

## Disclaimer

The following report(s) provides findings from an FDA-initiated query using Sentinel. While Sentinel queries may be undertaken to assess potential medical product safety risks, they may also be initiated for various other reasons. Some examples include determining a rate or count of an identified health outcome of interest, examining medical product use, exploring the feasibility of future, more detailed analyses within Sentinel, and seeking to better understand Sentinel capabilities.

Data obtained through Sentinel are intended to complement other types of evidence such as preclinical studies, clinical trials, postmarket studies, and adverse event reports, all of which are used by FDA to inform regulatory decisions regarding medical product safety. The information contained in this report is provided as part of FDA's commitment to place knowledge acquired from Sentinel in the public domain as soon as possible. Any public health actions taken by FDA regarding products involved in Sentinel queries will continue to be communicated through existing channels.

FDA wants to emphasize that the fact that FDA has initiated a query involving a medical product and is reporting findings related to that query does not mean that FDA is suggesting health care practitioners should change their prescribing practices for the medical product or that patients taking the medical product should stop using it. Patients who have questions about the use of an identified medical product should contact their health care practitioners.

The following report contains a description of the request, request specifications, and results from the modular program run(s).

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## Overview for Request: cder\_mpl1p\_wp085 (Report 1 of 4)

**Request ID:** cder\_mpl1p\_wp085

**Request Description:** We assessed the use of Attention-Deficit/Hyperactivity Disorder (ADHD) medications or opioid analgesics within pre- and post-pandemic time periods among pre-specified age groups in the Sentinel Distributed Database (SDD). This is report one out of four, and specifically represents the overall query period: January 1, 2017 - March 31, 2023. This is report one of four, and specifically represents the overall query period: January 1, 2017 - March 31, 2023. Report two represents the pre-pandemic query period: April 1, 2018 - March 31, 2020. Report three represents the pandemic query period: April 1, 2020 - March 31, 2022. Report four represents the latest available data query period: April 1, 2022 - March 31, 2023.

**Sentinel Routine Querying Module:** Cohort Identification and Descriptive Analysis (CIDA) tool, QRP version 13.1.1

**Data Source:** We distributed this request to eight Sentinel Data Partners (DP) on May 10, 2024. The study period included data from January 1, 2017 – March 31, 2023. Please see Appendix A for a list of available dates for each Data Partner.

**Study Design:** Using the SDD, we separately identified the following cohorts of individuals five years of age and older who initiated ADHD stimulant drugs, ADHD non-stimulant medications, or Schedule II (C-II) opioid analgesics with a minimum day supply of seven based on age on the index date: 1) Five years and older; 2) 18 years and older; 3) Five-17 Years; 4) 18-25 Years; 5) 26-44 Years; 6) 45-64 Years; and 7) 65 years and older. In each of the age-based cohorts, we assessed the characteristics of patients at four different time periods: January 1, 2017 - March 31, 2023 (overall), April 1, 2018 - March 31, 2020 (pre-pandemic), April 1, 2020 - March 31, 2022 (pandemic), and April 1, 2022 - March 31, 2023 (latest available). We described demographics (as of index date) and clinical characteristics for each age-based drug class cohort. This query included both Type 2 and Type 5 analyses in the Query Request Package (QRP) documentation.

**Exposures of Interest:** The exposures of interest were ADHD stimulants, ADHD non-stimulants, or Schedule II (C-II) opioid analgesics prescribed in an outpatient setting with a minimum seven-day supply, identified using National Drug Codes (NDCs). Please see Appendix C for a List of non-proprietary and proprietary names of medical products.

Stimulant ADHD medications comprised amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexmethylphenidate, and dexmethylphenidate.

Non-stimulant medications for ADHD comprised atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, and viloxazine.

Schedule II (C-II) opioid analgesics comprised fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, and single product codeine.

**Cohort Eligibility Criteria:** We required individuals to be enrolled in health plans with both medical and drug coverage for at least 365 days prior to the index exposure, during which gaps in coverage of up to 45 days were allowed and treated as continuous enrollment. The exposure washout window (i.e., the period with no dispensing of the exposure of interest) was defined as 365 days prior to the index date.

**Episode Creation:** We created exposure episodes based on the number of days of product supplied per dispensing in the outpatient pharmacy dispensing data. We bridged together episodes less than 30 days apart.























































































































































































































































































































































































































































































































































































































































### Appendix F. Specifications Defining Parameters for this Request

This request was executed on the Cohort Identification and Descriptive Analysis (CIDA) tool v13.1.0 to investigate the use of Attention-Deficit/Hyperactivity Disorder (ADHD) Medications or Opioid Analgesics within pre- and post-pandemic time periods among prespecified age groups in the Sentinel Distributed Database (SDD).

1. R01: Type 5 (Overall study period)
2. R02: Type 5 (Pre-pandemic study period)
3. R03: Type 5 (Pandemic study period)
4. R04: Type 5 (Post-pandemic study period)

**Query period:** January 1, 2017 - March 31, 2023 (overall)  
 April 1, 2018 - March 31, 2020 (pre-pandemic)  
 April 1, 2020 - March 31, 2022 (pandemic)  
 April 1, 2022 - March 31, 2023 (latest available)

**Coverage requirement:** Medical & Drug Coverage

**Pre-index enrollment requirement:** 365 days

**Post-index requirement:** N/A

**Enrollment gap:** 45

**Age groups:** See below in the Age Group column

**Stratifications:** Age groups  
 Census Bureau (CB) region

**Censor output categorization:** -

**Restrictions:** None

**Distribution of index-defining codes:** No

**Envelope macro:** \*Reclassify outpatient (AV), emergency department (ED), and other ambulatory (OA) encounters that occur during an inpatient stay as inpatient (IP) encounters. Do not reclassify if an encounter occurs on the day of admission (ADate).

**Freeze data:** Yes (for v01 only) (See Notes below)

**Stockpiling** See stockpiling tab

#### Appendix F. Specifications Defining Parameters for this Request

This request was executed on the Cohort Identification and Descriptive Analysis (CIDA) tool v13.1.0 to investigate the use of Attention-Deficit/Hyperactivity Disorder (ADHD) Medications or Opioid Analgesics within pre- and post-pandemic time periods among prespecified age groups in the Sentinel Distributed Database (SDD).

1. R01: Type 5 (Overall study period)
2. R02: Type 5 (Pre-pandemic study period)
3. R03: Type 5 (Pandemic study period)
4. R04: Type 5 (Post-pandemic study period)

**Features:** Run type 2 cohort off of Type 5 cohort of corresponding query period to ensure identical patients captured  
Carry forward other reporting features from cder\_mpl1p\_wp085  
Output the number of patients who had a mean/median current filled daily dose across all their dispensings within a user defined range  
Most frequent utilization (MFU) output and reporting  
Compute t-statistic and Z-statistic for comparisons between proportions between pre-pandemic and pandemic query periods, and report p-value

**Notes:** wp085 and wp087 will be distributed in three waves:

1. Distribution 1 (wp085 v04) – overall cohorts (with group names containing “\_5plus”) from r01 (overall study period) will be distributed to DPs. Data will be frozen.
2. Distribution 2 (wp085 v06) – all cohorts from r01-r04 (all type 5 runs) will be distributed to DPs. Package will point to data frozen from v01. Data in v02 will not be frozen.
3. Distribution 3 (wp087 v01) – all cohorts (r01-r07) will be distributed to DPs. Package will point to data frozen from v01. Data in v03 will not be frozen.

Appendix F. Specifications Defining Parameters for this Request							
Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
Overall	1	5+ years	5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexmethylphenidate, serdexmethylphenidate) (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	2	5+ years	5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine) (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	3	5+ years	5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine) (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

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Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
5-17 years	4	5-17 years	5-12 13-17	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexmethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	5	5-17 Years	5-12 13-17	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	6	5-17 years	5-12 13-17	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

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Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
18-25 Years	7	18-25 Years	18-25	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexamethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	8	18-25 Years	18-25	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	9	18-25 Years	18-25	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

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Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
26-44 Years	10	26-44 Years	26-29 30-39 40-44 Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexamethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;	
	11	26-44 Years	26-29 30-39 40-44 Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;	
	12	26-44 Years	26-29 30-39 40-44 Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;	

Appendix F. Specifications Defining Parameters for this Request							
Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
45-64 Years	13	45-64 Years	45-54 55-64	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexamethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	14	45-64 Years	45-54 55-64	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	15	45-64 Years	45-54 55-64	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

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Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
65+ Years	16	65+ Years	65+	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexmethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	17	65+ Years	65+	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	18	65+ Years	65+	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

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Exposure							
Scenario	Age Restriction	Age Group	Index Exposure	Cohort Definition	Incident Exposure Washout Period	Exclude Evidence of Days Supply if Exposure Washout Includes Dispensings	
18+ Years	19	18+ Years	18-25 26-29 30-39 40-49 50-64 65+	Stimulant Medications for ADHD (amphetamine, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate, dexmethylphenidate, serdexmethylphenidate)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	20	18+ Years	18-25 26-29 30-39 40-49 50-64 65+	Non-Stimulant Medications for ADHD (atomoxetine, clonidine (extended-release patch/oral solid), guanfacine, viloxazine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;
	21	18+ Years	18-25 26-29 30-39 40-49 50-64 65+	Schedule II (C-II) Opioid Analgesics (benzhydrocodone, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, oxycodone, oxymorphone, sufentanil, tapentadol, single product codeine)  (first episode duration of 7+ days)	*Include all valid exposure episodes during query period; --only the first valid exposure episode's incidence is assessed using washout criteria	365 days	*Washout lookback period should search for evidence of days supply;

Appendix F. Specifications Defining Parameters for this Request									
Exposure									
Scenario	Treatment Episode Gap	Treatment Episode Extension	Care Setting	Principal Diagnosis Position	Create Baseline Table?	Forced supply to Attach to Dispensings	Censor Treatment Episode at Evidence of:	Current Filled Daily Dose Summary (Mean) Category	
Overall	1	30 days	None	Outpatient dispensing	N/A <sup>1</sup>	Yes	N/A	*Death; *Data partner (DP) end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	2	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	3	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
5-17 years	4	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	5	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A

Appendix F. Specifications Defining Parameters for this Request									
Exposure									
Scenario	Treatment Episode Gap	Treatment Episode Extension	Care Setting	Principal Diagnosis Position	Create Baseline Table?	Forced supply to Attach to Dispensings	Censor Treatment Episode at Evidence of:	Current Filled Daily Dose Summary (Mean) Category	
5-17 years	6	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
18-25 Years	7	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	8	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	9	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
26-44 Years	10	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A

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Exposure									
Scenario	Treatment Episode Gap	Treatment Episode Extension	Care Setting	Principal Diagnosis Position	Create Baseline Table?	Forced supply to Attach to Dispensings	Censor Treatment Episode at Evidence of:	Current Filled Daily Dose Summary (Mean) Category	
26-44 Years	11	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	12	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
45-64 Years	13	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	14	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	15	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A

Appendix F. Specifications Defining Parameters for this Request									
Exposure									
Scenario	Treatment Episode Gap	Treatment Episode Extension	Care Setting	Principal Diagnosis Position	Create Baseline Table?	Forced supply to Attach to Dispensings	Censor Treatment Episode at Evidence of:	Current Filled Daily Dose Summary (Mean) Category	
65+ Years	16	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	17	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	18	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
18+ Years	19	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A
	20	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A

Appendix F. Specifications Defining Parameters for this Request									
Exposure									
Scenario	Treatment Episode Gap	Treatment Episode Extension	Care Setting	Principal Diagnosis Position	Create Baseline Table?	Forced supply to Attach to Dispensings	Censor Treatment Episode at Evidence of:	Current Filled Daily Dose Summary (Mean) Category	
18+ Years	21	30 days	None	Outpatient dispensing	N/A	Yes	N/A	*Death; *DP end date; *Query end date; *Enrollment end date; *Episode end date	N/A

National Drug Codes (NDC) are checked against First Data Bank's FDB MedKnowledge®.  
N/A: Not Applicable

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Demographic Characteristics</b>	N/A <sup>1</sup>	Continuous age	N/A	N/A	Index Day
	N/A	Age groups (5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+)	N/A	N/A	Index Day
	N/A	Race (White, Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Unknown, Multi-Racial)	N/A	N/A	Index Day
	N/A	Sex (M, F)	N/A	N/A	Index Day
	N/A	Hispanic Origin (Yes, No, Unknown)	N/A	N/A	Index Day
	N/A	US Census Region (Northeast; Midwest; South; West; Other)	N/A	N/A	Index Day
	N/A	Calendar year	N/A	N/A	Index Day
	N/A	Healthcare Payor Status (Commercial payor; Public payor)	N/A	N/A	N/A
<b>CCI Score</b>	Riskscore	Charlson/Elixhauser combined comorbidity index	N/A	N/A	(-365, 0)
	Riskscore	Categorical Charlson/Elixhauser combined comorbidity index (<0 0 1-2 3-4 5+)	N/A	N/A	(-365, 0)
<b>Prescription Dispensed</b>	<b>1</b>	ADHD Stimulant Medication	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>2</b>	ADHD Non-Stimulant Medication	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>3</b>	Schedule II (C-II) Opioid Analgesic	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>4</b>	Medication for Opioid-Related Disorders	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>5</b>	Antidepressant Medication	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>6</b>	Anxiolytic or Sedative/Hypnotic Medications	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>7</b>	Antipsychotic Medication	N/A	Dispensing (Dispensings table)	(-365, 0)
	<b>8</b>	Mood Stabilizers	N/A	Dispensing (Dispensings table)	(-365, 0)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Clinical Diagnoses</b>	<b>9</b>	Cancer	Any	Diagnosis	(-365, 0)
	<b>10</b>	Non-Cancer, Chronic Pain-Related Conditions	Any	Diagnosis	(-365, 0)
	<b>11</b>	Attention-Deficit/Hyperactivity Disorder	Any	Diagnosis	(-365, 0)
	<b>12</b>	Conduct or adjustment disorders or other related disorders on index date or year prior	Any	Diagnosis	(-365, 0)
	<b>13</b>	Narcolepsy	Any	Diagnosis	(-365, 0)
	<b>14</b>	Binge-Eating Disorder	Any	Diagnosis	(-365, 0)
	<b>94= NOT(11 OR 13 OR 14)</b>	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or year prior	Any	CC	(-365, 0)
	<b>96 = (94 AND 12)</b>	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders	Any	CC	(-365, 0)
	<b>15</b>	Attention-Deficit/Hyperactivity Disorder on index date or 30 days Prior	Any	Diagnosis	(-30, 0)
	<b>16</b>	Conduct or adjustment disorders or other related disorders on index date or 30 days Prior	Any	Diagnosis	(-30, 0)
	<b>17</b>	Narcolepsy on index date or 30 days Prior	Any	Diagnosis	(-30, 0)
	<b>18</b>	Binge-Eating Disorder on index date or 30 days Prior	Any	Diagnosis	(-30, 0)

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Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
Clinical Diagnoses	95= NOT(15 OR 17 OR 18)	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or 30 days Prior	Any	CC	(-30, 0)
	97= (95 AND 16)	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders on index date or 30 days Prior	Any	CC	(-30, 0)
	19	Hypertension	Any	Diagnosis	(-365, 0)
	20	Coronary artery disease	Any	Diagnosis	(-365, 0)
	21	Cardiac arrhythmia	Any	Diagnosis	(-365, 0)
	22	Cardiomyopathy	Any	Diagnosis	(-365, 0)
	23	Cardiac structural abnormality	Any	Diagnosis	(-365, 0)
	24	All other diseases of the circulatory system	Any	Diagnosis	(-365, 0)
	25	Epilepsy or recurrent seizures	Any	Diagnosis	(-365, 0)
Psychiatric Conditions	26	Other seizure or convulsions	Any	Diagnosis	(-365, 0)
	27	Depression	Any	Diagnosis	(-365, 0)
	28	Anxiety	Any	Diagnosis	(-365, 0)
	29	Bipolar Disorder	Any	Diagnosis	(-365, 0)
	30	Sleep Disorder	Any	Diagnosis	(-365, 0)
	31	Psychotic Disorder	Any	Diagnosis	(-365, 0)
	32	Post-Traumatic Stress Disorder (PTSD)	Any	Diagnosis	(-365, 0)
	33	Manic Episode	Any	Diagnosis	(-365, 0)
	34	Autistic Disorder	Any	Diagnosis	(-365, 0)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Substance-Related Disorder</b>	35	Any Substance-Related Disorders	Any	Diagnosis	(-365, 0)
	36	Opioid-Related Disorders	Any	Diagnosis	(-365, 0)
	37	Stimulant-Related Disorders	Any	Diagnosis	(-365, 0)
	38	Cocaine-Related Disorders	Any	Diagnosis	(-365, 0)
	39	Other Stimulant-Related Disorders	Any	Diagnosis	(-365, 0)
	40	Alcohol-Related Disorders	Any	Diagnosis	(-365, 0)
	41	Cannabis-Related Disorders	Any	Diagnosis	(-365, 0)
	42	Tobacco-Related Disorders	Any	Diagnosis	(-365, 0)
	43	Nicotine Use, Excluding Tobacco-Related Disorder	Any	Diagnosis	(-365, 0)
<b>Drug Poisoning</b>	44	Unintentional or Undetermined Poisoning by Broad Category	Any	Diagnosis	(-365, 0)
	45	Opioid Poisoning, Unintentional or Undetermined Intent	Any	Diagnosis	(-365, 0)
	46	Stimulant Poisoning, Unintentional or Undetermined Intent	Any	Diagnosis	(-365, 0)
	47	Intentional Poisoning by Broad Category	Any	Diagnosis	(-365, 0)
<b>Concurrent Prescriptions</b>	48	Concurrent antidepressants with ADHD Stimulant medication	N/A	Dispensing	(0, all post-index patient history)
	49	Concurrent benzodiazepines with ADHD Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	50	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	51	Concurrent antipsychotics with ADHD Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	52	Concurrent antidepressants with ADHD Non-Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Concurrent Prescriptions</b>	53	Concurrent benzodiazepines with ADHD Non-Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	54	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Non-Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	55	Concurrent antipsychotics with ADHD Non-Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	56	Concurrent antidepressants with Schedule II Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	57	Concurrent benzodiazepines with Schedule II Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	58	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with Schedule II Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	59	Concurrent antipsychotics with Schedule II Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	60	Concurrent ADHD Stimulant medication with ADHD Non-Stimulant medication for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	61	Concurrent ADHD Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	62	Concurrent ADHD Non-Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Concurrent Prescriptions</b>	<b>101</b>	Concurrent C-II Opioid Analgesic medication with ADHD Stimulant for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
	<b>102</b>	Concurrent C-II Opioid Analgesic medication with ADHD Non-Stimulant for at least 7 consecutive days	N/A	Dispensing	(0, all post-index patient history)
<b>Active Pharmaceutical Ingredients</b>	<b>63</b>	Amphetamine Single-entity Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	<b>64</b>	Amphetamine Single-entity Products Extended Release Oral Solid	N/A	Dispensing	(0, all post-index patient history)
	<b>65</b>	Amphetamine Single-entity Products Extended Release Oral Liquid	N/A	Dispensing	(0, all post-index patient history)
	<b>66</b>	Dextroamphetamine Single-entity Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	<b>67</b>	Dextroamphetamine Single-entity Products Extended Release	N/A	Dispensing	(0, all post-index patient history)
	<b>68</b>	Amphetamine/Dextroamphetamine Combination Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	<b>69</b>	Amphetamine/Dextroamphetamine Combination Products Extended Release	N/A	Dispensing	(0, all post-index patient history)
	<b>70</b>	Lisdexamfetamine Extended Release	N/A	Dispensing	(0, all post-index patient history)
	<b>71</b>	Methamphetamine Single-entity Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	<b>72</b>	Methylphenidate Single-entity Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
<b>73</b>	Methylphenidate Single-entity Products Extended Release Oral Solid	N/A	Dispensing	(0, all post-index patient history)	

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
Active Pharmaceutical Ingredients	74	Methylphenidate Single-entity Products Extended Release Oral Liquid	N/A	Dispensing	(0, all post-index patient history)
	75	Methylphenidate Single-entity Products Extended Release Transdermal Patch	N/A	Dispensing	(0, all post-index patient history)
	76	Dexmethylphenidate Single-entity Products Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	77	Dexmethylphenidate Single-entity Products Extended Release	N/A	Dispensing	(0, all post-index patient history)
	78	Dexmethylphenidate/Serdexmethylphenidate Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	79	Any ADHD Stimulant API Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	80	Any ADHD Stimulant API Extended Release	N/A	Dispensing	(0, all post-index patient history)
	81	Atomoxetine Immediate Release	N/A	Dispensing	(0, all post-index patient history)
	82	Guanfacine Extended Release	N/A	Dispensing	(0, all post-index patient history)
	83	Viloxazine Extended Release	N/A	Dispensing	(0, all post-index patient history)
	84	Clonidine Extended Release	N/A	Dispensing	(0, all post-index patient history)
	85	Any ADHD Non-Stimulant API Extended Release	N/A	Dispensing	(0, all post-index patient history)
	86	Codeine	N/A	Dispensing	(0, all post-index patient history)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
	87	Fentanyl	N/A	Dispensing	(0, all post-index patient history)
	88	Hydrocodone	N/A	Dispensing	(0, all post-index patient history)
	89	Hydromorphone	N/A	Dispensing	(0, all post-index patient history)
Active Pharmaceutical Ingredients	90	Morphine	N/A	Dispensing	(0, all post-index patient history)
	91	Oxycodone	N/A	Dispensing	(0, all post-index patient history)
	92	Oxymorphone	N/A	Dispensing	(0, all post-index patient history)
	93	Other C-II Opioid Analgesics	N/A	Dispensing	(0, all post-index patient history)
Encounters in Various Care Settings	98	At least One Encounter in the Emergency Department in Year Prior	ED*	Encounter	(-365,-1)
	99	At least One Encounter in the Inpatient Care Setting in Year Prior	IP*	Encounter	(-365,-1)
	100	At least One Encounter in the Outpatient Care Setting in Year Prior	AV* OA*	Encounter	(-365,-1)
Most Frequent Utilization	N/A	Diagnosis 1 (TBD upon MFU results)	Any	MFU (Diagnosis)	(-30, 0)
	N/A	Diagnosis 2 (TBD upon MFU results)	Any	MFU (Diagnosis)	(-30, 0)
	N/A	Diagnosis 3 (TBD upon MFU results)	Any	MFU (Diagnosis)	(-30, 0)
	N/A	Diagnosis 4 (TBD upon MFU results)	Any	MFU (Diagnosis)	(-30, 0)
	N/A	Diagnosis 5 (TBD upon MFU results)	Any	MFU (Diagnosis)	(-30, 0)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Care Setting	Code Type	Evaluation Window/ Evaluation Window Anchor Dates
<b>Intensity of Health Care Utilization</b>	N/A	Number of Ambulatory visits	AV	N/A	(-365, 0)
	N/A	Number of Emergency Department visits	ED	N/A	(-365, 0)
	N/A	Number of Non-Acute Institutional Stays	IS	N/A	(-365, 0)
	N/A	Number of Inpatient Hospital Stays	IP	N/A	(-365, 0)
	N/A	Number of other ambulatory visits (includes other non overnight ambulatory encounters such as home health visits, telemedicine, telephone and email consultations)	OA	N/A	(-365, 0)
<b>Intensity of Drug Utilization</b>	N/A	Number of dispensings	N/A	N/A	(-365, 0)
	N/A	Number of unique generics dispensed	N/A	N/A	(-365, 0)
	N/A	Number of unique drug classes dispensed	N/A	N/A	(-365, 0)

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
<b>Demographic Characteristics</b>	N/A <sup>1</sup>	Continuous age	N/A	N/A	N/A	N/A
	N/A	Age groups (5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+)	N/A	N/A	N/A	N/A
	N/A	Race (White, Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Unknown, Multi-Racial)	N/A	N/A	N/A	N/A
	N/A	Sex (M, F)	N/A	N/A	N/A	N/A
	N/A	Hispanic Origin (Yes, No, Unknown)	N/A	N/A	N/A	N/A
	N/A	US Census Region (Northeast; Midwest; South; West; Other)	N/A	N/A	N/A	N/A
	N/A	Calendar year	N/A	N/A	N/A	N/A
	N/A	Healthcare Payor Status (Commercial payor; Public payor)	N/A	N/A	N/A	N/A
<b>CCI Score</b>	Riskscore	Charlson/Elixhauser combined comorbidity index	N/A	N/A	N/A	N/A
	Riskscore	Categorical Charlson/Elixhauser combined comorbidity index (<0 0 1-2 3-4 5+)	N/A	N/A	N/A	N/A
<b>Prescription Dispensed</b>	<b>1</b>	ADHD Stimulant Medication	1x	Search by dispensing date	N/A	N/A
	<b>2</b>	ADHD Non-Stimulant Medication	1x	Search by dispensing date	N/A	N/A
	<b>3</b>	Schedule II (C-II) Opioid Analgesic	1x	Search by	N/A	N/A
	<b>4</b>	Medication for Opioid-Related Disorders	1x	Search by	N/A	N/A
	<b>5</b>	Antidepressant Medication	1x	Search by	N/A	N/A
	<b>6</b>	Anxiolytic or Sedative/Hypnotic Medications	1x	Search by	N/A	N/A
	<b>7</b>	Antipsychotic Medication	1x	Search by	N/A	N/A
	<b>8</b>	Mood Stabilizers	1x	Search by dispensing date	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
<b>Clinical Diagnoses</b>	<b>9</b>	Cancer	1x	wp085 and wp087 will be distributed in three waves:		
	<b>10</b>	Non-Cancer, Chronic Pain-Related Conditions	1x	N/A	N/A	N/A
	<b>11</b>	Attention-Deficit/Hyperactivity Disorder	1x	N/A	N/A	N/A
	<b>12</b>	Conduct or adjustment disorders or other related disorders on index date or year prior	1x	N/A	N/A	N/A
	<b>13</b>	Narcolepsy	1x	N/A	N/A	N/A
	<b>14</b>	Binge-Eating Disorder	1x	N/A	N/A	N/A
	<b>94= NOT(11 OR 13 OR 14)</b>	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or year prior	1x	N/A	N/A	N/A
	<b>96 = (94 AND 12)</b>	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders	1x	N/A	N/A	N/A
	<b>15</b>	Attention-Deficit/Hyperactivity Disorder on index date or 30 days Prior	1x	N/A	N/A	N/A
	<b>16</b>	Conduct or adjustment disorders or other related disorders on index date or 30 days Prior	1x	N/A	N/A	N/A
	<b>17</b>	Narcolepsy on index date or 30 days Prior	1x	N/A	N/A	N/A
	<b>18</b>	Binge-Eating Disorder on index date or 30 days Prior	1x	N/A	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
Clinical Diagnoses	95= NOT(15 OR 17 OR 18)	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or 30 days Prior	1x	N/A	N/A	N/A
	97= (95 AND 16)	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders on index date or 30 days Prior	1x	N/A	N/A	N/A
	19	Hypertension	1x	N/A	N/A	N/A
	20	Coronary artery disease	1x	N/A	N/A	N/A
	21	Cardiac arrhythmia	1x	N/A	N/A	N/A
	22	Cardiomyopathy	1x	N/A	N/A	N/A
	23	Cardiac structural abnormality	1x	N/A	N/A	N/A
	24	All other diseases of the circulatory system	1x	N/A	N/A	N/A
	25	Epilepsy or recurrent seizures	1x	N/A	N/A	N/A
Psychiatric Conditions	26	Other seizure or convulsions	1x	N/A	N/A	N/A
	27	Depression	1x	N/A	N/A	N/A
	28	Anxiety	1x	N/A	N/A	N/A
	29	Bipolar Disorder	1x	N/A	N/A	N/A
	30	Sleep Disorder	1x	N/A	N/A	N/A
	31	Psychotic Disorder	1x	N/A	N/A	N/A
	32	Post-Traumatic Stress Disorder (PTSD)	1x	N/A	N/A	N/A
	33	Manic Episode	1x	N/A	N/A	N/A
	34	Autistic Disorder	1x	N/A	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
Substance-Related Disorder	35	Any Substance-Related Disorders	1x	N/A	N/A	N/A
	36	Opioid-Related Disorders	1x	N/A	N/A	N/A
	37	Stimulant-Related Disorders	1x	N/A	N/A	N/A
	38	Cocaine-Related Disorders	1x	N/A	N/A	N/A
	39	Other Stimulant-Related Disorders	1x	N/A	N/A	N/A
	40	Alcohol-Related Disorders	1x	N/A	N/A	N/A
	41	Cannabis-Related Disorders	1x	N/A	N/A	N/A
	42	Tobacco-Related Disorders	1x	N/A	N/A	N/A
	43	Nicotine Use, Excluding Tobacco-Related Disorder	1x	N/A	N/A	N/A
Drug Poisoning	44	Unintentional or Undetermined Poisoning by Broad Category	1x	N/A	N/A	N/A
	45	Opioid Poisoning, Unintentional or Undetermined Intent	1x	N/A	N/A	N/A
	46	Stimulant Poisoning, Unintentional or Undetermined Intent	1x	N/A	N/A	N/A
	47	Intentional Poisoning by Broad Category	1x	N/A	N/A	N/A
Concurrent Prescriptions	48	Concurrent antidepressants with ADHD Stimulant medication	1x	Search by dispensing date	N/A	N/A
	49	Concurrent benzodiazepines with ADHD Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	50	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	51	Concurrent antipsychotics with ADHD Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	52	Concurrent antidepressants with ADHD Non-Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
<b>Concurrent Prescriptions</b>	53	Concurrent benzodiazepines with ADHD Non-Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	54	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Non-Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	55	Concurrent antipsychotics with ADHD Non-Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	56	Concurrent antidepressants with Schedule II Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	57	Concurrent benzodiazepines with Schedule II Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	58	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with Schedule II Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	59	Concurrent antipsychotics with Schedule II Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	60	Concurrent ADHD Stimulant medication with ADHD Non-Stimulant medication for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	61	Concurrent ADHD Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	62	Concurrent ADHD Non-Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
<b>Concurrent Prescriptions</b>	<b>101</b>	Concurrent C-II Opioid Analgesic medication with ADHD Stimulant for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
	<b>102</b>	Concurrent C-II Opioid Analgesic medication with ADHD Non-Stimulant for at least 7 consecutive days	1x	Search by dispensing date	N/A	N/A
<b>Active Pharmaceutical Ingredients</b>	<b>63</b>	Amphetamine Single-entity Products Immediate Release	1x	Search by dispensing date	N/A	N/A
	<b>64</b>	Amphetamine Single-entity Products Extended Release Oral Solid	1x	Search by dispensing date	N/A	N/A
	<b>65</b>	Amphetamine Single-entity Products Extended Release Oral Liquid	1x	Search by dispensing date	N/A	N/A
	<b>66</b>	Dextroamphetamine Single-entity Products Immediate Release	1x	Search by dispensing date	N/A	N/A
	<b>67</b>	Dextroamphetamine Single-entity Products Extended Release	1x	Search by dispensing date	N/A	N/A
	<b>68</b>	Amphetamine/Dextroamphetamine Combination Products Immediate Release	1x	Search by dispensing date	N/A	N/A
	<b>69</b>	Amphetamine/Dextroamphetamine Combination Products Extended Release	1x	Search by dispensing date	N/A	N/A
	<b>70</b>	Lisdexamfetamine Extended Release	1x	Search by dispensing date	N/A	N/A
	<b>71</b>	Methamphetamine Single-entity Products Immediate Release	1x	Search by dispensing date	N/A	N/A
	<b>72</b>	Methylphenidate Single-entity Products Immediate Release	1x	Search by dispensing date	N/A	N/A
<b>73</b>	Methylphenidate Single-entity Products Extended Release Oral Solid	1x	Search by dispensing date	N/A	N/A	

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
Active Pharmaceutical Ingredients	74	Methylphenidate Single-entity Products Extended Release Oral Liquid	1x	Search by dispensing date	N/A	N/A
	75	Methylphenidate Single-entity Products Extended Release Transdermal Patch	1x	Search by dispensing date	N/A	N/A
	76	Dexmethylphenidate Single-entity Products Immediate Release	1x	Search by dispensing date	N/A	N/A
	77	Dexmethylphenidate Single-entity Products Extended Release	1x	Search by dispensing date	N/A	N/A
	78	Dexmethylphenidate/Serdexmethylphenidate Immediate Release	1x	Search by dispensing date	N/A	N/A
	79	Any ADHD Stimulant API Immediate Release	1x	Search by dispensing date	N/A	N/A
	80	Any ADHD Stimulant API Extended Release	1x	Search by dispensing date	N/A	N/A
	81	Atomoxetine Immediate Release	1x	Search by dispensing date	N/A	N/A
	82	Guanfacine Extended Release	1x	Search by dispensing date	N/A	N/A
	83	Viloxazine Extended Release	1x	Search by dispensing date	N/A	N/A
	84	Clonidine Extended Release	1x	Search by dispensing date	N/A	N/A
	85	Any ADHD Non-Stimulant API Extended Release	1x	Search by dispensing date	N/A	N/A
	86	Codeine	1x	Search by dispensing date	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
	87	Fentanyl	1x	Search by dispensing date	N/A	N/A
	88	Hydrocodone	1x	Search by dispensing date	N/A	N/A
	89	Hydromorphone	1x	Search by dispensing date	N/A	N/A
Active Pharmaceutical Ingredients	90	Morphine	1x	Search by dispensing date	N/A	N/A
	91	Oxycodone	1x	Search by dispensing date	N/A	N/A
	92	Oxymorphone	1x	Search by dispensing date	N/A	N/A
	93	Other C-II Opioid Analgesics	1x	Search by dispensing date	N/A	N/A
Encounters in Various Care Settings	98	At least One Encounter in the Emergency Department in Year Prior	1x	Search by admit date	N/A	N/A
	99	At least One Encounter in the Inpatient Care Setting in Year Prior	1x	Search by admit date	N/A	N/A
	100	At least One Encounter in the Outpatient Care Setting in Year Prior	1x	Search by admit date	N/A	N/A
Most Frequent Utilization	N/A	Diagnosis 1 (TBD upon MFU results)	N/A	N/A	N/A	N/A
	N/A	Diagnosis 2 (TBD upon MFU results)	N/A	N/A	N/A	N/A
	N/A	Diagnosis 3 (TBD upon MFU results)	N/A	N/A	N/A	N/A
	N/A	Diagnosis 4 (TBD upon MFU results)	N/A	N/A	N/A	N/A
	N/A	Diagnosis 5 (TBD upon MFU results)	N/A	N/A	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Minimum # of Instances	Search due to evidence of days supply or dispensing date	Dose details	Forced supply to attach to codes
<b>Intensity of Health Care Utilization</b>	N/A	Number of Ambulatory visits	N/A	N/A	N/A	N/A
	N/A	Number of Emergency Department visits	N/A	N/A	N/A	N/A
	N/A	Number of Non-Acute Institutional Stays	N/A	N/A	N/A	N/A
	N/A	Number of Inpatient Hospital Stays	N/A	N/A	N/A	N/A
	N/A	Number of other ambulatory visits (includes other non overnight ambulatory encounters such as home health visits, telemedicine, telephone and email consultations)	N/A	N/A	N/A	N/A
<b>Intensity of Drug Utilization</b>	N/A	Number of dispensings	N/A	N/A	N/A	N/A
	N/A	Number of unique generics dispensed	N/A	N/A	N/A	N/A
	N/A	Number of unique drug classes dispensed	N/A	N/A	N/A	N/A

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Continuous or Categorical?	Table Origin	Create subgroup?
<b>Demographic Characteristics</b>	N/A <sup>1</sup>	Continuous age	Continuous	Yes	No
	N/A	Age groups (5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+)	Categorical	No	Yes
	N/A	Race (White, Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Unknown, Multi-Racial)	Categorical	No	No
	N/A	Sex (M, F)	Categorical	Yes	Yes
	N/A	Hispanic Origin (Yes, No, Unknown)	Categorical	No	No
	N/A	US Census Region (Northeast; Midwest; South; West; Other)	Categorical	No	No
	N/A	Calendar year	Categorical	No	No
	N/A	Healthcare Payor Status (Commercial payor; Public payor)	Categorical	No	No
<b>CCI Score</b>	Riskscore	Charlson/Elixhauser combined comorbidity index	Continuous	Yes	No
	Riskscore	Categorical Charlson/Elixhauser combined comorbidity index (<0 0 1-2 3-4 5+)	Categorical	No	No
<b>Prescription Dispensed</b>	<b>1</b>	ADHD Stimulant Medication	Categorical	Table 3	No
	<b>2</b>	ADHD Non-Stimulant Medication	Categorical	Table 3	No
	<b>3</b>	Schedule II (C-II) Opioid Analgesic	Categorical	Table 3	No
	<b>4</b>	Medication for Opioid-Related Disorders	Categorical	Table 3	No
	<b>5</b>	Antidepressant Medication	Categorical	Table 3	No
	<b>6</b>	Anxiolytic or Sedative/Hypnotic Medications	Categorical	Table 3	No
	<b>7</b>	Antipsychotic Medication	Categorical	Table 3	No
	<b>8</b>	Mood Stabilizers	Categorical	Table 3	No

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Continuous or Categorical?	Table Origin	Create subgroup?
<b>Clinical Diagnoses</b>	<b>9</b>	Cancer			
	<b>10</b>	Non-Cancer, Chronic Pain-Related Conditions	Categorical	Table 3	No
	<b>11</b>	Attention-Deficit/Hyperactivity Disorder	Categorical	Table 4A	No
	<b>12</b>	Conduct or adjustment disorders or other related disorders on index date or year prior	Categorical	Table 3	No
	<b>13</b>	Narcolepsy	Categorical	Table 4A	No
	<b>14</b>	Binge-Eating Disorder	Categorical	Table 4A	No
	<b>94= NOT(11 OR 13 OR 14)</b>	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or year prior	Categorical	Table 4A	No
	<b>96 = (94 AND 12)</b>	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders	Categorical	Table 4A	No
	<b>15</b>	Attention-Deficit/Hyperactivity Disorder on index date or 30 days Prior	Categorical	Table 4A	No
	<b>16</b>	Conduct or adjustment disorders or other related disorders on index date or 30 days Prior	Categorical	Table 4A	No
	<b>17</b>	Narcolepsy on index date or 30 days Prior	Categorical	Table 4A	No
	<b>18</b>	Binge-Eating Disorder on index date or 30 days Prior	Categorical	Table 4A	No

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Continuous or Categorical?	Table Origin	Create subgroup?
Clinical Diagnoses	95= NOT(15 OR 17 OR 18)	No diagnosis of ADHD, and no Narcolepsy, and no Binge-Eating Disorder on index date or 30 days Prior	Categorical	Table 4A	No
	97= (95 AND 16)	No diagnosis of ADHD AND No Narcolepsy AND No Binge-Eating Disorder AND a diagnosis of conduct or adjustment disorders on index date or 30 days Prior	Categorical	Table 4A	
	19	Hypertension	Categorical	Table 3	No
	20	Coronary artery disease	Categorical	Table 3	No
	21	Cardiac arrhythmia	Categorical	Table 3	No
	22	Cardiomyopathy	Categorical	Table 3	No
	23	Cardiac structural abnormality	Categorical	Table 3	No
	24	All other diseases of the circulatory system	Categorical	Table 3	No
	25	Epilepsy or recurrent seizures	Categorical	Table 3	No
Psychiatric Conditions	26	Other seizure or convulsions	Categorical	Table 3	No
	27	Depression	Categorical	Table 3	No
	28	Anxiety	Categorical	Table 3	No
	29	Bipolar Disorder	Categorical	Table 3	No
	30	Sleep Disorder	Categorical	Table 3	No
	31	Psychotic Disorder	Categorical	Table 3	No
	32	Post-Traumatic Stress Disorder (PTSD)	Categorical	Table 3	No
	33	Manic Episode	Categorical	Table 3	No
	34	Autistic Disorder	Categorical	Table 3	No

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Continuous or Categorical?	Table Origin	Create subgroup?
Substance-Related Disorder	35	Any Substance-Related Disorders	Categorical	Table 3	No
	36	Opioid-Related Disorders	Categorical	Table 3	No
	37	Stimulant-Related Disorders	Categorical	Table 3	No
	38	Cocaine-Related Disorders	Categorical	Table 3	No
	39	Other Stimulant-Related Disorders	Categorical	Table 3	No
	40	Alcohol-Related Disorders	Categorical	Table 3	No
	41	Cannabis-Related Disorders	Categorical	Table 3	No
	42	Tobacco-Related Disorders	Categorical	Table 3	No
	43	Nicotine Use, Excluding Tobacco-Related Disorder	Categorical	Table 3	No
Drug Poisoning	44	Unintentional or Undetermined Poisoning by Broad Category	Categorical	Table 3	No
	45	Opioid Poisoning, Unintentional or Undetermined Intent	Categorical	Table 3	No
	46	Stimulant Poisoning, Unintentional or Undetermined Intent	Categorical	Table 3	No
	47	Intentional Poisoning by Broad Category	Categorical	Table 3	No
Concurrent Prescriptions	48	Concurrent antidepressants with ADHD Stimulant medication	Categorical	Table 5	No
	49	Concurrent benzodiazepines with ADHD Stimulant medication for at least 7 consecutive days	what	Table 5	No
	50	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	51	Concurrent antipsychotics with ADHD Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	52	Concurrent antidepressants with ADHD Non-Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No

**Appendix G. Specifications Defining Baseline Characteristics Parameters for this Request**

Group	Number	Covariate	Continuous or Categorical?	Table Origin	Create subgroup?
<b>Concurrent Prescriptions</b>	53	Concurrent benzodiazepines with ADHD Non-Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	54	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with ADHD Non-Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	55	Concurrent antipsychotics with ADHD Non-Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	56	Concurrent antidepressants with Schedule II Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No
	57	Concurrent benzodiazepines with Schedule II Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No
	58	Concurrent nonbenzodiazepine anxiolytics or sedative or hypnotics with Schedule II Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No
	59	Concurrent antipsychotics with Schedule II Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No
	60	Concurrent ADHD Stimulant medication with ADHD Non-Stimulant medication for at least 7 consecutive days	Categorical	Table 5	No
	61	Concurrent ADHD Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No
	62	Concurrent ADHD Non-Stimulant medication with all Opioid Analgesic for at least 7 consecutive days	Categorical	Table 5	No























































































## Appendix K. Design Diagram for this Request

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### \*\*\*Covariates:

Window I: Age, Age groups (5-12 13-17 18-25 26-29 30-39 40-49 50-64 65+), Calendar year, Race, Sex, Census Bureau region

Window II: Most Frequent Utilization (top 5 codes after data aggregation); Attention-Deficit/Hyperactivity Disorder (ADHD); Narcolepsy; Binge-Eating Disorder; Conduct or adjustment disorders or other related disorders; No diagnosis of ADHD, Narcolepsy, or Binge-Eating Disorder; No diagnosis of ADHD, Narcolepsy, Binge-Eating Disorder, and presence of a diagnosis of conduct or adjustment disorder

Window III: Charlson/Elixhauser Combined Comorbidity Index, ADHD Stimulant Medication; ADHD Non-Stimulant Medication; Opioid Analgesic; Medication for Opioid Use Disorder; Antidepressant Medication; Anxiolytic or Sedative/Hypnotic Medications; Antipsychotic Medication; Mood Stabilizers; Cancer; Non-Cancer (Chronic Pain-Related Conditions); Attention-Deficit/Hyperactivity Disorder; Narcolepsy; Binge-Eating Disorder; No diagnosis of ADHD, Narcolepsy, or Binge-Eating Disorder; Hypertension; Coronary artery disease; Cardiac arrhythmia; Cardiomyopathy; Cardiac structural abnormality; All other diseases of the circulatory system; Epilepsy or recurrent seizures; Other seizure or convulsions; Depression; Anxiety; Bipolar Disorder; Sleep Disorder; Psychotic Disorder; Post-Traumatic Stress Disorder (PTSD); Manic Episode; Autistic Disorder; Any Substance-Related Disorders; Opioid-Related Disorders; Stimulant-Related Disorders; Cocaine-Related Disorders; Other Stimulant-Related Disorders; Alcohol-Related Disorders; Cannabis-Related Disorders; Tobacco-Related Disorders; Current Nicotine Use; Unintentional or Undetermined Poisoning by Broad Category; Unintentional or Undetermined Poisoning by Broad Category; Opioid Poisoning, Unintentional or Undetermined Intent; Stimulant Poisoning, Unintentional or Undetermined Intent; Intentional Poisoning by Broad Category; Healthcare and Drug utilization Characteristics

Window IV: Concurrent occurrence of for at least 7 consecutive days: Antidepressants with ADHD Stimulant medication; Benzodiazepines with ADHD Stimulant medication; Non-Benzodiazepine Anxiolytics or Sedative/Hypnotics with ADHD Stimulant medication; Antipsychotics with ADHD Stimulant medication; Antidepressants with ADHD Non-Stimulant medication; Benzodiazepines with ADHD Non-Stimulant medication; Non-Benzodiazepine Anxiolytics or Sedative/Hypnotics with ADHD Non-Stimulant medication; Antipsychotics with ADHD Non-Stimulant medication; Antidepressants with Schedule II (C-II) Opioid Analgesic; Benzodiazepines with C-II Opioid Analgesic; Non-Benzodiazepine Anxiolytics or Sedative/Hypnotics with C-II Opioid Analgesic; Antipsychotics with C-II Opioid Analgesic; ADHD Stimulant medication with ADHD Non-Stimulant medication; ADHD Stimulant medication with C-II Opioid Analgesic; ADHD Non-Stimulant medication with C-II Opioid Analgesic; All Opioid Analgesic with ADHD Stimulant medication; All Opioid Analgesic with ADHD Non-Stimulant medication

Window V: Amphetamine Single-Entity Products, Immediate Release; Amphetamine Single-entity Products, Extended Release, Oral Solid; Amphetamine Single-entity Products, Extended Release, Oral Liquid; Dextroamphetamine Single-entity Products, Immediate Release; Dextroamphetamine Single-entity Products, Extended Release; Amphetamine/Dextroamphetamine Combination Products, Immediate Release; Amphetamine/Dextroamphetamine Combination Products, Extended Release; Lisdexamfetamine, Extended Release; Methamphetamine Single-entity Products, Immediate Release; Methylphenidate Single-entity Products, Immediate Release; Methylphenidate Single-entity Products, Extended Release, Oral Solid; Methylphenidate Single-entity Products, Extended Release, Oral Liquid; Methylphenidate Single-entity Products, Extended Release, Transdermal Patch; Dexmethylphenidate Single-entity Products, Immediate Release; Dexmethylphenidate Single-entity Products, Extended Release; Dexmethylphenidate/Serdexmethylphenidate, Immediate Release; Any ADHD Stimulant Active Pharmaceutical Ingredient (API), Immediate Release; Any ADHD Stimulant API, Extended Release; Atomoxetine, Immediate Release; Guanfacine, Extended Release; Viloxazine, Extended Release; Clonidine, Extended Release; Any ADHD Non-Stimulant API, Extended Release; Codeine; Fentanyl; Hydrocodone; Hydromorphone; Morphine; Oxycodone; Oxymorphone; Other C-II Opioid Analgesics

Window VI: At least one encounter in the Emergency Department (ED\*); At least one encounter in the Inpatient care setting (IP\*); At least one encounter in the Outpatient (AV\*, OA\*) care setting