Minnesota Council for HIV/AIDS Care and Prevention

Epidemiologic Terms

MCHACP

June 9, 2021

Training Objectives

Following the training, participants will be able to:

1. Define epidemiology (often shortened to “epi”)
2. Understand basic terminology and concepts relating to epidemiology
3. Understand how epidemiology is used in HIV care and prevention planning

What is epidemiology?

- Study of health and diseases in populations and communities
- Description of patterns of diseases:
  - Individual person (gender identity, current age, race/ethnicity)
  - Geography or place (City of Saint Paul, Ramsey County, Minnesota)
  - Setting (where a person was diagnosed/where they currently receive care)
  - Time [trends in deaths among people living with HIV (PWH) from 1996-2019]
- Analyses to understand what a particular disease or infection looks like

What is the purpose of epidemiology?

- Monitor incidence and prevalence of HIV/AIDS
- Monitor overall treatment outcomes for PWH
- Identify changes in trends over time and (re)emerging populations
- Target prevention and care interventions
- Allocate funds for health and social services

Why should we care about statistics?

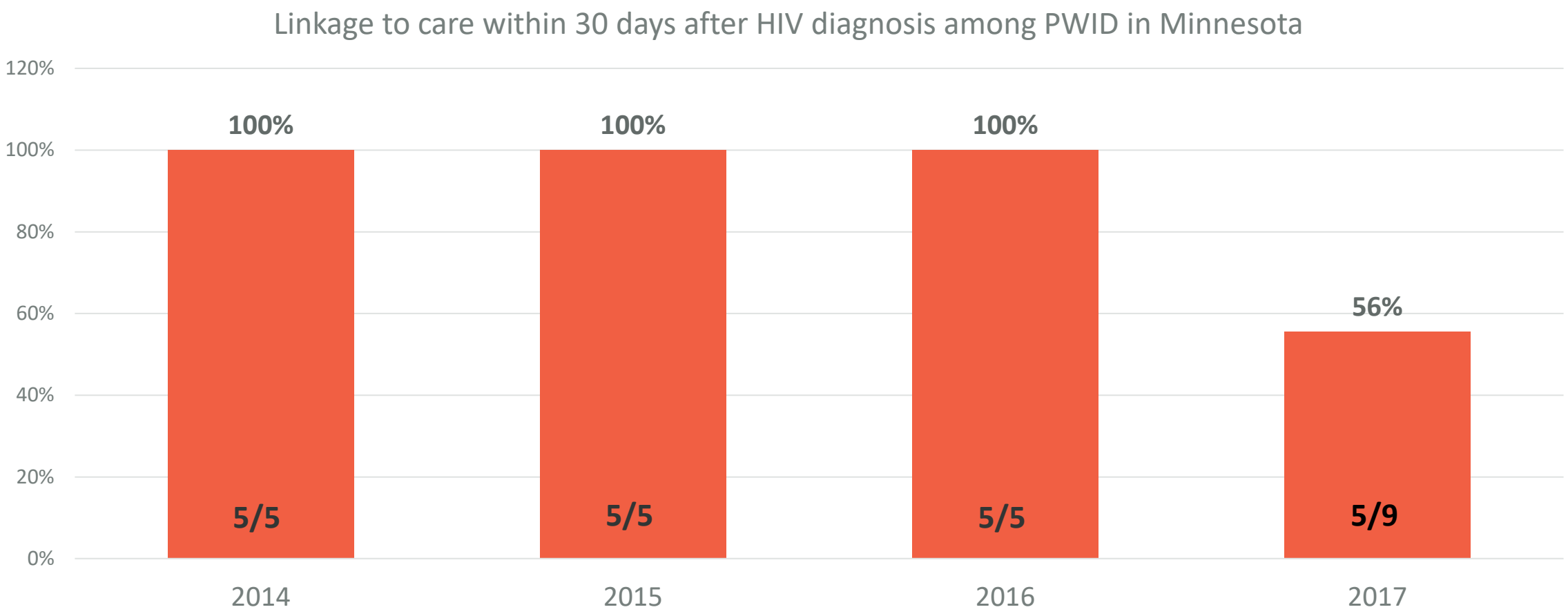
- The number of people living with HIV/AIDS impacts both prevention and care services
- Higher concentrations of infections in highly impacted communities makes it more likely that transmission will occur, even with the same behaviors
- Looking at new cases (incidence) and genetic sequences of HIV infections (molecular HIV data) helps us identify emerging trends in the epidemic [people who inject drugs (PWID) in Hennepin and Ramsey Counties and the Duluth area]
- It's important to know epidemiologic terms to be able to use them

Core Principles of Epidemiology

- Understand **who** is described in the statistic (entire state of Minnesota or subgroups within that)
- Understand **what** the statistic is (number of cases, rates of infection, retention in care)
- Understand **when** the statistic is calculated (one year, multiple years)

BEWARE OF SMALL NUMBERS!

Why should we beware of small numbers?



Also keep in mind what we're calculating. This is a measure of the time between diagnosis and first CD4 or viral load test result. All of that could have happened on the same day and the person never returned for treatment.

Epidemiology Terms: Incidence vs. Prevalence

- **Incidence:** NEW cases reported to the health department during a given time period
  - Does not represent when people were actually infected
  - Can change slightly over time when cases are reported late
- **Prevalence:** NEW + CUMULATIVE LIVING cases currently infected within a defined area or population
  - Increases when people are newly diagnosed or move to Minnesota from another state
  - Decreases when people die or move to another state from Minnesota

Always note the time period referenced

HIV Prevalent Population in a given year

Epidemiology Terms: Cases vs. Rates

- **Cases (also called *counts* or *numbers*):** an absolute number that describes how frequently a disease or infection occurs
  - Example: There were 114 new cases of HIV among white Minnesotans in 2018 compared to 36 new cases among Latinx Minnesotans.
- **Rates (also called *proportions*):** a relative number that describes how frequently a disease or infection occurs in relation to a defined "at risk" population
  - Example: The rate of new HIV cases among white Minnesotans in 2018 was 2.5 per 100,000 compared to 14.4 per 100,000 among Latinx Minnesotans.

While white Minnesotans have more cases diagnosed in a given year, the population is much larger, so the rates of new infections are considerably lower.

More on Rates: used to compare populations that are not of an equal size

Community A

- 50 people in the population
- 10 new cases in a given year
- Rate calculation:
  10/50 * 100 =
  20 cases per 100 people

Community B

- 10 people in the population
- 2 new cases in a given year
- Rate calculation:
  2/10 * 100 =
  20 cases per 100 people

Epidemiology Terms: HIV Continuum of Care (1)

Epidemiology Terms: HIV Continuum of Care (2)

- **Diagnosed with HIV:** received a positive HIV test that has been reported to the Minnesota Department of Health
- **Linked to Care:** measure of the time between date of HIV diagnosis and initial CD4/viral load results, does not reflect any appointments after that time
- **Retained in Care:** at least one CD4 or viral load result reported to the Minnesota Department of Health within a calendar year
- **Virally Suppressed:** most recent viral load reported to the Minnesota Department of Health within the calendar year was less than 200 copies/mL

Additional HIV-related Epidemiology Terms

- **Risk factor:** behavior, condition, or other factor that increases the likelihood of HIV infection
- **Transmission category:** the specific risk factor most likely to have resulted in HIV transmission (this varies across data systems)
- **Stage 3 HIV infection:** AIDS diagnosis, CD4 count falls below 200 or someone has an opportunistic infection
- **Late testers:** individuals who have a stage 3 HIV infection (AIDS) at time of diagnosis or within one year after diagnosis – likely infected years before they were diagnosed

Additional General Epidemiology Terms

- **Cluster:** group of cases in a specific time and place that might be more than expected (may or may not become an epidemic or outbreak)
- **Epidemic or outbreak:** disease or infection occurring in a population or community that is in excess of what is expected at a given time and place
- **Endemic:** disease or infection present in a population at all times and places
- **Pandemic:** disease or infection that spreads across regions (like coronavirus, MERS, and SARS)

Where do the data we use at MCHACP come from?

eHARS

- All diagnosed and reported HIV-positive Minnesotans, administered by CDC
- Patient names included, source documents for all data in system, more information comes from medical records and partner services

CAREWare

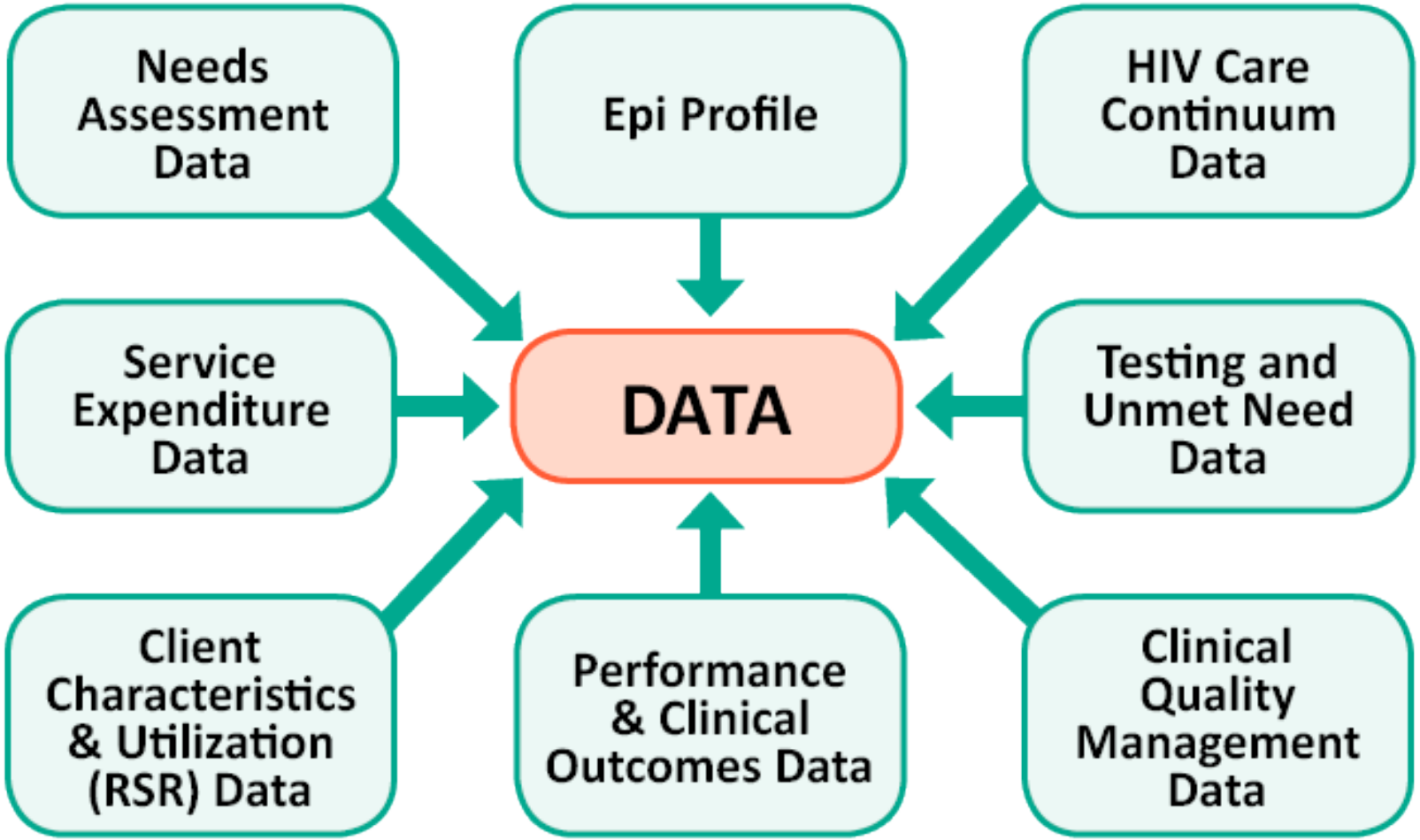
- All HIV-positive Minnesotans currently receiving Ryan White-funded services, administered by HRSA
- Patient names included, multiple users who enter data into one system, information comes from a variety of sources

EvaluationWeb

- All HIV tests funded by MDH and Ryan White Parts A/B, administered by CDC
- No patient names included, only testing events and not individual people

The state and local governments and agencies who use these systems often have little or no control over them.

What kinds of data are used in HIV care and prevention planning?



Take-home point: not all data used in HIV care and prevention planning are epidemiologic data