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## Forced Treatment Orders with Long-Acting Injectable Antipsychotics: Are They Forcing Implicit Biases?

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**Forced Treatment Orders with Long-Acting Injectable Antipsychotics:  
Are They Forcing Implicit Biases?**

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Master of Public Administration Capstone Project

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April 8<sup>th</sup>, 2022

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## **Executive Summary**

Involuntary treatment is a lengthy legal process through which an individual that is deemed to be a danger to themselves or to others is forced to receive psychiatric treatment against their will. Often, involuntary treatment utilizes a medication called a long-acting injectable antipsychotic (LAI). With the rise of implicit bias awareness as of late, there has been new research showing that Black patients receive LAIs at disproportionate rates compared to White patients. There has not been research, however, to show the impact of diversity, equity, and inclusion (DEI) training of healthcare providers on the utilization rate of LAIs among the different races. This study used data collected from UK HealthCare to analyze the rate of LAI utilization and schizophrenia diagnosis among different demographics pre- and post-DEI training. Although a statistically significant difference between the two time periods was not found among White and Black patients, this study still highlighted a disproportionate rate of LAI utilization and schizophrenia diagnosis for Black patients. The results of this study show that DEI training in its current form may not be effective, and through involuntary treatment, the government may be perpetuating implicit biases.

## **Background**

No area of medicine has such a harsh history as mental illness. The history of mental health treatment is riddled with procedures such as electroshock therapy, ice pick lobotomies, and insulin coma therapy. Today, many healthcare professionals recognize the cruelty of these past treatments and now these practices are either not used at all or are altered significantly for safer patient outcomes. There is, however, one aspect of mental health treatment that has continued to this day: involuntary treatment. Involuntary treatment is known by many names, such as civil or involuntary commitment, involuntary hospitalization, or forced treatment, and these terms are commonly used interchangeably.

### *Involuntary Treatment*

Involuntary treatment is still used today in situations when individuals with mental illness are deemed to be a danger to themselves or to others. The main difference in today's age is that involuntary treatment is a lengthy legal process, mainly due to the Community Mental Health Centers Act signed by John F. Kennedy in 1963 and three legal cases: *Lake v. Cameron* in 1966, *O'Connor v. Donaldson* in 1975, and *Addington v. Texas* in 1978 (Fariba & Gupta, 2021). Involuntary treatment doesn't only have to take place in a hospital (also known as inpatient); it can also be outside of the hospital (also known as outpatient) through an involuntary outpatient civil commitment (OPC). Of course, every step of the process (for both inpatient and outpatient involuntary treatment) involves judicial surveillance, and appeal opportunities are required (Jacobsen, 2012). Many people argue that involuntary treatment reduces serious acts of violence, but data has yet to show this; the idea that patients with serious mental illness are violent is not always the case (Swartz et al., 2016). Involuntary treatment does, however, improve treatment adherence and related outcomes (Swartz et al., 2016). Although it varies from state to state, generally an involuntary treatment order is brought before a judge just like any other court case. This process was observed personally at Eastern State Hospital in Lexington, KY. Prosecuting attorneys (commonwealth attorneys in Kentucky) and a defending attorney (usually a public defender) ask the attending psychiatrist questions and argue whether involuntary treatment should be used. Two psychiatrists must sign an order for involuntary treatment for it to be considered by a judge. Ultimately, it is up to the judge to decide whether a patient will be forced to receive medical treatment, but the patient does have an opportunity to speak on their own behalf. An involuntary treatment order must include the medications that will be forced. It is not just a blanket forced medication order for all medications; it's specific to the medication(s) discussed during the court trial and agreed upon by the judge. Often, these forced medication orders are crafted in a stepwise fashion, meaning if the patient refuses to take an oral option, the treating psychiatrist can then progress to another

specific medication that can be administered into the muscle. These forced medication orders also often include forced lab orders so that drug levels and other labs can be measured to ensure therapy safety.

### *Long-Acting Injectable Antipsychotics*

Involuntary treatment often includes the utilization of long-acting injectable antipsychotics (LAIs) which are medications that are administered intramuscularly (directly into the muscle, like how many vaccines are administered) every four weeks, instead of a daily oral medication. Antipsychotics are a class of psychotropic medications (meaning they affect a person's mental state) that act on receptors in the brain to manage delusions, hallucinations, paranoia, or other symptoms commonly associated with schizophrenia, acute mania, or other serious mental illnesses (Chokhawala & Stevens, 2021). Commonly prescribed LAIs include Abilify Maintena (generic name: aripiprazole), Invega Sustenna (generic name: paliperidone), Haldol Decanoate (generic name: haloperidol), Risperdal Consta (generic name: risperidone), among others. LAIs are thought to increase medication adherence in a population that historically has had low adherence rates since these medications are administered every four weeks instead of requiring daily oral intake (Chaudhari, et al., 2017). Evidence has yet to confirm this fact, but it has been determined that "LAIs are at least as effective as oral [antipsychotics] in the treatment of psychotic disorders" (Manchanda, et al., 2013). As with any medication, there are possible side effects to LAIs. The most common adverse drug event reported is pain at the injection site; however, majority of evidence finds that "patients tolerate [LAIs] relatively well" (Zolezzi, et al., 2021). There are potential risks associated with the long-term use of antipsychotics (such as weight gain, high cholesterol, and high blood sugar), but these risks can be monitored and adjusted for before they become permanent lifelong issues.

### *Implicit Biases in Healthcare*

Mental health (much like many other areas of healthcare) has seen a shift in recent years as implicit bias awareness has come to the forefront. “Today, the biased provision of health services is a well-documented barrier to health for marginalized populations” and mental health services are no exception (Merino, et al., 2018). Implicit biases impact patients’ mental healthcare in multiple ways. One way is by impacting a patient’s access to mental health care. Since mental health treatment is commonly a one-on-one interaction, “there is perhaps a greater potential for implicit bias among mental health professionals that prevents certain groups from accessing some mental health services” (Merino, et al., 2018). Implicit biases can also play a role in how certain behaviors are perceived. For example, a Black man who is vigilant in everyday life for fear of racial profiling by police officers, could be interpreted as being paranoid (Merino, et al., 2018). The diagnosis of certain illnesses can also be impacted by implicit biases. Despite the standardized diagnostic criteria provided by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (known more commonly as the DSM-5), mental health providers “are more likely to underdiagnose affective [or mood] disorders and overdiagnose psychotic disorders [such as schizophrenia] among patients from marginalized groups compared with the majority” (Merino, et al., 2018). Implicit bias exists among all healthcare providers, mental health providers included. These biases can significantly impact a patient’s care and perpetuate mental health disparities.

### **Problem Statement**

Long-acting injectable antipsychotics may be more likely to be utilized in specific subsets of the population, which is concerning, especially since they are commonly used as a part of court-ordered involuntary treatment. This study attempts to answer where or not there is a difference in the rate of LAI utilization among White and Black patients pre- and post-DEI training. This will (to the author’s knowledge) be the first study conducted in such a fashion.



## Literature Review

### *Patient Perceptions*

Even though LAIs are thought to improve patient adherence, “LAI prescription rates in clinical practice in most Western countries are low” (Blackwood et al., 2020). The largest potential barriers to LAI usage are patients’ perceptions and attitudes (Blackwood et al., 2020). Blackwood et al. performed an analysis in patients with schizophrenia to assess factors that determine patient’s preference for an LAI or an oral antipsychotic. What is interesting from this analysis is how the results look when broken down into different races. “Preference for LAI was highest among White (84.2%) followed by other racial groups (71.2%) and Black (57.7%) patients” and “in the logistic regression analysis, race (White) ... showed a significant association ( $p < 0.001$ ) with patient preference for LAIs” (Blackwood et al., 2020). This study shows that White patients are more likely to prefer LAIs over Black patients. This is likely due to the (understandable) mistrust Black/African American patients have with medicine. “Thirty-nine percent of Black patients said they have encountered discrimination in the medical setting at least somewhat often, and 31 percent said they experienced discrimination very often. Only 27 percent of Hispanic patients said they experience discrimination somewhat often, and more than half of White patients said discrimination against them happened only rarely” (Heath, 2020). Despite Black patients not preferring LAIs, and having more mistrust in medicine, there is evidence that shows they receive LAIs at disproportionate rates compared to White patients.

### *Unequal Use of LAIs Between Races*

While Blackwood et al. attempted to find a difference in preference for LAIs over oral antipsychotics, Soleman, et al. (2017) conducted a study determining whether different ethnicities and age groups receive LAIs equally. This study found no statistically significant impact of ethnicity on whether a patient received an LAI (chi-square=0.88, df=3,  $p=0.831$ ) (Soleman, et al., 2017). There are significant limitations to this study, though. First, the authors

mention that the healthcare system that from which the data are derived from does not have a separate racial category for the Latino population. This could have a significant impact on the generalizability of this information to specific racial groups. This study was also conducted at a single site in Los Angeles County, California, thus making the generalizability to other healthcare systems even lower. The authors also touched on the fact that their “findings are in disagreement with previous studies” (Soleman et al., 2017).

Although Soleman et al. found no association between race and the utilization of LAIs, there have been studies that have demonstrated this difference. Aggarwal et al. conducted a study to determine if “racial minorities are disproportionately prescribed long-acting injectable antipsychotic drugs” (2012). Their study found that “White patients were significantly less likely to receive long-acting antipsychotic prescriptions than minority patients (OR=0.52,  $p<0.007$ ); i.e., nonwhites were 1.89 times more likely to receive such drugs” (Soleman et al., 2012). This fact is compounded when you consider that other patient demographics (age, gender, and comorbid diagnoses) were not correlated with the likelihood of a patient receiving an LAI (Soleman et al., 2012). It is important to note that this study was also conducted at a single site and the racial information collected was not uniform across all patients (some patients self-identified their race, while others were assigned a race by the clinician). It is possible that the difference in LAI utilization among races could be related to perceived nonadherence; “racial and ethnic minorities ... may be perceived as at higher risk for nonadherence and in need of long-acting injectable prescription” (Soleman et al., 2012).

### *Rise of Diversity, Equity, and Inclusion Training in Healthcare*

Although diversity, equity, and inclusion (DEI) training has generally been on the rise for the past decade, recent events have greatly impacted its popularity. A few academic medical centers (AMC) initiated unconscious bias training for future healthcare professionals in 2019 likely in response to the American Medical Association (AMA) establishing the AMA Center for

Health Equity (Robeznieks, 2020). The impact of implicit biases did not make national news until May of 2020 when an online video surfaced of Minneapolis police officer Derek Chauvin placing his knee on the back of George Floyd's neck as he arrested him, resulting in Mr. Floyd's death (Hill, et al., 2020). This horrific event placed a great emphasis on racial inequality in America. At the same time, the COVID-19 pandemic was bringing to light many differences in healthcare among racial groups. As a matter of fact, in June of 2020, "Black people [were] dying from COVID at roughly the same rate as White people more than a decade older" (Ford, et al., 2020). This is truly when the topic of implicit biases in healthcare became a hot topic. Many AMCs, such as the University of Kansas and the University of Maryland, began offering unconscious bias training in June and July of 2020 (KU Medical Center Office for Diversity, Equity and Inclusion; University of Maryland School of Medicine). Johns Hopkins School of Medicine first offered anti-bias training in September of 2020 to "teach students and trainees how to address unconscious bias and recognize structural racism in their treatment of patients and their interactions with colleagues" (Nitkin, 2020). This was shortly followed by the Association of American Medical Colleges (AAMC) releasing their framework for addressing racism in academic medicine in October 2020 (Redford, 2020). Google trends also show that the search term "unconscious bias" has had two peaks over the last five years: the week of June 7<sup>th</sup> and the week of October 25<sup>th</sup>, both in 2020 (see attached Supplementary Material #1).

### *Conclusion of Current Literature*

There is a wide array of available literature on the possible racial disparities in the utilization of LAIs. Studies have shown a correlation between race and LAI utilization, while others haven't, despite the evidence that White patients prefer LAIs over non-White patients. This study will supplement the available information, while also providing a starting point for future research into this issue.

## Hypothesis

Given the recent rise in implicit bias awareness, there is likely going to be differences among the patient populations included in this analysis. Historically, “Black Americans are disproportionately diagnosed with schizophrenia and experience worse objective functional outcomes (e.g. hospitalizations) than their White counterparts” (Nagendra, et al., 2020). Therefore, it is expected that Black Americans receive LAIs disproportionately more often than White Americans. Alternatively, if no difference was seen, then it can be said that LAIs are being utilized equally among races. It is also expected that after DEI training, the rate of LAI utilization should be more similar among the different racial groups. If there is no difference, then it would appear that DEI training has no impact on the prescribing patterns of LAIs among racial groups.

## Data

Data for this analysis were collected from information available through the University of Kentucky’s Center for Clinical and Translational Science i2b2 tool. “The i2b2 (informatics for integrating biology and bedside) query tool allows one to retrieve de-identified, aggregate counts of patient populations that match a given criteria. I2b2 provides a framework that allows clinical claims data to be warehoused and searched based on specific inclusion and exclusion criteria selected by the user” (University of Kentucky Center for Clinical and Translation Science). This analysis included every patient that received specific LAIs between a year prior and after a specified date, within the UK HealthCare system. Unfortunately, the specific date of when the University of Kentucky implemented its version of DEI training is unavailable, but considering the literature, October 15<sup>th</sup>, 2020, appears to be an appropriate estimate. “Time Period One” refers to the period prior to DEI training (October 15<sup>th</sup>, 2019, through October 15<sup>th</sup>, 2020), while “Time Period Two” refers to the period after DEI training (October 16<sup>th</sup>, 2020, through October 16<sup>th</sup>, 2021).

The i2b2 tool provided patient demographics for every patient who received specific LAIs. This information included the patient's race, gender, and age. Data on the prevalence of schizophrenia diagnosis within UK HealthCare was also provided. This secondary analysis was conducted utilizing ICD-10 codes F20-F29, which are the ICD-10 codes associated with the spectra of schizophrenia illnesses. ICD-10 codes are used by the Centers for Medicare and Medicaid Services (CMS) for billing purposes and each disease state has a specific assigned code. All F20-F29 ICD-10 diagnoses were included (not just in the patients who received an LAI), and the results were also broken down by race, gender, and age.

## **Research Design**

### *Not Human Research Determination*

The federal definition of a human subject is “a living individual about whom an investigator conducting research obtains (i) information or biospecimens through intervention or interaction with the individual and uses, studies, or analyzes the information or biospecimens; or (ii) obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens” [45 CFR 46.102(e)(1)]. Since the i2b2 tool doesn't provide direct access to patient identifiers, nor does it allow for the re-identification of individuals, the University of Kentucky Institutional Review Board determined that this analysis did not include data meeting the federal definition of human subject research, and thus did not require IRB approval.

### *Variable Selection*

The first variable collected (the dependent variable) was whether an LAI was used. This was provided as a total count of how many patients received each specific LAI. The LAIs included were slightly limited due to UK HealthCare's formulary, but four commonly encountered LAI antipsychotics were able to be analyzed: Haldol Decanoate, Abilify Maintena, Invega

Sustenna, and Risperdal Consta. The independent variables included the demographics that were analyzed: age, race, and gender (which were all categorical variables).

### *Statistical Analysis*

The descriptive statistics provided by this analysis indicate a snapshot of the patient demographics receiving LAIs, but this information is not applicable to drawing conclusions about the entire population. Nonetheless, this analysis still provides valuable information and can serve as a starting point for a very important issue in healthcare. To determine if there was a difference in the proportion of LAIs used among White and Black patients between the two time periods, a Pearson's chi-square test was conducted. A  $p\text{-value} < 0.05$  was considered statistically significant.

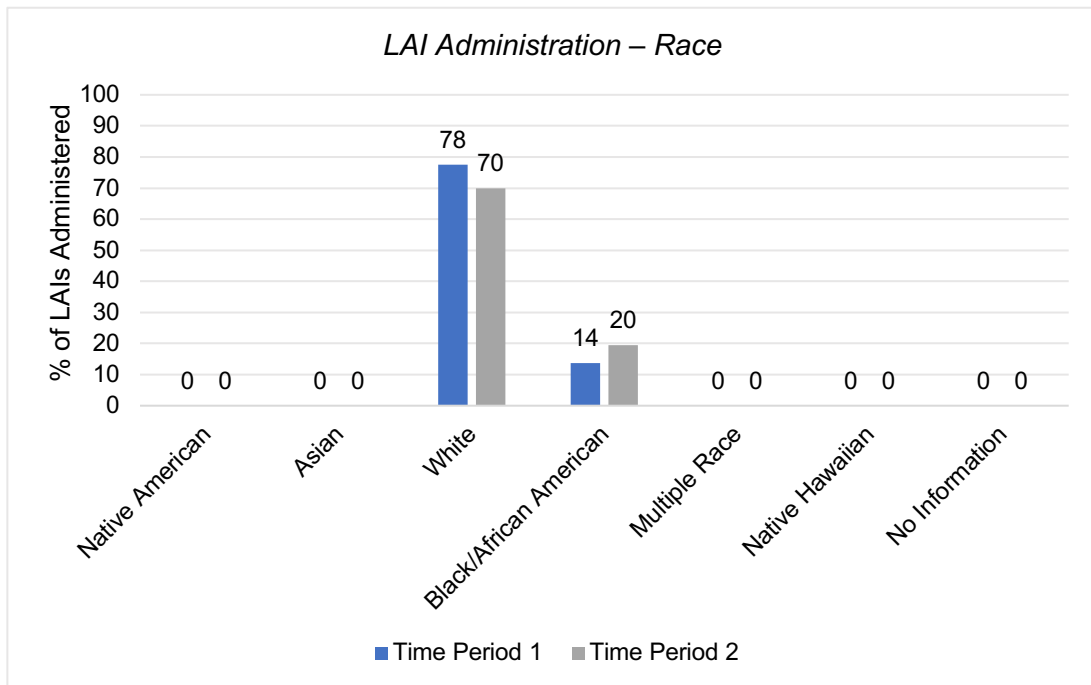
## **Results**

### *Primary Analysis*

In total, 80 patients received a LAI during Time Period One (10/15/19 – 10/15/20), while 123 patients received one during Time Period Two (10/16/20 – 10/16/21). In both time periods, Invega Sustenna was the most administered LAI, followed by Abilify Maintena. In total, during Time Period One, 13.75% of LAIs administered were in Black or African American patients, compared to 19.51% for Time Period Two. There was not a statistically significant difference between the two time periods when comparing the rate of LAI usage between White and Black patients ( $p\text{-value}=0.26$ ,  $df=1$ ). The results of the total racial breakdown are below, while the results of gender can be found under Supplementary Material #2.

| <i>LAI Time Period One – Race</i> |                     |                     |                    |                     |       |         |
|-----------------------------------|---------------------|---------------------|--------------------|---------------------|-------|---------|
|                                   | Haldol<br>Decanoate | Abilify<br>Maintena | Invega<br>Sustenna | Risperdal<br>Consta | Total | Percent |
| Native American                   | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| Asian                             | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| White                             | 7                   | 16                  | 34                 | 5                   | 62    | 77.50   |
| Black/African<br>American         | 0                   | 0                   | 11                 | 0                   | 11    | 13.75   |
| Multiple Race                     | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| Native Hawaiian                   | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| No Information                    | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |

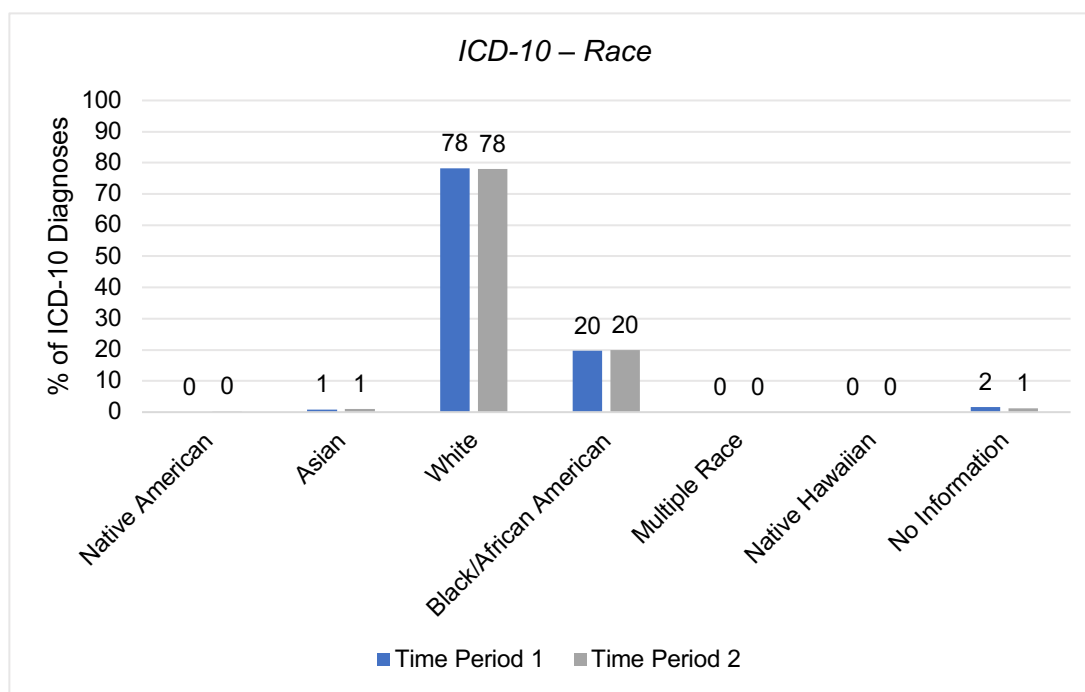
| <i>LAI Time Period Two – Race</i> |                     |                     |                    |                     |       |         |
|-----------------------------------|---------------------|---------------------|--------------------|---------------------|-------|---------|
|                                   | Haldol<br>Decanoate | Abilify<br>Maintena | Invega<br>Sustenna | Risperdal<br>Consta | Total | Percent |
| Native American                   | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| Asian                             | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| White                             | 12                  | 18                  | 50                 | 6                   | 86    | 69.92   |
| Black/African<br>American         | 6                   | 4                   | 14                 | 0                   | 24    | 19.51   |
| Multiple Race                     | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| Native Hawaiian                   | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |
| No Information                    | 0                   | 0                   | 0                  | 0                   | 0     | 0.00    |



### Secondary Analysis

Overall, 1,669 patients were given an ICD-10 code associated with schizophrenia during Time Period One, compared to 1,755 patients during Time Period Two. Majority of patients with such an ICD-10 code diagnosis were White, representing 78.13% for Time Period One and 77.95% for Time Period Two. Black or African American patients made up 19.65% and 19.89% for each time period, respectively. The results of the racial breakdown are below, while the results for gender can be found under Supplementary Material #3.

|                        | <i>ICD-10 Time Period One – Race</i> |              | <i>ICD-10 Time Period Two – Race</i> |              |
|------------------------|--------------------------------------|--------------|--------------------------------------|--------------|
|                        | Count                                | Percent      | Count                                | Percent      |
| Native American        | 0                                    | <b>0.00</b>  | 4                                    | <b>0.23</b>  |
| Asian                  | 12                                   | <b>0.72</b>  | 17                                   | <b>0.97</b>  |
| White                  | 1304                                 | <b>78.13</b> | 1368                                 | <b>77.95</b> |
| Black/African American | 328                                  | <b>19.65</b> | 349                                  | <b>19.89</b> |
| Multiple Race          | 0                                    | <b>0.00</b>  | 0                                    | <b>0.00</b>  |
| Native Hawaiian        | 0                                    | <b>0.00</b>  | 0                                    | <b>0.00</b>  |
| No Information         | 28                                   | <b>1.68</b>  | 22                                   | <b>1.25</b>  |





## Discussion

### *Primary Analysis*

Although there was not a statistically significant difference in the utilization of LAIs among White and Black patients between Time Period One and Time Period Two, these results still show high rates of Black patients receiving LAIs. According to the United States Census Bureau, 8.5% of Kentucky's population is Black or African American alone (2021); however, in both time periods, Black/African American patients account for more than 8.5% of LAIs administered (13.75% for Time Period One; 19.51% for Time Period Two). It's interesting to note that this percentage increased between the two time periods (even though it wasn't a statistically significant increase). This is surprising since one would expect that DEI training would cause the rate of LAI administration to be more equal among different races. It is possible, however, that DEI training could explain this increase. "Evidence shows that organizational diversity and inclusion initiatives (DIIs) are frequently ineffective, or worse, that they lead to worse diversity and inclusion related outcomes" (Temkin & Itembu, 2020). While slightly unexpected from a DEI training perspective, the data does show that Black/African American patients are administered LAIs at a disproportionate rate as compared to their White counterparts. This might be due to unconscious bias on the part of medical professionals. This study does not show that DEI training changes the impact of unconscious biases.

### *Secondary Analysis*

When considering the diagnosis rate of schizophrenia, this study agrees with previous literature. Black/African American patients represented 19.65% and 19.89% of all schizophrenia diagnoses in Time Period One and Time Period Two, respectively, despite Black/African Americans only representing 8.5% of Kentucky's population (United States Census Bureau, 2021). The difference in the diagnosis of schizophrenia for Black patients has long been researched. One study found that "even after controlling for other significant demographic and

clinical characteristics, African Americans were more than three times as likely to be diagnosed with schizophrenia than Euro-Americans” and the authors concluded that “to date, there are no empirically verified explanations determining why African Americans are overrepresented in having a schizophrenia diagnosis” (Schwartz & Blankenship, 2014). The authors propose a couple of theories (clinician bias, underdiagnosis of other mental illnesses, among others), but biological differences are not considered to be an explanation (Schwartz & Blankenship, 2014).

### *COVID-19*

A major limitation of this study is the impact of the coronavirus pandemic. The first case of COVID-19 was reported in the United States on January 20<sup>th</sup>, 2020, and by March 11<sup>th</sup>, 2020, the World Health Organization declared COVID-19 a pandemic (Centers for Disease Control and Prevention). Shortly after, many states began to shut down to prevent the spread of COVID-19 and hospitals began limiting non-COVID admissions. This has a great impact on the data for both Time Period One and Time Period Two in a multitude of ways. Hospitalization rates were not steady and could have a large effect on the already small dataset. COVID-19 could also have influenced the rate of LAI utilization considering the rise of mental health illnesses as the pandemic continued. This weakens the validity of the entire analysis; however, it could not have been minimized. Ideally, data would be collected from a period when COVID-19 did not have any impact; however, the rise of unconscious biases in healthcare and the coronavirus pandemic occurred almost simultaneously. This complicates this analysis and likely any future analyses as well.

### *Limitations*

Beside the impact of COVID-19, there are other limitations to this analysis. First, while the i2b2 tool is a great resource for data collection, it is limited to the information it provides. The i2b2 tool was not able to provide whether these LAIs were administered under a forced

medication order, however, it did provide insight into which demographics are receiving these injections. Also, to avoid reidentifying patients, all counts provided by the i2b2 tool included a  $\pm 3$ . If any count was less than three patients, the result returned only read  $\pm 3$ . Any such result was included as a count of zero in this analysis, which could have an impact on the statistical analyses, especially considering how small the sample sizes for LAI utilization were. In other words, it is possible that races that represent a small percentage of Kentucky's population (i.e., Native Hawaiian, Native American, etc.) were not included in the statistical analyses because less than three patients who identified as these races received an LAI. Secondly, this analysis doesn't lend to conclusions being drawn about the entire population as not enough data were provided to run a regression analysis. In an ideal situation, enough data would have been available to evaluate whether there is a correlation between the receipt of an LAI and a patient's race. This could be conducted via a binomial logistic regression since the dependent variable (whether or not an LAI was used) is binomial via a multiple regression approach. In an even more ideal situation, hypothesis testing would be used to determine the reliability of this regression. Even if these conclusions were able to be drawn, it would likely be difficult to meet power. This study only included a small sample size at a single center. This analysis was also limited to which LAIs could be included due to UK HealthCare's hospital formulary. A formulary is a list of medications available for use at a hospital. This is not to say that medications that are not on formulary cannot be used (for example, Abilify Maintena is not on UK HealthCare's formulary, but was the second most administered LAI). Given the extensive psychiatric treatment provided by Good Samaritan Hospital (a community hospital owned by UK HealthCare), it is likely that the preference for formulary vs. non-formulary medications can be ignored, but there are limitations to which LAIs were used in this analysis (for example, there were no administrations of Invega Trinza, another FDA-approved LAI). However, the four LAIs included in this analysis are very commonly prescribed and could all be utilized in a forced treatment order. Another limitation of this study is that it cannot be fully determined if the

University of Kentucky had finished DEI training among all healthcare providers by October 16<sup>th</sup>, 2020. Although supported with evidence from literature, a specific training date could not be determined, and the date selected was somewhat arbitrary. It also may have been beneficial to include a “washout period” (perhaps a span of approximately six months between the two time periods) to address this limitation more appropriately; however, this would have greatly reduced the available data for Time Period Two as it would be approaching present time.

### **Conclusion**

This analysis adds to the literature showing that Black/African American patients are disproportionately being treated with LAIs, as well as diagnosed with schizophrenia. While this could be because schizophrenia is more common in Black/African American patients, there has been significant research that shows how clinicians’ unconscious biases impact their diagnoses, especially in the realm of mental health. Although DEI training’s purpose is to curb these implicit biases, this study does not show this to be the case. Future studies should continue analyzing the impact of DEI training, ideally when the impact of COVID-19 is not as high.

### **Recommendations**

The results of this study shed light on an already dim area of medicine. Too long, mental health treatment has been plagued by mistrust and stigma. These issues are only compounded when one considers that patients can be forcibly required to receive treatment by the government. If future studies continue to conclude that Black/African American patients are being diagnosed/treated for schizophrenia at disproportionately higher rates, then the government could be unknowingly perpetuating these biases. This is not to say that forced/involuntary treatment should not be utilized (there are numerous studies to show its benefit), but that it should be used with great caution. Although mental health diagnoses can be greatly impacted by a provider’s unconscious biases, there have been many changes to the

DSM over the years to reduce this impact. The DSM should continue to change as more evidence continues to be published. There also needs to be significant changes to the DEI training provided to healthcare professionals. To truly extinguish the impact of implicit biases, organizations need to “[target] training to different audiences, [re-engineer] hiring practices, [and use] technology and behavioral science to reduce bias in performance evaluations” (Chang et al., 2019). In other words, DEI training by itself is not enough to minimize implicit biases among healthcare providers; it requires a multitude of changes throughout the entire healthcare organization. If it is determined that after these changes these disproportions still exist, then the future of involuntary treatment for mental illnesses should be re-evaluated to maximize patient experience and minimize implicit biases.

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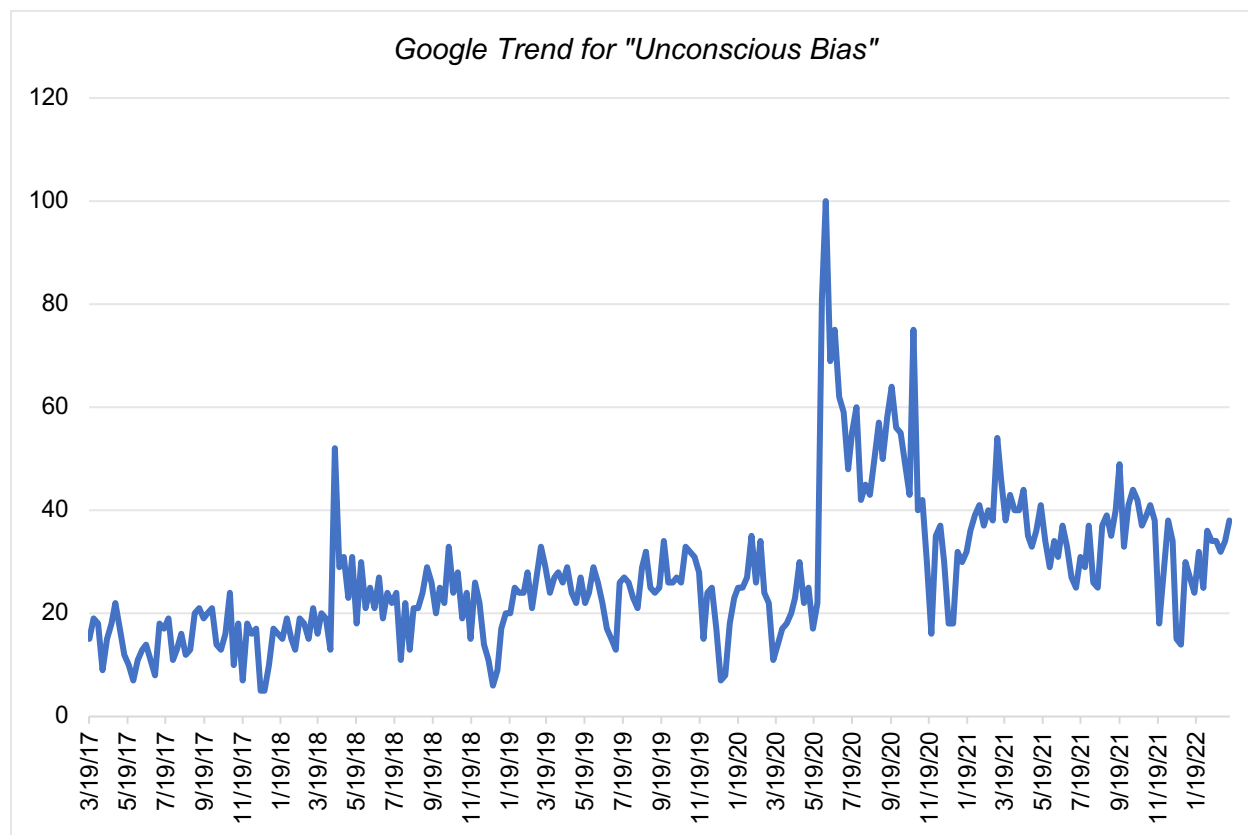
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## Supplementary Materials

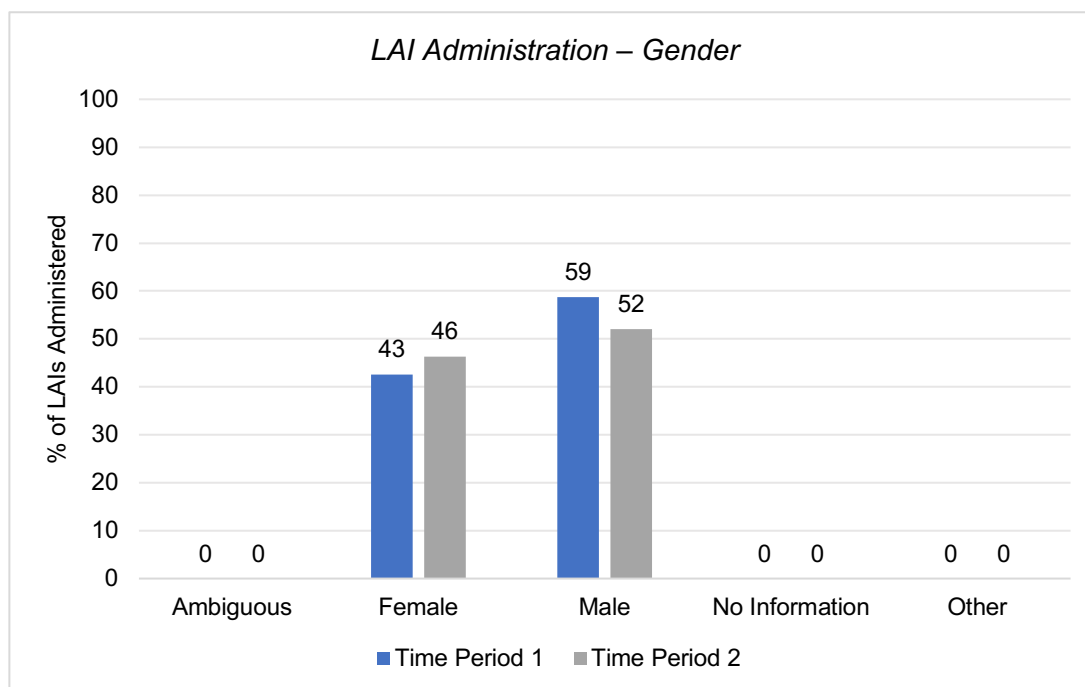
### Supplementary Material #1



### Supplementary Material #2

| <i>LAI Time Period One – Gender</i> |                     |                     |                    |                     |              |                |
|-------------------------------------|---------------------|---------------------|--------------------|---------------------|--------------|----------------|
|                                     | Haldol<br>Decanoate | Abilify<br>Maintena | Invega<br>Sustenna | Risperdal<br>Consta | <b>Total</b> | <b>Percent</b> |
| Ambiguous                           | 0                   | 0                   | 0                  | 0                   | <b>0</b>     | <b>0.00</b>    |
| Female                              | 5                   | 10                  | 19                 | 0                   | <b>34</b>    | <b>42.50</b>   |
| Male                                | 9                   | 7                   | 27                 | 4                   | <b>47</b>    | <b>58.75</b>   |
| No Information                      | 0                   | 0                   | 0                  | 0                   | <b>0</b>     | <b>0.00</b>    |
| Other                               | 0                   | 0                   | 0                  | 0                   | <b>0</b>     | <b>0.00</b>    |

| <i>LAI Time Period One – Gender</i> |                  |                  |                 |                  |       |         |
|-------------------------------------|------------------|------------------|-----------------|------------------|-------|---------|
|                                     | Haldol Decanoate | Abilify Maintena | Invega Sustenna | Risperdal Consta | Total | Percent |
| Ambiguous                           | 0                | 0                | 0               | 0                | 0     | 0.00    |
| Female                              | 9                | 16               | 32              | 0                | 57    | 46.34   |
| Male                                | 8                | 10               | 42              | 4                | 64    | 52.03   |
| No Information                      | 0                | 0                | 0               | 0                | 0     | 0.00    |
| Other                               | 0                | 0                | 0               | 0                | 0     | 0.00    |



*Supplementary Material #3*

|                | <i>ICD-10 Time Period One – Gender</i> |         | <i>ICD-10 Time Period Two – Gender</i> |         |
|----------------|--|---------|--|---------|
|                | Count                                  | Percent | Count                                  | Percent |
| Ambiguous      | 0                                      | 0.00    | 0                                      | 0.00    |
| Female         | 705                                    | 42.24   | 714                                    | 40.68   |
| Male           | 961                                    | 57.58   | 1032                                   | 58.80   |
| No Information | 0                                      | 0.00    | 0                                      | 0.00    |
| Other          | 0                                      | 0.00    | 0                                      | 0.00    |

