



Evaluation of Infectious Diseases in People With Substance Use Disorders: An Opportunity for Disease Elimination

April 26, 2023

INDIAN + COUNTRY

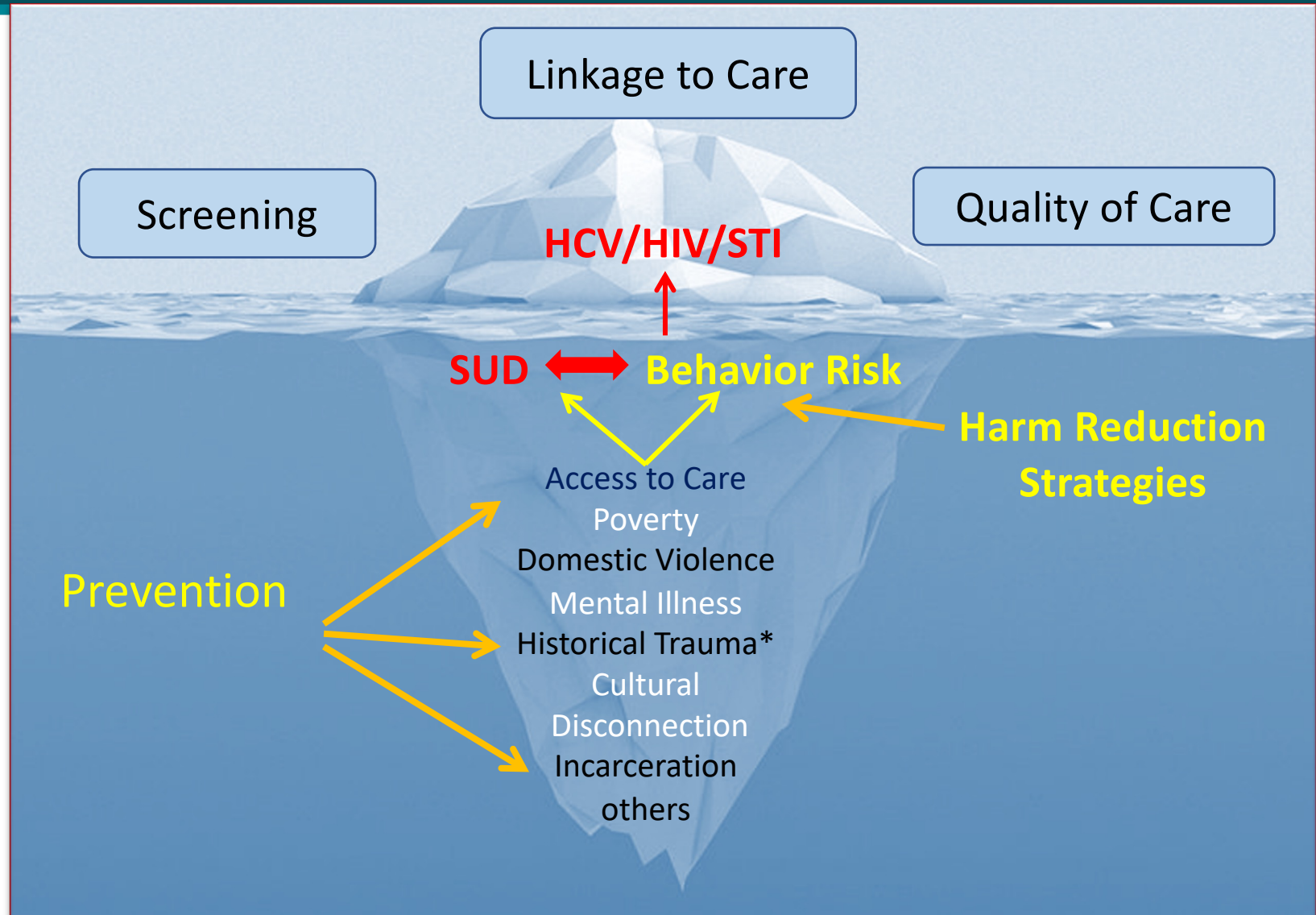
ECHO

LEADING THE WAY ➡➡➡

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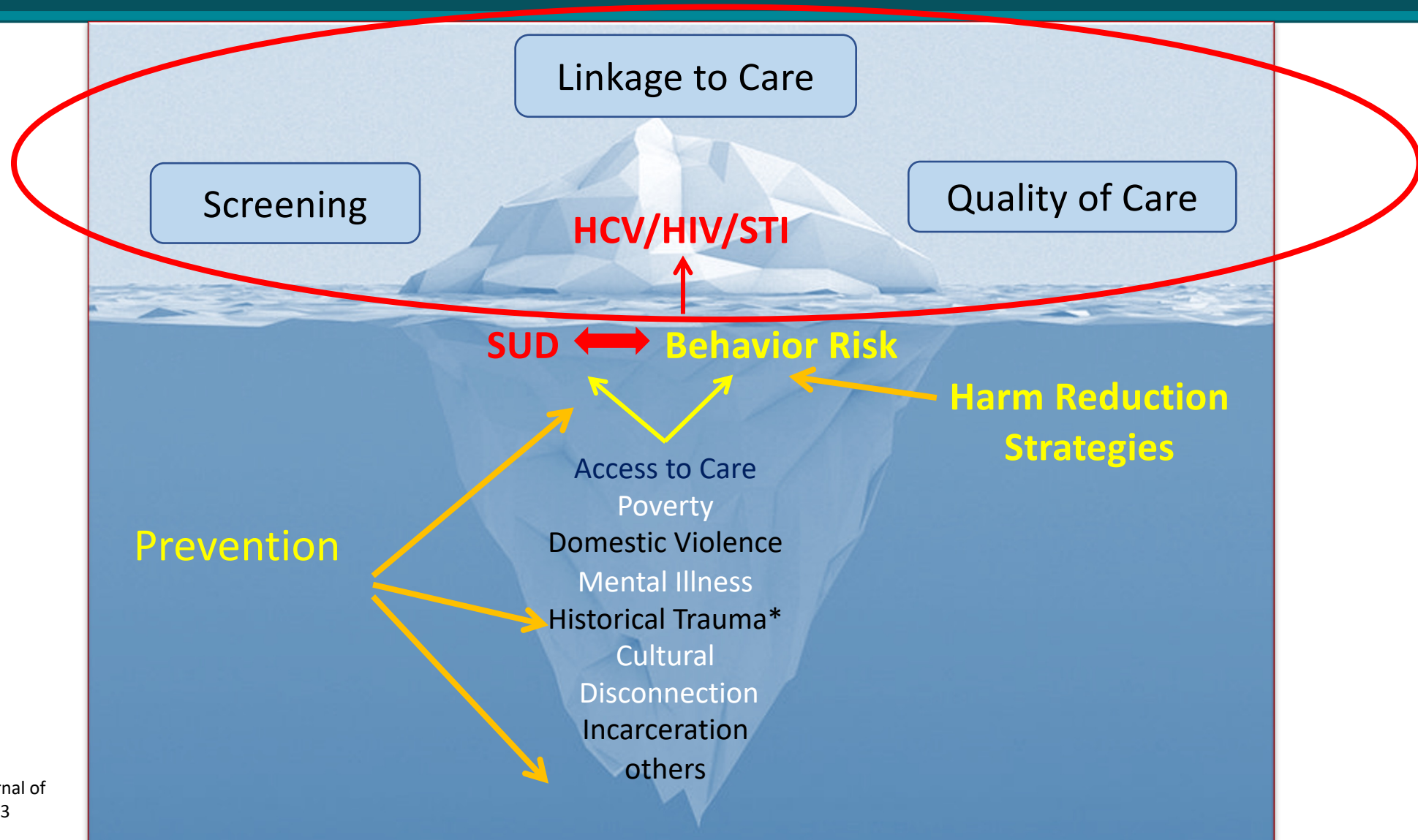
*Growing the Ability to Deliver Quality Healthcare to
American Indian and Alaska Native People.*

Syndemic

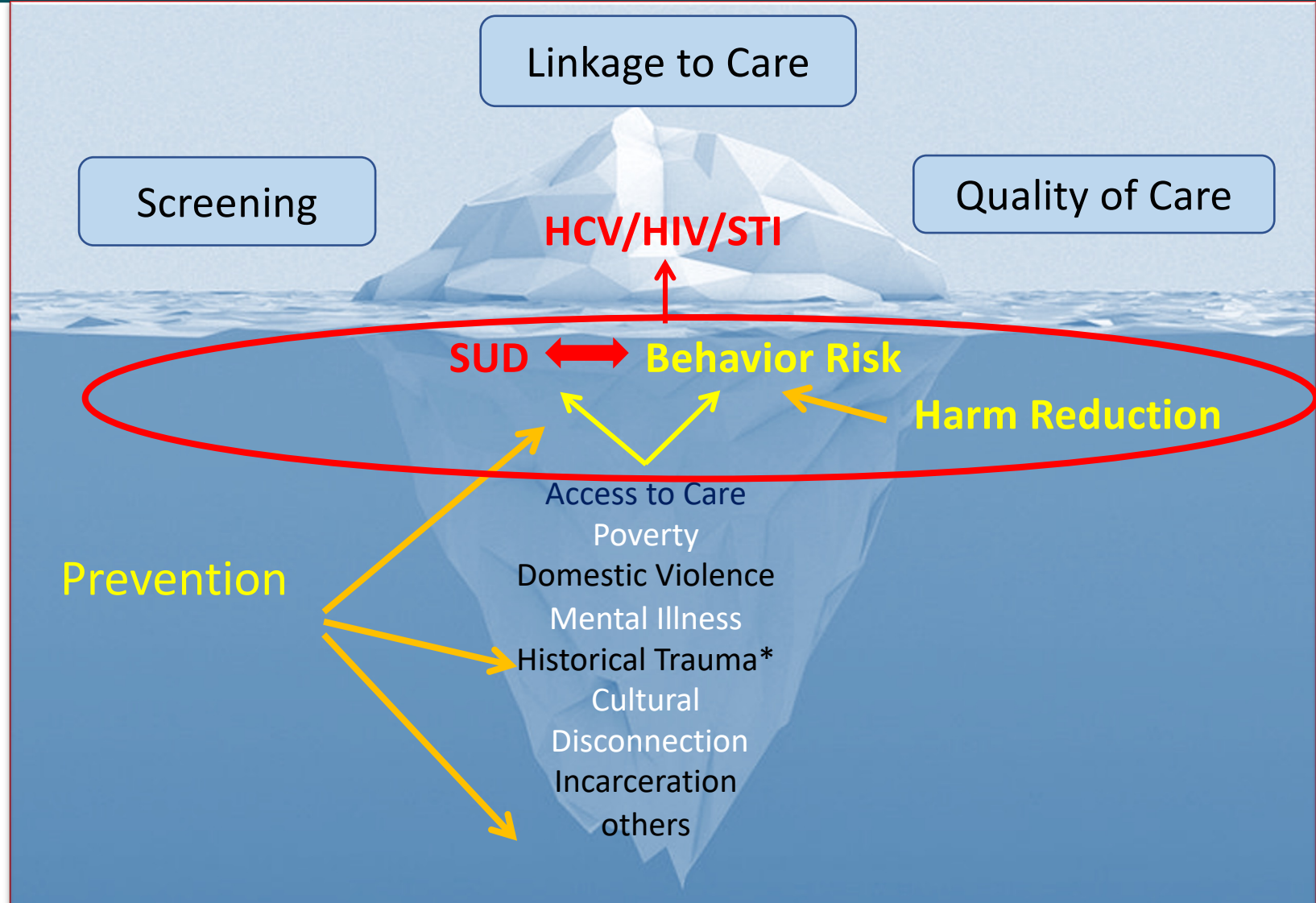


*Maria Yellow Horse Brave Heart Journal of Psychoactive Drugs Vol. 35, Iss. 1, 2003

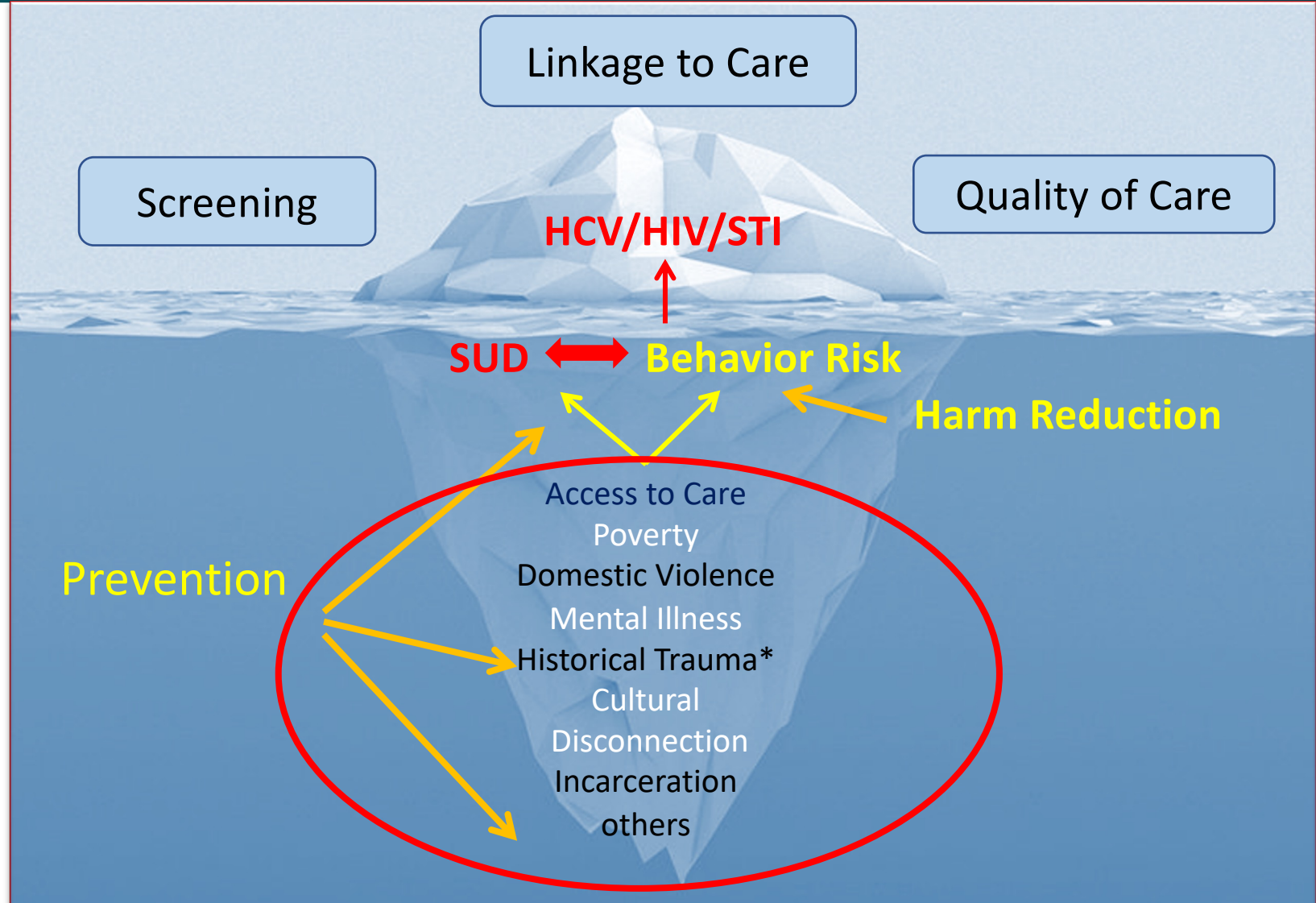
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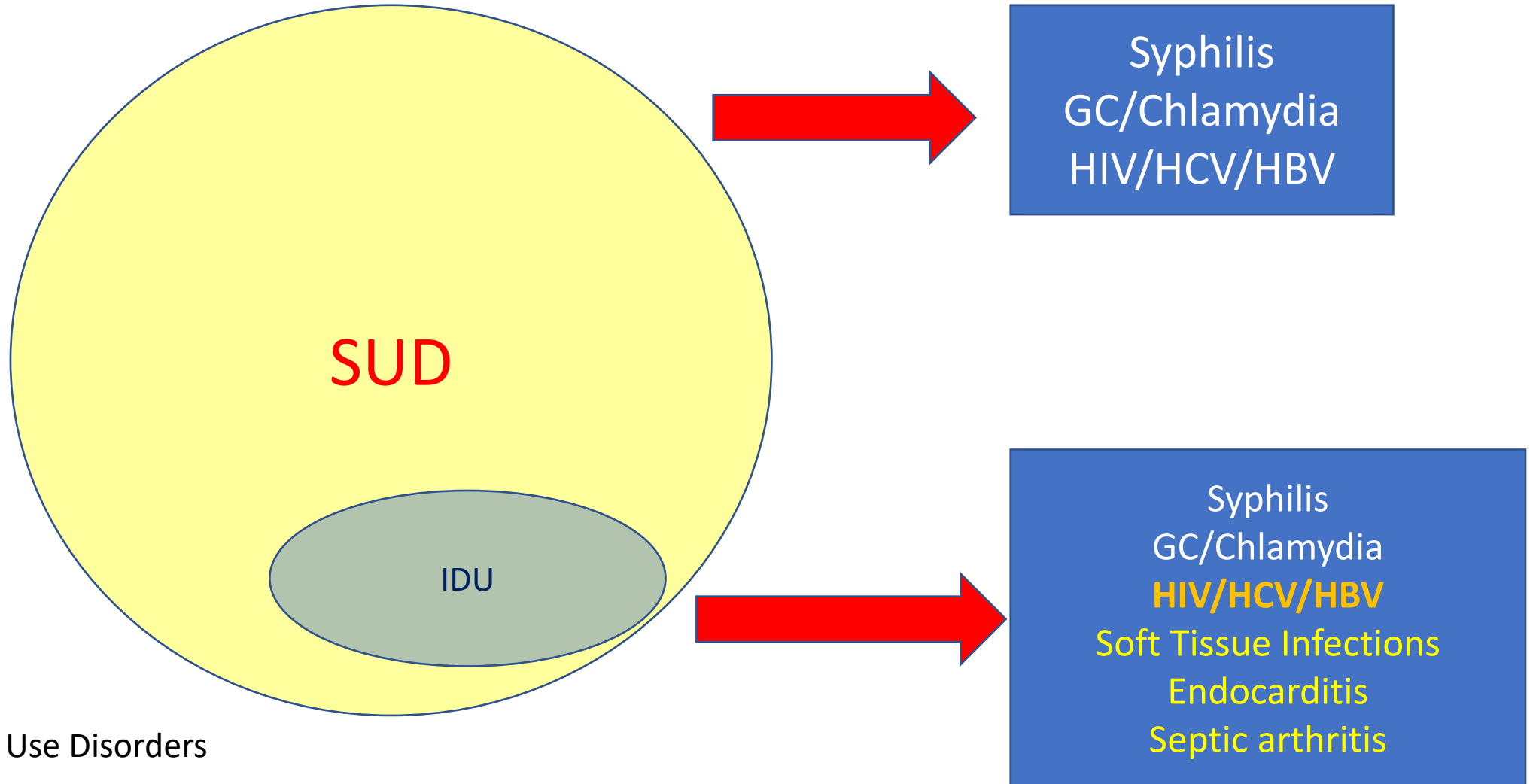
Syndemic



Syndemic



The Intersection of SUD and Infectious Diseases



SUD: Substance Use Disorders

Infectious Diseases Associated with Substance Use Disorders

- **Viral infections (bloodborne)**

- Hepatitis C Virus (HCV)
- Hepatitis B Virus (HBV)
- Hepatitis A Virus (HAV)
- HIV

- **STI's**

- GC/Chlamydia
- Syphilis
- HIV/HCV/HBV

- **Bacterial Infections (soft tissue/skin) ¹**

- Septicemia
- Bacteremia
- Cellulitis
- Abscesses (staph, strep)
- Endocarditis
- Necrotizing fasciitis
- Wound botulism

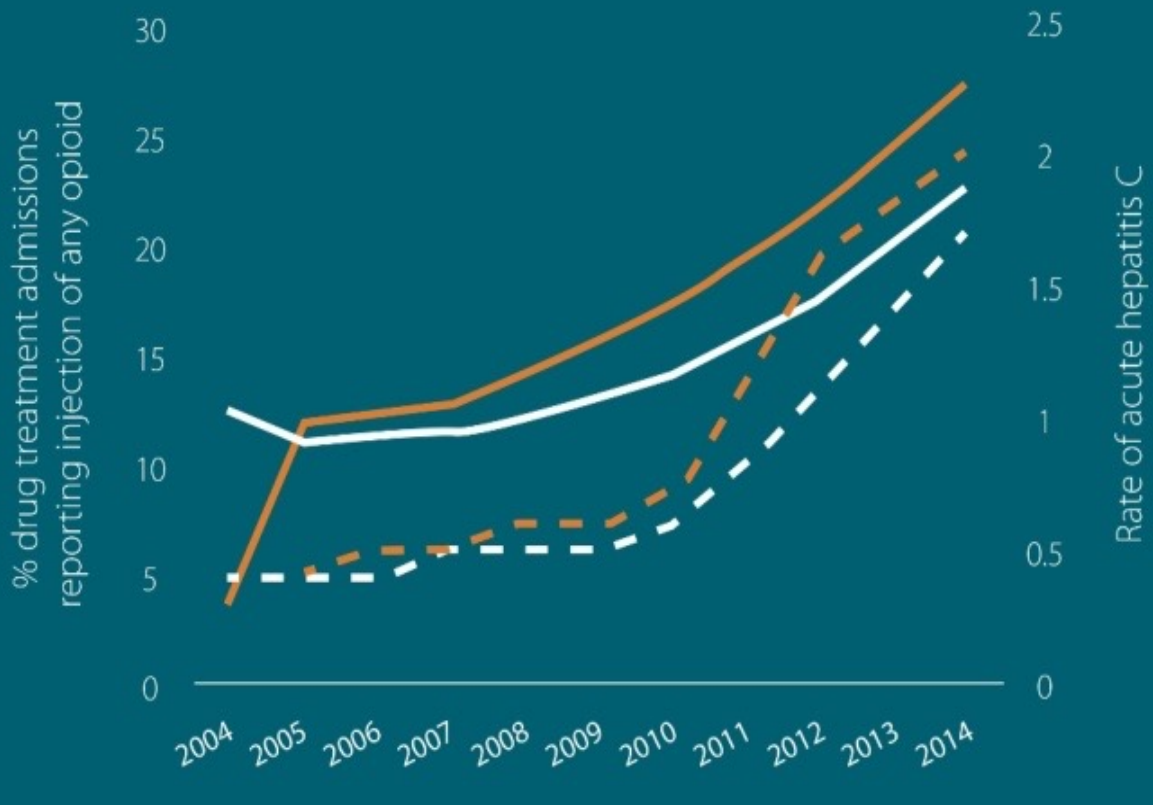
- Before 2020, Hepatitis C was the leading cause of death among all infectious diseases in the USA ²
- The CDC estimates 57,500 acute HCV cases in the US in 2019 ²
- IDU is currently the most common risk factor for HCV in developed countries (60-80% worldwide) ³

1. Collier, M., et al. 2018. <https://link.springer.com/article/10.1007%2Fs10900-017-0458-9>

2. Centers for Disease Control and Prevention, 2019. <https://www.cdc.gov/hepatitis/hcv/index.htm>

3. Centers for Disease Control and Prevention, 2018. <https://www.cdc.gov/nchstp/newsroom/2018/hepatitis-c-prevalence-estimates.html>

HEPATITIS C AND OPIOID INJECTION ROSE DRAMATICALLY IN YOUNGER AMERICANS FROM 2004-2014



- Among people aged 18-29, HCV increased by 400% and admission for opioid injection by 622%
- Among people aged 30-39, HCV increased by 325% and admission for opioid injection by 83%

— Any Opioid Injection (18-29)
— Any Opioid Injection (30-39)
- - HCV Rate (18-29)
- - HCV Rate (30-39)

Source: Centers for Disease Control and Prevention and Substance Abuse and Mental Health Services Administration

National HIV & Hepatitis Overview

- **Injection Drug Use accounts for**
 - ~9% of new HIV cases ¹
 - Over 65% of HCV cases ²
- **Among people who inject drugs**
 - Median time to HCV transmission is ~3 years
 - And each year ~ 20-30% of PWID acquire HCV ³
- **Comorbidity**
 - Among PWID and have HIV, 75% also have HCV
 - Among PLWHIV w/o IDU, 25% have HCV ⁴

Life time cost of each HIV infection is over \$380,000 ⁵

Accumulated costs of HCV care over the next 20 years on this trajectory over \$78 billion ⁶

1. Centers for Disease Control and Prevention, 2017. HIV Surveillance Report, <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2017-vol-29.pdf>

2. Centers for Disease Control and Prevention, 2016, Surveillance for Viral Hepatitis – United States, 2016. <https://www.cdc.gov/hepatitis/statistics/2016surveillance/index.htm>

3. Grebely, J. et al. 2011. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3072734/>

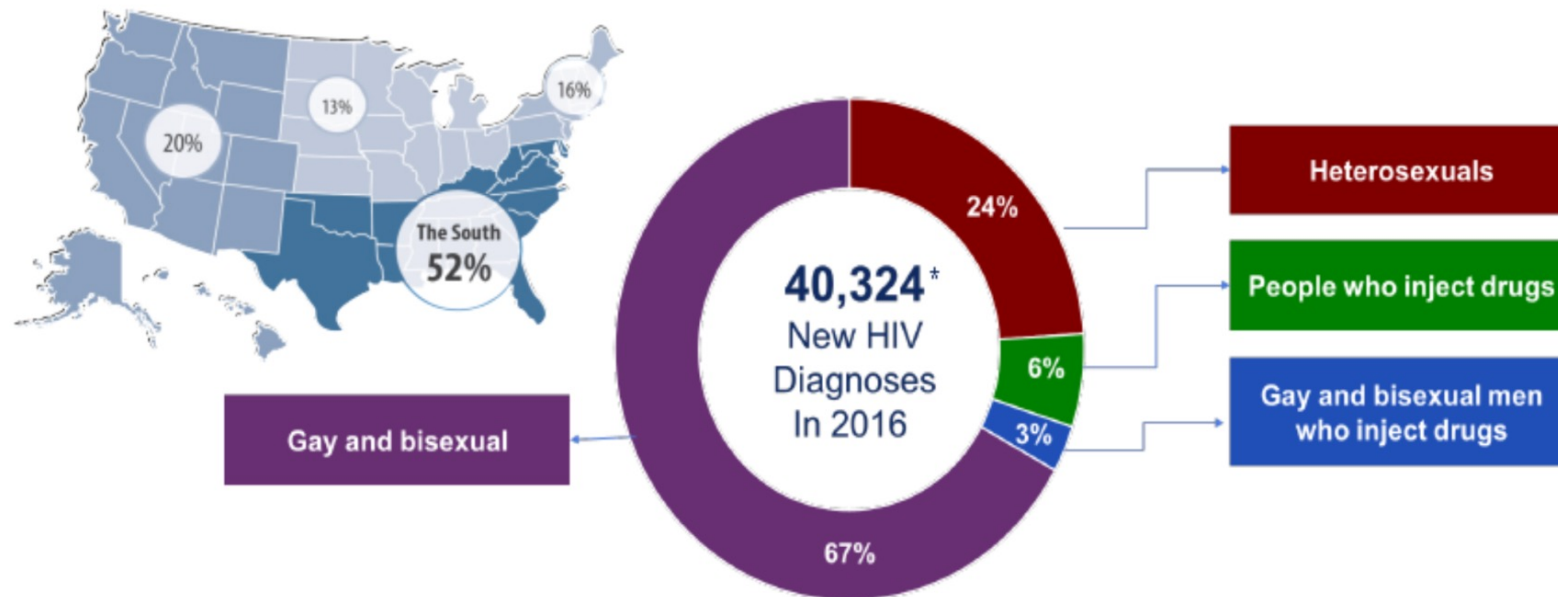
4. Centers for Disease Control and Prevention, 2017. HIV and Viral Hepatitis. <https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf>

5. Centers for Disease Control and Prevention, 2017. <https://www.cdc.gov/hiv/programresources/guidance/costeffectiveness/index.html>

6. National Academies of Sciences, Engineering, and Medicine, 2017. <https://www.nap.edu/read/24731/chapter/8>

HIV: Facts

HIV DIAGNOSES ACROSS SPECIFIC GROUPS



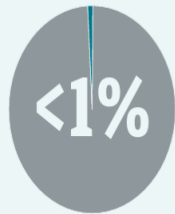
In 2016, **African Americans** accounted for 44% of HIV diagnoses, but comprised 12% of U.S. population

From 2012-2016, HIV diagnoses among **Hispanic/Latino** MSM age 25-34 years increased 22%

From 2012-2016, HIV diagnoses among **American Indian / Alaska Native** MSM increased 58%

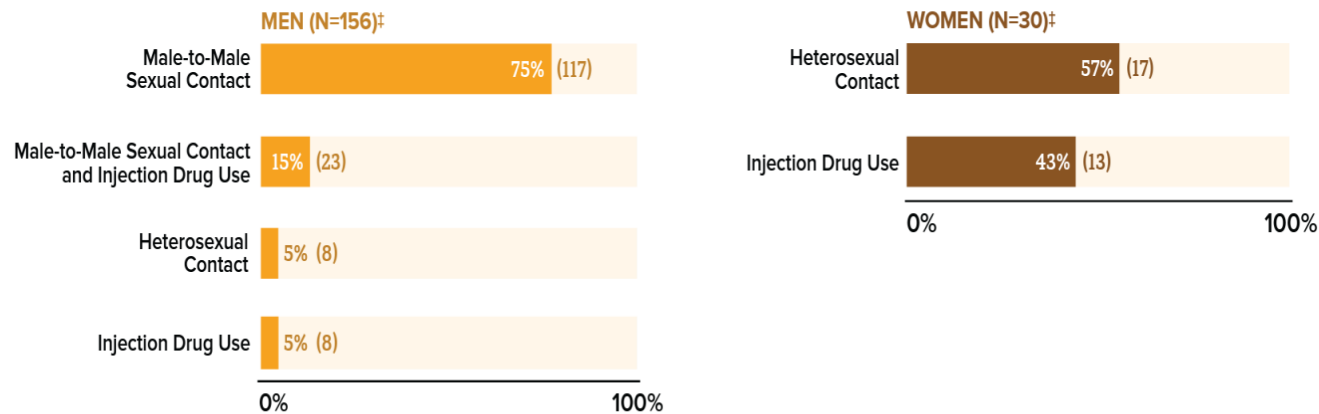
* www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplemental-report-vol-23-4.pdf,
all other data from <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2017-vol-29.pdf>

HIV in American Indian/Alaska Native Populations



Of the **37,968 NEW HIV DIAGNOSES** in the US and dependent areas* in 2018, less than 1% (186) were among American Indian/Alaska Native (AI/AN) people.

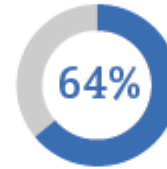
Most new HIV diagnoses were among AI/AN gay and bisexual men.[†]



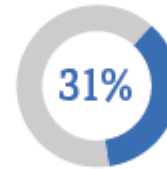
- In 2018, male and female AI/AN had the highest percent of estimated new diagnoses of HIV attributed to injection drug use, compared with all races/ethnicities.
- Among men, 15% (23) of new HIV diagnoses were attributed to male-to-male sex and injection drug use.
- Among women, 43% (13) of new HIV diagnoses were attributed to injection drug use.

Selected Characteristics Among PWID With HIV in 23 US Cities, 2018

Social and economic factors may limit access to HIV treatment services among PWID with HIV.



reported being homeless



reported being incarcerated



reported having no health insurance

Source: CDC. HIV infection risk, prevention, and testing behaviors among persons who inject drugs—National HIV Behavioral Surveillance: Injection drug use – 23 U.S. Cities, 2018. *HIV Surveillance Special Report 2020*; 24.



Meet Mrs. S

Reason for consultation:

- Patient referred to our clinic for HCV evaluation. During the nurse's intake it was noticed that she was very sleepy and when asked why, she mentioned she had injected morphine that morning.

HPI:

- Mrs. S is a pleasant 44 yo female who is interested in HCV treatment.
- She was screened for HCV in our Dental Department and referred to us for evaluation.
- She has been injecting morphine 50 mg twice a day for the past 20 years. She has overdosed once. She can't be 24 hours without morphine, or she will start withdrawing, and is terrified about this happening. She mentions living for many years with anxiety and depression.

PE:

- Vital signs are normal, BMI 26. Except for track marks in her arms the physical exam is unremarkable.



What is the most imminent threat to her life?

What can I do about her opioid use disorder?

Should the HCV be treated now? How will this impact HCV elimination in my community?

What other interventions to improve her health and prevent new infections can I offer?



HIV



Chronic Liver Disease



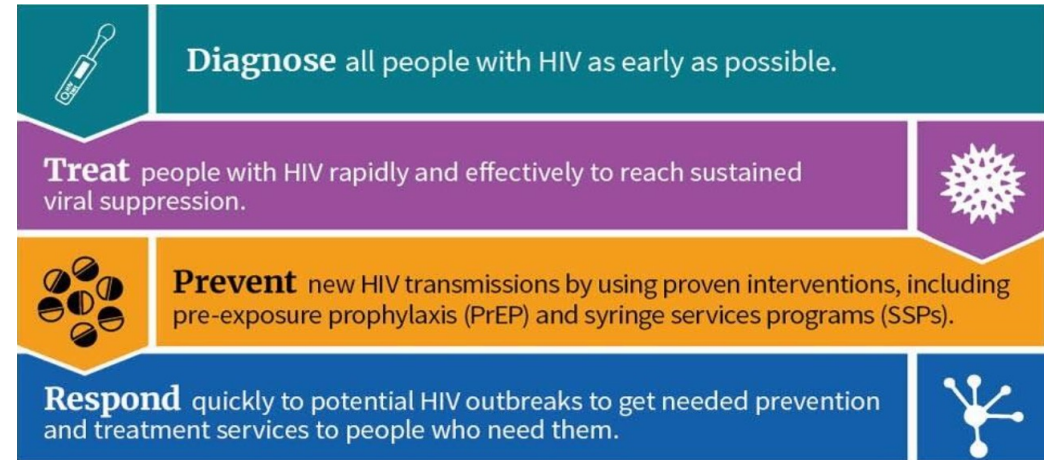
Overdose and Death

What We Are Trying To Prevent at the Individual Level

• Key Concepts to Guide HCV Elimination

- **Decrease the burden of HCV related liver diseases by treating the chronically infected population**
 - Patients born between 1945-1965
 - Anyone infected for 20+ years or with multiple liver comorbidities
- **Decrease new infections by preventing transmission**
 - Mainly target the younger population who are PWID
 - Treatment as prevention /MAT/Needle and syringe programs
 - Corrections system is an opportunity
 - Address sexual transmission in MSM

• EHE CDC 4 Strategies



The efforts will focus on four key strategies that together can end the HIV epidemic in the U.S.

1. Diagnose all people with HIV as early as possible.
2. Treat people with HIV rapidly and effectively to reach sustained viral suppression.
3. Prevent new HIV transmissions by using proven interventions, including pre-exposure prophylaxis (PrEP) and syringe services programs (SSPs).
4. Respond quickly to potential HIV outbreaks to get needed prevention and treatment services to people who need them.

What We Are Trying To Achieve at the Population Level



How Can the PCP Contribute to HCV and HIV Elimination?



Universal Screening



Be an advocate



Treat patients with HCV and HIV: Treatment as Prevention

Infections in People with SUD: Interventions

Prevention

- Vaccination
- HIV PEP
- HIV PrEP
- Harm reduction
 - Education
 - SSP
 - Pharmacotherapy

Diagnosis

- Baseline and Periodic infectious disease screening

First Encounter with People with SUD Evaluation:

Focus on the reason for the visit but do not limit it to that only



Review Vaccines

HPV
Hepatitis A and B
Pneumococcal
TdAP
Shingles
COVID-19
Influenza
Monkey pox



HIV PrEP Evaluation

Sexual history
Injection Drug Use?
Sharing injection equipment?
Sex when using drugs?
Condom use?



Physical Exam

Soft tissue exam
• Rule out abscess
Cardiac Murmurs
• Rule out endocarditis



Laboratory Evaluation

Hepatitis A, B and C serology
HIV screening
Syphilis screening
GC/Chlamydia testing

Second Visit: Review Labs and Act

Test	Result	Interpretation	Action
Hepatitis B	HBsAb (-), HBsAg (-), HBcAb (-)	Never exposed	Vaccinate
	HBsAb (+), HBsAg (-), HBcAb (-)	Immune	None needed
	HBsAb (-), HBsAg (+), HBcAb (+)	Active Infection	Refer to ID*
	HBsAb (-), HBsAg (-), HBcAb (+)	Isolated HB core Ab	Call ID
Hepatitis C	Positive HCV Ab	Possible current infection	Order HCV RNA
	Positive HCV RNA	Current Infection confirmed	Treat or refer
Hepatitis A	Total Ab (+)	Immune	Non needed
	Total Ab (-)	Not immune	Vaccinate
Chlamydia	Reactive	Active Infection	Treat*
Gonorrhea	Reactive	Active Infection	Treat*
Syphilis (TP/RPR)	Reactive	Active Infection	Stage and Treat *

ID: Infectious Diseases

* Evaluate for PrEP

How often should labs be ordered in PWID?

Test	Result
Hepatitis C	Most guidelines recommend once a year but may be more frequent
Hepatitis A	Once since if negative vaccination should be offered
Hepatitis B	Once since if negative vaccination should be offered If chronic HBV present refer to specialist
GC/Chlamydia/Syphilis	Every 6 months if they are on PrEP and anytime unprotected sexual exposure is reported

Bacterial Endocarditis in PWID

The incidence of bacterial endocarditis among PWID increased >12-fold over a 5-year period

Worse outcomes at 5-10 years compared to non-IDU-endocarditis

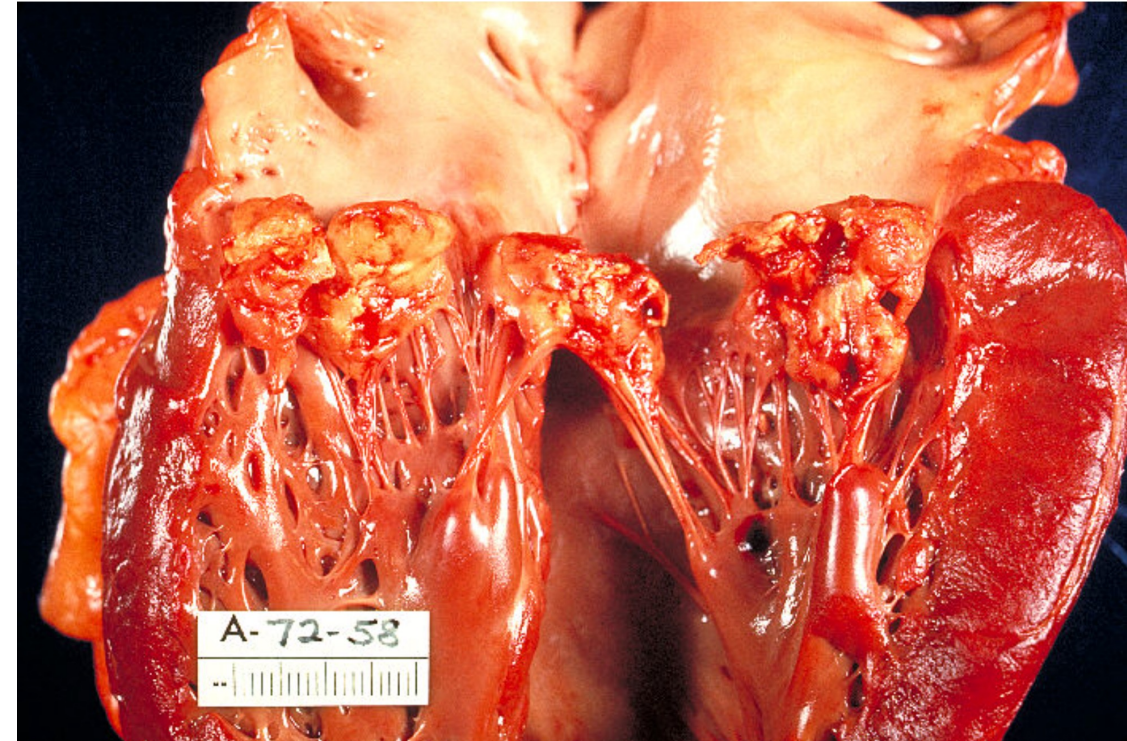
- Anecdotal evidence suggests that surgeons are hesitant to operate on PWID due to poor long-term outcomes, recurrent substance use and limited linkage to care

Major drivers to the increase in invasive bacterial infections are:

- The increasing prevalence of fentanyl and other short-acting synthetic opioids.

Fentanyl use is associated with higher injection frequency and with increased rates of receptive needle and syringe sharing

- Heroin injection typically occurs 3–4 times/day fentanyl injection 6–10 times/day
- Higher frequency of injection represents an additional at-risk moment for transmission of infection and leads to higher rates of needle reuse
- Infectious risk is additionally increased if needles and paraphernalia are shared



<https://phil.cdc.gov/Details.aspx?pid=851>

Preventing Bacterial Endocarditis

Harm reduction strategies are important tools for preventing infections in PWID.

- These include SSPs, safe injection facilities, immunizations, skin cleaning and safe injection strategies, and HIV PrEP

Safe injection techniques can reduce incidence of infectious endocarditis by over 90%,

- Significantly higher than is achievable with a reduction in injection frequency alone.

SSPs reduce disease transmission by

- Decreasing the rate of needle and syringe sharing
- Reducing needle reuse and the length of time that used injection materials are in circulation

Six Moments of Infection Prevention in Injection Drug Use: An Educational Toolkit for Clinicians

Harvey L, Boudreau J, Sliwinski SK, et al. Open Forum Infect Dis. 2022 Jan 6;9(2):ofab631

Based on the The Five Moments for Hand Hygiene developed by the WHO's *Guidelines on Hand Hygiene in Health Care*.

The model is designed to highlight specific “at risk” moments and interactions that can contribute to the spread of nosocomial infection and specifies time points when hand hygiene is appropriate to break the “chain of infection.”

Table 1. Six Moments of Infection Prevention in Injection Drug Use

Moment	Potential Pathogens	Intervention
Contaminated needle (prior to filling)	HIV, HCV, HBV, delta agent	<ul style="list-style-type: none">• Use new needle for every injection• One needle for each person injecting• Vaccination against HBV• HIV PrEP
Contaminated water or acid	<i>Candida</i> and other fungal infections	<ul style="list-style-type: none">• Use sterile water• Use single-use sachet of citric or ascorbic acid
Contaminated cooker	HIV, HCV, HBV, delta agent	<ul style="list-style-type: none">• Use clean cooker• One cooker for each person injecting• Vaccination against HBV• HIV PrEP
Contaminated filter	“Cotton fever”—endotoxin from gram-negative bacteria	<ul style="list-style-type: none">• Use clean, single-use cotton filter• One cotton for each person injecting
Unclean skin	MRSA and skin flora	<ul style="list-style-type: none">• Wash hands• Wash area to be injected
Contaminated needle (after filling)	<i>Streptococcus</i> and oral flora	<ul style="list-style-type: none">• Avoid contact with mouth or other surfaces after needle filled• Use of sharps bin

Abbreviations: HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; MRSA, methicillin-resistant *Staphylococcus aureus*; PrEP, preexposure prophylaxis.

Six Moments of Infection Prevention in Injection Drug Use: An Educational Toolkit for Clinicians


<p>1. CONTAMINATED NEEDLE BEFORE STARTING INJECTION</p>		<p>4. DIRTY FILTER</p> <ul style="list-style-type: none"> ! ALWAYS use fresh, clean cotton. ! NEVER use cigarette filters – they can contain glass particles.
<p>RISKS HIV, HBV, HCV, delta agent</p> <ul style="list-style-type: none"> ! ALWAYS use a clean, fresh needle. NEVER share needles. Do not reuse needles. NEVER lick your needle. ! GET VACCINATED to prevent HAV & HBV. 		<p>5. UNCLEANNED SKIN</p> <p>RISKS Skin organisms can lead to MRSA endocarditis, skin abscesses.</p> <ul style="list-style-type: none"> ! ALWAYS clean your skin beforehand. ! Twist alcohol swab in a circular, outward motion for 30 seconds – about the length of “Twinkle, Twinkle, Little Star” – on dry skin.
<p>2. CONTAMINATED ACIDIFICATION AGENT/WATER</p>	<p> THE SIX MOMENTS of infection prevention in injection drug use</p>	<p>6. CONTAMINATED NEEDLE AFTER FILLING SYRINGE (USUALLY FROM LICKING)</p> <p>RISKS Oral organisms can lead to strep endocarditis.</p>
<p>RISKS <i>Candida</i> and others</p>		
<p>3. DIRTY/SHARED SPOON</p>		
<p>RISKS HIV, HBV, HCV, delta agent</p> <ul style="list-style-type: none"> ! ALWAYS use a clean spoon and NEVER share spoons 		

Figure 1. Six Moments of Infection Prevention in Injection Drug Use Model. Abbreviations: HAV, hepatitis A virus; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; MRSA, methicillin-resistant *Staphylococcus aureus*.



Mrs. S, First Encounter

What is the most imminent threat to her life?	Overdosing: Naloxone prescribed/Scheduled for Bup/Nal induction in 24 hours
What can I do about her opioid dependence?	Behavioral health counseling/Peer support Social work evaluation Pharmacotherapy
Should the HCV be treated now?	YES!!!
Should she be offered HIV PrEP	YES!!!
Should ID workup be done now	YES!!!
Should vaccination be addressed now?	YES!!!



Mrs. S, 2nd Encounter

Labs

- RNA Viral load, 3.4 million copies /mL, Genotype 1a.
- ALT 72 IU/L, AST 65 IU/, Creatinine 0.9 mg/dL,
- Hg 13.4 g/dL, **Platelets 288 x 10³/mCL**, Albumin 4.5 g/dL, Total Bilirubin 0.7 mg/dL, INR 1.0.
- Hep A Ab (-), **HBsAg (-), HBsAb (-), HBcAb (-)**
- GC/Chlamydia screen was negative
- RPR test was positive 1:32, TP test positive
- HIV 4th generation test was negative



Mrs. S, 2nd Encounter

Treatment

- HCV medications ordered.
- Hepatitis A and B vaccination started
- Tdap given
- 1st dose of Benzyl Penicillin 2.4 million units given.
- HIV PrEP started
- Safe injection practices discussed
- 2nd visit with behavioral health counselor
- Bupenorprhine/Naloxone continued

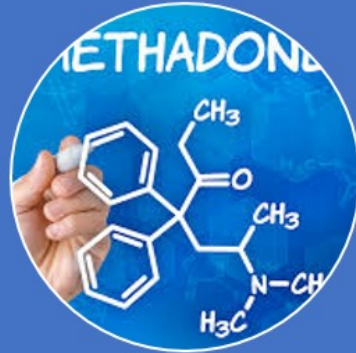
Comprehensive Approach



HCV/HIV/STI
Testing and
Treatment
Vaccines



Mental Health
Services



Pharmacotherapy



PrEP for PWUDs



Naloxone, Syringe
Service
Programs, and
Safer Injection
Practices



Thank You

