Data Report

Characteristics of the Pediatric Population Across Clinical Research Networks Participating in PCORnet®

Rationale for Network Query of PCORnet Data Resources:

This Network query of PCORnet data resources identifies characteristics of the pediatric population receiving care at any health care setting across PCORnet. It was requested by the Patient-Centered Outcomes Research Institute® (PCORI®) in collaboration with the PCORnet® Network Partners. Network queries are developed, distributed, and processed through the Coordinating Center for PCORnet®.

This pediatric query aligns with PCORI's goal of demonstrating ways in which PCORnet can be used to address national-scale patient-centered comparative clinical effectiveness research (CER) questions focused on PCORI research priority areas, including promoting healthy children and youth. Using PCORnet to identify opportunities for national-scale research on key topics is explicitly described in PCORI's Board-approved Strategies to Leverage PCORnet® to Advance PCORI's National Priorities for Health and Evaluate PCORnet Performance. Additionally, the results of this query may support pediatric researchers who are interested in using PCORnet to inform development of proposals in response to PCORI funding opportunities such as PCORI's Broad Pragmatic Studies Category 3: PCORnet® Study option or periodic topical funding focused on PCORI's research priority areas. PCORnet supports the capability for researchers to leverage real-world data (RWD) on health status and delivery of health care to create real-world evidence (RWE) regarding the potential benefits or risks of health interventions for children and youth across the care continuum.

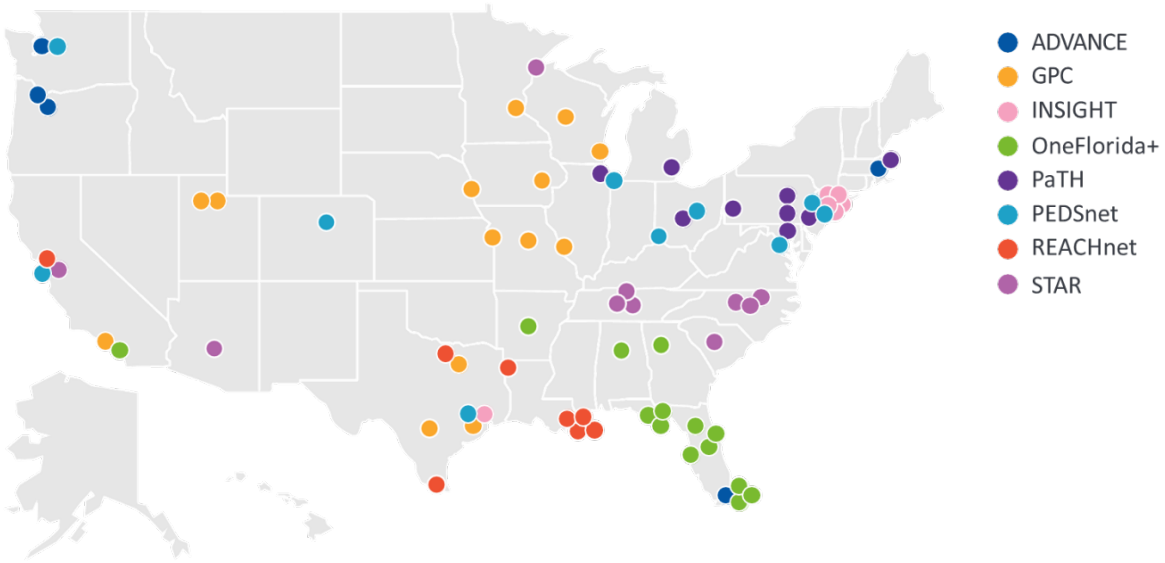
Children and youth between the ages of birth to 24 years old comprise more than 30 percent of the population in the United States.[1] Assessing the infrastructure resources available to inform health promotion for children and youth entails exploration of several domains. These include interventions across the care continuum including supporting optimal growth and development, screening and prevention, and treatment of acute and chronic illnesses and the transition from pediatric to adult care settings. As demonstrated by the results of this PCORI-initiated query report, PCORnet has the capacity to support national scale research in all three domains needed to enable patient-centered CER efforts and generate real-world evidence to promote healthy children and youth.

Background on PCORnet:

[1] Hoyert DL. Maternal mortality rates in the United States, 2021. NCHS Health E-Stats. 2023. DOI: https://dx.doi.org/10.15620/cdc:124678.

PCORnet is a large, distributed "network of networks" (Figure 1) funded by PCORI to improve the nation's capacity to efficiently conduct definitive health research, particularly patient-centered comparative clinical effectiveness research (CER).

Figure 1. Clinical Research Networks (CRNs) (right) and their participating network sites in PCORnet, August 2024. Each CRN site comprises numerous clinical sites of care. Source: Developed by the Duke Clinical Research Institute (DCRI) with funding through a PCORI Award (RI-DCRI-01-PS3).



At the time of this query report, PCORnet® Clinical Research Networks (CRNs) included 78 data contributing CRN sites (two of which are claims data only sites which did not contribute to this report), in addition to patient partners and a Coordinating Center. Collectively, CRN data-contributing partners consist of more than thirteen thousand clinical sites connected to more than 47 million unique patients receiving care across the U.S. each year, including care delivered at large academic health systems, hospitals, federally qualified health centers, and community clinics.

A unique feature of PCORnet is that all data contributing partners store a version of their clinical data in the same standardized data model, the PCORnet® Common Data Model (CDM). In this distributed network, data holders (e.g., health systems, clinics) maintain physical control, use, and manage the transfer of their data to the CRNs, the Coordinating Center for PCORnet® and data requestors.

Query Description:

This query of PCORnet data resources describes the sociodemographic and clinical characteristics of the population of pediatric patients ages birth to 20 years old with at least one face-to-face health care encounter at a PCORnet partner site between January 1, 2023 – December 31, 2023. The query results will enhance public awareness of the population and cohort prevalence of various conditions among pediatric patients across PCORnet and is

designed to provide investigators and the public with information on ways PCORnet can be used to conduct patient-centered CER to improve the health of children and youth.

In addition, the query aims to demonstrate the utility of PCORnet by:

- Describing the extent of co-occurring conditions, procedures and medication prescribing for the pediatric population served by PCORnet participants.
- Describing the breadth and volume of pediatric patients and sites providing pediatric clinical services that participate in PCORnet.

Query Methodology, Criteria and Engagement:

This query of PCORnet data resources includes a cohort of patients likely to seek pediatric clinical services at a partner site participating in PCORnet during 2023 (January 1, 2023, to December 31, 2023). The query identifies individuals aged 0 to 20 years old who had at least one face-to-face health care encounter across any health care setting at a PCORnet partner site. While the query describes the general pediatric population, the query also includes information on 15 cohorts identified below with conditions considered highly prevalent or a high burden for the pediatric population. The Coordinating Center for PCORnet® programmed and distributed this descriptive query to all data contributing partners.

As with all PCORI topics, the development process included a review of the relevant literature and engagement with stakeholders such as subject matter experts and patient partners. Patient partners and subject matter experts were engaged early in the query development to help identify the range of conditions and covariates to describe the cohort.

The cohort criteria for the query are provided below (all code sets are included in Appendix A):

- Age: 0-20 years old
- At least 1 face-to-face encounter at a PCORnet site between January 1, 2023 – December 31, 2023
- The following characteristics were also examined:
    - Demographics:
        - Race
        - Ethnicity
        - Area Deprivation Index
        - Proximity in miles to the nearest health clinic
        - Proximity in miles to the nearest Pediatric ICU
        - Gini Index of Income Inequality (based on 5-digit zip code)[2]
    - Condition Cohorts (≥ 2 diagnosis codes (ICD-10) at least 30 days apart within the last 8 years):
        - Attention Deficit Hyperactivity Disorder (ADHD)
        - Asthma
        - Autism Spectrum Disorder
        - Cystic Fibrosis
        - Chronic Kidney Disease
        - Congenital Heart Disease

        - Down Syndrome
        - Muscular Dystrophy
        - Epilepsy/Seizure disorder
        - Hypertension
        - Inflammatory Bowel Disease (Crohn's, ulcerative colitis)
        - Sickle Cell Disease
        - Type 1 Diabetes
        - Type 2 Diabetes
        - Any Pediatric Cancers
    - Procedures in 2023 (CPT and HCPCS codes)
        - Kidney transplant
        - Dialysis catheter placement or AV fistula or AV graft placement
        - Tracheostomy
        - G-tube
        - Heart transplant
        - Blood transplant
        - Bone marrow transplant
        - Blood transfusion
        - Lung transplant
        - Liver transplant
        - Ventricular Assist Device
        - Central venous catheter placement
        - Bariatric surgery
        - Hernia surgery
        - Surgery for large bone fracture
        - Tonsillectomy
        - Appendectomy
    - Proxies for ICU/Critical Care Stay in 2023
    - Prevalent or Incident diagnoses in 2023 (ICD-10 codes)
        - Sepsis
        - Bronchiolitis or RSV
        - Pneumonia
        - Failure to thrive
        - Anxiety
        - Depression
        - Covid-19
        - Fractures (large bone)
        - Abuse or Neglect
        - Obesity
    - Medications prescribed in 2023 (RxNorm codes)
        - Anti-diabetic medications
        - Antidepressants
        - Antibiotics

- Asthma Related Inhalers
- Antihypertensives
    - Angiotensin-converting enzyme (ACE) Inhibitor
    - Beta Blockers
    - Angiotensin Receptor Blockers (ARBs)
    - Calcium Channel Blockers
    - Diuretics
- ADHD medications
- Antivirals
- Anti-obesity medications (GLP-1 agonists, Phentermine, Orlistat, etc.)
- Opioids[2]

Results:

71 data contributing partners participating in PCORnet responded to the query request (93%).

Table 1 presents details of the counts, demographic characteristics, and care setting utilization of the pediatric population across PCORnet in addition to populations of specific pediatric cohort conditions.

Pediatric patients represent over 27% (n = 12,902,963) of the total general population of patients served by PCORnet partners with at least one face-to-face encounter in 2023. Of the 70 data-contributing partners that responded to this query, 33 maintained data for health systems that had between 10,000 – 99,999 annual pediatric patients with encounters in 2023. Another 33 maintained data for health systems that had between 100,000 – 873,000 annual pediatric patients with encounters in 2023.

Additionally, 20% of the pediatric population included in this query had one or more visits to emergency departments at institutions participating in PCORnet in 2023. Approximately 37% of the pediatric population had one or more wellness visits at health systems participating in PCORnet.

The average age of pediatric patients in this cohort that had encounters in 2023 was 9.5 years old (SD ± 6.1 years), and the majority of patients were white (55%) and non-Hispanic (62%). Table 1 also includes socioeconomic status variables for patients defined by 5-digit zip code and the Area Deprivation Index (ADI), proximity in miles to the nearest health clinic, proximity in miles to the nearest Pediatric ICU and Gini Index of Income Inequality. Approximately 17% of pediatric patients were in the lowest socioeconomic status group of ADI scores based on their zip code in 2023. Approximately 9% of pediatric patients live more than 10 miles away from the nearest health clinic, while nearly 45% of patients live 10+ miles away from the nearest Pediatric ICU.

Table 2 presents characteristics and frequencies of the 15 conditions that were selected for

[2] For medications included in this query, medications administered in the healthcare setting were counted only for opioids, in addition to those prescribed.

inclusion by stakeholders and subject matter experts. Patients were included in the condition cohorts if they had at least 2 diagnostic billing codes for a given condition between January 1, 2016 – December 31, 2023. Of the selected chronic conditions, those with the highest frequencies include asthma (n = 776,248), ADHD (n= 571,690), autism (n = 274,191), epilepsy/seizure disorders (n = 233,546), and congenital heart disease (n = 82,720).

Table 3 and 4 present characteristics of the prevalent or incident conditions, procedures, and medications prescribed for the pediatric population in 2023. These conditions, procedures, and medications were selected through an iterative process with stakeholders and subject matter experts. During 2023, the most frequent prevalent or incident conditions included in this query were anxiety (n = 760,795), depression (n = 219,933), bronchiolitis/RSV (n = 203,139) and large bone fractures (n = 157,516). The most frequent medications prescribed during 2023 and included in this query were antibiotics (n= 2,643,075), anti-obesity medications (n = 873,969), opioids (prescribed and administered) (n = 565,536), asthma-related inhalers (n = 361,362), anti-depressants (n = 337,616), and ADHD medications (n = 310,320). During 2023, approximately 12,846 patients in this pediatric population had a recorded diagnosis code for obesity/overweight.

The most frequent procedures included in this query were tonsillectomy (n = 63,051), surgery for large bone fractures (n = 53,473), blood transfusion (n = 37,369), placement of gastrostomy tubes (n = 25,527) and central venous catheters (n = 20,471) (Table 4). Additionally, this query explored pediatric admissions to intensive care and critical care units (ICU/CCU) during 2023 based on the inclusion of proxies related to these admission events, which are presented in Table 4. Over 185,000 patients in this pediatric cohort potentially had an encounter in the ICU/CCU at health systems participating in PCORnet, with more than 52,000 patients requiring the use of ventilators during 2023.

Limitations:

Data and analyses presented are descriptive and derived from diagnosis and procedure codes collected during healthcare encounters in the EHR. Rows and percentages may not round due to missing values and/or if counts are less than 10. If counts are between 0-10, then they are reported as "-" to protect patient privacy and risk of identification from aggregate values as outlined in the Data Privacy Statement for PCORnet®.

No inferential analyses were conducted to compare populations or test hypotheses, as these are descriptive data only. Limitations with any EHR data analysis are applicable to this data, such as the possibility for misclassification due to imperfect algorithms and lack of consistent definition of enrollment to define cohorts, in addition to limitations associated with processes to collect clinical data during healthcare encounters. Therefore, results should be interpreted with these limitations in mind.

To ensure PCORnet data resources are of high quality for research, activities in preparation for research (e.g., network query requests), and to mitigate the limitations above, all PCORnet-accessible data resources undergo rigorous quality curation and screening as part of quarterly coordinated data quality assessment. For more information on data curation activities and

strategies to improve data quality for PCORnet please contact frontdoor@pcornet.org.

Conclusion:

The results presented in this data report provide researchers and patient/caregiver partners with information about the capacity of the PCORnet infrastructure to support national scale studies in pediatrics. Researchers and patients/caregivers can use the information in this report to identify study questions and plan additional research activities leveraging PCORnet. While this exploratory query was developed with input from stakeholders and subject matter experts in pediatric research, additional work remains to continue to characterize the pediatric population served by PCORnet partners to inform national-scale research efforts using PCORnet.

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Disclaimer:

PCORnet® is intended to improve the nation's capacity to efficiently conduct patient- centered health research, particularly CER, by providing a large, highly representative network of health data, research expertise, and patient insights. PCORnet has been developed with funding from the Patient-Centered Outcomes Research Institute® (PCORI®).

Network queries that return only aggregate or limited data sets are covered by the PCORnet® Master Data Sharing Agreement (version 4.0), and site-level blanket Institutional Review Board approvals.

The statements presented in this report do not necessarily represent the views of PCORI or other organizations participating in, collaborating with, or funding PCORnet.

For questions, comments or suggestions related to this PCORnet® Front Door query or other

PCORnet queries, please contact frontdoor@pcornet.org.

Tables

Table 1. Demographic characteristics of the pediatric population and whole population across data-contributing partners participating in PCORnet in 2023.

	Pediatric		PCORnet*	
	n	**%**	**n**	**%**
Unique Patient Records	12,902,963		47,036,018	
Age				
Infants (0-11 months)	857,626	7 %	857,626	2 %
Toddlers (1-2 years)	1,428,132	11 %	1,428,132	3 %
Early Childhood (3-4 years)	1,261,737	10 %	1,261,737	3 %
Middle Childhood (5-11 years)	4,127,685	32 %	4,127,685	9 %
Early Adolescence (12-17 years)	3,633,853	28 %	3,633,853	8 %
Late Adolescence (18-20 years)	1,593,959	12 %	1,593,959	3 %
21-30			4,373,189	9 %
31-40			5,500,239	12 %
41-50			5,320,126	11 %
51-60			5,665,832	12 %
61-70			6,225,444	13 %
71-80			4,727,049	10 %
81+			2,321,147	5 %
Mean Age (SD)		9.5 (±6.1)		40.7 (±22.6)
Sex				
Female	6,382,103	49%	26,549,569	56%
Male	6,516,740	51%	20,465,498	44%
Unknown	4,120	<1%	20,951	<1%
Race				
White	7,134,991	55 %	29,060,403	62 %
Black or African American	2,110,462	16 %	7,223,976	15 %
Asian	536,887	4 %	1,796,576	4 %
Multiple race	276,246	2 %	575,660	1 %
American Indian or Alaska Native	76,494	1 %	272,325	1 %
Native Hawaiian or Other Pacific Islander	42,041	<1 %	116,106	<1 %
Other	1,090,185	8 %	2,792,624	6 %
Missing[1]	1,635,657	13 %	5,198,348	11 %
Hispanic				
Yes	2,768,979	21 %	7,014,440	15 %
No	7,955,105	62 %	32,674,210	69 %
Other	216,418	2 %	794,890	2 %
Missing[1]	1,962,461	15 %	6,552,478	14 %
Area Deprivation Index (ADI)[2]				
SES Q1	4,343,809	34 %	15,895,530	34 %
SES Q2	2,212,470	17 %	8,242,019	18 %
SES Q3	2,428,676	19 %	9,203,978	20 %
SES Q4	2,196,814	17 %	7,553,570	16 %
Missing	1,716,988	13 %	6,125,328	13 %
Proximity in Miles to the Nearest Health Clinic (FQHC, RHC)				
0 - <1 Mile	3,023,160	23 %	11,610,285	25 %
1 - <3 Miles	3,183,840	25 %	11,724,558	25 %
3 - <10 Miles	3,881,809	30 %	13,798,322	29 %
10+ Miles	1,160,428	9 %	4,103,788	9 %
Missing	1,653,726	13 %	5,799,065	12 %
Gini Index of Income Inequality				
0 - <0.2 (perfect equality)	2,330	<1 %	9,857	<1 %
0.2 - <0.4	2,352,645	18 %	7,982,981	17 %
0.4 - <0.6	8,831,939	68 %	32,972,276	70 %
0.6 - <0.8	58,851	<1 %	267,108	1 %
0.8 – 1 (perfect inequality)	-	-	35	<1 %
Missing	1,657,206	13 %	5,803,761	12 %
Proximity in Miles to the Nearest Pediatric ICU				
<5 Miles	3,361,585	26 %	13,216,520	28 %
5 - <10 Miles	2,262,852	18 %	7,606,199	16 %
10 - <25 Miles	3,485,180	27 %	11,796,156	25 %
25 - <50 Miles	1,571,963	12 %	6,133,900	13 %
50+ Miles	566,957	4 %	2,483,089	5 %
Missing	1,654,426	13 %	5,800,154	12 %
Encounter Care Setting (At Least 1 Encounter in 2023)				
Emergency Department Visit	2,600,494	20 %	8,477,841	18 %
Inpatient Visit	823,635	6 %	3,570,939	8 %
Ambulatory Visit	11,306,216	88 %	42,058,791	89 %
Telehealth Visit	1,089,397	8 %	5,902,113	13 %
Wellness Visit	4,781,330	37 %	12,703,434	27 %
Pediatric Patient Count Classification (number of data contributing sites (%))				
Small: < 10,000 pediatric patients			5 (7.04%)	
Medium: >=10,000 and <100,000 pediatric patients			33 (46.48%)	
Large: >=100,000 pediatric patients			33 (46.48%)	

* Total only includes 71 of 78 data-contributing partners in PCORnet.

[1]Missing includes those values that are missing, refuse to answer, no information, and unknown.

[2]Area Deprivation Index (ADI): Patient 5-Digit Zip Codes are mapped to socioeconomic status by normalized Area Deprivation Index (ADI) value (0-100). Lower values are associated with lower deprivation and higher values are associated with higher deprivation. A ranking of 1 indicates the highest level of socioeconomic status within the nation and an ADI with a ranking of 100 indicates the lowest level of socioeconomic status. In this table, values are grouped into quartiles using the count of zip codes. Quartile 1 (SES Q1) represents the lowest range of ADI values and Quartile 4 (SES Q4) represents the highest

range of ADI values (Q1=0-38, Q2=39-43, Q3=44-49, and Q4=50-100). For additional information regarding the ADI index, see the Neighborhood Atlas here: https://www.neighborhoodatlas.medicine.wisc.edu/. Note that the Area Deprivation Index (ADI) is designed for validity at the 9-digit zip or census block group level rather than the 5-digit zip level.

Table 2. Characteristics of selected pediatric condition cohorts for unique patients in the pediatric population for PCORnet data-contributing partners, 2023.

	Asthma	ADHD	Autism	Epilepsy or Seizure Disorder	Congenital Heart Disease	Chronic Kidney Disease	Pediatric Cancer	Type 1 Diabetes	Hypertension	Down Syndrome	Type 2 Diabetes	Inflammatory Bowel Disease	Sickle Cell Anemia	Cystic Fibrosis	Muscular Dystrophy
Unique Patient Records	776,248	571,690	274,191	233,546	82,720	75,119	74,179	65,800	59,415	34,322	26,362	26,051	15,654	7,773	5,949
Percent of Pediatric Population (2 decimals)	6.02 %	4.43 %	2.13 %	1.81 %	0.64 %	0.58 %	0.57 %	0.51 %	0.46 %	0.27 %	0.20 %	0.20 %	0.12 %	0.06 %	0.05 %
Age															
Infants (0-11 months)	<1%	-	-	1 %	8 %	2 %	1 %	-	1 %	4 %	-	-	3 %	3 %	<1 %
Toddlers (1-2 years)	3 %	<1 %	1 %	7 %	15 %	9 %	4 %	<1 %	3 %	12 %	<1 %	<1 %	9 %	8 %	3 %
Early Childhood (3-4 years)	7 %	<1 %	12 %	10 %	13 %	10 %	7 %	2 %	5 %	11 %	1 %	1 %	10 %	8 %	4 %
Middle Childhood (5-11 years)	41 %	34 %	47 %	38 %	34 %	35 %	32 %	24 %	23 %	36 %	9 %	13 %	34 %	34 %	35 %
Early Adolescence (12-17 years)	37 %	49 %	30 %	31 %	20 %	29 %	36 %	48 %	39 %	26 %	53 %	47 %	30 %	32 %	39 %
Late Adolescence (18-20 years)	13 %	16 %	10 %	14 %	9 %	14 %	20 %	26 %	29 %	11 %	37 %	39 %	15 %	16 %	19 %
Mean Age (SD)	11.3(5)	13.2(4)	10.2(5)	10.7(5.6)	7.8(6)	10.2(6)	12.1(5.4)	14.1(4)	13.4(5.2)	9.2(6)	15.9(3.2)	15.7(3.7)	10.5(6)	10.7(5.9)	12.50(4.9)
Sex															
Female	42 %	33 %	25 %	46 %	45 %	43 %	48 %	48 %	41 %	47 %	55 %	45%	49%	48 %	19 %
Male	58%	67%	75%	54%	55%	57%	52%	52%	59%	53%	45%	55%	51%	52%	81%
Race															
White	49 %	67 %	57 %	59 %	58 %	60 %	66 %	68 %	53 %	61 %	45 %	69 %	4 %	81 %	67 %
Black or African American	29 %	17 %	17 %	18 %	15 %	14 %	10 %	14 %	23 %	12 %	30 %	11 %	85 %	5 %	7 %
Asian	3 %	2 %	5 %	4 %	4 %	5 %	4 %	2 %	3 %	4 %	3 %	5 %	0 %	1 %	5 %
Multiple race	3 %	3 %	3 %	3 %	3 %	3 %	2 %	2 %	3 %	2 %	2 %	2 %	2 %	2 %	2 %
American Indian or Alaska Native	1 %	1 %	1 %	1 %	1 %	1 %	1 %	<1 %	1 %	1 %	1 %	<1 %	<1 %	<1 %	1 %
Native Hawaiian or Other Pacific Islander	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	<1%	<1 %	<1 %	<1 %	<1 %	<1 %	<1 %	-	<1 %
Other	8 %	5 %	9 %	9 %	10 %	10 %	9 %	7 %	10 %	11 %	12 %	6 %	5 %	6 %	10 %
Missing[1]	8 %	6 %	9 %	7 %	9 %	7 %	7 %	6 %	7 %	8 %	7 %	7 %	4 %	5 %	7 %
Hispanic															
Yes	23 %	14 %	22 %	20 %	21 %	21 %	20 %	15 %	24 %	26 %	28 %	11 %	8 %	13 %	20 %
No	69 %	76 %	66 %	68 %	62 %	66 %	67 %	72 %	65 %	61 %	62 %	75 %	78 %	75 %	67 %
Other	1 %	1 %	1 %	1 %	1 %	1 %	1 %	1 %	1 %	1 %	1 %	1 %	2 %	2 %	1 %
Missing[1]	8 %	10 %	11 %	10 %	16 %	12 %	11 %	12 %	10 %	12 %	10 %	12 %	12 %	10 %	12 %
Area Deprivation Index (ADI)[2]															
SES Q1	31 %	35 %	33 %	32 %	34 %	35 %	38 %	37 %	27 %	34 %	23 %	49 %	19 %	35 %	34 %
SES Q2	17 %	19 %	18 %	19 %	19 %	19 %	18 %	19 %	18 %	18 %	18 %	17 %	16 %	21 %	18 %
SES Q3	19 %	20 %	20 %	22 %	21 %	20 %	19 %	20 %	23 %	20 %	23 %	16 %	21 %	22 %	21 %
SES Q4	22 %	15 %	18 %	18 %	18 %	17 %	15 %	14 %	23 %	17 %	27 %	9 %	30 %	12 %	14 %
Missing	11 %	11 %	11 %	9 %	8 %	9 %	10 %	10 %	9 %	11 %	9 %	9 %	14 %	10 %	13 %
Encounter Care Setting in 2023															
Emergency Department Visit	23 %	15 %	17 %	24 %	20 %	21 %	18 %	15 %	23 %	17 %	23 %	16 %	38 %	14 %	13 %
Inpatient Visit	6 %	4 %	6 %	15 %	22 %	16 %	17 %	10 %	19 %	14 %	12 %	15 %	28 %	14 %	11 %
Ambulatory Visit	94 %	95 %	95 %	94 %	96 %	98 %	98 %	97 %	98 %	98 %	96 %	98 %	96 %	99 %	99 %
Telehealth Visit	14 %	28 %	29 %	29 %	19 %	22 %	21 %	23 %	24 %	19 %	23 %	33 %	11 %	23 %	23 %
Wellness Visit	51 %	47 %	39 %	26 %	26 %	24 %	18 %	15 %	27 %	27 %	21 %	15 %	26 %	17 %	17 %

[1]Missing includes those values that are missing, refuse to answer, no information and unknown.

[2]Area Deprivation Index (ADI): Patient 5-Digit Zip Codes are mapped to socioeconomic status by normalized Area Deprivation Index (ADI) value (0-100). Lower values are associated with lower deprivation and higher values are associated with higher deprivation. A ranking of 1 indicates the highest level of socioeconomic status within the nation and an ADI with a ranking of 100 indicates the lowest level of socioeconomic status. In this table, values are grouped into quartiles using the count of zip codes. Quartile 1 (SES Q1) represents the lowest range of ADI values and Quartile 4 (SES Q4) represents the highest range of ADI values (Q1=0-38, Q2=39-43, Q3=44-49, and Q4=50-100). For additional information regarding the ADI index, see the Neighborhood Atlas here: https://www.neighborhoodatlas.medicine.wisc.edu/. Note that the Area Deprivation Index (ADI) is designed for validity at the 9-digit zip or census block group level rather than the 5-digit zip level.

** Only percentages are included in this table due to space limitations.

Table 3. Frequency of prevalent or incident conditions and medication prescribing for unique patients in the pediatric population and selected pediatric condition cohorts for PCORnet data-contributing partners, 2023.*

	Pediatric Population	Asthma	ADHD	Autism	Epilepsy or Seizure Disorder	Congenital Heart Disease	Chronic Kidney Disease	Pediatric Cancer	Type 1 Diabetes	Hypertension	Down Syndrome	Type 2 Diabetes	Inflammatory Bowel Disease	Sickle Cell Disease	Cystic Fibrosis	Muscular Dystrophy
Unique Patient Records	12,902,963	776,248	571,690	274,191	233,546	82,720	75,119	74,179	65,800	59,415	34,322	26,362	26,051	15,654	7,773	5,949
Prevalent or Incident Conditions in 2023																
Anxiety	760,795	79,213	169,569	50,815	24,879	4,755	5,950	9,070	5,668	8,752	1,347	3,734	2,998	1,153	845	555
Depression	219,933	22,953	48,921	9,564	4,698	677	1,283	1,556	1,876	2,459	72	1,676	672	250	206	77
Fractures (Large Bone)	206,735	9,985	6,327	2,514	2,676	775	807	845	504	686	139	176	187	90	64	163
Bronchiolitis/Respiratory Syncytial Virus	203,139	13,463	609	1,463	3,565	3,380	1,292	838	85	1,053	1,373	70	42	405	152	62
COVID-19	157,516	15,672	6,971	3,322	4,204	1,753	1,423	1,804	641	1,831	607	467	341	617	157	108
Failure to Thrive	150,181	9,548	7,154	5,814	7,841	5,185	2,962	1,279	348	1,902	1,605	134	947	298	649	248
Pneumonia	130,347	25,641	3,981	3,604	7,660	3,665	2,280	2,073	347	2,769	1,730	326	250	888	591	277
Abuse or Neglect-Related Diagnosis	52,099	4,442	7,263	2,113	2,231	305	310	220	231	412	70	263	42	56	21	26
Sepsis	17,592	2,084	557	566	2,811	1,098	1,372	1,413	185	1,533	307	227	182	224	40	69
Obesity/Overweight	873,969	122,567	71,122	34,569	16,680	4,282	6,045	5,783	6,462	16,965	3,681	10,368	1,251	678	339	642
Medications Prescribed in 2023[1]																
Antibiotic	2,643,075	225,990	114,332	55,550	53,213	26,102	22,642	22,923	8,173	18,750	9,870	5,028	6,575	7,892	3,950	1,032
Anti-Obesity Medication	12,846	1,834	1,548	685	333	84	284	230	974	1,275	86	3,165	33	14	-	25
Opioids (Prescribed or Administered)	565,536	45,533	22,957	15,677	22,671	15,118	11,562	15,908	2,345	11,145	4,762	2,039	4,966	6,190	690	622
Asthma Related Inhalers	361,362	230,773	24,726	13,615	14,641	6,846	4,093	2,616	1,035	4,843	2,573	937	834	1,826	1,598	423
Antidepressants	337,616	33,813	88,582	28,866	11,584	1,710	2,606	3,595	2,632	4,151	506	1,956	1,472	346	357	328
ADHD Medications	310,320	36,811	235,029	34,226	10,657	1,629	1,845	2,046	1,444	2,313	610	731	565	160	226	162
Antivirals	154,656	18,801	8,899	4,171	4,571	1,788	2,319	2,873	1,104	3,324	484	584	523	802	245	88
Any Hypertension Medication	128,190	11,326	9,703	4,567	8,067	14,810	13,259	5,296	1,787	23,036	1,918	2,449	544	753	119	1,743
Beta Blockers	63,014	4,641	5,775	2,489	3,166	3,988	2,453	1,495	408	4,446	185	504	274	96	32	663
Diuretics	33,203	2,721	915	718	3,173	8,420	3,732	2,279	185	3,739	1,367	260	124	286	48	116
ACE Inhibitor	25,396	2,783	2,138	1,023	1,641	5,627	6,088	947	996	10,391	666	1,365	90	248	18	1,336
Calcium Channel Blockers	24,159	2,854	1,706	784	1,983	2,135	4,901	2,108	310	10,552	200	592	129	275	46	28
Angiotensin II Receptor Blockers	7,988	999	747	315	421	863	1,781	287	249	3,149	29	416	38	43	<11	245
Antidiabetic Medications	90,472	7,970	8,916	4,513	2,686	1,175	2,470	1,370	48,817	4,728	492	17,850	211	69	351	218

*Only frequency of unique patients are provided in this table due to the space limitations and extent of values under 1%.

[1] Value presented is for unique patients that were prescribed medications 1 or more times in 2023.

Table 4. Frequency of procedures and intensive care and critical care unit events for pediatric population and selected pediatric condition cohorts for PCORnet data-contributing partners, 2023.*

	Pediatric Population	Asthma	ADHD	Autism	Epilepsy or Seizure Disorder	Congenital Heart Disease	Chronic Kidney Disease	Pediatric Cancer	Type 1 Diabetes	Hypertension	Down Syndrome	Type 2 Diabetes	Inflammatory Bowel Disease	Sickle Cell Anemia	Cystic Fibrosis	Muscular Dystrophy
Unique Patient Records		776,248	571,690	274,191	233,546	82,720	75,119	74,179	65,800	59,415	34,322	26,362	26,051	15,654	7,773	5,949
Any Proxy for ICU/Critical Care stay	185,163	17,826	6,860	5,673	12,887	9,895	4,845	6,424	601	5,623	2,301	628	1,333	532	242	438
Vasoactive Pressor Medications	133,311	11,961	5,834	4,281	7,195	6,146	3,283	5,689	469	3,662	1,647	467	1,267	336	176	237
Ventilator Use	52,906	5,238	922	1,020	6,187	5,446	1,806	1,225	165	2,491	1,023	219	96	195	77	280
Extreme Prematurity (NICU)	16,053	2,236	430	751	1,594	1,074	411	120	-	568	56	-	16	34	-	-
Umbilical Catheters (NICU)	6,933	-	-	-	163	895	81	19	-	45	50	-	-	-	-	-
Extracorporeal Membrane Oxygenation)	1,818	124	66	41	243	333	81	88	12	169	46	14	-	23	-	-
Continuous Renal Replacement Therapy	1,203	104	43	32	207	212	587	126	13	532	15	26	-	-	-	-
Procedures in 2023																
Tonsillectomy	63,051	6,439	2,246	1,968	1,520	694	456	355	95	443	987	79	71	98	47	29
Surgery for Large Bone Fractures	53,473	2,552	1,786	782	1,149	232	277	310	152	224	52	73	42	26	18	50
Blood Transfusion	37,369	3,139	1,179	848	3,144	5,404	2,485	5,278	155	3,600	814	213	584	2,093	55	74
Gastrostomy Tube	25,527	3,320	983	1,778	6,205	3,201	1,981	1,079	81	1,878	984	98	147	44	163	173
Central Venous Catheters	20,471	1,680	677	519	2,281	4,053	1,793	2,088	149	2,579	589	188	275	205	401	74
Hernia Surgeries	18,513	871	338	315	354	402	297	79	15	175	119	-	25	20	11	-
Appendectomy	18,084	965	695	262	242	134	149	133	67	108	35	30	52	17	13	-
Tracheostomy	2,211	340	63	92	620	371	172	90	13	255	78	13	13	-	-	49
Bariatric Surgery	2,164	295	163	84	139	130	112	77	17	217	35	86	30	-	11	-
Dialysis Catheter/AV Fistula/AV Graft	1,958	191	93	67	288	298	585	347	20	650	37	40	13	37	-	-
Bone Marrow Transplant	1,316	107	53	29	85	28	89	776	12	406	12	23	-	73	-	-
Kidney Transplant	556	50	40	14	66	44	487	28	-	374	-	-	-	-	-	-
Liver Transplant	359	23	11	-	24	25	66	53	-	169	-	-	-	-	-	-
Heart Transplant	330	39	31	11	43	174	49	13	-	138	-	12	-	-	-	-
Ventricular Assist Device	310	35	20	12	37	125	28	-	-	105	-	14	-	-	-	-
Lung Transplant	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Only frequency of unique patients are provided in this table due to space limitations and the extent of values under 1%.