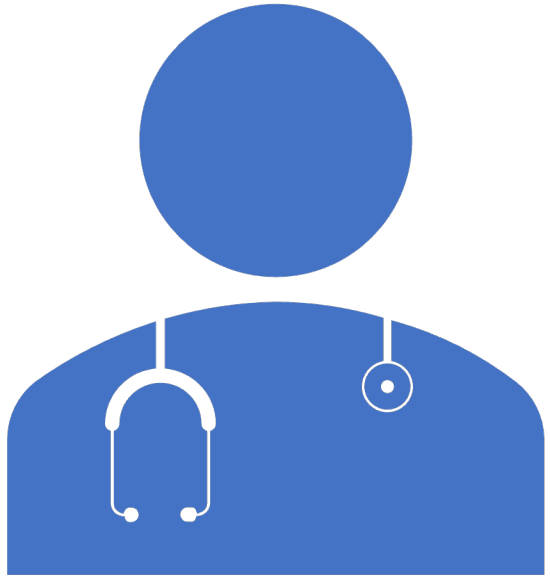


Evaluation of Infectious Diseases in People With Substance Use Disorders: An Opportunity for Disease Elimination

Jorge Mera, MD

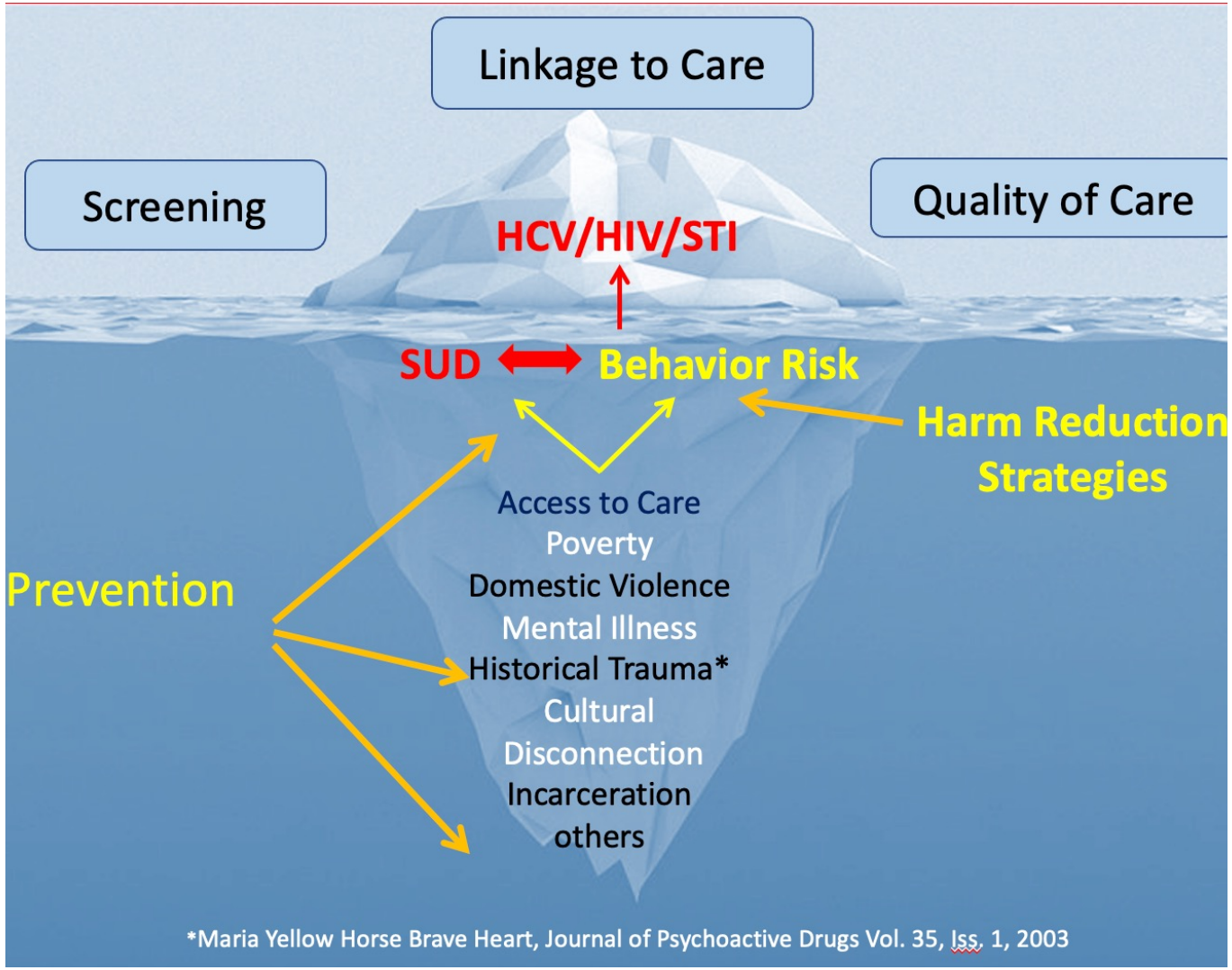
Unintentional Bias Disclosure

- I am aware that despite my best intentions and efforts toward reducing bias and stigmatizing terms, language is evolving, and I may not be aware that certain terminology may be offensive to participants.
- I welcome your feedback on language, images, or concepts that may be offensive or stigmatizing so that I may continue to optimize my presentations.

Syndemic

A syndemic is the clustering of multiple health conditions within a particular population that interact to create a greater burden of disease.

These conditions are influenced by various widespread behavioral, structural, and social factors, leading to their clustering and exacerbation.



Singer, M. and Clair, S. (2003), Syndemics and Public Health: Reconceptualizing Disease in Bio-Social Context. Medical Anthropology Quarterly, 17: 423-441.

The Connection Between Substance Use Disorders and Infectious Diseases

Under the influence of substances people are more likely to:	• Have anal or vaginal sex without protection • Have sex with multiple partners • Trade sex for money or drugs
Sharing needles:	• Is the second riskiest behavior for getting HIV • Is the first riskiest behavior for getting HCV
An HIV negative person has a 1/160 chance of getting HIV	• Every time they use a needle that has been used by someone with HIV • HIV PrEP can decrease the risk by 70%

https://www.cdc.gov/hiv/basics/hiv-transmission/injection-drug-use.

Infectious Diseases Associated with SUD

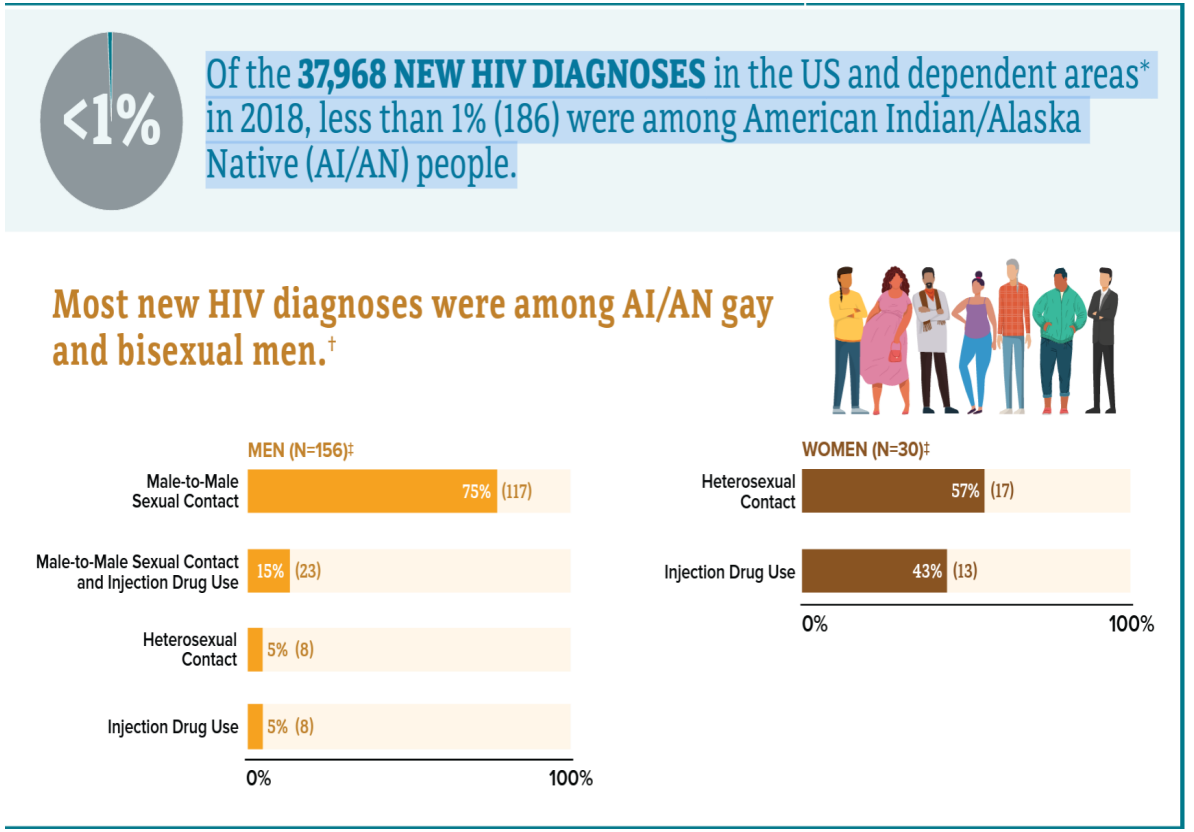
- **Viral infections (bloodborne)**
  - Hepatitis C Virus (HCV)
  - Hepatitis B Virus (HBV)
  - Hepatitis A Virus (HAV)*
  - Human Immunodeficiency Virus (HIV
- **STI's**
  - Gonorrhea/Chlamydia
  - Syphilis
  - HIV/HCV/HBV
- **Bacterial Infections (soft tissue/skin)**
  - Septicemia
  - Bacteremia
  - Cellulitis
  - Abscesses (staph, strep)
  - Endocarditis
  - Necrotizing fasciitis
  - Wound botulism

*. MMWR Morb Mortal Wkly Rep 2018;67:1208–1210. DOI: http://dx.doi.org/10.15585/mmwr.mm6743a3

- **Injection Drug Use accounts for**
  - ~9% of new HIV cases [1]
  - 66% of HCV cases [2]
- **Among people who inject drugs**
  - Each year ~ 20-30% will acquire HCV [3]
- **Co-infections**
  - Among injection drug users who have HIV coinfection with HCV is common (62%–80%)
  - Among PLWHIV w/o IDU, 21% have HCV [4]

1. Centers for Disease Control and Prevention, 2020. HIV Surveillance Report, www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2020-updated-vol-33.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, People Coinfected with HIV and Viral Hepatitis (accessed 8/10/23) https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf

HIV in American Indian/Alaska Native Populations



- In the U.S. in 2018, AI/AN had the highest percent of estimated diagnoses of HIV infection attributed to injection drug use, compared with all races/ethnicities.
- Among men, 15% of new HIV diagnoses were attributed MSM who inject drugs, and 5 % were attributed to both male-to-male sex and injection drug use.
- Among women, 43% of new HIV diagnoses were attributed to injection drug use.

Bacterial Infections Associated With Substance Use Disorders, Large Cohort of United States Hospitals, 2012–2017

Results: Hospitalizations of persons with SUDs and infections increased

- From 1.1 to 2.1 per 100 000 persons for IE
- From 1.4 to 2.4 per 100 000 persons for osteomyelitis
- From 0.5 to 0.9 per 100 000 persons for central nervous system abscesses
- From 24.4 to 32.9 per 100 000 persons for skin and soft tissue infections.
- From 1.6 in 2012 to 3.6 per 100 000 persons for adults aged 18–44 years with IE

Conclusions

- Rates of hospitalization for serious infections among persons with SUDs are increasing, driven primarily by younger age groups.

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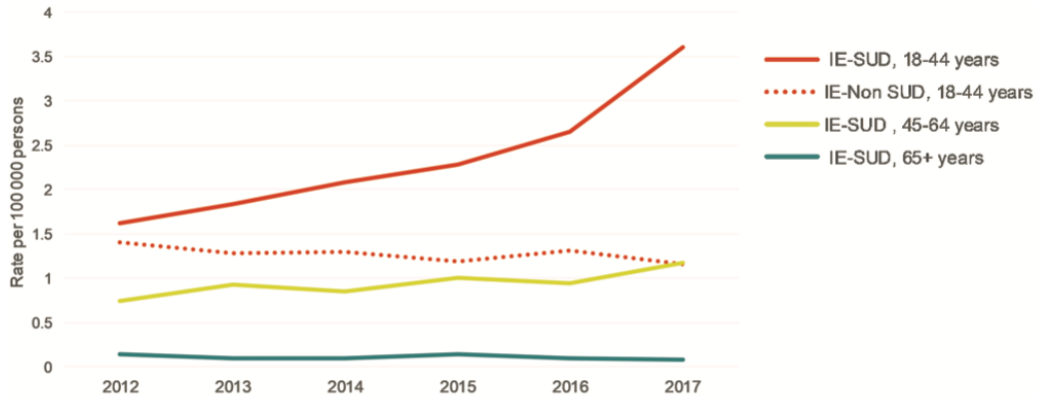
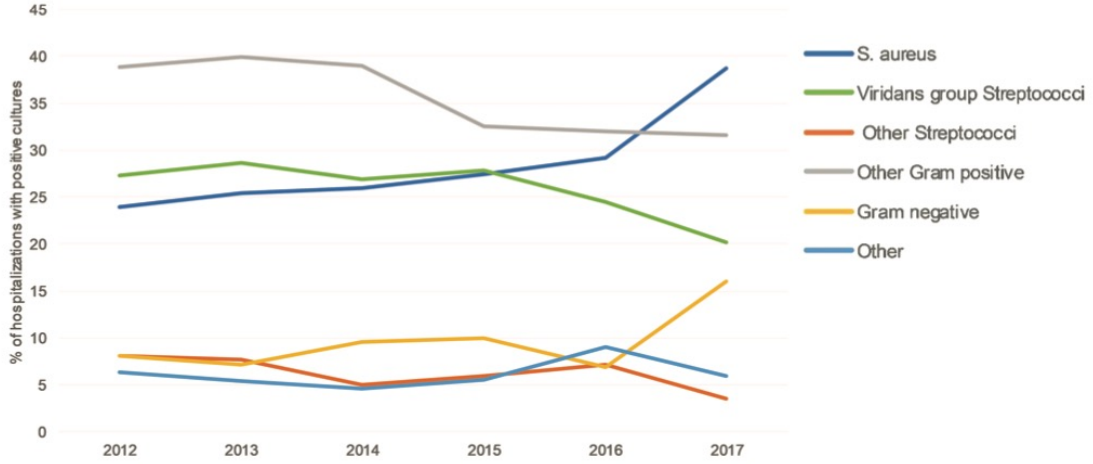
Bacterial Infections Associated With Substance Use Disorders, Large Cohort of United States Hospitals, 2012–2017

Among all IE-SUD hospitalizations, 50.3% had a *Staphylococcus aureus* infection, compared with 19.4% of IE hospitalizations without SUDs.



Weighted infective endocarditis hospitalizations with and without substance use disorder diagnoses, Premier Healthcare Database, 2012–2017. Includes opi- oids, cocaine, amphetamines, hallucinogens, or other/unspecified drugs (see Supplementary Materials). Abbreviations: IE-SUD, infective endocarditis hospitalization with substance use disorder diagnoses; IE-Non-SUD, infective endocarditis hospitalization without substance use disorder diagnoses.



Trends of microorganisms among infective endocarditis hospitalizations with positive cultures, Premier Healthcare Database, 2012–2017 (N = 1826). Abbreviation: *S. aureus, Staphylococcus aureus*.

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Infectious Endocarditis (IE) in People Who Inject Drugs (PWID)

IE among PWID has increased

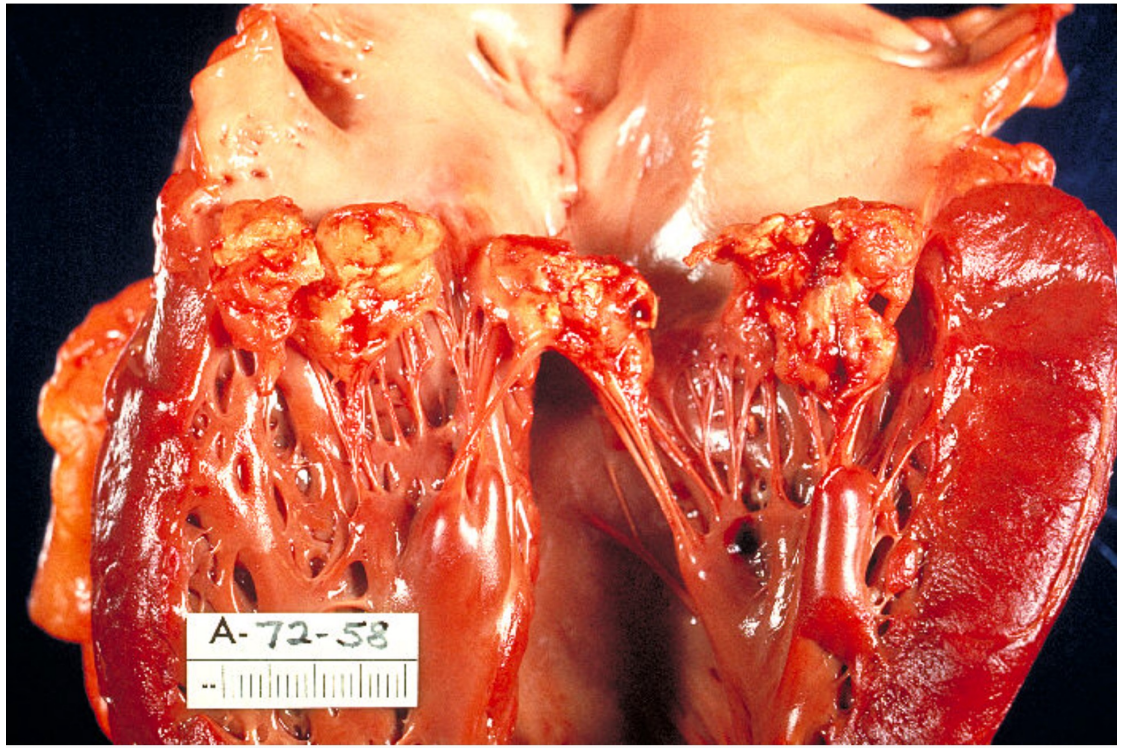
- PWID have worse outcomes at 5/10 years compared to non PWID.
- Surgeons are hesitant to operate on PWID due to poor outcomes, substance use, and limited care.

Fentanyl use linked to higher injection frequency and needle sharing.

- Injecting 6-10 times/day compared to 3-4 times/day with heroin.

Higher injection frequency increases infection transmission risk.

- Sharing needles and paraphernalia further increases infectious risk.



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

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

Infections in People with SUD: Interventions

Prevention

- Vaccination
- Harm reduction
  - HIV PEP and PrEP
  - Safe injection education
  - Syringe Service Program
  - Medication Assisted Treatment
  - Behavioral health assessment or referral

Diagnosis

- Baseline and Periodic infectious disease screening

SUD: Substance Use Disorder

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?

Having 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 RNA	Current Infection confirmed	Treat
Hepatitis A	Total Ab (+)	Immune	Non needed
	Total Ab (-)	Not immune	Vaccinate
Chlamydia	Reactive	Active Infection	Treat*
Gonorrhea	Reactive	Active Infection	Treat*
Syphilis	Reactive	Active Infection	Stage and Treat *

ID: Infectious Diseases
* Evaluate for PrEP

How often should labs be ordered in people with SUD Who Inject Drugs?

Test	Result
Hepatitis C	Most guidelines recommend periodic testing but here is limited evidence to determine how often to screen persons at increased risk
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

PWID: People Who Inject Drugs

Preventing Bacterial Infections

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

- Access to SSPs, safe injection facilities, skin cleaning and safe injection strategies

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

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

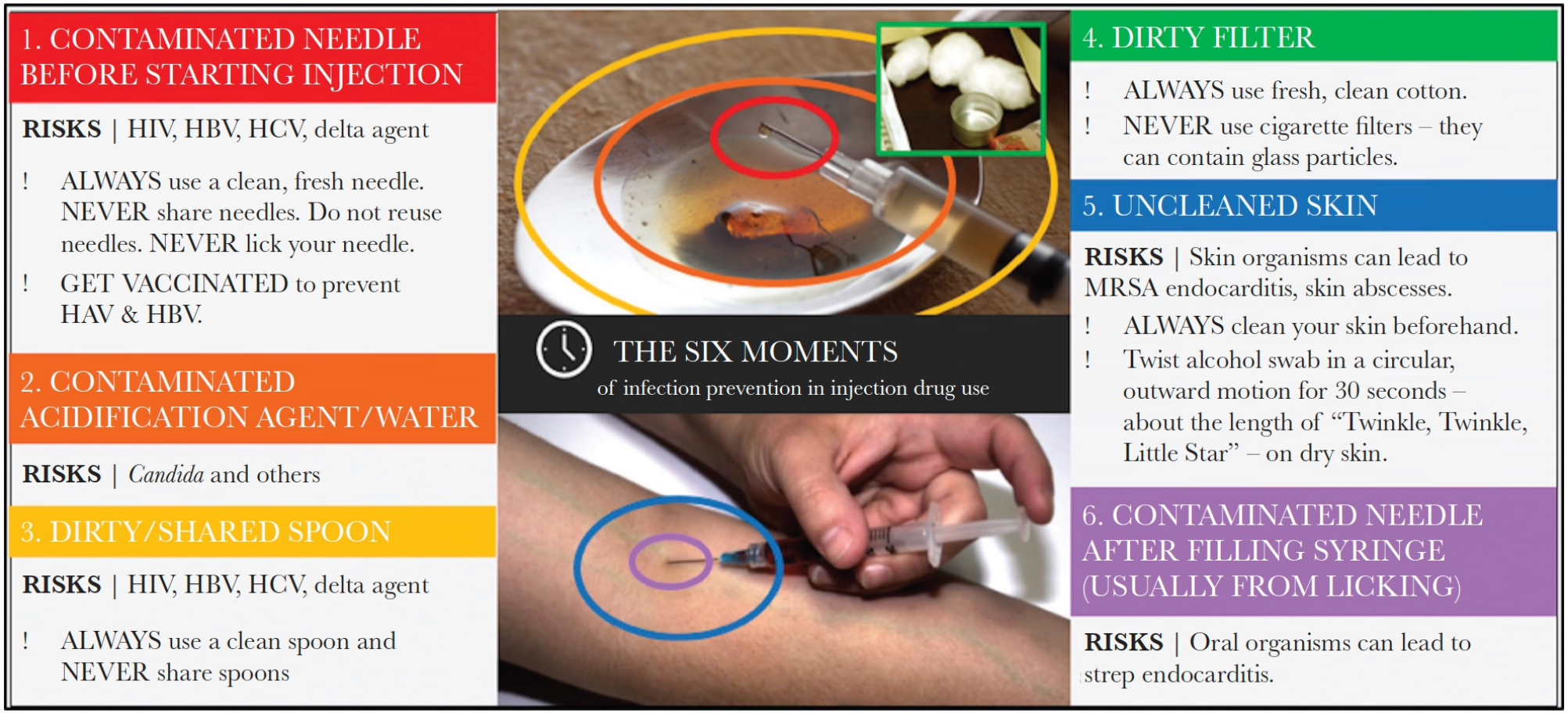

Figure 1. Six Moments of Infection Prevention in Injection Drug Use Model. Abbreviations: HAV, hepatitis A virus; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; MRSA, methicillin-resistant *Staphylococcus aureus*.

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

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

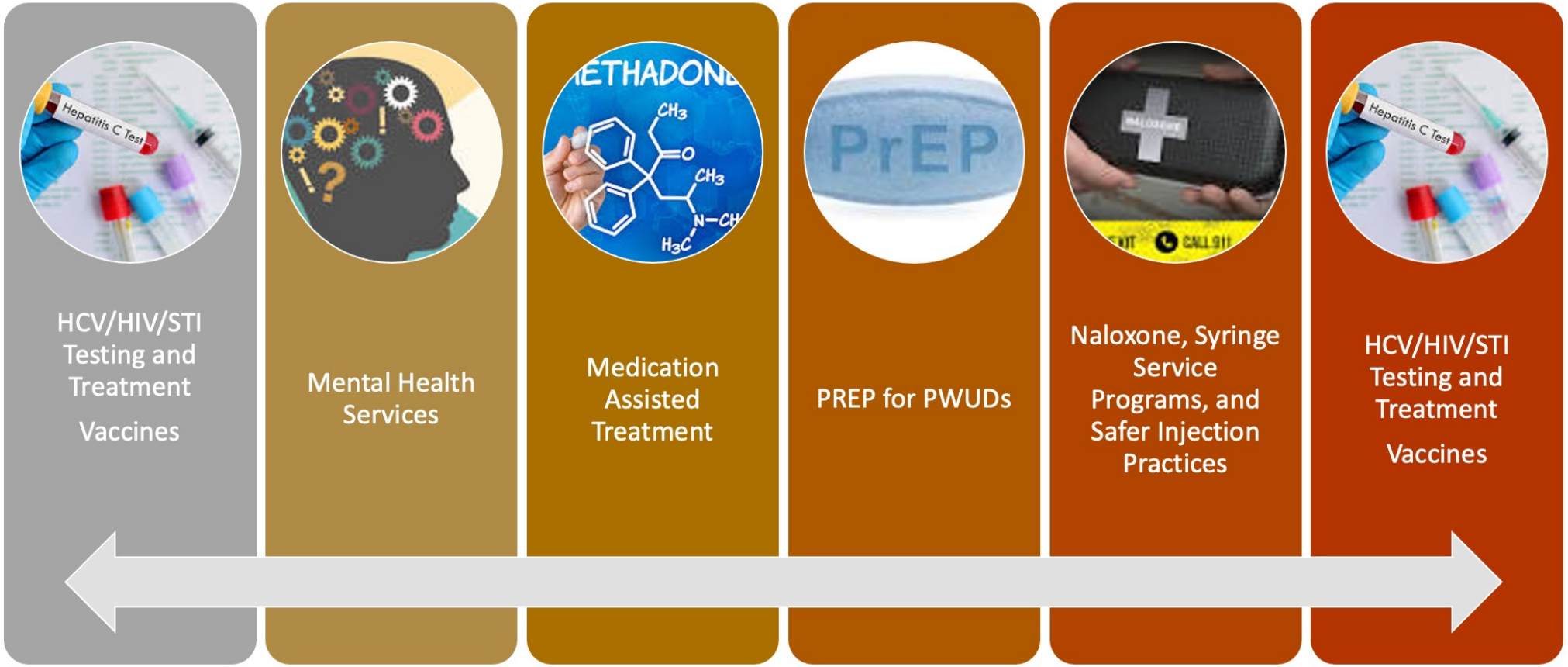
The model is designed to highlight specific "at risk" moments and interactions that can contribute to the spread of nosocomial infection and specifies time points when hand hygiene is appropriate to break the "chain of infection."

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	• Use new needle for every injection • One needle for each person injecting • Vaccination against HBV • HIV PrEP
Contaminated water or acid	*Candida* and other fungal infections	• Use sterile water • Use single-use sachet of citric or ascorbic acid
Contaminated cooker	HIV, HCV, HBV, delta agent	• Use clean cooker • One cooker for each person injecting • Vaccination against HBV • HIV PrEP
Contaminated filter	"Cotton fever"—endotoxin from gram-negative bacteria	• Use clean, single-use cotton filter • One cotton for each person injecting
Unclean skin	MRSA and skin flora	• Wash hands • Wash area to be injected
Contaminated needle (after filling)	*Streptococcus* and oral flora	• 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.

Comprehensive Approach



Thank You