Pre and Post COVID-19 Impact on Medication Adherence

C036

Evaluating The Impact of State level COVID-19 Policies On Compliance and Persistency Over Time in Diabetic Populations

Roberto Lopez, MPH Biostatistics ● **Jennifer Liu,** MS Statistics ● **Bill Long,** MS Statistics

OBJECTIVES

When the COVID-19 pandemic began, states in the U.S. responded with a variety of preventive policies, from physical distancing and mask requirements to expansions of social safety net programs and restaurant closures. This research aims to explore medication adherence during and after COVID. The analysis includes the impact of masking policies, and adherence behavior among diabetic and hypertensive populations across the U.S. The masking period and the two years that followed were examined.

METHODS

MedAdvisor Solutions™ receives a nationally representative sample of pharmacy data containing coverage of 65% of the U.S. population. We used a sample of 2.6M oral diabetes patients and 4.9M hypertensive patients *(See Chart 1)*. The data is HIPAA compliant, updated daily, longitudinal, and not projected. Evaluation periods are starting 3/1/2019 and running 365 days for 2019-20, 2020-21, 2021-22, and 2022-23. Patients were only included in the analysis if they had at least one fill in each of the time periods to show sufficient persistence in the oral diabetes and hypertension categories. Policy information on masking duration was obtained from the COVID U.S. Policy (CUSP) database.

Patient adherence pre-COVID, during COVID and post COVID were compared. A logistic regression model was used to identify drivers of adherence.

RESULTS

Descriptive analysis shows increases in mean adherence averaged 1.4% and 1.3% for Hypertensive and Diabetic patients, respectively, for the 3 years after baseline. Increases in the compliant population (PDC>.8) averaged 2.5% and 2.4% for the 3 years after baseline *(see Table 1)*.

Logistic Regression results for Diabetes showed compliance in the pre-COVID Baseline period had an Odds Ratios of 3.9 and 3.3 for two years post COVID, indicating that such individuals to be almost 4 times as likely to be compliant. Being over the age of 65 was also associated with greater compliance (OR 1.5, 1.5), as was being male (OR 1.1, 1.2). Mask mandates of greater than 180 days were associated with compliance (OR 1.1, 1.1), but was less significant than other variables in the regression model *(see Table 2)*.

Similarly for Hypertensives, compliance in the pre-COVID time-frame results in Odds Ratios of 3.8 and 3.2 in the following 2 years, showing a similar powerful effect on adherence in subsequent years. Age_Over65 was also found to have a strong association (OR 1.5, 1.5). Masking polices showed a mild effect for Hypertensive (OR 1.1, 1.1), slightly higher relatively speaking, than other predictors *(see Table 3)*. Having both Diabetes and Hypertension had an association with higher compliance for diabetics (OR 1.3, 1.2) and mixed results for hypertensives (OR 1.03, 0.99) *(See Tables 2, 3)*.

Table 3 Logistic Regression Results for **Hypertensives** for Post COVID Years

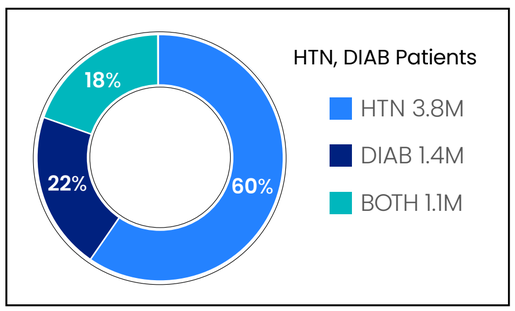
Oral Diabetic Regression Results*	Post COVID Year 1		Post COVID Year 2	
	MLE	Odds Ratio Estimate	MLE	Odds Ratio Estimate
Intercept	-0.2626		-0.2245	
Base_Yr_ Adherence (>80%)	1.3347	3.799	1.1514	3.163
Masking Policy (>180 days)	0.132	1.141	0.1185	1.126
Both_HTN_DIAB	0.029	1.029	-0.0146	0.985
Gender (Male=1)	0.1279	1.136	0.1248	1.133
Poverty_County**	-0.0224	0.978	-0.0221	0.978
Age_Over65 (as 2024)	0.4254	1.53	0.4012	1.494

* Pr>ChiSq <.0001 for all estimates
** Percent of population living in poverty at the county level (2020)

CONCLUSIONS

The masking policies that were implemented did not create obstacles to negatively impact adherence in our patient population and showed a mild impact on subsequent compliance. The primary driver of adherence in the post COVID years, however, was compliance in the pre-COVID period. The secondary drivers of adherence are masking mandates of greater than 180 days, over the age of 65, and gender (Male). Hypertensive patients were more impacted by masking policies than diabetics.

Chart 1 Patient Population - 6.3M across 2 conditions



Total Diabetic Patients:	2,559,725
Total Hypertensive Patients:	4,909,901

Table 1 Population Adherence and Compliance by Disease State

Disease State	Time Frame	Mean Adherence (PDC)	% of Patients Compliant (PDC>80%)
Hypertensive Patients	Pre-COVID Baseline	79.7%	61.7%
	COVID	80.9%	64.0%
	Post COVID Yr 1	81.2%	65.2%
	Post COVID Yr 2	81.2%	63.3%
Oral Diabetic Patients	Pre-COVID Baseline	77.8%	57.5%
	COVID	79.2%	60.2%
	Post COVID Yr 1	79.1%	60.8%
	Post COVID Yr 2	79.1%	58.7%

All years post COVID show an increase over baseline for both metrics. For diabetics, mean adherence shows an increase of 1.2% - 1.5%. Percent compliance for diabetics shows increases of 1.6% to 3.6%. Hypertensives show an increase of 1.3% to 1.4% in mean adherence, with percent compliance increases ranging from 1.2% to 3.3%.

Table 2 Logistic Regression Results for **Oral Diabetics** for Post COVID Years

Oral Diabetic Regression Results*	Post COVID Year 1		Post COVID Year 2	
	MLE	Odds Ratio Estimate	MLE	Odds Ratio Estimate
Intercept	-0.4729		-0.4434	
Base_Yr_ Adherence(>80%)	1.3673	3.925	1.1894	3.285
Masking Policy (>180 days)	0.1057	1.112	0.0932	1.098
Both_HTN_DIAB	0.2378	1.268	0.1973	1.218
Gender (Male=1)	0.1159	1.123	0.12	1.217
Poverty_County**	-0.0212	0.979	-0.0208	0.979
Age_Over65 (as 2024)	0.4152	1.515	0.3828	1.466

* Pr>ChiSq <.0001 for all estimates
** Percent of population living in poverty at the county level (2020)

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