COVID-19 Impact on Inpatient Admissions and Chronic Conditions Among Medicaid Enrollees with Intellectual and Developmental Disabilities: Analysis of Louisiana and Pennsylvania

Authors

- **Claire Payne** Associate Director, Healthcare, *Guidehouse*
- **Sydney Page**, Consultant, *Guidehouse*
- **Jason Gerling,** Director, *Guidehouse*
- **Alex Kearly**, Director, Medicaid and Health Systems Partnership, *ASTHO*
- **Madison Hluchan,** Assistant Director**,** Medicaid and Health Systems Partnership, *ASTHO*

Contributors

- **Adrianna Evans**, Director, Preparedness and Disability Integration, *ASTHO*
- **Rachel Scheckman**, Senior Analyst, Population Health and Innovation, *ASTHO*
- **Orobosa Idehen**, Senior Analyst, Medicaid and Health Systems Partnership, *ASTHO*

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Executive Summary

ASTHO, with funding from CDC and in partnership with Guidehouse, led a multi-state COVID-19 Medicaid analysis project to assess the COVID-19 pandemic's impact on adults with intellectual and developmental disabilities (IDD).

We explored the prevalence of chronic conditions and the potential impact of COVID-19 on adults with IDD in two states, Louisiana and Pennsylvania, by examining Medicaid claims and encounters from Jan. 1, 2018 – March 10, 2021, to answer the following questions:

1. Does the prevalence of individual chronic conditions differ by IDD status (including the prevalence of having one or more chronic conditions)?
2. Were adults with IDD more likely to have a COVID-19-related inpatient admission compared to people without IDD?

This work was part of a broader project to help address the needs of people with disabilities in COVID-19 planning, mitigation, and recovery efforts.

Key Observations

- People with IDD had a higher prevalence of mood disorders (e.g., major depressive disorder and bipolar disorder) and dementia/other neurological conditions, compared to people without IDD.
- Associations between chronic conditions and COVID-19-related inpatient admission were similar, regardless of IDD status.
- People with IDD had an increased likelihood of a COVID-19 inpatient admission compared to people without IDD.
    - People with diabetes, dementia/other neurological conditions, or hypertension were more likely to be hospitalized with severe COVID-19.
    - People with cancer or mood disorders were less likely to be hospitalized with severe COVID-19.
    - People with a higher number of chronic conditions had an increased likelihood of a COVID-19 inpatient hospital admission.

Introduction

Developmental disability (DD) is a severe, chronic disability manifested before age 22 and resulting in substantial functional limitations in multiple areas of major life activity. Intellectual disability (ID) is a type of DD characterized by limitations in intellectual functioning and adaptive behavior originating before age 18. Between 1% – 3% of the U.S. population has ID, whereas recent prevalence estimates for DD are 2 – 6 times that number depending on how DD is defined. The COVID-19 pandemic disproportionately impacted people with disabilities and amplified existing gaps in access to care, health outcomes, and quality of life.

Individuals with intellectual disability and other developmental disabilities (IDD) often experience health disparities and reduced access to care. Additionally, people with IDD are at increased risk of contracting COVID-19 and experiencing severe COVID-19 outcomes. Crowded residential settings and contacts with daily support service providers have led to higher COVID-19 exposure for some people with IDD. Greater risks of chronic diseases and health disparities among people with IDD may increase their risk of more severe COVID-19.

ASTHO and CDC sought to better understand the impact of COVID-19 on people with IDD and how chronic conditions may increase their risk of severe outcomes. The findings can inform public health surveillance, preparedness, response efforts, and Medicaid services and policies to help address the needs of people with IDD during future public health emergencies.

Methods

For this analysis, we examined Medicaid claims and encounters for individuals aged 25 – 64 years in Louisiana and Pennsylvania[1] from Jan. 1, 2018 – March 10, 2021. We considered individuals with one or more claims with a diagnosis code (ICD-10-CM code) of IDD at any point in the three-year period to have IDD[2]. The quality of information provided on Medicaid claims is dependent on the accuracy of claims submitted by medical providers and human entry of codes[3]. Individuals included in this analysis had at least six months of eligibility at any point during the pre-COVID-19 study period (March 2019 – Feb. 2020) and six months of eligibility at any point during the COVID-19 study period (March 2020 – March 2021) to decrease the impact of Medicaid "churn."

We used a two-year study period (pre-COVID period and during COVID) to identify individuals with one or more claims with a primary or secondary diagnosis code indicating chronic conditions. We categorized chronic conditions into nine groups using the CMS Chronic Conditions Data Warehouse groupings, with each comprised of either a single chronic condition or multiple.

[1] Medicaid data from Wyoming was also analyzed but was excluded due to small sample sizes.

[2] We refined a list of ICD-10-CM codes to identify people with IDD for this analysis based on potentially disabling conditions listed in the Chronic Conditions Data Warehouse (CCDW) of the Centers for Medicare and Medicaid Services (CMS) and algorithms applied in previous CDC-funded collaborations to exclude congenital malformations where a person would likely not survive to adulthood. We considered Medicaid members as having IDD if they had ICD-10-CM codes related to IDD at any point from January 1, 2018 – March 10, 2021.

[3] Three years was used to best account for potential under coding of diagnoses which can be a limitation when using Medicaid data.

Criteria for chronic conditions includes 1) conditions that have been shown to increase the likelihood of having severe COVID-19 and 2) had a high prevalence within the IDD cohort. The top chronic conditions and their associated groupings are shown in Table 1.

Table 1: Chronic Conditions and Chronic Condition Groups

Chronic Condition	Chronic Condition Group
Depression, Bipolar, or Other Depressive Mood Disorders	Mood Disorders
Hypertension	Hypertension
Diabetes	Diabetes
Asthma	Chronic Lung Diseases
Chronic Obstructive Pulmonary Disease	Chronic Lung Diseases
Chronic Kidney Disease	Chronic Kidney Disease
Acute Myocardial Infarction	Heart Conditions
Atrial Fibrillation and Flutter	Heart Conditions
Heart Failure and Non-Ischemic Heart Disease	Heart Conditions
Ischemic Heart Disease	Heart Conditions
Stroke/Transient Ischemic Attack	Stroke
Alzheimer's Disease	Dementia or other neurological conditions
Non-Alzheimer's Dementia	Dementia or other neurological conditions
Cancer, Breast	Cancer
Cancer, Colorectal	Cancer
Cancer, Endometrial	Cancer
Cancer, Lung	Cancer

To assess the distribution of chronic conditions and the potential impact of COVID-19 on the population of people with IDD, we performed analyses that would answer the following questions:

1. Does the prevalence of individual chronic conditions differ by IDD status (including the prevalence of having one or more chronic conditions?
2. Were adults with IDD more likely to have a COVID-19 inpatient admission compared to adults without IDD?

To determine whether adults with IDD were more likely to have a COVID-19 inpatient admission compared to those without IDD, we conducted a Poisson logistic regression. The model also included age, gender, race and ethnicity, and all chronic conditions listed in Table 1 as covariates to statistically control for differences across the populations with and without IDD.

Results

Chronic Conditions Among People With and Without IDD

- Within this analytic sample of adults in Medicaid, 3.4% of those in Louisiana and 4.6% of those in Pennsylvania had IDD.

- Results show that some chronic conditions were more prevalent among adults with IDD during the study period compared to adults without IDD (Table 1).

- Adults with IDD had a higher prevalence of mood disorders (e.g., major depressive disorder and bipolar disorder) and dementia/other neurological conditions in both states. Diabetes and chronic kidney disease were also slightly more common among people with IDD.

- The prevalence of mood disorders was 5.3 and 1.2 percentage points higher among people with IDD compared to those without IDD in Louisiana (36.4% vs. 31.1%) and Pennsylvania (38.8% vs 37.6%).

- The largest difference was for dementia/other neurological conditions; the prevalence of these conditions among adults with IDD was five times higher in Louisiana and nearly four times higher in Pennsylvania when compared to adults without IDD.

- The number of chronic conditions per person ranged from none to four or more (Table 2).

- In Louisiana, 32.6% of adults without IDD had no chronic conditions, compared to 29.5% of adults with IDD.

- In Pennsylvania, 34.8% of adults without IDD had no chronic conditions, compared to 37.2% of adults with IDD.

- In both states, prevalence generally decreased as the number of chronic conditions increased (from no chronic conditions to 4+), regardless of IDD status.

Limitations

Results from this analysis do not account for the severity of IDD or chronic conditions, rather they describe whether a person had a healthcare encounter where the condition was documented during the study period. This study did not control for other demographic differences and, therefore, prevalence estimates could be influenced by factors such as age or gender.

Table 1. Unadjusted Period Prevalence of Chronic Conditions by IDD Status in Louisiana and Pennsylvania: March 11, 2019 – March 10, 2021

	Louisiana				Pennsylvania			
	IDD		All Other Medicaid		IDD		All Other Medicaid	
	n	%	n	%	n	%	n	%
Chronic Conditions								
Hypertension	8,190	45.4%	237,382	46.6%	13,220	28.8%	311,776	33.0%
Mood Disorders	6,564	36.4%	158,587	31.1%	17,831	38.8%	355,603	37.6%
Chronic Lung Disease	3,046	16.9%	97,790	19.2%	8,466	18.4%	230,286	24.4%
Diabetes	3,810	21.1%	96,983	19.0%	7,198	15.7%	145,879	15.4%
Heart Conditions	1,740	9.7%	54,925	10.8%	3,437	7.5%	83,837	8.9%
Chronic Kidney Disease	1,391	7.7%	30,725	6.0%	2,744	6.0%	49,303	5.2%
Stroke	806	4.5%	17,946	3.5%	1,417	3.1%	28,542	3.0%
Cancer	313	1.7%	12,193	2.4%	784	1.7%	21,618	2.3%
Dementia and Other Neurological Conditions	786	4.4%	4,313	0.9%	1,416	3.1%	7,479	0.8%
Total Chronic Conditions								
None	5,319	29.5%	166,197	32.6%	17,107	37.2%	329,320	34.8%
1	4,943	27.4%	139,775	27.4%	13,023	28.3%	271,862	28.8%
2	3,549	19.7%	97,500	19.1%	7,601	16.5%	166,814	17.6%
3	2,163	12.0%	56,183	11.0%	4,100	8.9%	92,217	9.8%
4+	2,053	11.4%	50,210	9.8%	4,112	9.0%	85,030	9.0%
Total	18,027	3.4%	509,865	96.6%	45,943	4.6%	945,243	95.4%

COVID-19 Inpatient Admissions

- Among adults covered by Medicaid in Louisiana, 1.2% with IDD and 0.7% without IDD were hospitalized with COVID-19. In Pennsylvania, 0.9% with IDD and 0.6% without IDD were hospitalized with COVID-19 (data not shown).

- Adults with IDD also had an increased likelihood of a COVID-19 inpatient admission compared to those without IDD after controlling for potential confounders (Table 3).

- In Pennsylvania, adults with IDD had 1.84 (CI: 1.67 – 2.02) times the risk of experiencing a COVID-19 inpatient admission relative to those without IDD, while in Louisiana, people with IDD had 1.58 (1.39 – 1.81) times the risk.

- In both Louisiana and Pennsylvania, the following chronic conditions were positively associated with COVID-19 inpatient hospital admissions: Diabetes [Relative risk (RR): Louisiana, 1.92, confidence interval (CI): 1.79 – 2.07; Pennsylvania, 1.59, CI: 1.50 – 1.69], dementia and other neurological conditions (RR: Louisiana, 1.39, CI: 1.21 – 1.59;

Pennsylvania, 1.37, CI: 1.23 – 1.53), and hypertension (RR: Louisiana, 1.44, CI: 1.31–1.58; Pennsylvania, 1.14, CI: 1.07 – 1.22).

- There were negative associations in both states between cancer (RR: Louisiana, 0.78, CI: 0.67 – 0.90; Pennsylvania, 0.80, CI: 0.72 – 0.90) and mood disorders (RR: Louisiana, 0.65, CI:0.61 – 0.69; Pennsylvania, 0.70, CI: 0.67 – 0.74) and COVID-19 inpatient admission; however, the relative risk ratio for the likelihood of a COVID-19 inpatient hospital admission increased as the number of chronic conditions per person increased.

- RRs did not reach statistical significance for some levels after adjusting for IDD status, age, gender, and race and ethnicity.

Table 2: Relative Risk of COVID-19 Inpatient Admissions by IDD Status, Chronic Conditions, and Cumulative Comorbidities

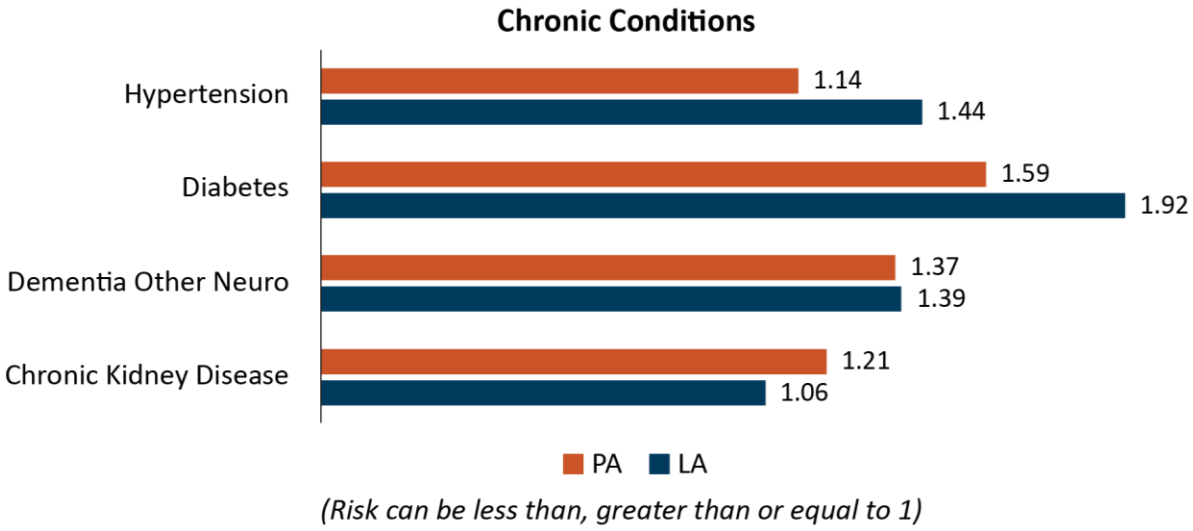
	Louisiana					Pennsylvania				
	n[c]	Relative Risk	Lower CI	Upper CI		n	Relative Risk	Lower CI	Upper CI	
IDD Status[a]	212	1.59	1.39	1.81	*	404	1.84	1.67	2.02	*
All Other Medicaid	3,446	Reference	-	-		5,689	Reference	-	-	
Chronic Conditions[a]										
Cancer	179	0.78	0.68	0.90	*	303	0.81	0.72	0.90	*
Chronic Kidney Disease	828	1.06	0.98	1.15		1,435	1.21	1.14	1.29	*
Chronic Lung Disease	1,227	0.95	0.88	1.01		2,577	1.02	0.97	1.08	
Dementia and Other Neurological Conditions	196	1.39	1.21	1.59	*	332	1.37	1.23	1.53	*
Mood Disorders	1,499	0.65	0.61	0.69	*	2,961	0.70	0.67	0.74	*
Diabetes	1,839	1.92	1.79	2.07	*	2,697	1.59	1.50	1.69	*
Heart Conditions	1,257	0.97	0.90	1.04	*	1,947	0.85	0.80	0.90	*
Hypertension	2,850	1.44	1.31	1.58	*	4,000	1.14	1.07	1.22	*
Stroke	472	0.84	0.76	0.92	*	754	0.94	0.87	1.01	
Total Chronic Conditions[b]										
None	362	Reference	-	-		696	Reference	-	-	
1	550	1.03	0.90	1.18		1,019	0.91	0.83	1.01	
2	747	1.25	1.10	1.43	*	1,210	1.03	0.94	1.14	
3	734	1.35	1.17	1.56	*	1,080	1.04	0.94	1.15	
4+	1,265	1.51	1.31	1.73	*	2,088	1.14	1.04	1.26	*

Abbreviations: CL = Confidence Interval
a: First model included IDD status, age, gender, race and ethnicity, and 9 chronic conditions. Reference groups are those without IDD and no chronic conditions.
b: Second model included IDD status, age, gender, race and ethnicity, and cumulative number of chronic conditions.
c: The number of COVID-19 inpatient hospitalizations.
* Indicates statistical significance.

Figure 1 highlights the chronic conditions most positively associated with COVID-19 inpatient admission after controlling for IDD status, age, gender, race and ethnicity, and the remaining eight chronic conditions. Associations were similar regardless of IDD status.

Patterns in associations between each chronic condition and COVID-19 inpatient admission were fairly consistent across states (Figure 1). The higher the relative risk, the greater the association of that chronic condition with COVID-19 hospitalization.

Figure 1: Statistically Significant Relative Risk Ratios of Chronic Conditions on COVID-19 Inpatient Admission in Louisiana and Pennsylvania: March 11, 2019 – March 10, 2021



Themes and Considerations

These results indicate the IDD community has a higher prevalence of certain chronic conditions, such as mood disorders (e.g., major depressive disorder and bipolar disorder) and dementia/other neurological conditions, and is at an increased risk of COVID-19 hospitalization. Our analysis complements prior work demonstrating a disproportionate impact on the population of individuals with IDD. Further, findings suggest a need to prepare for public health emergencies by considering increased prevalence of chronic conditions among adults with IDD and the needs of those who receive direct care services or live in congregate settings. Potential considerations for state and territorial health agency (S/THA) staff in preparing for future public health emergencies for this population are:

- Include people with IDD in all emergency planning, response, and recovery efforts through opportunities to review emergency plans, sustained partnerships, and accessible communications.

- Anticipate disruptions to regular support services for people with IDD and identify ways to maintain the health and well-being among this population after an emergency.

- Address strain and burnout among disability support providers. Consider options to increase capacity of disability support providers during emergencies, such as in-person special education and respite programs.

- Anticipate needs of those living in congregate settings. S/THAs may consider prioritizing case investigation and contact tracing efforts among high-risk populations during future public health emergencies, including those living in congregate settings, such as nursing homes or housing for people with IDD.

Inequities in underlying health comorbidities and social determinants of health place individuals with IDD at increased risk for both severe illness due to COVID-19 and negative health outcomes. S/THA staff can work to ensure their public health preparedness plans are inclusive of people with IDD and accessible for people with IDD.

Medicaid data provide opportunities for S/THAs to better understand COVID-19 outcomes, co-occurring chronic conditions, and overall health among people with IDD. Enhancing S/THA capacity to analyze available data sources, including Medicaid claims data, will serve to better inform S/THA planning efforts in addressing the needs of individuals with IDD during future public health emergencies.