

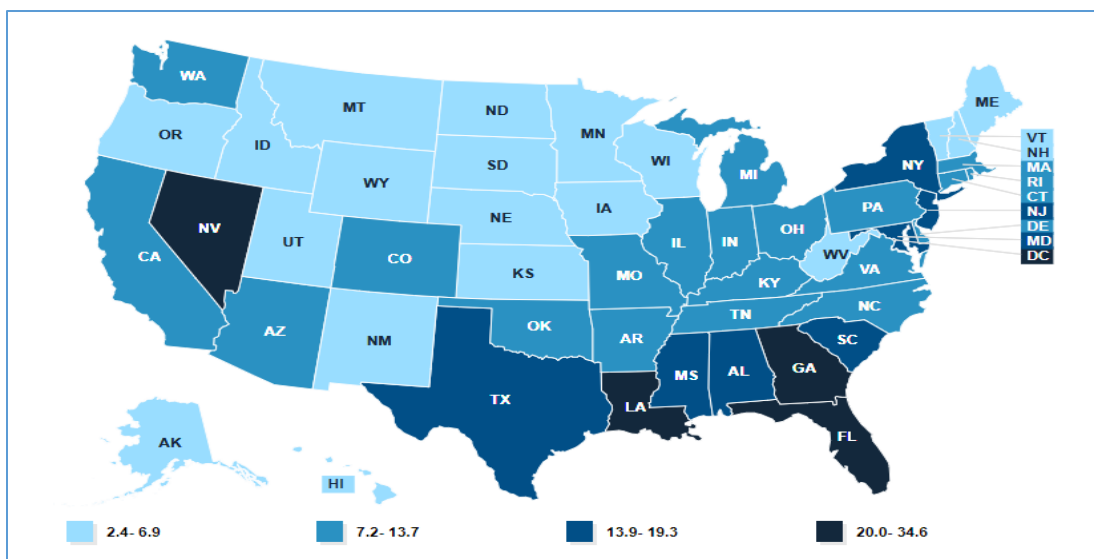
## HIV Pre-Exposure Prophylaxis

### BACKGROUND

At its peak in the mid-1990s, Acquired Immunodeficiency Syndrome (AIDS) was the leading cause of death for individuals aged 25 to 44 years in the United States.<sup>1</sup> Despite tremendous advances in care, data indicate Human Immunodeficiency Virus (HIV) infections continue to be a major public health problem in the United States and around the world. According to the Centers for Disease Control and Prevention (CDC), in 2018 over 1 million individuals in the United States and dependent areas had an HIV diagnosis with an estimated 38,000 new infections occurring that year.<sup>2</sup> While overall trends in new HIV infection rates have decreased in the US, progress has stalled in recent years.

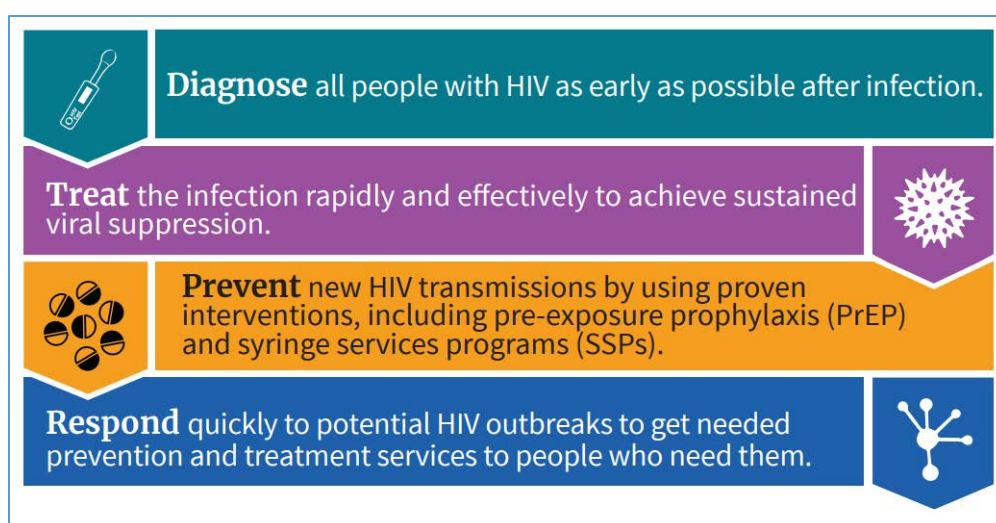
The disease burden of HIV is disproportionately distributed across the US. The overall rate of HIV diagnosis in the US in 2018 was 11.5 per 100,000 population. Individuals age 20 to 24 years and 25 to 29 years had the highest rates of HIV diagnoses per 100,000 population at 27.9 and 32.6, respectively. Incidence among Black/African Americans was more than twice the rate when compared to other racial/ethnic groups at 39.2.<sup>2</sup> Although Southern states make up 38% of the population, they accounted for 52% of new diagnoses in the US in 2018.<sup>2</sup> Drilling down even further, Mississippi was included among those states with high rates of HIV infections. According to the 2018 HIV Surveillance Report, there were over 9,000 people living with HIV in Mississippi.<sup>3</sup> In 2018, Mississippi was tied with Maryland as having the 6<sup>th</sup> highest incidence of HIV infection among adolescents and adults in the US with a diagnosis rate of approximately 19.3 per 100,000 population, while the US average diagnosis rate was 13.6 per 100,000 population.<sup>4</sup> (Figure 1) More specifically, Jackson, Mississippi had the 8<sup>th</sup> highest diagnosis rate of HIV infections (28.4) for all metropolitan statistical areas measured in the US.<sup>5</sup>

FIGURE 1: HIV Diagnosis Rates per 100,000 population for the US in 2018.<sup>4</sup>



In 2019, the US Department of Health and Human Services (HHS) launched an initiative, *Ending the HIV Epidemic: A Plan for America*.<sup>6</sup> This multi-year initiative's goal was to drastically reduce incident HIV infections in the US by 90% within 10 years. (Figure 2) The initiative was designed to rapidly increase utilization of these key components in 48 counties, plus Washington, D.C., and San Juan, Puerto Rico with the highest number of new HIV diagnoses in 2016 and 2017. Additionally seven states with a high proportion of HIV diagnoses in rural areas (Mississippi was included) were added to the focus areas.<sup>7</sup>

FIGURE 2: Ending the HIV Epidemic: A Plan for America Key Components.<sup>6</sup>



One of the primary components of this initiative is prevention, which many consider the key to eliminating HIV.<sup>8</sup> Pre-exposure prophylaxis (PrEP) is one aspect of prevention that involves the use of antiretroviral medications on a routine basis by individuals that are HIV negative who are at high-risk of being exposed to HIV. Currently, there are two FDA products approved for use as PrEP. Both products are combination antiretroviral drug formulations consisting of emtricitabine and tenofovir. The first product approved by the FDA in 2012 to be used for PrEP was Truvada®.<sup>9</sup> A second product, Descovy®, was approved in October 2019.<sup>10</sup> Both products are approved for use in PrEP for adults and adolescents > 35kg to reduce the risk of HIV infection.<sup>9,10</sup> A key factor in the effectiveness of HIV PrEP therapy is adherence. Studies have shown that PrEP can reduce the risk of acquiring HIV from sex by up to 99% and from injection drug use by 74%, but effectiveness was highly associated with the degree of adherence.<sup>11</sup>

In 2019 the US Preventive Services Task Force (USPSTF) issued updated recommendations on PrEP for the prevention of HIV infection. After a systematic review of evidence, PrEP was found to be of substantial benefit in decreasing the risk of HIV infection among high-risk persons. Adherence to PrEP was highly associated with efficacy at preventing HIV infection, and PrEP use was associated

with minimal harms.<sup>12</sup> Categories of individuals identified by USPSTF as high-risk for acquiring HIV infection include:

- **Men who have sex with men, are sexually active, and have 1 of the following characteristics:**
  - A serodiscordant sex partner (i.e., in a sexual relationship with a partner living with HIV)
  - Inconsistent use of condoms during receptive or insertive anal sex
  - A sexually transmitted infection (STI) with syphilis, gonorrhea, or chlamydia within the past 6 months
- **Heterosexually active women and men who have 1 of the following characteristics:**
  - A serodiscordant sex partner (i.e., in a sexual relationship with a partner living with HIV)
  - Inconsistent use of condoms during sex with a partner whose HIV status is unknown and who is at high risk (e.g., a person who injects drugs or a man who has sex with men and women)
  - An STI with syphilis or gonorrhea within the past 6 months
- **Persons who inject drugs and have 1 of the following characteristics**
  - Shared use of drug injection equipment
  - Risk of sexual acquisition (see above)

For Mississippi Division of Medicaid beneficiaries, PrEP medications are covered under the Universal Preferred Drug List (UPDL). Both branded Truvada® and Descovy® are preferred agents available without prior authorization requirements. To further increase access to PrEP products, DOM's Family Planning Waiver is available to **women and men** to receive family planning related services, including many medications for the treatment of sexually transmitted infections/ sexually transmitted diseases (STIs/STDs). The two medications currently approved for PrEP use are included on the list of medications covered under the Waiver.

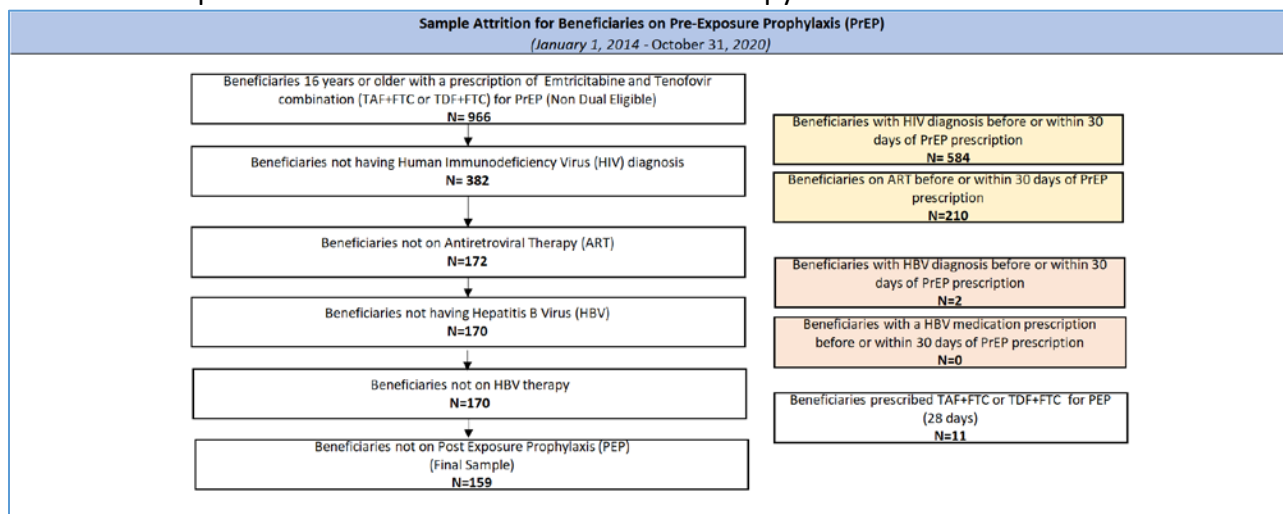
MS-DUR conducted an analysis assessing the utilization of PrEP products in Mississippi Medicaid between 2014 and 2020. A summary of those findings follows.

## **METHODS**

A retrospective analysis was conducted using Mississippi Medicaid fee-for-service (FFS) and coordinated care organization [CCOs: United Healthcare (UHC), Magnolia (MAG), and Molina (MOL)] claims for the period of January 1, 2014 to November 30, 2020. The identification period for beneficiaries on HIV Pre-Exposure Prophylaxis (PrEP) was January 1, 2014 to October 31, 2020, which allowed for a 12 month look back period and a 30-day follow-up period for every beneficiary in the sample. MS-DUR has complete medical claims in its database beginning CY 2013. Beneficiaries on (PrEP) were identified according to the algorithm developed by Wu et.al. which is used by CDC.<sup>13,14</sup> Beneficiaries aged  $\geq 16$  years who were prescribed tenofovir and emtricitabine (TDF+FTC or TAF+FTC) for PrEP were included in the sample. The first claim was assigned as the index date. Dual eligible beneficiaries and those age  $> 64$  years were excluded from the study sample. Additionally, beneficiaries with a diagnosis code for Hepatitis B (HBV) or an

HIV infection (assessed from medical claims) at any time before or within 30 days after the index date were excluded from analysis.<sup>13</sup> All 25 ICD 10 diagnosis codes as well as the principal diagnosis code of each claim were checked from inpatient, outpatient and medical claim files to identify beneficiaries with HIV or HBV. Beneficiaries having a prescription intended to treat HIV or HBV (assessed from pharmacy claims), at any time before or within 30 days after the index date, were excluded from analysis.<sup>13</sup> Finally, beneficiaries prescribed TDF+FTC or TAF+FTC for Post-Exposure Prophylaxis (PEP), identified as those with a prescription for  $\leq 28$  continuous days, were excluded from the analysis.<sup>14</sup> Figure 3 provides a description of the attrition associated with the algorithm used.

FIGURE 3: Sample Attrition for Beneficiaries on PrEP Therapy



Plan was determined as of index date (earliest prescription fill date for PrEP). Information on beneficiaries' race, gender, age, and plan (FFS/UHC/MAG/MOL) were summarized in the analysis (Table 1). Age and plan were assessed as of index date. Trends in number of people utilizing PrEP was reported according to the plan as of index date, for each year from 2014-2020 (Figure 4 & Figure 5). PrEP utilization patterns for beneficiaries on PrEP were reported according to plan at index date in terms of mean duration of continuous use and length of continuous use in the following categories 29-60 days, 61-90 days and 91 days or more (Table 2). Continuous use was defined as continuous PrEP use with a maximum allowable gap of up to 14 days between consecutive prescription fills after adjusting for early refills. Code of eligibility (COE) for each index PrEP fill was reported by plan in Table 3. County level distribution of number of unique providers that prescribed PrEP during the study period was reported in Figure 6.

## RESULTS

In Table 1 demographic characteristics of beneficiaries initiated on pre-exposure prophylaxis (PrEP) between January 1, 2014 and October 31, 2020 are displayed.

- A total of 159 beneficiaries were initiated on PrEP therapy.
- 71.7% were between the ages of 18-35 years.
- 55.3% were male.
- 75.5% were African American.

TABLE 1: Demographic Characteristics of Beneficiaries Initiated on Pre-Exposure Prophylaxis (PrEP)									
(January 1, 2014 - October 31, 2020)									
Characteristic	Total Beneficiaries (N=159)*	Plan At Index							
		FFS		UHC		MAG		MOL	
		N	%	N	%	N	%	N	%
<b>Age Category (years)</b>									
16-18	20	4	5%	9	21%	6	17%	1	20%
18-35	114	63	84%	28	65%	22	61%	1	20%
36-50	18	7	9%	2	5%	6	17%	3	60%
51-64	7	1	1%	4	9%	2	6%	0	0%
<b>Total</b>	<b>159</b>	<b>75</b>		<b>43</b>		<b>36</b>		<b>5</b>	
<b>Sex</b>									
Female	71	22	29%	22	51%	23	64%	4	80%
Male	88	53	71%	21	49%	13	36%	1	20%
<b>Total</b>	<b>159</b>	<b>75</b>		<b>43</b>		<b>36</b>		<b>5</b>	
<b>Race</b>									
African American	120	61	81%	29	67%	27	75%	3	60%
Caucasian	28	10	13%	11	26%	7	19%	0	0%
Other	11	4	5%	3	7%	2	6%	2	40%
<b>Total</b>	<b>159</b>	<b>75</b>		<b>43</b>		<b>36</b>		<b>5</b>	
<p>Note: FFS - Fee-for-Service; UHC - UnitedHealthcare; MAG - Magnolia; MOL - Molina</p> <p>*Beneficiaries on PrEP were identified according to the algorithm used by CDC/IQVIA developed by Wu et.al. which identifies persons aged ≥ 16 years who were prescribed Tenofovir and Emtricitabine for PrEP. The identification period for PrEP beneficiaries was Jan 1, 2014 to Oct 31, 2020. The first claim was the index date. Non dual eligible beneficiaries aged between 16 - 64 years were included in the study sample. Beneficiaries with a diagnosis of Hepatitis B (HBV) or an HIV infection or prescribed medications intended to treat HIV or HBV, at any time within one year prior or 30 days after the index date, were excluded from analysis. Finally, beneficiaries prescribed these agents for Post Exposure Prophylaxis (PEP), identified as those with a prescription for less than 28 continuous days, were excluded from analysis. Plan was determined as of index date (earliest date of prescription for PrEP).</p>									

Figure 4 displays yearly trends in beneficiaries initiating PrEP Therapy.

- The maximum number of annual initiates of PrEP therapy occurred in 2019 with 40 beneficiaries.
- 2020 saw a 30% drop compared to 2019.

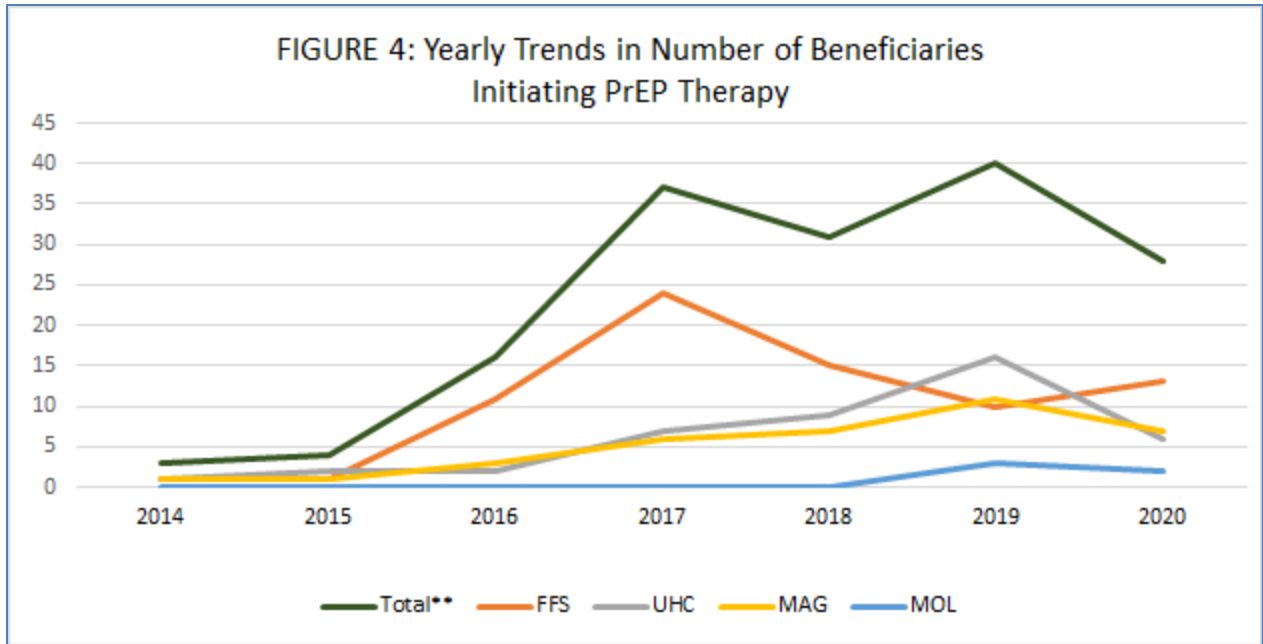
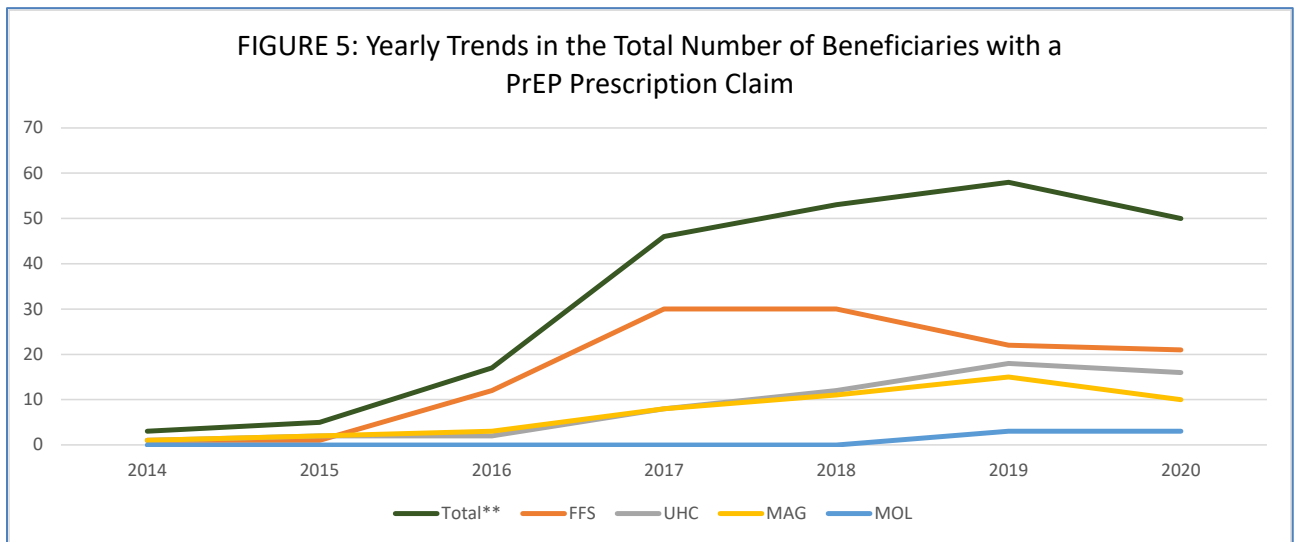


Figure 5 also shows a decrease in 2020 in the total number of beneficiaries having a PrEP prescription claim. These declines follow national trends associating the coronavirus disease 2019 (COVID-19) pandemic with changes in PrEP utilization. <sup>15</sup>



Length of therapy patterns for Medicaid beneficiaries prescribed PrEP products are detailed in Table 2.

- Mean length of therapy across all programs was 72.46 days.
- The majority of beneficiaries (104/159) appear to have taken PrEP  $\leq$  60 days.

<b>TABLE 2: Description of PrEP Utilization Patterns Among Medicaid Beneficiaries</b> (1st January 1, 2014 - October 31, 2020)					
Plan*	Mean Length of Therapy (Days) **	Length of Therapy*** (Days)			Total
		29-60	61-90	$\geq$ 91	
FFS	76.51	48	7	20	75
UHC	50.53	33	4	6	43
MAG	93.64	20	4	12	36
MOL	48	3	1	1	5
<b>Total</b>		<b>104</b>	<b>16</b>	<b>39</b>	<b>159</b>

Notes: FFS - Fee-for-Service; UHC - UnitedHealthcare; MAG - Magnolia; MOL - Molina  
 \*Plan calculated as of index date.  
 \*\*Length of Therapy was defined as continuous PrEP use with a maximum allowable gap of up to 14 days between prescriptions.  
 \*\*\*Mean duration of continuous PrEP Use

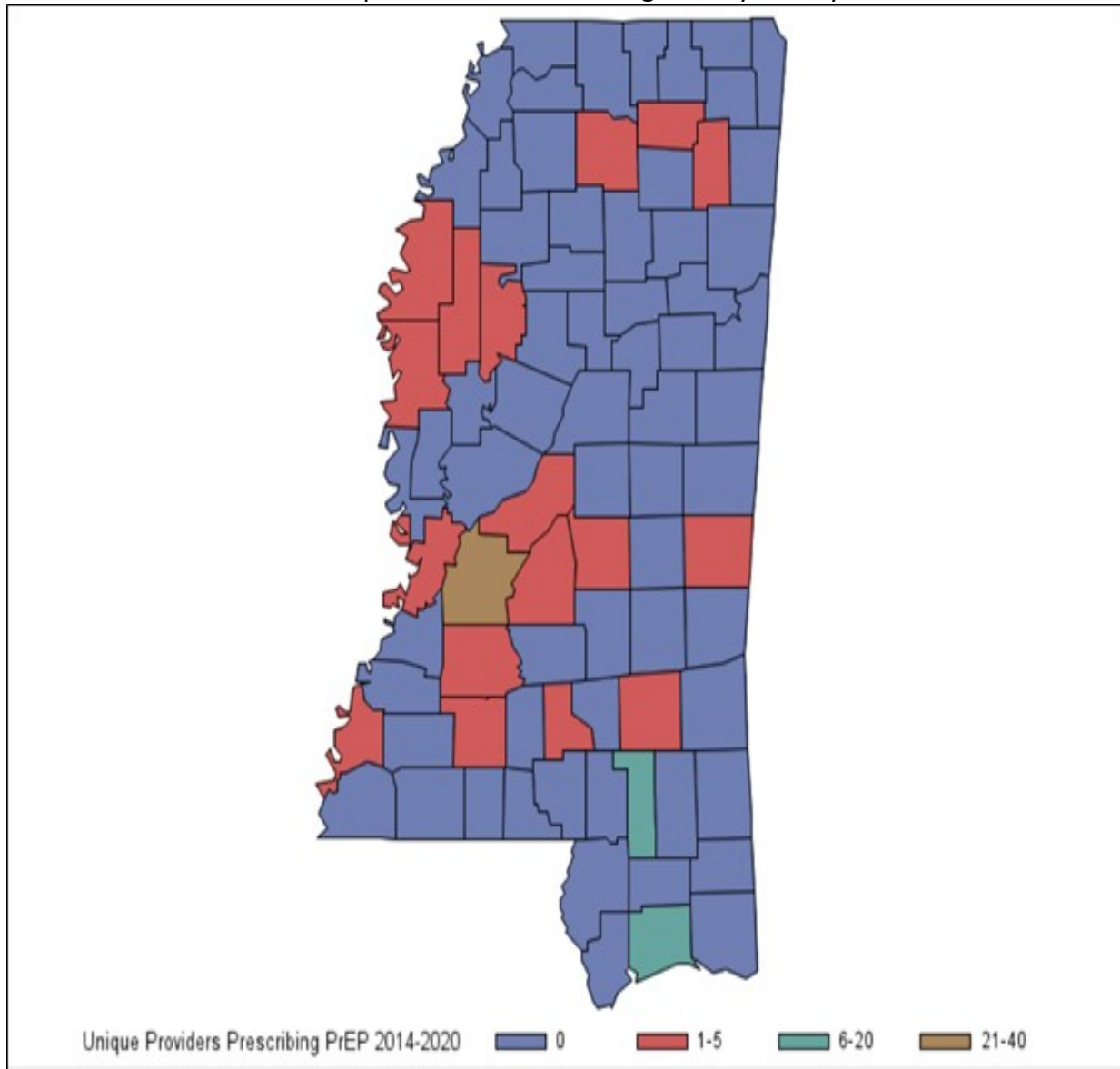
As mentioned earlier in the report, PrEP therapy is covered under Medicaid's Family Planning Waiver. Of the 159 beneficiaries started on PrEP therapy, 53 were covered under the Family Planning Waiver as of the index fill date. (Table 3)

<b>TABLE 3: Description of Code Of Eligibility Types as of Index Fill</b> (January 1, 2014 - October 31, 2020)					
Code Of Eligibility*	Plan				
	FFS	UHC	MAG	MOL	Total
Family Planning	53	0	0	0	53
Parents/Caretakers of children under the age 18 (EFFECTIVE: 1/1/2014)	5	11	13	1	30
Children 6-19 with income at or below 107% FPL (EFFECTIVE: 1/1/2014)	2	17	8	1	28
SSI Individual via SDX	5	9	11	2	27
Pregnant Women under 194%	2	2	1	1	6
Quasi-CHIP – Children age 6 – 19 with income between 107% and 133% FPL who would have qualified for CHIP under per-ACA rules. (EFFECTIVE: 1/1/2014)	0	3	1	0	4
Protected Foster Care	3	0	0	0	3
Medical Assistance – Intact Family (END: 12/31/2013)	0	1	1	0	2
Working Disabled	0	0	1	0	1
Child Under Age 19, under 100% (END: 12/31/2013)	1	0	0	0	1
<b>Total</b>	<b>71</b>	<b>43</b>	<b>36</b>	<b>5</b>	<b>155</b>

Notes: Missing COE for 4 beneficiaries  
 \*Code of eligibility was calculated as of the index date

One of the key components to initiating PrEP therapy is beneficiary access to providers that will identify high-risk individuals and prescribe PrEP. Providers were identified across the state that had prescribed PrEP to Medicaid beneficiaries during the study period. (Figure 6)

FIGURE 6: Distribution of Unique Providers Prescribing PrEP by County



A total of 76 Providers across 20 counties prescribed PrEP therapies to Medicaid beneficiaries between 2014–2020.

- Hinds county accounted for 48.7% (37) of the providers prescribing PrEP therapies.
- Only 24.4% (20) of the 82 counties in MS had a provider prescribe PrEP to a Medicaid beneficiary.
- 55% (11/20) of the counties where PrEP was prescribed only had 1 provider.



## **CONCLUSIONS**

HIV infections continue to be a major public health issue in the United States, with Mississippi among the highest states in the nation in HIV incidence rates. One of the keys to ending the HIV epidemic is prevention through PrEP. PrEP therapy is covered under Medicaid's UPDL with no prior authorization criteria needed and is also included under the Family Planning Waiver. Even with no restrictions to access, there have been only 159 beneficiaries initiated on PrEP therapy since January 2014. In order for PrEP therapy to be effective in reducing incident HIV infections in Mississippi, more high-risk individuals need to be identified and initiated on PrEP therapy.

## **RECOMMENDATIONS**

1. The Division of Medicaid should conduct provider education on PrEP therapy to include:
  - Incidence rates for HIV infections in Mississippi;
  - Categories of individuals identified as being high-risk for acquiring HIV infection;
  - Preferred status of PrEP products on UPDL;
  - Inclusion of PrEP products as covered medications under the Family Planning Waiver for both males and females;
  - Need for more providers around the state to identify high-risk beneficiaries and prescribe PrEP.
  
2. MS-DUR to conduct future research related to PrEP utilization in the Medicaid population to include:
  - Compare sociodemographic, clinical, and social determinant of health characteristics between PrEP utilizers and those newly diagnosed with HIV infections;
  - Assess PrEP persistence patterns and predictors of PrEP persistence;
  - Assess geographical disparities in PrEP uptake and persistence;
  - Assess potential barriers to PrEP therapy (social stigma, provider stigma, adherence, lab monitoring, etc.).

## REFERENCES:

1. Hariri S, McKenna MT. Epidemiology of Human Immunodeficiency Virus in the United States. *Clin Microbiol Rev.* 2007;20(3):478-488. doi:10.1128/CMR.00006-07
2. HIV Surveillance Report 2018 (updated). 31:119.
3. AIDSvu - Mississippi | 2018. AIDSvu. Accessed September 9, 2020. <http://aidsvu.org/local-data/united-states/south/mississippi/>
4. HIV Diagnoses, Adults and Adolescents. The Henry J. Kaiser Family Foundation. Published February 10, 2020. Accessed February 26, 2020. <https://www.kff.org/hivaids/state-indicator/hiv-diagnoses-adults-and-adolescents/>
5. HIV Surveillance Data Tables | Reports | Resource Library | HIV/AIDS | CDC. Published September 3, 2020. Accessed September 9, 2020. <https://www.cdc.gov/hiv/library/reports/surveillance-data-tables/vol-1-no-3/index.html>
6. Fauci AS, Redfield RR, Sigounas G, Weahkee MD, Giroir BP. Ending the HIV Epidemic: A Plan for the United States. *JAMA.* 2019;321(9):844. doi:10.1001/jama.2019.1343
7. Federal Response, Policy H, July 02 Hhsd last updated:, 2020. Federal-Response|Ending-the-HIV-Epidemic|Overview. HIV.gov. Published July 2, 2020. Accessed September 9, 2020. <https://www.hiv.gov/federal-response/ending-the-hiv-epidemic/overview>
8. Poku NK. HIV Prevention: The Key to Ending AIDS by 2030. *Open AIDS J.* 2016;10:65-77. doi:10.2174/1874613601610010065
9. Truvada - MICROMEDEX. Accessed February 23, 2020. [https://www.micromedexsolutions.com/micromedex2/librarian/CS/51F374/ND\\_PR/evidencexpert/ND\\_P/evidencexpert/DUPLICATIONSHIELDSYNC/C72358/ND\\_PG/evidencexpert/ND\\_B/evidencexpert/ND\\_AppProduct/evidencexpert/ND\\_T/evidencexpert/PFActionId/evidencexpert.GoToDashboard?docId=928216&contentSetId=100&title=Emtricitabine%2FTenofovir+Disoproxil+Fumarate&servicesTitle=Emtricitabine%2FTenofovir+Disoproxil+Fumarate&brandName=Truvada#](https://www.micromedexsolutions.com/micromedex2/librarian/CS/51F374/ND_PR/evidencexpert/ND_P/evidencexpert/DUPLICATIONSHIELDSYNC/C72358/ND_PG/evidencexpert/ND_B/evidencexpert/ND_AppProduct/evidencexpert/ND_T/evidencexpert/PFActionId/evidencexpert.GoToDashboard?docId=928216&contentSetId=100&title=Emtricitabine%2FTenofovir+Disoproxil+Fumarate&servicesTitle=Emtricitabine%2FTenofovir+Disoproxil+Fumarate&brandName=Truvada#)
10. Descovy- MICROMEDEX. Accessed February 23, 2020. [https://www.micromedexsolutions.com/micromedex2/librarian/CS/116FB3/ND\\_PR/evidencexpert/ND\\_P/evidencexpert/DUPLICATIONSHIELDSYNC/5C75F6/ND\\_PG/evidencexpert/ND\\_B/evidencexpert/ND\\_AppProduct/evidencexpert/ND\\_T/evidencexpert/PFActionId/evidencexpert.GoToDashboard?docId=931813&contentSetId=100&title=Emtricitabine%2FTenofovir+Alafenamide&servicesTitle=Emtricitabine%2FTenofovir+Alafenamide&brandName=Descovy#](https://www.micromedexsolutions.com/micromedex2/librarian/CS/116FB3/ND_PR/evidencexpert/ND_P/evidencexpert/DUPLICATIONSHIELDSYNC/5C75F6/ND_PG/evidencexpert/ND_B/evidencexpert/ND_AppProduct/evidencexpert/ND_T/evidencexpert/PFActionId/evidencexpert.GoToDashboard?docId=931813&contentSetId=100&title=Emtricitabine%2FTenofovir+Alafenamide&servicesTitle=Emtricitabine%2FTenofovir+Alafenamide&brandName=Descovy#)

11. Riddell J, Amico KR, Mayer KH. HIV Preexposure Prophylaxis: A Review. *JAMA*. 2018;319(12):1261-1268. doi:10.1001/jama.2018.1917
12. US Preventive Services Task Force, Owens DK, Davidson KW, et al. Preexposure Prophylaxis for the Prevention of HIV Infection: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2019;321(22):2203-2213. doi:10.1001/jama.2019.6390
13. Wu H, Mendoza MCB, Huang Y-LA, Hayes T, Smith DK, Hoover KW. Uptake of HIV Preexposure Prophylaxis Among Commercially Insured Persons-United States, 2010-2014. *Clin Infect Dis Off Publ Infect Dis Soc Am*. 2017;64(2):144-149. doi:10.1093/cid/ciw701
14. Furukawa NW, Smith DK, Gonzalez CJ, et al. Evaluation of Algorithms Used for PrEP Surveillance Using a Reference Population From New York City, July 2016-June 2018. *Public Health Rep Wash DC 1974*. 2020;135(2):202-210. doi:10.1177/0033354920904085
15. Pampati S, Emrick K, Siegler AJ, Jones J. Changes in sexual behavior, PrEP adherence, and access to sexual health services due to the COVID-19 pandemic among a cohort of PrEP-using MSM in the South. *JAIDS J Acquir Immune Defic Syndr*. 2021; Publish Ahead of Print. doi:10.1097/QAI.0000000000002640