

The Tale of Two Epidemics

“Building the plane, while you are flying it”

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Associate Chief Medical Officer, CAMC Memorial Division

Medical Director, CAMC Ryan White Program

Physician Champion, Addiction Care Program

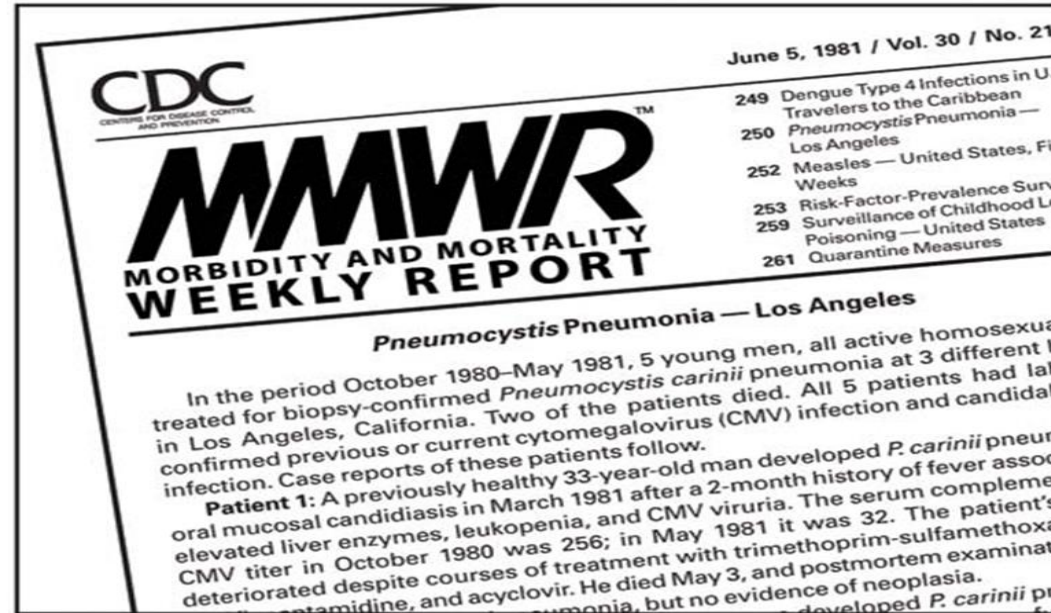
8/4/23




**Charleston Area
Medical Center**

 **Vandalia Health**

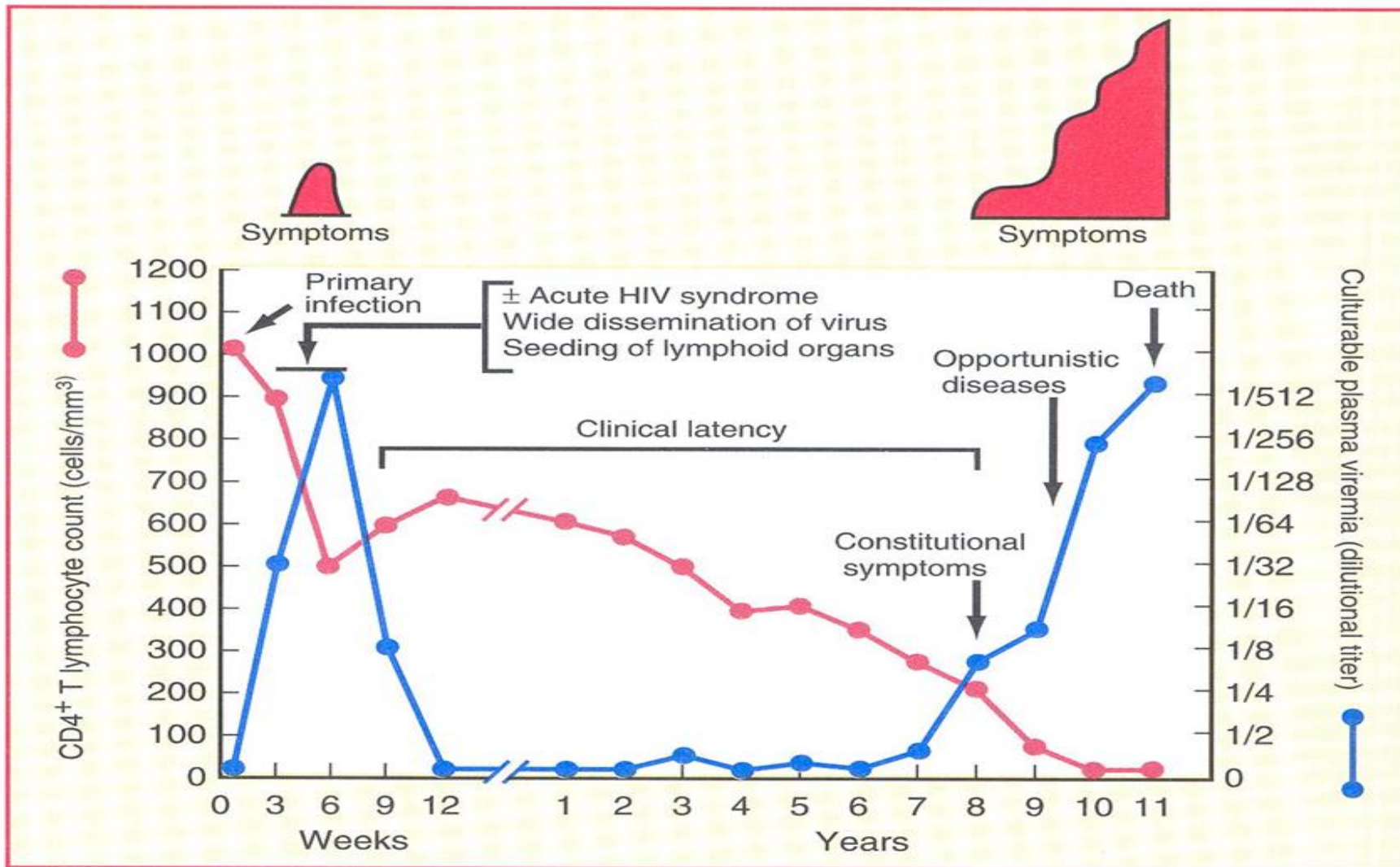
A New Disease.....



- 1981- Gay Related Immune Deficiency (GRID)
- 1982- Acquired Immunodeficiency Syndrome
- 1983- Human Immunodeficiency Virus identified
- 1985- First Commercial Blood test
- 1987- First Anti-HIV Drug- Zidovudine (AZT) 

AIDS Defining Conditions

- Candidiasis
 - Cervical Cancer
 - Coccidiomycosis
 - Cryptococcus
 - Cryptosporidiosis
 - Cytomegalovirus
 - Herpes simplex
 - Histoplasmosis
 - HIV wasting
 - Isoporiasis
- Kaposi's sarcoma
 - Lymphoma
 - Mycobacterium avium
 - M. Tuberculosis
 - Pneumocystis jiroveci
 - Pneumonia-recurrent
 - Salmonella septicemia
 - Toxoplasmosis



Natural History of human immunodeficiency virus (HIV-1) infection in adult. Science 1993; 262:1011.

Modes of HIV Transmission

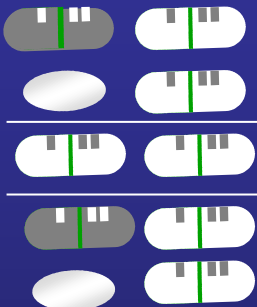
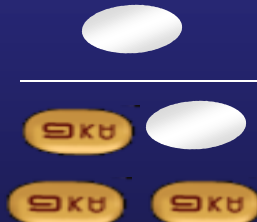

- Per act probabilities vary; plasma HIV RNA level, presence of STD in the index case and quantity of blood transferred via needle stick.
- Transfusion- 95/100
- Peri-natal w/o ART- 1/4
- Needle sharing-1/150
- Occupational needlestick-1/300
- Male/male receptive anal intercourse-1/10-1/1600
- Male/female vaginal intercourse-1/200-1/2000
- Female/male vaginal intercourse-1/700-1/3000

Royce RA, N Engl J Med 1997




When to Start: Indications for Initiation of Antiretroviral Therapy

- History of AIDS-defining illness
- CD4 count < 200 (AI)
- CD4 count 200-350 (AII)
- Pregnant women (AI)
- Persons with HIV-associated nephropathy (AI)
- Persons co-infected with Hepatitis B, when HBV treatment is indicated (BIII)
- The necessity for patient adherence to a long-term drug regimen should be discussed in depth between the patient and clinician.

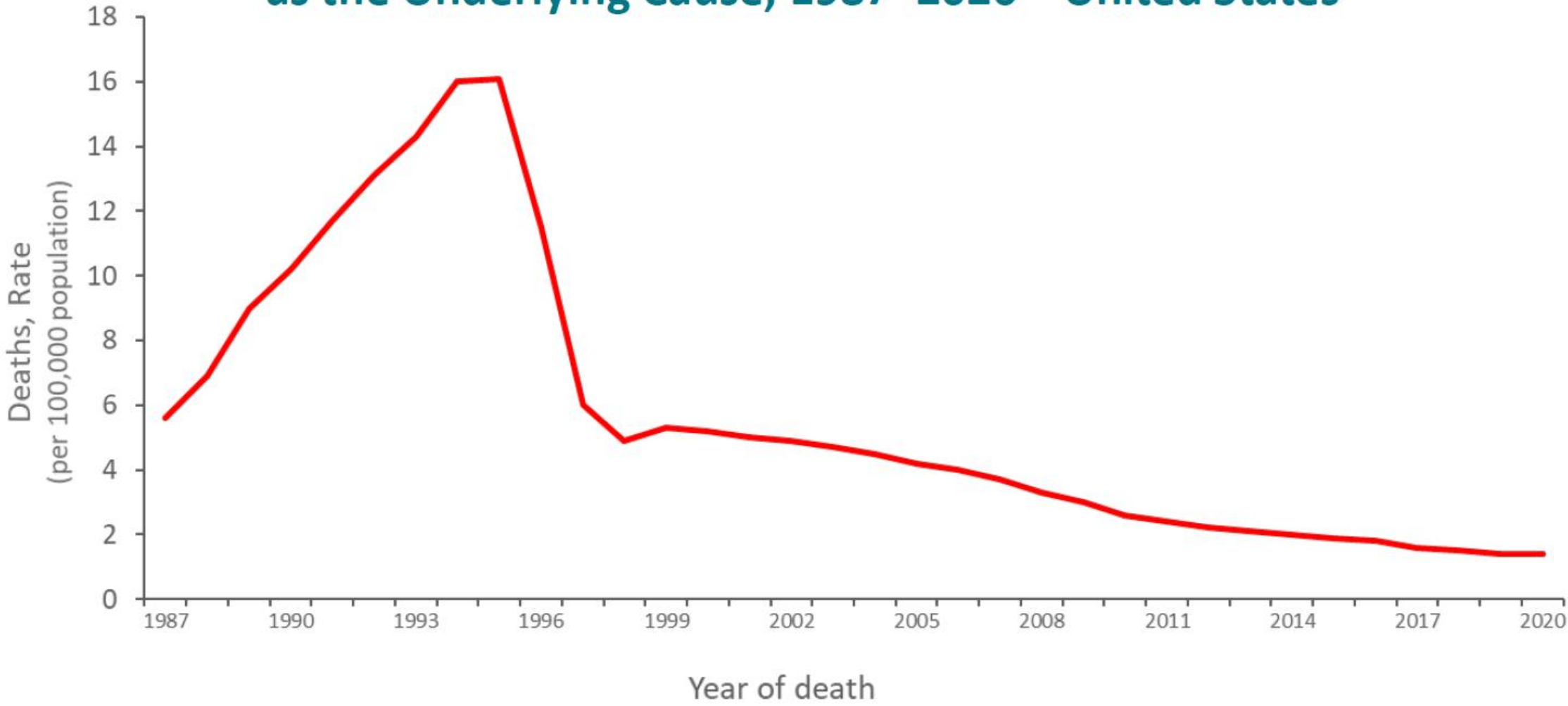
The Move Toward “Simple” Regimens

Regimen	Dosing	Daily pill burden	Issues
1996 d4T/3TC/ indinavir	10 pills, TID		<ul style="list-style-type: none"> ➤ Food restrictions, liquids frequently ➤ Poor tolerability ➤ Short and long-term toxicities
1998 ZDV/3TC/ Efavirenz	5 pills, BID		<ul style="list-style-type: none"> ➤ Gastrointestinal (GI) effects, anemia, neutropenia ➤ Central nervous system (CNS) toxicities ➤ Mitochondrial-related toxicities
2002 ZDV/3TC/EFV	3 pills, BID		<ul style="list-style-type: none"> ➤ Gastrointestinal (GI) effects, anemia, neutropenia ➤ Central nervous system (CNS) toxicities ➤ Mitochondrial-related toxicities

The Move Toward “Simple” Regimens

Regimen	Dosing	Daily pill burden	Issues
2003 TDF/[FTC Or 3TC] / EFV	3 pills, QD		➤ Generally well tolerated; GI effects, CNS effects (EFV)
2005 TDF/FTC + EFV	2 pills, QD		➤ Minimal to no side effects, good PK, and no food restrictions without compromising efficacy
2006 TDF/3TC/ EFV	1 pill daily		-Minimal to no side effects, good PK, and no food restrictions Without compromising efficacy

Trends in Annual Age-Adjusted* Rates of Death with HIV Disease as the Underlying Cause, 1987–2020—United States



Note. For comparison with data for 1999 and later years, data for 1987–1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

*Standard: age distribution of 2000 US population.



ART in 2023:



Atripla



Biktarvy



Delstrigo



Dovato



Eviplera



Juluca



Odefsey



Stribild



Symtuza



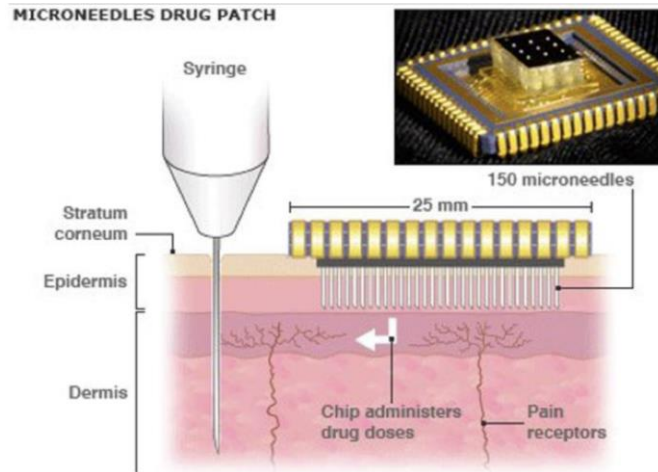
Triumeq



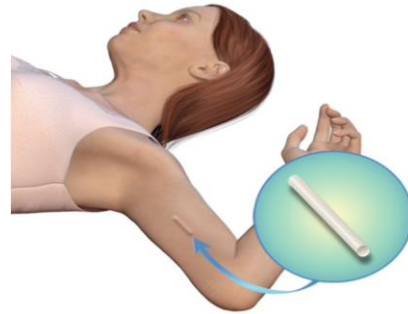
CAB-LA + RPV-LA injections

Alternatives to pills

Microneedle drug patch



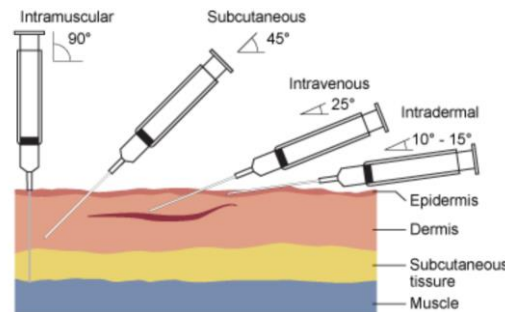
Implants



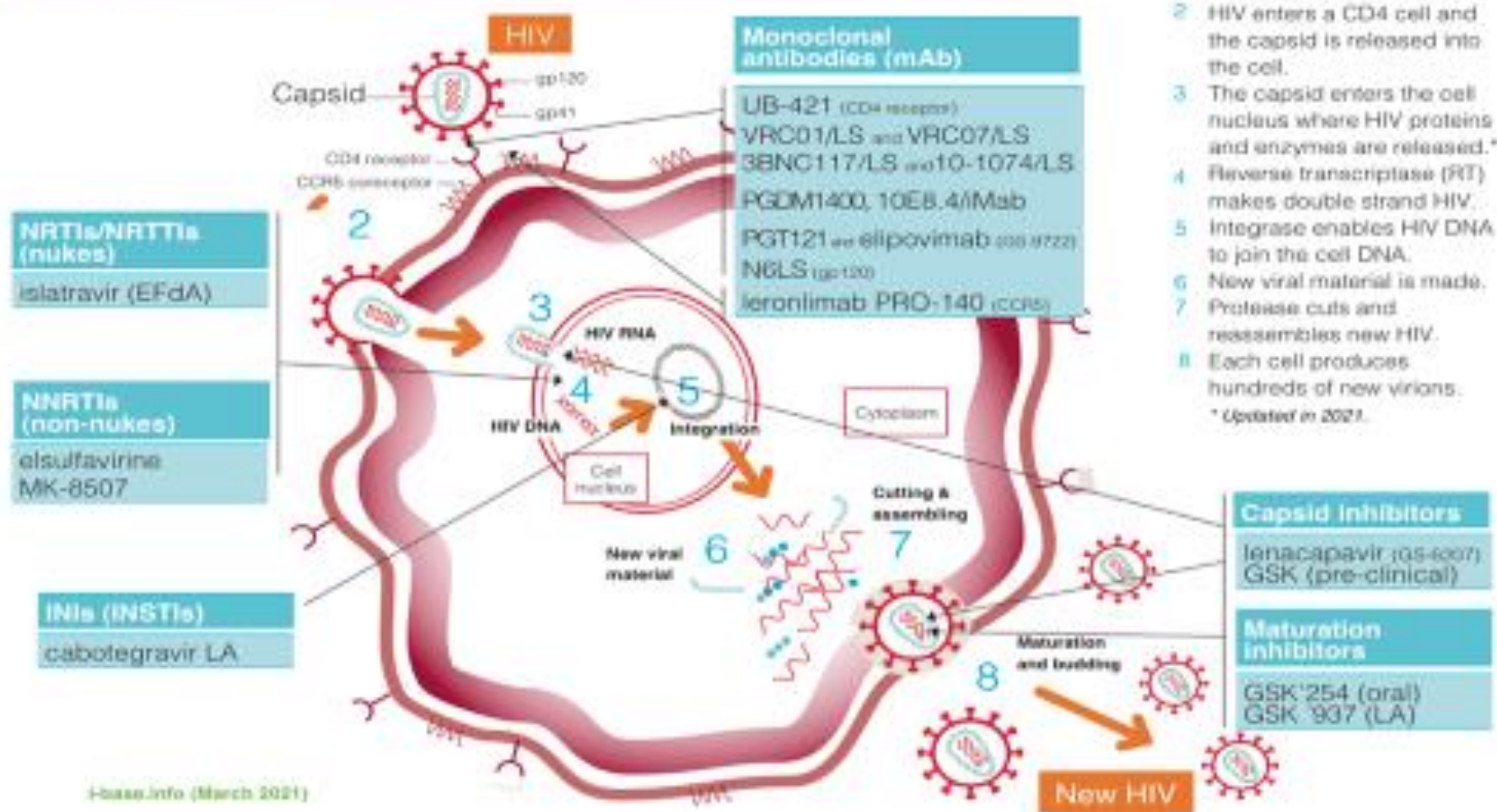
Vaginal Rings



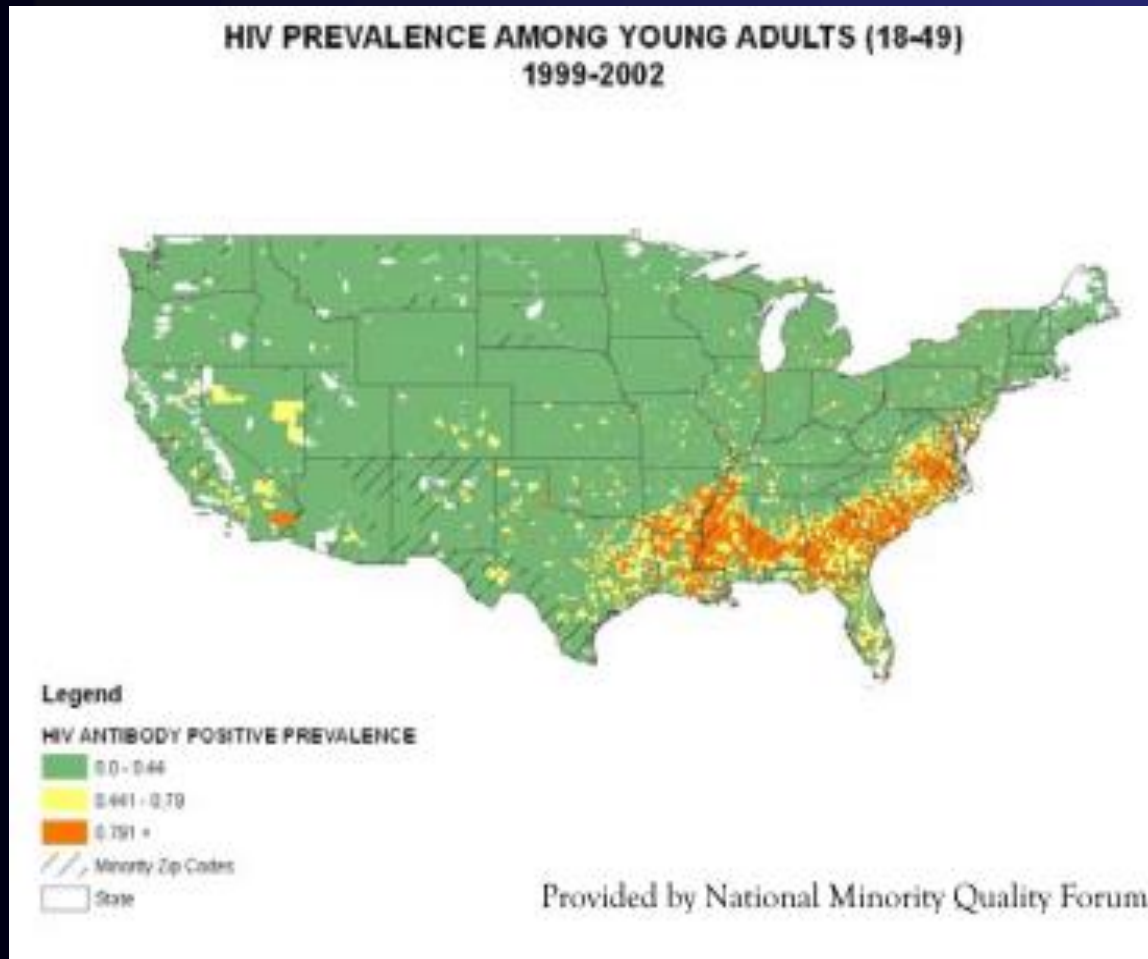
Long-acting depo injections



HIV pipeline 2021: targets in the HIV lifecycle



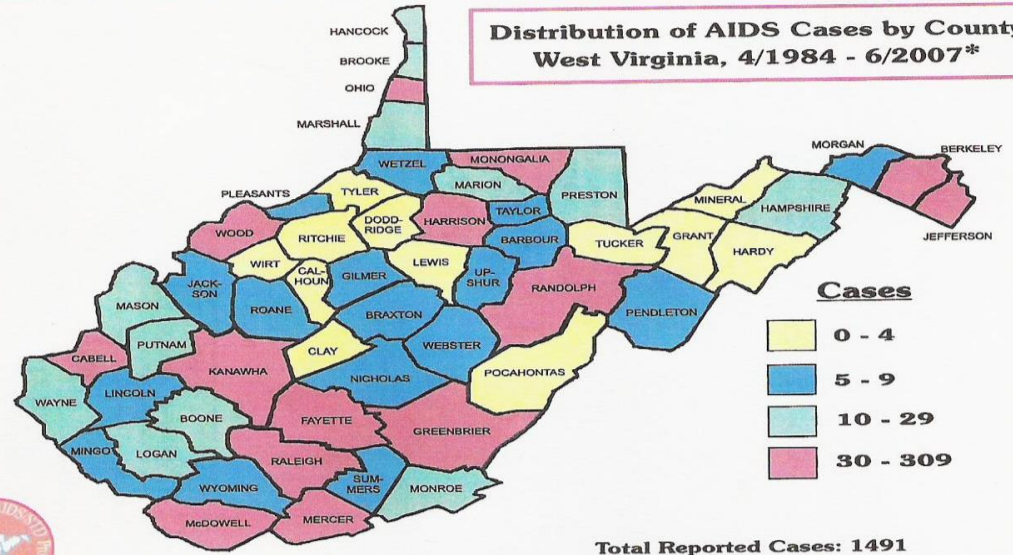
What's going on?



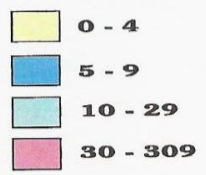
- Rural
- Stigma
- Social conservatism
- Vulnerable population
- Poverty
- Unemployment
- Uninsured and underinsured
- Higher STD rates

HIV/AIDS in West Virginia

**Distribution of AIDS Cases by County
West Virginia, 4/1984 - 6/2007***



Cases

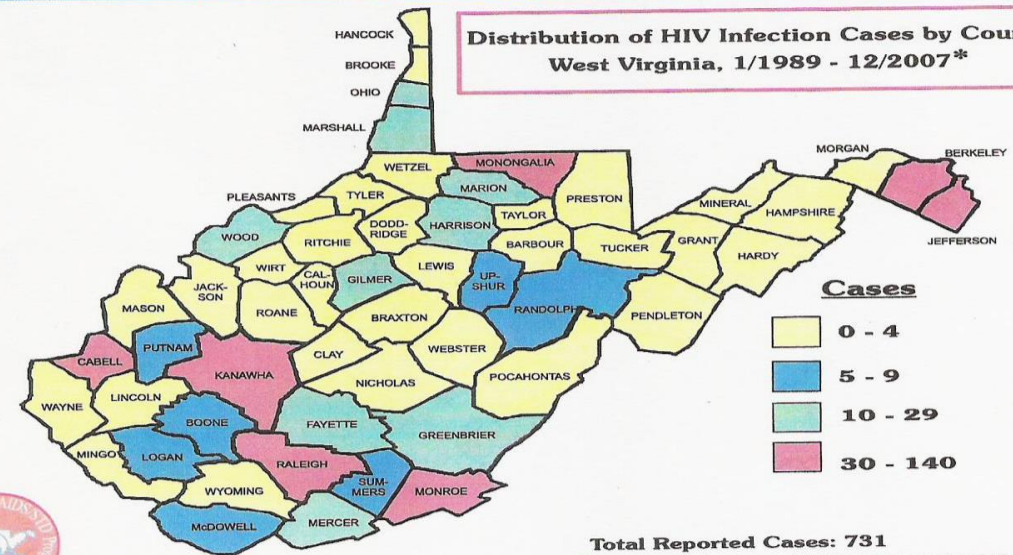


Total Reported Cases: 1491
* AIDS data includes April 1984 through June 30, 2007.

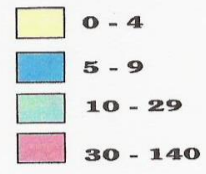


Bureau for Public Health
Division of Surveillance and Disease Control
West Virginia HIV/AIDS/STD Program

**Distribution of HIV Infection Cases by County
West Virginia, 1/1989 - 12/2007***



Cases



Total Reported Cases: 731
* HIV data includes January 1989 through June 30, 2007.



Bureau for Public Health
Division of Surveillance and Disease Control
West Virginia HIV/AIDS/STD Program

CAMC Ryan White Team 2007

- Denise Heflin-Peyton RN
- Yvonne Lane RN
- Christine Teague Pharm D
- Dr. Jason Kettler
- Dr. Shelda Martin



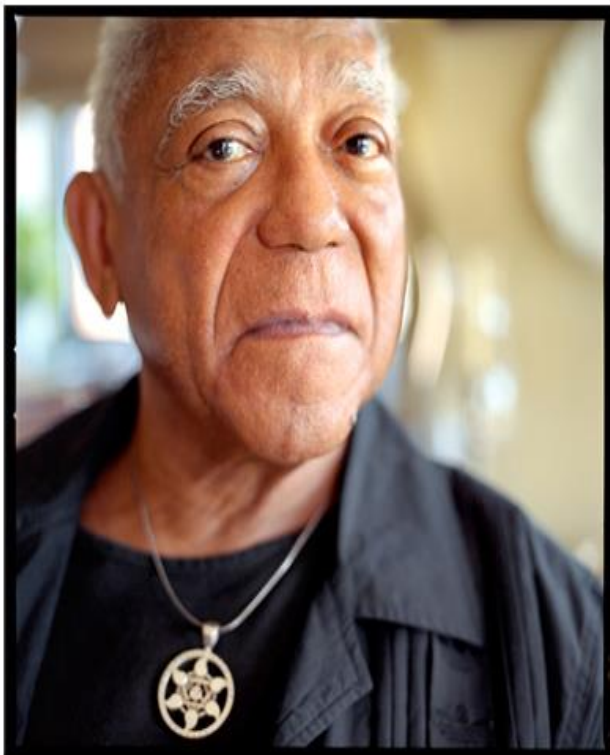
December 1, 2009 Revision DHHS Treatment Guidelines

CD4 count/conditions	Recommendations
CD4 <350 cells/mm ³ or a history of AIDS defining illness	ART should be initiated (AI)
CD4 350-500 cells/mm ³	ART is recommended, 55% of panel members voted for a strong recommendation (AII) and 45% voted for a moderate recommendation (BII)
CD4 > 500 cells/mm ³	50% of panel members favor starting ART (BIII) and 50% of the members view that this is optional (CIII)
Pregnancy (AI) HIVAN (AII) HBV requiring HBV Tx (AIII)	Should be started on ART regardless of CD4 count

Amazing Transition....

From an illness that younger
persons died *of*

To an illness that older persons
die *with*



Robert, age 74, New York, Sue, age 73, Fort Lauderdale, and Bill, age 73, Chicago.

HIV Age 50+.....Two Groups

- Survivors



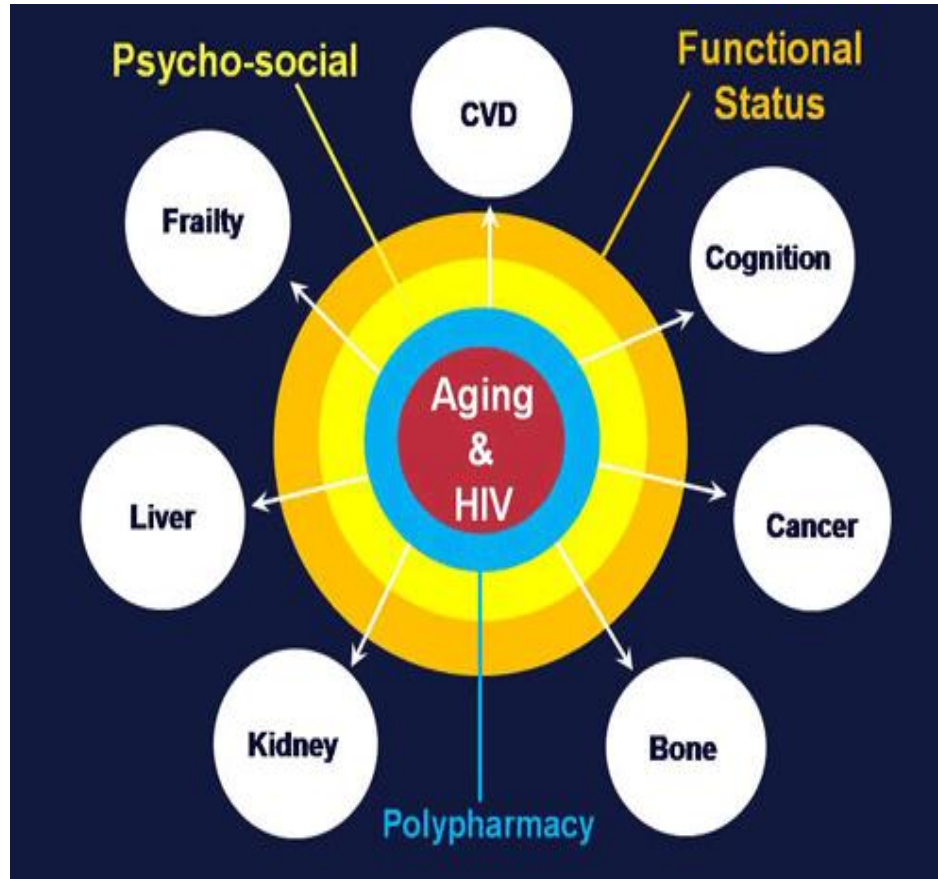
- Recently Infected



Polypharmacy

- Hepatic and renal elimination are the major routes of HIV drug clearance
- HIV+ patients with aging associated co-morbidities are more likely to take pain medications and anti-emetics
- HIV+ patients are more likely to self medicate with OTC medications or supplements
- Drug-drug interactions (CYP 450 and P-glycoprotein) are common
- When evaluating any new complaint or lab abnormality, consider role of ART and concomitantly administer medications

HIV Infection is a Complex Chronic Disease



- AIDS defining conditions are increasingly rare and variably associated with mortality
- Many common “Non-AIDS” conditions are associated with HIV infection and disease progression

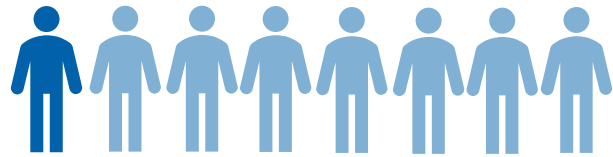
Long-term consequences of HIV infection:

- Premature aging
- Cardiovascular disease
- Non-AIDS associated cancers
- Osteoporosis
- Frailty
- Neurocognitive decline

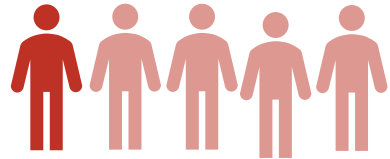
Summary: HIV in the United States



Around **1.2 million people** in the United States are living with HIV¹



Approximately **1 in 8** do not know they have HIV¹



Roughly **1 in 5** already have AIDS at the time of HIV diagnosis²

HIV disproportionately affects some populations:

- Men who have sex with men
- People of color
- Transgender people
- People who inject drugs

If current trends continue, an additional

400,000 people in the United States will be diagnosed with HIV over the **next 10 years**³

¹ Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2015–2019. *HIV Surveillance Report: Supplemental Report*. 2021;26(1):44. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplemental-report-vol-26-1.pdf>

² Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using surveillance data. United States and 6 dependent areas, 2019. *HIV Surveillance Report: Supplemental Report*. 2021;26(2): 11. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-vol-26-no-2.pdf>

³ About Ending the HIV Epidemic in the U.S.: Overview. HIV.gov. Updated June 2, 2021. Accessed July 19, 2021. <https://www.hiv.gov/federal-response/ending-the-hiv-epidemic/overview>

HIV in the United States

In 2019

The number of new HIV diagnoses fell 9% between 2015 and 2019:

from **40,431** in 2015

to **36,801** in 2019¹

~1.2M

people were living with HIV in the United States²

1 in 8

people with HIV did not know it²

1 in 5

people diagnosed with HIV were young adults (13–24 years)¹

1 in 5

people already had AIDS³

About **40% of new HIV transmissions** are from people undiagnosed and unaware they have HIV⁴

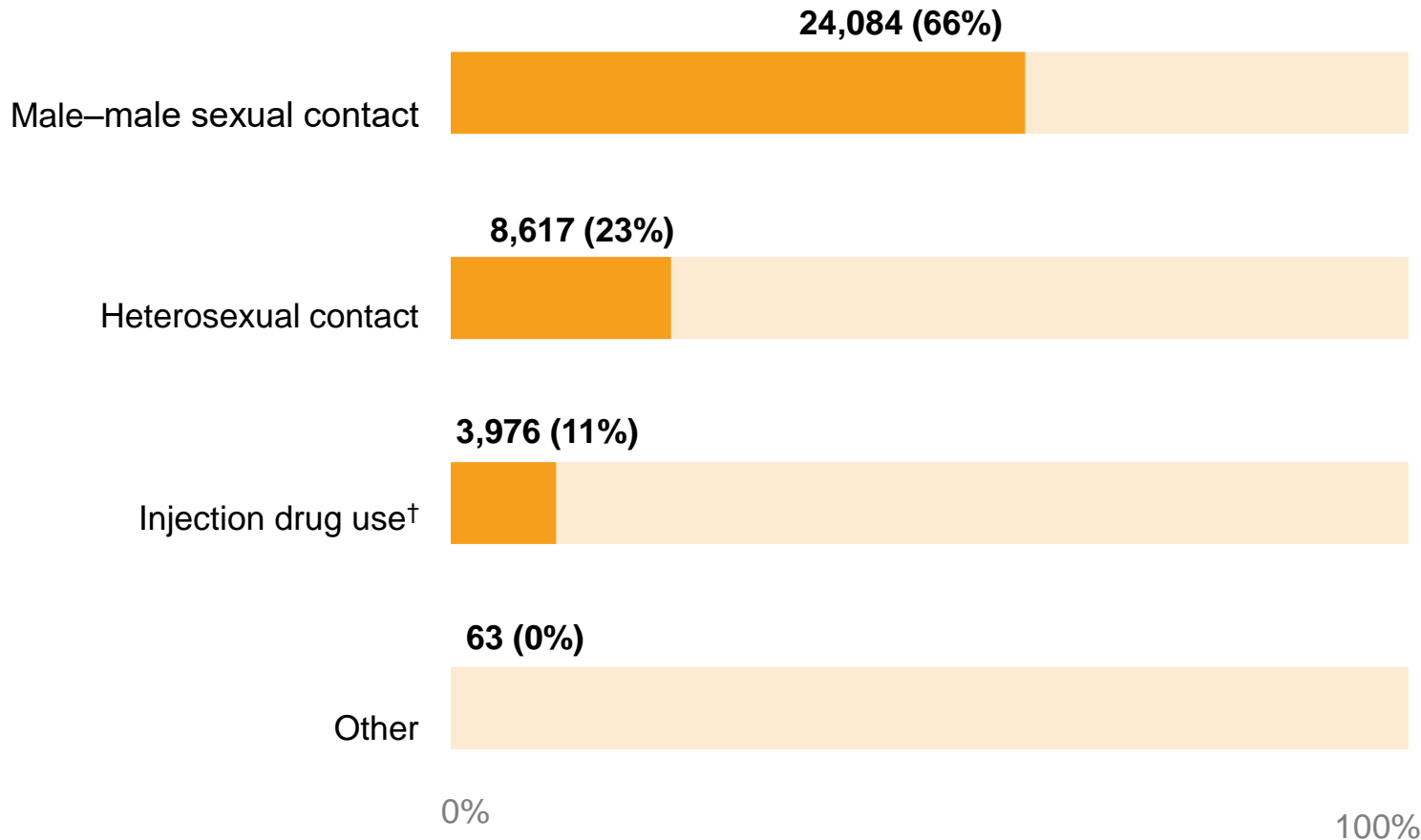
¹ Centers for Disease Control and Prevention. Diagnoses of HIV infection in the United States and dependent areas, 2019. *HIV Surveillance Report*. 2021;32:51. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2018-updated-vol-32.pdf>

² Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2015–2019. *HIV Surveillance Report: Supplemental Report*. 2021;26(1):44. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplemental-report-vol-26-1.pdf>

³ Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using surveillance data. United States and 6 dependent areas, 2019. *HIV Surveillance Report: Supplemental Report*. 2021;26(2): 11. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-vol-26-no-2.pdf>

⁴ Dailey AF, Hoots BE, Hall HI, et al. Vital signs: human immunodeficiency virus testing and diagnosis delays—United States. *MMWR Morb Mortal Wkly Rep*. 2017;66:1301-1302.

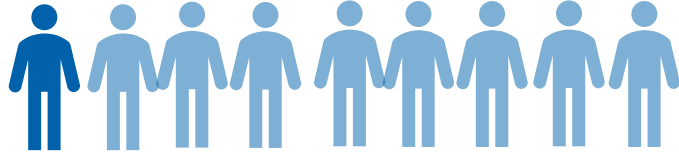
HIV Diagnoses by Transmission Category*



Two-thirds of new HIV diagnoses in 2019 were among gay, bisexual, and other men who have sex with men

*Excluding children (aged <13 y; n=61); †Includes infections attributed to both male-male sexual contact and injection drug use.

HIV Diagnoses Among People Who Inject Drugs*

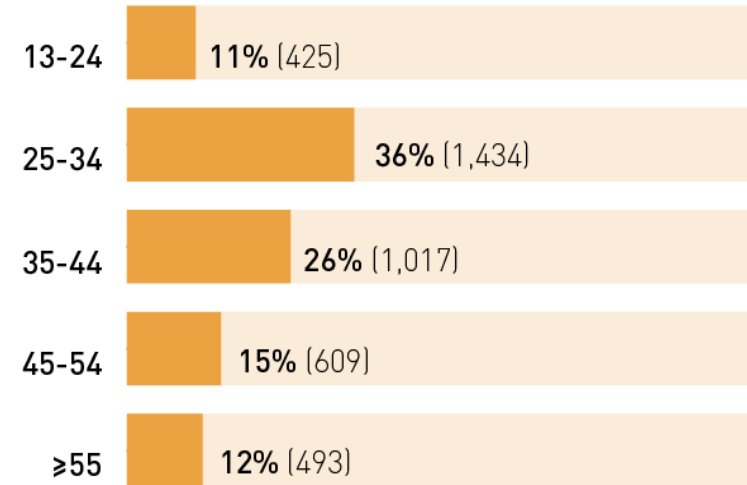


In 2019, **1 in 9 people** (3,978/36,801) diagnosed with HIV got HIV through injection drug use

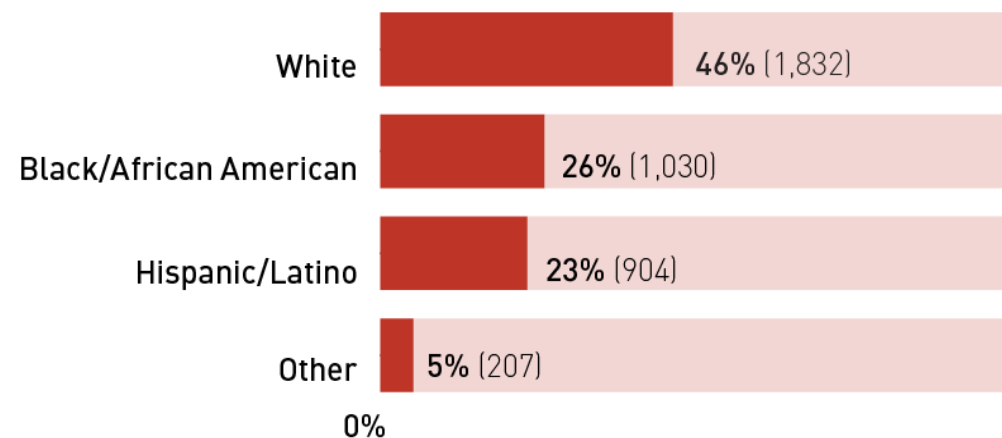
28%
Female
(1,111)

72%
Male
(2,867)

Age



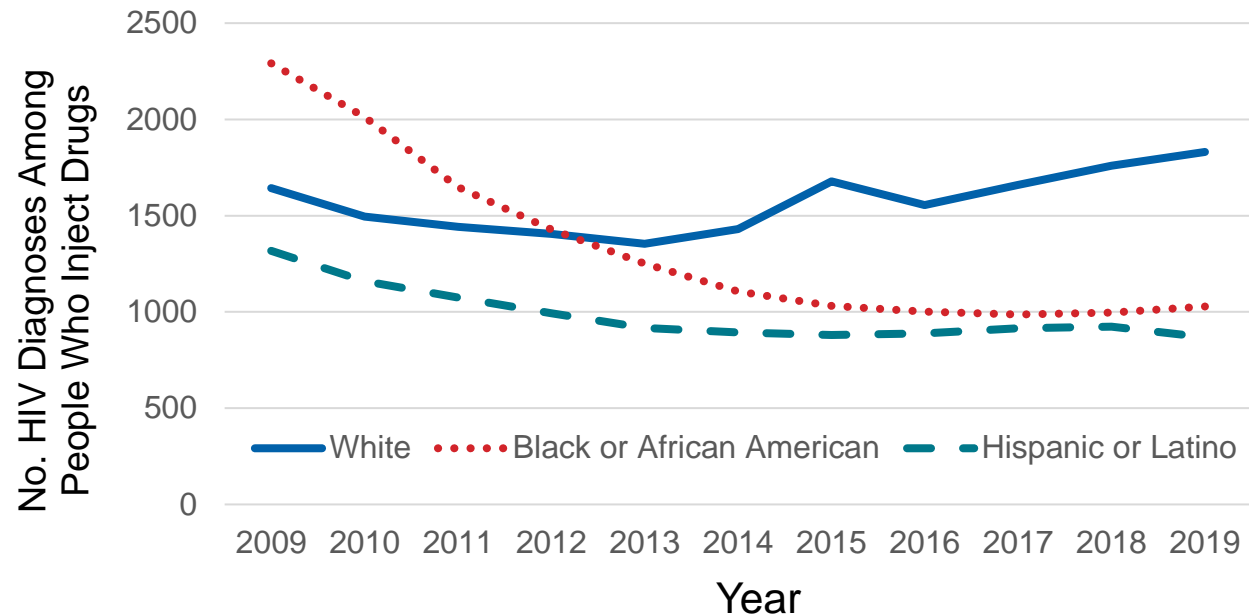
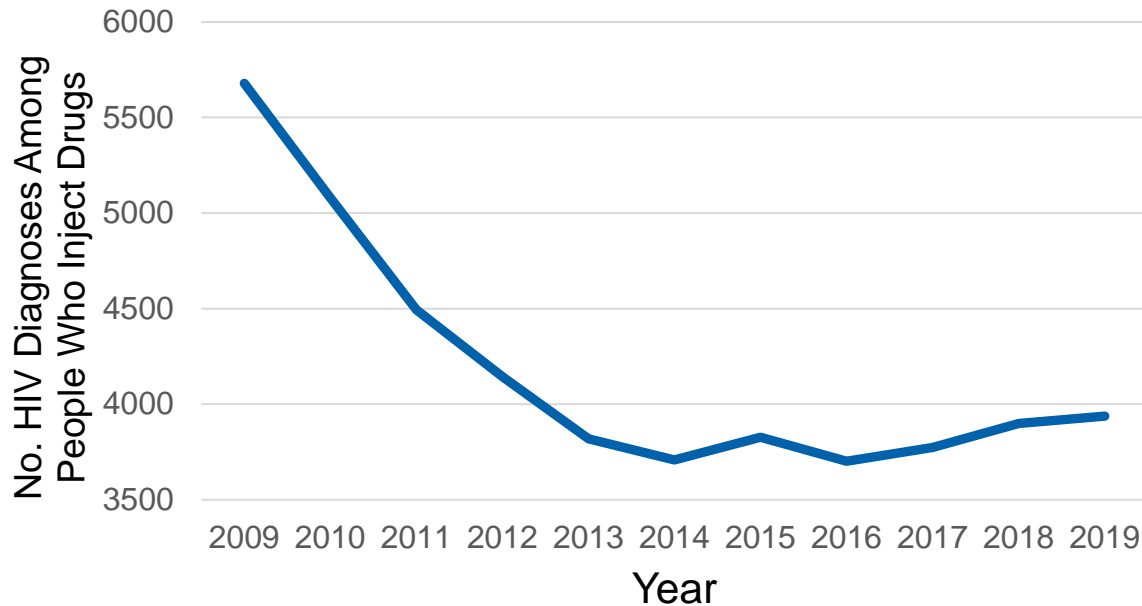
Race/Ethnicity



* These data include infections attributed to male-male sexual contact *and* injection drug use (i.e., men who reported both risk factors)

Trends in HIV Diagnoses Among People Who Inject Drugs*

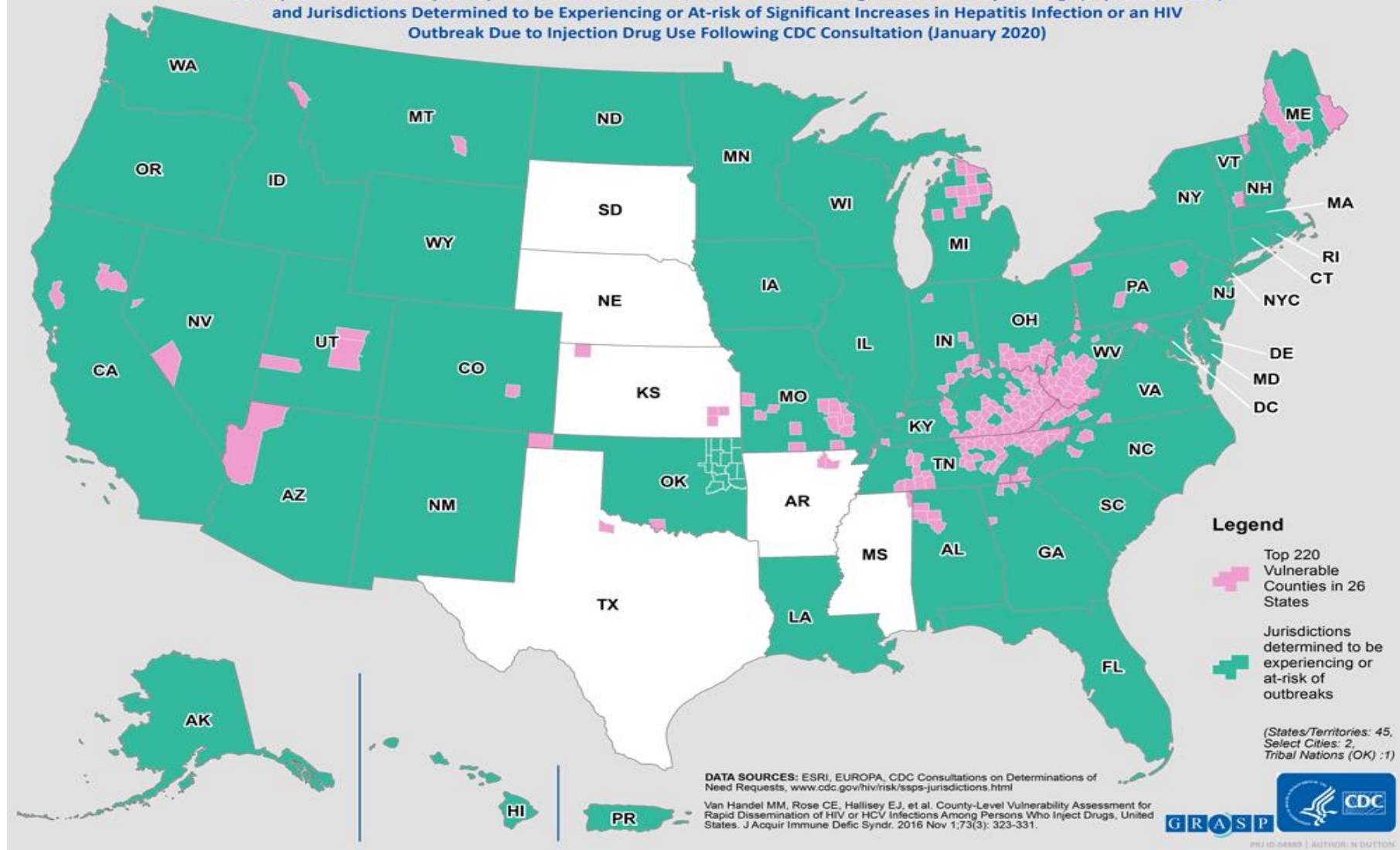
Between 2009 and 2019, HIV diagnoses attributed to injection drug use decreased by **31%**



* These data include infections attributed to male-male sexual contact *and* injection drug use (i.e., men who reported both risk factors). Centers for Disease Control and Prevention. NCHHSTP AtlasPlus. Accessed July 19, 2021. <https://www.cdc.gov/nchhstp/atlas/index.htm>

Vulnerable Counties and Jurisdictions Experiencing or At-Risk of Outbreaks

County-level Vulnerability to Rapid Dissemination of HIV/HCV Infection Among Persons who Inject Drugs (September 2015)
and Jurisdictions Determined to be Experiencing or At-risk of Significant Increases in Hepatitis Infection or an HIV
Outbreak Due to Injection Drug Use Following CDC Consultation (January 2020)



Impact on our Health System

- Increased infectious viral disease
 - Hepatitis A: One of the largest outbreaks in US history ⁵
 - Hepatitis B: Rate 14 times the national average
 - Hepatitis C: Highest incidence rate in the nation ⁶
 - HIV: Southern WV listed as most vulnerable in US ^{6,7}
- Increased ED utilization
- Increased hospital admissions due to drug related endocarditis, skin and soft tissue infections and osteomyelitis- \$13,476,763 deficit 2008-2015 CAMC ⁸
 - Nationally 53% of opioid overdose patients are admitted
 - Readmission rate for ED discharged-24% at 30 days
 - Average admission cost \$11,731
 - ICU admission cost \$20,500 ⁹
 - Endocarditis \$54,281 ¹⁰
- Highest rate of Neonatal Abstinence Syndrome in nation ¹¹
- Human toll to patients, families, staff and providers

HIV Cluster Reported in Cabell County



- WV BPH issued Health Advisory #162- October 2019
- 2014-2019 five-fold increase in new HIV diagnoses among PWID from 12.5% to 64.2% driven primarily by Cabell county increases

HIV Diagnoses by County, West Virginia, 2018-2021

(As of December 29, 2021)

Note: DATA ARE PRELIMINARY AND SUBJECT TO CHANGE[¥]

County of residence at time of HIV diagnosis	2013-2017 Average No. of Cases per Year	2018		2019		2020		2021 Year to Date	
		Total Cases	Cases Reporting IDU [^]	Total Cases	Cases Reporting IDU [^]	Total Cases	Cases Reporting IDU [^]	Total Cases	Cases Reporting IDU [^]
Barbour	0	0	0	0	0	0	0	0	0
Berkeley	7	*	*	5	0	6	0	9	*
Boone	1	*	0	0	0	*	*	*	*
Braxton	0	0	0	0	0	*	*	*	*
Brooke	1	0	0	0	0	0	0	*	0
Cabell	7	17	13	67	62	45	45	31	28
Calhoun	0	0	0	*	0	0	0	0	0
Clay	8	0	0	0	0	0	0	*	0
Doddridge	0	*	*	*	*	*	0	*	0
Fayette	2	*	*	*	0	0	0	*	*
Gilmer	1	0	0	*	0	0	0	0	0
Grant	1	0	0	0	0	0	0	0	0
Greenbrier	1	*	0	*	0	*	*	*	0
Hampshire	0	0	0	0	0	*	*	*	*
Hancock	0	*	0	*	0	0	0	0	0
Hardy	0	*	0	0	0	0	0	*	*
Harrison	1	*	0	5	*	*	0	*	*
Jackson	0	*	0	0	0	0	0	*	*
Jefferson	2	*	*	*	0	*	0	*	0
Kanawha	14	17	*	28	14	44	40	52	40
Lewis	1	*	0	0	0	0	0	0	0

CDC inquiry sought on HIV outbreak in WVa's largest county

U.S. Sen. Joe Manchin has submitted a congressional inquiry with the Centers for Disease Control and Prevention regarding an HIV outbreak in West Virginia's largest county



Evidence-Based Strategies

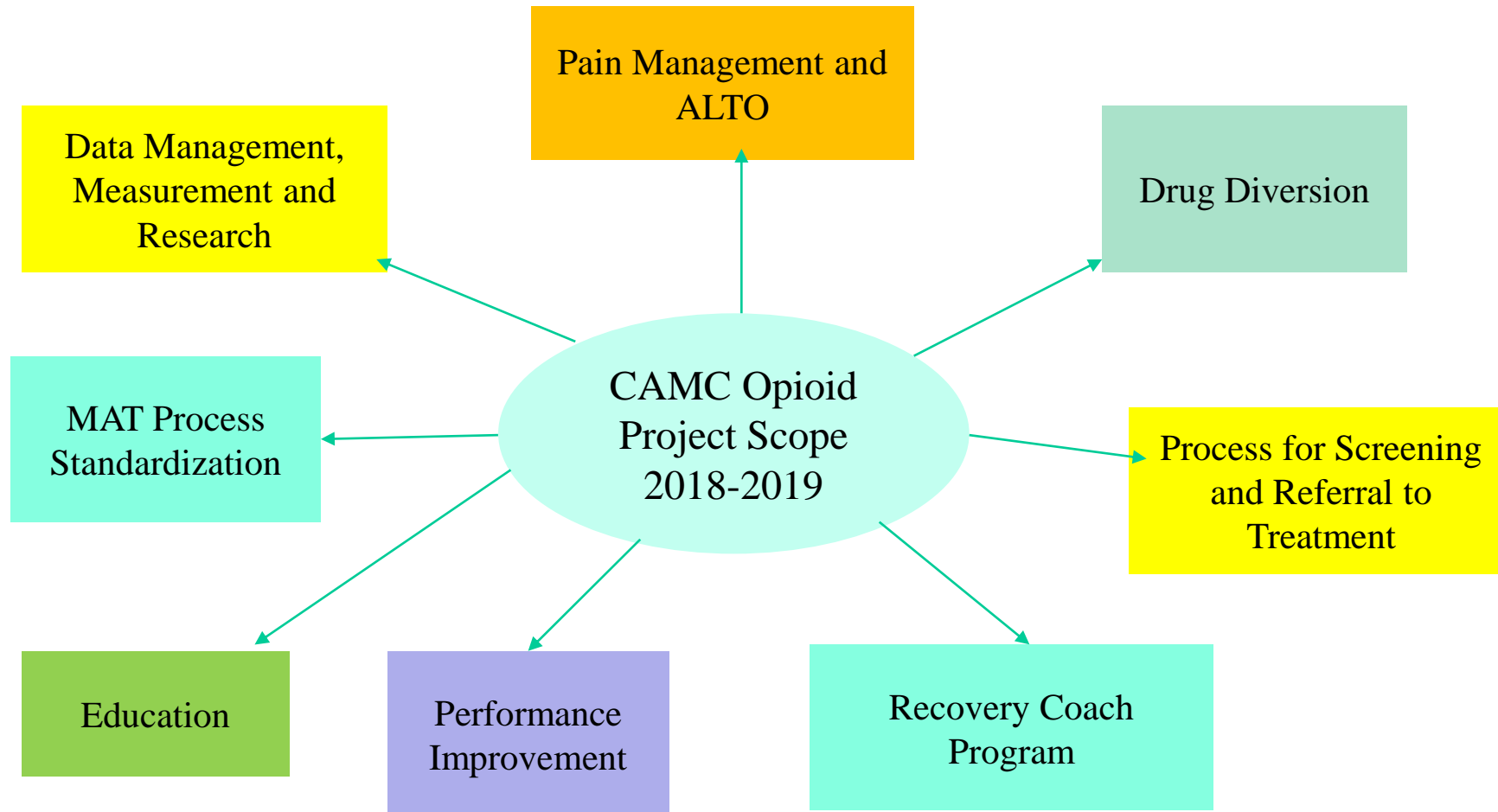
Prevent Opioid Overdose

- Overdose Education
- Targeted Naloxone Distribution
- Medication Assisted Therapy
- Initiating Buprenorphine –based MAT in ED
- MAT in Criminal Justice Settings and on release
- Eliminating Prior Authorization for OUD Medications
- Screening for Fentanyl in routine drug testing
- 911 Good Samaritan Laws
- Syringe Services Programs

Prevent HIV Infection

- HIV testing
- ART (antiretroviral therapy) for HIV-positive persons to prevent sexual transmission
- Oral Daily Pre-exposure prophylaxis (PrEP) for HIV-negative persons
- Post-exposure prophylaxis
- Treatment of sexually transmitted diseases
- Male condom use
- Circumcision of males
- Risk reduction counseling
- Medication assisted therapy
- Syringe Services Programs

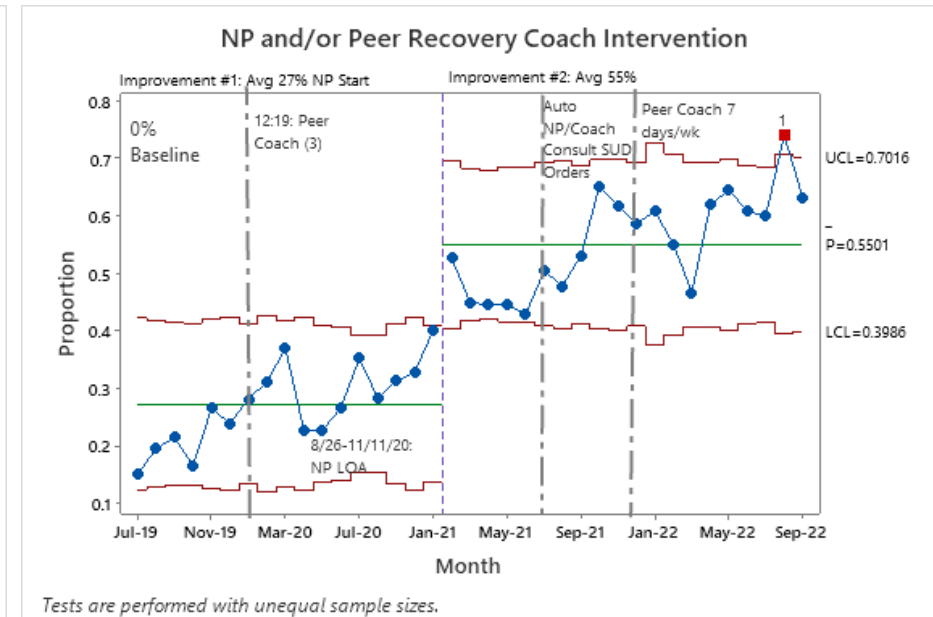
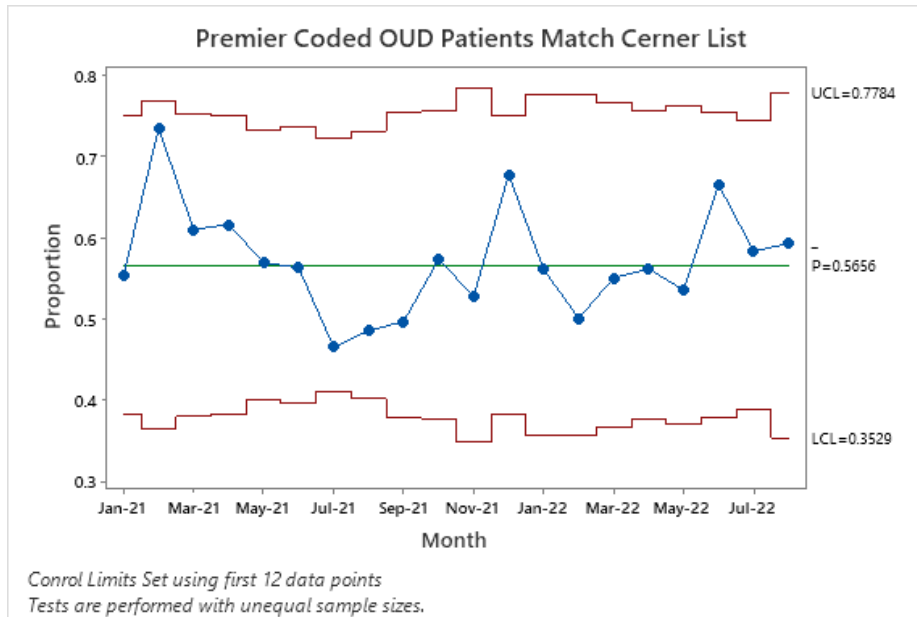
CAMC 2018-2019 Blueprint to Fight the Opioid Epidemic



Critical Variable (X)	Root Cause	Solution
Societal & healthcare professions stigma associated with SUD	Lack of education regarding SUD	<ul style="list-style-type: none"> • State symposium • Managing our opioid epidemic quarterly training • Provider MAT waiver training quarterly • On demand education: The crisis in substance abuse in healthcare • Drug Diversion education • Effectively Caring for Patients with SUD (video) • Annual education on SUD
Provider knowledge regarding Opioid Use Disorder (OUD)	No standardized evidenced based opioid treatment	<ul style="list-style-type: none"> • Implemented ED triage screening questions • Developed and implemented evidenced based Cerner treatment power plans for ED & IP • Implemented Cerner Opioid Toolkit (PDMP integration, standardized workflows for opioid prescribing and naloxone provisioning, clinical decision support to identify high risk patients)
	Provider hesitancy & limitations on prescribing MAT/MOUD in the acute setting	<ul style="list-style-type: none"> • Provider stigma and MAT training • COWS training
	Lack of available resources to address SUD	<ul style="list-style-type: none"> • Hired Behavioral Health Addiction specialist • Hired FNP Addiction specialist* • Hired Addiction Care Program Director • Hired peer recovery coaches*
Provider & healthcare professional's focus on acute diagnosis	Lack of real time ID of patients for intervention	<ul style="list-style-type: none"> • 110 opioid diagnosis ICD 10 codes & IT development of real time patient list • Daily list pushed to FNP specialist and coaches for intervention • FNP and coaches document interventions in EHR and Excel file • Documentation includes MAT/MOUD initiation and referrals made • Multi-disciplinary team approach with provider, nursing, patient, family • Protocols, policies, patient agreement, partnering with security, visitor code of conduct, Injecting drug use harm reduction education, naloxone prescriptions at discharge • Monthly analysis to key stakeholders with action plans



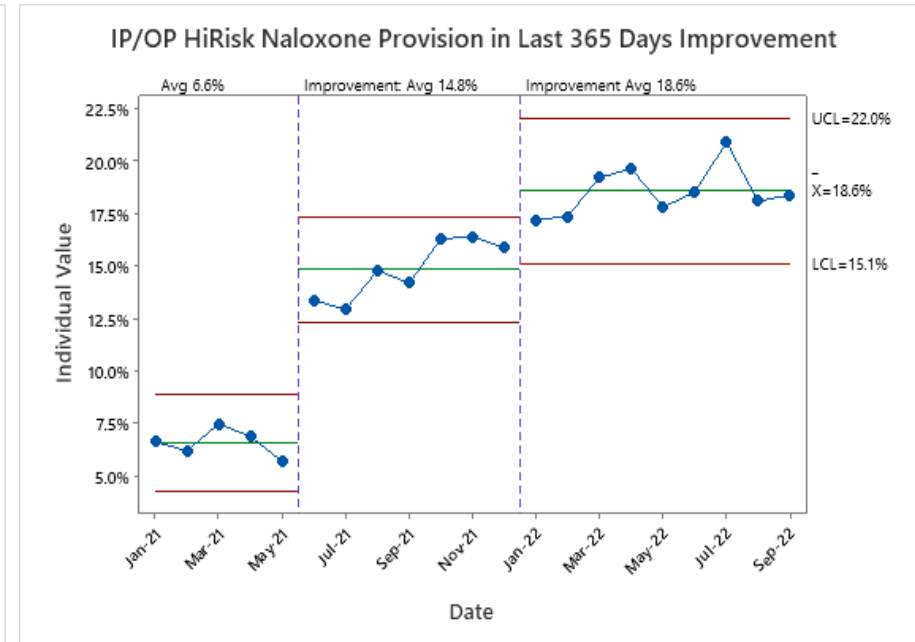
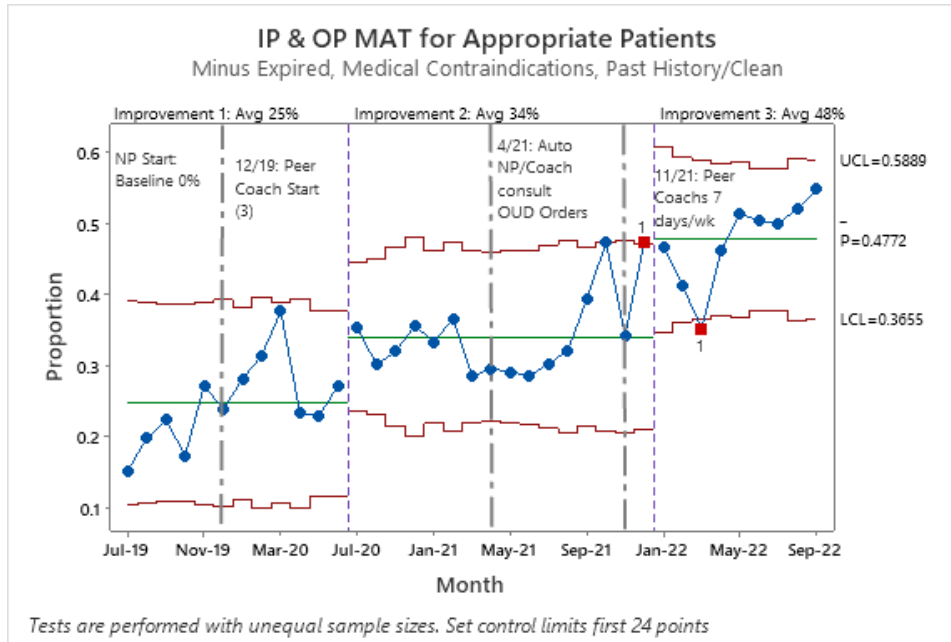
OUD Daily Patient Identification and Resource Utilization



Key Takeaway: 1) Cerner daily list capturing average 57% patients coded OUD at discharge. IT request for updated real-time report given lower priority and will not be completed this year. 2) Statistical improvement with implementation of auto consult to NP/Peer Coach with Opiate Withdrawal Cerner Orders Power Plan and addition of peer coaches to average of 55% from baseline of 27%.



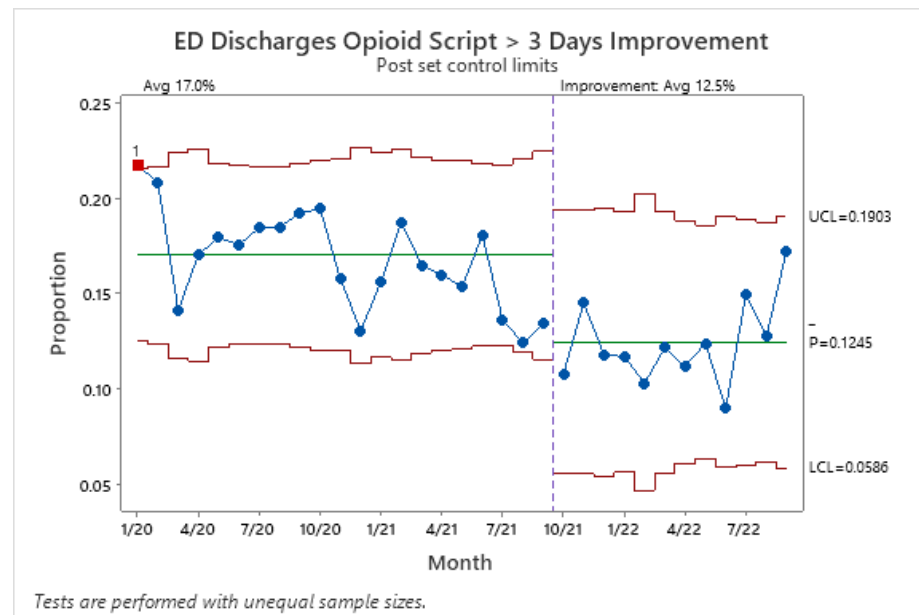
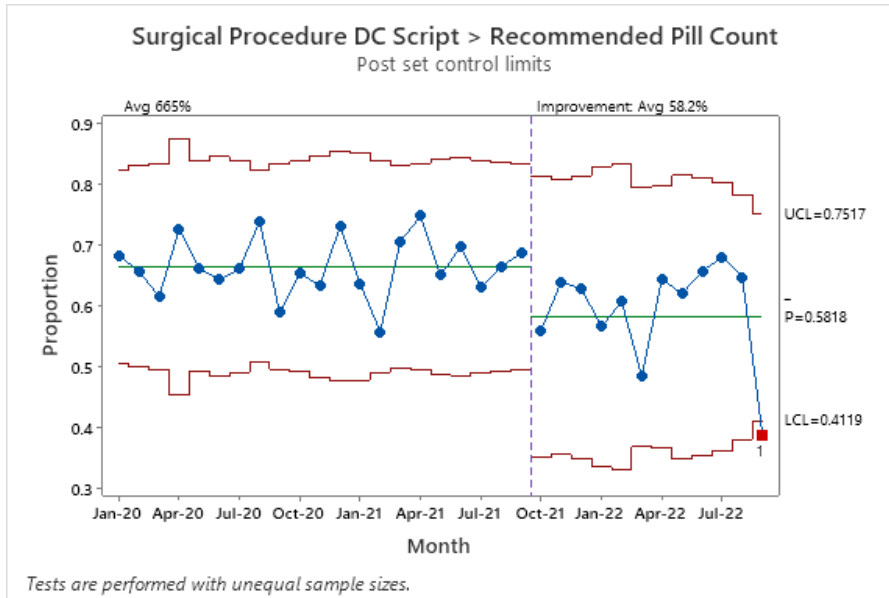
MAT Administered/Arranged & Rescue Therapy Provisioned Last 365 Days



Key Takeaway: 1) MAT demonstrates 2 statistical improvements with 48% average from baseline of 0%. Reasons MAT not administered or arranged are AMA & discharged with median 8 hours LOS. Reduction of AMA/DC without MAT decreased from 57% in 2020 to current 31%, 2) Naloxone provisioning in last 365 days with 2 statistical changes, currently 18.6% average from baseline of 6.6%.



Opioid Discharge Scripts > Recommended Pill Count Guidelines



Key Takeaway: 1) Statistical improvement in surgical procedure discharges with > recommended pill count; focus on high volume procedures of open reduction internal fixation ankle and caesarian section deliveries, 2) Statistical improvement ED discharge scripts > ACEP recommendation of 3 days

Addiction Care Team Success

- Improved medical knowledge and treatment for the patient with SUD
- Overdose prevention education & Naloxone distribution
- Partnerships with community providers
- Lives are being saved
- 340 patients this year confirmed in treatment
 - 266 in Inpatient treatment facilities
 - 74 in Outpatient MAT

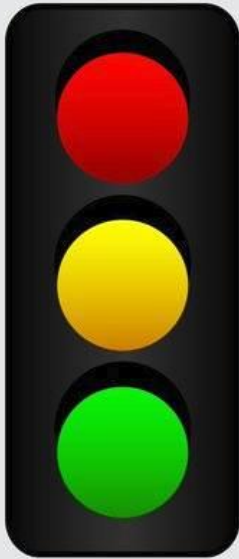


RWP Mobile Unit

- November 2022- RWP van began seeing homeless, SUD population on the West side of Charleston
- 40 people dispensed 7-day Biktarvy packets
- January 2023- Mobile unit with fully integrated lab
- Vaccinations/PAP smears
- 40 Patients undetectable!



Undetectable = Untransmittable



HIV Positive

With Treatment - Medication

Becomes Undetectable - Noninfectious

Undetectable means ZERO risk of infection



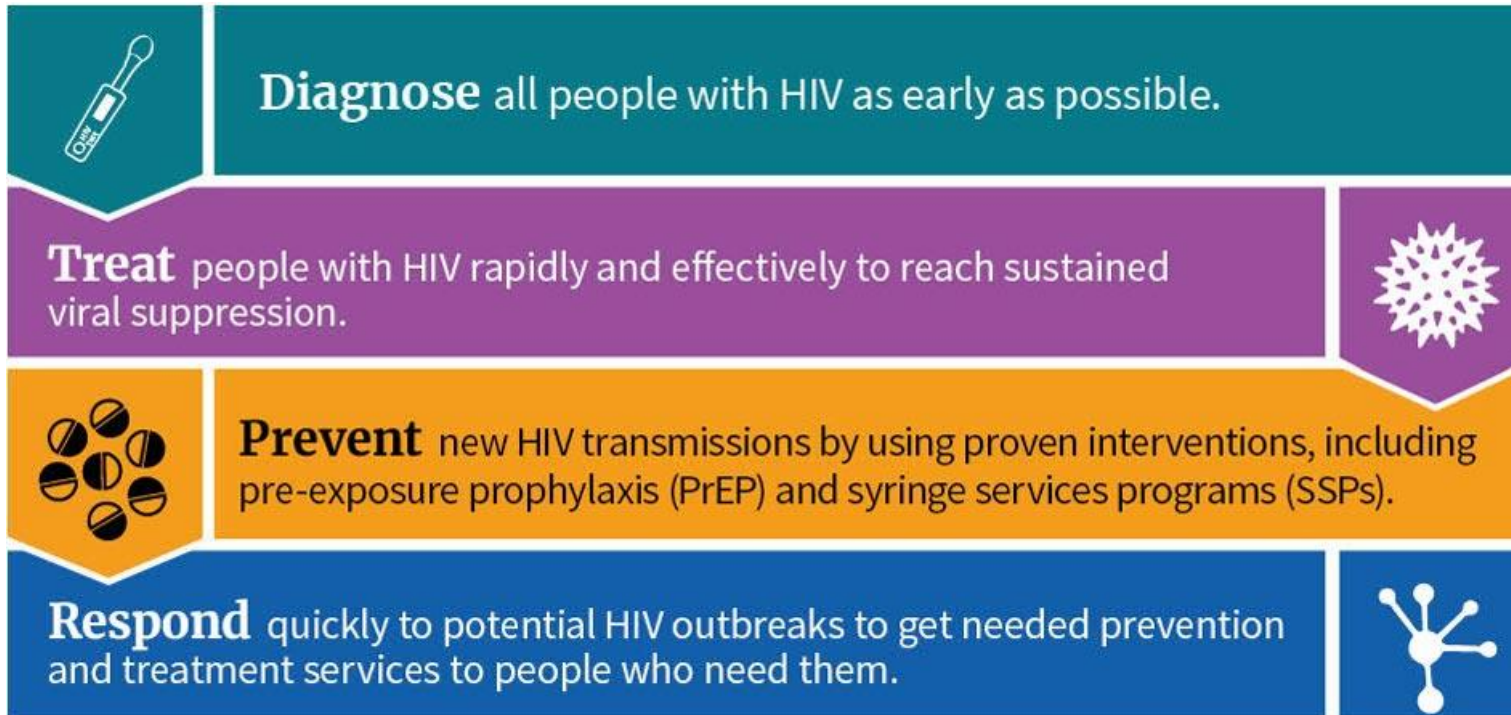
For more information go to:
www.preventionaccess.org/undetectable

Public Health Emergency- Dual Epidemic Substance Use Disorder and HIV Crisis

Guiding Principles:

- Know your epidemic, Know your response ²
- Make collaboration your strategy
- Nothing about us without us ³
- Meet people where they are

Ending the HIV Epidemic: Four Pillars



Through its four pillars— Diagnose, Treat, Prevent, Respond—Phases I and II of *Ending the HIV Epidemic* aim to reduce the number of new HIV diagnoses by 90% by 2030

Phase III will leverage intensive case management to maintain <3,000 new HIV infections per year

Looking to the Future: *Ending the HIV Epidemic in the U.S.*

Ending the HIV Epidemic in the U.S. is a bold plan announced in 2019 that aims to end the HIV epidemic in the United States by 2030 by:

- Reducing the number of new HIV infections by **75% by 2025**
- Reducing the number of new HIV infections by **at least 90% by 2030**
- Averting an estimated **250,000 total HIV infections**

Ending the HIV Epidemic
A PLAN FOR AMERICA

GOAL:
75%
reduction in new HIV infections
by 2025
and at least
90%
reduction
by 2030.

DEPARTMENT OF HEALTH & HUMAN SERVICES - USA

www.hiv.gov

Ending the HIV Epidemic: Indicators



Diagnoses



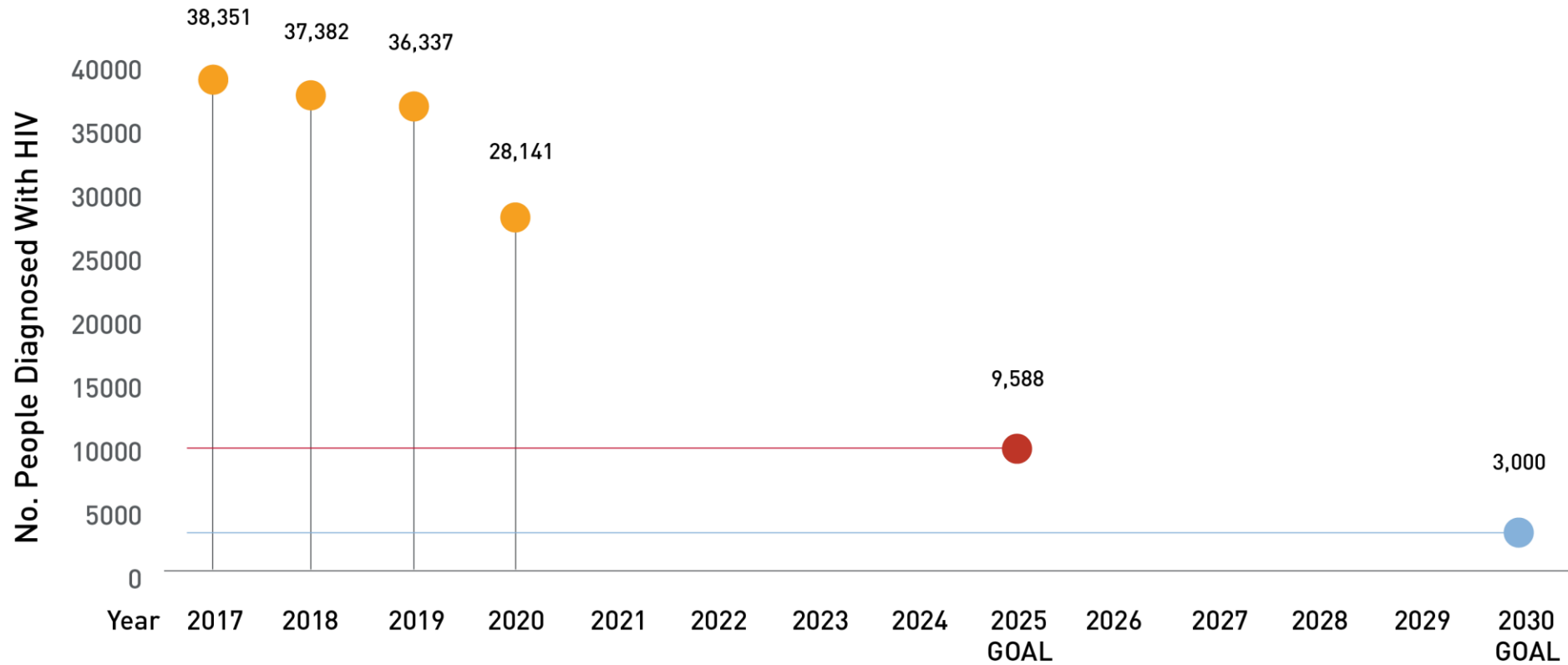
Linkage to HIV Medical Care



Viral Suppression



PrEP Coverage



Ending the HIV Epidemic: Indicators (cont'd 1)



Diagnoses



Linkage to HIV Medical Care

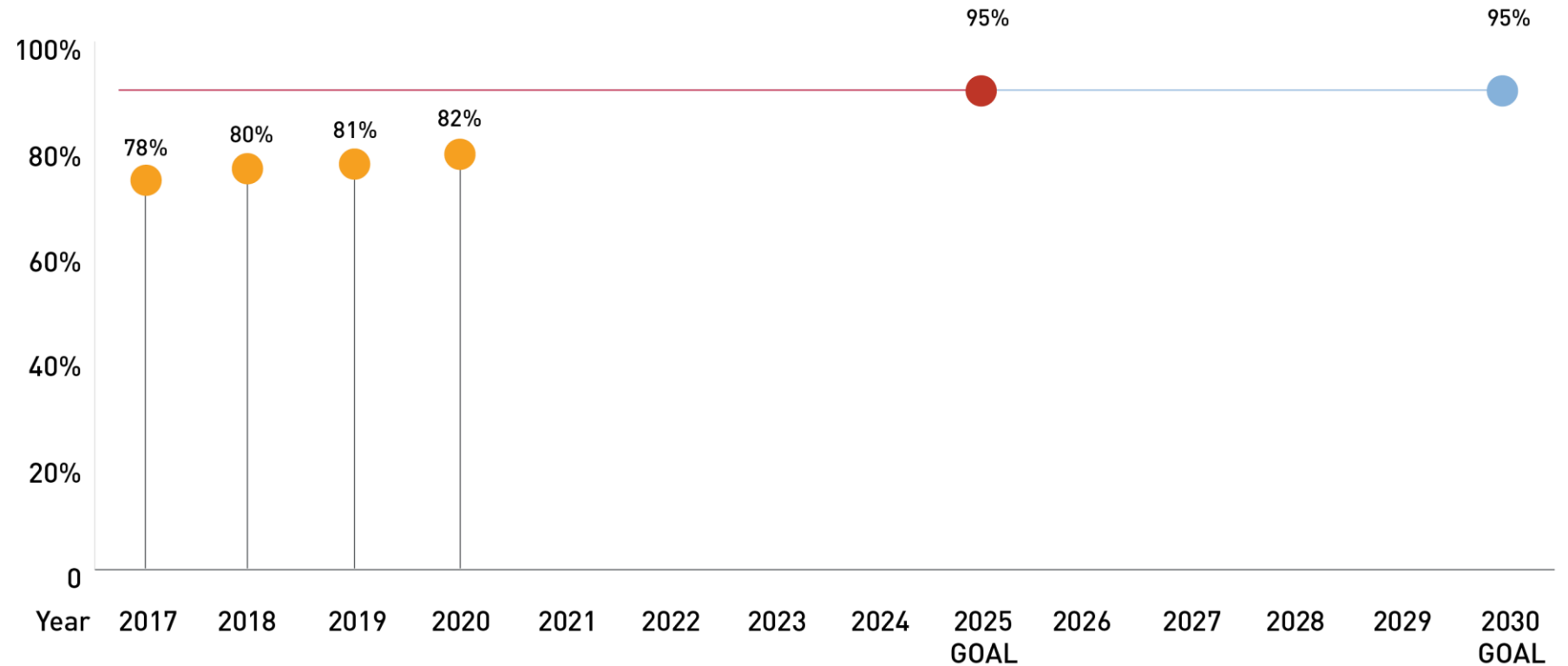


Viral Suppression



PrEP Coverage

Percentage of People Linked to Medical Care <1 Month After Diagnosis



Ending the HIV Epidemic: Indicators (cont'd 2)



Diagnoses



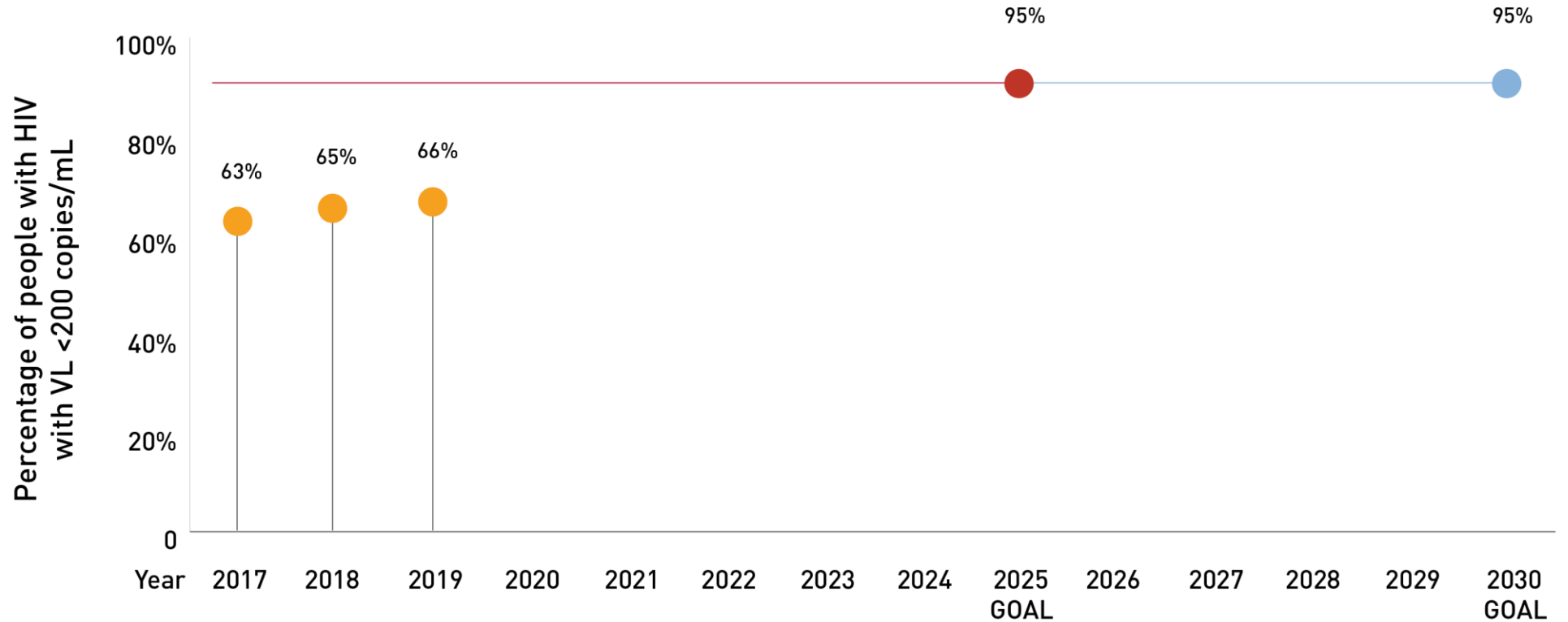
Linkage to HIV Medical Care



Viral Suppression



PrEP Coverage



Ending the HIV Epidemic: Indicators (cont'd 3)



Diagnoses



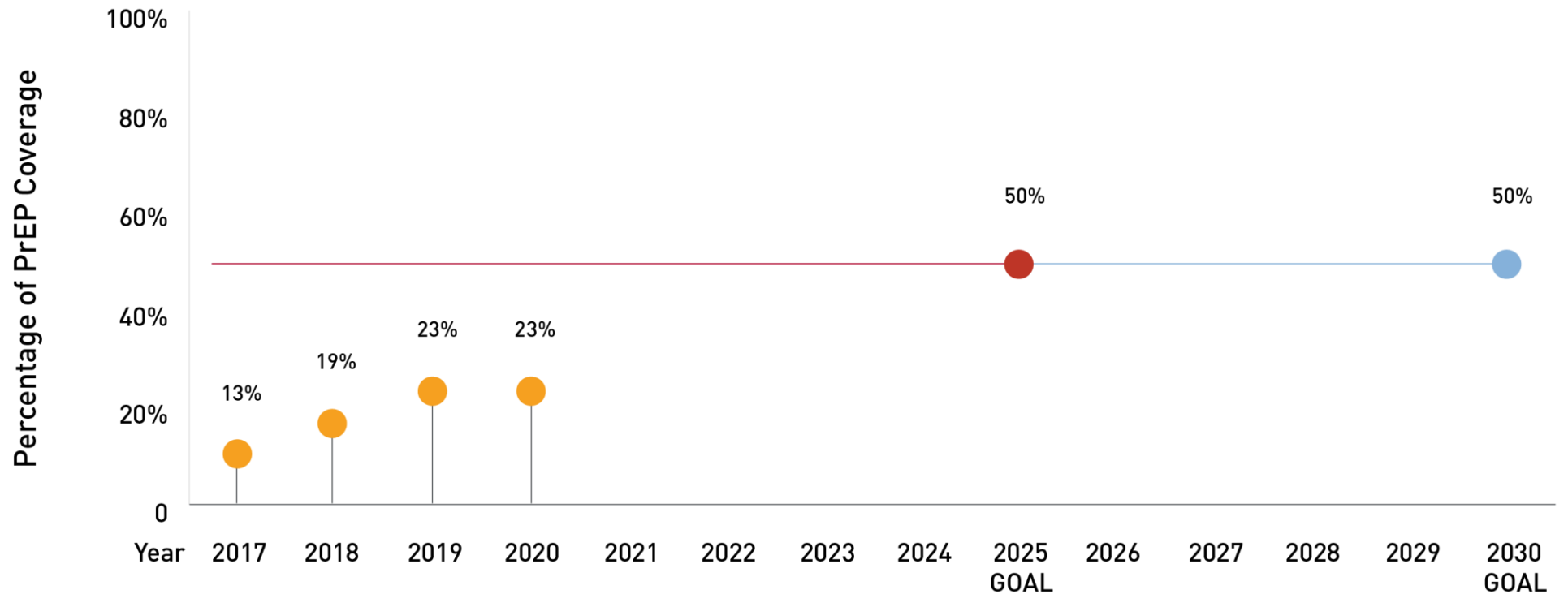
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Questions?

