

NOCD Clinical and Cost Outcomes study

Optum Advisory

October 15th, 2025

Session objectives

- Review and discuss findings from the Optum & NOCD Clinical and Cost Outcomes study
- Explore strategic implications and next steps for NOCD

Agenda

1 Executive Summary

2 Benchmark Analysis

3 Propensity Score Matching Analysis

4 Conclusions and Strategic Next Steps



Executive summary – NOCD & Optum Clinical and Cost Outcomes Study

NOCD asked Optum to support their case for **enhanced access and reimbursement** aligned with the value they deliver NOCD and Optum codeveloped analyses to prove NOCD's value for negotiations with payers Optum found promising national OCD insights and significant savings associated with NOCD intervention

Optum can support positioning of NOCD as a critical lever for payers to manage affordability of OCD members

To support development of the study, Optum conducted...

- 1 Clinical Interviews with NOCD to develop hypotheses to be tested out in analysis
- 2 Review of SBA algorithm to assess model fit and efficacy at stratifying OCD patients



Benchmarking Analysis to identify opportunities for NOCD via national patterns associated with OCD patients



Matching Analysis to demonstrate the value of NOCD services through comparison of outcomes of NOCD and non-NOCD providers **Comorbidities** play a larger role in cost and utilization in lower severities



Mid-Atlantic region has the highest OCD prevalence

North Central and South Central regions show the highest risk scores

Place of treatment is significantly different by severity level

\$3,430 PMPY Savings

Identified highest areas of savings in inpatient and pharmacy

NOCD can leverage study findings to negotiate:

- 1 Improved rates
- 2 Inclusion in preferred networks and enhanced payer driven steerage
- 3 Enhancing / activating alternate channels for growth



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Optum completed against the scope of work

Clinical Hypotheses

- OA conducted interviews with NOCD clinical and sales leaders to inform hypotheses to test within the following analyses
- OA and NOCD aligned on key metrics to be measured by OA to validate hypotheses

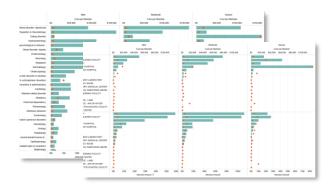
Santa Barbara Algorithm Review

 OA reviewed and validated SBA algorithm for accuracy and made recommendations for how to modify for our study, which led to an enhanced clinical severity model rather than counting number of transitions

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Cohort / Benchmark Analysis

- OA performed a benchmark analysis to assess national patterns associated with OCD patients and prioritize cohorts for higher level of treatment
- Deliverable: OA will deliver an Excel and PowerPoint with the outcomes (including patient counts, average annual medical and pharmacy costs, and average risk score for each treatment cohort)



Propensity Score Match Analysis

- OA performed a propensity score matching analysis to quantify the impact of NOCD interventions
- Deliverable: OA will deliver an Excel and PowerPoint summary of the services and outcomes (including metrics showing financial impact of clinical intervention and supporting drivers of change)





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Benchmarking Analysis



Top Highlights – Benchmarking Analysis



Comorbidity Impacts

- Comorbidities play a larger role in the overall cost and utilization of patients who are lower in OCD severity.
- As patients increase in OCD severity, the impact of comorbidities plays a lesser role, with the patients being defined more exclusively by their OCD and other psychiatric conditions



Prevalence Varies by Geography

- There appear to be notable differences in OCD prevalence and overall patient risk based on geography.
- A literature review highlights that OCD is historically undertreated, underrepresented in claims data, and often misclassified into other psychiatric conditions.



Place of Treatment

- Place of treatment (e.g. IP vs. office setting), while driven by the condition and severity of condition, is significantly different for the severe OCD patients vs. mild and moderate counterparts.
- Notable differences in comorbid conditions, suggest opportunity for rapid access channels and teambased approaches to manage conditions before they rise to the need for IP care.



OCD Utilization & Prevalence

Psychiatry care dominates the total care for severe patients, while other conditions are more relevant for the mild and moderate cohorts.

- **1.** Mild and moderate OCD patients have a lower and more similar risk score compared to severe patients.
- 2. Severe OCD patients have higher cost per member annual spend on a risk adjusted basis, driven largely by spend on psychiatry-related conditions.
- **3**. Mild, moderate, and severe OCD patients have similar avoidable ER and avoidable admit rates. However, severe OCD patients have a higher readmit rate and count of PCP visits (2.5 PCP visits per member).

Utilization and Prevalence

	Mild	Moderate	Severe
Count of Members	12,056	26,954	4,177
Risk Score	3.20	3.13	5.07
Cost per Member Annual Spend*	2 \$10,030	\$11,087	\$19,015
Psych Cost per Member Annual Spend*	\$2,497	\$4,279	\$12,976
ER Visits per Member	0.3	0.4	0.8
Avoidable ER Rate	1.1%	1.1%	0.8%
Admits per Member	0.1	0.1	0.3
Avoidable Admit Rate	5.1%	4.9%	2.1%
Readmit Rate	7.9%	9.6%	14.8%
PCP Visits per Member	2.2	2.2	2.5

*Per member annual spend is risk-adjusted



OCD Chronic Disease Management

Severe OCD patients have higher per member annual spend for psychiatry specific conditions, however their medical per member annual spend is similar to other OCD patients.

1. Severe OCD patients have significantly higher per member annual spend for **depression** (\$13.3K v. \$3.2K/\$4.2K) and **eating disorders** (\$85.3K v. \$3.2K/\$5.0K).

2. Mild OCD patients have higher per member annual spend for medical specific care. Specifically, diabetes and asthma have higher spend compared to other OCD patients.

Chronic Disease Management

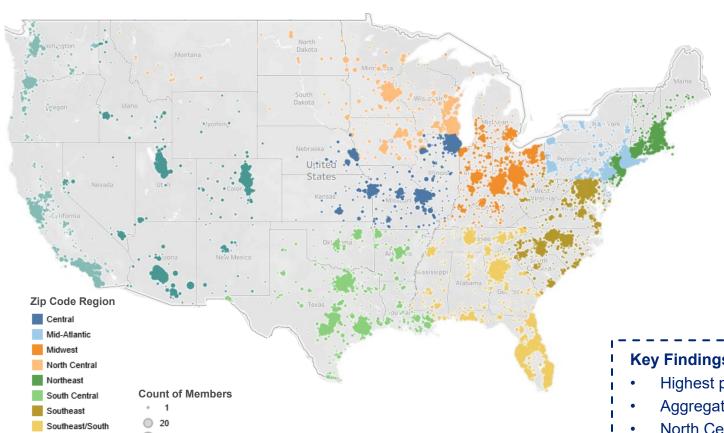
Comorbid Conditions	Mild	Moderate	Severe
Mood disorder, depressed Per member annual spend*	\$3,245	\$4,241	1 \$13,339
% of cohort	22.1%	50.1%	65.9%
Eating Disorder Per member annual spend*	\$3,248	\$5,045	\$85,335
% of cohort	1.8%	3.4%	10.5%
Anxiety disorder or phobias Per member annual spend*	\$1,522	\$2,543	\$2,276
% of cohort	29.0%	38.3%	12.8%
Autism Per member annual spend*	\$4,241	\$3,949	\$4,411
% of cohort	1.8%	5.3%	4.0%
Pregnancy, with delivery Per member annual spend*	\$10,430	\$10,031	\$12,513
% of cohort	2.1%	2.0%	1.6%
Diabetes Per member annual spend*	\$4,970	\$4,540	\$4,411
% of cohort	3.3%	3.0%	4.7%
Asthma Per member annual spend*	\$1,430	\$1,260	\$1,374
% of cohort	7.7%	8.2%	10.1%
Hypertension Per member annual spend*	\$447	\$445	\$498
% of cohort	9.4%	7.8%	10.5%

*Per claimant annual spend is risk-adjusted



Assessed national patterns associated with OCD patients by analyzing cost and utilization

Nationwide OCD Prevalence



Zip Code Region*	OCD Prevalence	Cost per Member	Risk Score	Allowed Amount
Central	0.48%	\$24.8K	3.33	\$78.0M
Mid-Atlantic	0.66%	\$25.6K	2.95	\$79.2M
Midwest	0.51%	\$26.4K	3.70	\$95.9M
North Central	0.51%	\$26.2K	4.09	\$88.5M
Northeast	0.17%	\$23.3K	3.12	\$66.8M
South Central	0.30%	\$24.9K	4.33	\$99.2M
Southeast	0.46%	\$22.2K	3.28	\$77.1M
Southeast/South	0.39%	\$22.7K	3.45	\$112.6M
Southwest/Mountain	0.44%	\$22.4K	3.90	\$76.7M
West/Pacific	0.45%	\$22.6K	3.12	\$74.0M
Grand Total	0.48%	\$24.1K	3.54	\$848.2M

*Zip code region defined by first number in a member's zip code

Key Findings:

- Highest prevalence of OCD members in the Mid-Atlantic region (0.66%)
- Aggregate cost per member is consistent across regions
- North Central and South Central regions have higher risk scores compared to the rest of the country

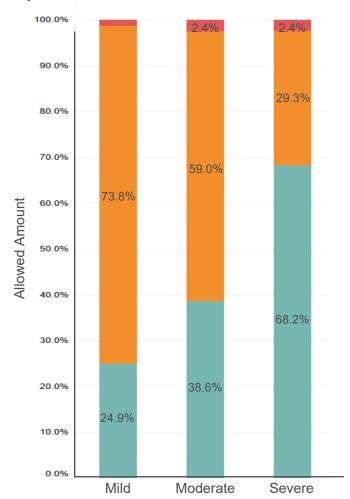


West/Pacific

Source: OA benchmarking data Timeframe: between 01/01/22-12/31/23

Benchmarking analysis indicates cost drivers shift by OCD severity level

Proportion of Cost Drivers Relative to Allowed Amount



Major Practice Category Group					
Chemical DependencyMedicalPsychiatry					

Severity Level	Member Count	Total Allowed Amount
Mild	12,056	\$232M
Moderate	26,954	\$561M
Severe	4,177	\$241M



Members with **mild OCD** are primarily driven by **medical costs**. In **severe OCD** cases, **psychiatry costs** dominate, highlighting intensive behavioral health needs and an opportunity for specialized, high-touch strategies.

Consider **post admission referral** to reduce readmission rates and improve FUH (Follow-Up After Hospitalization for Mental Illness) quality indicator.

The moderate severity group represents the largest share of members, making it the greatest opportunity for targeted interventions that could improve outcomes and reduce overall costs.



Site of care patterns reveal opportunities for proactive intervention

Mild OCD members primarily receive psychiatric care in office settings, while severe OCD members have higher inpatient hospitalization—driving higher costs and signaling missed opportunities for early, evidence-based intervention.





These findings indicate an opportunity for NOCD to activate rapid access pathways for moderateto-severe members to avoid IP hospitalization



There is an industry movement to implement psych urgent cares and 24-hour stabilization environments^{1,2}



A team-based approach and coordination **b**[×]**×** with other providers may encourage a shift towards ambulatory care



Source: OA benchmarking data Timeframe: between 01/01/22-12/31/23 1 Mental Health Urgent Care: Bridging the Gap in Crisis Care -Journal of Urgent Care Medicine

Propensity Score Matching (PSM) Analysis



NOCD intervention results in a total savings of \$3,430 per member per year



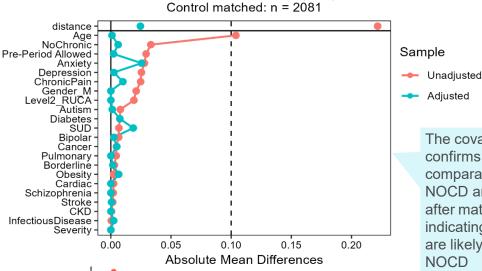
The total difference-in-difference PMPY indicates that average allowed PMPY from the pre-period to the post-period increased by \$3,430 more within the control population compared with the NOCD population

NOCD and Optum co-developed study methodology:

- Utilized 6-month pre period and 12-month post period
- Approximate match on chronic indicators and "no chronic" condition
- Caliper match on age (+/- 3 years)
- Caliper match on pre-period allowed +/- \$2500
- Exact match on urban/rural indicator
- Removed members not continuously enrolled or with missing data
- Allowed up to 5 matches in the control population per NOCD patient

Covariate Balance

NOCD matched: n = 428 (98%) Control matched: n = 2081



The covariate balance confirms improved comparability between NOCD and control groups after matching (blue line), indicating observed savings are likely attributable to NOCD

Average Allowed Cost PMPY

6 months pre vs. 12 months post

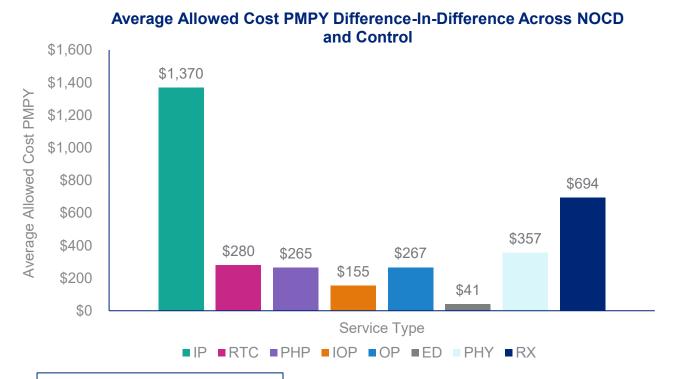
Cohort	Member Count	"Pre" Period	"Post" Period	Difference
NOCD (Study)	419	\$10,121	\$11,046	\$925
Matched Non- NOCD (Control)	2,017	\$8,326	\$12,682	\$4,356
	\$3,430			

Source: OA Propensity Matching Cohort Summary Exclusions: Members under age 5

Experience period: 1/1/2021 - 12/31/2024 Index event period: 1/1/2022 - 12/31/2023

HCC utilized for risk adjustment

The highest buckets of total savings from NOCD are inpatient and pharmacy



Key:

- IP: Inpatient
- RTC: Residential treatment center
- PHP: Partial hospitalization
- IOP: Intensive outpatient
- OP: Outpatient
- ED: Emergency department
- PHY: Physician
- RX: Pharmacy

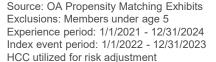


NOCD's intervention improves patient outcomes and reduces reliance on high-cost interventions. PSM demonstrates that NOCD patients have **lower IP and Rx spend** post service compared to other OCD providers.

When combined, **RTC**, **PHP**, and **IOP** equal average allowed cost of \$700, representing significant psych specific savings.

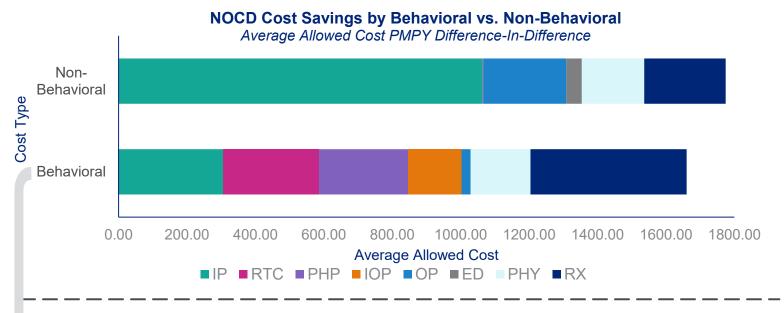
This information can be used to help **target payers** who have outsized exposure in these populations.

Consider embedding NOCD as **step therapy** into prior auth approval for these services.





Significant inpatient and pharmacy savings seen for behavioral in members scored with severe OCD



Breakdown of Behavioral Savings by Severity Level

Average Allowed Cost PMPY Difference-In-Difference

	Severity	% of Members	IP	RTC	PHP	IOP	ОР	ER	PHY	RX
oral	Mild	30%	\$13	\$51	\$17	\$65	\$0	-\$49	-\$65	\$424
Behavioral	Moderate	60%	\$31	\$319	\$188	\$196	\$4	-\$12	\$286	\$274
ă	Severe	10%	\$3,236	\$553	\$2,185	-\$416	\$24	\$94	\$852	\$1,009
	Aggregate	100%	\$306	\$280	\$262	\$155	\$27	-\$4	\$175	\$457



The areas of greatest cost savings for nonbehavioral is inpatient and behavioral is pharmacy.

NOCD's intervention drives cost savings across all severity levels – exponential impact at the higher severity. This supports payer investment in early identification and tiered engagement.

Consider behavioral **pharmacy management** as a major strategy for cost containment across all severity levels.

Source: OA Propensity Matching Exhibits Exclusions: Members under age 5 Experience period: 1/1/2021 - 12/31/2024 Index event period: 1/1/2022 - 12/31/2023 HCC utilized for risk adjustment



Propensity score matching highlighted an opportunity for NOCD to expand into the pediatrics population









NOCD has an opportunity to partner with payers to **expand pediatric care**. Early intervention prevents costly escalations.

Consider developing a new channel strategy such as **direct to provider** or **direct to school**.

Work with **School-Based Health Centers** (SBHCs) to develop an OCD screening and identification process to refer students to NOCD telehealth services.¹

¹Gratale, D., (2023) Fostering School-Based Behavioral Health Services, Nemours Children's Health



Source: OA Propensity Matching Exhibits Exclusions: Members under age 5 Experience period: 1/1/2021 - 12/31/2024 Index event period: 1/1/2022 - 12/31/2023 HCC utilized for risk adjustment

Conclusions and Next Steps



Study results support positioning of NOCD as a critical lever for payers to manage affordability of members with OCD and adjacent conditions

Benchmarking Study found key cost drivers and national prevalence patterns

- > Severe OCD patients have the highest annual spend, largely psychiatry-related, and show elevated readmission rates, PCP visits, and risk scores
- OCD prevalence is highest in the Mid-Atlantic, with higher risk scores in the North Central and South Central regions
- Mild OCD care is primarily office-based, while severe OCD care has higher inpatient settings

Propensity Score Matching found NOCD intervention results in a total savings of **\$3,430** per member per year

- NOCD cost savings are most significant in inpatient care and pharmacy, with exponential impact for members with severe OCD
- NOCD sees half as many members ages 5 18 compared to other OCD providers

Next Steps for NOCD:



Obtain Improved Rates

Position NOCD as a cost-saving alternative to high-cost inpatient and intensive programs (RTC, PHP, IOP)



Reach Inclusion in Preferred Networks & Enhanced Payer-Driven Steerage

Implement post admission referral to reduce readmission rates and improve FUH quality indicator

Embed NOCD as step therapy in prior authorization workflows for intensive psychiatric programs and pharmaceuticals



Enhance / Activate Alternate Channels for Growth

Partner with PCPs with capitated risk in a collaborative care model

Partner with psych urgent cares for referrals to prevent inpatient hospitalizations

Launch direct-to-school strategies such as partnerships with school-based health centers for screening and referral to expand pediatric access



Critical Steps in Driving Returns



Benchmarking analysis

- Leverage Optum's unparalleled data repository and Symmetry suite to develop dataset which will help inform key insights around potential opportunity size and intervention population
- Calculate benchmark utilization statistics to be used in baseline discussions and set KPIs



Prospective sales model

- ✓ Develop economic model containing actuarial best estimates of potential financial value, backed with combination of Optum and your organization's data
 - Create sales collateral to support financial negotiations with potential partners and payers



Retrospective program ROI evaluation

- ✓ Conduct study to determine program ROI by comparing pre- and post-intervention costs between your organization's engaged population and control population
- ✓ Identify drivers of savings and establish validity to results via statistical methods



Risk stratification and accelerating go to market strategy

- Assist in development of market strategy to answer question of: who is ideal intervention target, and how do we get in front of them?
- Develop predictive risk stratification models to achieve operation outreach efficiency and optimal member experience



Contracting support

- Provide expert actuarial support on VBC / riskbased deals with payers
- Conduct risk analyses using statistical methods (value-at-risk calculations, sensitivity testing, Monte Carlo simulations, bootstrapping) on contract terms and targets



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Appendix



Optum and NOCD aligned on study methodology

Benchmarking Analysis

Goal

Assess national patterns associated with OCD patients by analyzing cost and utilization across different severity levels and comorbidities.

Approach

Enriching national data with Symmetry groups claims into episodes of care resulting in an analysis that looks at the total care associated with an OCD patient.

Methodology

- Identify patients with an OCD diagnosis for the most current 3-year period
- 2. Pull all medical and pharmacy claims for members identified in step 1 for that same 3-year period
- 3. Run data through Symmetry and benchmarking algorithm
- 4. Stratify population by Severity Level (Mild/Moderate/Severe)
- 5. Build benchmarking dashboard to analyze key metrics...
 - 1. Assess prevalence and severity of OCD diagnoses, leveraging Symmetry ETGs
 - 2. Assess care and treatment patterns within different OCD diagnoses

Data Source

Paid claims (medical and pharmacy) and enrollment for commercial benefit plans from a national database of payer data.

Matching Analysis

Goal

Demonstrate the value of services NOCD provides by comparing utilization and costs of OCD patients who utilized services provided by NOCD compared to similar patients who did not see a NOCD provider.

Approach

In the absence of a randomized controlled study, the next best alternative is Propensity Score Matching (PSM) a study design that is frequently used in program evaluation.

Methodology

- 1. Defined episodes of care relative to any claims associated with an OCD diagnosis with 6-month pre-period and 12-month post-period
- 2. Stratified population by severity level using clinical and utilization criteria provided by NOCD
- 3. Built logistic models by severity level to develop propensity scores of study members with treatment by NOCD vs non-NOCD
 - 1. Additional independent variables include:
 - 1. Metropolitan indicator
 - 2. Specified BH and medical comorbidities
- 4. Allowed up to 5 matches in the control population per NOCD patient. Of 428 NOCD patients across all severity levels, 98% were matched to at least one patient in the control population.

Data Source

Paid claims (medical and pharmacy) and enrollment for commercial benefit plans from a national database of payer data.



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Demographics

Benchmarking Analysis Assessment of nationwide trends associated with OCD members

	Count of	Members	% of Total Count of Members			
Severity Level	2022	2023	2022	2023		
Mild	10,691	8,831	29.6%	29.7%		
Moderate	22,371	18,363	62.0%	61.7%		
Severe	3,046	2,572	8.4%	8.6%		
Total	36,108	29,766	100.0%	100.0%		

	Mild		Mode	erate	Severe		
Year	Female	Male	Female	Male	Female	Male	
2022	59.2%	40.8%	63.6%	36.4%	68.7%	31.3%	
2023	59.0%	41.0%	64.1%	35.9%	68.6%	31.4%	

Study period: 2022-2023

Matching Analysis Comparing NOCD and other OCD providers

Cohort	Members	Avg Age	% Female	% Metropolitan
NOCD - Mild	153	29.0	56.9%	96.7%
Control – Mild	2,982	28.8	55.9%	93.2%
NOCD - Moderate	299	29.8	61.9%	92.3%
Control – Moderate	7,322	28.3	64.0%	92.6%
NOCD – Severe	58	28.3	56.9%	94.8%
Control – Severe	1,734	28.2	66.4%	91.0%
NOCD	510	29.4	59.8%	93.9%
Control	12,038	28.4	62.3%	92.5%

Study period: 2021-2024

Note: PSM demographics include entire population prior to match



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Propensity Score Matching Analysis follow up regarding outliers

Results were examined both including and excluding outliers with >\$100K in annual total allowed cost in either the pre or post period

PMPY Difference-In-Difference Allowed Amount Cost Across NOCD and Control

_	NOCD Members	Control Members	Total	IP	RTC	PHP	IOP	ОР	ED	PHY	RX
All-In	419	2,017	\$3,430	\$1,370	\$280	\$265	\$155	\$267	\$41	\$357	\$694
Outliers Excluded	415	1,999	\$1,762	\$725	-\$27	\$290	\$121	-\$228	\$210	\$130	\$540

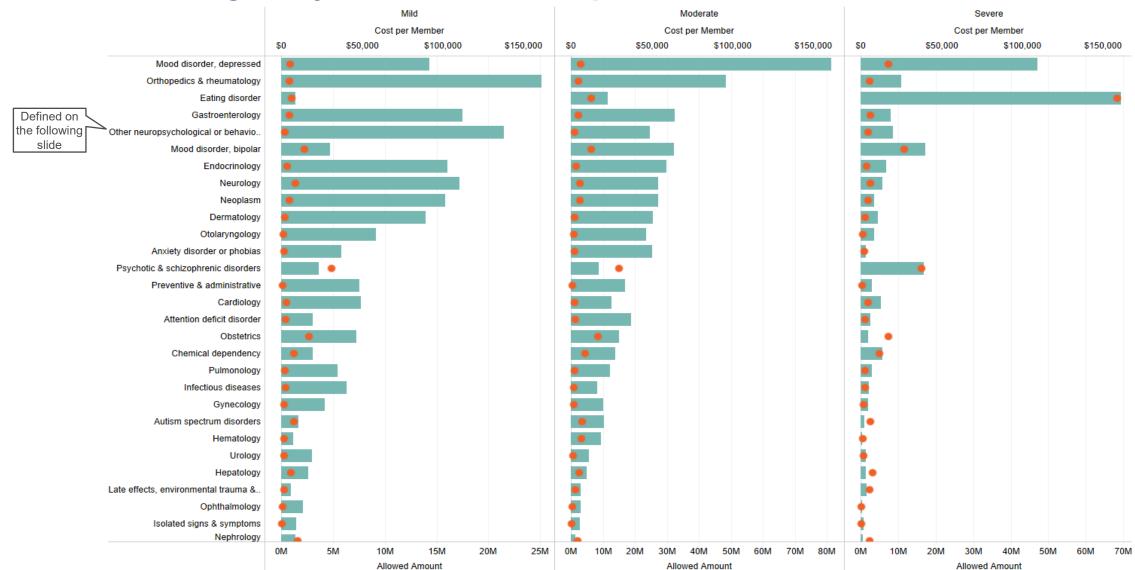
Overall, results without excluding outliers are more favorable to NOCD indicating NOCD may have a favorable impact on outliers

- Of 40 outliers excluded, 4 were NOCD. Of the NOCD outliers excluded, 3 were excluded for non-behavioral related costs
- The small number of NOCD outliers provides useful information but is not enough with which to reliably develop conclusions



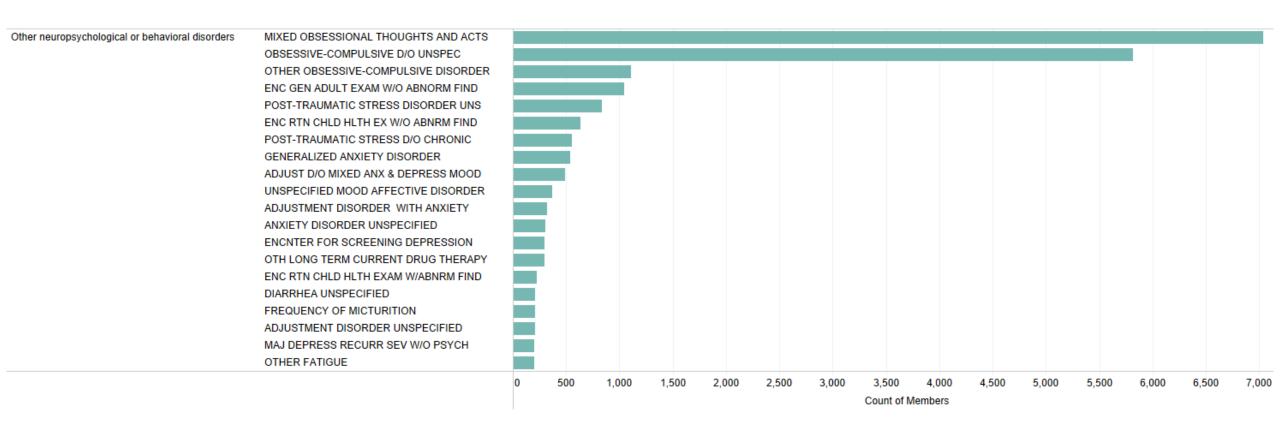
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Benchmarking Analysis base ETG cost per member





Benchmarking Analysis follow up to define "Other neuropsychological or behavioral disorders"





Source: OA benchmarking data
Timeframe: between 01/01/22-12/31/23