Integrating Addictions Medicine into HIV Care

Nick Cochkanoff, MD CCFP
FM HIV Fellow
Oct 2024 HIV Grand Rounds
Monday Oct 7, 2024

Objectives

1. Understand the association between STBBI and Substance Use Disorders (SUDs)
2. Understand the bi-direction impacts SUD and HIV care
3. Understand models for integrated care and recommendations
4. Understand harm reduction principles and recommendations
5. Understand the current forms of treatment for SUDs
6. Understand local resources for SUD treatment

STBBI and Substance Use Disorders

STBBI and Substance Use Disorders

- The Joint United Nations Programme on HIV/AIDS aimed to end the AIDS epidemic by 2030 with the following goals and a 2020 deadline:
  - 90% of all people living with HIV will know their status
  - 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy
  - 90% of all people receiving antiretroviral therapy will have viral suppression
- By 2020, Canada had met the first (90%) and third (95%) of these targets, but failing to reach target for ART (87%; Public Health Agency of Canada, 2020)

STBBI and Substance Use Disorders

- Recently, Canada has seen an increase in the number of new HIV diagnoses within a year – 1,833 new diagnoses
  - 20.5% due to intravenous drug use (IVDU)
  - 3.3% more occurring in MSM with IVDU

- This is a lower rate of transmission than has been noted in the US (>30%; Lesko et al., 2023)

STBBI and Substance Use Disorders

- Drug use was identified as a driver of HIV transmission as early as the mid-1990s
  - IV cocaine use was found to lead to “explosive outbreaks” of HIV transmission (Tyndall et al., 2003)
  - The use of amyl nitrates for chemsex, and later methamphetamine for chemsex
- Demographic features (Indigeneity, precarious housing, sex work) were also identified as risk factors

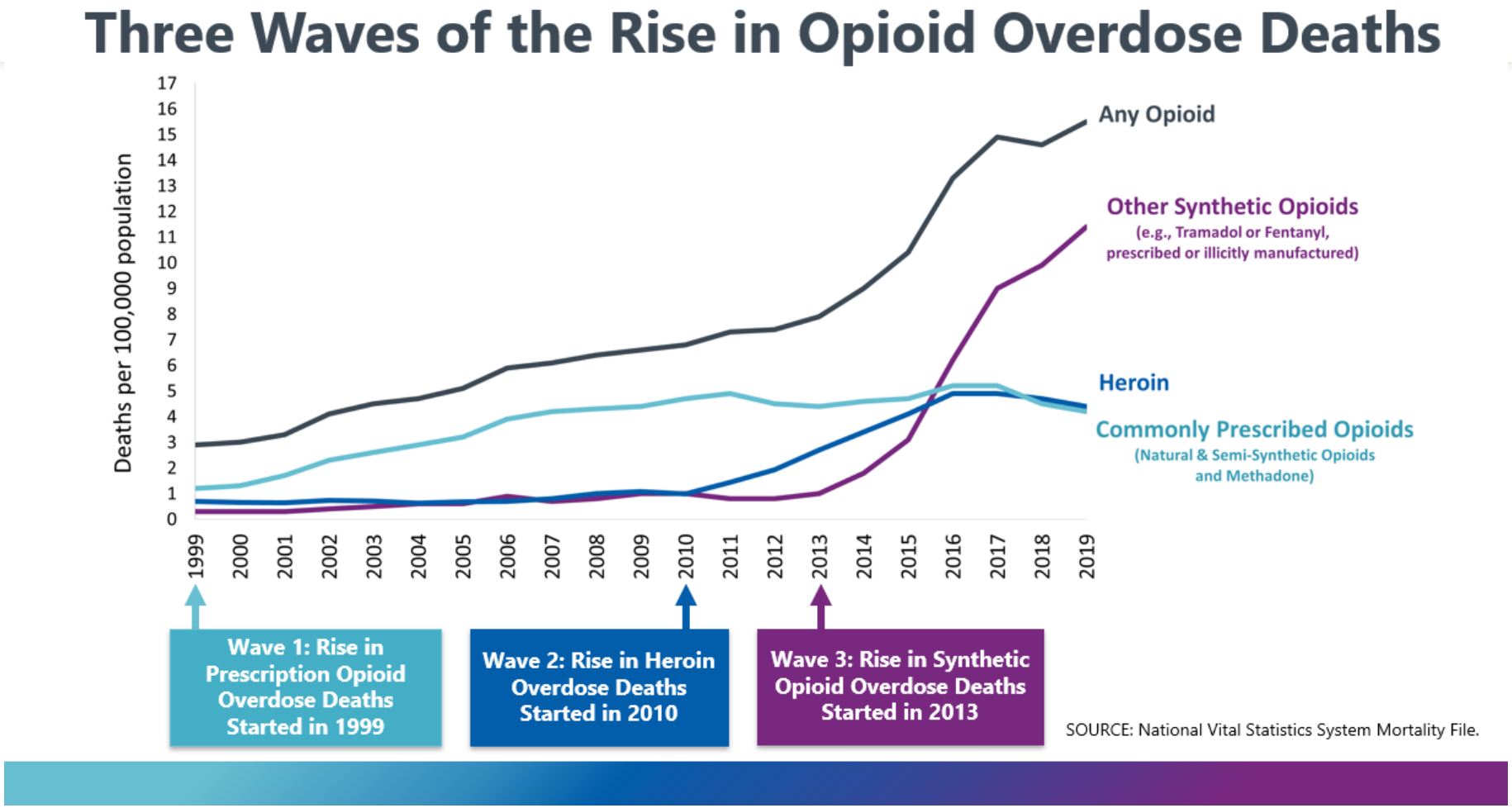
STBBI and Substance Use Disorders

- Drug use raises the risk of HIV exposure and transmission in, even separate from the actual act of injecting
  - Alcohol, amyl nitrate inhalants (poppers), methamphetamine, and other substances in the setting of chemsex leading to riskier sexual behaviors and transmission (Bositis, 2019; Tyndall 2003)
  - Increased interactions with other PLWH or other infectious conditions in close proximity
  - Incarceration, use of shelters
  - Transactional sex
  - Survival sex

STBBI and Substance Use Disorders

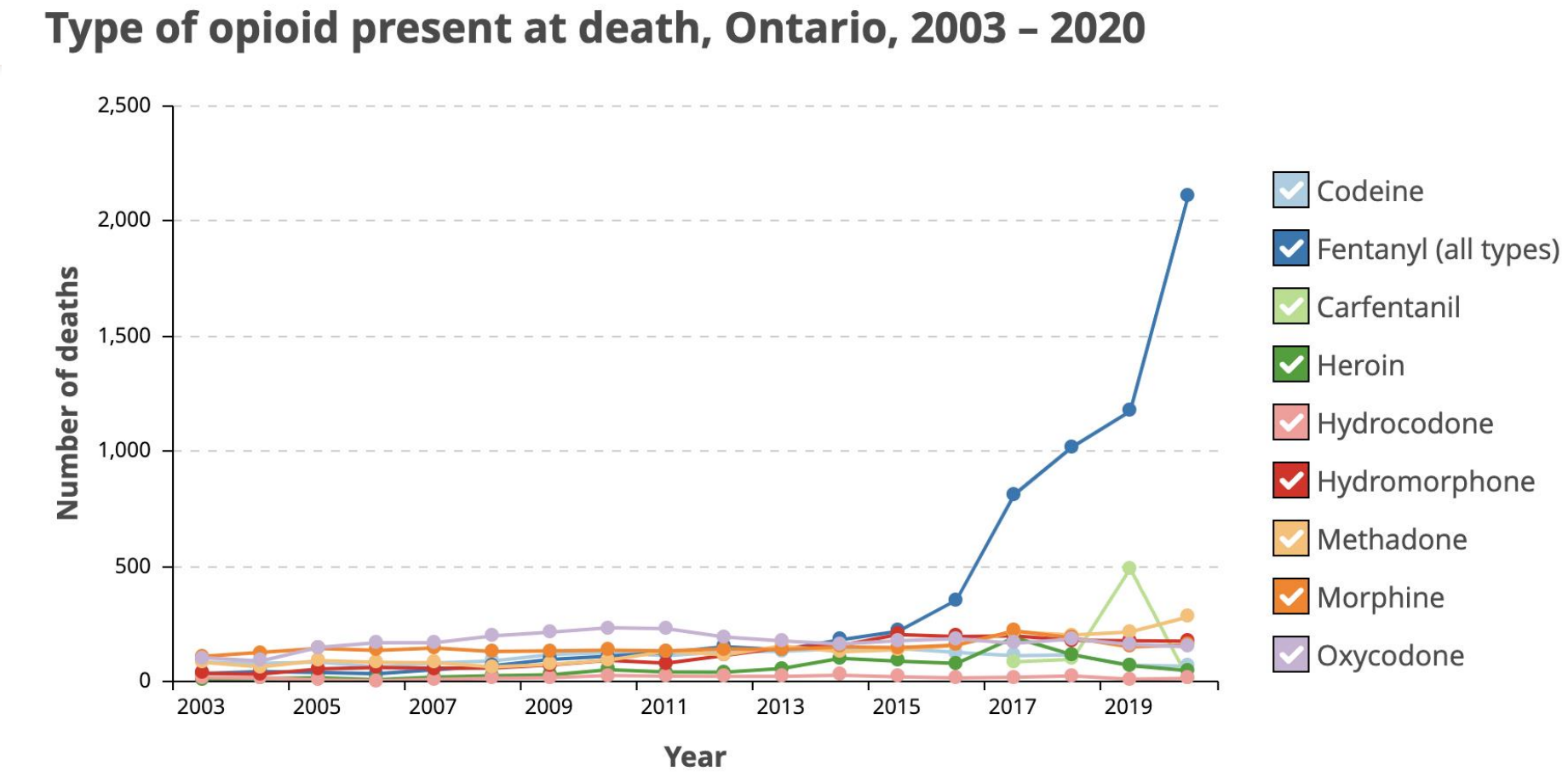
- IV opioid use was originally driven by heroin, but in the 1980's popularity decreased, with surging smoked crack-cocaine use rising in its place (Bositis et al., 2019)
  - Opioids returned to favour in 1996 with the introduction of Extended-release Oxycodone
- Rates of non-prescribed opioid use, especially IV use, have increased over time largely due to the synthetic opioid fentanyl

STBBI and Substance Use Disorders



https://www.cdc.gov/drugoverdose/epidemic/index.html

STBBI and Substance Use Disorders



https://www.publichealthontario.ca/en/data-and-analysis/substance-use/interactive-opioid-tool#/drug

STBBI and Substance Use Disorders

- Many factors have contributed to an association between HIV diagnosis and substance use
  - MSM individuals and stigma related to sexuality
  - Chemsex
  - Precarious housing or incarceration
  - Limited finances
  - Disconnection from social supports, etc.
- This has led to a disproportionately high rate of substance use and diagnosed substance use disorders (Bositis, 2019)

STBBI and Substance Use Disorders

- Rates of SU or SUD among PLWH is highly variable (Lesko, 2023)
  - Prevalence of substance use within the last month (cocaine and/or non-prescribed opioids) ~36%
  - Prevalence of diagnosed SUD 10-48%
- Cannabis use disorder was most common, followed by Alcohol use disorder (AUD), Methamphetamine UD, Cocaine UD, and then Opioid UD (Hartzler et al., 2017)
  - One-fifth had MULTIPLE substance use disorders

Impact of SUD care on HIV care

The Impact of SUD care on HIV care

- Outbreaks among specific communities most often centered about fentanyl or crystal meth injection (Lier et al., 2024)

- Areas found to have greater prevalence of OUD have demonstrated more of these outbreaks (Bostitis et al., 2019; Peters et al., 2016; Cranston et al., 2019; Evans et al., 2018)

The Impact of SUD care on HIV care

- SU or a SUD have been associated with reduced engagement in care and outcomes

- Lesko et al; 2023
  - Patients seeing regular HIV care in Baltimore
  - 1/3rd had a cocaine or opioid use disorder history,
  - 1/5th had used cocaine or a non-prescribed opioid in the last 6 months

The Impact of SUD care on HIV care

- No SUD, no recent use: 7.5% viral non-suppression

- No SUD, but recent use: 1.59-1.79x RR
- Hx Cocaine UD but no recent use: 1.63-1.79x RR
  - Notably found to be HIGHER than Cocaine UD WITH recent use 1.53-1.56x RR
- Hx Opioid UD but no recent use: 1-1.12. RR
  - With recent use increases to 1.53-1.56x RR
- Hx both Cocaine and Opioid UD with recent use: 1.75-1.89x RR

The Impact of SUD care on HIV care

- Takeaways from Lesko et al. (2023)
  - Any recent use of cocaine or non-prescribed opioids increased risk of viral non-suppression
  - A history of OUD did not
  - A history of Cocaine UD significantly increased risk
  - Concurrent substance use had an additive effect

- Other studies have made similar conclusions, and have even identified dose-dependent impacts on viral non-suppression (Carrico et al., 2019)

The Impact of SUD care on HIV care

- Alcohol, the most common SUD, hinders viral suppression(Azar et al., 2010)
  - Severity of SUD is associated with worsening outcomes
  - Reduced linkage to care (Episodic care, i.e. ED, instead of organized f/u)
  - Reduced viral suppression

- In individuals ever diagnosed with AUD, any alcohol use significantly reduces rates of viral suppression (Lesko et al., 2022)

The Impact of SUD care on HIV care

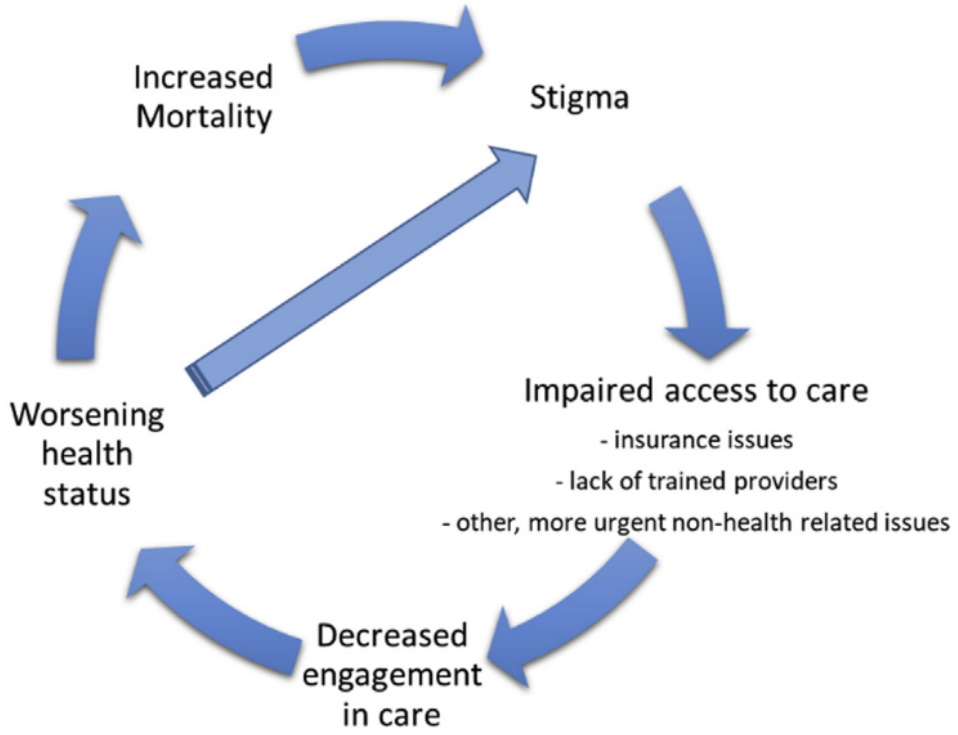


Fig. 2. Cycle of factors contributing to increased mortality in HIV-infected PWID.

Bositis (2019)

The Impact of SUD care on HIV care

- From 2011-2015 the overall risk of death for PLWH decreased by 10%, but risk of overdose death increased 43% (Bosh et al., 2019)
- This has been found to be true for all PLWH, including those with CD4 >200. This suggests that non-HIV related causes drive this difference, most concerningly overdose deaths.

The Impact of OUD care on HIV care

- Opioid Agonist Therapy (OAT) – the act of prescribing an alternative opioid as a form of harm reduction and stabilization
  - Provides a sense of stability
  - Promotes regular follow-up
  - Reduces peaks and valleys of use
  - Reduces risk of overdose through safe titration and ensured dosages
  - Gradual reduction over time

The Impact of OUD care on HIV care

- **Buprenorphine**: partial mu-opioid receptor agonist
  - **Suboxone** (SL; with Naloxone) OD or **Sublocade** (IM) q4w
  - **Naloxone**: opioid receptor antagonists
- **Methadone**: synthetic mu-opioid agonist
- **Morphine SR** (Kadian): mu-opioid agonist

The Impact of OUD care on HIV care

- Methadone OAT… (Hill et al., 2023; Doshi et al., 2021; Guise et al., 2017; McNamara et al., 2021):
  - Reduce HIV transmission risk behaviours
  - Reduces Acquisition
  - Reduces transmission to others
  - Adherence to ART
  - Maintenance of viral suppression
  - Improvement to related antimicrobial and HCV treatment

The Impact of AUD care on HIV care

- **Naltrexone**: opioid and endorphin antagonist
  - Often emphasized for its ability to help cravings
- **Acamprosate**: weak glutamate/NMDA antagonist
  - Often emphasized in the context of bolstering ongoing abstinence

The Impact of AUD care on HIV care

- **Naltrexone ER** (an IM injection q28d) has demonstrated in a double blind-RCT a significant, positive impact on both viral suppression and alcohol consumption (Springer et al, 2017; Springer et al., 2018)

The Impact of StUD care on HIV care

- Pharmacologic agents: NONE
  - Potential options: mirtazapine, Naltrexone/Bupropion, Topiramate, or even Dextroamphetamine or methylphenidate
  - However, systematic review of systematic reviews have NOT found sufficient evidence to support or discount their use (Ronsley et al., 2020)

- **Contingency management** – rewarding patients for the achievement of specific and measurable desired behaviour (Ronsley et al., 2020; Hill et al., 2023)

The Impact of StUD care on HIV care

- Contingency management (CM) has positive impacts on HIV care
  - Significant positive impact on HIV ART adherence (Ribeiro et al., 2023)
  - Significantly improved viral suppression among participants engaged in CM (Cunningham et al., 2020)

The Impact of SUDs care on HIV care

- It is important to note the indirect ways in which substance use negatively impacts HIV care (Hill et al., 2023)
  - Housing difficulties
  - Interactions with the justice system
  - Incarceration
  - Racism
  - Stigma when trying to access care
  - Lack of transportation
  - Untreated mental health concerns
  - Financial impact

The Impact of SUD Rx on HIV Rx

- Concern about drug-drug interactions have been raised by both SUD care providers and HIV care providers

- Pertinent impacts on ART activity:
  - **Atazanavir**: potentially decreased concentration with buprenorphine (for OUD)

The Impact of ART Rx on OUD Rx

- **Methadone**: hepatic metabolism, CYP3A4 (Cytochrome P450 family)
  - Increased by: none!
  - Decreased by: Darunavir, Atazanavir, Efavirenz, Rilpivirine
- **Buprenorphine**: hepatic metabolism, CYP3A4 (and CYP2C8)
  - Increased by: Elvitegravir/cobicistat, Darunavir, Atazanavir
  - Decreased by: Efavirenz, Etravirine

- Management: careful dose titration, consideration with medication changes (Bositis et al., 2019; Lier et al., 2024)

The Impact of HIV care on SUD care

- HIV can negatively impact treatment of substance use disorders
  - Stigma
  - Deprioritization
  - Emphasis on abstinence then causes disengagement

Integrated Care Models

Integrated Care Models

- Integrating HIV and SUD care improves outcomes for patients (Hill et al., 2023).
  - Brick-and-mortar clinics
  - Mobile Health Clinics

Integrated Care Models

- **Brick-and-mortar clinics:** one physical location. Ideally able to offer routine screening for SUD, HIV testing, and appropriate prevention or treatment of HIV (PrEP, ART, etc.), and treatment for identified SUD
- Pros: positive impact on retention in HIV prevention, retention in HIV care, reducing unplanned or incomplete discharges, and is cost effective (Serota et al., 2020; Seval et al., 2020)

Integrated Care Models

- **Brick-and-mortar clinics:** literature review of quantitative/RCT studies regarding impact on outcomes (Vold, 2019) has identified:
  - Clinics that provided both HIV and OUD care had significantly better retention in OAT, viral suppression, and CD4 recovery than in patients engaged in care at different sites
  - Significantly improved effect on HIV suppression when integrating direct administration of both OAT and ART
- Ultimately this review commented on the overall lack of data

Integrated Care Models

- **Brick-and-mortar clinics:** patient experience in such a model led to many positives (Guise et al., 2017):
  - Co-location highly valued by patients
  - Raised confidence in both HIV and SUD care providers
  - Felt less stigma regarding either issues

- Guise et al. also demonstrated decreased rates of referral rejection to specialty care.

Integrated Care Models

- **Brick-and-mortar clinics:** Limitations identified include:
  - Geographic location
    - Lack of transport as a common issue
    - Lack of childcare
  - Medical institution mistrust
  - Racism and prejudice

Integrated Care Models

- **Mobile Health Clinic Interventions**: more free-form, mobile group either on foot or in a vehicle that travels directly to individuals or designated meeting spots to provide care
  - Goal is to eliminate barriers that are present with brick-and-mortar approaches

- Model: Palliative Education and Care for the Homeless (PEACH) employing a similar model for palliative care!

Integrated Care Models

- INTEGRA Study by HIV Prevention Trials Network
  - Randomized, open label, two-arm trial
  - Examining efficacy of a MHC with “one stop” health services for PWID with OUD and at risk or living with HIV
    - Compared to peer navigation
    - Compared to brick and mortar clinics
  - Method: MHC parks in community locations to overcome transportation and stigma barriers in five different cities in the US

Integrated Care Models

- INTEGRA Study by HIV Prevention Trials Network
  - Outcomes:
    - Engagement in methadone OAT
    - Engagement in HIV PrEP if at risk
    - Engagement in HIV care for PLWH

Integrated Care Models

- Integrated care models recommendations including:
  - Co-location should be favored over referral models
  - Client centered approach allowing for harm reduction focused on low-threshold access to care, emphasis long-term retention
- Ultimately there is the belief that HIV providers have a duty to also be comfortable treating SUDs, but this is placing excess pressure

Harm Reduction Principles

Harm Reduction Principles

- Discussing contamination of substances
- Safe supply of substances (such as opioid prescriptions) or having substances tested
- Safe supply of tools to use substances
- Safe environments to use in (such as a safe injection site, using with a trusted individual)
- Testing doses before using
- Recovery prescriptions, such as Narcan

Harm Reduction Principles

Sterile injection

- Use a tourniquet to minimize punctures
- Alcohol swab for 30s before/after
- Sterile syringe/supplies each time
- Safe disposal

Harm Reduction Principles

Harm Reduction Principles

Safe consumption sites

- Many available all over the city!
- Please consider looking up perhaps the nearest ones in your community!

https://www.toronto.ca/community-people/health-wellness-care/health-programs-advice/supervised-injection-services/

Harm Reduction Principles

- Upcoming expected closured likely to negatively impact community

Local Resources

Toronto Drug Checker: continually updated analysis of the contents of substances submitted to the city for purity testing

https://drugchecking.community/

Allows individuals to understand what other substances might also be mixed into what they expect to be fentanyl/cocaine/meth

Local Resources

Rapid Access Addictions Medicine Clinics (RAAMs or RAACs)

- Consult Meta:Phi RAAM Clinics Map
  - https://www.metaphi.ca/raam-clinics/
- Local SUD clinics (True North, Coderix)
- CAMH

“The ambitious goal of ending the transmission of HIV will never be realized if we do not also address drug use while ensuring there are no disparities in access to treatment of HIV and SUD”

- **Dr. Nora Volkow**, director of the National Institute on Drug Abuse, 2020

Discussion

How have you incorporated SUD care into your HIV care?

What issues have you faced?

What resources have you found most helpful?

References

- Alpren, Charles, Erica L. Dawson, Betsey John, Kevin Cranston, Nivedha Panneer, H. Dawn Fukuda, Kathleen Roosevelt, et al. "Opioid Use Fueling HIV Transmission in an Urban Setting: An Outbreak of HIV Infection Among People Who Inject Drugs—Massachusetts, 2015–2018." *American Journal of Public Health* 110, no. 1 (January 2020): 37–44. https://doi.org/10.2105/AJPH.2019.305366.
- Aralis, Hilary J., Steve Shoptaw, Ron Brookmeyer, Amy Ragsdale, Robert Bolan, and Pamina M. Gorbach. "Psychiatric Illness, Substance Use, and Viral Suppression Among HIV-Positive Men of Color Who Have Sex with Men in Los Angeles." *AIDS and Behavior* 22, no. 10 (October 2018): 3117–29. https://doi.org/10.1007/s10461-018-2055-z.
- Azar, Marwan M., Sandra A. Springer, Jaimie P. Meyer, and Frederick L. Altice. "A Systematic Review of the Impact of Alcohol Use Disorders on HIV Treatment Outcomes, Adherence to Antiretroviral Therapy and Health Care Utilization." *Drug and Alcohol Dependence* 112, no. 3 (December 2010): 178–93. https://doi.org/10.1016/j.drugalcdep.2010.06.014.
- Bositis, Christopher M., and Joshua St. Louis. "HIV and Substance Use Disorder." *Infectious Disease Clinics of North America* 33, no. 3 (September 2019): 835–55. https://doi.org/10.1016/j.idc.2019.04.006.
- Carrico, Adam W., Peter W. Hunt, Torsten B. Neilands, Samantha E. Dilworth, Jeffrey N. Martin, Steven G. Deeks, and Elise D. Riley. "Stimulant Use and Viral Suppression in the Era of Universal Antiretroviral Therapy." *JAIDS Journal of Acquired Immune Deficiency Syndromes* 80, no. 1 (January 1, 2019): 89–93. https://doi.org/10.1097/QAI.0000000000001867.
- Cranston, Kevin, Charles Alpren, Betsey John, Erica Dawson, Kathleen Roosevelt, Amanda Burrage, Janice Bryant, et al. "*Notes from the Field:* HIV Diagnoses Among Persons Who Inject Drugs — Northeastern Massachusetts, 2015–2018." *MMWR. Morbidity and Mortality Weekly Report* 68, no. 10 (March 15, 2019): 253–54. https://doi.org/10.15585/mmwr.mm6810a6.

References

- Cunningham, Chinazo O., Julia H. Arnsten, Chenshu Zhang, Moonseong Heo, Marcus A. Bachhuber, John J. Jost, Robert Grossberg, Melissa R. Stein, and Nancy L. Sohler. "Abstinence-Reinforcing Contingency Management Improves HIV Viral Load Suppression among HIV-Infected People Who Use Drugs: A Randomized Controlled Trial." *Drug and Alcohol Dependence* 216 (November 2020): 108230. https://doi.org/10.1016/j.drugalcdep.2020.108230.
- Doshi, Rupali Kotwal, Morgan Byrne, Matthew Levy, Leah Varga, Irene Kuo, Michael A. Horberg, Amanda D. Castel, and Anne K. Monroe. "Association of Substance Use Disorders with Engagement in Care and Mortality among a Clinical Cohort of People with HIV in Washington, DC." *AIDS and Behavior* 25, no. 7 (July 2021): 2289–2300. https://doi.org/10.1007/s10461-021-03157-4.
- Evans, Mary E., Sarah M. Labuda, Vicki Hogan, Christine Agnew-Brune, John Armstrong, Amarnath Babu Periasamy Karuppiah, Deborah Blankinship, et al. "*Notes from the Field*: HIV Infection Investigation in a Rural Area — West Virginia, 2017." *MMWR. Morbidity and Mortality Weekly Report* 67, no. 8 (March 2, 2018): 257–58. https://doi.org/10.15585/mmwr.mm6708a6.
- Garner, Bryan R., Heather J. Gotham, Hannah K. Knudsen, Brittany A. Zulkiewicz, Stephen J. Tueller, Marcus Berzofsky, Tom Donohoe, Erika G. Martin, L. Lauren Brown, and Theodore Gordon. "The Prevalence and Negative Impacts of Substance Use Disorders among People with HIV in the United States: A Real-Time Delphi Survey of Key Stakeholders." *AIDS and Behavior* 26, no. 4 (April 2022): 1183–96. https://doi.org/10.1007/s10461-021-03473-9.
- Guise, Andy, Maureen Seguin, Gitau Mburu, Susie McLean, Pippa Grenfell, Zahed Islam, Sergii Filippovych, et al. "Integrated Opioid Substitution Therapy and HIV Care: A Qualitative Systematic Review and Synthesis of Client and Provider Experiences." *AIDS Care* 29, no. 9 (September 2, 2017): 1119–28. https://doi.org/10.1080/09540121.2017.1300634.

References

- Hartzler, Bryan, Julia C. Dombrowski, Heidi M. Crane, Joseph J. Eron, Elvin H. Geng, W. Christopher Mathews, Kenneth H. Mayer, et al. "Prevalence and Predictors of Substance Use Disorders Among HIV Care Enrollees in the United States." *AIDS and Behavior* 21, no. 4 (April 2017): 1138–48. https://doi.org/10.1007/s10461-016-1584-6.
- Hill, Katherine, Irene Kuo, Sheela V. Shenoi, Mahalia S. Desruisseaux, and Sandra A. Springer. "Integrated Care Models: HIV and Substance Use." *Current HIV/AIDS Reports* 20, no. 5 (October 2023): 286–95. https://doi.org/10.1007/s11904-023-00667-9.
- Lesko, Catherine R., Oluwaseun O. Falade-Nwulia, Jarratt D. Pytell, Heidi E. Hutton, Anthony T. Fojo, Jeanne C. Keruly, Richard D. Moore, and Geetanjali Chander. "Joint Effects of Substance Use Disorders and Recent Substance Use on HIV Viral Non-suppression among People Engaged in HIV Care in an Urban Clinic, 2014–2019." *Addiction* 118, no. 11 (November 2023): 2193–2202. https://doi.org/10.1111/add.16301.
- Lesko, Catherine R., Heidi E. Hutton, Jessie K. Edwards, Mary E. McCaul, Anthony T. Fojo, Jeanne C. Keruly, Richard D. Moore, and Geetanjali Chander. "Alcohol Use Disorder and Recent Alcohol Use and HIV Viral Non-Suppression Among People Engaged in HIV Care in an Urban Clinic, 2014–2018." *AIDS and Behavior* 26, no. 4 (April 2022): 1299–1307. https://doi.org/10.1007/s10461-021-03487-3.
- Lier, Audun J., Adati Tarfa, Sheela V. Shenoi, Irene Kuo, and Sandra A. Springer. "HIV and Substance Use Disorders." *Infectious Disease Clinics of North America* 38, no. 3 (September 2024): 599–611. https://doi.org/10.1016/j.idc.2024.06.003.
- McNamara, Katelyn F, Breanne E Biondi, Raúl U Hernández-Ramírez, Noor Taweh, Alyssa A Grimshaw, and Sandra A Springer. "A Systematic Review and Meta-Analysis of Studies Evaluating the Effect of Medication Treatment for Opioid Use Disorder on Infectious Disease Outcomes." *Open Forum Infectious Diseases* 8, no. 8 (August 1, 2021): ofab289. https://doi.org/10.1093/ofid/ofab289.

References

- Peters, Philip J., Pamela Pontones, Karen W. Hoover, Monita R. Patel, Romeo R. Galang, Jessica Shields, Sara J. Blosser, et al. “HIV Infection Linked to Injection Use of Oxymorphone in Indiana, 2014–2015.” *New England Journal of Medicine* 375, no. 3 (July 21, 2016): 229–39. https://doi.org/10.1056/NEJMoa1515195.
- Ribeiro, Ariadne, Denis Gomes Alves Pinto, Alisson Paulino Trevisol, Vitor Tardelli, Felipe Arcadepani, Rogério Adriano Bosso, Marcelo Ribeiro, and Thiago Marques Fidalgo. “Can Contingency Management Solve the Problem of Adherence to Antiretroviral Therapy in Drug-Dependent Individuals?” *Health Education & Behavior* 50, no. 6 (December 2023): 738–47. https://doi.org/10.1177/10901981221148966.
- Ronsley, Claire, Seonaid Nolan, Rod Knight, Kanna Hayashi, Jano Klimas, Alex Walley, Evan Wood, and Nadia Fairbairn. “Treatment of Stimulant Use Disorder: A Systematic Review of Reviews.” Edited by Kenji Hashimoto. *PLOS ONE* 15, no. 6 (June 18, 2020): e0234809. https://doi.org/10.1371/journal.pone.0234809.
- Serota, David P, Joshua A Barocas, and Sandra A Springer. “Infectious Complications of Addiction: A Call for a New Subspecialty Within Infectious Diseases.” *Clinical Infectious Diseases* 70, no. 5 (February 14, 2020): 968–72. https://doi.org/10.1093/cid/ciz804.
- Seval, Nikhil, Ellen Eaton, and Sandra A Springer. “Beyond Antibiotics: A Practical Guide for the Infectious Disease Physician to Treat Opioid Use Disorder in the Setting of Associated Infectious Diseases.” *Open Forum Infectious Diseases* 7, no. 1 (January 1, 2020): ofz539. https://doi.org/10.1093/ofid/ofz539.
- Springer, Sandra A., Angela Di Paola, Marwan M. Azar, Russell Barbour, Archana Krishnan, and Frederick L. Altice. “Extended-Release Naltrexone Reduces Alcohol Consumption among Released Prisoners with HIV Disease as They Transition to the Community.” *Drug and Alcohol Dependence* 174 (May 2017): 158–70. https://doi.org/10.1016/j.drugalcdep.2017.01.026.
- Springer, Sandra A., P. Todd Korthuis, and Carlos Del Rio. “Integrating Treatment at the Intersection of Opioid Use Disorder and Infectious Disease Epidemics in Medical Settings: A Call for Action After a National Academies of Sciences, Engineering, and Medicine Workshop.” *Annals of Internal Medicine* 169, no. 5 (September 4, 2018): 335–36. https://doi.org/10.7326/M18-1203.
- Tyndall, Mark W, Sue Currie, Patricia Spittal, Kathy Li, Evan Wood, Michael V O’Shaughnessy, and Martin T Schechter. “Intensive Injection Cocaine Use as the Primary Risk Factor in the Vancouver HIV-1 Epidemic:” *AIDS* 17, no. 6 (April 2003): 887–93. https://doi.org/10.1097/00002030-200304110-00014.
- Vold, Jørn Henrik, Christer Aas, Rafael Alexander Leiva, Peter Vickerman, Fatemeh Chalabianloo, Else-Marie Løberg, Kjell Arne Johansson, and Lars Thore Fadnes. “Integrated Care of Severe Infectious Diseases to People with Substance Use Disorders; a Systematic Review.” *BMC Infectious Diseases* 19, no. 1 (December 2019): 306. https://doi.org/10.1186/s12879-019-3918-2.

Extras

STBBI and Substance Use Disorders

- Substance use and disorders are associated with other infections STBBI
  - IVDU is estimated to account for 1% of new HBV and 23% of new HCV (Vold et al., 2019)
  - IVDU is also associated with bacterial and fungal infections, including infectious endocarditis (McNamara et al., 2021)

The Impact of SUD care on HIV care

- Using substances can invite exposure to infections, including HIV, through many avenues
  - Use of non-sterile equipment
  - Use of soiled substances
  - Sharing of tools with other individuals

- Further, behavioral changes after ingesting substances can lead to further risk-taking behaviour, especially in the context of stimulant use, such as methamphetamine (Tyndall et al., 2003)

End