

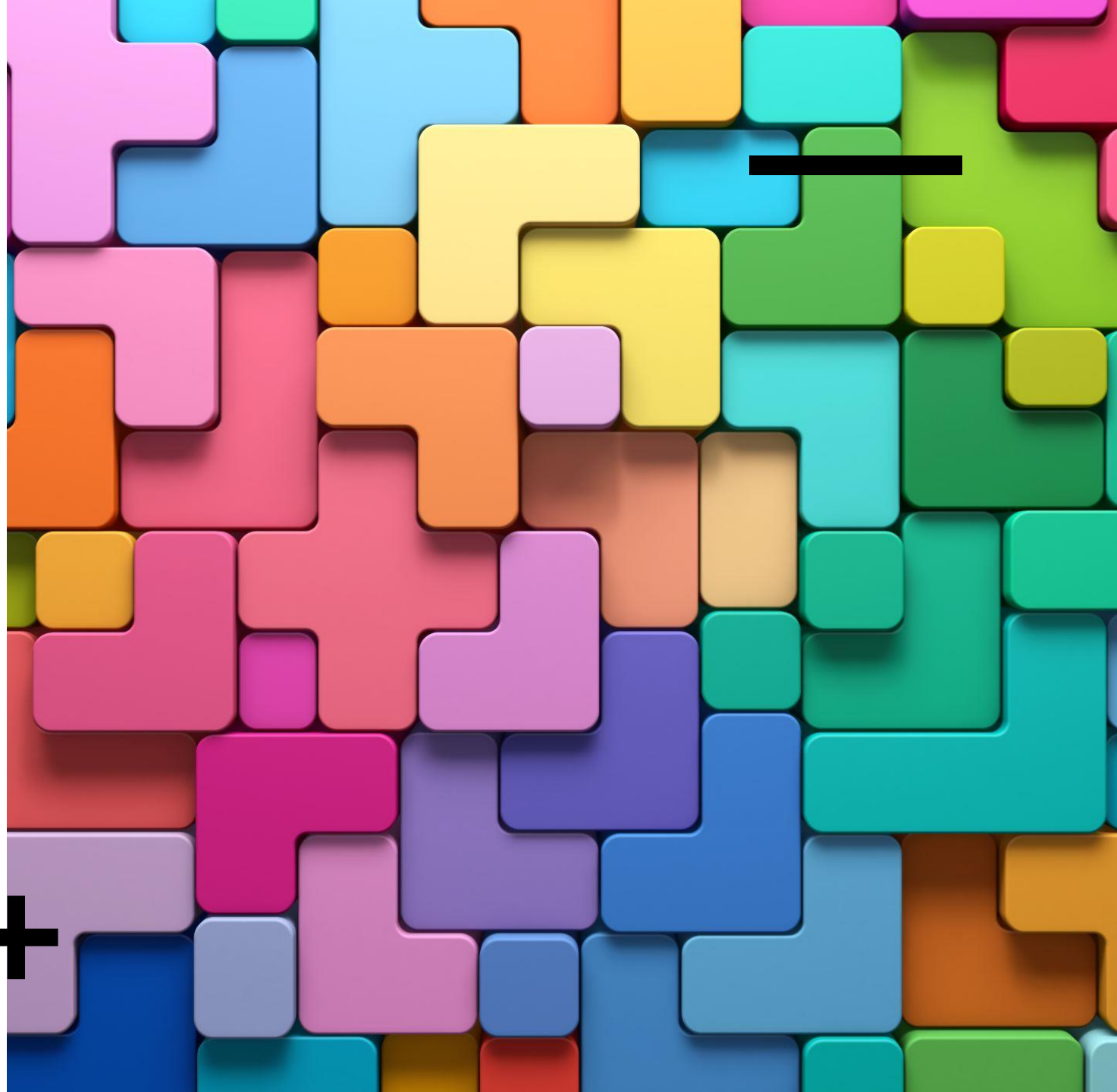


Introduction to PrEP

Bailey Benidir, PharmD, AAHIVP



Survey





How many of you are currently prescribing
or have prescribed PrEP?

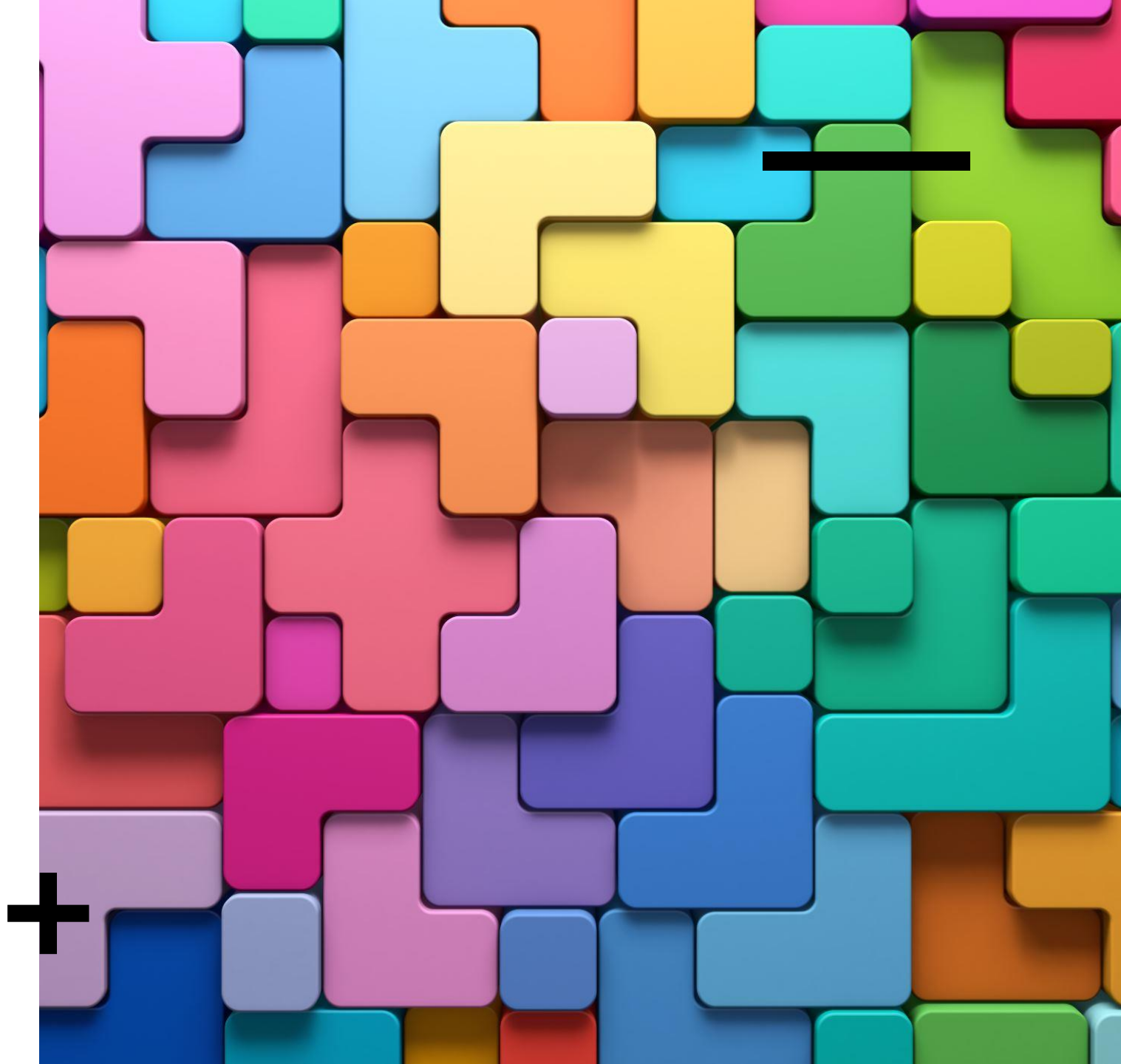
If you are not prescribing PrEP, what is your primary hesitation?

- a. Lack of knowledge or confidence
- b. Concerns about costs to the patient
- c. Concerns about behavioral changes and health consequences
- d. Personal beliefs
- e. Concerns about patient adherence



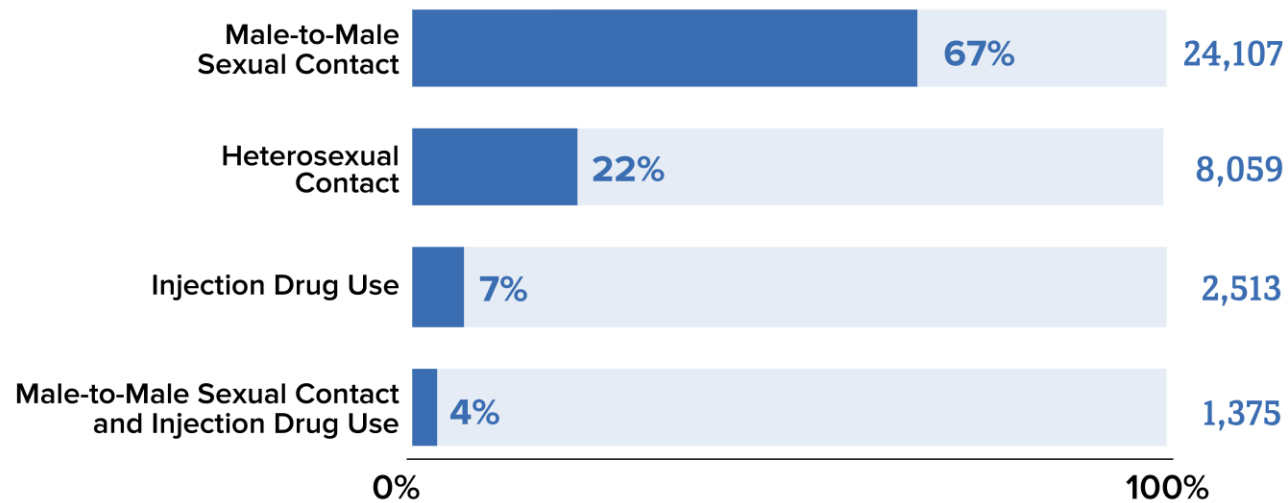
Why PrEP?

Because it is needed!



Epidemiology

New HIV Diagnoses in the US and Dependent Areas by Transmission Category, 2021*



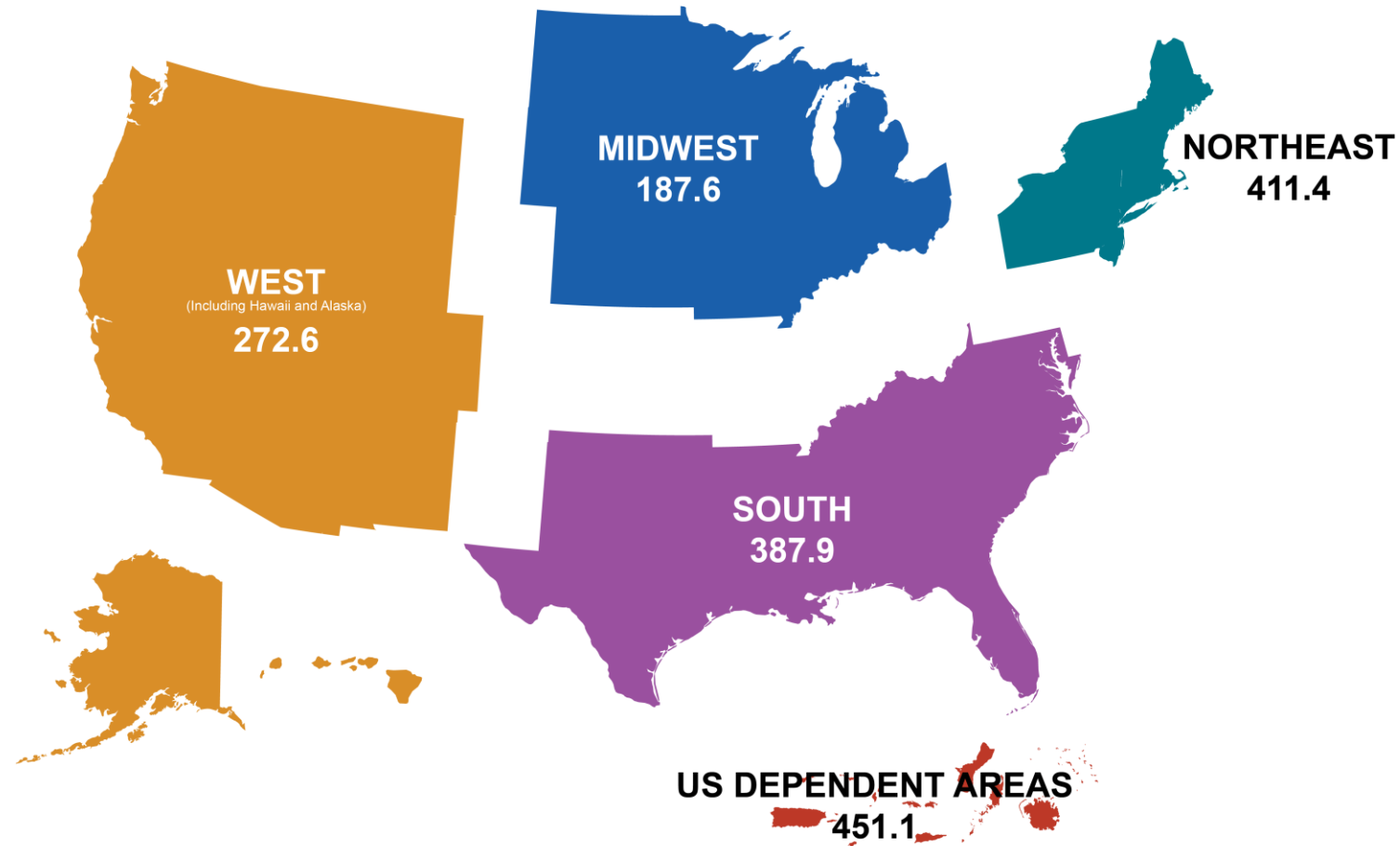
NOTE: Does not include *other* and *perinatal* transmission categories.

* Among people aged 13 and older.

Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2021. *HIV Surveillance Report* 2023;34.



Rates of People with Diagnosed HIV in the US and Dependent Areas by Region, 2021*†

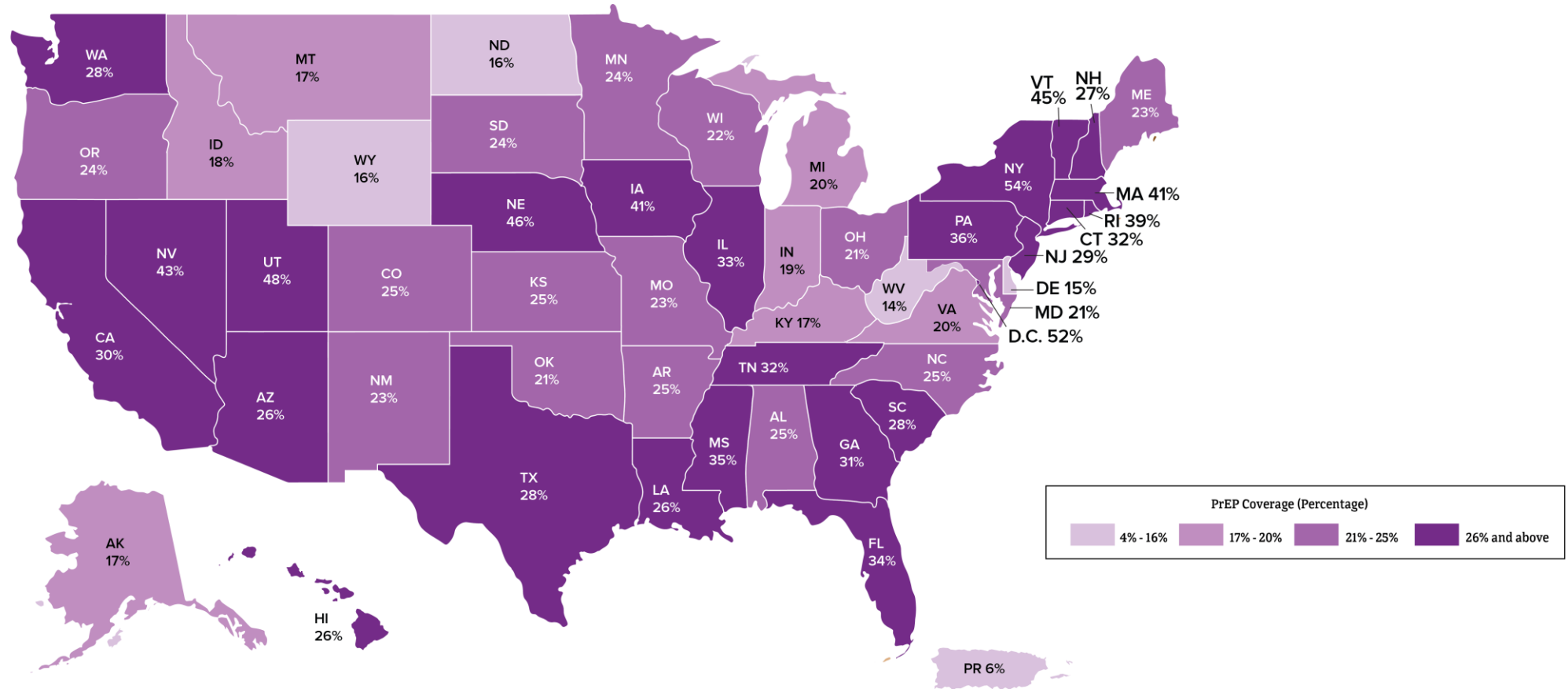


* Rates are per 100,000 people.

† Includes adults, adolescents, and children under the age of 13.

Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2021. *HIV Surveillance Report* 2023;34.

PrEP Coverage in the US and Puerto Rico by Area of Residence, 2021*

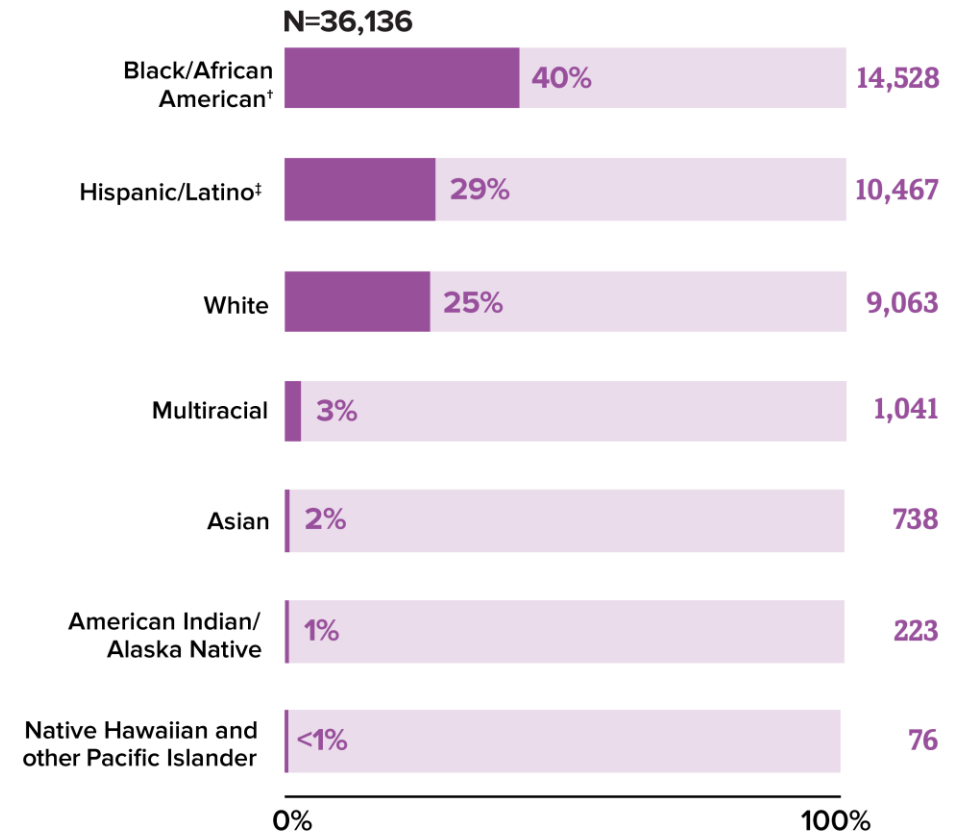


* Among people aged 16 and older.

Source: CDC. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas, 2021. *HIV Surveillance Supplemental Report* 2023;28(4).

New HIV Diagnoses in the US and Dependent Areas by Race and Ethnicity, 2021*

Racial and ethnic differences in HIV diagnoses persist.



* Among people aged 13 and older.

[†] *Black* refers to people having origins in any of the Black racial groups of Africa. *African American* is a term often used for people of African descent with ancestry in North America.

[‡] Hispanic/Latino people can be of any race.

Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2021. *HIV Surveillance Report* 2023;34.

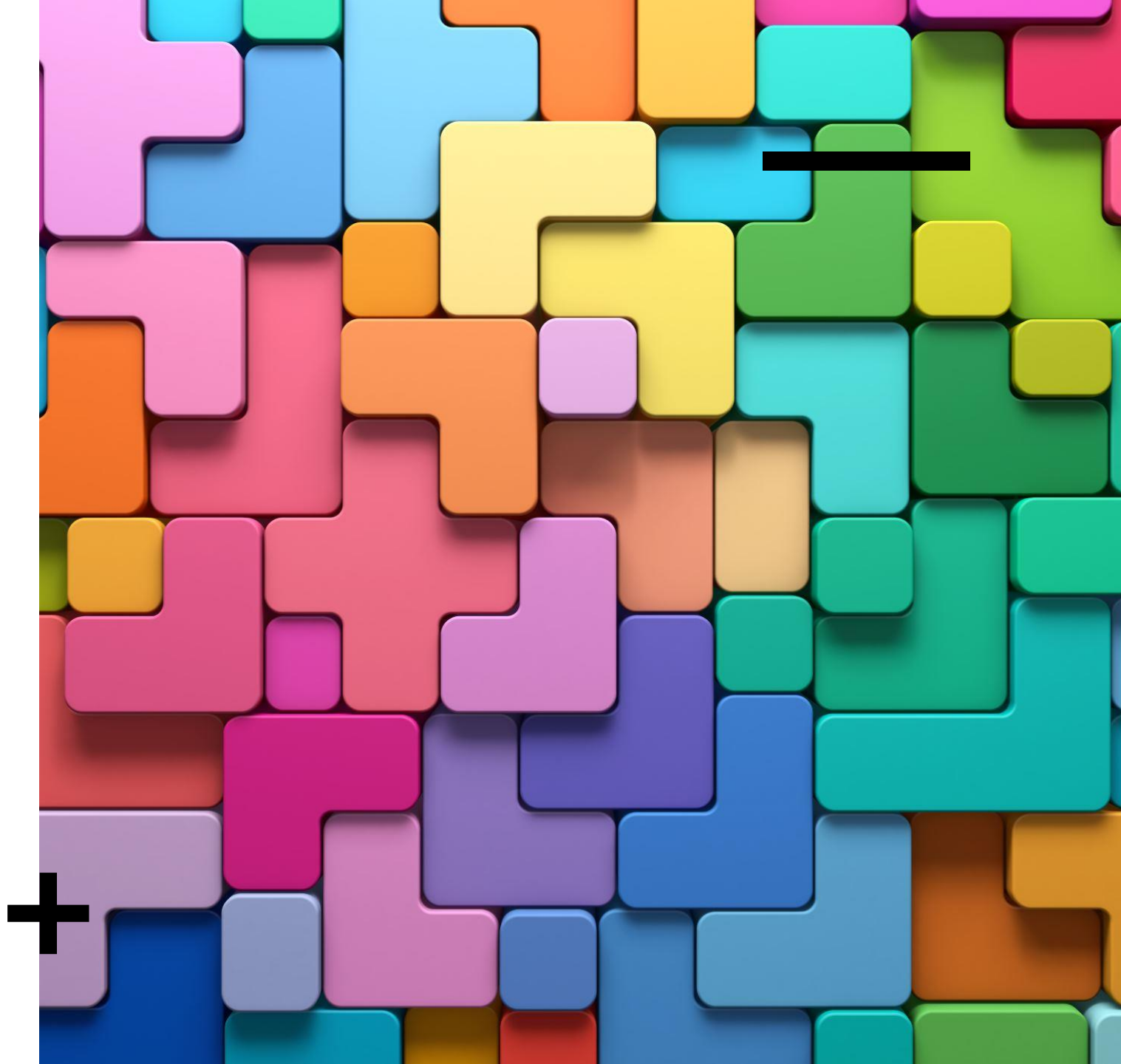
Epidemiology

- In 2019, only **14% of the Hispanic/Latino patients** who could benefit from PrEP received a prescription
- In 2019, only **8% of the black/African American patients** who could benefit from PrEP received a prescription
- In 2019, only **10% of women** who could benefit from PrEP received a prescription



Why PrEP?

Because it works!



Data Supporting PrEP

Taking oral PrEP daily or consistently reduces the sexual risk of acquiring HIV by 99% in men who have sex with men (MSM) and transgender women

iPrEX OLE

An observational study of preexposure prophylaxis uptake, sexual practices, and HIV incidence among men and transgender women who have sex with men

Robert M Grant, MD^{1,2,3}, Peter L. Anderson, PharmD⁴, Vanessa McMahan, BS¹, Albert Liu, MD^{2,5}, K. Rivet Amico, PhD⁶, Megha Mehrotra, MPH¹, Sybil Hosek, PhD⁷, Carlos Mosquera, MD⁸, Martin Casapia, MD⁹, Orlando Montoya¹⁰, Susan Buchbinder, MD^{2,5}, Valdilea G. Veloso, MD¹¹, Kenneth Mayer, MD¹², Suwat Charialertsak, MD¹³, Linda-Gail Bekker, PhD¹⁴, Esper G. Kallas, MD¹⁵, Mauro Schechter, MD¹⁶, Juan Guanira, MD⁸, Lane Bushman, BChem⁴, David N. Burns, MD¹⁷, James F. Rooney, MD¹⁸, David V. Glidden, PhD², and for the iPrEx study team

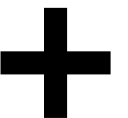
Data Supporting PrEP

Taking oral PrEP (recently) reduces the sexual risk of acquiring HIV by $\geq 90\%$ in heterosexual men and women

Partners PrEP Study

Single-Agent Tenofovir versus Combination Emtricitabine/ Tenofovir for Pre-Exposure Prophylaxis against HIV-1 Acquisition: A Randomized Trial

Professor Jared M. Baeten, M.D., Deborah Donnell, Ph.D., Nelly R. Mugo, M.B., Ch.B., Patrick Ndase, M.B., Ch.B., Katherine K. Thomas, M.S., James D. Campbell, M.D., Jonathan Wangisi, M.B., Ch.B., Jordan W. Tappero, M.D., Elizabeth A. Bukusi, M.B., Ch.B., Professor Craig R. Cohen, M.D., Professor Elly Katabira, M.B., Professor Allan Ronald, M.D., Elioda Tumwesigye, M.B., Ch.B., Edwin Were, M.B., Ch.B., Professor Kenneth H. Fife, M.D., James Kiarie, M.B., Ch.B., Professor Carey Farquhar, M.D., Professor Grace John-Stewart, M.D., Lara Kidoguchi, M.P.H., Professor Robert W. Coombs, M.D., Professor Craig Hendrix, M.D., Mark A. Marzinke, Ph.D., Professor Lisa Frenkel, M.D., Jessica E. Haberer, M.D., Professor David Bangsberg, M.D., and Professor Connie Celum, M.D. for the Partners PrEP Study Team



Data Supporting PrEP

Taking injectable PrEP reduces the sexual risk of acquiring HIV by 99% in men and women

HPTN 083 & 084

Cabotegravir for HIV Prevention in Cisgender Men and Transgender Women

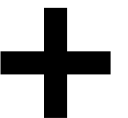
[R.J. Landovitz](#), [D. Donnell](#), [M.E. Clement](#), [B. Hanscom](#), [L. Cottle](#), [L. Coelho](#), [R. Cabello](#), [S. Chariyalertsak](#), [E.F. Dunne](#), [I. Frank](#), [J.A. Gallardo-Cartagena](#), [A.H. Gaur](#), [P. Gonzales](#), [H.V. Tran](#), [J.C. Hinojosa](#), [E.G. Kallas](#), [C.F. Kelley](#), [M.H. Losso](#), [J.V. Madruga](#), [K. Middelkoop](#), [N. Phanuphak](#), [B. Santos](#), [O. Sued](#), [J. Valencia Huamaní](#), [E.T. Overton](#), [S. Swaminathan](#), [C. del Rio](#), [R.M. Gulick](#), [P. Richardson](#), [P. Sullivan](#), [E. Piwowar-Manning](#), [M. Marzinke](#), [C. Hendrix](#), [M. Li](#), [Z. Wang](#), [J. Marrazzo](#), [E. Daar](#), [A. Asmelash](#), [T.T. Brown](#), [P. Anderson](#), [S.H. Eshleman](#), [M. Bryan](#), [C. Blanchette](#), [J. Lucas](#), [C. Psaros](#), [S. Safren](#), [J. Sugarman](#), [H. Scott](#), [J.J. Fron](#), [S.D. Fields](#), [N.D. Sista](#), [K. Gomez-Feliciano](#), [A. Jennings](#), [R.M. Kofron](#), [T.H. Holtz](#), [K. Shin](#), [J.F. Rooney](#), [K.Y. Smith](#), [W. Spreen](#), [D. Margolis](#), [A. Rinehart](#), [A. Adeyeye](#), [M.S. Cohen](#), [M. McCauley](#), [B. Grinsztejn](#), and HPTN 083 Study Team*

Cabotegravir for the prevention of HIV-1 in women: results from HPTN 084, a phase 3, randomised clinical trial

[Sinead Delany-Moretlwe](#), Prof, PhD,^{a,*} [James P Hughes](#), Prof, PhD,^c [Peter Bock](#), Prof, PhD,^d [Samuel Gurrion Ouma](#), MD,^e [Portia Hunidzarira](#), MBChB,^f [Dishiki Kalonji](#), FCPHM,^g [Noel Kayange](#), MMed,^h [Joseph Makhema](#), FRCP,ⁱ [Patricia Mandima](#), MBChB,^j [Carrie Mathew](#), MBBCh,^a [Elizabeth Spooner](#), MBBCh,^g [Juliet Mpendo](#), MPH,^j [Pamela Mukwekwerere](#), MPH,^f [Nyaradzo Mgodzi](#), MMed,^f [Patricia Nahirya Ntege](#), MMed,^h [Gonasagrie Nair](#), MBChB,ⁱ [Clemensia Nakabiito](#), MMed,^m [Harriet Nuwagaba-Biribonwoha](#), PhD,ⁿ [Ravindre Panchia](#), MBBCh,^b [Nishanta Singh](#), MBChB,^g [Bekezela Siziba](#), MPH,^f [Jennifer Fariior](#), MS,^o [Scott Rose](#), BS,^o [Peter L Anderson](#), Prof, PharmD,^p [Susan H Eshleman](#), Prof, PhD,^q [Mark A Marzinke](#), Prof, MD,^{q,r} [Craig W Hendrix](#), Prof, MD,^f [Stephanie Beigel-Orme](#), BA,^c [Sybil Hosek](#), PhD,^s [Elizabeth Tolley](#), PhD,^o [Nirupama Sista](#), PhD,^o [Adeola Adeyeye](#), MD,^t [James F Rooney](#), MD,^u [Alex Rinehart](#), PhD,^v [William R Spreen](#), PhD,^v [Kimberly Smith](#), MD,^v [Brett Hanscom](#), PhD,^c [Myron S Cohen](#), Prof, MD,^w [Mina C Hosseinipour](#), Prof, MD,^{w,x} and HPTN 084 study group, on behalf of the

Landovitz RJ, Donnell D, Clement ME, et al. Cabotegravir for HIV prevention in cisgender men and transgender women. *N Engl J Med*. 2021;385(7):595-608.

Delany-Moretlwe S, Hughes JP, Bock P, et al. Cabotegravir for the prevention of HIV-1 in women: results from HPTN 084, a phase 3, randomised clinical trial. *Lancet*. 2022;399(10337):1779-1789.



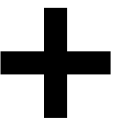
Data Supporting PrEP

Taking oral PrEP daily or consistently reduces the risk of acquiring HIV by 74-84% in persons who inject drugs

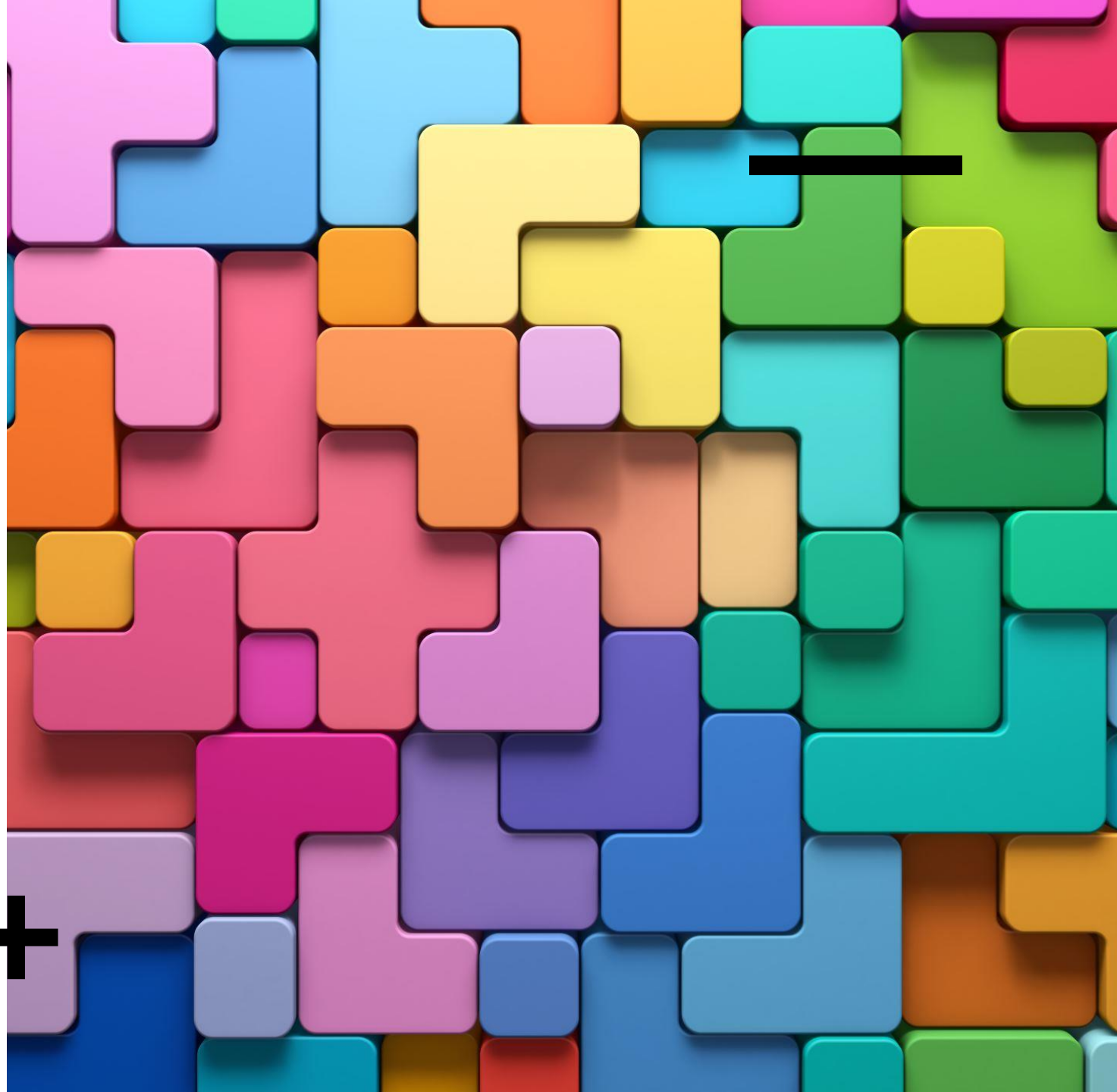
Bangkok Tenofovir Study

The impact of adherence to preexposure prophylaxis on the risk of HIV infection among people who inject drugs

Michael Martin ¹, Suphak Vanichseni, Pravan Suntharasamai, Udomsak Sangkum, Philip A Mock, Manoj Leethochawalit, Sithisat Chiamwongpaet, Marcel E Curlin, Supawadee Na-Pompet, Anchalee Warapronmongkholkul, Somyot Kittimunkong, Roman J Gvetadze, Janet M McNicholl, Lynn A Paxton, Kachit Choopanya; Bangkok Tenofovir Study Group



Indications for PrEP



Indications

- **All sexually active adults and adolescents should be informed of PrEP**
 - Taking a social and sexual history can help to identify those at higher risk of HIV
 - Do not limit histories to specific patient populations



Indications

- Offer PrEP to all patients with an ongoing, substantial risk of HIV infection
 - Persons who inject drugs AND have an HIV-positive injecting partner or who share injection equipment
 - Anal or vaginal sex within the last 6 months AND any of the following:
 - HIV-positive sexual partner
 - Bacterial STI within the last 6 months
 - History of inconsistent condom use with sexual partner(s)



Indications

- Assuming there are no clinical contraindications, offer PrEP to **all patients who request it**
 - Even in the absence of an obvious risk factor



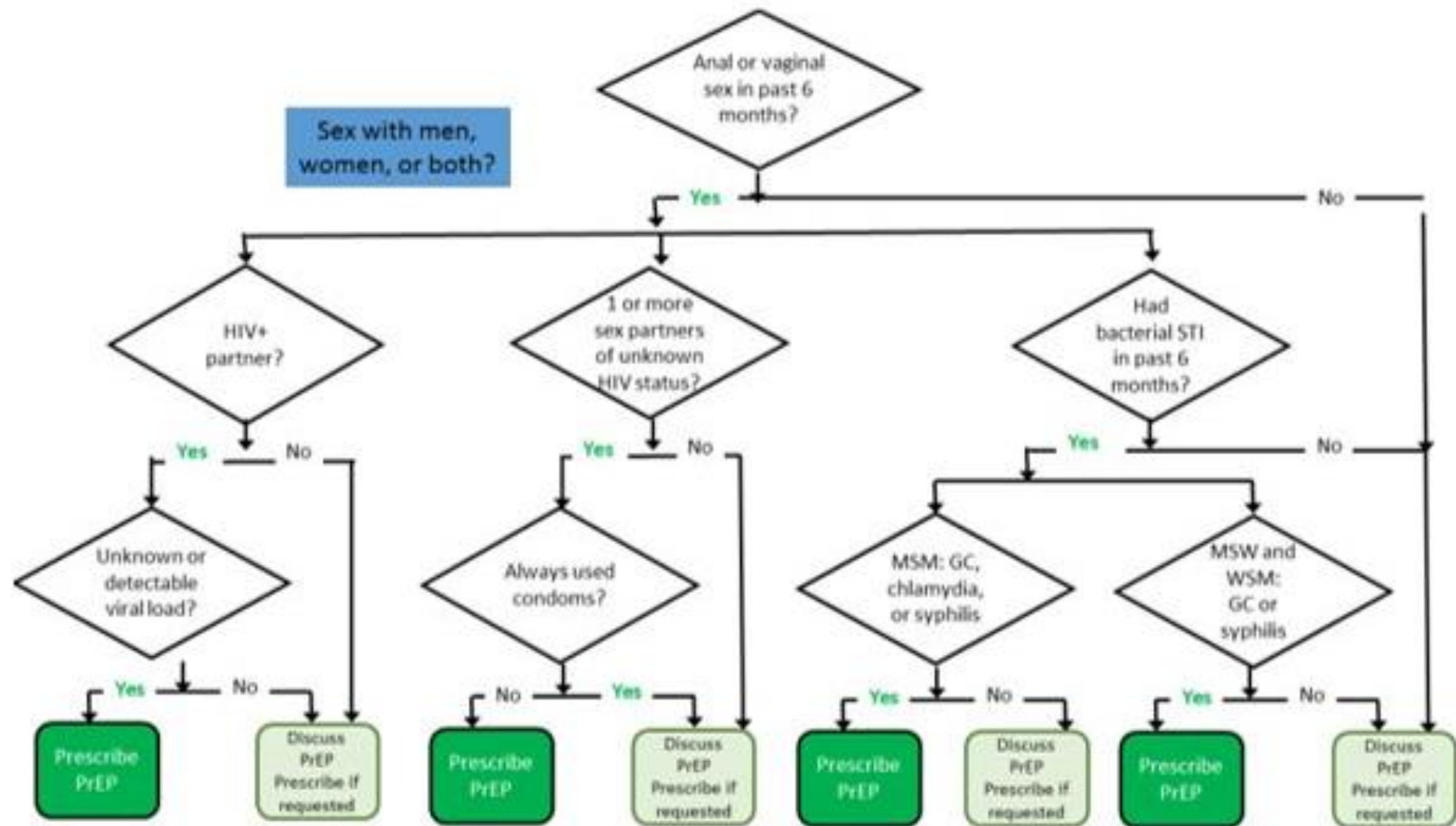
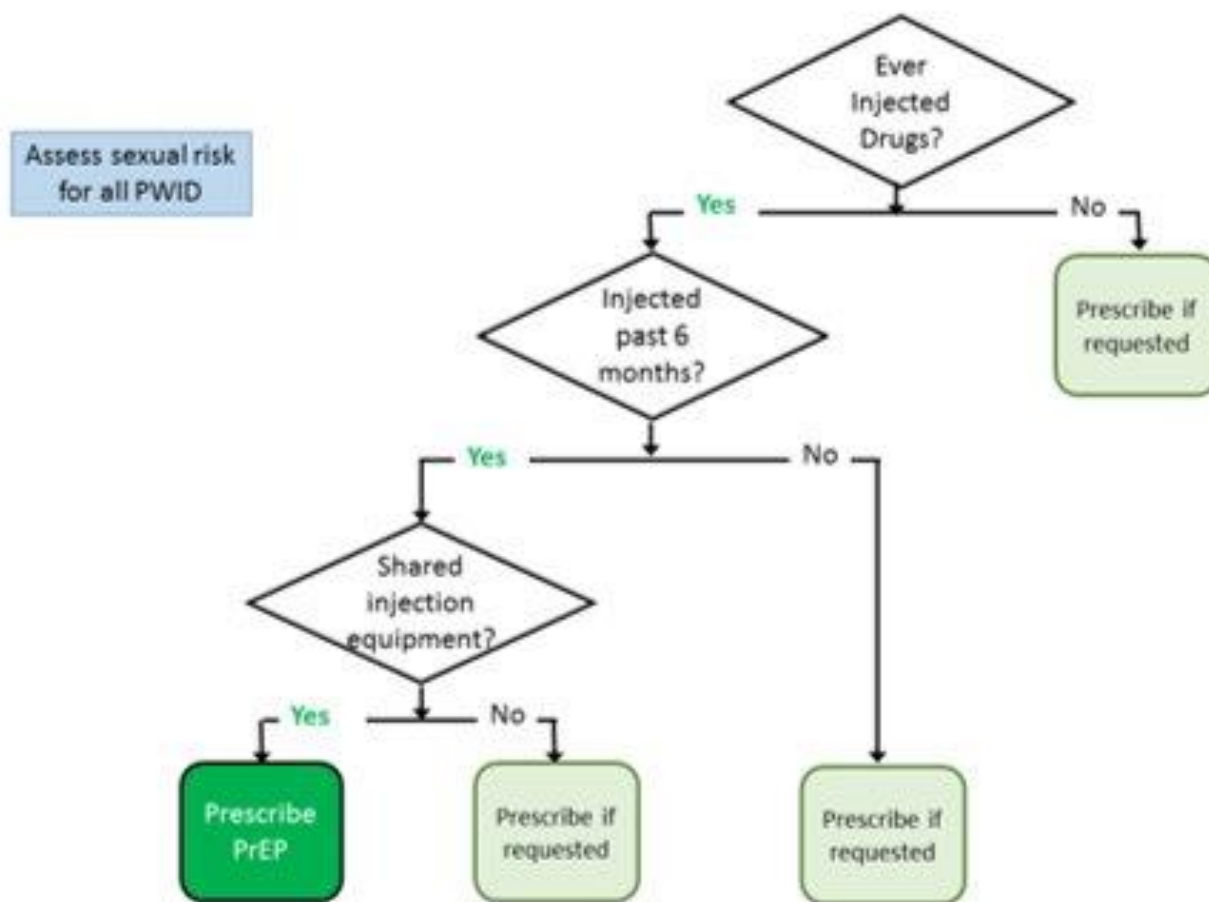
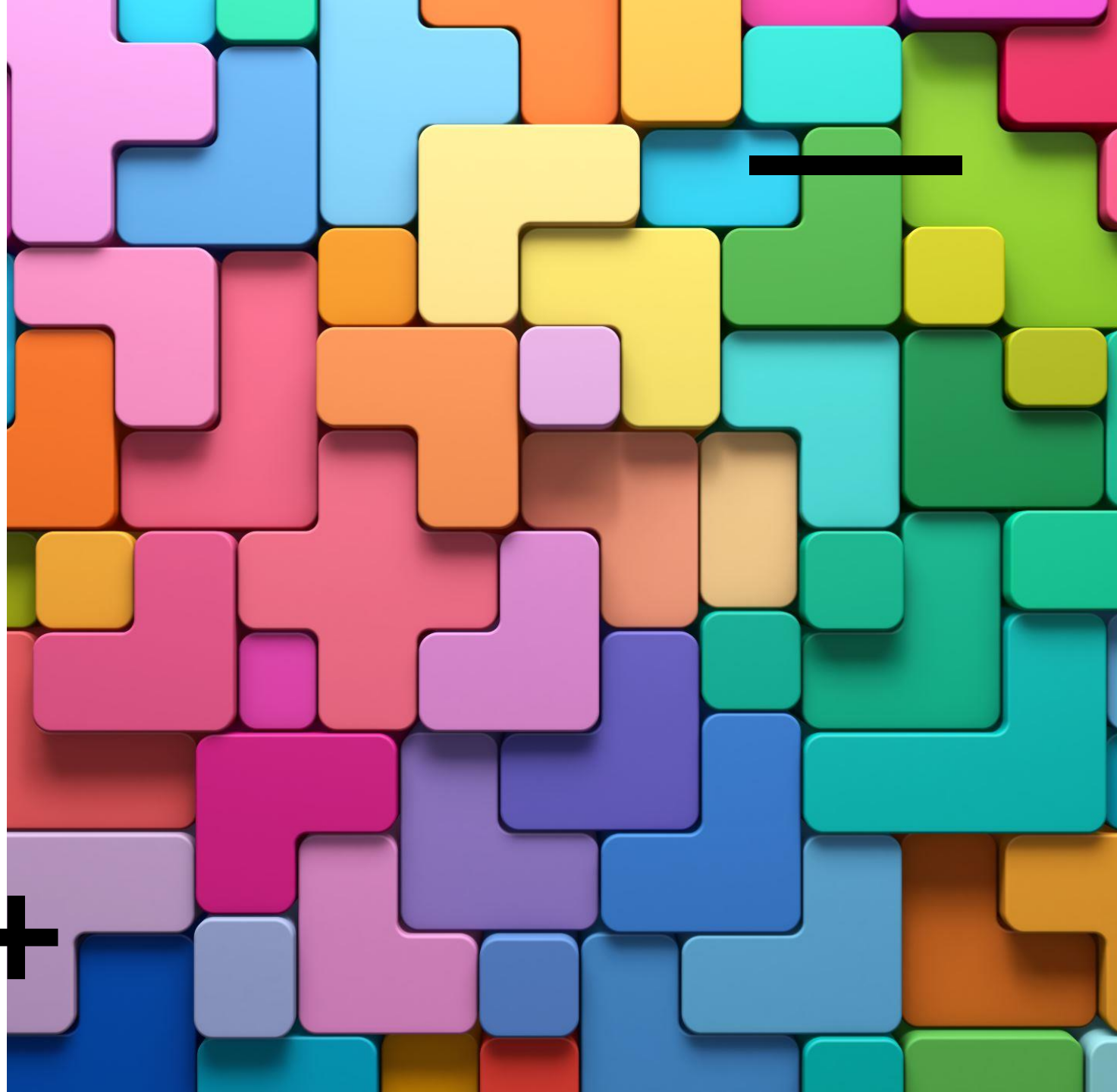


Figure 3 Assessing Indications for PrEP in Persons Who Inject Drugs



Screening





Screening (PrEP not considered)

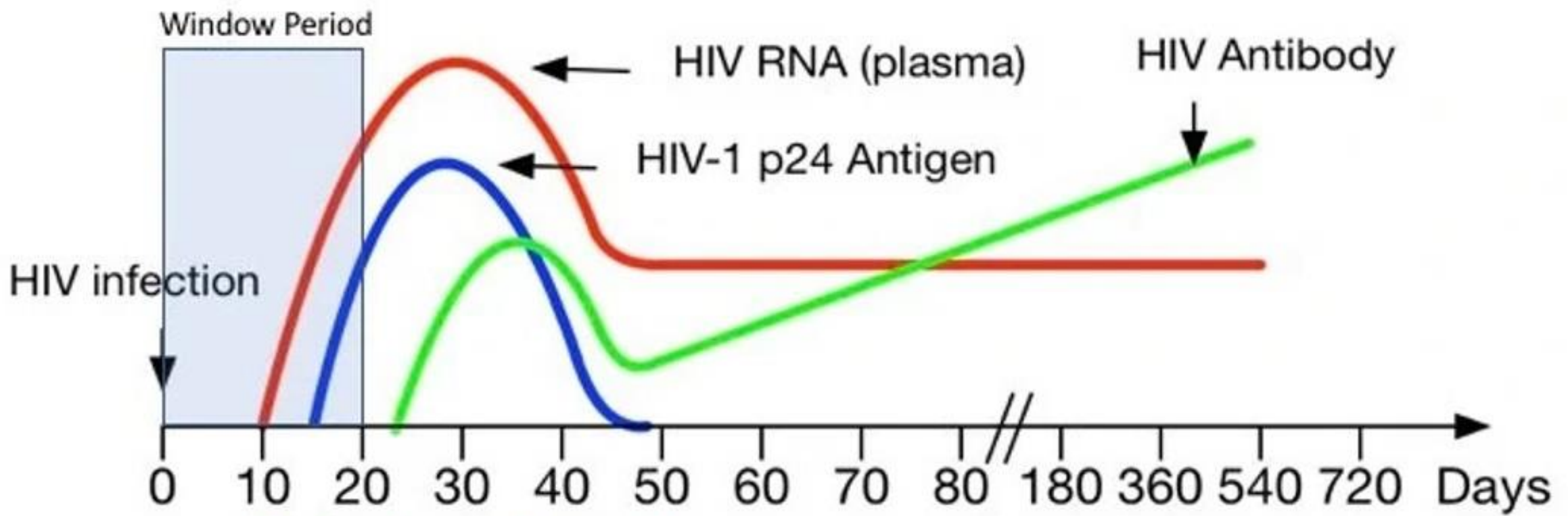
- Everyone between 13 and 64 years of age should be screened for HIV at least once
- Annual testing recommended for those at higher risk:
 - HIV positive partner
 - MSM
 - Multiple sexual partners
 - Shared injection equipment





Screening (PrEP is considered)

- Negative HIV status must be confirmed prior to initiating PrEP
 - Risk of drug resistance with the use of PrEP in the setting of HIV infection



- 1st Gen. Ab EIA
- 2nd Gen. Ab EIA
- 3rd Gen. Ab EIA
- 4th Gen. HIV p24 Ag + Ab EIA
- NAT Detectable HIV RNA

Screening for PrEP

Ag/Ab test only

- No recent exposure to PrEP or PEP
 - Last exposure to oral antiretrovirals >3 months ago
 - Last exposure to long-acting cabotegravir >12 months ago

Ag/Ab test AND HIV RNA assay

- Recent exposure to PrEP or PEP
- Possible HIV exposure within the last 4 weeks
- Signs/symptoms of acute antiretroviral syndrome within the last 4 weeks
- Planning to use long-acting PrEP

Start PrEP
within 7 days of the
negative test



Other Baseline Labs



Bacterial sexually transmitted infections (STIs)

Renal function

Lipid panel

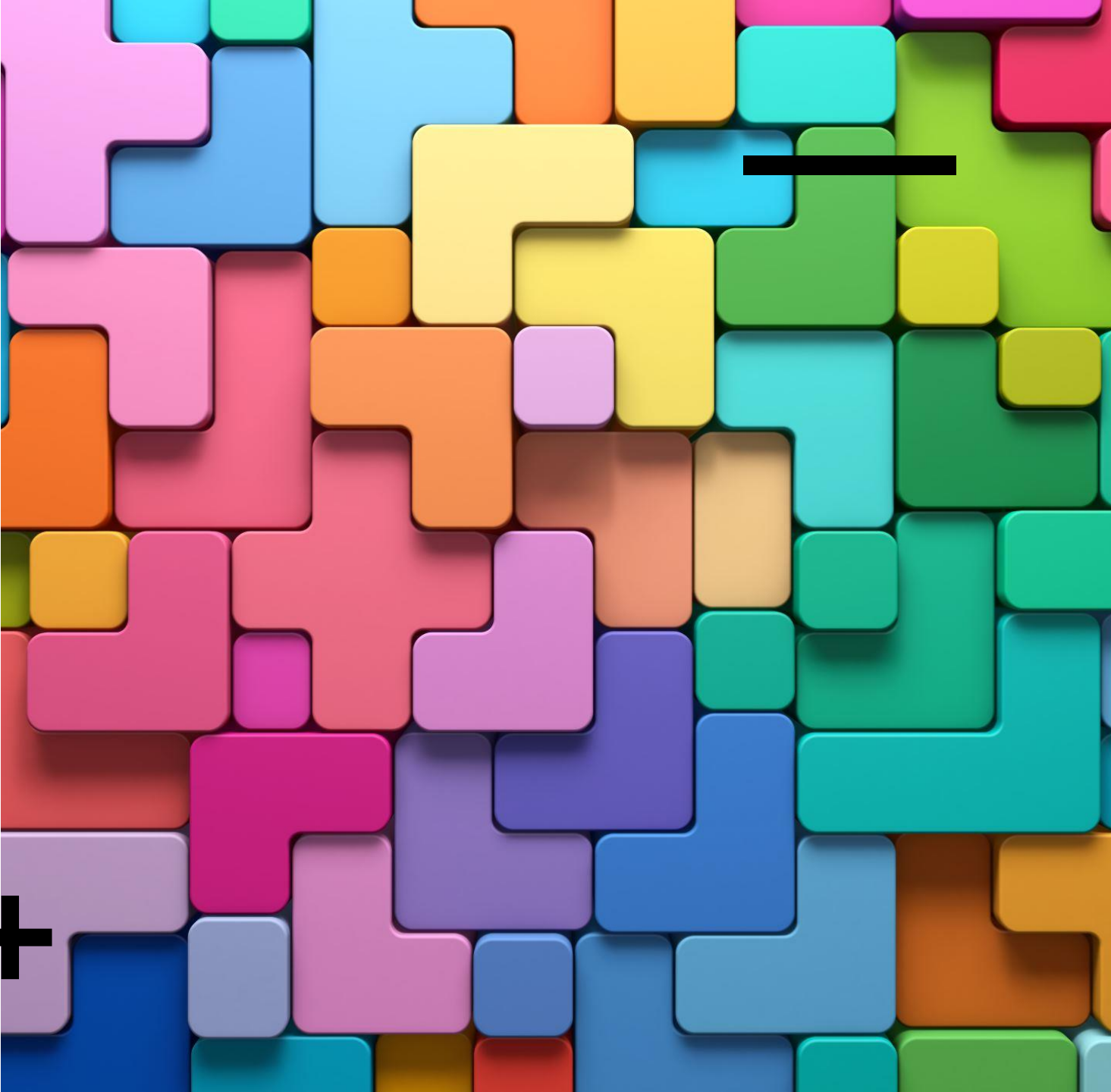
Hepatitis B and Hepatitis C serologies

Pregnancy test (optional)



Medications

+



Oral PrEP



Emtricitabine/tenofovir disoproxil fumarate

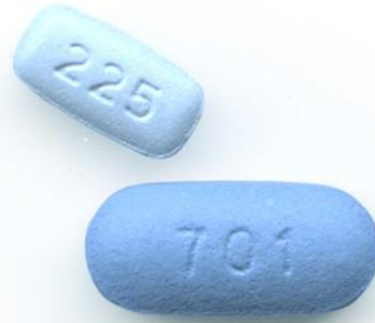
- Brand name: Truvada
- Class: nucleoside reverse transcriptase inhibitor
- Dose: 200/300 mg PO once daily

Emtricitabine/tenofovir alafenamide

- Brand name: Descovy
- Class: nucleoside reverse transcriptase inhibitor
- Dose: 200/25 mg PO once daily



Oral PrEP



FTC/TDF (Truvada)

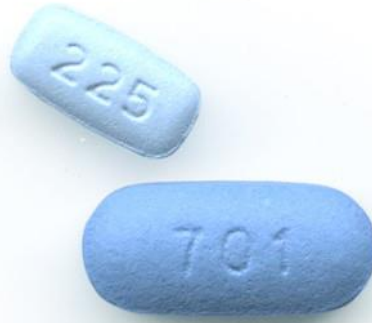
- Side effects: nausea, headache, diarrhea
 - Risk of decreased bone mineral density & renal toxicity
- Activity against Hepatitis B
- Weight and lipid neutral/favorable

FTC/TAF (FTC/TAF)

- Side effects: nausea, headache, diarrhea
 - Minimal risk of decreased bone mineral density & renal toxicity
- Activity against Hepatitis B
- May increase weight and lipids



Oral PrEP



FTC/TDF (Truvada)

- Do not use with CrCl <60 mL/min
- Indicated for any PrEP patient (assuming adequate renal function)

FTC/TAF (FTC/TAF)

- Do not use with CrCl <30 mL/min
- **Not indicated** for patients at risk of HIV from receptive vaginal sex

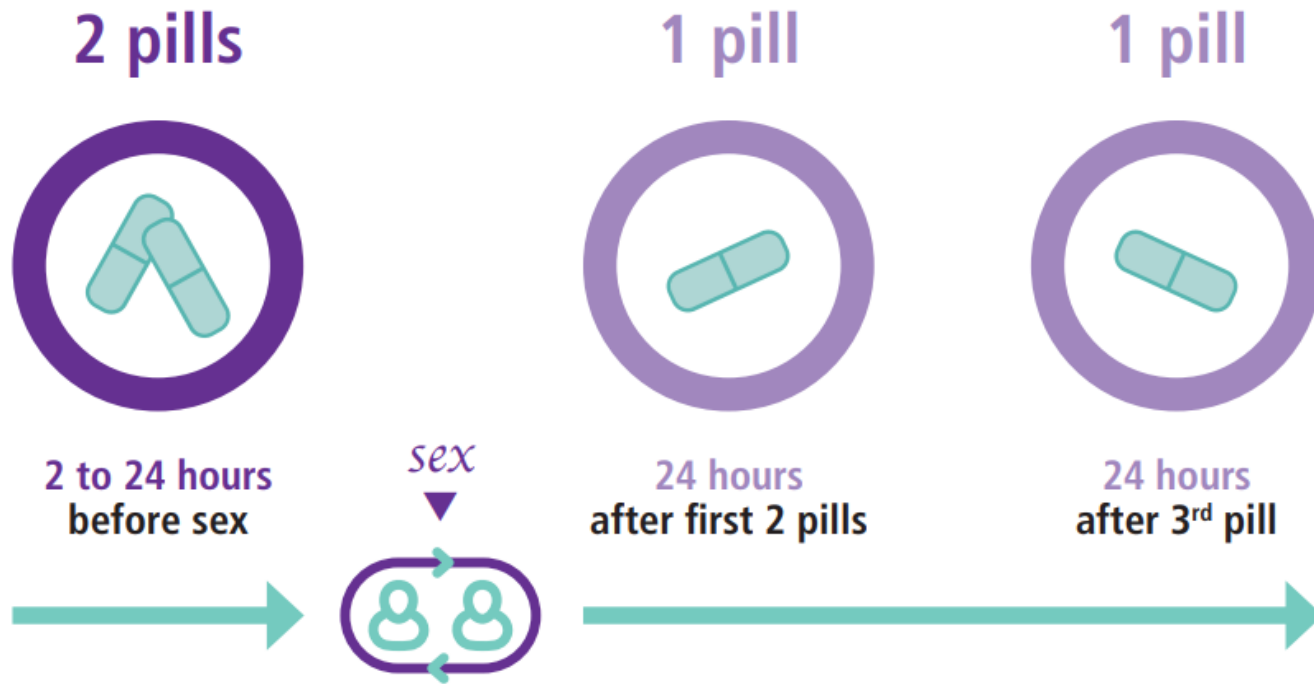




Oral PrEP: Time to Max Protection

- Adequate drug levels for receptive anal sex (rectal tissue) after **7 days** of daily use
- Adequate drug levels for receptive vaginal sex and injection drug use after **21 days** of daily use





On-Demand PrEP



On-Demand PrEP

- Dosing schedule is **off-label**
- Data originated from the IPERGAY and Prevenir studies
 - MSM patients only (no heterosexual patients included)
 - 2-1-1 schedule with FTC/TDF
 - Participants took an average of 3-4 doses/week

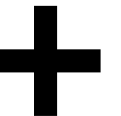
ORIGINAL ARTICLE

On-Demand Preexposure Prophylaxis in Men at High Risk for HIV-1 Infection

Jean-Michel Molina, M.D., Catherine Capitant, M.D., Bruno Spire, M.D., Ph.D., Gilles Pialoux, M.D., Laurent Cotte, M.D., Isabelle Charreau, M.D., Cecile Tremblay, M.D., Jean-Marie Le Gall, Ph.D., Eric Cua, M.D., Armelle Pasquet, M.D., François Raffi, M.D., Claire Pintado, M.D., *et al.*, for the ANRS IPERGAY Study Group^a

Daily and on-demand HIV pre-exposure prophylaxis with emtricitabine and tenofovir disoproxil (ANRS PREVENIR): a prospective observational cohort study

Jean-Michel Molina¹, Jade Ghosn², Lambert Assoumou³, Constance Delaugerre⁴, Michèle Algarte-Genin³, Gilles Pialoux⁵, Christine Katlama⁶, Laurence Slama⁷, Geoffroy Liegeon⁸, Lydie Beniguel³, Michel Ohayon⁹, Hanane Mouhim¹⁰, Lauriane Goldwirt¹¹, Bruno Spire¹², Bénédicte Loze¹¹, Laure Surgers¹³, Juliette Pavie⁷, Jérémy Lourenco¹⁴, Mohamed Ben-Mechlia¹⁵, Soizic Le Mestre¹⁵, Daniela Rojas-Castro¹⁶, Dominique Costagliola³; ANRS PREVENIR Study Group



Cabotegravir

- Long-acting injectable PrEP
- Class: integrase strand transfer inhibitor
- Side effects: injection site reactions (pain, induration, nodule), muscle soreness, headache
 - Take OTC pain reliever after injections
- Indicated for patients with a **sexual risk of HIV infection**



Cabotegravir

- **Optional** oral lead-in with 1 tablet daily for ~1 month
 - CAB (Vocabria) must be dispensed from Theracom Pharmacy
 - No cost to the patient
- Administer first IM injection within 3 days of last oral dose
 - Office admin. only



Cabotegravir



- Injections: 600 mg IM into gluteal muscle
 - Ventrogluteal site is preferred
 - Dorsogluteal site is alternative option
- Repeat loading dose one month after first injection
- Maintenance doses every 2 months thereafter
 - May occur +/- 1 week from target date
 - Consider oral bridge for planned missed injections

Injectable PrEP: Time to Max Protection

Unknown



Drug-Drug Interactions

Liverpool HIV Interactions tool

FTC/TDF

- Nephrotoxic agents (e.g. NSAIDs)
 - Monitor for toxicities
- Ledipasvir, sofosbuvir, velpatasvir, voxilaprevir
 - Monitor for toxicities
- Feminizing hormones(?)

FTC/TAF

- Rifamycins
 - Do not coadminister
- Carbamazepine, oxcarbazepine, phenytoin, phenobarbital
 - Consider avoiding



Drug-Drug Interactions

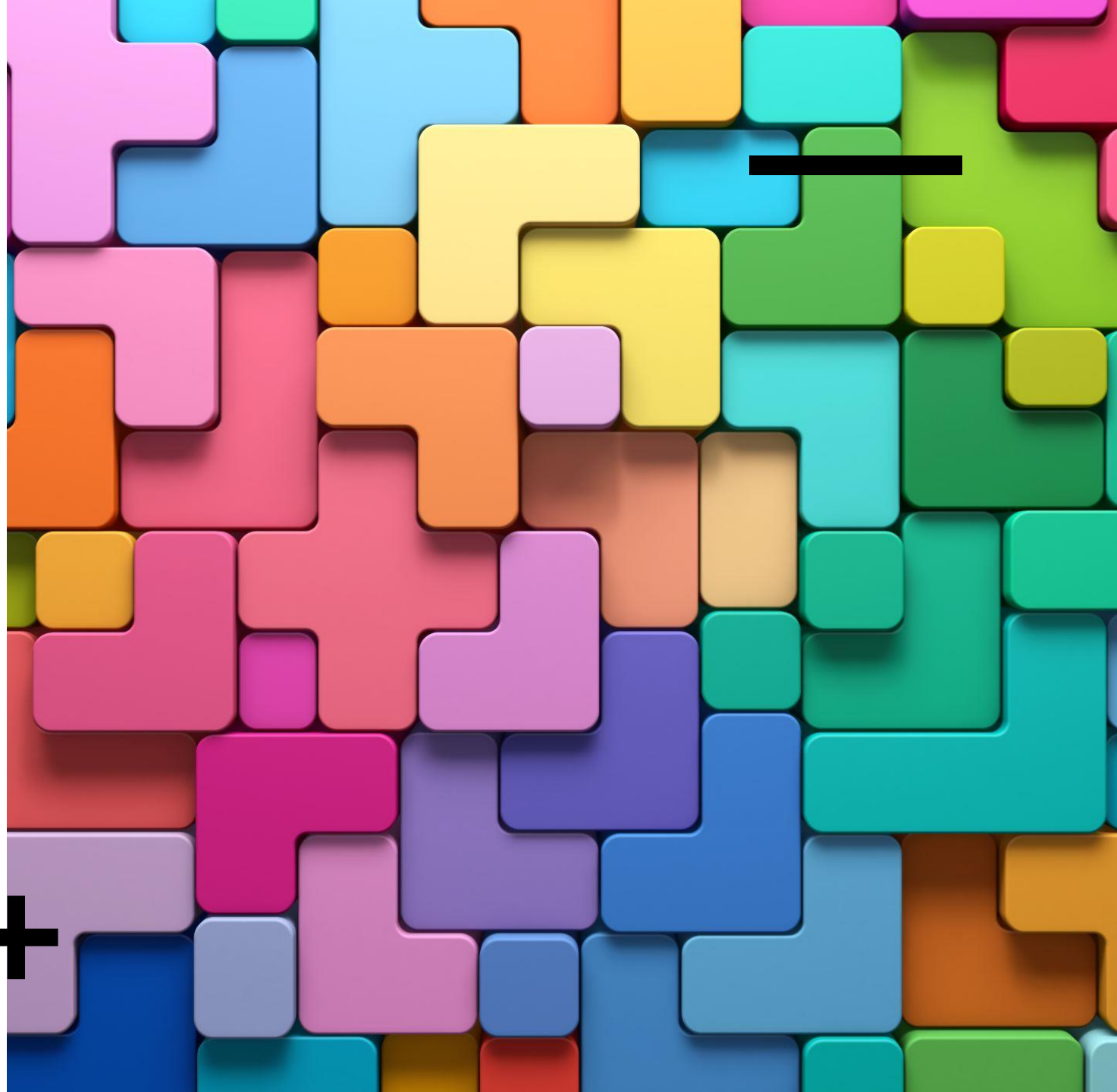
Liverpool HIV Interactions tool

Cabotegravir

- Rifamycins
 - Less risk with rifabutin
- Carbamazepine, oxcarbazepine, phenytoin, phenobarbital
 - Do not coadminister



Monitoring and Follow-up



Appointments

- Every 3 months for those on oral PrEP
- Every 2 months for those on cabotegravir maintenance dose



Appointments

- At every appointment assess for:
 - Signs/symptoms of acute HIV
 - Adherence
 - Ongoing risk



Follow-up Labs

- HIV test (Ag/Ab and RNA assay)
 - Before each injection with cabotegravir
 - Every 3 months with oral PrEP
- Renal function
 - Every 6 months if ≥ 50 yrs or if CrCl < 90 mL/min at initiation
 - Every 12 months otherwise
 - Only needed if on oral PrEP
- Lipid panel
 - Once yearly for patients taking FTC/TAF



Follow-up Labs

- Hepatitis C once yearly for those at high risk
 - MSM, transgender women (TGW), persons who inject drugs
- Syphilis and Gonorrhea
 - Every 3 months for MSM & TGW on oral PrEP
 - Every 4 months for MSM & TGW on injectable PrEP
 - Every 6 months heterosexually active men and women
- Chlamydia
 - Every 3 months for MSM & TGW on oral PrEP
 - Every 4 months for MSM & TGW on injectable PrEP
 - Every 12 months heterosexually active men and women



Table 5 Timing of Oral PrEP-associated Laboratory Tests

Test	Screening/Baseline Visit	Q 3 months	Q 6 months	Q 12 months	When stopping PrEP
HIV Test	X*	X			X*
eCrCl	X		If age ≥ 50 or eCrCL < 90 ml/min at PrEP initiation	If age < 50 and eCrCl ≥ 90 ml/min at PrEP initiation	X
Syphilis	X	MSM /TGW	X		MSM/TGW
Gonorrhea	X	MSM /TGW	X		MSM /TGW
Chlamydia	X	MSM /TGW	X		MSM /TGW
Lipid panel (F/TAF)	X			X	
Hep B serology	X				
Hep C serology	MSM, TGW, and PWID only			MSM, TGW, and PWID only	

* Assess for acute HIV infection (see Figure 4)

Table 7 **Timing of CAB PrEP-associated Laboratory Tests**

Test	Initiation Visit	1 month visit	Q2 months	Q4 months	Q6 months	Q12 months	When Stopping CAB
HIV*	X	X	X	X	X	X	X
Syphilis	X			MSM^/TGW [†] only	Heterosexually active women and men only	X	MSM/TGW only
Gonorrhea	X			MSM/TGW only	Heterosexually active women and men only	X	MSM/TGW only
Chlamydia	X			MSM/TGW only	MSM/TGW only	Heterosexually active women and men only	MSM/TGW only

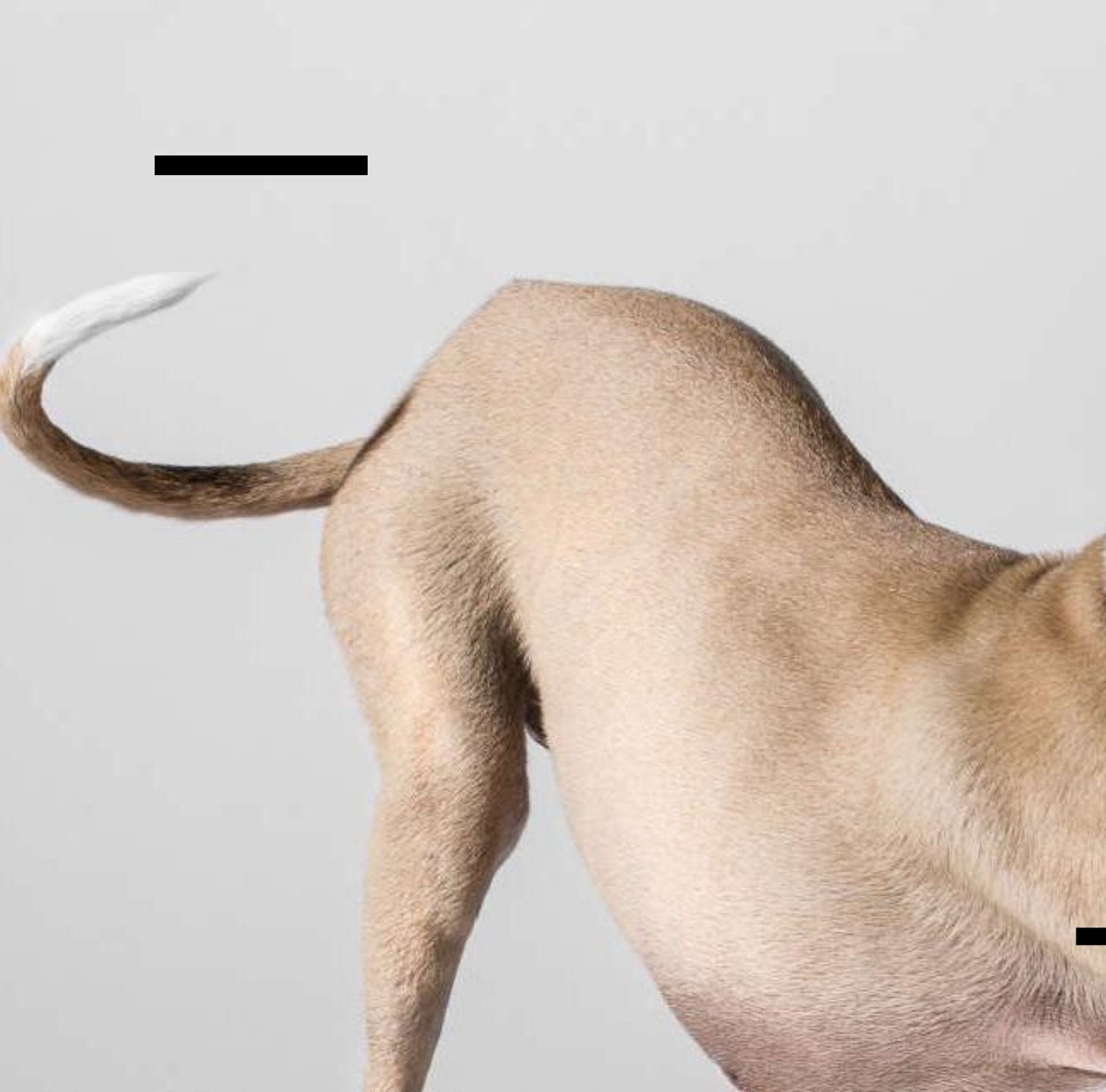
* HIV-1 RNA assay

X all PrEP patients

^ men who have sex with men

† persons assigned male sex at birth whose gender identification is female



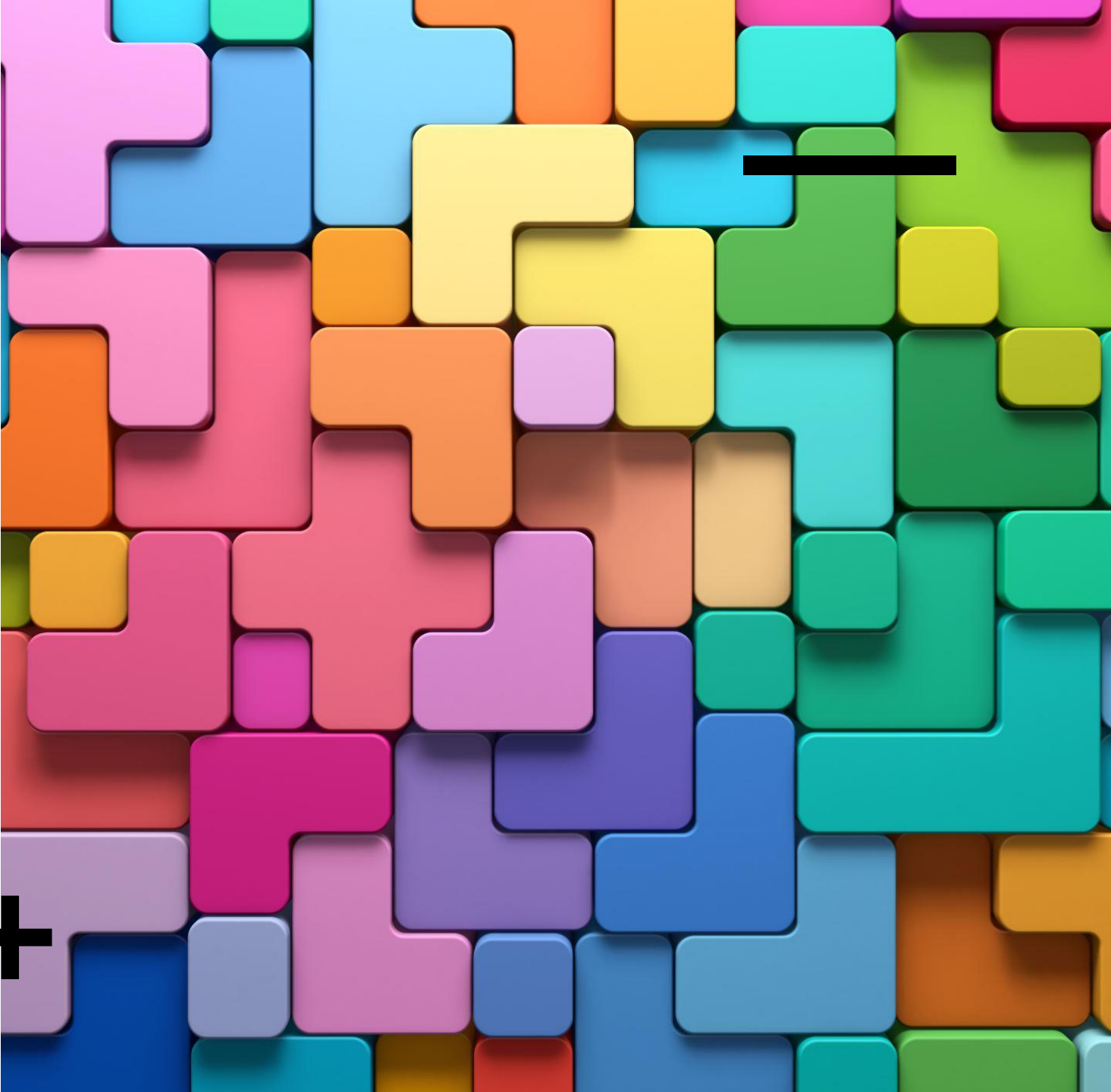


Cabotegravir tail

- Long half-life means detectable (but not protective) drug levels up to 1 year after discontinuation
 - Potential for development of drug-resistant infection
- Recommend oral PrEP (or other protective measures) within 8 weeks of last injection
 - Quarterly HIV tests
 - Continue for 12 months

Resources

+



Resources

[CDC PrEP Guidelines, 2021 Update](#)

[CDC PrEP Provider Supplement](#)

[HIV Risk Reduction Tool](#)

[NCCC PrEP Warmline](#)





Introduction to PrEP

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