In 2018, an estimated 37.9 million individuals worldwide were living with human immunodeficiency virus (HIV). Over 1.1 million individuals in the United States (US) currently live with the disease, with an estimated 38,000 new infections annually. In 2018, HIV/AIDS and related infections were responsible for over 770,000 deaths worldwide with over 17,000 deaths in the United States alone. Populations at greatest risk of contracting HIV include men who have sex with men, injection drug users, African Americans, and Hispanics. Within the US, new HIV diagnoses are not distributed evenly across the country. Southern states experience the greatest disease burden and account for 52% of new US HIV/AIDS diagnoses. The Centers for Disease Control and Prevention stated in 2019 that there was an “HIV epidemic” affecting Southern states, including Mississippi. According to the 2018 HIV Surveillance Report, there are over 9,000 people living with HIV in Mississippi. In 2018, Mississippi was tied with Maryland as having the 6th highest incidence of HIV infection in the US with a diagnosis rate of approximately 19.3 per 100,000 population. (Figure 1) The US average diagnosis rate was 13.6 per 100,000 population. More specifically, Jackson, Mississippi had the 7th highest diagnosis rate of HIV infections (23.6) for all metropolitan statistical areas measured in the US.

Figure 1: HIV Diagnosis Rates per 100,000 population for the US in 2018.
To prevent disease progression, the National Institutes of Health (NIH) recommends immediate initiation of antiretroviral therapy (ART) in all patients diagnosed with HIV. ART works to suppress viral replication, prevent disease progression and complications, and to prevent disease transmission. In treatment-naïve patients, initial treatment generally consists of two nucleoside reverse transcriptase inhibitors (NRTIs) paired with one of the following: a non-nucleoside reverse transcriptase inhibitor (NNRTI); integrase strand transfer inhibitor (INSTI); or a protease inhibitor (PI) combination with a pharmacokinetic enhancing agent.

Adherence to ART has been found to be critical to achieving viral load suppression. For appropriate suppression of HIV and prevention of progression to AIDS, a 90% adherence rate is recommended.

- The World Health Organization (WHO) recommends a goal of 90% adherence to ART therapy. Studies have shown additional benefits when individuals taking ART attain adherence rates of 95% or greater.
- The NIH guidelines do not recommend a specific threshold for adherence, but state that patients should maintain high adherence to achieve suppressed HIV replication, which is defined as plasma HIV-RNA less than 20-50 copies/mL blood.
- WHO and NIH both emphasize the importance of adherence in attaining viral suppression and optimal outcomes and caution against nonadherence within this population.

Lack of appropriate adherence to ART therapy may result in treatment failure, increased HIV transmission rates, and the emergence of viral drug resistance. Despite severe consequences associated with nonadherence, the proportion of patients achieving WHO-defined 90% adherence threshold has been reported to be roughly half of all adults on ART.

Factors associated with poor ART adherence include the following:
- psychiatric disorders,
- cognitive impairment,
- substance use disorder,
- unstable housing environment,
- concerns with adverse effects,
- low socioeconomic status,
- poor adherence to clinic visits.

Not only is nonadherence a threat to population health, but it places an additional burden on payers with an estimated cost of non-adherence exceeding $30,000 per patient annually.

The purpose of this report is to examine adherence to ART among Mississippi Medicaid beneficiaries. Understanding the scope of nonadherence within the Medicaid beneficiaries receiving ART for HIV/AIDS assists the Division of Medicaid (DOM) to develop interventions for improving ART adherence.
METHODS

A retrospective analysis of Medicaid point of sale (POS) pharmacy claims data from fee-for-service (FFS) and the three coordinated care organizations (CCOs) was conducted for the measurement period, calendar year 2019 (January 1, 2019 – December 31, 2019). Pharmacy Quality Alliance’s (PQA) Proportion of Days Covered: Antiretroviral Medications Measure (PDC-ARV-2019) was utilized to assess adherence to antiretroviral therapy.

- PDC-ARV-2019 measures the percentage of individuals 18 years and older who meet the proportion of days covered (PDC) of 90% for > 3 antiretroviral medications during the measurement year.
- The eligible population included all individuals 18 years and older on the first day of the measurement period with continuous enrollment who filled a prescription for > 3 distinct antiretrovirals (as a single agent or as a combination) on 2 different dates of service during the measurement year. From this population, PDC was calculated.
- The earliest date of service with an overlap of > 3 distinct antiretrovirals during the measurement period was designated as the index prescription start date (IPSD).

Figure 2 displays antiretroviral medications included in the measure.

Figure 2: PQA PDC-ARV-2019 Medication List
RESULTS

Table 1 describes the demographic characteristics of Medicaid beneficiaries included in the analysis and Tables 2, 2a, and 2b address ART adherence.

- 78.7% of beneficiaries were between ages 36 and 65 years.
- African Americans accounted for 75.8% of beneficiaries taking antiretroviral therapy.

  - African Americans comprise a disproportionate amount of individuals diagnosed with HIV in the US. According to the CDC, in 2018 African Americans composed approximately 13% of the US population but account for 42% of new HIV diagnoses in the US and dependent areas.

| TABLE 1. Demographic Characteristics of Mississippi Medicaid Beneficiaries on Antiretroviral Therapy  
(Jan 2019 - Dec 2019) |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Characteristic</td>
<td>FFS n = 209</td>
<td>UHC n = 296</td>
<td>Mag n = 444</td>
<td>Mol n = 53</td>
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<tr>
<td>Age</td>
<td></td>
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<tr>
<td>18 to 35</td>
<td>54 (25.8%)</td>
<td>62 (21.0%)</td>
<td>77 (17.3%)</td>
<td>19 (35.9%)</td>
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<tr>
<td>36 to 65</td>
<td>154 (73.7%)</td>
<td>234 (79.1%)</td>
<td>367 (82.7%)</td>
<td>34 (64.2%)</td>
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<td>66+</td>
<td>1 (0.5%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Total</td>
<td>212 (21.2%)</td>
<td>207 (21.2%)</td>
<td>408 (21.4%)</td>
<td>789 (78.7%)</td>
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<tr>
<td>Sex</td>
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</tr>
<tr>
<td>Female</td>
<td>100 (47.9%)</td>
<td>143 (48.3%)</td>
<td>260 (58.6%)</td>
<td>26 (49.1%)</td>
</tr>
<tr>
<td>Male</td>
<td>109 (52.2%)</td>
<td>153 (51.7%)</td>
<td>184 (41.4%)</td>
<td>27 (50.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>529 (52.8%)</td>
<td>296 (49.7%)</td>
<td>444 (50.4%)</td>
<td>473 (47.2%)</td>
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<tr>
<td>Race</td>
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<tr>
<td>African American</td>
<td>154 (73.7%)</td>
<td>224 (75.7%)</td>
<td>343 (77.3%)</td>
<td>38 (71.7%)</td>
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<tr>
<td>Caucasian</td>
<td>35 (16.8%)</td>
<td>22 (7.4%)</td>
<td>40 (9.0%)</td>
<td>5 (9.4%)</td>
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<tr>
<td>Other</td>
<td>20 (9.6%)</td>
<td>50 (16.9%)</td>
<td>61 (13.7%)</td>
<td>10 (18.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>759 (75.8%)</td>
<td>566 (55.1%)</td>
<td>753 (75.8%)</td>
<td>141 (14.1%)</td>
</tr>
</tbody>
</table>

Note: FFS = Fee-for-service, UHC = UnitedHealthcare, Mag = Magnolia, Mol = Molina
Across all pharmacy programs, 42.1% (422/1002) of beneficiaries had a PDC > 90%.

Magnolia had the highest proportion of beneficiaries with 49.1% having a PDC > 90%.

Beneficiaries receiving antiretrovirals for 90 days supply did not appear to negatively impact PDC overall.

- The number of beneficiaries receiving 90 days supply was limited and the study period limited the number of subsequent claims observed. Antiretrovirals were added to DOM’s 90 day list effective April 1, 2019.
CONCLUSIONS

Adherence to antiretroviral therapy is crucial in attaining viral suppression and optimal outcomes in individuals treated for HIV. A 90% adherence is the minimum threshold established for achieving viral suppression, with many experts emphasizing the benefits of attaining 95% adherence or better. Among Medicaid beneficiaries, only 42.1% of beneficiaries achieved PDC > 90%. Opportunities exist to improve adherence to antiretroviral therapy.

RECOMMENDATIONS -

1. DOM to collaborate with MSDH, UMMC Infectious Disease Department, and state medical/pharmacy/nursing associations on ART adherence issues.

2. DOM to conduct targeted outreach to providers:
   a. Commend providers having patients with PDCs ≥ 90 and seek guidance on best practices;
   b. Educate providers with patients having PDCs < 90.
References: