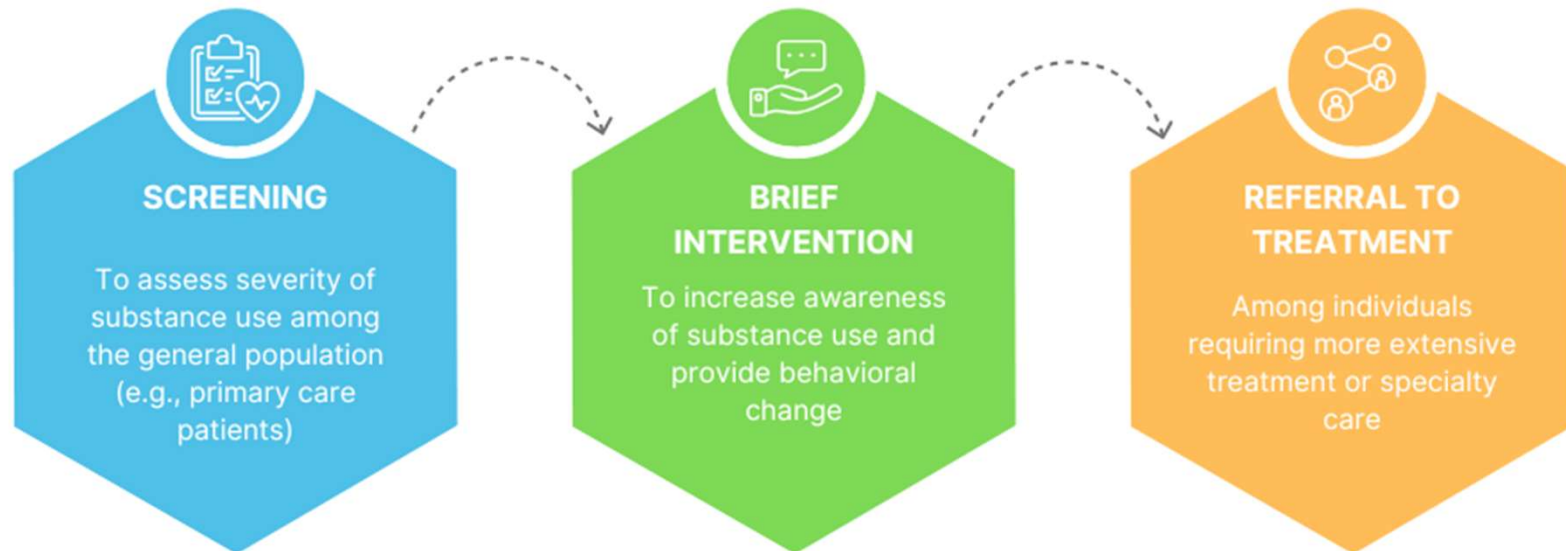**2** **Multi-component intervention within multi-component program**

3 **Claims data subject to variability in documentation and billing**

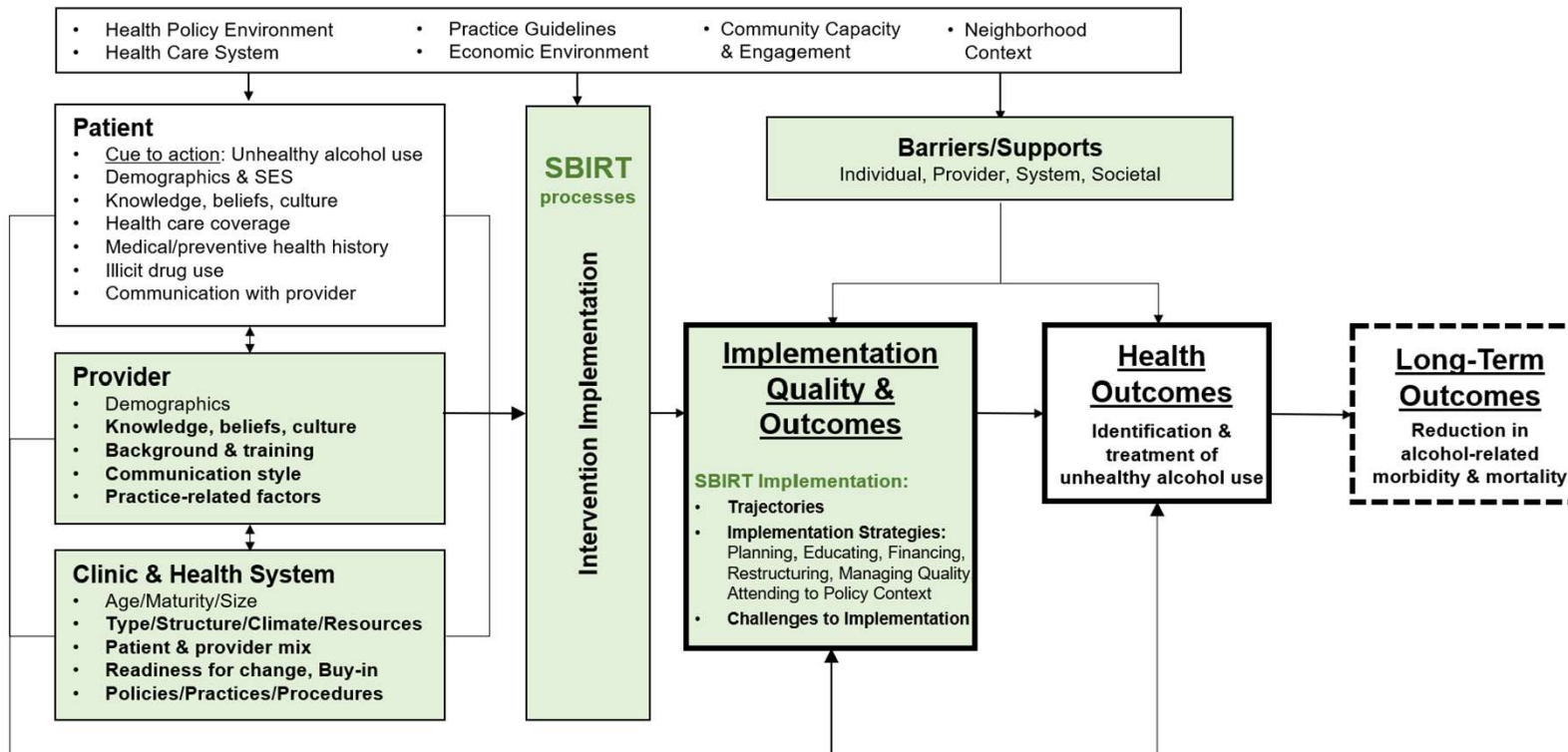**4** **Analysis of hospital-level influences restricted to program participants**

Screening, Brief Intervention, Referral to Treatment (SBIRT)

SCREENING

To assess severity of substance use among the general population (e.g., primary care patients)

BRIEF INTERVENTION

To increase awareness of substance use and provide behavioral change

REFERRAL TO TREATMENT

Among individuals requiring more extensive treatment or specialty care

- Evidence that SBIRT can reduce alcohol and drug use, promote abstinence
- USPSTF recommends screening and behavioral counseling for alcohol and drug use in primary care settings (B recommendation)

Study 3
Identifying Strategies and Trajectories in Implementing Screening, Brief Intervention, and Referral to Treatment (SBIRT) among Public Hospitals

Multi-Level Health Outcomes Framework. Adapted from Bastani, et al., UCLA, 1990-2022.

Study team / co-authors: Elizabeth Bromley, MD, PhD, Rajat Simhan, MBA, MS, CHFP, PMP, Roshan Bastani, PhD, Beth Glenn, PhD, Nadereh Pourat, PhD

Methods

Data Source:

Bi-annual narrative reports from key informants in 22 public hospitals participating in PRIME obtained from PRIME program evaluation (Pourat, et al.), 2015-2020

Research Question	Analysis
What were the *trajectories of SBIRT implementation* within primary care settings in public hospitals participating in PRIME?	Assessment of SBIRT status at the end of each year of implementation
What *strategies and challenges* were experienced by hospitals in implementing SBIRT systematically in primary care settings?	Template and content analysis

Results: Trajectories of SBIRT Implementation
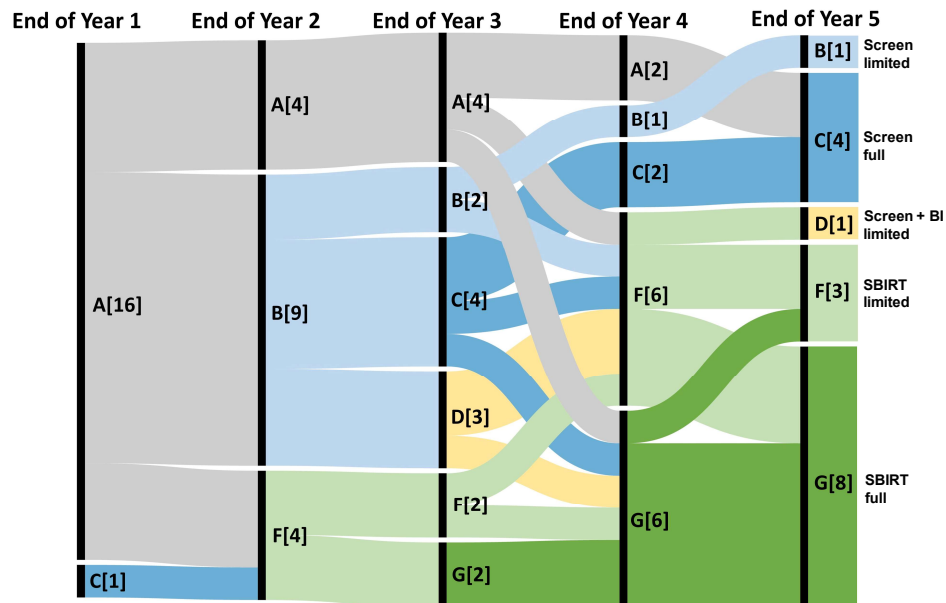
Designated Public Hospitals, n=17
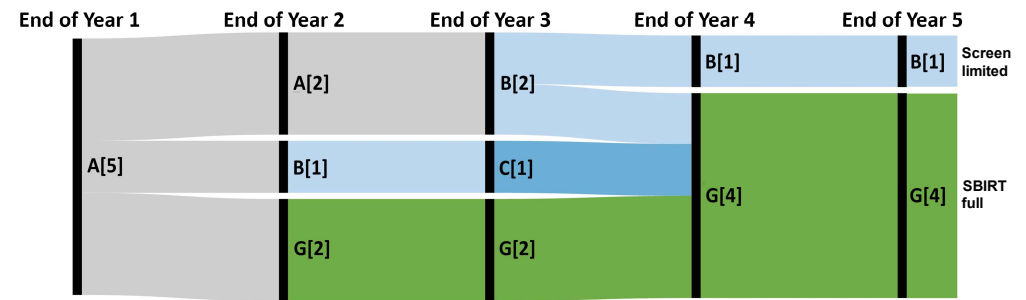
District and Municipal Public Hospitals, n=5

Legend:

A No standardized SBIRT protocol

B Screening, standardized in limited population

C Screening, standardized in full population

D Screening + brief intervention, standardized in limited population

E Screening + brief intervention, standardized in full population

F Screening + brief intervention + referral, standardized in limited population

G Screening + brief intervention + referral, standardized in full population

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Results: SBIRT Processes

SBIRT Processes Implemented by Public Hospitals	SCREENING	BRIEF INTERVENTION	REFERRAL TO TREATMENT
	• Wide variation in screening measures and strategies • Majority used EHR-integrated templates for screening administration • Staff responsible for screening included PCPs, MAs, nurses, and front desk staff	• Processes included provider conversation, motivational interviewing, and provision of educational materials • Staff responsible for brief intervention included PCP, nurse, MA, behavioral health provider	• Use of warm handoffs, e-referral, decision support, and care coordinators • Variety of internal and external treatment partners for referral • Substance use care coordination processes

Strategies for SBIRT Implementation (ERIC Framework)

Planning

- Prioritize and leverage processes for depression
- Piloting workflows
- Varied focus and leadership models
- Challenges: workload burden, discomfort, treatment capacity

Financing

- SBIRT metric reporting and achievement
- Changes in SBIRT metric during PRIME
- External funding/support for SBIRT
- Internal funding mechanisms

Managing Quality

- Tools: performance dashboards, reports
- Regular auditing & feedback
- Re-examination of implementation strategies

Education

- Materials: curricula, protocols, digital & print media
- Delivery: in-service, QI meetings, train-the-trainer, individual coaching

Restructuring

- Hiring & engaging behavioral health clinicians and staff
- Expanding capacity of primary care providers
- Challenges: treatment capacity, workflow integration, data system integration

Attending to Policy Context

- Increased certification for medication-assisted treatment

Challenges

1   **Burden of collecting organizational data**

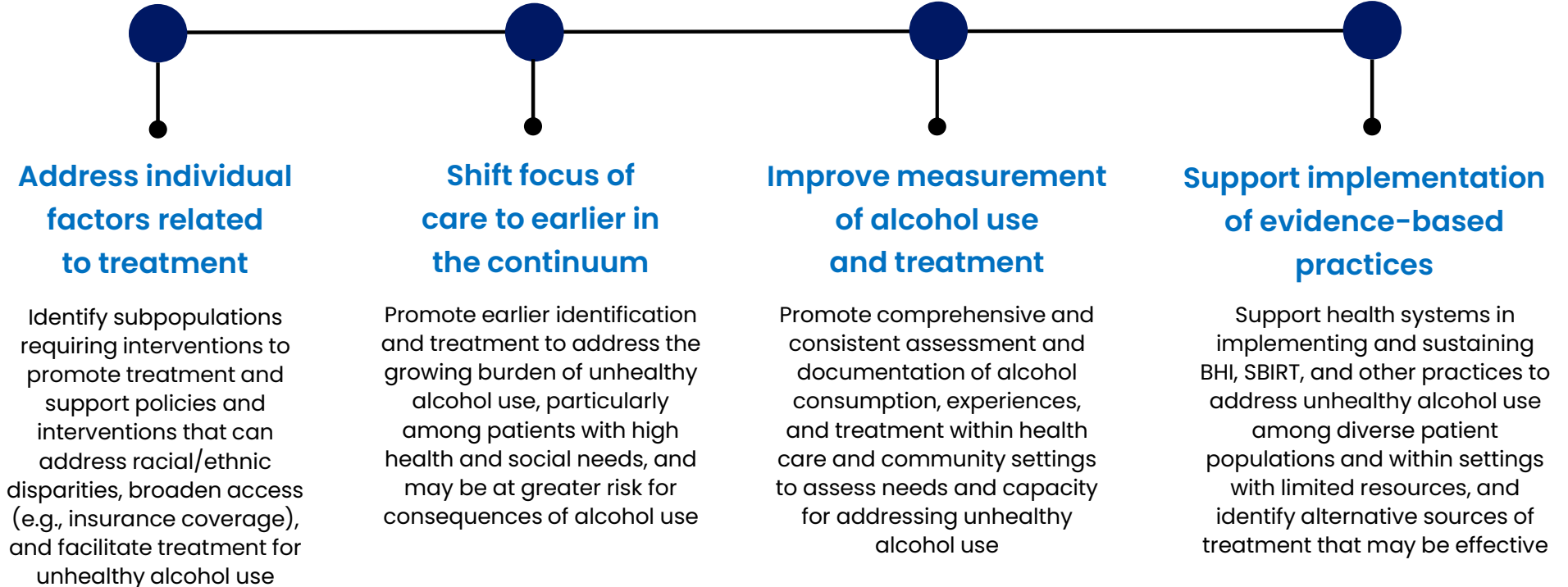**2**   **Variation in depth of reporting between hospitals**

3   **Focus on one component of complex, multi-component program**

4   **COVID impact on hospital processes**

Implications for Policy and Practice

Address individual factors related to treatment

Identify subpopulations requiring interventions to promote treatment and support policies and interventions that can address racial/ethnic disparities, broaden access (e.g., insurance coverage), and facilitate treatment for unhealthy alcohol use

Shift focus of care to earlier in the continuum

Promote earlier identification and treatment to address the growing burden of unhealthy alcohol use, particularly among patients with high health and social needs, and may be at greater risk for consequences of alcohol use

Improve measurement of alcohol use and treatment

Promote comprehensive and consistent assessment and documentation of alcohol consumption, experiences, and treatment within health care and community settings to assess needs and capacity for addressing unhealthy alcohol use

Support implementation of evidence-based practices

Support health systems in implementing and sustaining BHI, SBIRT, and other practices to address unhealthy alcohol use among diverse patient populations and within settings with limited resources, and identify alternative sources of treatment that may be effective

Future Research Directions

Updated Prevalence Estimates

on the burden of unhealthy alcohol use, particularly that which exceeds guidelines but does not meet criteria for higher severity alcohol use patterns or alcohol use disorder

Focus on Implementation Quality and Outcomes

to promote more efficient and effective implementation of evidence-based practices

Design of Interventions

to improve access to and quality of care for racial/ethnic minorities and other patient populations

Assessment of Interventions

and their effect on alcohol-related outcomes, including long term health outcomes, and health care costs

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