Public Health
Seattle & King County

Syndemic Approaches to Public Health Intervention

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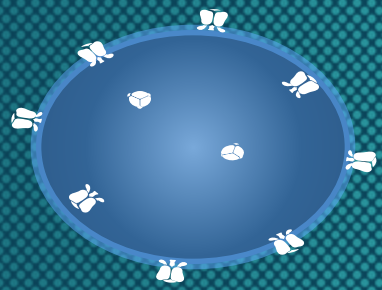

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Disclosure

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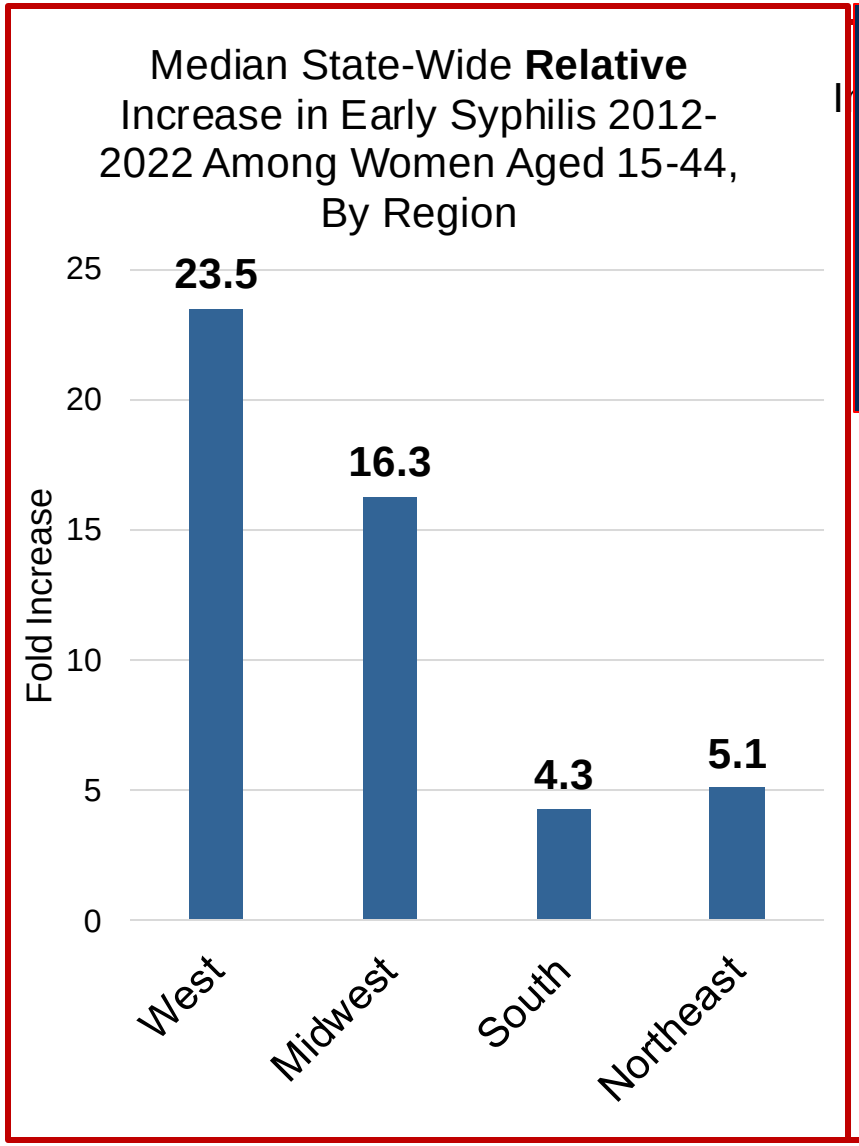
Overview

- Epidemiologic trends
- Tailoring the syndemic approach to the population’s needs
- Opportunities within partner services
- Opportunities at the clinic level

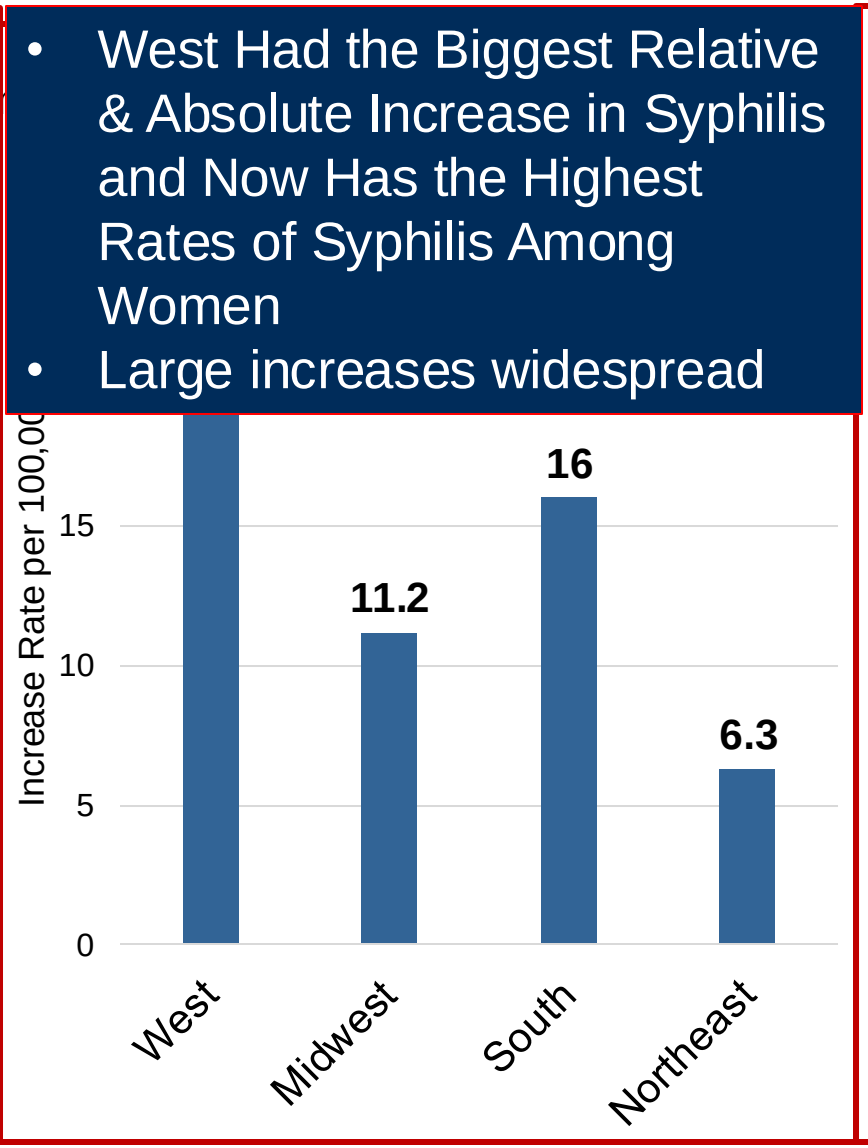
Epidemiologic Trends

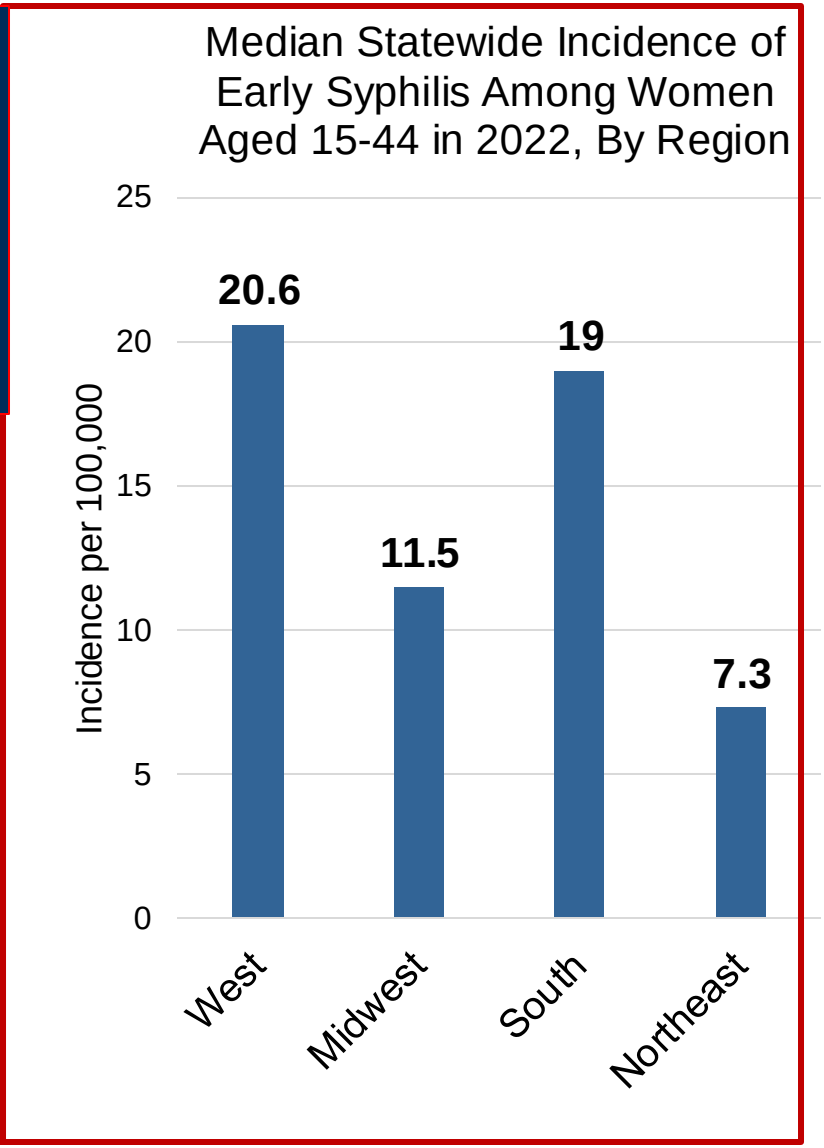
- Declining numbers of cases of HIV nationally
  - Increasing proportion in MSM
  - Slowing progress in many areas
- Syphilis
  - Large but roughly stable epidemic in MSM
  - Rapidly growing epidemic in heterosexuals
- Crisis in opioid deaths
- Progress on HCV treatment, but not enough given how good our intervention is

Regional Epidemiology of Syphilis



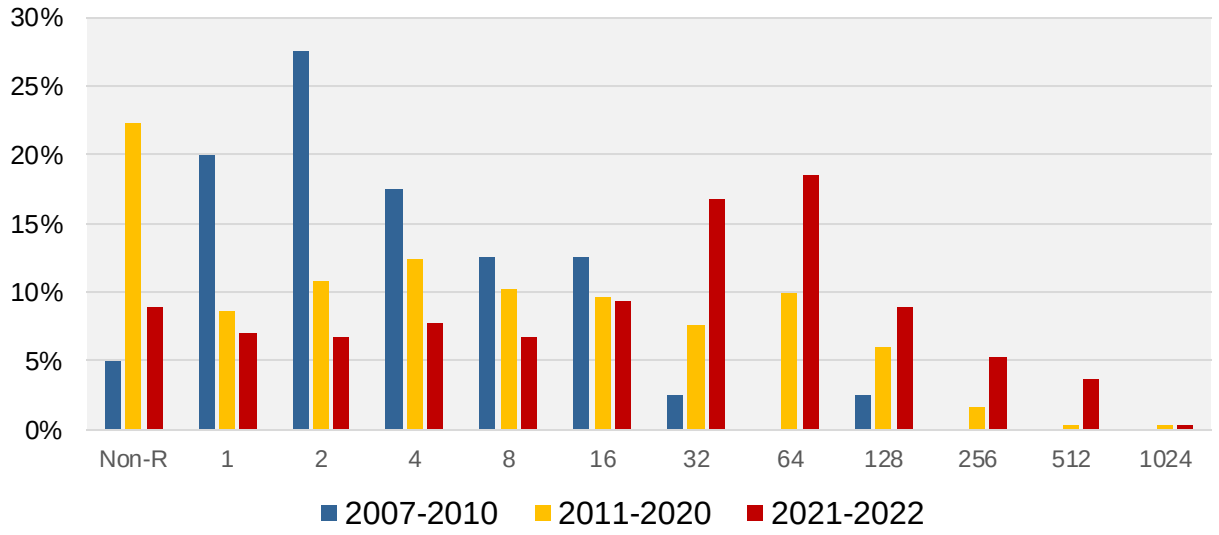
- West Had the Biggest Relative & Absolute Increase in Syphilis and Now Has the Highest Rates of Syphilis Among Women
- Large increases widespread





Late/Unknown Duration Syphilis: A Shift Epidemic

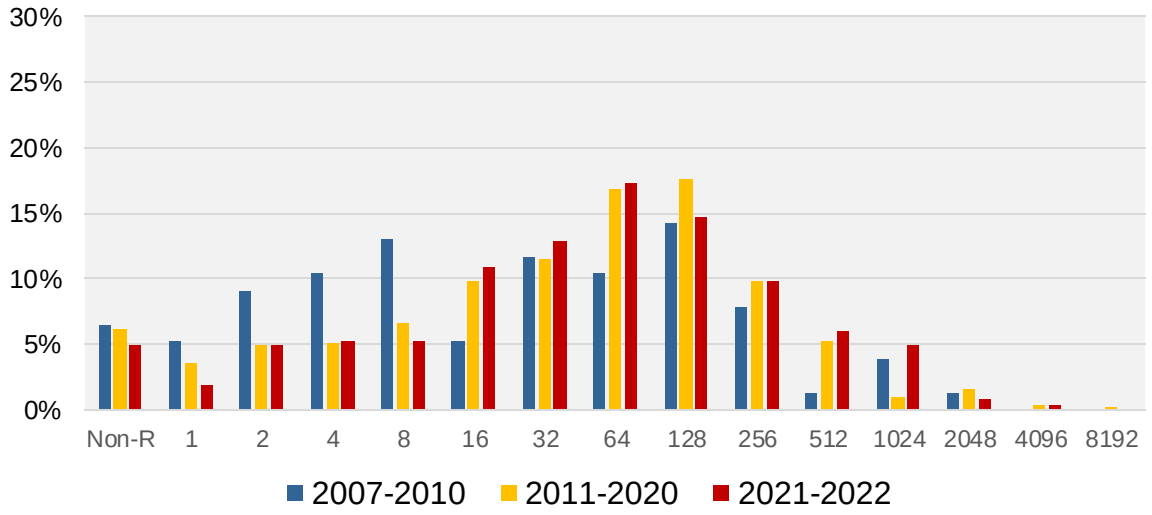
Trends in RPR titer among **cisgender women** with late/unknown duration syphilis in King County, WA, 2007-2022



RPR >1:32 - 19% 2007-10 versus 64% 2020-22

Big Shift in Late/Unknown Duration Syphilis

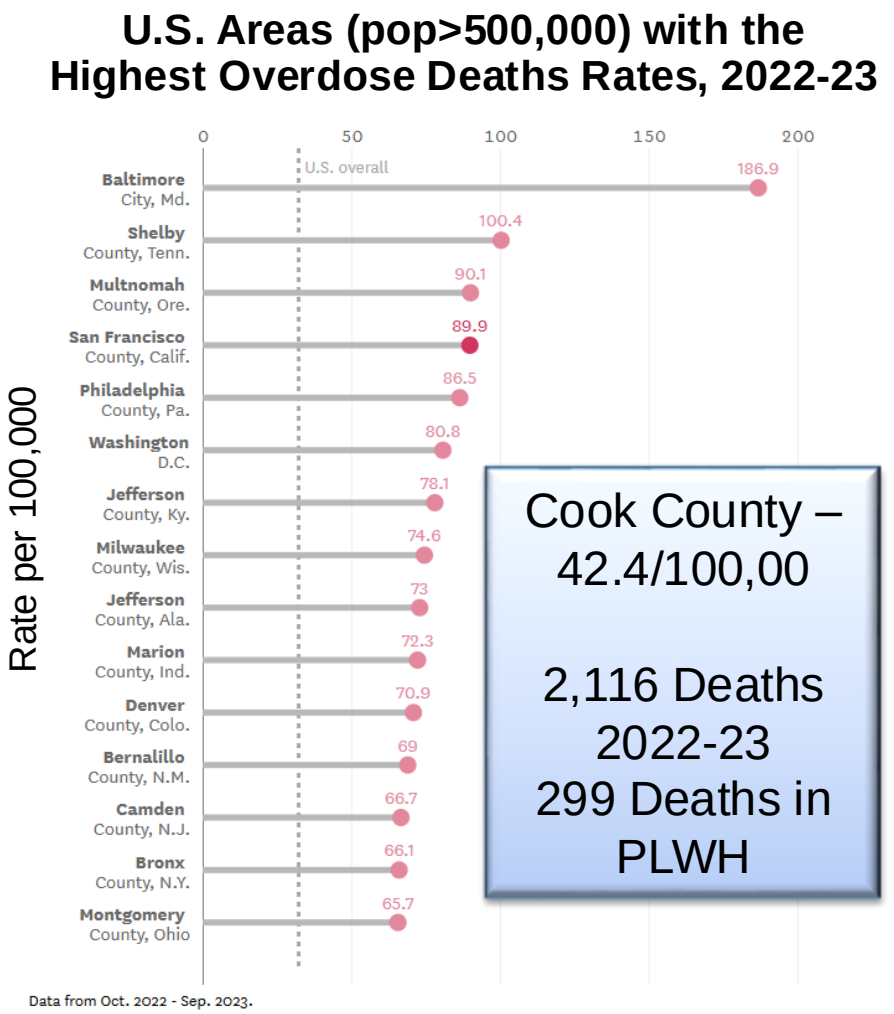
Trends in RPR titer among cisgender **MSM** with late/unknown duration syphilis, King County, WA, 2007-22



RPR >1:32 - 51% 2007-10 versus 67% 2020-22

- High titer unknown duration infections are mostly early
- Focusing on primary/secondary/early latent syphilis misrepresents the current epidemic
- Heterosexual epidemic is larger than what our numbers suggest

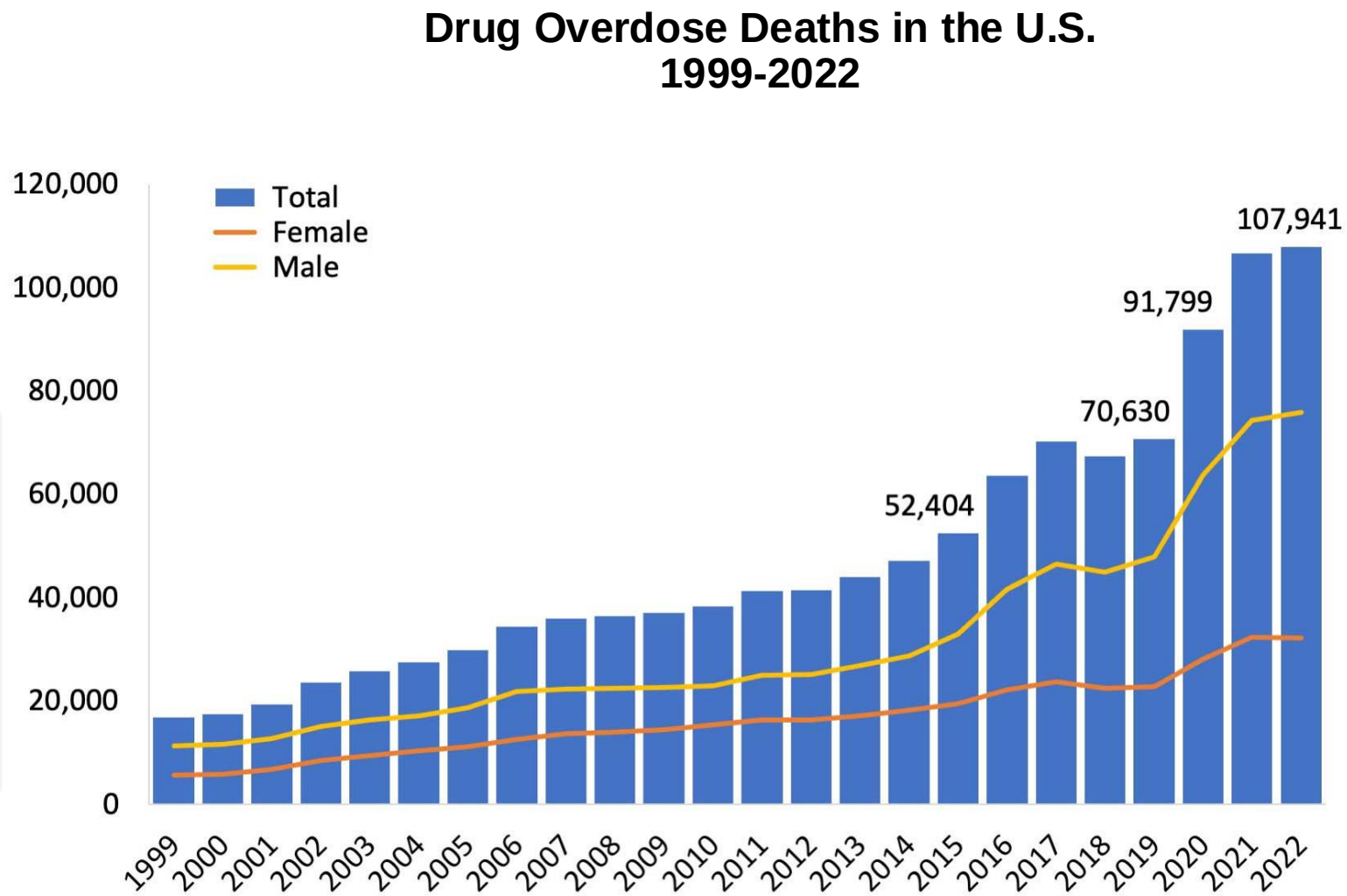
Drug Overdose Deaths in the U.S. 1999-2022



Cook County – 42.4/100,00

2,116 Deaths 2022-23

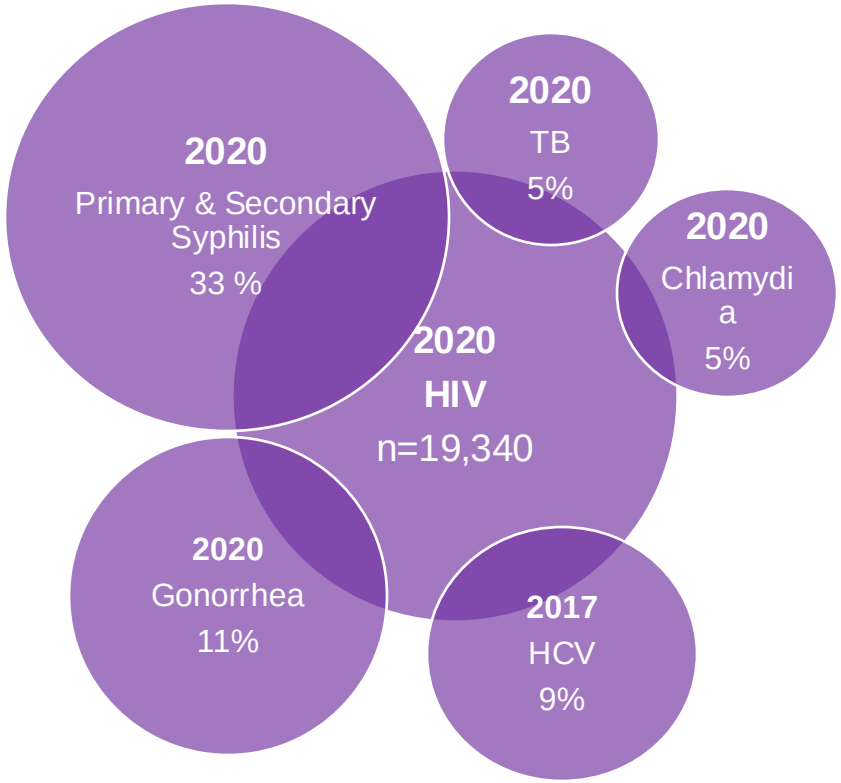
299 Deaths in PLWH



Check your area: https://www.sfchronicle.com/projects/us-drug-overdose-deaths/

Syndemics

Overlapping Infectious Diseases Syndemics, Chicago



- Phenomenon - multiple health conditions and/or social factors interact to exacerbate their individual impact and concentrate morbidity in specific populations
  - **Infections** – HIV, HCV, syphilis, etc.
  - **Non-infectious chronic disease** - cardiovascular disease
  - **Psychiatric illness & behavioral health** – substance use, psychosis, depression
  - **Social factors** – poverty, homelessness/unstable housing, racism

How do we convert knowledge of this phenomena into action that benefits the people and populations we serve?

Syndemics: Variable Focus in Different Populations

- **Different syndemics affect different populations?**
  - **Integrated approaches to testing are relatively easy to implement**
  - **Not one size fits all**
  - **Goal is to tailor our syndemic approach to the needs of specific people and populations**

	Example Populations		
	MSM who do not use substances*	**Substance Using/Unhoused Heterosexuals**	**Immigrants from Nations with a High Prevalence of HIV**
Infectious disease priorities	HIV Syphilis GC/CT ? HCV	**Syphilis** HCV GC/CT ? HIV	HIV TB HBV ? Syphilis ? HCV
Priority interventions**	Frequent HIV/STI Testing **PrEP** **Doxy PEP**	Frequent HIV/STI testing Ensuring index case treatment **Narcan** **MAT+ Opioids** **HCV treatment** ? PrEP ? Doxy-PEP	One time HIV/HCV/HBV/TB testing **LTBI treatment** **HBV treatment**

* Risk is heterogeneous and not all MSM are at high risk for HIV/STI. ** All persons with HIV or HCV (RNA+) should be treated. + Medication Assisted Treatment

Converting A Syndemic Perspective Into Action

Two Examples:

- Integrate outreach services – HIV/STI Partner Services
  - Not clear how much this applies to partner services that are based in clinics

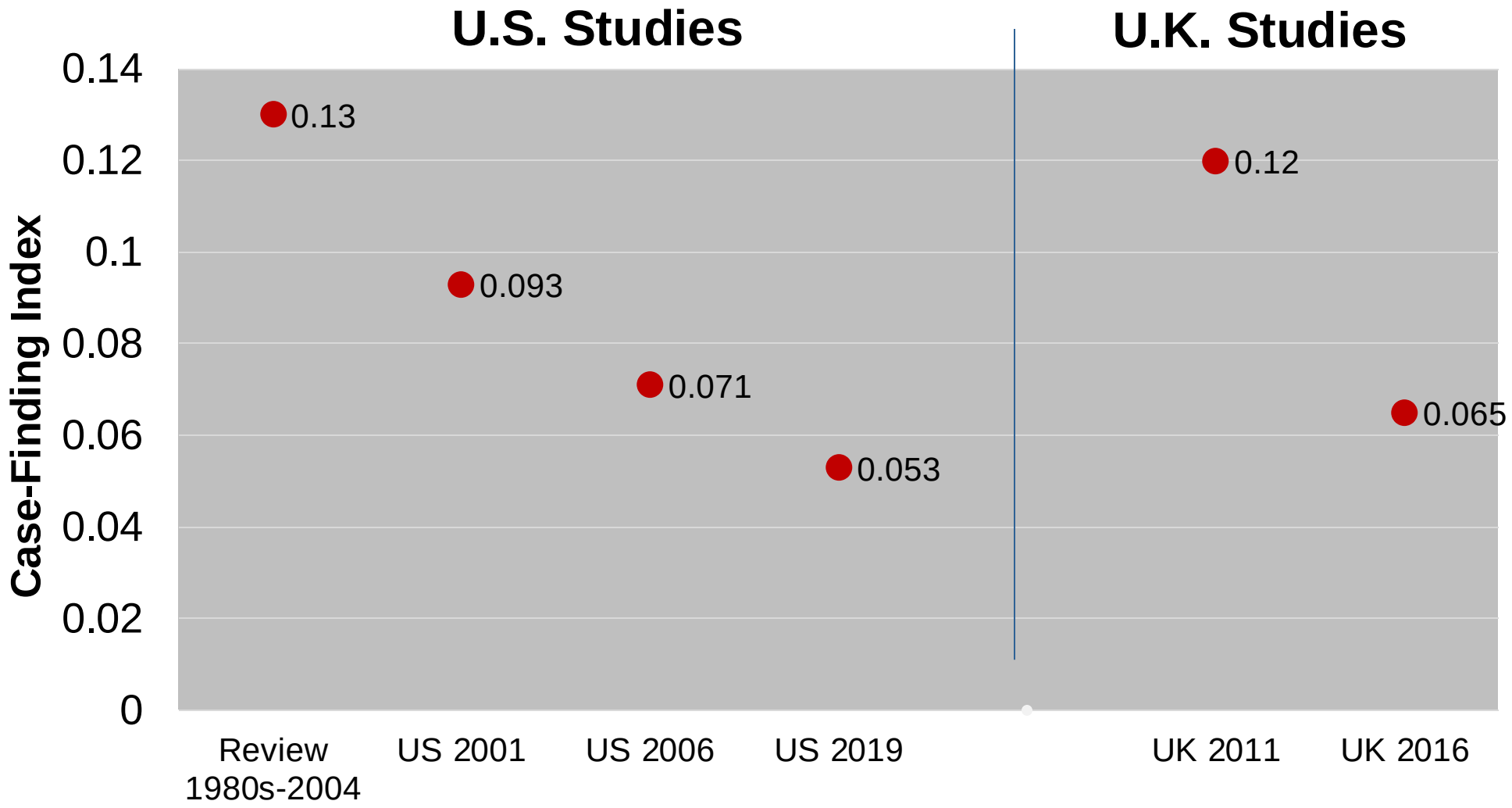
- Healthcare system change – Low barrier HIV clinics

Case-Investigation & Contact Tracing Three Overarching Goals

- **Case-investigation**
  - Identify outbreaks
  - Epidemiology to characterize affected population
  - Data for monitoring key aspects of disease control (e.g., why and where were people tested, HIV testing history)
- **Partner notification** – Goal is case-finding and treatment
  - Traditional focus for HIV/STI programs
- **Case management**
  - Focus is more on linking people (particularly index cases) to services (e.g., HIV/syphilis treatment, PrEP)

Trends in HIV Partner Services Case-Finding

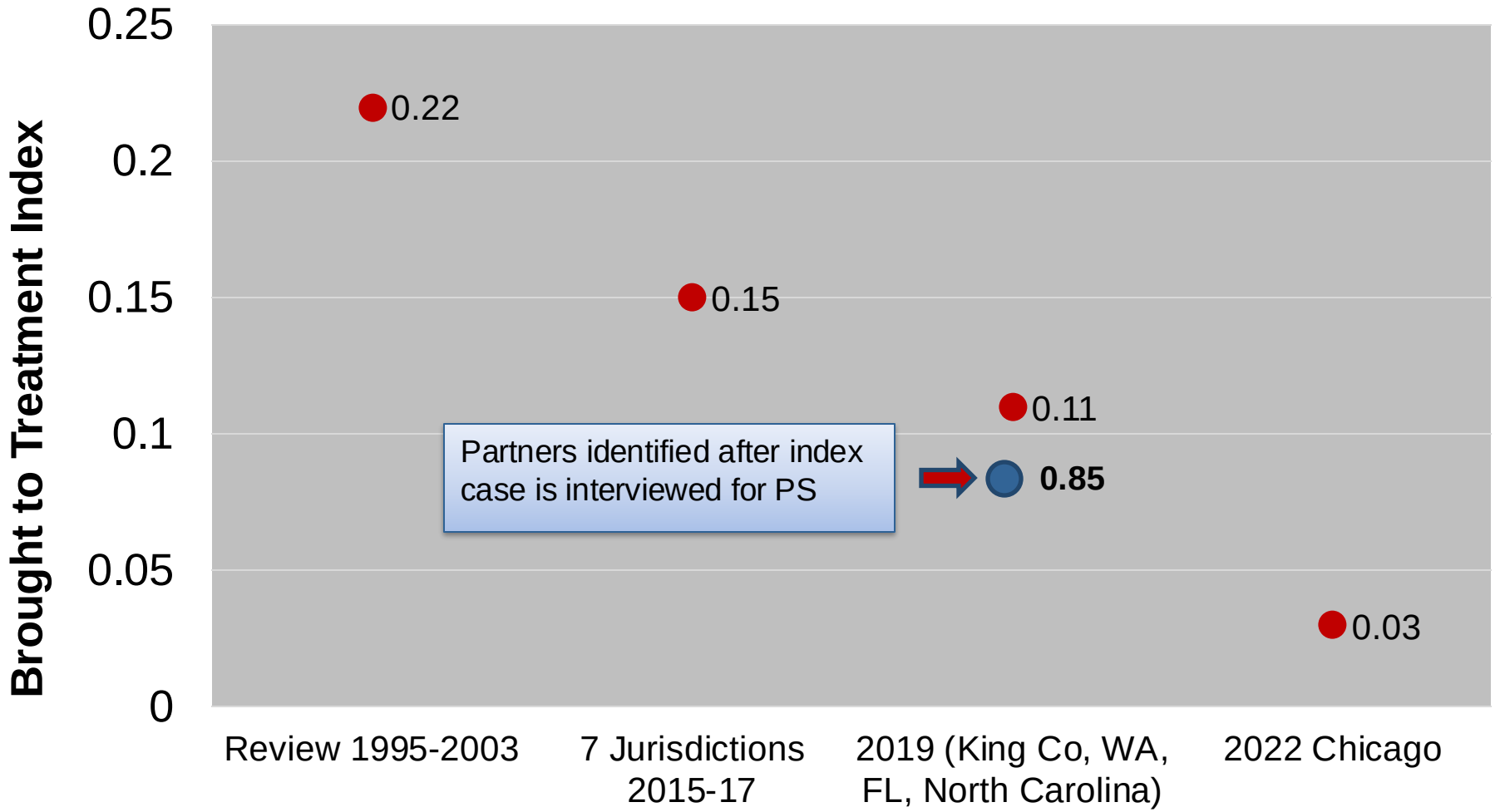
- Declining case-finding over time US and UK
- Study of HIV PS in 13 US jurisdictions in 2019 found that the average fulltime DIS probably identified <2 cases of HIV
- Case-finding in partners is not high enough to justify PS
  - Case investigation
  - Case mgt - linkage to care, PrEP



Sources: ; [1]Brewer D Sex Transm Dis 2005; [2]Golden MR Sex Transm Dis 2001; [3]Golden MR Sex Transm Dis 2006; [4]Golden MR JAIDS 2021; [5]Rayment M Sex Transm Inf 2017; [6]Bull L Int J STD AIDS 2021

Syphilis Partner Services Brought to Treatment Index in the US

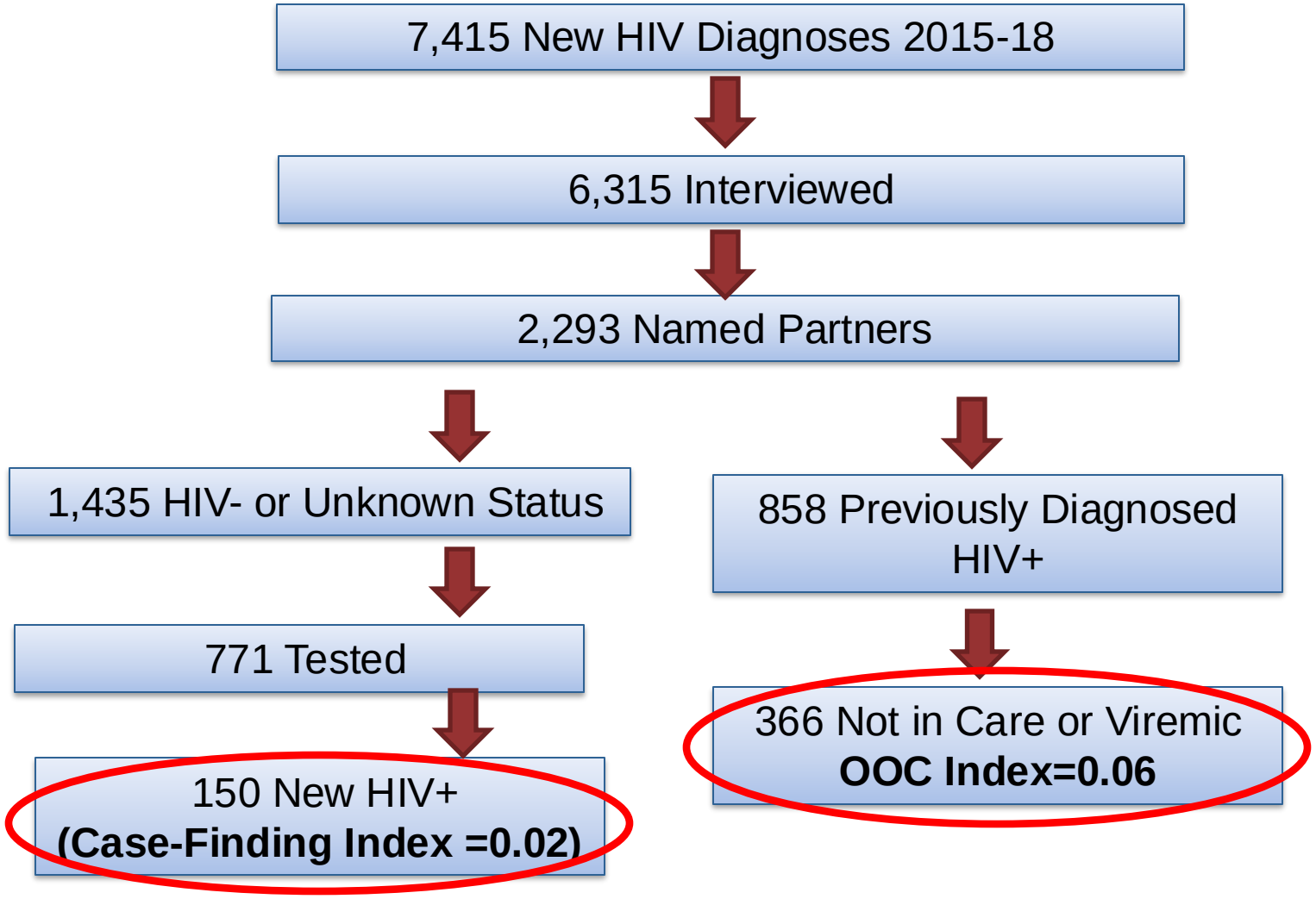
- Case-finding indices declining over time
  - Many partners attributed to APS notified by partners without assistance
- Absent a significant increase in case-finding among partners, the focus of STI field services needs to change



Sources: Brewer D Sex Transm Dis 2005; Golden MR PHSKC; George D. FL DOH. Mobley V. NC DOH; *Cope A Sex Transm Dis 2021.

HIV Partner Services for Relinkage to Care: NYC

- Evaluation of HIV PS program in NYC 2015-2018
- HIV case-finding is low
  - One named HIV+ partner who is out of care or viremic for every ~17 index cases
    - 49% of HIV+ partners were OOC or viremic
  - Suggests potential to use HIV PS for relinkage

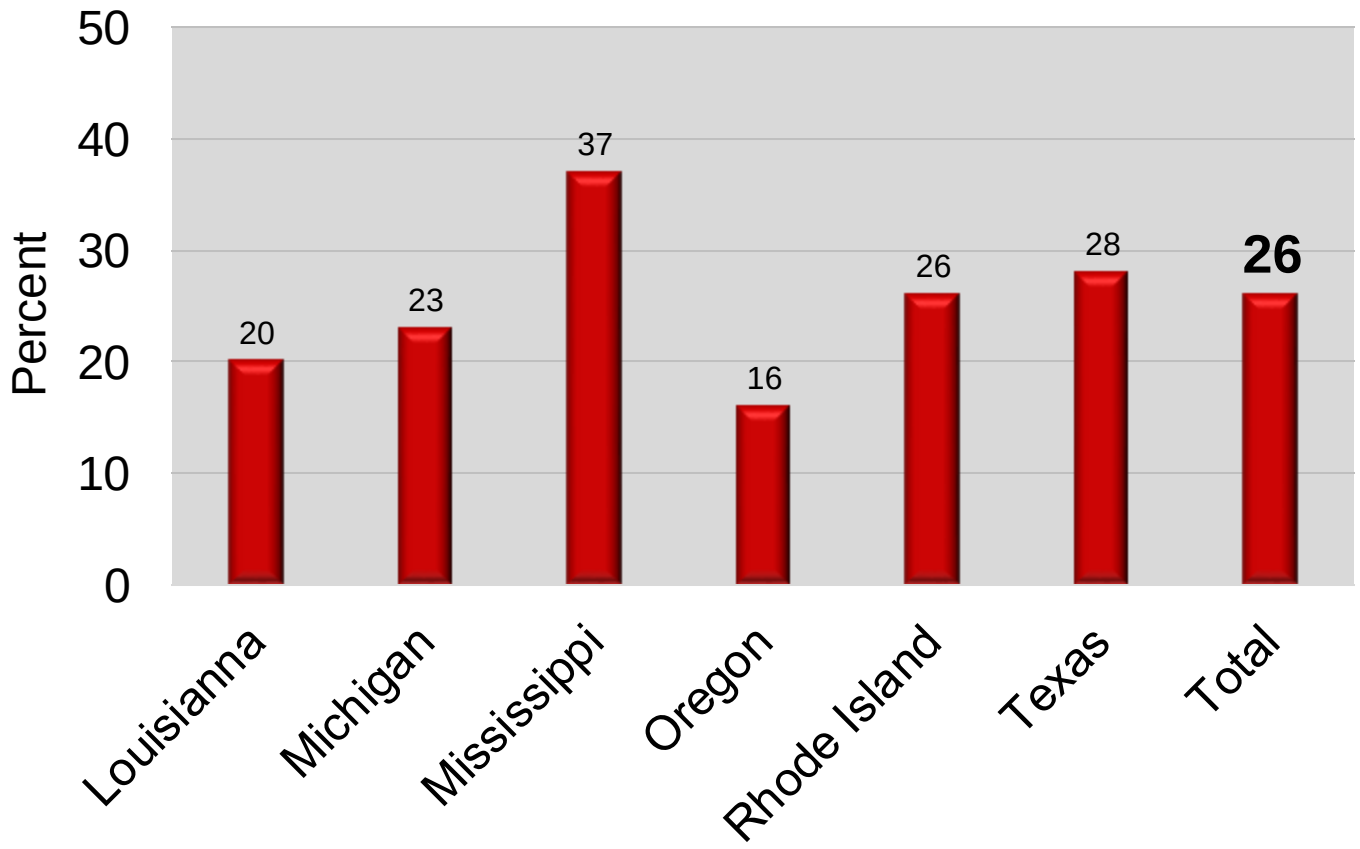


Source: Udeagu C. Lancet HIV 2020

Syphilis Partner Services for Relinkage to HIV Care

- 39% of early syphilis cases were HIV+
- 26% of 6,942 HIV+ cases were out of care or not suppressed
- Data suggest substantial potential to use STI partner services to promote relinkage to care
- Uncertain if relinkage through this mechanism will be effective
  - Relinkage is hard – finding people is necessary but not sufficient

Percentage of HIV+ Persons with Early Syphilis Who Are Out of Care or Viremic, 2016-17



Source: Norkin, S.; Sex Transm Dis 2021

Field Services: Linkage to PrEP

- Several studies have reported success using STD PS to link MSM to PrEP
- No studies have found this to be successful in heterosexuals, though data are limited

	Percentage of HIV- Index Cases Not on PrEP who Initiate it After PS Offer
Seattle	37% - MSM
Iowa	44% - MSM 3% - Non-MSM
Chicago	24% - Black MSM

Source: Katz D. JAIDS 2019 (updated data); Howren MB Public Health Reports 2021; Teixeira da Silca D. JAIDS 2021.

Incidence of HIV in Women with STIs

- 15% of new HIV diagnoses in the US in 2022 occurred in women who were not PWID
- Providing PreP to women in known serodiscordant relationships makes sense, particularly if their partner(s) is not virally suppressed
- Risk in women with bacterial STI is not typically very high
- **Do we really know which women will benefit from PrEP?**

Population	Incidence (Per 100 Person Yrs)
Syphilis	
King County, WA (2008-18)	0
Florida (2000-11)	0.60
Shelby Co, TN (Black women) (1998-2016)	0.32
Louisiana (2000-15)	0.18
Gonorrhea	
King County, WA	0.06
Florida	0.17
Louisiana	0.07
Chlamydia	
King County, WA	0.02
Florida	0.07
Louisiana	0.04

1 in 166 to 1 in 500 per year

1 in 588 to 1 in 1429 per year

1 in 1429 to 1 in 2500 per year

Field Services Dilemma

- Workload increasingly exceeds capacity of DIS teams to investigate cases
- Need to explicitly prioritize cases
- Reconsider content of investigations
  - Content of partner services should vary depending on the infection and the population/person affected
  - When is case management more important than partner notification?

Index Case Population
Tier 1
Pregnant women with syphilis or HIV with an unsuppressed viral load (VL)
New HIV infection (prioritize acute)
Tier 2
Untreated syphilis
Complicated syphilis (ocular, neuro-, otosyphilis)
HIV+ persons known to be in-jurisdiction with an unsuppressed VL (including with STI)
Syphilis in MSW
Cephalosporin resistant GC
Tier 3
Syphilis in women of child-bearing age
GC/CT in untreated persons (GC>CT, ♀>♂)
Syphilis in HIV- MSM/TG not on PrEP
Surveillance-identified HIV+ - ? viremic or out of care
Tier 4
GC and CT in MSM/TG persons off PrEP (GC>CT)
Tier 5
GC in MSW
Syphilis in MSM/TG on PrEP or suppressed
GC in women
Tier 6
CT in MSW & Women
GC/CT in MSM and TG persons

Focus on prevention of mother to child transmission, epidemiology of syphilis

Heterogeneous group

- Case management focus - Untreated & complicated syphilis, out of care HIV+
- Syphilis in MSW – goal to find

Heterogeneous group

- Syphilis in women – identify pregnant women, find male partners, epi
- Untreated GC/CT
- MSM – PrEP/doxy-PEP promotion

Promotion of PrEP/doxy-PEP in MSM

Lower Intensity Intervention

Syndemics and Field Services: Conclusions

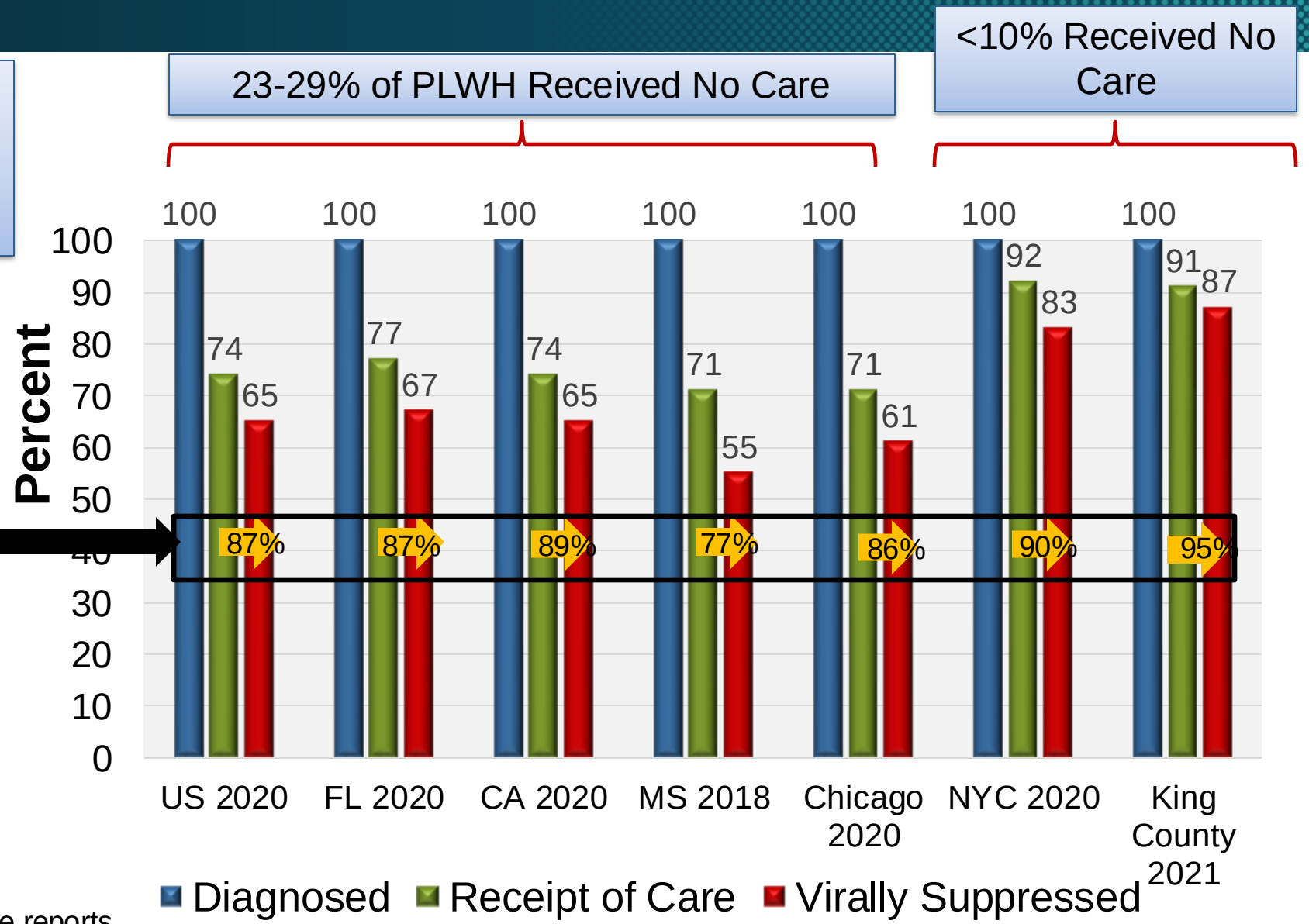
- Lots of opportunities to integrate linkage to services and goals other that case-finding in partners into field services
  - HIV care – new diagnoses and out of care persons
  - PrEP
  - Doxy-PEP
  - Narcan and linkage to MAT
  - Primary care
  - Immunization
- Public health system in many areas has been overwhelmed by syphilis
- Given the scale of the syphilis epidemic, many jurisdictions will need to concentrate public health DIS efforts almost exclusively on new cases of HIV, untreated syphilis, and syphilis in heterosexuals
- Need to be explicit about priority populations and interventions
  - Articulate this to medical providers and affected populations

Addressing Syndemics in Clinical Settings

HIV Care Continuums (Among Diagnosed Persons)

- Largest drop is between diagnosis and any care in the prior year
- Huge variance between areas

Much less variance in viral suppression among those who have received care
- 5 jurisdictions 85-95%



Sources: AIDSVu, NYC and PHSKC Surveillance reports

Out of Care Lists from Surveillance: Investigation Outcomes

- Much of the difference in the estimated number who are out of care reflects surveillance data quality
- Most people who appear to be out of care have moved
- **Good news**: We're doing way better than we say we are
- **Bad news**: Surveillance data need to be better

Location	Number of cases investigated	% with alternate explanation* upon investigation
4 states in CAPUS project (LA, IL, TN, VA)	13,798	58%
6-state collaborative (WA, WY, AK, MT, ID, OR)	3,866	72%
Seattle & King County	2,573	54%
Maryland	2,488	88%
New York	985	76%

**In care, deceased, moved out of area, labs not reported to surveillance, error*

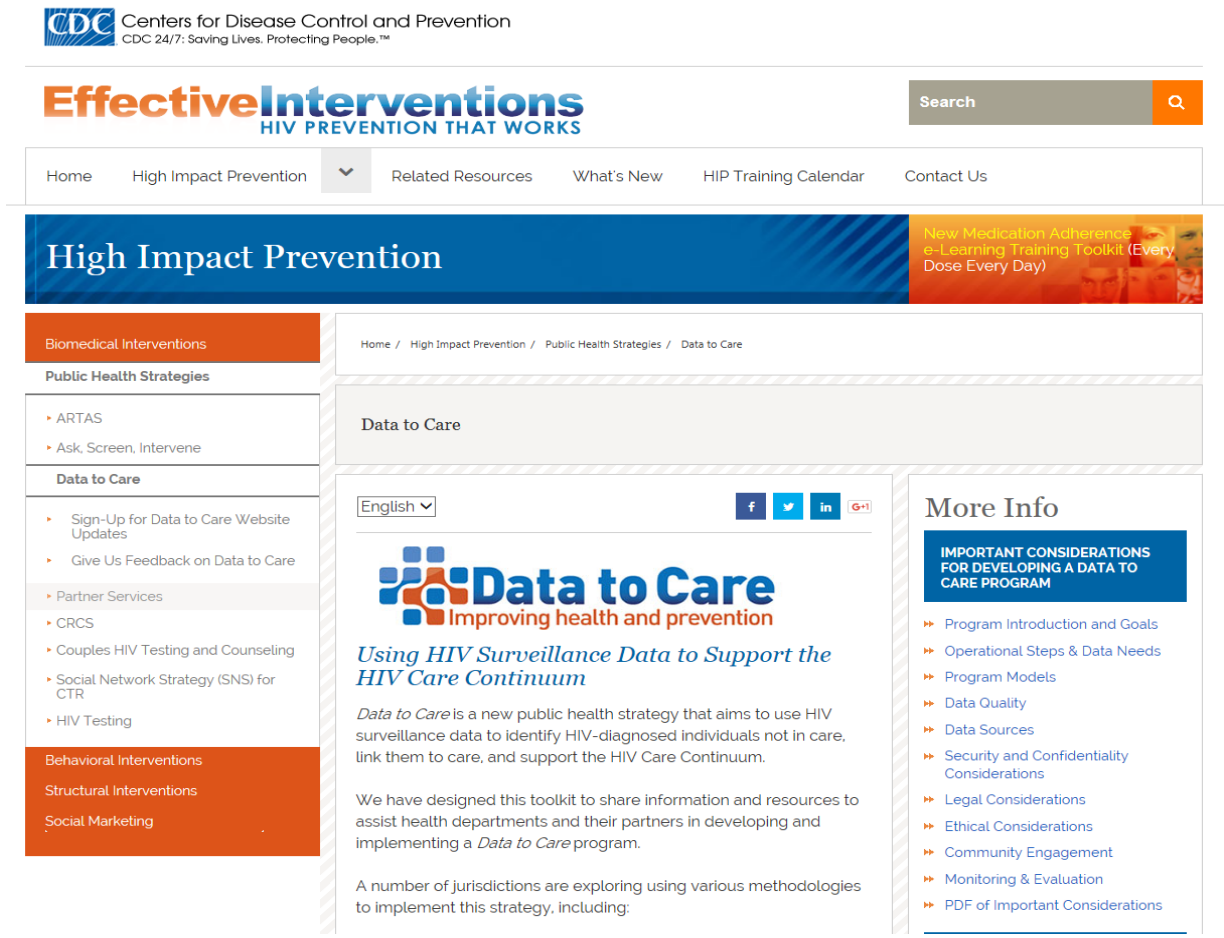
Sources: Sweeny Pub Health Rep 2018; Dombrowski, JAIDS 2017; Dombrowski JAIDS 2016 ; Cassidy-Stewart,2016 National STD Conf (1650); and Tesoriero J, JPMMP, 2017

Improve Care Continuum Estimates
Why Does this Matter?

- How one invests resources depends, at least in part, on where one sees attrition in the continuum and the size and characteristics of the population you're trying to impact
  - Wrong diagnosis = wrong treatment
  - Who are we really missing?
  - We can invest more per person if the population is smaller

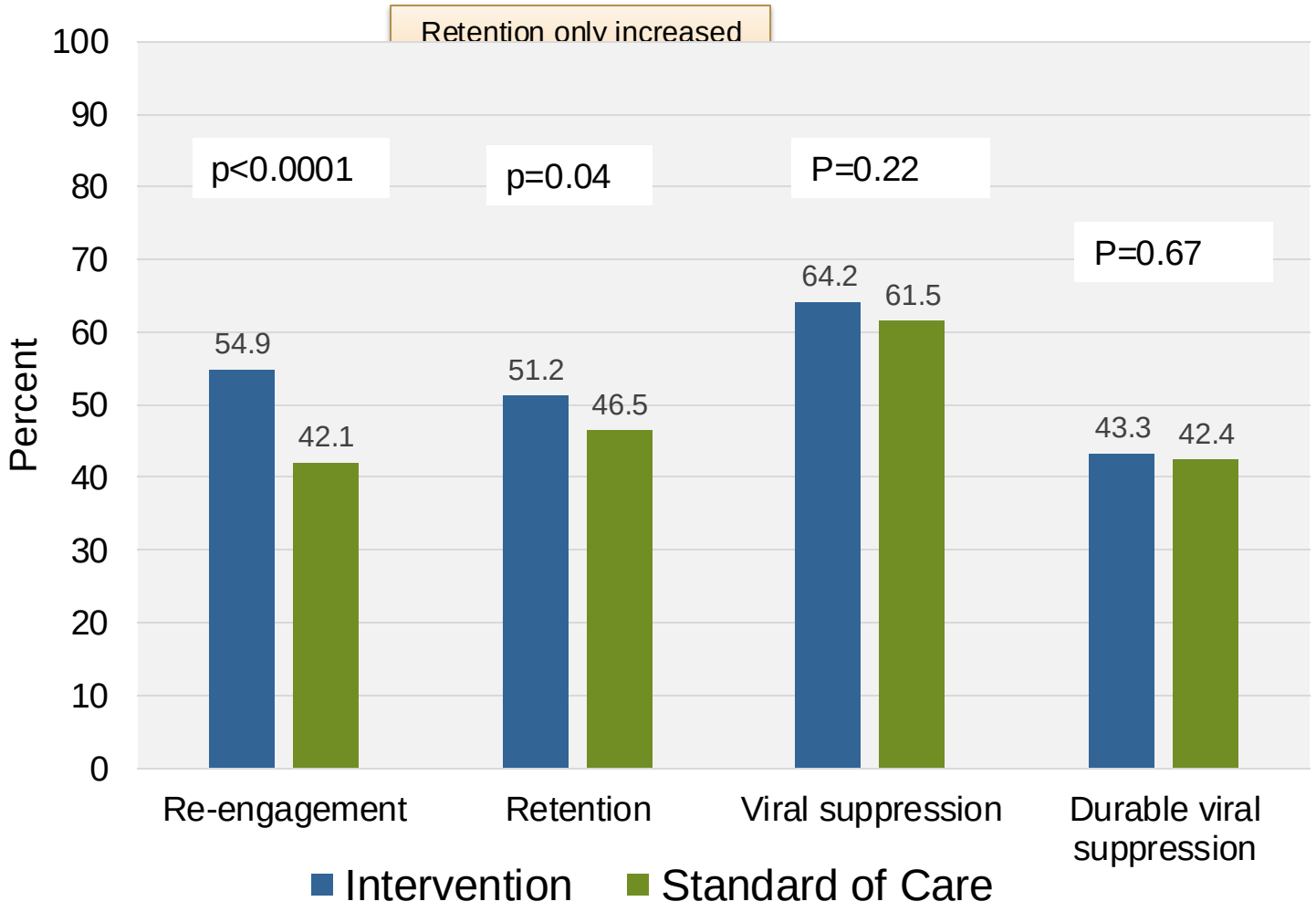
Treatment: Data to Care (D2C)

- If our problem is that people are out of care, the solution is to find them and link them to care
- HIV is reportable – including HIV RNA and CD4 lymphocyte results – so we should know who is out of care
- D2C - Use of surveillance data to promote increased engagement in care
- CDC now requires for all health departments



CDC Multicenter Trial

- **Design**: Randomized controlled trial
- **Population**: 1893 PLWH in CT, MA, Philadelphia – patients had linked to care but had not care for ≥6 months
- **Intervention**: Public health field services used to relink patients to HIV care
- **Outcome**: Reengagement ≤3 months; retention (>2 labs >3 months apart in 12 months) Viral suppression.



Fanfair RN Lancet Regional Health –Americas 2021;100057;34-142

Where does this leave us?

- We spent a lot of effort trying to relink patients to the same system that failed to engage them in the first place.

We need to spend less time trying to change our patients and more time trying to change our health care system

Low Barrier Care: Seattle Max Clinic

Components of Low-Barrier HIV Care

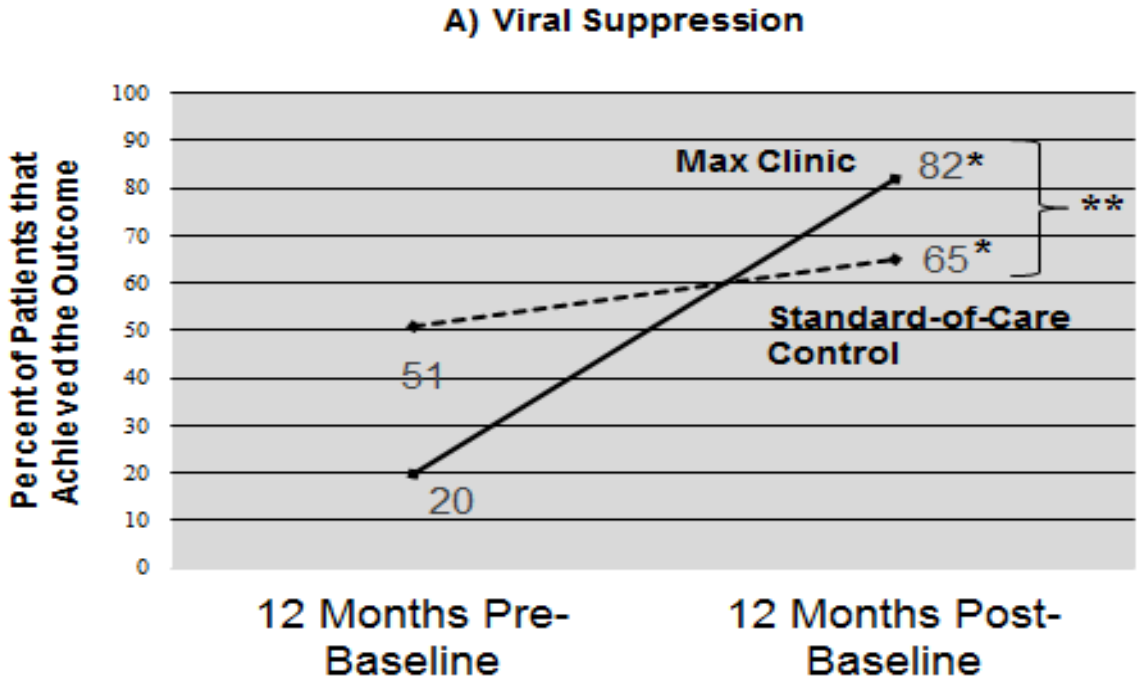
Walk-in access to primary care for people with HIV

High-intensity support
- *Medical & non-medical case managers*
- *Bus passes and grocery cards*

Incentives for visits & viral suppression
- *$25 for blood draws, $50 for viral suppression*

Multisectoral care coordination
- *Jails, supportive housing, hospitals*

HIV Care Outcomes among Patients Enrolled in the Max Clinic (N=50) & Standard-of-Care Control (N=100) in the 12 Months Pre- and Post-Baseline



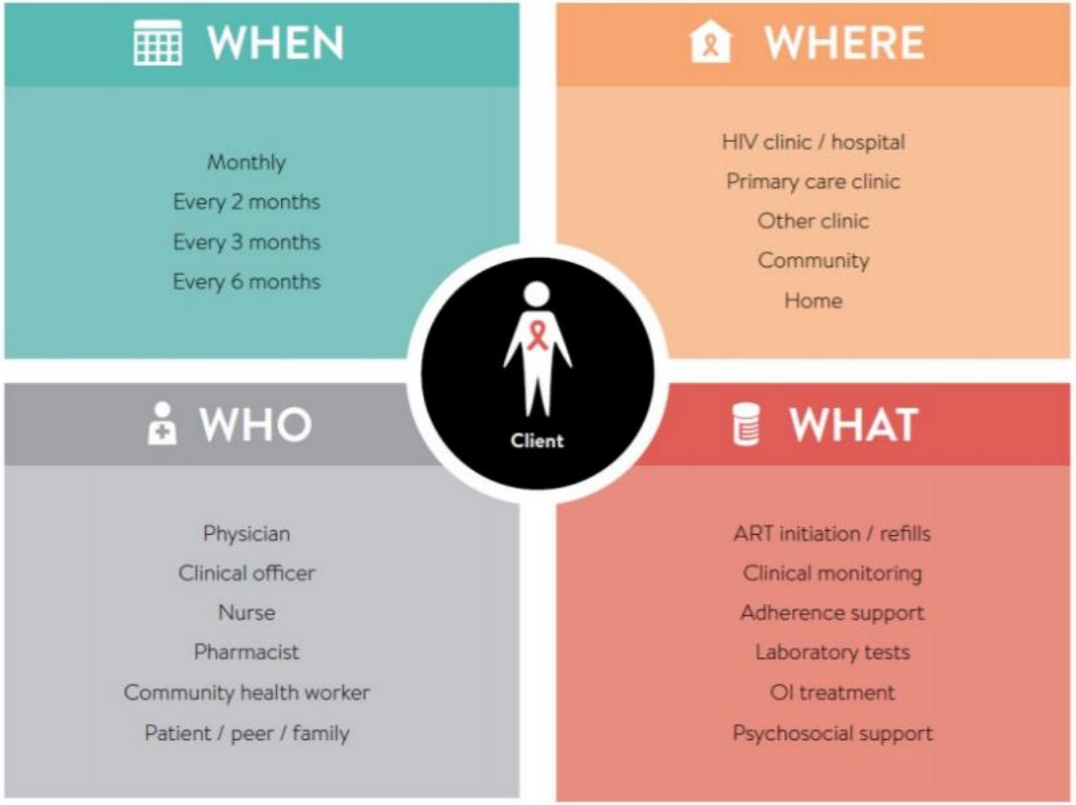
Adjusted RR for viral suppression 3.2 (95% CI 1.8-5.9)

- *Dombrowski J. Open Forum Infect Dis 2019.*

Differentiated Care

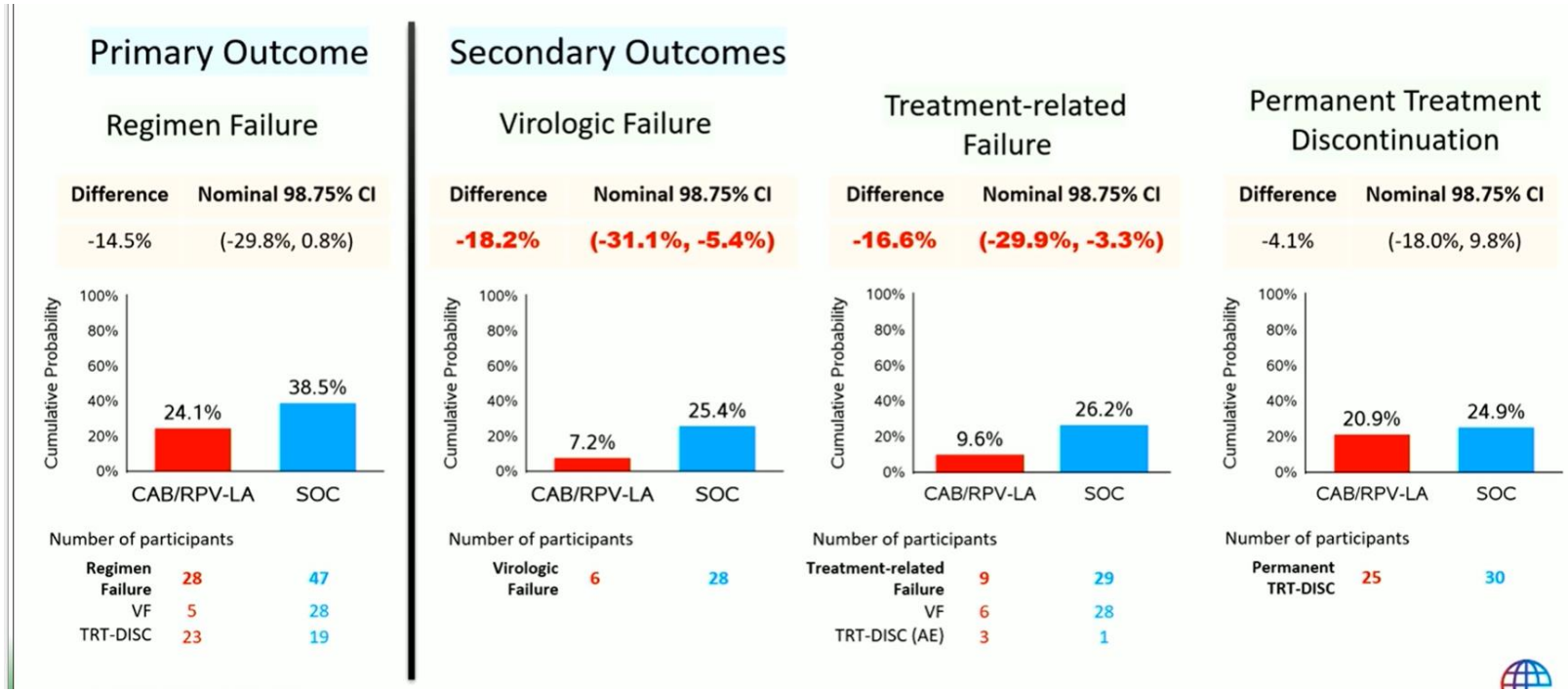
- Goal it to recreate the healthcare system to make it easier for patients to use
- Not everyone needs the same things
- Most people do well in a conventionally organized clinic with appointments
- Many people do not do well in such a clinic
  - Vary service content, intensity, frequency, location and workforce to meet patient needs

Figure 1: Key factors in differentiated approaches to HIV care (WHO)



Long-Acting ART: Latitude Study

- **Population**: 434 PLWH with suboptimal adherence
  - 70% Assigned male at birth
  - 64% Black
  - 14% H/o IDU
- **Design:** Randomized, open-label trial
- **Intervention**:
  - **Step 1:** Cash incentives to achieve viral suppression on oral ART
  - **Step 2:** Monthly Cabotegravir/rilpivirine-LA vs. standard of care (17% VL >200 copies/ml)



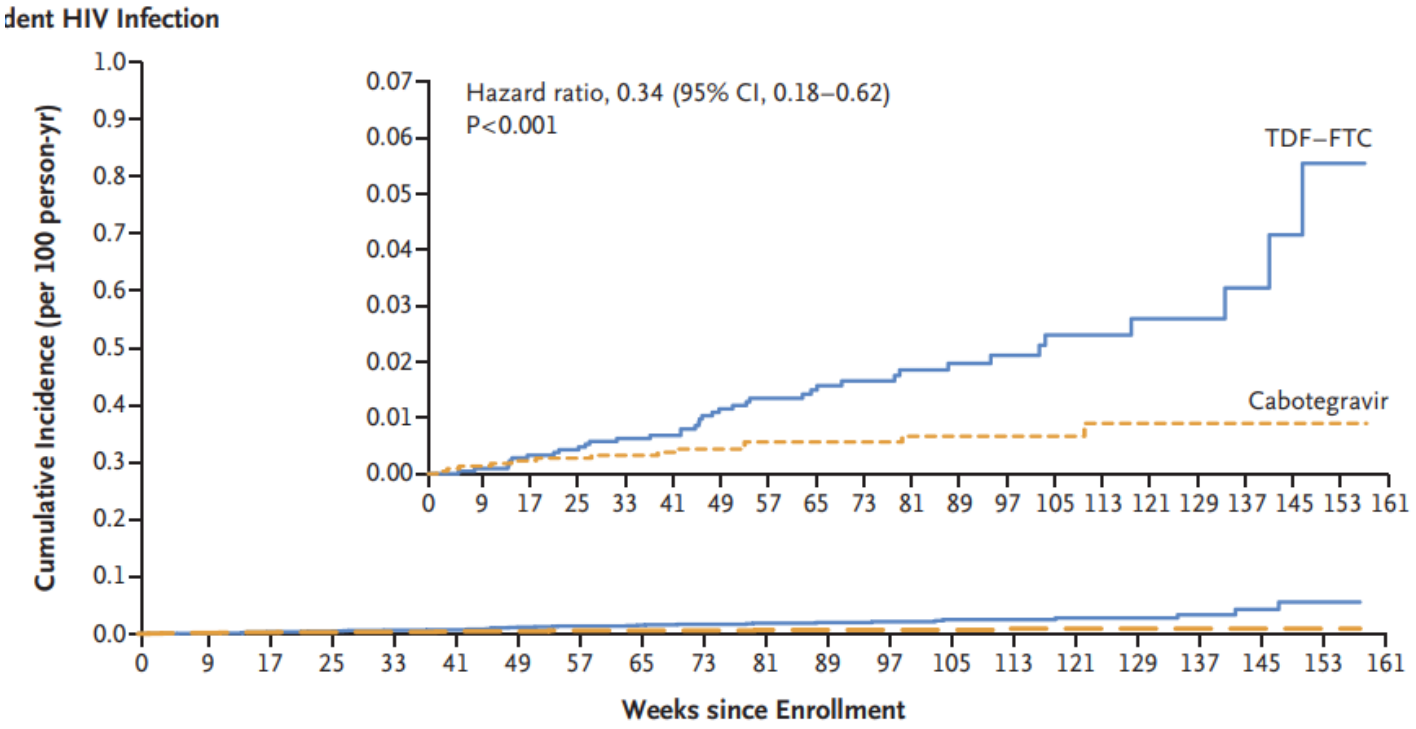
Virologic Failure or Treatment Discontinuation

Virologic Failure or Treatment Discontinuation due Adverse Events

Long-Acting Drugs Likely to be Important in Coming Years
Limited Data in Actively Viremic Patients

Long Acting Cabotegravir: HPTN 083

- Cabotegravir superior to TDF/FTC – 66% reduction in HIV risk relative to TDF/FTC
- Drug level coverage TDF/FTC vs. Cabo (72% vs. 92%)
- Racial disparity
  - 79% of 24 infections in the U.S. occurred in the 46% of participants who were Black
  - Absolute risk reduction
    - Blacks -1.52/100 pys
    - Non-Black - 0.64/100 pys

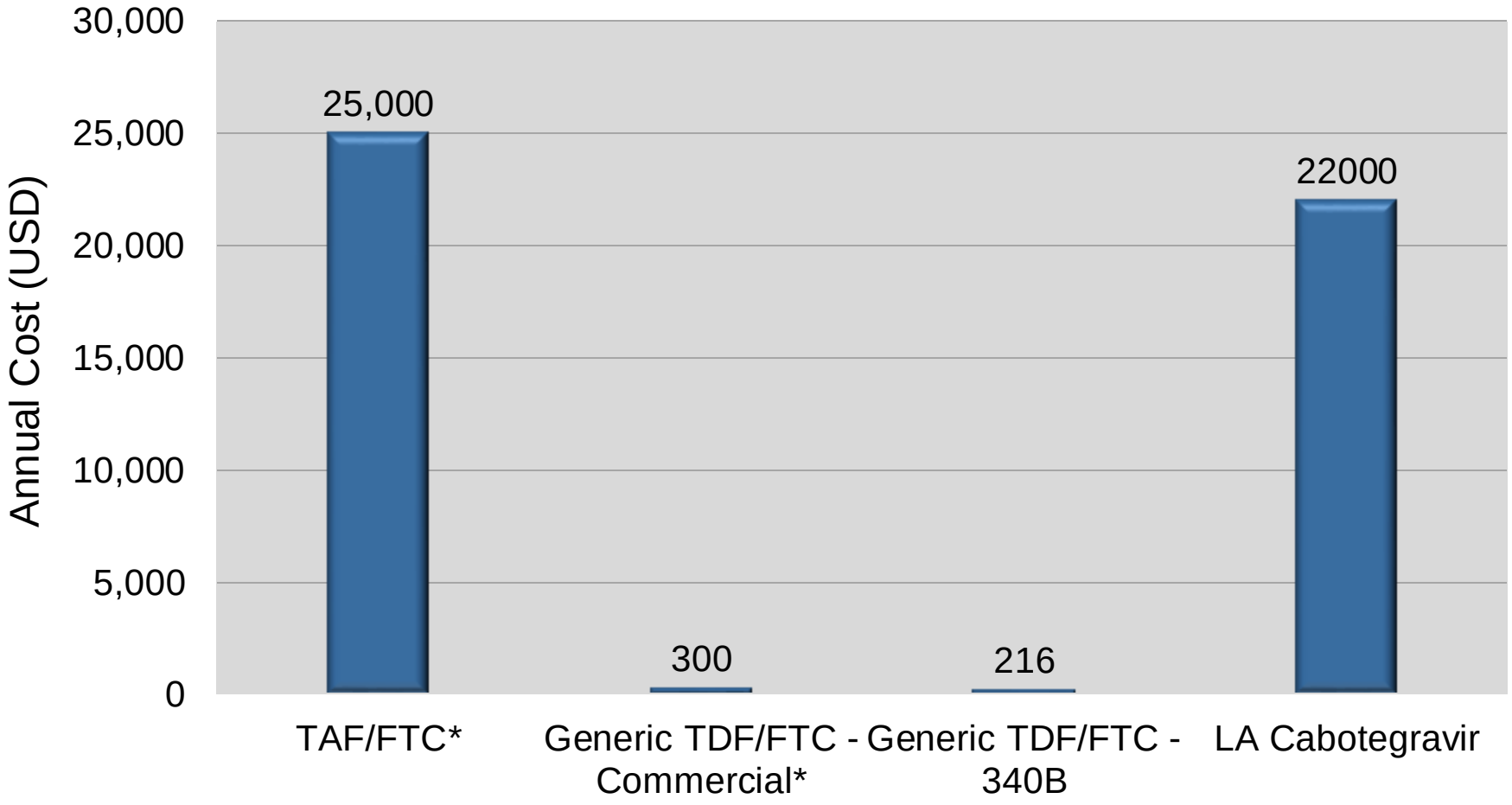


Incidence: Cabo vs. TDF/FTC 0.41 vs.1.22 (HR 0.34, 0.18-0.62)

Source: Landovitz RJ. NEJM 2021

Estimated Annual Cost of PrEP per Person

- Introduction of new generic TDF/FTC led to a 98-99% drop in price
- Generic TDF/FTC should be the standard PrEP drug
- Dolutegravir goes off patent in 2028
  - 1st line HIV treatment likely to cost <$1000/year
- **Consider opportunity costs**



*Cost on GoodRx – Out of Pocket – What insurance companies (including Medicaid) pay varies and is not public information

Integrating a Syndemic Approach into Clinical Setting: Conclusions

- Outreach efforts are unlikely to make a real difference for disproportionately affected populations if we don't change our healthcare system to make it more accessible to the most marginalized populations
- Major changes
  - Eliminate requirement for appointments – More than just urgent care
  - Improved wrap around services
  - More welcoming environment
  - De-intensifying PrEP follow-up – Do we really need every 3 months visits?
  - Walk-in, same-day HCV treatment
  - ? Incentives

Conclusions

- Lots of opportunities to adopt a syndemic approach and integrate services
- Need to tailor that approach to our patients and the populations we serve
- Success will require changes in both outreach services and how we deliver care
- Consider opportunity costs
  - Patient focused care means using limited funding on the things that will most improve our patients' lives
  - More expensive pharmaceuticals are not always the best answer