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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_wp046

Request ID: cder_mpl1p_wp046_nsdp_v01

Request Description: In this report we examined counts of pediatric patients with vitals blood pressure measurements in the Sentinel Distributed Database (SDD), classified based on American Academy of Pediatrics (AAP) guidelines for pediatric high blood pressure. Among cohorts, we determined concurrence between claims and clinical definitions of hypertension and examined baseline conditions, pre- and post-index medication use, and presence of additional blood pressure measurements.

Sentinel Routine Querying Module: Cohort Identification and Descriptive Analysis (CIDA) module, version 9.7.0, with custom programming

Data Source: We distributed this request to seven Sentinel Data Partners on December 30, 2020. These seven Data Partners represent a subset of the SDD with access to both claims and electronic health record (EHR) data. The study period included data from January 1, 2006 through December 31, 2018. Please see Appendix A for the dates of available data for each Data Partner.

Study Design: We identified individuals with valid blood pressure measurements among a cohort who were between 3 and 17.999 years of age. We assessed five separate cohorts: 1) members with one high blood pressure measure; 2) members with one normotensive measure and no evidence of high blood pressure in their entire enrollment history; 3) members with one high blood pressure measure and no subsequent normotensive measures; 4) members with one normotensive measure with no prior high blood pressure measures; and 5) members with any valid prevalent blood measure. We stratified results by age group, sex, year, race, and Hispanic ethnicity. This is a Type 1 analysis with custom programming in the Query Request Package (QRP) documentation.

Events of Interest: We defined the events of interest, valid blood pressure measurements, using clinical vital signs EHR data. For a valid measurement, we required same day diastolic and systolic blood pressure measures within a specified valid range of values, and a valid height recording within six months of the blood pressure reading. As there is no standard algorithm for defining biologic plausibility for blood pressure measures, we modified our definition for valid blood pressure values from Eny et al.¹; in this study the valid range of values for systolic blood pressure was between 50 mmHg - 260 mmHg, and the valid range of values for diastolic blood pressure was between 25 mmHg - 200 mmHg. Valid height percentiles were defined using the Centers for Disease Control and Prevention (CDC) growth charts.² We leveraged a programming macro developed by Dr. Bernard Rosner which incorporated systolic blood pressure, diastolic blood pressure, height, age, and sex to calculate pediatric BP percentiles.³ If multiple blood pressure measurements were recorded on one day, the valid measurement with the latest recorded time was chosen. We further classified all valid blood pressure measurements into either normotensive, elevated, or hypertensive categories, according to AAP guidelines for pediatric hypertension.⁴ Please see Appendix B for further details on the algorithm used to define the pediatric hypertension categories.

We assessed five separate cohorts with differing cohort qualifying (index) events of interest. In each cohort, the index event was defined as:

- 1) The first qualifying elevated or hypertensive blood pressure measurement
- 2) The first qualifying normotensive measurement, with no elevated or hypertensive blood pressure measurements in the entire pre- or post-index enrollment history
- 3) The first qualifying elevated or hypertensive blood pressure measurement, with no normotensive blood pressure measurements in the entire post-index enrollment history
- 4) The first qualifying normotensive measurement, with no elevated or hypertensive blood pressure measurements in the entire pre-index enrollment history
- 5) Any qualifying normotensive, elevated, or hypertensive blood pressure measurement

In cohorts #1-4 cohort re-entry was not allowed. In cohort #5 all blood pressure measurements were included; cohort re-entry was allowed.

Overview for Request: cder_mpl1p_wp046

Cohort Eligibility Criteria: We required members to be enrolled in health plans with medical and drug coverage in the 365 days prior to and after their qualifying blood pressure index date in order to be included in the cohorts; a gap in coverage of up to 45 days was allowed and treated as continuous enrollment. The following age groups were included in the cohort: 3-5.999, 6-11.999, and 12-17.999 years.

Baseline Characteristics: We assessed the following vitals signs at the time of valid index blood pressure measurement: mean height, diastolic, and systolic values. We also classified the valid index-defining blood pressure measurement as either elevated, hypertensive, or normotensive. Among all valid index blood pressure measurements, we determined whether those individuals had at least one, at least two, or no additional valid blood pressure measurements in the 183 days after valid index blood pressure measure, 365 days after valid index blood pressure measure, or entire available enrollment history post-index blood pressure measure. We also performed the same assessment of additional blood pressure measurements for a subsection of members that were hypertensive at the time of valid index blood pressure measure. We additionally evaluated whether individuals had a diagnosis claims code for an abnormal blood pressure exam or a normal blood pressure exam in the year prior to or after the valid index blood pressure measurement. We performed this evaluation for all valid index blood pressure measurements, and subsections of members that were hypertensive or had elevated blood pressure at index. We additionally characterized whether members had evidence of high blood pressure in their claims records in the year after their index blood pressure measurement. We characterized three claims definitions for high blood pressure: 1) either one outpatient or two inpatient hypertension claims diagnoses (hypertension claims definition 1); 2) any hypertension claims diagnosis (hypertension claims definition 2); and 3) any elevated blood pressure claims diagnosis.

Misclassification Matrix: To evaluate concurrence between clinical and claims definitions of pediatric hypertension, we compared evidence of hypertension in the EHR record to the claims record. Among those with evidence of hypertension based on their clinical record at index, we assessed 1) whether they had evidence of hypertension definition 1 in their claims record the following year; 2) whether they did not have evidence of hypertension definition 1 in their claims record in the following year; 3) whether they had evidence of hypertension definition 2 in their claims record in the following year; 4) whether they did not have evidence of hypertension definition 2 in their claims record in the following year; and 5) whether they did not have evidence of any high blood pressure diagnosis in their claims record in the following year (hypertension claims definition 1, hypertension claims definition 2, or elevated blood pressure claim). Among those with evidence of elevated blood pressure in their clinical record at index, we assessed 1) whether they had evidence of elevated blood pressure in their claims record in the following year; 2) whether they did not have evidence of elevated blood pressure in their claims record in the following year; and 3) whether they did not have evidence of any high blood pressure diagnosis in their claims record in the following year (hypertension claims definition 1, hypertension claims definition 2, or elevated blood pressure claim). Please see Table A for the misclassification matrix for each high blood pressure category.

Furthermore, we assessed the following baseline characteristics in the 365 days prior to and including the date of the valid index blood pressure measure: obesity, body mass index (in four categories, underweight, normal weight, overweight, and obese), broad obesity defined as either an obesity code or code for BMI ≥ 30 kg/m², type 2 diabetes mellitus, dyslipidemia, chronic kidney disease, cardiomegaly, pyelonephritis, vesicoureteral reflux, neurofibromatosis type 1, hyperthyroidism, tuberous sclerosis, systemic lupus erythematosus, Cushing syndrome, Williams syndrome, and Turner syndrome. We additionally evaluated the use of the following anti-hypertensive medications in the 365 days prior to and including the date of the valid index blood pressure measure, and from the first day following the index blood pressure measure through to the end of enrollment: angiotensin receptor blockers (ARBs), angiotensin-converting enzyme (ACE) inhibitors, alpha antagonists, beta-blockers, calcium channel blockers, central alpha-agonists, direct renin inhibitors, direct vasodilators, diuretics, and combination products. We defined the clinical conditions using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) codes. We defined the anti-hypertensive medications using National Drug Codes (NDCs). Please see Appendix C for a list of codes and Appendix D for a list of generic and brand name medical products used to define baseline characteristics in this request.

Overview for Request: cder_mpl1p_wp046

Implausible Value and Data Characterization: We characterized data missingness and implausibility in the SDD vitals data used in this request. We examined counts of blood pressure measurements that were excluded from the cohorts due to the following reasons: 1) the systolic blood pressure measurement was outside of the valid range (<50 mmHg or >260 mmHg); 2) the diastolic blood pressure measurement was outside of the valid range (<25 mmHg or >200 mmHg); 3) the systolic blood pressure measurement was less than or equal to the diastolic blood pressure measurement; 4) the blood pressure measurement was biologically implausible according to the AAP Guidelines; 5) the height measurement was biologically implausible (height z-score < -3.09 or >3.09); 6) the systolic blood pressure measurement was missing a measure time recording when there were multiple blood pressure measurements per day; and 7) the diastolic blood pressure measurement was missing a measure time recording when there were multiple blood pressure measurements per day. We additionally counted the number of blood pressure measurements that had same day systolic and diastolic measurements but did not have a same day height recording; these measurements were not excluded from the cohorts as long as a valid height measurement occurred with six months of diastolic and systolic measurements.

Please see Appendices E-G for the specifications of parameters used in this request and a design diagram.

Limitations: The AAP guidelines for pediatric hypertension require three consecutive hypertensive measures to meet the clinical definition of hypertension. In this request we only required one blood pressure measurement for hypertension classification. Additionally, the algorithms used to define blood pressure measurements and the baseline characteristics are imperfect; thus, it is possible that there may be misclassification. Therefore, data should be interpreted with these limitations in mind.

Notes: Please contact the Sentinel Operations Center (info@sentinelssystem.org) for questions and to provide comments/suggestions for future enhancements to this document. For more information on Sentinel's routine querying modules, please refer to the documentation (<https://dev.sentinelssystem.org/projects/SENTINEL/repos/sentinel-routine-querying-tool-documentation/browse>).

¹Eny KM, et al. Association of accelerated body mass index gain with repeated measures of blood pressure in early childhood. *Int J Obes (Lond)*. 2019 Jul;43(7):1354-1362. doi: 10.1038/s41366-019-0345-9. Epub 2019 Apr 2. PMID: 30940913; PMCID: PMC6760600.

²Centers for Disease Control and Prevention, National Center for Health Statistics. 2000 CDC growth charts: United States. Available at: www.cdc.gov/growthcharts. Accessed August 19, 2020

³Rosner B, Cook N, Portman R, Daniels S, Falkner B. Determination of blood pressure percentiles in normal-weight children: some methodological issues. *Am J Epidemiol*. 2008 Mar 15;167(6):653-66

⁴Flynn JT, Kaelber DC, Baker-Smith CM, et al. Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents. *Pediatrics*.2017;140(3):e20171904

Table of Contents

<u>Glossary</u>	List of Terms Found in this Report and their Definitions
<u>Table 1a</u>	Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table 1b</u>	Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre- or Post-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table 1c</u>	Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement and No Post-Index Normotensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table 1d</u>	Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table 1e</u>	Aggregated Baseline Table for Pediatric Members with Any Valid Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table A</u>	Misclassification Matrices Comparing Clinical and Claims Evidence of High Blood Pressure in the Sentinel Distributed Database
<u>Table 2</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, Overall
<u>Table 3</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Year
<u>Table 4</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Sex
<u>Table 5</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Age Group
<u>Table 6</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Race
<u>Table 7</u>	Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Hispanic Ethnicity
<u>Table 8</u>	Distribution of Follow-Up for Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018
<u>Table 9</u>	Frequency of Implausible Blood Pressure Measurements among all Blood Pressure Measurements in the Sentinel Distributed Database (SDD), by Metric that Caused Implausible Value
<u>Appendix A</u>	Start and End Dates for Each Data Partner as of Request Distribution Date (December 30, 2020)
<u>Appendix B</u>	American Academy of Pediatrics (AAP) Guidelines for Pediatric Hypertension Classification

Table of Contents

<u>Appendix C</u>	List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request
<u>Appendix D</u>	List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request
<u>Appendix E</u>	Specifications Defining Parameters Used in this Request
<u>Appendix F</u>	Specifications Defining Baseline Characteristic Parameters Used in this Request
<u>Appendix G</u>	Design Diagram of Cohort Entry Requirements for this Request

**Glossary of Terms for Analyses Using
Cohort Identification and Descriptive Analysis (CIDA) Module***

Amount Supplied - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing.

Blackout Period - number of days at the beginning of a treatment episode that events are to be ignored. If an event occurs during the blackout period, the episode is excluded.

Care Setting - type of medical encounter or facility where the exposure, event, or condition code was recorded. Possible care settings include: Inpatient Hospital Stay (IP), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA). For laboratory results, possible care settings include: Emergency Department (E), Home (H), Inpatient (I), Outpatient (O), or Unknown or Missing (U). The Care Setting, along with the Principal Diagnosis Indicator (PDX), forms the Care Setting/PDX parameter.

Ambulatory Visit (AV) - includes visits at outpatient clinics, same-day surgeries, urgent care visits, and other same-day ambulatory hospital encounters, but excludes emergency department encounters.

Emergency Department (ED) - includes ED encounters that become inpatient stays (in which case inpatient stays would be a separate encounter). Excludes urgent care visits.

Inpatient Hospital Stay (IP) - includes all inpatient stays, same-day hospital discharges, hospital transfers, and acute hospital care where the discharge is after the admission date.

Non-Acute Institutional Stay (IS) - includes hospice, skilled nursing facility (SNF), rehab center, nursing home, residential, overnight non-hospital dialysis and other non-hospital stays.

Other Ambulatory Visit (OA) - includes other non overnight AV encounters such as hospice visits, home health visits, skilled nursing facility visits, other non-hospital visits, as well as telemedicine, telephone and email consultations.

Charlson/Elixhauser Combined Comorbidity Score - calculated based on comorbidities observed during a requester-defined window around the exposure episode start date (e.g., in the 183 days prior to index).

Code Days - the minimum number of times the diagnosis must be found during the evaluation period in order to fulfill the algorithm to identify the corresponding patient characteristic.

Cohort Definition (drug/exposure) - indicates how the cohort will be defined: 01: Cohort includes only the first valid treatment episode during the query period; 02: Cohort includes all valid treatment episodes during the query period; 03: Cohort includes all valid treatment episodes during the query period until an event occurs.

Computed Start Marketing Date - represents the first observed dispensing date among all valid users within a GROUP (scenario) within each Data Partner site.

Days Supplied - number of days supplied for all dispensings in qualifying treatment episodes.

Eligible Members - number of members eligible for an incident treatment episode (defined by the drug/exposure and event washout periods) with drug and medical coverage during the query period.

Enrollment Gap - number of days allowed between two consecutive enrollment periods without breaking a "continuously enrolled" sequence.

Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive dispensings bridged by the episode gap.

Episode Gap - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be considered the same treatment episode.

Event Deduplication - specifies how events are counted by the Modular Program (MP) algorithm: 0: Counts all occurrences of a health outcome of interest (HOI) during an exposure episode; 1: de-duplicates occurrences of the same HOI code and code type on the same day; 2: de-duplicates occurrences of the same HOI group on the same day (e.g., de-duplicates at the group level).

Exposure Episode Length - number of days after exposure initiation that is considered "exposed time."

Exposure Extension Period - number of days post treatment period in which the outcomes/events are counted for a treatment episode. Extensions are added after any episode gaps have been bridged.

Lookback Period - number of days wherein a member is required to have evidence of pre-existing condition (diagnosis/procedure/drug dispensing).

Maximum Episode Duration - truncates exposure episodes after a requester-specified number of exposed days. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

Member-Years - sum of all days of enrollment with medical and drug coverage in the query period preceded by an exposure washout period all divided by 365.25.

Minimum Days Supplied - specifies a minimum number of days in length of the days supplied for the episode to be considered.

Minimum Episode Duration - specifies a minimum number of days in length of the episode for it to be considered. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

Monitoring Period - used to define time periods of interest for both sequential analysis and simple cohort characterization requests.

Principal Diagnosis (PDX) - diagnosis or condition established to be chiefly responsible for admission of the patient to the hospital. 'P' = principal diagnosis, 'S' = secondary diagnosis, 'X' = unspecified diagnosis, '.' = blank. Along with the Care Setting values, forms the Caresetting/PDX parameter.

Query Period - period in which the modular program looks for exposures and outcomes of interest.

Switch Evaluation Step Value - value used to differentiate evaluation step. Each switch pattern can support up to 2 evaluation steps (0 = switch pattern evaluation start; 1 = first evaluation; 2 = second evaluation).

Switch Gap Inclusion Indicator - indicator for whether gaps in treatment episodes that are included in a switch episode will be counted as part of the switch episode duration.

Switch Pattern Cohort Inclusion Date - indicates which date to use for inclusion into the switch pattern cohort of interest as well as optionally as the index date of the treatment episode initiating the switch pattern. Valid options are the product approval date, product marketing date, other requester defined date, or computed start marketing date.

Switch Pattern Cohort Inclusion Strategy - indicates how the switch pattern cohort inclusion date will be used: 01: used only as a switch cohort entry date. First treatment episode dispensing date is used as index for computing time to first switch; 02: used as switch cohort entry date and as initial switch step index date for computing time to first switch.

Treatment Episode Truncation Indicator - indicates whether the exposure episode will be truncated at the occurrence of a requester-specified code.

Washout Period (drug/exposure) - number of days a user is required to have no evidence of prior exposure (drug dispensing/procedure) and continuous drug and medical coverage prior to an incident treatment episode.

Washout Period (event/outcome) - number of days a user is required to have no evidence of a prior event (procedure/diagnosis) and continuous drug and medical coverage prior to an incident treatment episode.

Years at Risk - number of days supplied plus any episode gaps and exposure extension periods all divided by 365.25.

*all terms may not be used in this report

Table 1a. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Characteristic ¹	Elevated Blood Pressure or Hypertensive	
	Number	Percent
Number of episodes	1,024,299	
Number of unique patients	1,024,299	
Demographics:	Mean	Standard Deviation
Mean Age (years)	10.1	5
Age	Number	Percent
3-5 years	322,477	31.5%
6-11 years	280,071	27.3%
12-17 years	421,751	41.2%
Sex		
Female	461,946	45.1%
Male	562,353	54.9%
Race ²		
Unknown	239,126	23.3%
American Indian or Alaska Native	8,537	0.8%
Asian	163,736	16.0%
Black or African American	114,740	11.2%
Native Hawaiian or Other Pacific Islander	31,511	3.1%
White	466,649	45.6%
Hispanic Origin	242,313	23.7%
Year		
2006	65,783	6.4%
2007	94,785	9.3%
2008	93,220	9.1%
2009	90,331	8.8%
2010	89,420	8.7%
2011	88,067	8.6%
2012	82,159	8.0%
2013	78,266	7.6%
2014	75,069	7.3%
2015	75,836	7.4%
2016	76,177	7.4%
2017	76,028	7.4%
2018	39,158	3.8%
Vital Measurements:	Mean	Standard Deviation
Height (inches)	54.4	11.2
Diastolic Blood Pressure	68.9	8.9
Systolic Blood Pressure	115.7	12.3

Table 1a. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Clinical Hypertension Category at Index:	Elevated Blood Pressure or Hypertensive		
	Number	Percent	
Elevated Blood Pressure	513,892	50.2%	
Hypertensive	510,407	49.8%	
Normotensive	0	0.0%	
Post-Index Blood Pressure Measures:			
At Least 1 Additional Blood Pressure Measure in 183 days	429,959	42.0%	
At Least 2 Additional Blood Pressure Measures in 183 days	187,717	18.3%	
At Least 1 Additional Blood Pressure Measure in 365 days	616,206	60.2%	
At Least 2 Additional Blood Pressure Measures in 365 days	332,043	32.4%	
At Least 1 Additional Blood Pressure Measure in entire history	907,234	88.6%	
At Least 2 Additional Blood Pressure Measures in entire history	771,268	75.3%	
No Additional Blood Pressure Measures in 183 days	594,340	58.0%	
No Additional Blood Pressure Measures in 365 days	408,093	39.8%	
No Additional Blood Pressure Measures in entire history	117,065	11.4%	
Post-Index Blood Pressure Measures, among Hypertensive at Index Members:			
Hypertensive and at least 1 Additional Blood Pressure Measure in 183 days	223,875	43.9%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in 183 days	96,807	19.0%	**
Hypertensive and No Additional Blood Pressure Measures in 183 days	286,532	56.1%	**
Hypertensive and at least 1 Additional Blood Pressure Measure in 365 days	316,264	62.0%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in 365 days	169,463	33.2%	**
Hypertensive and No Additional Blood Pressure Measures in 365 days	194,143	38.0%	**
Hypertensive and at least 1 Additional Blood Pressure Measure in entire history	461,928	90.5%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in entire history	398,970	78.2%	**
Hypertensive and No Additional Blood Pressure Measures in entire history	48,479	9.5%	**
Blood Pressure Exam Claims Codes:			
Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	122	0.0%	
Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	6	0.0%	
Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	285	0.0%	
Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	5	0.0%	
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	40	0.0%	***
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%	***
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	80	0.0%	***
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	1	0.0%	***
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	82	0.0%	**
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	6	0.0%	**
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	205	0.0%	**
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	4	0.0%	**
Claims Definitions:	Number	Percent	

Table 1a. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Elevated Blood Pressure or Hypertensive	
Hypertension Claims Definition 1: 1 Inpatient or 2 Outpatient Claims	1,970	0.2%
Hypertension Claims Definition 2: Any Claim	3,850	0.4%
Elevated Blood Pressure Claim	8,011	0.8%
Claims and Clinical Hypertension Cross-Tabulations:		
Elevated Blood Pressure AND Elevated Blood Pressure Claim	1,643	0.3% ***
Elevated Blood Pressure AND NOT Elevated Blood Pressure Claim	512,249	99.7% ***
Hypertensive AND Hypertension Claims Definition 1	1,506	0.3% **
Hypertensive AND NOT Hypertension Claims Definition 1	508,901	99.7% **
Hypertensive AND Hypertension Claims Definition 2	2,995	0.6% **
Hypertensive AND NOT Hypertension Claims Definition 2	507,412	99.4% **
Elevated Blood Pressure AND NOT ANY Claims Definition	511,502	99.5% ***
Hypertensive AND NOT ANY Claims Definition	501,608	98.3% **
Recorded History of Anti-Hypertension Agents in 365 Days Prior to Blood Pressure Measurement:		
Pre Angiotensin Receptor Blockers	37	0.0%
Pre Angiotensin-Converting Enzyme Inhibitors	687	0.1%
Pre Alpha Antagonists	106	0.0%
Pre Beta-Blockers	1,397	0.1%
Pre Calcium Channel Blockers	303	0.0%
Pre Central Alpha-Agonists	5,407	0.5%
Pre Direct Renin Inhibitors	0	0.0%
Pre Direct Vasodilators	16	0.0%
Pre Diuretics	577	0.1%
Pre Combination Products	26	0.0%
History of Anti-Hypertension Agents in 365 Days After Blood Pressure Measurement:		
Post Angiotensin Receptor Blockers	572	0.1%
Post Angiotensin-Converting Enzyme Inhibitors	3,689	0.4%
Post Alpha Antagonists	2,266	0.2%
Post Beta-Blockers	14,632	1.4%
Post Calcium Channel Blockers	3,644	0.4%
Post Central Alpha-Agonists	18,730	1.8%
Post Direct Renin Inhibitors	0	0.0%
Post Direct Vasodilators	150	0.0%
Post Diuretics	7,127	0.7%
Post Combination Products	862	0.1%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:		
Obesity	50,842	5.0%
Obesity Combo (Obesity Procedures or BMI)	139,674	13.6%
BMI - Underweight	15,500	1.5%
BMI - Normal Weight	342,408	33.4%

Table 1a. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Recorded History of in 365 Days Prior to Blood Pressure Measurement:	Elevated Blood Pressure or Hypertensive	
	Number	Percent
BMI - Overweight	87,147	8.5%
BMI - Obese	101,995	10.0%
Type 2 Diabetes Mellitus	1,519	0.1%
Dyslipidemia	3,611	0.4%
Chronic Kidney Disease	3,623	0.4%
Cardiomegaly	442	0.0%
Pyelonephritis	1,543	0.2%
Vesicoureteral Reflux	1,189	0.1%
Neurofibromatosis Type 1	347	0.0%
Hyperthyroidism	415	0.0%
Tuberous Sclerosis	83	0.0%
Systemic Lupus Erythematosus	112	0.0%
Cushing Syndrome	31	0.0%
Williams Syndrome	409	0.0%
Turner Syndrome	171	0.0%
Health Service Utilization Intensity in 365 Days Prior to Blood Pressure Measurement:	Mean	Standard Deviation
Mean number of ambulatory encounters	4.6	8.2
Mean number of emergency room encounters	0.3	0.6
Mean number of inpatient hospital encounters	0	0.3
Mean number of non-acute institutional encounters	0	0.1
Mean number of other ambulatory encounters	2.1	3.4

¹All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

²In the SDD, race information is not well populated and there are substantial proportions of "unknown" race and Hispanic indicator values. Specifically, two commercial Data Partners do not provide any race or ethnicity data.

** Denominator for percentage calculation is members who were hypertensive at index

*** Denominator for percentage calculation is members who had elevated blood pressure at index

Table 1b. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre- or Post-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Characteristic ¹	Normotensive	
	Number	Percent
Number of episodes	502,992	
Number of unique patients	502,992	
Demographics:	Mean	Standard Deviation
Mean Age (years)	9.7	5
Age	Number	Percent
3-5 years	174,793	34.8%
6-11 years	135,362	26.9%
12-17 years	192,837	38.3%
Sex		
Female	292,071	58.1%
Male	210,921	41.9%
Race ²		
Unknown	130,277	25.9%
American Indian or Alaska Native	4,000	0.8%
Asian	84,464	16.8%
Black or African American	44,622	8.9%
Native Hawaiian or Other Pacific Islander	14,064	2.8%
White	225,565	44.8%
Hispanic Origin	99,684	19.8%
Year		
2006	50,910	10.1%
2007	57,867	11.5%
2008	46,233	9.2%
2009	37,962	7.5%
2010	40,570	8.1%
2011	36,633	7.3%
2012	32,130	6.4%
2013	30,873	6.1%
2014	31,873	6.3%
2015	34,719	6.9%
2016	37,988	7.6%
2017	42,304	8.4%
2018	22,930	4.6%
Vital Measurements:	Mean	Standard Deviation
Height (inches)	53	10.7
Diastolic Blood Pressure	58.5	7.8
Systolic Blood Pressure	98.6	9.8

Table 1b. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre- or Post-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Normotensive	
Clinical Hypertension Category at Index:	Number	Percent
Elevated Blood Pressure	0	0.0%
Hypertensive	0	0.0%
Normotensive	502,992	100.0%
Post-Index Blood Pressure Measures:		
At Least 1 Additional Blood Pressure Measure in 183 days	123,513	24.6%
At Least 2 Additional Blood Pressure Measures in 183 days	37,920	7.5%
At Least 1 Additional Blood Pressure Measure in 365 days	213,189	42.4%
At Least 2 Additional Blood Pressure Measures in 365 days	80,938	16.1%
At Least 1 Additional Blood Pressure Measure in entire history	396,744	78.9%
At Least 2 Additional Blood Pressure Measures in entire history	292,417	58.1%
No Additional Blood Pressure Measures in 183 days	379,479	75.4%
No Additional Blood Pressure Measures in 365 days	289,803	57.6%
No Additional Blood Pressure Measures in entire history	106,248	21.1%
Post-Index Blood Pressure Measures, among Hypertensive at Index Members:		
Hypertensive and at least 1 Additional Blood Pressure Measure in 183 days	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in 183 days	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in 183 days	0	0.0%
Hypertensive and at least 1 Additional Blood Pressure Measure in 365 days	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in 365 days	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in 365 days	0	0.0%
Hypertensive and at least 1 Additional Blood Pressure Measure in entire history	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in entire history	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in entire history	0	0.0%
Blood Pressure Exam Claims Codes:		
Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	14	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	28	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	0	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	0	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	0	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	0	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%
Claims Definitions:	Number	Percent

Table 1b. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre- or Post-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Normotensive	
Hypertension Claims Definition 1: 1 Inpatient or 2 Outpatient Claims	56	0.0%
Hypertension Claims Definition 2: Any Claim	122	0.0%
Elevated Blood Pressure Claim	89	0.0%
Claims and Clinical Hypertension Cross-Tabulations:		
Elevated Blood Pressure AND Elevated Blood Pressure Claim	0	0.0%
Elevated Blood Pressure AND NOT Elevated Blood Pressure Claim	0	0.0%
Hypertensive AND Hypertension Claims Definition 1	0	0.0%
Hypertensive AND NOT Hypertension Claims Definition 1	0	0.0%
Hypertensive AND Hypertension Claims Definition 2	0	0.0%
Hypertensive AND NOT Hypertension Claims Definition 2	0	0.0%
Elevated Blood Pressure AND NOT ANY Claims Definition	0	0.0%
Hypertensive AND NOT ANY Claims Definition	0	0.0%
Recorded History of Anti-Hypertension Agents in 365 Days Prior to Blood Pressure Measurement:		
Pre Angiotensin Receptor Blockers	10	0.0%
Pre Angiotensin-Converting Enzyme Inhibitors	120	0.0%
Pre Alpha Antagonists	29	0.0%
Pre Beta-Blockers	389	0.1%
Pre Calcium Channel Blockers	59	0.0%
Pre Central Alpha-Agonists	1,172	0.2%
Pre Direct Renin Inhibitors	0	0.0%
Pre Direct Vasodilators	2	0.0%
Pre Diuretics	104	0.0%
Pre Combination Products	5	0.0%
History of Anti-Hypertension Agents in 365 Days After Blood Pressure Measurement:		
Post Angiotensin Receptor Blockers	85	0.0%
Post Angiotensin-Converting Enzyme Inhibitors	348	0.1%
Post Alpha Antagonists	550	0.1%
Post Beta-Blockers	4,099	0.8%
Post Calcium Channel Blockers	733	0.1%
Post Central Alpha-Agonists	3,946	0.8%
Post Direct Renin Inhibitors	0	0.0%
Post Direct Vasodilators	12	0.0%
Post Diuretics	2,489	0.5%
Post Combination Products	53	0.0%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:		
Obesity	10,973	2.2%
Obesity Combo (Obesity Procedures or BMI)	29,175	5.8%
BMI - Underweight	10,044	2.0%
BMI - Normal Weight	180,691	35.9%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:	Number	Percent

Table 1b. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre- or Post-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Normotensive	
BMI - Overweight	30,044	6.0%
BMI - Obese	20,296	4.0%
Type 2 Diabetes Mellitus	149	0.0%
Dyslipidemia	582	0.1%
Chronic Kidney Disease	931	0.2%
Cardiomegaly	118	0.0%
Pyelonephritis	416	0.1%
Vesicoureteral Reflux	413	0.1%
Neurofibromatosis Type 1	108	0.0%
Hyperthyroidism	93	0.0%
Tuberous Sclerosis	23	0.0%
Systemic Lupus Erythematosus	19	0.0%
Cushing Syndrome	0	0.0%
Williams Syndrome	97	0.0%
Turner Syndrome	41	0.0%
Health Service Utilization Intensity in 365 Days Prior to Blood Pressure Measurement:		
	Mean	Standard Deviation
Mean number of ambulatory encounters	3.5	7
Mean number of emergency room encounters	0.1	0.4
Mean number of inpatient hospital encounters	0	0.2
Mean number of non-acute institutional encounters	0	0.1
Mean number of other ambulatory encounters	1.5	2.6

¹All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

²In the SDD, race information is not well populated and there are substantial proportions of "unknown" race and Hispanic indicator values. Specifically, two commercial Data Partners do not provide any race or ethnicity data.

Table 1c. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement and No Post-Index Normotensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Characteristic¹	Always Elevated or Hypertensive	
	Number	Percent
Number of episodes	364,093	
Number of unique patients	364,093	
Demographics:	Mean	Standard Deviation
Mean Age (years)	13.7	4.4
Age	Number	Percent
3-5 years	40,636	11.2%
6-11 years	60,904	16.7%
12-17 years	262,553	72.1%
Sex		
Female	139,872	38.4%
Male	224,221	61.6%
Race ²		
Unknown	90,788	24.9%
American Indian or Alaska Native	2,861	0.8%
Asian	57,426	15.8%
Black or African American	40,827	11.2%
Native Hawaiian or Other Pacific Islander	9,394	2.6%
White	162,797	44.7%
Hispanic Origin	87,100	23.9%
Year		
2006	18,139	5.0%
2007	25,113	6.9%
2008	24,606	6.8%
2009	23,687	6.5%
2010	24,425	6.7%
2011	26,062	7.2%
2012	24,615	6.8%
2013	25,741	7.1%
2014	26,727	7.3%
2015	30,444	8.4%
2016	35,578	9.8%
2017	45,590	12.5%
2018	33,366	9.2%
Vital Measurements:	Mean	Standard Deviation
Height (inches)	61.6	9.5
Diastolic Blood Pressure	70.6	8.9
Systolic Blood Pressure	122.4	10.7

Table 1c. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement and No Post-Index Normotensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Clinical Hypertension Category at Index:	Always Elevated or Hypertensive		
	Number	Percent	
Elevated Blood Pressure	199,081	54.7%	
Hypertensive	165,012	45.3%	
Normotensive	0	0.0%	
Post-Index Blood Pressure Measures:			
At Least 1 Additional Blood Pressure Measure in 183 days	78,740	21.6%	
At Least 2 Additional Blood Pressure Measures in 183 days	22,193	6.1%	
At Least 1 Additional Blood Pressure Measure in 365 days	113,723	31.2%	
At Least 2 Additional Blood Pressure Measures in 365 days	38,677	10.6%	
At Least 1 Additional Blood Pressure Measure in entire history	180,410	49.6%	
At Least 2 Additional Blood Pressure Measures in entire history	91,874	25.2%	
No Additional Blood Pressure Measures in 183 days	285,353	78.4%	
No Additional Blood Pressure Measures in 365 days	250,370	68.8%	
No Additional Blood Pressure Measures in entire history	183,683	50.4%	
Post-Index Blood Pressure Measures, among Hypertensive at Index Members:			
Hypertensive and at least 1 Additional Blood Pressure Measure in 183 days	41,983	25.4%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in 183 days	12,659	7.7%	**
Hypertensive and No Additional Blood Pressure Measures in 183 days	123,029	74.6%	**
Hypertensive and at least 1 Additional Blood Pressure Measure in 365 days	58,413	35.4%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in 365 days	21,128	12.8%	**
Hypertensive and No Additional Blood Pressure Measures in 365 days	106,599	64.6%	**
Hypertensive and at least 1 Additional Blood Pressure Measure in entire history	90,679	55.0%	**
Hypertensive and at least 2 Additional Blood Pressure Measures in entire history	48,739	29.5%	**
Hypertensive and No Additional Blood Pressure Measures in entire history	74,333	45.0%	**
Blood Pressure Exam Claims Codes:			
Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	169	0.0%	
Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	5	0.0%	
Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	187	0.1%	
Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	5	0.0%	
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	68	0.0%	***
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%	***
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	38	0.0%	***
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	2	0.0%	***
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	101	0.1%	**
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	5	0.0%	**
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	149	0.1%	**
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	3	0.0%	**

Table 1c. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement and No Post-Index Normotensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Claims Definitions:	Always Elevated or Hypertensive		
	Number	Percent	
Hypertension Claims Definition 1: 1 Inpatient or 2 Outpatient Claims	1,274	0.3%	
Hypertension Claims Definition 2: Any Claim	2,698	0.7%	
Elevated Blood Pressure Claim	5,398	1.5%	
Claims and Clinical Hypertension Cross-Tabulations:			
Elevated Blood Pressure AND Elevated Blood Pressure Claim	1,182	0.6%	***
Elevated Blood Pressure AND NOT Elevated Blood Pressure Claim	197,899	99.4%	***
Hypertensive AND Hypertension Claims Definition 1	966	0.6%	**
Hypertensive AND NOT Hypertension Claims Definition 1	164,046	99.4%	**
Hypertensive AND Hypertension Claims Definition 2	2,091	1.3%	**
Hypertensive AND NOT Hypertension Claims Definition 2	162,921	98.7%	**
Elevated Blood Pressure AND NOT ANY Claims Definition	197,374	99.1%	***
Hypertensive AND NOT ANY Claims Definition	159,120	96.4%	**
Recorded History of Anti-Hypertension Agents in 365 Days Prior to Blood Pressure Measurement:			
Pre Angiotensin Receptor Blockers	29	0.0%	
Pre Angiotensin-Converting Enzyme Inhibitors	525	0.1%	
Pre Alpha Antagonists	99	0.0%	
Pre Beta-Blockers	980	0.3%	
Pre Calcium Channel Blockers	270	0.1%	
Pre Central Alpha-Agonists	2,248	0.6%	
Pre Direct Renin Inhibitors	0	0.0%	
Pre Direct Vasodilators	6	0.0%	
Pre Diuretics	310	0.1%	
Pre Combination Products	33	0.0%	
History of Anti-Hypertension Agents in 365 Days After Blood Pressure Measurement:			
Post Angiotensin Receptor Blockers	342	0.1%	
Post Angiotensin-Converting Enzyme Inhibitors	1,980	0.5%	
Post Alpha Antagonists	777	0.2%	
Post Beta-Blockers	6,100	1.7%	
Post Calcium Channel Blockers	1,692	0.5%	
Post Central Alpha-Agonists	4,076	1.1%	
Post Direct Renin Inhibitors	0	0.0%	
Post Direct Vasodilators	81	0.0%	
Post Diuretics	3,078	0.8%	
Post Combination Products	712	0.2%	
Recorded History of in 365 Days Prior to Blood Pressure Measurement:			
Obesity	25,774	7.1%	
Obesity Combo (Obesity Procedures or BMI)	76,472	21.0%	
BMI - Underweight	4,724	1.3%	
BMI - Normal Weight	125,885	34.6%	
BMI - Overweight	41,914	11.5%	
Recorded History of in 365 Days Prior to Blood Pressure Measurement:	Number	Percent	

Table 1c. Aggregated Baseline Table for Pediatric Members with an Elevated or Hypertensive Blood Pressure Measurement and No Post-Index Normotensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Always Elevated or Hypertensive	
BMI - Obese	60,406	16.6%
Type 2 Diabetes Mellitus	988	0.3%
Dyslipidemia	2,857	0.8%
Chronic Kidney Disease	1,317	0.4%
Cardiomegaly	190	0.1%
Pyelonephritis	608	0.2%
Vesicoureteral Reflux	187	0.1%
Neurofibromatosis Type 1	118	0.0%
Hyperthyroidism	239	0.1%
Tuberous Sclerosis	23	0.0%
Systemic Lupus Erythematosus	49	0.0%
Cushing Syndrome	9	0.0%
Williams Syndrome	83	0.0%
Turner Syndrome	60	0.0%
Health Service Utilization Intensity in 365 Days Prior to Blood Pressure Measurement:		
	Mean	Standard Deviation
Mean number of ambulatory encounters	4.7	9.3
Mean number of emergency room encounters	0.3	0.7
Mean number of inpatient hospital encounters	0	0.3
Mean number of non-acute institutional encounters	0	0.2
Mean number of other ambulatory encounters	2	3.5

¹All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

²In the SDD, race information is not well populated and there are substantial proportions of "unknown" race and Hispanic indicator values. Specifically, two commercial Data Partners do not provide any race or ethnicity data.

** Denominator for percentage calculation is members who were hypertensive at index

*** Denominator for percentage calculation is members who had elevated blood pressure at index

Table 1d. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Characteristic ¹	Pressure	
	Number	Percent
Number of episodes	1,030,259	
Number of unique patients	1,030,259	
Demographics:	Mean	Standard Deviation
Mean Age (years)	9	4.8
Age	Number	Percent
3-5 years	393,777	38.2%
6-11 years	302,622	29.4%
12-17 years	333,860	32.4%
Sex		
Female	550,200	53.4%
Male	480,059	46.6%
Race ²		
Unknown	243,724	23.7%
American Indian or Alaska Native	8,531	0.8%
Asian	163,110	15.8%
Black or African American	102,149	9.9%
Native Hawaiian or Other Pacific Islander	31,471	3.1%
White	481,274	46.7%
Hispanic Origin	218,333	21.2%
Year	121,298	11.8%
2006		
2007	137,296	13.3%
2008	109,531	10.6%
2009	89,460	8.7%
2010	90,579	8.8%
2011	78,665	7.6%
2012	68,186	6.6%
2013	62,503	6.1%
2014	60,500	5.9%
2015	60,721	5.9%
2016	61,692	6.0%
2017	60,651	5.9%
2018	29,177	2.8%
Vital Measurements:	Mean	Standard Deviation
Height (inches)	51.9	10.7
Diastolic Blood Pressure	58.4	7.8
Systolic Blood Pressure	98.8	9.8

Table 1d. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Clinical Hypertension Category at Index:	Pressure	
	Number	Percent
Elevated Blood Pressure	0	0.0%
Hypertensive	0	0.0%
Normotensive	1,030,259	100.0%
Post-Index Blood Pressure Measures:		
At Least 1 Additional Blood Pressure Measure in 183 days	328,276	31.9%
At Least 2 Additional Blood Pressure Measures in 183 days	123,377	12.0%
At Least 1 Additional Blood Pressure Measure in 365 days	532,827	51.7%
At Least 2 Additional Blood Pressure Measures in 365 days	248,573	24.1%
At Least 1 Additional Blood Pressure Measure in entire history	924,011	89.7%
At Least 2 Additional Blood Pressure Measures in entire history	789,737	76.7%
No Additional Blood Pressure Measures in 183 days	701,983	68.1%
No Additional Blood Pressure Measures in 365 days	497,432	48.3%
No Additional Blood Pressure Measures in entire history	106,248	10.3%
Post-Index Blood Pressure Measures, among Hypertensive at Index Members:		
Hypertensive and at least 1 Additional Blood Pressure Measure in 183 days	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in 183 days	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in 183 days	0	0.0%
Hypertensive and at least 1 Additional Blood Pressure Measure in 365 days	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in 365 days	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in 365 days	0	0.0%
Hypertensive and at least 1 Additional Blood Pressure Measure in entire history	0	0.0%
Hypertensive and at least 2 Additional Blood Pressure Measures in entire history	0	0.0%
Hypertensive and No Additional Blood Pressure Measures in entire history	0	0.0%
Blood Pressure Exam Claims Codes:		
Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	22	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	70	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	0	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	0	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	0	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	0	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	0	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	0	0.0%

Table 1d. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Claims Definitions:	Pressure	
	Number	Percent
Hypertension Claims Definition 1: 1 Inpatient or 2 Outpatient Claims	332	0.0%
Hypertension Claims Definition 2: Any Claim	590	0.1%
Elevated Blood Pressure Claim	804	0.1%
Claims and Clinical Hypertension Cross-Tabulations:		
Elevated Blood Pressure AND Elevated Blood Pressure Claim	0	0.0%
Elevated Blood Pressure AND NOT Elevated Blood Pressure Claim	0	0.0%
Hypertensive AND Hypertension Claims Definition 1	0	0.0%
Hypertensive AND NOT Hypertension Claims Definition 1	0	0.0%
Hypertensive AND Hypertension Claims Definition 2	0	0.0%
Hypertensive AND NOT Hypertension Claims Definition 2	0	0.0%
Elevated Blood Pressure AND NOT ANY Claims Definition	0	0.0%
Hypertensive AND NOT ANY Claims Definition	0	0.0%
Recorded History of Anti-Hypertension Agents in 365 Days Prior to Blood Pressure Measurement:		
Pre Angiotensin Receptor Blockers	21	0.0%
Pre Angiotensin-Converting Enzyme Inhibitors	321	0.0%
Pre Alpha Antagonists	51	0.0%
Pre Beta-Blockers	841	0.1%
Pre Calcium Channel Blockers	140	0.0%
Pre Central Alpha-Agonists	3,064	0.3%
Pre Direct Renin Inhibitors	0	0.0%
Pre Direct Vasodilators	3	0.0%
Pre Diuretics	287	0.0%
Pre Combination Products	12	0.0%
History of Anti-Hypertension Agents in 365 Days After Blood Pressure Measurement:		
Post Angiotensin Receptor Blockers	259	0.0%
Post Angiotensin-Converting Enzyme Inhibitors	1,494	0.1%
Post Alpha Antagonists	1,759	0.2%
Post Beta-Blockers	11,492	1.1%
Post Calcium Channel Blockers	2,257	0.2%
Post Central Alpha-Agonists	14,895	1.4%
Post Direct Renin Inhibitors	0	0.0%
Post Direct Vasodilators	76	0.0%
Post Diuretics	5,990	0.6%
Post Combination Products	203	0.0%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:		
Obesity	29,634	2.9%
Obesity Combo (Obesity Procedures or BMI)	76,794	7.5%
BMI - Underweight	17,617	1.7%
BMI - Normal Weight	349,979	34.0%
BMI - Overweight	64,502	6.3%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:	Number	Percent

Table 1d. Aggregated Baseline Table for Pediatric Members with a Normotensive Blood Pressure Measurement and No Pre-Index Elevated or Hypertensive Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Pressure	
BMI - Obese	52,697	5.1%
Type 2 Diabetes Mellitus	615	0.1%
Dyslipidemia	1,403	0.1%
Chronic Kidney Disease	2,228	0.2%
Cardiomegaly	277	0.0%
Pyelonephritis	924	0.1%
Vesicoureteral Reflux	1,160	0.1%
Neurofibromatosis Type 1	269	0.0%
Hyperthyroidism	208	0.0%
Tuberous Sclerosis	66	0.0%
Systemic Lupus Erythematosus	43	0.0%
Cushing Syndrome	8	0.0%
Williams Syndrome	263	0.0%
Turner Syndrome	103	0.0%
Health Service Utilization Intensity in 365 Days Prior to Blood Pressure Measurement:		
	Mean	Standard Deviation
Mean number of ambulatory encounters	3.8	6.8
Mean number of emergency room encounters	0.1	0.5
Mean number of inpatient hospital encounters	0	0.2
Mean number of non-acute institutional encounters	0	0.2
Mean number of other ambulatory encounters	1.7	2.9

¹All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

²In the SDD, race information is not well populated and there are substantial proportions of "unknown" race and Hispanic indicator values. Specifically, two commercial Data Partners do not provide any race or ethnicity data.

Table 1e. Aggregated Baseline Table for Pediatric Members with Any Valid Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Characteristic ¹	Any Valid Blood Pressure Measure	
	Number	Percent
Number of episodes	10,021,452	
Number of unique patients	1,659,773	
Demographics:	Mean	Standard Deviation
Mean Age (years)	11.2	4.5
Age	Number	Percent
3-5 years	1,845,122	18.4%
6-11 years	3,276,285	32.7%
12-17 years	4,900,045	48.9%
Sex		
Female	820,423	49.4%
Male	839,350	50.6%
Race ²		
Unknown	406,815	24.5%
American Indian or Alaska Native	13,612	0.8%
Asian	268,409	16.2%
Black or African American	173,267	10.4%
Native Hawaiian or Other Pacific Islander	49,225	3.0%
White	748,445	45.1%
Hispanic Origin	374,668	22.6%
Year		
2006	283,895	2.8%
2007	494,717	4.9%
2008	614,313	6.1%
2009	714,491	7.1%
2010	802,953	8.0%
2011	866,311	8.6%
2012	907,197	9.1%
2013	933,462	9.3%
2014	959,588	9.6%
2015	994,117	9.9%
2016	997,834	10.0%
2017	999,321	10.0%
2018	453,253	4.5%
Vital Measurements:	Mean	Standard Deviation
Height (inches)	56.8	9.8
Diastolic Blood Pressure	62.8	9.3
Systolic Blood Pressure	106.6	12.7

Table 1e. Aggregated Baseline Table for Pediatric Members with Any Valid Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Clinical Hypertension Category at Index:	Any Valid Blood Pressure Measure	
	Number	Percent
Elevated Blood Pressure	1,401,167	14.0%
Hypertensive	1,446,316	14.4%
Normotensive	7,173,969	71.6%
Post-Index Blood Pressure Measures:		
At Least 1 Additional Blood Pressure Measure in 183 days	5,262,103	52.5%
At Least 2 Additional Blood Pressure Measures in 183 days	2,819,668	28.1%
At Least 1 Additional Blood Pressure Measure in 365 days	6,999,170	69.8%
At Least 2 Additional Blood Pressure Measures in 365 days	4,585,672	45.8%
At Least 1 Additional Blood Pressure Measure in entire history	9,110,457	90.9%
At Least 2 Additional Blood Pressure Measures in entire history	8,007,678	79.9%
No Additional Blood Pressure Measures in 183 days	4,759,349	47.5%
No Additional Blood Pressure Measures in 365 days	3,022,282	30.2%
No Additional Blood Pressure Measures in entire history	910,995	9.1%
Post-Index Blood Pressure Measures, among Hypertensive at Index Members:		
Hypertensive and at least 1 Additional Blood Pressure Measure in 183 days	808,132	8.1%
Hypertensive and at least 2 Additional Blood Pressure Measures in 183 days	443,745	4.4%
Hypertensive and No Additional Blood Pressure Measures in 183 days	638,184	6.4%
Hypertensive and at least 1 Additional Blood Pressure Measure in 365 days	1,032,410	10.3%
Hypertensive and at least 2 Additional Blood Pressure Measures in 365 days	676,663	6.8%
Hypertensive and No Additional Blood Pressure Measures in 365 days	413,906	4.1%
Hypertensive and at least 1 Additional Blood Pressure Measure in entire history	1,312,441	13.1%
Hypertensive and at least 2 Additional Blood Pressure Measures in entire history	1,152,219	11.5%
Hypertensive and No Additional Blood Pressure Measures in entire history	133,875	1.3%
Blood Pressure Exam Claims Codes:		
Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	4,107	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	93	0.0%
Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	4,812	0.0%
Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	58	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	730	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	15	0.0%
Elevated Blood Pressure and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	713	0.0%
Elevated Blood Pressure and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	9	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Pre-Index)	1,256	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Pre-Index)	51	0.0%
Hypertensive and Normal Blood Pressure Exam Claim (Z01.30) (Post-Index)	1,800	0.0%
Hypertensive and Abnormal Blood Pressure Exam Claim (Z01.31) (Post-Index)	31	0.0%

Table 1e. Aggregated Baseline Table for Pediatric Members with Any Valid Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Claims Definitions:	Any Valid Blood Pressure Measure	
	Number	Percent
Hypertension Claims Definition 1: 1 Inpatient or 2 Outpatient Claims	47,044	0.5%
Hypertension Claims Definition 2: Any Claim	66,404	0.7%
Elevated Blood Pressure Claim	70,351	0.7%
Claims and Clinical Hypertension Cross-Tabulations:		
Elevated Blood Pressure AND Elevated Blood Pressure Claim	12,882	0.1%
Elevated Blood Pressure AND NOT Elevated Blood Pressure Claim	1,388,285	13.9%
Hypertensive AND Hypertension Claims Definition 1	23,486	0.2%
Hypertensive AND NOT Hypertension Claims Definition 1	1,422,830	14.2%
Hypertensive AND Hypertension Claims Definition 2	33,430	0.3%
Hypertensive AND NOT Hypertension Claims Definition 2	1,412,886	14.1%
Elevated Blood Pressure AND NOT ANY Claims Definition	1,378,570	13.8%
Hypertensive AND NOT ANY Claims Definition	1,381,243	13.8%
Recorded History of Anti-Hypertension Agents in 365 Days Prior to Blood Pressure Measurement:		
Pre Angiotensin Receptor Blockers	1,650	0.0%
Pre Angiotensin-Converting Enzyme Inhibitors	25,330	0.3%
Pre Alpha Antagonists	3,953	0.0%
Pre Beta-Blockers	37,946	0.4%
Pre Calcium Channel Blockers	14,484	0.1%
Pre Central Alpha-Agonists	112,834	1.1%
Pre Direct Renin Inhibitors	0	0.0%
Pre Direct Vasodilators	665	0.0%
Pre Diuretics	16,929	0.2%
Pre Combination Products	1,051	0.0%
History of Anti-Hypertension Agents in 365 Days After Blood Pressure Measurement:		
Post Angiotensin Receptor Blockers	9,007	0.1%
Post Angiotensin-Converting Enzyme Inhibitors	57,628	0.6%
Post Alpha Antagonists	34,952	0.3%
Post Beta-Blockers	189,685	1.9%
Post Calcium Channel Blockers	54,891	0.5%
Post Central Alpha-Agonists	266,107	2.7%
Post Direct Renin Inhibitors	0	0.0%
Post Direct Vasodilators	2,483	0.0%
Post Diuretics	96,318	1.0%
Post Combination Products	7,576	0.1%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:		
Obesity	592,464	5.9%
Obesity Combo (Obesity Procedures or BMI)	1,346,047	13.4%
BMI - Underweight	165,101	1.6%
BMI - Normal Weight	3,162,514	31.6%
BMI - Overweight	848,752	8.5%
BMI - Obese	951,834	9.5%
Recorded History of in 365 Days Prior to Blood Pressure Measurement:	Number	Percent

Table 1e. Aggregated Baseline Table for Pediatric Members with Any Valid Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Any Valid Blood Pressure Measure	
Type 2 Diabetes Mellitus	39,112	0.4%
Dyslipidemia	75,425	0.8%
Chronic Kidney Disease	85,402	0.9%
Cardiomegaly	13,370	0.1%
Pyelonephritis	28,771	0.3%
Vesicoureteral Reflux	16,494	0.2%
Neurofibromatosis Type 1	6,541	0.1%
Hyperthyroidism	10,374	0.1%
Tuberous Sclerosis	1,622	0.0%
Systemic Lupus Erythematosus	6,632	0.1%
Cushing Syndrome	2,086	0.0%
Williams Syndrome	7,130	0.1%
Turner Syndrome	3,322	0.0%
Health Service Utilization Intensity in 365 Days Prior to Blood Pressure Measurement:		
	Mean	Standard Deviation
Mean number of ambulatory encounters	6.5	9.9
Mean number of emergency room encounters	0.4	0.9
Mean number of inpatient hospital encounters	0.1	0.7
Mean number of non-acute institutional encounters	0	0.2
Mean number of other ambulatory encounters	3.6	6.2

¹All metrics are based on total number of episodes per group, except for sex, race, and hispanic origin which are based on total number of unique patients

²In the SDD, race information is not well populated and there are substantial proportions of "unknown" race and Hispanic indicator values. Specifically, two commercial Data Partners do not provide any race or ethnicity data.

Table A. Misclassification Matrices Comparing Clinical and Claims Evidence of High Blood Pressure in the Sentinel Distributed Database

		Claims Evidence	
		Elevated Blood Pressure	No Elevated Blood Pressure
Clinical Evidence***	Elevated Blood Pressure	1,643	512,249
	No Elevated Blood Pressure	n/a	n/a

		Claims Evidence	
		Hypertension Definition 1*	No Hypertension Definition 1
Clinical Evidence***	Hypertensive Blood Pressure	1,506	508,901
	No Hypertensive Blood Pressure	n/a	n/a

		Claims Evidence	
		Hypertension Definition 2**	No Hypertension Definition 2
Clinical Evidence***	Hypertensive Blood Pressure	2,995	507,412
	No Hypertensive Blood Pressure	n/a	n/a

* Hypertension Definition 1 defined as evidence of one inpatient diagnosis or two outpatient diagnoses of hypertension.

** Hypertension Definition 2 defined as any valid diagnosis of hypertension.

***Clinical definition of elevated blood pressure and hypertension defined in Appendix B and are based on the 2017 American Academy of Pediatrics Guidelines (Flynn JT, Kaelber DC, Baker-Smith CM, et al. Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents. Pediatrics.2017;140(3):e20171904)

Table 2. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, Overall

	New Users
Elevated Blood Pressure or Hypertensive	1,024,299
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	502,992
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	364,093
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	1,030,259
Any Valid Blood Pressure Measurement	1,659,773

Table 3. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Year

Year	New Users
Elevated Blood Pressure or Hypertensive	
2006	65,783
2007	94,785
2008	93,220
2009	90,331
2010	89,420
2011	88,067
2012	82,159
2013	78,266
2014	75,069
2015	75,836
2016	76,177
2017	76,028
2018	39,158
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	
2006	50,910
2007	57,867
2008	46,233
2009	37,962
2010	40,570
2011	36,633
2012	32,130
2013	30,873
2014	31,873
2015	34,719
2016	37,988
2017	42,304
2018	22,930
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	
2006	18,139
2007	25,113
2008	24,606
2009	23,687
2010	24,425
2011	26,062
2012	24,615
2013	25,741
2014	26,727
2015	30,444
2016	35,578
2017	45,590
2018	33,366
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	

Table 3. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Year

Year	New Users
2006	121,298
2007	137,296
2008	109,531
2009	89,460
2010	90,579
2011	78,665
2012	68,186
2013	62,503
2014	60,500
2015	60,721
2016	61,692
2017	60,651
2018	29,177
Any Valid Blood Pressure Measurement	
2006	176,018
2007	292,292
2008	344,819
2009	383,088
2010	432,020
2011	464,541
2012	472,920
2013	486,547
2014	498,000
2015	514,081
2016	527,219
2017	528,828
2018	302,646

Table 4. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Sex

Sex	New Users
Elevated Blood Pressure or Hypertensive	
Female	461,946
Male	562,353
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	
Female	292,071
Male	210,921
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	
Female	139,872
Male	224,221
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	
Female	550,200
Male	480,059
Any Valid Blood Pressure Measurement	
Female	820,423
Male	839,350

Table 5. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Age Group

Age Group	New Users
Elevated Blood Pressure or Hypertensive	
3-5 years	322,477
6-11 years	280,071
12-17 years	421,751
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	
3-5 years	174,793
6-11 years	135,362
12-17 years	192,837
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	
3-5 years	40,636
6-11 years	60,904
12-17 years	262,553
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	
3-5 years	393,777
6-11 years	302,622
12-17 years	333,860
Any Valid Blood Pressure Measurement	
3-5 years	628,213
6-11 years	844,504
12-17 years	960,534

Table 6. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Race

Race	New Users
Elevated Blood Pressure or Hypertensive	
American Indian or Alaska Native	8,537
Asian	163,736
Black or African American	114,740
Native Hawaiian or Other Pacific Islander	31,511
Unknown	239,126
White	466,649
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	
American Indian or Alaska Native	4,000
Asian	84,464
Black or African American	44,622
Native Hawaiian or Other Pacific Islander	14,064
Unknown	130,277
White	225,565
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	
American Indian or Alaska Native	2,861
Asian	57,426
Black or African American	40,827
Native Hawaiian or Other Pacific Islander	9,394
Unknown	90,788
White	162,797
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	
American Indian or Alaska Native	8,531
Asian	163,110
Black or African American	102,149
Native Hawaiian or Other Pacific Islander	31,471
Unknown	243,724
White	481,274
Any Valid Blood Pressure Measurement	
American Indian or Alaska Native	13,612
Asian	268,409
Black or African American	173,267
Native Hawaiian or Other Pacific Islander	49,225
Unknown	406,815
White	748,445

Table 7. Summary of Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018, by Hispanic Ethnicity

Hispanic	New Users
Elevated Blood Pressure or Hypertensive	
Hispanic Origin	242,313
Not Hispanic Origin	161,026
Unknown	620,960
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	
Hispanic Origin	99,684
Not Hispanic Origin	110,082
Unknown	293,226
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	
Hispanic Origin	87,100
Not Hispanic Origin	40,127
Unknown	236,866
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	
Hispanic Origin	218,333
Not Hispanic Origin	213,215
Unknown	598,711
Any Valid Blood Pressure Measurement	
Hispanic Origin	374,668
Not Hispanic Origin	294,145
Unknown	990,960

Table 8. Distribution of Follow-Up for Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

	Number of Episodes by Length of Follow-Up Time										
	0-183 days			184-364 days		365-729 days		730-1,094 days		1,095+ days	
	Total Number of Episodes	Number of Episodes	Percent Total Episodes	Number of Episodes	Percent Total Episodes	Number of Episodes	Percent Total Episodes	Number of Episodes	Percent Total Episodes	Number of Episodes	Percent Total Episodes
Elevated Blood Pressure or Hypertensive	1,024,299	0	0.0%	2,221	0.2%	175,189	17.1%	141,958	13.9%	704,931	68.8%
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	502,992	0	0.0%	1,460	0.3%	117,989	23.5%	80,436	16.0%	303,107	60.3%
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	364,093	0	0.0%	1,510	0.4%	105,422	29.0%	62,698	17.2%	194,463	53.4%
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	1,030,259	0	0.0%	1,965	0.2%	169,694	16.5%	133,206	12.9%	725,394	70.4%
Any Valid Blood Pressure Measurement	10,021,452	0	0.0%	40,770	0.4%	1,838,122	18.3%	1,522,235	15.2%	6,620,325	66.1%

Table 8. Distribution of Follow-Up for Pediatric Members with Blood Pressure Measurements in the Sentinel Distributed Database (SDD) between January 1, 2006 to December 31, 2018

Distribution of Length of Follow-up Time in Days, by Episode

	Minimum	Q1	Median	Q3	Maximum	Mean	Standard Deviation
Elevated Blood Pressure or Hypertensive	242	919	1,746	2,957	4,960	1,994	1,218
Normotensive, No Pre- or Post-Index Elevated or Hypertensive Measurements	242	752	1,420	2,733	4,960	1,815	1,244
Elevated Blood Pressure or Hypertensive, No Post-Index Normotensive Measurements	242	663	1,186	2,249	4,958	1,556	1,083
Normotensive, No Pre-Index Elevated or Hypertensive Measurements	242	955	1,898	3,281	4,960	2,156	1,325
Any Valid Blood Pressure Measurement	242	870	1,562	2,559	4,960	1,797	1,088

Table 9. Frequency of Implausible Blood Pressure Measurements among all Blood Pressure Measurements in the Sentinel Distributed Database (SDD), by Metric that Caused Implausible Value

Implausible Systolic Value (<50 mmHg or >260 mmHg)	Implausible Diastolic Value (<25 mmHg or >200 mmHg)	Systolic Value Less than or Equal to Diastolic Value	Implausible Values as defined by American Academy of Pediatrics Algorithm	Implausible Height Value (Height Z-Score <-3.09 or >3.09)	Same Day Blood Pressure Values with no Same Day Height Measurement*	Systolic Discarded Due to Missing Measure Time**	Diastolic Discarded Due to Missing Measure Time**	Number	Percent
0	0	0	0	0	0	0	1	4,179,658	-
0	0	0	0	0	0	1	0	4,179,980	-
0	0	0	0	0	1	0	0	5,563,574	31.38%
0	0	0	0	1	0	0	0	152,399	0.86%
0	0	1	0	0	0	0	0	120	0.00%
0	0	1	0	1	0	0	0	1	0.00%
0	1	0	0	0	0	0	0	8,969	0.05%
0	1	0	0	1	0	0	0	198	0.00%
1	0	0	0	0	0	0	0	19	0.00%
1	0	1	0	0	0	0	0	119	0.01%
1	1	0	0	0	0	0	0	33	0.00%
1	1	0	0	1	0	0	0	1	0.00%
1	1	1	0	0	0	0	0	10	0.00%

*Blood pressure values with no same day height measurements were not excluded from the cohorts as long as a valid height measurement occurred with six months of diastolic and systolic measurement. This scenario is included here for data characterization purposes.

**Diastolic and systolic values with missing measure times were discarded if multiple measures occurred on the same day and any diastolic or systolic value had a missing time value. Due to the missing measure time recording it would not be possible to reliably match the diastolic and systolic values from each blood pressure measure.

Appendix A. Start and End Dates for Each Data Partner as of Request Distribution Date (December 30, 2020)

Masked ID	DP Start Date*	DP End Date*
DP01	01/01/2005	07/31/2018
DP02	01/01/2000	07/31/2019
DP03	01/01/2004	08/31/2019
DP04	01/01/2000	04/30/2019
DP05	01/01/2000	02/28/2019
DP06	01/01/2000	04/30/2018
DP07	01/01/2000	01/31/2019

*The start and end dates are based on the minimum and maximum dates within each DP. The month with the maximum date must have at least 80% of the number of records in the previous month.

Appendix B. American Academy of Pediatrics (AAP) Guidelines for Pediatric Hypertension Classification

AAP 2017 for Children 1-13 y		AAP 2017 for Children ≥13 y	
Classification	SBP/DBP Percentile	Classification	Absolute Threshold
Normal	<90th	Normal	<120/<80 mm Hg
Elevated BP	≥90th to <95th Or 120/80 mm Hg to <95th (whichever is lower)	Elevated BP	120/<80 to 129/<80 mm Hg
Stage 1 hypertension	≥95th to <95th Plus 12 mm Hg or 130/80-139/89 mm Hg (whichever is lower)	Stage 1 hypertension	130/80 to 139/89 mm Hg
Stage 2 hypertension	≥95th Plus 12 mm Hg or ≥140/90 mm Hg (whichever is lower)	Stage 2 hypertension	≥140/≥90 mm Hg

*Note: In this request, Stage 1 hypertension and Stage 2 hypertension were grouped together under "Hypertension"

**Please see the following reference for look-up tables defining the systolic blood pressure (SBP)/diastolic blood pressure (DBP) percentiles for each height percentile and gender: Flynn JT, Kaelber DC, Baker-Smith CM, et al. Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents. *Pediatrics*.2017;140(3):e20171904

***Height percentiles are based on Centers for Disease Control and Prevention (CDC) guidelines: Centers for Disease Control and Prevention, National Center for Health Statistics. 2000 CDC growth charts: United States. Available at: www.cdc.gov/growthcharts. Accessed August 19, 2020

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
Hypertension			
401	Essential hypertension	ICD-9-CM	Diagnosis
401.0	Essential hypertension, malignant	ICD-9-CM	Diagnosis
401.1	Essential hypertension, benign	ICD-9-CM	Diagnosis
401.9	Unspecified essential hypertension	ICD-9-CM	Diagnosis
402	Hypertensive heart disease	ICD-9-CM	Diagnosis
402.0	Malignant hypertensive heart disease	ICD-9-CM	Diagnosis
402.00	Malignant hypertensive heart disease without heart failure	ICD-9-CM	Diagnosis
402.01	Malignant hypertensive heart disease with heart failure	ICD-9-CM	Diagnosis
402.1	Benign hypertensive heart disease	ICD-9-CM	Diagnosis
402.10	Benign hypertensive heart disease without heart failure	ICD-9-CM	Diagnosis
402.11	Benign hypertensive heart disease with heart failure	ICD-9-CM	Diagnosis
402.9	Unspecified hypertensive heart disease	ICD-9-CM	Diagnosis
402.90	Unspecified hypertensive heart disease without heart failure	ICD-9-CM	Diagnosis
402.91	Hypertensive heart disease, unspecified, with heart failure	ICD-9-CM	Diagnosis
403	Hypertensive chronic kidney disease	ICD-9-CM	Diagnosis
403.0	Hypertensive chronic kidney disease, malignant	ICD-9-CM	Diagnosis
403.00	Hypertensive chronic kidney disease, malignant, with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
403.01	Hypertensive chronic kidney disease, malignant, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
403.1	Hypertensive chronic kidney disease, benign	ICD-9-CM	Diagnosis
403.10	Hypertensive chronic kidney disease, benign, with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
403.11	Hypertensive chronic kidney disease, benign, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
403.9	Hypertensive chronic kidney disease, unspecified	ICD-9-CM	Diagnosis
403.90	Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
403.91	Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404	Hypertensive heart and chronic kidney disease	ICD-9-CM	Diagnosis
404.0	Hypertensive heart and chronic kidney disease, malignant	ICD-9-CM	Diagnosis
404.00	Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.01	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.02	Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.03	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.1	Hypertensive heart and chronic kidney disease, benign	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
404.10	Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.11	Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.12	Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.13	Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.9	Hypertensive heart and chronic kidney disease, unspecified	ICD-9-CM	Diagnosis
404.90	Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.91	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified	ICD-9-CM	Diagnosis
404.92	Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.93	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
405	Secondary hypertension	ICD-9-CM	Diagnosis
405.0	Secondary hypertension, malignant	ICD-9-CM	Diagnosis
405.01	Secondary renovascular hypertension, malignant	ICD-9-CM	Diagnosis
405.09	Other secondary hypertension, malignant	ICD-9-CM	Diagnosis
405.1	Secondary hypertension, benign	ICD-9-CM	Diagnosis
405.11	Secondary renovascular hypertension, benign	ICD-9-CM	Diagnosis
405.19	Other secondary hypertension, benign	ICD-9-CM	Diagnosis
405.9	Unspecified secondary hypertension, unspecified	ICD-9-CM	Diagnosis
405.91	Secondary renovascular hypertension, unspecified	ICD-9-CM	Diagnosis
405.99	Other secondary hypertension, unspecified	ICD-9-CM	Diagnosis
997.91	Hypertension	ICD-9-CM	Diagnosis
I10	Essential (primary) hypertension	ICD-10-CM	Diagnosis
I11	Hypertensive heart disease	ICD-10-CM	Diagnosis
I11.0	Hypertensive heart disease with heart failure	ICD-10-CM	Diagnosis
I11.9	Hypertensive heart disease without heart failure	ICD-10-CM	Diagnosis
I12	Hypertensive chronic kidney disease	ICD-10-CM	Diagnosis
I12.0	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease	ICD-10-CM	Diagnosis
I12.9	Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis
I13	Hypertensive heart and chronic kidney disease	ICD-10-CM	Diagnosis
I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis
I13.1	Hypertensive heart and chronic kidney disease without heart failure	ICD-10-CM	Diagnosis
I13.2	Hypertensive heart and chronic kidney disease without heart failure, with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
I13.10	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease	ICD-10-CM	Diagnosis
I13.11	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease	ICD-10-CM	Diagnosis
I15	Secondary hypertension	ICD-10-CM	Diagnosis
I15.0	Renovascular hypertension	ICD-10-CM	Diagnosis
I15.1	Hypertension secondary to other renal disorders	ICD-10-CM	Diagnosis
I15.2	Hypertension secondary to endocrine disorders	ICD-10-CM	Diagnosis
I15.8	Other secondary hypertension	ICD-10-CM	Diagnosis
I15.9	Secondary hypertension, unspecified	ICD-10-CM	Diagnosis
I16.0	Hypertensive urgency	ICD-10-CM	Diagnosis
I16.1	Hypertensive emergency	ICD-10-CM	Diagnosis
I16.9	Hypertensive crisis, unspecified	ICD-10-CM	Diagnosis
N26.2	Page kidney	ICD-10-CM	Diagnosis
I97.3	Postprocedural hypertension	ICD-10-CM	Diagnosis
Elevated Blood Pressure			
796.2	Elevated blood pressure reading without diagnosis of hypertension	ICD-9-CM	Diagnosis
R03.0	Elevated blood-pressure reading, without diagnosis of hypertension	ICD-10-CM	Diagnosis
Obesity			
278.0	Overweight and obesity	ICD-9-CM	Diagnosis
278.00	Obesity, unspecified	ICD-9-CM	Diagnosis
278.01	Morbid obesity	ICD-9-CM	Diagnosis
278.02	Overweight	ICD-9-CM	Diagnosis
278.1	Localized adiposity	ICD-9-CM	Diagnosis
V45.86	Bariatric surgery status	ICD-9-CM	Diagnosis
44.31	High gastric bypass	ICD-9-CM	Procedure
44.68	Laparoscopic gastroplasty	ICD-9-CM	Procedure
44.95	Laparoscopic gastric restrictive procedure	ICD-9-CM	Procedure
E65	Localized adiposity	ICD-10-CM	Diagnosis
E66.01	Morbid (severe) obesity due to excess calories	ICD-10-CM	Diagnosis
E66.09	Other obesity due to excess calories	ICD-10-CM	Diagnosis
E66.1	Drug-induced obesity	ICD-10-CM	Diagnosis
E66.2	Morbid (severe) obesity with alveolar hypoventilation	ICD-10-CM	Diagnosis
E66.3	Overweight	ICD-10-CM	Diagnosis
E66.8	Other obesity	ICD-10-CM	Diagnosis
E66.9	Obesity, unspecified	ICD-10-CM	Diagnosis
Z98.84	Bariatric surgery status	ICD-10-CM	Diagnosis
0D1607A	Bypass Stomach to Jejunum with Autologous Tissue Substitute, Open Approach	ICD-10-PCS	Procedure
0D160JA	Bypass Stomach to Jejunum with Synthetic Substitute, Open Approach	ICD-10-PCS	Procedure
0D160KA	Bypass Stomach to Jejunum with Nonautologous Tissue Substitute, Open Approach	ICD-10-PCS	Procedure
0D160ZA	Bypass Stomach to Jejunum, Open Approach	ICD-10-PCS	Procedure
0D1687A	Bypass Stomach to Jejunum with Autologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic	ICD-10-PCS	Procedure

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
0D168JA	Bypass Stomach to Jejunum with Synthetic Substitute, Via Natural or Artificial Opening Endoscopic	ICD-10-PCS	Procedure
0D168KA	Bypass Stomach to Jejunum with Nonautologous Tissue Substitute, Via Natural or Artificial Opening Endoscopic	ICD-10-PCS	Procedure
0D168ZA	Bypass Stomach to Jejunum, Via Natural or Artificial Opening Endoscopic	ICD-10-PCS	Procedure
0DQ64ZZ	Repair Stomach, Percutaneous Endoscopic Approach	ICD-10-PCS	Procedure
0DV64CZ	Restriction of Stomach with Extraluminal Device, Percutaneous Endoscopic Approach	ICD-10-PCS	Procedure
Body Mass Index (BMI) - Underweight			
V85.0	Body Mass Index less than 19, adult	ICD-9-CM	Diagnosis
V85.51	Body Mass Index, pediatric, less than 5th percentile for age	ICD-9-CM	Diagnosis
Z68.1	Body mass index (BMI) 19 or less, adult	ICD-10-CM	Diagnosis
Z68.51	Body mass index (BMI) pediatric, less than 5th percentile for age	ICD-10-CM	Diagnosis
Body Mass Index (BMI) - Normal Weight			
V85.1	Body Mass Index between 19-24, adult	ICD-9-CM	Diagnosis
V85.52	Body Mass Index, pediatric, 5th percentile to less than 85th percentile for age	ICD-9-CM	Diagnosis
Z68.20	Body mass index (BMI) 20.0-20.9, adult	ICD-10-CM	Diagnosis
Z68.21	Body mass index (BMI) 21.0-21.9, adult	ICD-10-CM	Diagnosis
Z68.22	Body mass index (BMI) 22.0-22.9, adult	ICD-10-CM	Diagnosis
Z68.23	Body mass index (BMI) 23.0-23.9, adult	ICD-10-CM	Diagnosis
Z68.24	Body mass index (BMI) 24.0-24.9, adult	ICD-10-CM	Diagnosis
Z68.52	Body mass index (BMI) pediatric, 5th percentile to less than 85th percentile for age	ICD-10-CM	Diagnosis
Body Mass Index (BMI) - Overweight			
V85.21	Body Mass Index 25.0-25.9, adult	ICD-9-CM	Diagnosis
V85.22	Body Mass Index 26.0-26.9, adult	ICD-9-CM	Diagnosis
V85.23	Body Mass Index 27.0-27.9, adult	ICD-9-CM	Diagnosis
V85.24	Body Mass Index 28.0-28.9, adult	ICD-9-CM	Diagnosis
V85.25	Body Mass Index 29.0-29.9, adult	ICD-9-CM	Diagnosis
V85.53	Body Mass Index, pediatric, 85th percentile to less than 95th percentile for age	ICD-9-CM	Diagnosis
Z68.25	Body mass index (BMI) 25.0-25.9, adult	ICD-10-CM	Diagnosis
Z68.26	Body mass index (BMI) 26.0-26.9, adult	ICD-10-CM	Diagnosis
Z68.27	Body mass index (BMI) 27.0-27.9, adult	ICD-10-CM	Diagnosis
Z68.28	Body mass index (BMI) 28.0-28.9, adult	ICD-10-CM	Diagnosis
Z68.29	Body mass index (BMI) 29.0-29.9, adult	ICD-10-CM	Diagnosis
Z68.53	Body mass index (BMI) pediatric, 85th percentile to less than 95th percentile for age	ICD-10-CM	Diagnosis
Body Mass Index (BMI) - Obese			
V85.3	Body Mass Index between 30-39, adult	ICD-9-CM	Diagnosis
V85.30	Body Mass Index 30.0-30.9, adult	ICD-9-CM	Diagnosis
V85.31	Body Mass Index 31.0-31.9, adult	ICD-9-CM	Diagnosis
V85.32	Body Mass Index 32.0-32.9, adult	ICD-9-CM	Diagnosis
V85.33	Body Mass Index 33.0-33.9, adult	ICD-9-CM	Diagnosis
V85.34	Body Mass Index 34.0-34.9, adult	ICD-9-CM	Diagnosis
V85.35	Body Mass Index 35.0-35.9, adult	ICD-9-CM	Diagnosis
V85.36	Body Mass Index 36.0-36.9, adult	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
V85.37	Body Mass Index 37.0-37.9, adult	ICD-9-CM	Diagnosis
V85.38	Body Mass Index 38.0-38.9, adult	ICD-9-CM	Diagnosis
V85.39	Body Mass Index 39.0-39.9, adult	ICD-9-CM	Diagnosis
V85.4	Body Mass Index 40 and over, adult	ICD-9-CM	Diagnosis
V85.41	Body Mass Index 40.0-44.9, adult	ICD-9-CM	Diagnosis
V85.42	Body Mass Index 45.0-49.9, adult	ICD-9-CM	Diagnosis
V85.43	Body Mass Index 50.0-59.9, adult	ICD-9-CM	Diagnosis
V85.44	Body Mass Index 60.0-69.9, adult	ICD-9-CM	Diagnosis
V85.45	Body Mass Index 70 and over, adult	ICD-9-CM	Diagnosis
V85.54	Body Mass Index, pediatric, greater than or equal to 95th percentile for age	ICD-9-CM	Diagnosis
Z68.30	Body mass index (BMI) 30.0-30.9, adult	ICD-10-CM	Diagnosis
Z68.31	Body mass index (BMI) 31.0-31.9, adult	ICD-10-CM	Diagnosis
Z68.32	Body mass index (BMI) 32.0-32.9, adult	ICD-10-CM	Diagnosis
Z68.33	Body mass index (BMI) 33.0-33.9, adult	ICD-10-CM	Diagnosis
Z68.34	Body mass index (BMI) 34.0-34.9, adult	ICD-10-CM	Diagnosis
Z68.35	Body mass index (BMI) 35.0-35.9, adult	ICD-10-CM	Diagnosis
Z68.36	Body mass index (BMI) 36.0-36.9, adult	ICD-10-CM	Diagnosis
Z68.37	Body mass index (BMI) 37.0-37.9, adult	ICD-10-CM	Diagnosis
Z68.38	Body mass index (BMI) 38.0-38.9, adult	ICD-10-CM	Diagnosis
Z68.39	Body mass index (BMI) 39.0-39.9, adult	ICD-10-CM	Diagnosis
Z68.41	Body mass index (BMI) 40.0-44.9, adult	ICD-10-CM	Diagnosis
Z68.42	Body mass index (BMI) 45.0-49.9, adult	ICD-10-CM	Diagnosis
Z68.43	Body mass index (BMI) 50-59.9, adult	ICD-10-CM	Diagnosis
Z68.44	Body mass index (BMI) 60.0-69.9, adult	ICD-10-CM	Diagnosis
Z68.45	Body mass index (BMI) 70 or greater, adult	ICD-10-CM	Diagnosis
Z68.54	Body mass index (BMI) pediatric, greater than or equal to 95th percentile for age	ICD-10-CM	Diagnosis
Type 2 Diabetes Mellitus			
250.00	Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.02	Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.20	Diabetes with hyperosmolarity, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.22	Diabetes with hyperosmolarity, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.10	Diabetes with ketoacidosis, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.12	Diabetes with ketoacidosis, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.60	Diabetes with neurological manifestations, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.62	Diabetes with neurological manifestations, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.50	Diabetes with ophthalmic manifestations, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.52	Diabetes with ophthalmic manifestations, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.30	Diabetes with other coma, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.32	Diabetes with other coma, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
250.80	Diabetes with other specified manifestations, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.82	Diabetes with other specified manifestations, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.70	Diabetes with peripheral circulatory disorders, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.72	Diabetes with peripheral circulatory disorders, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.40	Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.42	Diabetes with renal manifestations, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.90	Diabetes with unspecified complication, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.92	Diabetes with unspecified complication, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
E11.3539	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, unspecified eye	ICD-10-CM	Diagnosis
E11.37X9	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, unspecified eye	ICD-10-CM	Diagnosis
E11.37	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment	ICD-10-CM	Diagnosis
E11.3219	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.354	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment	ICD-10-CM	Diagnosis
E11.3549	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, unspecified eye	ICD-10-CM	Diagnosis
E11.353	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula	ICD-10-CM	Diagnosis
E11.352	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula	ICD-10-CM	Diagnosis
E11.3529	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, unspecified eye	ICD-10-CM	Diagnosis
E11.3533	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, bilateral	ICD-10-CM	Diagnosis
E11.3531	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, right eye	ICD-10-CM	Diagnosis
E11.3532	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment not involving the macula, left eye	ICD-10-CM	Diagnosis
E11.355	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy	ICD-10-CM	Diagnosis
E11.01	Type 2 diabetes mellitus with hyperosmolarity with coma	ICD-10-CM	Diagnosis
E11	Type 2 diabetes mellitus	ICD-10-CM	Diagnosis
E11.37X3	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, bilateral	ICD-10-CM	Diagnosis
E11.37X1	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, right eye	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E11.37X2	Type 2 diabetes mellitus with diabetic macular edema, resolved following treatment, left eye	ICD-10-CM	Diagnosis
E11.3213	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3211	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, right eye	ICD-10-CM	Diagnosis
E11.3212	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema, left eye	ICD-10-CM	Diagnosis
E11.3293	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3291	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, right eye	ICD-10-CM	Diagnosis
E11.3292	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, left eye	ICD-10-CM	Diagnosis
E11.3299	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.3319	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.3313	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3311	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, right eye	ICD-10-CM	Diagnosis
E11.3312	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema, left eye	ICD-10-CM	Diagnosis
E11.3393	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3391	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, right eye	ICD-10-CM	Diagnosis
E11.3392	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, left eye	ICD-10-CM	Diagnosis
E11.3399	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.39	Type 2 diabetes mellitus with other diabetic ophthalmic complication	ICD-10-CM	Diagnosis
E11.3543	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, bilateral	ICD-10-CM	Diagnosis
E11.3541	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, right eye	ICD-10-CM	Diagnosis
E11.3542	Type 2 diabetes mellitus with proliferative diabetic retinopathy with combined traction retinal detachment and rhegmatogenous retinal detachment, left eye	ICD-10-CM	Diagnosis
E11.3519	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.3513	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, bilateral	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E11.3511	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, right eye	ICD-10-CM	Diagnosis
E11.3512	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema, left eye	ICD-10-CM	Diagnosis
E11.3523	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, bilateral	ICD-10-CM	Diagnosis
E11.3521	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, right eye	ICD-10-CM	Diagnosis
E11.3522	Type 2 diabetes mellitus with proliferative diabetic retinopathy with traction retinal detachment involving the macula, left eye	ICD-10-CM	Diagnosis
E11.3599	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.3593	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3591	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, right eye	ICD-10-CM	Diagnosis
E11.3592	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, left eye	ICD-10-CM	Diagnosis
E11.3553	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, bilateral	ICD-10-CM	Diagnosis
E11.3552	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, left eye	ICD-10-CM	Diagnosis
E11.3551	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, right eye	ICD-10-CM	Diagnosis
E11.3559	Type 2 diabetes mellitus with stable proliferative diabetic retinopathy, unspecified eye	ICD-10-CM	Diagnosis
E11.3419	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.3413	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3411	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, right eye	ICD-10-CM	Diagnosis
E11.3412	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema, left eye	ICD-10-CM	Diagnosis
E11.3493	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, bilateral	ICD-10-CM	Diagnosis
E11.3491	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, right eye	ICD-10-CM	Diagnosis
E11.3492	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, left eye	ICD-10-CM	Diagnosis
E11.3499	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema, unspecified eye	ICD-10-CM	Diagnosis
E11.5	Type 2 diabetes mellitus with circulatory complications	ICD-10-CM	Diagnosis
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E11.41	Type 2 diabetes mellitus with diabetic mononeuropathy	ICD-10-CM	Diagnosis
E11.42	Type 2 diabetes mellitus with diabetic polyneuropathy	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E11.44	Type 2 diabetes mellitus with diabetic amyotrophy	ICD-10-CM	Diagnosis
E11.61	Type 2 diabetes mellitus with diabetic arthropathy	ICD-10-CM	Diagnosis
E11.620	Type 2 diabetes mellitus with diabetic dermatitis	ICD-10-CM	Diagnosis
E11.21	Type 2 diabetes mellitus with diabetic nephropathy	ICD-10-CM	Diagnosis
E11.641	Type 2 diabetes mellitus with hypoglycemia with coma	ICD-10-CM	Diagnosis
E11.649	Type 2 diabetes mellitus with hypoglycemia without coma	ICD-10-CM	Diagnosis
E11.10	Type 2 diabetes mellitus with ketoacidosis without coma	ICD-10-CM	Diagnosis
E11.2	Type 2 diabetes mellitus with kidney complications	ICD-10-CM	Diagnosis
E11.4	Type 2 diabetes mellitus with neurological complications	ICD-10-CM	Diagnosis
E11.3	Type 2 diabetes mellitus with ophthalmic complications	ICD-10-CM	Diagnosis
E11.59	Type 2 diabetes mellitus with other circulatory complications	ICD-10-CM	Diagnosis
E11.618	Type 2 diabetes mellitus with other diabetic arthropathy	ICD-10-CM	Diagnosis
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	ICD-10-CM	Diagnosis
E11.49	Type 2 diabetes mellitus with other diabetic neurological complication	ICD-10-CM	Diagnosis
E11.638	Type 2 diabetes mellitus with other oral complications	ICD-10-CM	Diagnosis
E11.628	Type 2 diabetes mellitus with other skin complications	ICD-10-CM	Diagnosis
E11.69	Type 2 diabetes mellitus with other specified complication	ICD-10-CM	Diagnosis
E11.6	Type 2 diabetes mellitus with other specified complications	ICD-10-CM	Diagnosis
E11.630	Type 2 diabetes mellitus with periodontal disease	ICD-10-CM	Diagnosis
E11.8	Type 2 diabetes mellitus with unspecified complications	ICD-10-CM	Diagnosis
E11.31	Type 2 diabetes mellitus with unspecified diabetic retinopathy	ICD-10-CM	Diagnosis
E11.36	Type 2 diabetes mellitus with diabetic cataract	ICD-10-CM	Diagnosis
E11.621	Type 2 diabetes mellitus with foot ulcer	ICD-10-CM	Diagnosis
E11.65	Type 2 diabetes mellitus with hyperglycemia	ICD-10-CM	Diagnosis
E11.0	Type 2 diabetes mellitus with hyperosmolarity	ICD-10-CM	Diagnosis
E11.64	Type 2 diabetes mellitus with hypoglycemia	ICD-10-CM	Diagnosis
E11.1	Type 2 diabetes mellitus with ketoacidosis	ICD-10-CM	Diagnosis
E11.11	Type 2 diabetes mellitus with ketoacidosis with coma	ICD-10-CM	Diagnosis
E11.63	Type 2 diabetes mellitus with oral complications	ICD-10-CM	Diagnosis
E11.622	Type 2 diabetes mellitus with other skin ulcer	ICD-10-CM	Diagnosis
E11.62	Type 2 diabetes mellitus with skin complications	ICD-10-CM	Diagnosis
E11.9	Type 2 diabetes mellitus without complications	ICD-10-CM	Diagnosis
E11.359	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema	ICD-10-CM	Diagnosis
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene	ICD-10-CM	Diagnosis
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene	ICD-10-CM	Diagnosis
E11.43	Type 2 diabetes mellitus with diabetic autonomic (poly)neuropathy	ICD-10-CM	Diagnosis
E11.610	Type 2 diabetes mellitus with diabetic neuropathic arthropathy	ICD-10-CM	Diagnosis
E11.00	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	ICD-10-CM	Diagnosis
E11.321	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	ICD-10-CM	Diagnosis
E11.329	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
E11.32	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy	ICD-10-CM	Diagnosis
E11.331	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	ICD-10-CM	Diagnosis
E11.33	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy	ICD-10-CM	Diagnosis
E11.339	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	ICD-10-CM	Diagnosis
E11.351	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema	ICD-10-CM	Diagnosis
E11.35	Type 2 diabetes mellitus with proliferative diabetic retinopathy	ICD-10-CM	Diagnosis
E11.349	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	ICD-10-CM	Diagnosis
E11.341	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	ICD-10-CM	Diagnosis
E11.34	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy	ICD-10-CM	Diagnosis
E11.319	Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema	ICD-10-CM	Diagnosis
E11.311	Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema	ICD-10-CM	Diagnosis
E11.40	Type 2 diabetes mellitus with diabetic neuropathy, unspecified	ICD-10-CM	Diagnosis
Dyslipidemia			
272.0	Pure hypercholesterolemia	ICD-9-CM	Diagnosis
272.1	Pure hyperglyceridemia	ICD-9-CM	Diagnosis
272.2	Mixed hyperlipidemia	ICD-9-CM	Diagnosis
272.3	Hyperchylomicronemia	ICD-9-CM	Diagnosis
272.4	Other and unspecified hyperlipidemia	ICD-9-CM	Diagnosis
272.5	Lipoprotein deficiencies	ICD-9-CM	Diagnosis
272.8	Other disorders of lipoid metabolism	ICD-9-CM	Diagnosis
272.9	Unspecified disorder of lipoid metabolism	ICD-9-CM	Diagnosis
E78	Disorders of lipoprotein metabolism and other lipidemias	ICD-10-CM	Diagnosis
E78.0	Pure hypercholesterolemia	ICD-10-CM	Diagnosis
E78.00	Pure hypercholesterolemia, unspecified	ICD-10-CM	Diagnosis
E78.01	Familial hypercholesterolemia	ICD-10-CM	Diagnosis
E78.1	Pure hyperglyceridemia	ICD-10-CM	Diagnosis
E78.2	Mixed hyperlipidemia	ICD-10-CM	Diagnosis
E78.3	Hyperchylomicronemia	ICD-10-CM	Diagnosis
E78.4	Other hyperlipidemia	ICD-10-CM	Diagnosis
E78.41	Elevated Lipoprotein(a)	ICD-10-CM	Diagnosis
E78.49	Other hyperlipidemia	ICD-10-CM	Diagnosis
E78.5	Hyperlipidemia, unspecified	ICD-10-CM	Diagnosis
E78.6	Lipoprotein deficiency	ICD-10-CM	Diagnosis
E78.8	Other disorders of lipoprotein metabolism	ICD-10-CM	Diagnosis
E78.89	Other lipoprotein metabolism disorders	ICD-10-CM	Diagnosis
E78.9	Disorder of lipoprotein metabolism, unspecified	ICD-10-CM	Diagnosis
Chronic Kidney Disease			
016.00	Tuberculosis of kidney, confirmation unspecified	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
016.01	Tuberculosis of kidney, bacteriological or histological examination not done	ICD-9-CM	Diagnosis
016.02	Tuberculosis of kidney, bacteriological or histological examination unknown (at present)	ICD-9-CM	Diagnosis
016.03	Tuberculosis of kidney, tubercle bacilli found (in sputum) by microscopy	ICD-9-CM	Diagnosis
016.04	Tuberculosis of kidney, tubercle bacilli not found (in sputum) by microscopy, but found by bacterial culture	ICD-9-CM	Diagnosis
016.05	Tuberculosis of kidney, tubercle bacilli not found by bacteriological examination, but tuberculosis confirmed histologically	ICD-9-CM	Diagnosis
016.06	Tuberculosis of kidney, tubercle bacilli not found by bacteriological or histological examination, but tuberculosis confirmed by other methods [inoculation of animals]	ICD-9-CM	Diagnosis
095.4	Syphilis of kidney	ICD-9-CM	Diagnosis
189.0	Malignant neoplasm of kidney, except pelvis	ICD-9-CM	Diagnosis
189.9	Malignant neoplasm of urinary organ, site unspecified	ICD-9-CM	Diagnosis
223.0	Benign neoplasm of kidney, except pelvis	ICD-9-CM	Diagnosis
236.91	Neoplasm of uncertain behavior of kidney and ureter	ICD-9-CM	Diagnosis
249.40	Secondary diabetes mellitus with renal manifestations, not stated as uncontrolled, or unspecified	ICD-9-CM	Diagnosis
249.41	Secondary diabetes mellitus with renal manifestations, uncontrolled	ICD-9-CM	Diagnosis
250.40	Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled	ICD-9-CM	Diagnosis
250.41	Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled	ICD-9-CM	Diagnosis
250.42	Diabetes with renal manifestations, type II or unspecified type, uncontrolled	ICD-9-CM	Diagnosis
250.43	Diabetes with renal manifestations, type I [juvenile type], uncontrolled	ICD-9-CM	Diagnosis
271.4	Renal glycosuria	ICD-9-CM	Diagnosis
274.10	Gouty nephropathy, unspecified	ICD-9-CM	Diagnosis
283.11	Hemolytic-uremic syndrome	ICD-9-CM	Diagnosis
403.01	Hypertensive chronic kidney disease, malignant, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
403.11	Hypertensive chronic kidney disease, benign, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
403.91	Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.02	Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.03	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.12	Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.13	Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
404.92	Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
404.93	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease stage V or end stage renal disease	ICD-9-CM	Diagnosis
440.1	Atherosclerosis of renal artery	ICD-9-CM	Diagnosis
442.1	Aneurysm of renal artery	ICD-9-CM	Diagnosis
572.4	Hepatorenal syndrome	ICD-9-CM	Diagnosis
580.0	Acute glomerulonephritis with lesion of proliferative glomerulonephritis	ICD-9-CM	Diagnosis
580.4	Acute glomerulonephritis with lesion of rapidly progressive glomerulonephritis	ICD-9-CM	Diagnosis
580.81	Acute glomerulonephritis with other specified pathological lesion in kidney in disease classified elsewhere	ICD-9-CM	Diagnosis
580.89	Other acute glomerulonephritis with other specified pathological lesion in kidney	ICD-9-CM	Diagnosis
580.9	Acute glomerulonephritis with unspecified pathological lesion in kidney	ICD-9-CM	Diagnosis
581.0	Nephrotic syndrome with lesion of proliferative glomerulonephritis	ICD-9-CM	Diagnosis
581.1	Nephrotic syndrome with lesion of membranous glomerulonephritis	ICD-9-CM	Diagnosis
581.2	Nephrotic syndrome with lesion of membranoproliferative glomerulonephritis	ICD-9-CM	Diagnosis
581.3	Nephrotic syndrome with lesion of minimal change glomerulonephritis	ICD-9-CM	Diagnosis
581.81	Nephrotic syndrome with other specified pathological lesion in kidney in diseases classified elsewhere	ICD-9-CM	Diagnosis
581.89	Other nephrotic syndrome with specified pathological lesion in kidney	ICD-9-CM	Diagnosis
581.9	Nephrotic syndrome with unspecified pathological lesion in kidney	ICD-9-CM	Diagnosis
582.0	Chronic glomerulonephritis with lesion of proliferative glomerulonephritis	ICD-9-CM	Diagnosis
582.1	Chronic glomerulonephritis with lesion of membranous glomerulonephritis	ICD-9-CM	Diagnosis
582.2	Chronic glomerulonephritis with lesion of membranoproliferative glomerulonephritis	ICD-9-CM	Diagnosis
582.4	Chronic glomerulonephritis with lesion of rapidly progressive glomerulonephritis	ICD-9-CM	Diagnosis
582.81	Chronic glomerulonephritis with other specified pathological lesion in kidney in diseases classified elsewhere	ICD-9-CM	Diagnosis
582.89	Other chronic glomerulonephritis with specified pathological lesion in kidney	ICD-9-CM	Diagnosis
582.9	Chronic glomerulonephritis with unspecified pathological lesion in kidney	ICD-9-CM	Diagnosis
583.0	Nephritis and nephropathy, not specified as acute or chronic, with lesion of proliferative glomerulonephritis	ICD-9-CM	Diagnosis
583.1	Nephritis and nephropathy, not specified as acute or chronic, with lesion of membranous glomerulonephritis	ICD-9-CM	Diagnosis
583.2	Nephritis and nephropathy, not specified as acute or chronic, with lesion of membranoproliferative glomerulonephritis	ICD-9-CM	Diagnosis
583.4	Nephritis and nephropathy, not specified as acute or chronic, with lesion of rapidly progressive glomerulonephritis	ICD-9-CM	Diagnosis
583.6	Nephritis and nephropathy, not specified as acute or chronic, with lesion of renal cortical necrosis	ICD-9-CM	Diagnosis
583.7	Nephritis and nephropathy, not specified as acute or chronic, with lesion of renal medullary necrosis	ICD-9-CM	Diagnosis
583.81	Nephritis and nephropathy, not specified as acute or chronic, with other specified pathological lesion in kidney, in diseases classified elsewhere	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
583.89	Other nephritis and nephropathy, not specified as acute or chronic, with specified pathological lesion in kidney	ICD-9-CM	Diagnosis
583.9	Nephritis and nephropathy, not specified as acute or chronic, with unspecified pathological lesion in kidney	ICD-9-CM	Diagnosis
584.5	Acute kidney failure with lesion of tubular necrosis	ICD-9-CM	Diagnosis
584.6	Acute kidney failure with lesion of renal cortical necrosis	ICD-9-CM	Diagnosis
584.7	Acute kidney failure with lesion of medullary [papillary] necrosis	ICD-9-CM	Diagnosis
584.8	Acute kidney failure with other specified pathological lesion in kidney	ICD-9-CM	Diagnosis
584.9	Acute kidney failure, unspecified	ICD-9-CM	Diagnosis
585.1	Chronic kidney disease, Stage I	ICD-9-CM	Diagnosis
585.2	Chronic kidney disease, Stage II (mild)	ICD-9-CM	Diagnosis
585.3	Chronic kidney disease, Stage III (moderate)	ICD-9-CM	Diagnosis
585.4	Chronic kidney disease, Stage IV (severe)	ICD-9-CM	Diagnosis
585.5	Chronic kidney disease, Stage V	ICD-9-CM	Diagnosis
585.6	End stage renal disease	ICD-9-CM	Diagnosis
585.9	Chronic kidney disease, unspecified	ICD-9-CM	Diagnosis
586	Unspecified renal failure	ICD-9-CM	Diagnosis
587	Unspecified renal sclerosis	ICD-9-CM	Diagnosis
588.0	Renal osteodystrophy	ICD-9-CM	Diagnosis
588.1	Nephrogenic diabetes insipidus	ICD-9-CM	Diagnosis
588.81	Secondary hyperparathyroidism (of renal origin)	ICD-9-CM	Diagnosis
588.89	Other specified disorders resulting from impaired renal function	ICD-9-CM	Diagnosis
588.9	Unspecified disorder resulting from impaired renal function	ICD-9-CM	Diagnosis
591	Hydronephrosis	ICD-9-CM	Diagnosis
753.12	Congenital polycystic kidney, unspecified type	ICD-9-CM	Diagnosis
753.13	Congenital polycystic kidney, autosomal dominant	ICD-9-CM	Diagnosis
753.14	Congenital polycystic kidney, autosomal recessive	ICD-9-CM	Diagnosis
753.15	Congenital renal dysplasia	ICD-9-CM	Diagnosis
753.16	Congenital medullary cystic kidney	ICD-9-CM	Diagnosis
753.17	Congenital medullary sponge kidney	ICD-9-CM	Diagnosis
753.19	Other specified congenital cystic kidney disease	ICD-9-CM	Diagnosis
753.20	Unspecified obstructive defect of renal pelvis and ureter	ICD-9-CM	Diagnosis
753.21	Congenital obstruction of ureteropelvic junction	ICD-9-CM	Diagnosis
753.22	Congenital obstruction of ureterovesical junction	ICD-9-CM	Diagnosis
753.23	Congenital ureterocele	ICD-9-CM	Diagnosis
753.29	Other obstructive defect of renal pelvis and ureter	ICD-9-CM	Diagnosis
794.4	Nonspecific abnormal results of kidney function study	ICD-9-CM	Diagnosis
R94.4	Abnormal results of kidney function studies	ICD-10-CM	Diagnosis
Q62.39	Other obstructive defects of renal pelvis and ureter	ICD-10-CM	Diagnosis
Q62.32	Cecoureterocele	ICD-10-CM	Diagnosis
Q62.31	Congenital ureterocele, orthotopic	ICD-10-CM	Diagnosis
Q62.2	Congenital megaureter	ICD-10-CM	Diagnosis
Q62.12	Congenital occlusion of ureterovesical orifice	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
Q62.11	Congenital occlusion of ureteropelvic junction	ICD-10-CM	Diagnosis
Q62.10	Congenital occlusion of ureter, unspecified	ICD-10-CM	Diagnosis
Q62.0	Congenital hydronephrosis	ICD-10-CM	Diagnosis
Q61.8	Other cystic kidney diseases	ICD-10-CM	Diagnosis
Q61.5	Medullary cystic kidney	ICD-10-CM	Diagnosis
Q61.4	Renal dysplasia	ICD-10-CM	Diagnosis
Q61.3	Polycystic kidney, unspecified	ICD-10-CM	Diagnosis
Q61.2	Polycystic kidney, adult type	ICD-10-CM	Diagnosis
Q61.19	Other polycystic kidney, infantile type	ICD-10-CM	Diagnosis
Q61.11	Cystic dilatation of collecting ducts	ICD-10-CM	Diagnosis
Q61.02	Congenital multiple renal cysts	ICD-10-CM	Diagnosis
N26.9	Renal sclerosis, unspecified	ICD-10-CM	Diagnosis
N26.1	Atrophy of kidney (terminal)	ICD-10-CM	Diagnosis
N25.9	Disorder resulting from impaired renal tubular function, unspecified	ICD-10-CM	Diagnosis
N25.89	Other disorders resulting from impaired renal tubular function	ICD-10-CM	Diagnosis
N25.81	Secondary hyperparathyroidism of renal origin	ICD-10-CM	Diagnosis
N25.1	Nephrogenic diabetes insipidus	ICD-10-CM	Diagnosis
N25.0	Renal osteodystrophy	ICD-10-CM	Diagnosis
N19	Unspecified kidney failure	ICD-10-CM	Diagnosis
N18.9	Chronic kidney disease, unspecified	ICD-10-CM	Diagnosis
N18.6	End stage renal disease	ICD-10-CM	Diagnosis
N18.5	Chronic kidney disease, stage 5	ICD-10-CM	Diagnosis
N18.4	Chronic kidney disease, stage 4 (severe)	ICD-10-CM	Diagnosis
N18.3	Chronic kidney disease, stage 3 (moderate)	ICD-10-CM	Diagnosis
N18.2	Chronic kidney disease, stage 2 (mild)	ICD-10-CM	Diagnosis
N18.1	Chronic kidney disease, stage 1	ICD-10-CM	Diagnosis
N17.9	Acute kidney failure, unspecified	ICD-10-CM	Diagnosis
N17.8	Other acute kidney failure	ICD-10-CM	Diagnosis
N17.2	Acute kidney failure with medullary necrosis	ICD-10-CM	Diagnosis
N17.1	Acute kidney failure with acute cortical necrosis	ICD-10-CM	Diagnosis
N17.0	Acute kidney failure with tubular necrosis	ICD-10-CM	Diagnosis
N16	Renal tubulo-interstitial disorders in diseases classified elsewhere	ICD-10-CM	Diagnosis
N15.9	Renal tubulo-interstitial disease, unspecified	ICD-10-CM	Diagnosis
N15.8	Other specified renal tubulo-interstitial diseases	ICD-10-CM	Diagnosis
N15.0	Balkan nephropathy	ICD-10-CM	Diagnosis
N14.4	Toxic nephropathy, not elsewhere classified	ICD-10-CM	Diagnosis
N14.3	Nephropathy induced by heavy metals	ICD-10-CM	Diagnosis
N14.2	Nephropathy induced by unspecified drug, medicament or biological substance	ICD-10-CM	Diagnosis
N14.1	Nephropathy induced by other drugs, medicaments and biological substances	ICD-10-CM	Diagnosis
N14.0	Analgesic nephropathy	ICD-10-CM	Diagnosis
N13.39	Other hydronephrosis	ICD-10-CM	Diagnosis
N13.30	Unspecified hydronephrosis	ICD-10-CM	Diagnosis
N13.2	Hydronephrosis with renal and ureteral calculous obstruction	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
N13.1	Hydronephrosis with ureteral stricture, not elsewhere classified	ICD-10-CM	Diagnosis
N08	Glomerular disorders in diseases classified elsewhere	ICD-10-CM	Diagnosis
N07.9	Hereditary nephropathy, not elsewhere classified with unspecified morphologic lesions	ICD-10-CM	Diagnosis
N07.8	Hereditary nephropathy, not elsewhere classified with other morphologic lesions	ICD-10-CM	Diagnosis
N07.7	Hereditary nephropathy, not elsewhere classified with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N07.6	Hereditary nephropathy, not elsewhere classified with dense deposit disease	ICD-10-CM	Diagnosis
N07.5	Hereditary nephropathy, not elsewhere classified with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N07.4	Hereditary nephropathy, not elsewhere classified with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N07.3	Hereditary nephropathy, not elsewhere classified with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N07.2	Hereditary nephropathy, not elsewhere classified with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N07.1	Hereditary nephropathy, not elsewhere classified with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N07.0	Hereditary nephropathy, not elsewhere classified with minor glomerular abnormality	ICD-10-CM	Diagnosis
N06.9	Isolated proteinuria with unspecified morphologic lesion	ICD-10-CM	Diagnosis
N06.8	Isolated proteinuria with other morphologic lesion	ICD-10-CM	Diagnosis
N06.7	Isolated proteinuria with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N06.6	Isolated proteinuria with dense deposit disease	ICD-10-CM	Diagnosis
N06.5	Isolated proteinuria with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N06.4	Isolated proteinuria with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N06.3	Isolated proteinuria with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N06.2	Isolated proteinuria with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N06.1	Isolated proteinuria with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N06.0	Isolated proteinuria with minor glomerular abnormality	ICD-10-CM	Diagnosis
N05.9	Unspecified nephritic syndrome with unspecified morphologic changes	ICD-10-CM	Diagnosis
N05.8	Unspecified nephritic syndrome with other morphologic changes	ICD-10-CM	Diagnosis
N05.7	Unspecified nephritic syndrome with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N05.6	Unspecified nephritic syndrome with dense deposit disease	ICD-10-CM	Diagnosis
N05.5	Unspecified nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N05.4	Unspecified nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N05.3	Unspecified nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N05.2	Unspecified nephritic syndrome with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N05.1	Unspecified nephritic syndrome with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N05.0	Unspecified nephritic syndrome with minor glomerular abnormality	ICD-10-CM	Diagnosis
N04.9	Nephrotic syndrome with unspecified morphologic changes	ICD-10-CM	Diagnosis
N04.8	Nephrotic syndrome with other morphologic changes	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
N04.7	Nephrotic syndrome with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N04.6	Nephrotic syndrome with dense deposit disease	ICD-10-CM	Diagnosis
N04.5	Nephrotic syndrome with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N04.4	Nephrotic syndrome with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N04.3	Nephrotic syndrome with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N04.2	Nephrotic syndrome with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N04.1	Nephrotic syndrome with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N04.0	Nephrotic syndrome with minor glomerular abnormality	ICD-10-CM	Diagnosis
N03.9	Chronic nephritic syndrome with unspecified morphologic changes	ICD-10-CM	Diagnosis
N03.8	Chronic nephritic syndrome with other morphologic changes	ICD-10-CM	Diagnosis
N03.7	Chronic nephritic syndrome with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N03.6	Chronic nephritic syndrome with dense deposit disease	ICD-10-CM	Diagnosis
N03.5	Chronic nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N03.4	Chronic nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N03.3	Chronic nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N03.2	Chronic nephritic syndrome with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N03.1	Chronic nephritic syndrome with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N03.0	Chronic nephritic syndrome with minor glomerular abnormality	ICD-10-CM	Diagnosis
N02.9	Recurrent and persistent hematuria with unspecified morphologic changes	ICD-10-CM	Diagnosis
N02.8	Recurrent and persistent hematuria with other morphologic changes	ICD-10-CM	Diagnosis
N02.7	Recurrent and persistent hematuria with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N02.6	Recurrent and persistent hematuria with dense deposit disease	ICD-10-CM	Diagnosis
N02.5	Recurrent and persistent hematuria with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N02.4	Recurrent and persistent hematuria with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N02.3	Recurrent and persistent hematuria with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N02.2	Recurrent and persistent hematuria with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N02.1	Recurrent and persistent hematuria with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N02.0	Recurrent and persistent hematuria with minor glomerular abnormality	ICD-10-CM	Diagnosis
N01.9	Rapidly progressive nephritic syndrome with unspecified morphologic changes	ICD-10-CM	Diagnosis
N01.8	Rapidly progressive nephritic syndrome with other morphologic changes	ICD-10-CM	Diagnosis
N01.7	Rapidly progressive nephritic syndrome with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N01.6	Rapidly progressive nephritic syndrome with dense deposit disease	ICD-10-CM	Diagnosis
N01.5	Rapidly progressive nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N01.4	Rapidly progressive nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N01.3	Rapidly progressive nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N01.2	Rapidly progressive nephritic syndrome with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N01.1	Rapidly progressive nephritic syndrome with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
N01.0	Rapidly progressive nephritic syndrome with minor glomerular abnormality	ICD-10-CM	Diagnosis
N00.9	Acute nephritic syndrome with unspecified morphologic changes	ICD-10-CM	Diagnosis
N00.8	Acute nephritic syndrome with other morphologic changes	ICD-10-CM	Diagnosis
N00.7	Acute nephritic syndrome with diffuse crescentic glomerulonephritis	ICD-10-CM	Diagnosis
N00.6	Acute nephritic syndrome with dense deposit disease	ICD-10-CM	Diagnosis
N00.5	Acute nephritic syndrome with diffuse mesangiocapillary glomerulonephritis	ICD-10-CM	Diagnosis
N00.4	Acute nephritic syndrome with diffuse endocapillary proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N00.3	Acute nephritic syndrome with diffuse mesangial proliferative glomerulonephritis	ICD-10-CM	Diagnosis
N00.2	Acute nephritic syndrome with diffuse membranous glomerulonephritis	ICD-10-CM	Diagnosis
N00.1	Acute nephritic syndrome with focal and segmental glomerular lesions	ICD-10-CM	Diagnosis
N00.0	Acute nephritic syndrome with minor glomerular abnormality	ICD-10-CM	Diagnosis
M35.04	Sicca syndrome with tubulo-interstitial nephropathy	ICD-10-CM	Diagnosis
M32.15	Tubulo-interstitial nephropathy in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.14	Glomerular disease in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M10.39	Gout due to renal impairment, multiple sites	ICD-10-CM	Diagnosis
M10.38	Gout due to renal impairment, vertebrae	ICD-10-CM	Diagnosis
M10.379	Gout due to renal impairment, unspecified ankle and foot	ICD-10-CM	Diagnosis
M10.372	Gout due to renal impairment, left ankle and foot	ICD-10-CM	Diagnosis
M10.371	Gout due to renal impairment, right ankle and foot	ICD-10-CM	Diagnosis
M10.369	Gout due to renal impairment, unspecified knee	ICD-10-CM	Diagnosis
M10.362	Gout due to renal impairment, left knee	ICD-10-CM	Diagnosis
M10.361	Gout due to renal impairment, right knee	ICD-10-CM	Diagnosis
M10.359	Gout due to renal impairment, unspecified hip	ICD-10-CM	Diagnosis
M10.352	Gout due to renal impairment, left hip	ICD-10-CM	Diagnosis
M10.351	Gout due to renal impairment, right hip	ICD-10-CM	Diagnosis
M10.349	Gout due to renal impairment, unspecified hand	ICD-10-CM	Diagnosis
M10.342	Gout due to renal impairment, left hand	ICD-10-CM	Diagnosis
M10.341	Gout due to renal impairment, right hand	ICD-10-CM	Diagnosis
M10.339	Gout due to renal impairment, unspecified wrist	ICD-10-CM	Diagnosis
M10.332	Gout due to renal impairment, left wrist	ICD-10-CM	Diagnosis
M10.331	Gout due to renal impairment, right wrist	ICD-10-CM	Diagnosis
M10.329	Gout due to renal impairment, unspecified elbow	ICD-10-CM	Diagnosis
M10.322	Gout due to renal impairment, left elbow	ICD-10-CM	Diagnosis
M10.321	Gout due to renal impairment, right elbow	ICD-10-CM	Diagnosis
M10.319	Gout due to renal impairment, unspecified shoulder	ICD-10-CM	Diagnosis
M10.312	Gout due to renal impairment, left shoulder	ICD-10-CM	Diagnosis
M10.311	Gout due to renal impairment, right shoulder	ICD-10-CM	Diagnosis
M10.30	Gout due to renal impairment, unspecified site	ICD-10-CM	Diagnosis
K76.7	Hepatorenal syndrome	ICD-10-CM	Diagnosis
I72.2	Aneurysm of renal artery	ICD-10-CM	Diagnosis
I70.1	Atherosclerosis of renal artery	ICD-10-CM	Diagnosis
I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
I13.11	Hypertensive heart and chronic kidney disease without heart failure, with stage 5 chronic kidney disease, or end stage renal disease	ICD-10-CM	Diagnosis
I13.10	Hypertensive heart and chronic kidney disease without heart failure, with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis
I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis
I12.9	Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease	ICD-10-CM	Diagnosis
I12.0	Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease	ICD-10-CM	Diagnosis
E74.8	Other specified disorders of carbohydrate metabolism	ICD-10-CM	Diagnosis
E13.29	Other specified diabetes mellitus with other diabetic kidney complication	ICD-10-CM	Diagnosis
E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E13.21	Other specified diabetes mellitus with diabetic nephropathy	ICD-10-CM	Diagnosis
E11.65	Type 2 diabetes mellitus with hyperglycemia	ICD-10-CM	Diagnosis
E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	ICD-10-CM	Diagnosis
E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E11.21	Type 2 diabetes mellitus with diabetic nephropathy	ICD-10-CM	Diagnosis
E10.65	Type 1 diabetes mellitus with hyperglycemia	ICD-10-CM	Diagnosis
E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	ICD-10-CM	Diagnosis
E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E10.21	Type 1 diabetes mellitus with diabetic nephropathy	ICD-10-CM	Diagnosis
E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication	ICD-10-CM	Diagnosis
E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy	ICD-10-CM	Diagnosis
E08.65	Diabetes mellitus due to underlying condition with hyperglycemia	ICD-10-CM	Diagnosis
E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication	ICD-10-CM	Diagnosis
E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease	ICD-10-CM	Diagnosis
E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy	ICD-10-CM	Diagnosis
D59.3	Hemolytic-uremic syndrome	ICD-10-CM	Diagnosis
D41.22	Neoplasm of uncertain behavior of left ureter	ICD-10-CM	Diagnosis
D41.21	Neoplasm of uncertain behavior of right ureter	ICD-10-CM	Diagnosis
D41.20	Neoplasm of uncertain behavior of unspecified ureter	ICD-10-CM	Diagnosis
D41.12	Neoplasm of uncertain behavior of left renal pelvis	ICD-10-CM	Diagnosis
D41.11	Neoplasm of uncertain behavior of right renal pelvis	ICD-10-CM	Diagnosis
D41.10	Neoplasm of uncertain behavior of unspecified renal pelvis	ICD-10-CM	Diagnosis
D41.02	Neoplasm of uncertain behavior of left kidney	ICD-10-CM	Diagnosis
D41.01	Neoplasm of uncertain behavior of right kidney	ICD-10-CM	Diagnosis
D41.00	Neoplasm of uncertain behavior of unspecified kidney	ICD-10-CM	Diagnosis
D30.02	Benign neoplasm of left kidney	ICD-10-CM	Diagnosis
D30.01	Benign neoplasm of right kidney	ICD-10-CM	Diagnosis
D30.00	Benign neoplasm of unspecified kidney	ICD-10-CM	Diagnosis
C68.9	Malignant neoplasm of urinary organ, unspecified	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
C64.9	Malignant neoplasm of unspecified kidney, except renal pelvis	ICD-10-CM	Diagnosis
C64.2	Malignant neoplasm of left kidney, except renal pelvis	ICD-10-CM	Diagnosis
C64.1	Malignant neoplasm of right kidney, except renal pelvis	ICD-10-CM	Diagnosis
B52.0	Plasmodium malariae malaria with nephropathy	ICD-10-CM	Diagnosis
A52.75	Syphilis of kidney and ureter	ICD-10-CM	Diagnosis
A18.11	Tuberculosis of kidney and ureter	ICD-10-CM	Diagnosis
Cardiomegaly			
429.3	Cardiomegaly	ICD-9-CM	Diagnosis
I51.7	Cardiomegaly	ICD-10-CM	Diagnosis
Pyelonephritis			
590.0	Chronic pyelonephritis	ICD-9-CM	Diagnosis
590.00	Chronic pyelonephritis without lesion of renal medullary necrosis	ICD-9-CM	Diagnosis
590.01	Chronic pyelonephritis with lesion of renal medullary necrosis	ICD-9-CM	Diagnosis
590.1	Acute pyelonephritis	ICD-9-CM	Diagnosis
590.10	Acute pyelonephritis without lesion of renal medullary necrosis	ICD-9-CM	Diagnosis
590.11	Acute pyelonephritis with lesion of renal medullary necrosis	ICD-9-CM	Diagnosis
590.8	Other pyelonephritis or pyonephrosis, not specified as acute or chronic	ICD-9-CM	Diagnosis
590.80	Unspecified pyelonephritis	ICD-9-CM	Diagnosis
590.81	Pyelitis or pyelonephritis in diseases classified elsewhere	ICD-9-CM	Diagnosis
A02.25	Salmonella pyelonephritis	ICD-10-CM	Diagnosis
D86.84	Sarcoid pyelonephritis	ICD-10-CM	Diagnosis
N10	Acute pyelonephritis	ICD-10-CM	Diagnosis
N11.0	Nonobstructive reflux-associated chronic pyelonephritis	ICD-10-CM	Diagnosis
N11.1	Chronic obstructive pyelonephritis	ICD-10-CM	Diagnosis
N11.8	Other chronic tubulo-interstitial nephritis	ICD-10-CM	Diagnosis
N11.9	Chronic tubulo-interstitial nephritis, unspecified	ICD-10-CM	Diagnosis
N12	Tubulo-interstitial nephritis, not specified as acute or chronic	ICD-10-CM	Diagnosis
N13.6	Pyonephrosis	ICD-10-CM	Diagnosis
N16	Renal tubulo-interstitial disorders in diseases classified elsewhere	ICD-10-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
Vesicoureteral Reflux			
593.7	Vesicoureteral reflux	ICD-9-CM	Diagnosis
593.70	Vesicoureteral reflux, unspecified or without reflux nephropathy	ICD-9-CM	Diagnosis
593.71	Vesicoureteral reflux with reflux nephropathy, unilateral	ICD-9-CM	Diagnosis
593.72	Vesicoureteral reflux with reflux nephropathy, bilateral	ICD-9-CM	Diagnosis
593.73	Vesicoureteral reflux with reflux nephropathy, NOS	ICD-9-CM	Diagnosis
N13.7	Vesicoureteral-reflux	ICD-10-CM	Diagnosis
N13.70	Vesicoureteral-reflux, unspecified	ICD-10-CM	Diagnosis
N13.71	Vesicoureteral-reflux without reflux nephropathy	ICD-10-CM	Diagnosis
N13.72	Vesicoureteral-reflux with reflux nephropathy without hydroureter	ICD-10-CM	Diagnosis
N13.721	Vesicoureteral-reflux with reflux nephropathy without hydroureter, unilateral	ICD-10-CM	Diagnosis
N13.722	Vesicoureteral-reflux with reflux nephropathy without hydroureter, bilateral	ICD-10-CM	Diagnosis
N13.729	Vesicoureteral-reflux with reflux nephropathy without hydroureter, unspecified	ICD-10-CM	Diagnosis
N13.73	Vesicoureteral-reflux with reflux nephropathy with hydroureter	ICD-10-CM	Diagnosis
N13.731	Vesicoureteral-reflux with reflux nephropathy with hydroureter, unilateral	ICD-10-CM	Diagnosis
N13.732	Vesicoureteral-reflux with reflux nephropathy with hydroureter, bilateral	ICD-10-CM	Diagnosis
N13.739	Vesicoureteral-reflux with reflux nephropathy with hydroureter, unspecified	ICD-10-CM	Diagnosis
N13.9	Obstructive and reflux uropathy, unspecified	ICD-10-CM	Diagnosis
Neurofibromatosis, Type 1			
237.71	Neurofibromatosis, Type 1 (von Recklinghausen's disease)	ICD-9-CM	Diagnosis
Q85.01	Neurofibromatosis, type 1	ICD-10-CM	Diagnosis
Hyperthyroidism			
242	Thyrotoxicosis with or without goiter	ICD-9-CM	Diagnosis
242.0	Toxic diffuse goiter	ICD-9-CM	Diagnosis
242.00	Toxic diffuse goiter without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.01	Toxic diffuse goiter with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.1	Toxic uninodular goiter	ICD-9-CM	Diagnosis
242.10	Toxic uninodular goiter without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.11	Toxic uninodular goiter with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.2	Toxic multinodular goiter	ICD-9-CM	Diagnosis
242.20	Toxic multinodular goiter without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.21	Toxic multinodular goiter with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.3	Toxic nodular goiter, unspecified type	ICD-9-CM	Diagnosis
242.30	Toxic nodular goiter, unspecified type, without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.31	Toxic nodular goiter, unspecified type, with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.4	Thyrotoxicosis from ectopic thyroid nodule	ICD-9-CM	Diagnosis
242.40	Thyrotoxicosis from ectopic thyroid nodule without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.41	Thyrotoxicosis from ectopic thyroid nodule with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.8	Thyrotoxicosis of other specified origin	ICD-9-CM	Diagnosis
242.80	Thyrotoxicosis of other specified origin without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.81	Thyrotoxicosis of other specified origin with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.9	Thyrotoxicosis without mention of goiter or other cause	ICD-9-CM	Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
242.90	Thyrotoxicosis without mention of goiter or other cause, without mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
242.91	Thyrotoxicosis without mention of goiter or other cause, with mention of thyrotoxic crisis or storm	ICD-9-CM	Diagnosis
E05.00	Thyrotoxicosis with diffuse goiter without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.01	Thyrotoxicosis with diffuse goiter with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.10	Thyrotoxicosis with toxic single thyroid nodule without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.11	Thyrotoxicosis with toxic single thyroid nodule with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.20	Thyrotoxicosis with toxic multinodular goiter without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.21	Thyrotoxicosis with toxic multinodular goiter with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.30	Thyrotoxicosis from ectopic thyroid tissue without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.31	Thyrotoxicosis from ectopic thyroid tissue with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.40	Thyrotoxicosis factitia without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.41	Thyrotoxicosis factitia with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.80	Other thyrotoxicosis without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.81	Other thyrotoxicosis with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.90	Thyrotoxicosis, unspecified without thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
E05.91	Thyrotoxicosis, unspecified with thyrotoxic crisis or storm	ICD-10-CM	Diagnosis
Tuberous Sclerosis			
759.5	Tuberous sclerosis	ICD-9-CM	Diagnosis
Q85.1	Tuberous sclerosis	ICD-10-CM	Diagnosis
Systemic Lupus Erythematosus			
710.0	Systemic lupus erythematosus	ICD-9-CM	Diagnosis
M32.0	Drug-induced systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.10	Systemic lupus erythematosus, organ or system involvement unspecified	ICD-10-CM	Diagnosis
M32.11	Endocarditis in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.12	Pericarditis in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.13	Lung involvement in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.14	Glomerular disease in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.15	Tubulo-interstitial nephropathy in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.19	Other organ or system involvement in systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.8	Other forms of systemic lupus erythematosus	ICD-10-CM	Diagnosis
M32.9	Systemic lupus erythematosus, unspecified	ICD-10-CM	Diagnosis
Cushing's Syndrome			
255.0	Cushing's syndrome	ICD-9-CM	Diagnosis
E24	Cushing's syndrome	ICD-10-CM	Diagnosis
E24.0	Pituitary-dependent Cushing's disease	ICD-10-CM	Diagnosis
E24.2	Drug-induced Cushing's syndrome	ICD-10-CM	Diagnosis
E24.3	Ectopic ACTH syndrome	ICD-10-CM	Diagnosis
E24.4	Alcohol-induced pseudo-Cushing's syndrome	ICD-10-CM	Diagnosis
E24.8	Other Cushing's syndrome	ICD-10-CM	Diagnosis
E24.9	Cushing's syndrome, unspecified	ICD-10-CM	Diagnosis
Williams Syndrome			

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) Diagnosis and Procedure Codes Used to Define Baseline Characteristics in this Request

Code	Description	Code Type	Code Category
758.9	Conditions due to anomaly of unspecified chromosome	ICD-9-CM	Diagnosis
Q93.82	Williams syndrome	ICD-10-CM	Diagnosis
Turner's Syndrome			
758.6	Gonadal dysgenesis	ICD-9-CM	Diagnosis
Q96	Turner's syndrome	ICD-10-CM	Diagnosis
Q96.8	Other variants of Turner's syndrome	ICD-10-CM	Diagnosis
Q96.9	Turner's syndrome, unspecified	ICD-10-CM	Diagnosis
Normal Blood Pressure Exam			
Z01.30	Encounter for examination of blood pressure without abnormal findings	ICD-10-CM	Diagnosis
Abnormal Blood Pressure Exam			
Z01.31	Encounter for examination of blood pressure with abnormal findings	ICD-10-CM	Diagnosis

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
Angiotensin Receptor Blockers (ARB)	
losartan potassium	Cozaar
irbesartan	Avapro
losartan potassium	losartan
irbesartan	irbesartan
telmisartan	telmisartan
eprosartan mesylate	Teveten
valsartan	Diovan
valsartan	valsartan
olmesartan medoxomil	olmesartan
candesartan cilexetil	Atacand
candesartan cilexetil	candesartan
eprosartan mesylate	eprosartan
telmisartan	Micardis
olmesartan medoxomil	Benicar
azilsartan medoxomil	Edarbi
Angiotensin-Converting Enzyme Inhibitors (ACEI)	
captopril	Capoten
lisinopril	Prinivil
perindopril erbumine	Aceon
ramipril	ramipril
perindopril erbumine	perindopril erbumine
quinapril HCl	Accupril
enalaprilat dihydrate	enalaprilat
trandolapril	Mavik
benazepril HCl	Lotensin
fosinopril sodium	Monopril
moexipril HCl	Univasc
moexipril HCl	moexipril
enalapril maleate	enalapril maleate
quinapril HCl	quinapril
lisinopril	lisinopril
benazepril HCl	benazepril
fosinopril sodium	fosinopril
trandolapril	trandolapril
captopril	captopril
enalapril maleate	Vasotec
lisinopril	Zestril
ramipril	Altace
captopril	captopril (bulk)
enalapril maleate	enalapril maleate (bulk)
lisinopril	lisinopril (bulk)
benazepril HCl	benazepril HCl (bulk)
enalapril maleate	Epaned
lisinopril	Qbrelis
lisinopril/dietary supplement,comb.10	Lytensopril

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
Alpha Antagonists	
doxazosin mesylate	Cardura XL
doxazosin mesylate	Cardura
phenoxybenzamine HCl	phenoxybenzamine
prazosin HCl	Minipress
terazosin HCl	Hytrin
terazosin HCl	terazosin
doxazosin mesylate	doxazosin
prazosin HCl	prazosin
phentolamine mesylate	phentolamine
prazosin HCl	prazosin HCl (bulk)
phentolamine mesylate	phentolamine mesylate (bulk)
phenoxybenzamine HCl	phenoxybenzamine (bulk)
doxazosin mesylate	doxazosin mesylate (bulk)
phenoxybenzamine HCl	Dibenzyline
Beta-Blockers	
nadolol	Corgard
timolol maleate	Blocadren
carvedilol phosphate	Coreg CR
carvedilol	Coreg
acebutolol HCl	Sectral
betaxolol HCl	Kerlone
metoprolol tartrate	Lopressor
propranolol HCl	Inderal
propranolol HCl	Inderal LA
propranolol HCl	propranolol
metoprolol tartrate	metoprolol tartrate
labetalol HCl	labetalol
penbutolol sulfate	Levatol
carvedilol	carvedilol
atenolol	atenolol
sotalol HCl	sotalol
nadolol	nadolol
bisoprolol fumarate	bisoprolol fumarate
sotalol HCl	Sotalol AF
pindolol	pindolol
propranolol HCl	InnoPran XL
metoprolol succinate	metoprolol succinate
metoprolol succinate	Toprol XL
sotalol HCl	Sorine
atenolol	Tenormin
timolol maleate	timolol maleate
acebutolol HCl	acebutolol
nebivolol HCl	Bystolic
esmolol HCl	esmolol
esmolol HCl	Brevibloc

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
esmolol HCl in sodium chloride, iso-osmotic	Brevibloc in NaCl (iso-osm)
betaxolol HCl	betaxolol
metoprolol succinate	Kaspargo Sprinkle
sotalol HCl	Sotylize
esmolol HCl in sodium chloride, iso-osmotic	esmolol in NaCl (iso-osm)
metoprolol tartrate	
propranolol HCl	propranolol (bulk)
atenolol	atenolol (bulk)
timolol maleate	timolol maleate (bulk)
pindolol	pindolol (bulk)
acebutolol HCl	acebutolol (bulk)
nadolol	nadolol (bulk)
metoprolol tartrate	metoprolol tartrate (bulk)
esmolol HCl in sterile water	esmolol in sterile water
labetalol HCl	labetalol (bulk)
sotalol HCl	Betapace
sotalol HCl	Betapace AF
bisoprolol fumarate	Zebeta
carvedilol phosphate	carvedilol phosphate
labetalol HCl	Normodyne
labetalol HCl	Trandate
propranolol HCl	Inderal XL
propranolol HCl	Hemangeol
metoprolol tartrate/dietary supplement,comb.10	Hypertensolol
labetalol in dextrose 5 % in water	labetalol in dextrose 5 %
propranolol HCl	atenolol
metoprolol tartrate	labetalol
propranolol HCl	labetalol
propranolol HCl	labetalol in dextrose 5 %
atenolol	esmolol
labetalol HCl	esmolol
labetalol HCl	Lopressor
labetalol in dextrose 5 % in water	propranolol
esmolol HCl	propranolol

Calcium Channel Blockers

nicardipine HCl	Cardene SR
nicardipine HCl	Cardene
verapamil HCl	Calan
verapamil HCl	Calan SR
verapamil HCl	Covera-HS
nimodipine	Nimotop
nifedipine	Adalat CC
amlodipine besylate	amlodipine
amlodipine besylate	Norvasc
nifedipine	Procardia
nifedipine	Procardia XL

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
verapamil HCl	verapamil
verapamil HCl	Isoptin SR
diltiazem HCl	diltiazem HCl
diltiazem HCl	Cardizem LA
diltiazem HCl	Cardizem
diltiazem HCl	Cardizem SR
diltiazem HCl	Cardizem CD
verapamil HCl	Verelan
verapamil HCl	Verelan PM
nicardipine HCl	nicardipine
nifedipine	Nifedical XL
nifedipine	Nifediac CC
nifedipine	nifedipine
nicardipine in sodium chloride, iso-osmotic	nicardipine in NaCl (iso-os)
isradipine	DynaCirc CR
felodipine	Plendil
diltiazem HCl	Tiazac
nisoldipine	Sular
nisoldipine	nisoldipine
felodipine	felodipine
verapamil HCl	verapamil (bulk)
amlodipine besylate	amlodipine besylate (bulk)
nifedipine, micronized	nifedipine, micronized (bulk)
diltiazem HCl	diltiazem HCl (bulk)
diltiazem HCl	Cartia XT
diltiazem HCl	Diltia XT
nimodipine	nimodipine
nifedipine	Afeditab CR
nicardipine in sodium chloride, iso-osmotic	Cardene IV in sodium chloride
nicardipine in dextrose, iso-osmotic	Cardene IV in dextrose
clevidipine butyrate	Cleviprex
diltiazem HCl/dextrose 5 % in water	diltiazem in dextrose 5 %
nifedipine	nifedipine (bulk)
isradipine	isradipine
nimodipine	Nymalize
nicardipine HCl	Cardene IV
nicardipine HCl in 0.9 % sodium chloride	nicardipine in 0.9 % sod chlor
diltiazem HCl	Dilacor XR
diltiazem HCl	Matzim LA
isradipine	DynaCirc
diltiazem HCl	DILT-XR
diltiazem HCl	DILT-CD
diltiazem HCl	Diltzac ER
diltiazem HCl	Taztia XT
nimodipine	nimodipine (bulk)
diltiazem HCl in 0.9 % sodium chloride	diltiazem HCl in 0.9% NaCl

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
diltiazem HCl	Tiadylt ER
nicardipine in 5 % dextrose in water	nicardipine in 5 % dextrose
Central Alpha-Agonists	
guanfacine HCl	Tenex
methyldopate HCl	methyldopate
methyldopa	methyldopa
guanabenz acetate	guanabenz
clonidine HCl	clonidine HCl
clonidine	clonidine
guanfacine HCl	guanfacine
clonidine HCl	clonidine HCl (bulk)
clonidine HCl	Catapres
clonidine	Catapres-TTS-1
clonidine	Catapres-TTS-2
clonidine	Catapres-TTS-3
clonidine HCl	Nexiclon XR
guanabenz acetate	guanabenz (bulk)
guanfacine HCl	guanfacine (bulk)
methyldopa	Aldomet
Direct Renin Inhibitors	
aliskiren hemifumarate	Tekturna
aliskiren hemifumarate	aliskiren
Direct Vasodilators	
minoxidil	Loniten
nitroprusside sodium	Nitropress
diazoxide	Hyperstat
hydralazine HCl	hydralazine
minoxidil	minoxidil (bulk)
minoxidil	minoxidil
nitroprusside sodium	sodium nitroprusside
diazoxide	diazoxide (bulk)
hydralazine HCl	hydralazine HCl (bulk)
nitroprusside sodium in 0.9 % sodium chloride	Nipride RTU
tolazoline HCl	tolazoline (bulk)
Diuretics	
bumetanide	Bumex
toremide	Demadex
ethacrynic acid	Edecrin
amiloride HCl	Midamor
chlorothiazide	Diuril
chlorothiazide sodium	Diuril IV
spironolactone	Aldactone
eplerenone	Inspra
methyclothiazide	Aquatensen
furosemide	Lasix
toremide	toremide

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
ethacrynic acid	ethacrynic acid
furosemide	furosemide
bumetanide	bumetanide
indapamide	Lozol
hydrochlorothiazide	hydrochlorothiazide
metolazone	metolazone
chlorothiazide	chlorothiazide
indapamide	indapamide
eplerenone	eplerenone
spironolactone	spironolactone
methyclothiazide	methyclothiazide
chlorthalidone	chlorthalidone
spironolactone	spironolactone (bulk)
chlorothiazide sodium	chlorothiazide sodium
amiloride HCl	amiloride
trichlormethiazide	trichlormethiazide (bulk)
furosemide in 0.9 % sodium chloride	furosemide in 0.9 % NaCl
furosemide	furosemide (bulk)
triamterene	triamterene (bulk)
hydrochlorothiazide	hydrochlorothiazide (bulk)
methyclothiazide	methyclothiazide (bulk)
spironolactone	CaroSpir
spironolactone, micronized	spironolactone micro (bulk)
ethacrynic acid	ethacrynic acid (bulk)
hydrochlorothiazide	Microzide
triamterene	triamterene
metolazone	Zaroxolyn
methyclothiazide	Enduron
triamterene	Dyrenium
chlorthalidone	Thalitone
furosemide/dextrose 5 % in water	furosemide in dextrose 5 %
Combination Products	
captopril/hydrochlorothiazide	Capozide
lisinopril/hydrochlorothiazide	Prinzide
methyldopa/hydrochlorothiazide	Aldoril-25
losartan potassium/hydrochlorothiazide	Hyzaar
amiloride HCl/hydrochlorothiazide	Moduretic
triamterene/hydrochlorothiazide	Dyazide
nebivolol HCl/valsartan	Byvalson
irbesartan/hydrochlorothiazide	Avalide
spironolactone/hydrochlorothiazide	Aldactazide
metoprolol tartrate/hydrochlorothiazide	Lopressor HCT
propranolol HCl/hydrochlorothiazide	Inderide
losartan potassium/hydrochlorothiazide	losartan-hydrochlorothiazide
irbesartan/hydrochlorothiazide	irbesartan-hydrochlorothiazide
telmisartan/hydrochlorothiazide	telmisartan-hydrochlorothiazid

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
prazosin HCl/polythiazide	Minizide
quinapril HCl/hydrochlorothiazide	Accuretic
eprosartan mesylate/hydrochlorothiazide	Teveten HCT
trandolapril/verapamil HCl	Tarka
valsartan/hydrochlorothiazide	Diovan HCT
amlodipine besylate/benazepril HCl	Lotrel
benazepril HCl/hydrochlorothiazide	Lotensin HCT
amlodipine besylate/valsartan	Exforge
aliskiren hemifumarate/hydrochlorothiazide	Tekturna HCT
amlodipine besylate/valsartan/hydrochlorothiazide	Exforge HCT
sacubitril/valsartan	Entresto
fosinopril sodium/hydrochlorothiazide	Monopril HCT
moexipril HCl/hydrochlorothiazide	Uniretic
captopril/hydrochlorothiazide	captopril-hydrochlorothiazide
lisinopril/hydrochlorothiazide	lisinopril-hydrochlorothiazide
enalapril maleate/hydrochlorothiazide	enalapril-hydrochlorothiazide
bisoprolol fumarate/hydrochlorothiazide	bisoprolol-hydrochlorothiazide
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	olmesartan-amlodipin-hcthiazid
moexipril HCl/hydrochlorothiazide	moexipril-hydrochlorothiazide
amlodipine besylate/olmesartan medoxomil	amlodipine-olmesartan
amlodipine besylate/valsartan/hydrochlorothiazide	amlodipine-valsartan-hcthiazid
amlodipine besylate/benazepril HCl	amlodipine-benazepril
olmesartan medoxomil/hydrochlorothiazide	olmesartan-hydrochlorothiazide
amlodipine besylate/valsartan	amlodipine-valsartan
nadolol/bendroflumethiazide	nadolol-bendroflumethiazide
triamterene/hydrochlorothiazide	triamterene-hydrochlorothiazid
benazepril HCl/hydrochlorothiazide	benazepril-hydrochlorothiazide
fosinopril sodium/hydrochlorothiazide	fosinopril-hydrochlorothiazide
enalapril maleate/felodipine	Lexxel
candesartan cilexetil/hydrochlorothiazide	Atacand HCT
enalapril maleate/hydrochlorothiazide	Vaseretic
propranolol HCl/hydrochlorothiazide	propranolol-hydrochlorothiazid
lisinopril/hydrochlorothiazide	Zestoretic
atenolol/chlorthalidone	Tenoretic 50
atenolol/chlorthalidone	Tenoretic 100
metoprolol succinate/hydrochlorothiazide	Dutoprol
clonidine HCl/chlorthalidone	Clorpres
spironolactone/hydrochlorothiazide	spironolacton-hydrochlorothiaz
metoprolol tartrate/hydrochlorothiazide	metoprolol ta-hydrochlorothiaz
triamterene/hydrochlorothiazide	Maxzide
triamterene/hydrochlorothiazide	Maxzide-25mg
methyldopa/hydrochlorothiazide	methyldopa-hydrochlorothiazide
quinapril HCl/hydrochlorothiazide	quinapril-hydrochlorothiazide
amiloride HCl/hydrochlorothiazide	amiloride-hydrochlorothiazide
telmisartan/amlodipine besylate	telmisartan-amlodipine

Appendix D. List of Generic and Brand Names of Medical Products Used to Define Baseline Characteristics in this Request

Generic Name	Brand Name
atenolol/chlorthalidone	atenolol-chlorthalidone
candesartan cilexetil/hydrochlorothiazide	candesartan-hydrochlorothiazid
valsartan/hydrochlorothiazide	valsartan-hydrochlorothiazide
telmisartan/hydrochlorothiazide	Micardis HCT
telmisartan/amlodipine besylate	Twynsta
olmesartan medoxomil/hydrochlorothiazide	Benicar HCT
hydralazine HCl/hydrochlorothiazide	Hydra-Zide
hydralazine HCl/hydrochlorothiazide	hydralazine-hydrochlorothiazid
trandolapril/verapamil HCl	trandolapril-verapamil
bisoprolol fumarate/hydrochlorothiazide	Ziac
quinapril HCl/hydrochlorothiazide	Quinaretic
nadolol/bendroflumethiazide	Corzide
amlodipine besylate/olmesartan medoxomil	Azor
azilsartan medoxomil/chlorthalidone	Edarbyclor
perindopril arginine/amlodipine besylate	Prestalia
olmesartan medoxomil/amlodipine besylate/hydrochlorothiazide	Tribenzor
metoprolol succinate/hydrochlorothiazide	metoprolol su-hydrochlorothiaz

Appendix E. Specifications Defining Parameters Used in this Request

The purpose of this request is to execute the Cohort Identification and Descriptive Analysis (CIDA) module, version 9.7.0 to compare claims and clinical definitions of hypertension in a pediatric population with blood pressure vitals measurements in the Sentinel Distributed Database (SDD).

Query Period: January 1, 2006 - December 31, 2018
Coverage requirement: Medical & Drug Coverage
Pre-index enrollment requirement: 365 days
Post-index enrollment requirement: 365 days
Enrollment gap: 45 days
Age groups: 3-5, 6-11, 12-17 years
Stratifications: Age group, Sex, Calendar year, Race, Hispanic
Freeze data: No
Envelope macro: Reclassify encounters during inpatient stay as inpatient

Scenario	Exposure/Event					Exclusion Criteria						Number of instances the criteria should be found in evaluation
	Index Exposure/ Event	Cohort definition	Washout period	Incident with respect to:	Censor enrollment at evidence of	Inclusion/ Exclusion	Criteria	Care setting	Principal diagnosis	Evaluation period start	Evaluation period end	
1	Elevated or hypertensive blood pressure measurement (hard coded combination of a same-day diastolic + systolic measurement, with height measurement within 6 months that equates to an elevated or hypertensive blood pressure according to AAP guidelines)	01: First valid date index date	0	N/A	Death; Data Partner End Date; Query End Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Normotensive blood pressure measurement (hard coded combination of a same-day diastolic + systolic measurement, with height measurement within 6 months that equates to a normotensive blood pressure according to AAP guidelines)	01: First valid date index date	0	N/A	Death; Data Partner End Date; Query End Date	Elevated or hypertensive blood pressure measurement	Exclusion	N/A	N/A	ever	ever	N/A
3	Elevated or hypertensive blood pressure measurement (hard coded combination of a same-day diastolic + systolic measurement, with height measurement within 6 months that equates to an elevated or hypertensive blood pressure according to AAP guidelines)	01: First valid date index date	0	N/A	Death; Data Partner End Date; Query End Date	Normotensive blood pressure measurement	Exclusion	N/A	N/A	1	ever	N/A

Appendix E. Specifications Defining Parameters Used in this Request

Scenario	Exposure/Event					Exclusion Criteria						Number of instances the criteria should be found in evaluation period
	Index Exposure/ Event	Cohort definition	Washout period	Incident with respect to:	Censor enrollment at evidence of	Inclusion/ Exclusion	Criteria	Care setting	Principal diagnosis position	Evaluation period start	Evaluation period end	
4	Normotensive blood pressure measurement (hard coded combination of a same-day diastolic + systolic measurement, with height measurement within 6 months that equates to a normotensive blood pressure according to AAP guidelines)	01: First valid date index date	0	N/A	Death; Data Partner End Date; Query End Date	Elevated or hypertensive blood pressure measurement	Exclusion	N/A	N/A	ever	-1	N/A
5	Elevated, hypertensive, or normotensive blood pressure measurement (hard coded combination of a same-day diastolic + systolic measurement, with height measurement within 6 months)	02: All valid index dates	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) codes are provided by Optum360.
National Drug Codes (NDCs) are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."

Appendix F. Specifications Defining Baseline Characteristic Parameters Used in this Request

Baseline Characteristics

Characteristic	Care setting	Principal diagnosis position	Evaluation period start (days)	Evaluation period end (days)	Exclude evidence of days supply if characteristic includes dispensings	Number of instances the characteristic should be found in evaluation period
Vitals Measures						
Height	n/a	N/A	-183	183	N/A	1
Systolic Blood Pressure	n/a	N/A	0	0	N/A	1
Diastolic Blood Pressure	n/a	N/A	0	0	N/A	1
Blood Pressure Exam Codes						
Normal BP exam Z01.30 (pre-index)	Any care setting	N/A	-365	0	N/A	1
Abnormal BP Exam Z01.31 (pre-index)	Any care setting	N/A	-365	0	N/A	1
Normal BP exam Z01.30 (post-index)	Any care setting	N/A	1	365	N/A	1
Abnormal BP Exam Z01.31 (post-index)	Any care setting	N/A	1	365	N/A	1
Combo: Normal BP exam AND elevated at index (pre-index)						
Combo: Normal BP exam AND hypertensive at index (pre-index)						
Combo: Abnormal BP exam AND elevated at index (pre-index)						
Combo: Abnormal BP exam AND hypertensive at index (pre-index)						
Combo: Normal BP exam AND elevated at index (post-index)						
Combo: Normal BP exam AND hypertensive at index (post-index)						
Combo: Abnormal BP exam AND elevated at index (post-index)						
Combo: Abnormal BP exam AND hypertensive at index (post-index)						
Clinical Algorithm						
Elevated Blood Pressure	N/A	N/A	0	0	N/A	1
Hypertensive	N/A	N/A	0	0	N/A	1
Normotensive	N/A	N/A	0	0	N/A	1
At least 1 additional BP Measure in 183 days	N/A	N/A	1	183	N/A	1
At least 2 additional BP Measures in 183 days	N/A	N/A	1	183	N/A	2
At least 1 additional BP Measure in 365 days	N/A	N/A	1	365	N/A	1
At least 2 additional BP Measures in 365 days	N/A	N/A	1	365	N/A	2
At least 1 additional BP Measure ever	N/A	N/A	1	ever	N/A	1
At least 2 additional BP Measures ever	N/A	N/A	1	ever	N/A	2
Combo: NO additional BP Measure 183 (NOT At least 1 BP measure in 183 days)						
Combo: NO additional BP Measure 365 (NOT At least 1 BP measure in 365 days)						
Combo: NO additional BP Measure ever (NOT At least 1 BP measure ever)						
Combo: Hypertensive at index AND At least 1 additional BP Measure in 183 days						
Combo: Hypertensive at index AND at least 2 additional BP Measures in 183 days						

Appendix F. Specifications Defining Baseline Characteristic Parameters Used in this Request

Baseline Characteristics						
Characteristic	Care setting	Principal diagnosis position	Evaluation period start (days)	Evaluation period end (days)	Exclude evidence of days supply if characteristic includes dispensings	Number of instances the characteristic should be found in evaluation period
Combo: Hypertensive at index AND no additional BP Measure in 183 days (hypertensive AND NOT At least 1 BP measure in 183 days)						
Combo: Hypertensive at index AND At least 1 additional BP Measure in 365 days						
Combo: Hypertensive at index AND at least 2 additional BP Measures in 365 days						
Combo: Hypertensive at index AND no additional BP Measure in 365 days (hypertensive AND NOT At least 1 BP measure in 365 days)						
Combo: Hypertensive at index AND At least 1 additional BP Measure ever						
Combo: Hypertensive at index AND at least 2 additional BP Measures ever						
Combo: Hypertensive at index AND no additional BP Measure ever (hypertensive AND NOT At least 1 BP measure ever)						
Claims Algorithms						
Inpatient hypertension code	Inpatient Hospital Stay (IP)	Any	0	365	n/a	1
Outpatient hypertension code	Emergency Department (ED), Ambulatory Visit (AV), Other Ambulatory Visit	Any	0	365	n/a	2
Claims HTN definition 1: Combo: 1 Inpatient OR 2 outpatient hypertension codes						
Claims HTN definition 2: any hypertension code	Any care setting	Any	0	365	n/a	1
Claims Elevated BP definition (R03.0 OR 796.2)	Any care setting	Any	0	365	n/a	1
Claims x Clinical Algorithm Matrix						
Combo: Elevated BP AND elevated claim						
Combo: Elevated BP AND NOT elevated claim						
Combo: Hypertensive AND HTN Claims def. 1: (1 IP or 2 ED claims)						
Combo: Hypertensive AND NOT HTN Claims def. 1: (1 IP or 2 ED claims)						
Combo: Hypertensive AND HTN Claims def. 2 (Any HTN claim)						
Combo: Hypertensive AND NOT HTN Claims def. 2 (Any HTN claim)						
Combo: Elevated BP AND NOT (HTN claims def. 1 OR HTN claims def. 2 OR elevated claim)						
Combo: Hypertensive AND NOT (HTN Claims def 1 OR HTN Claims def 2 OR elevated Claim)						

Appendix F. Specifications Defining Baseline Characteristic Parameters Used in this Request

Baseline Characteristics						
Characteristic	Care setting	Principal diagnosis position	Evaluation period start (days)	Evaluation period end (days)	Exclude evidence of days supply if characteristic includes dispensings	Number of instances the characteristic should be found in evaluation period
Baseline Medication Use						
Angiotensin receptor blockers	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Angiotensin-converting enzyme inhibitors	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Alpha antagonists	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Beta-blockers	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Calcium channel blockers	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Central Alpha-agonists	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Direct renin inhibitor	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Direct vasodilators	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Diuretics	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1
Combination products	N/A	N/A	-365	0	Evaluation period should search for only evidence of days supply	1

Appendix F. Specifications Defining Baseline Characteristic Parameters Used in this Request

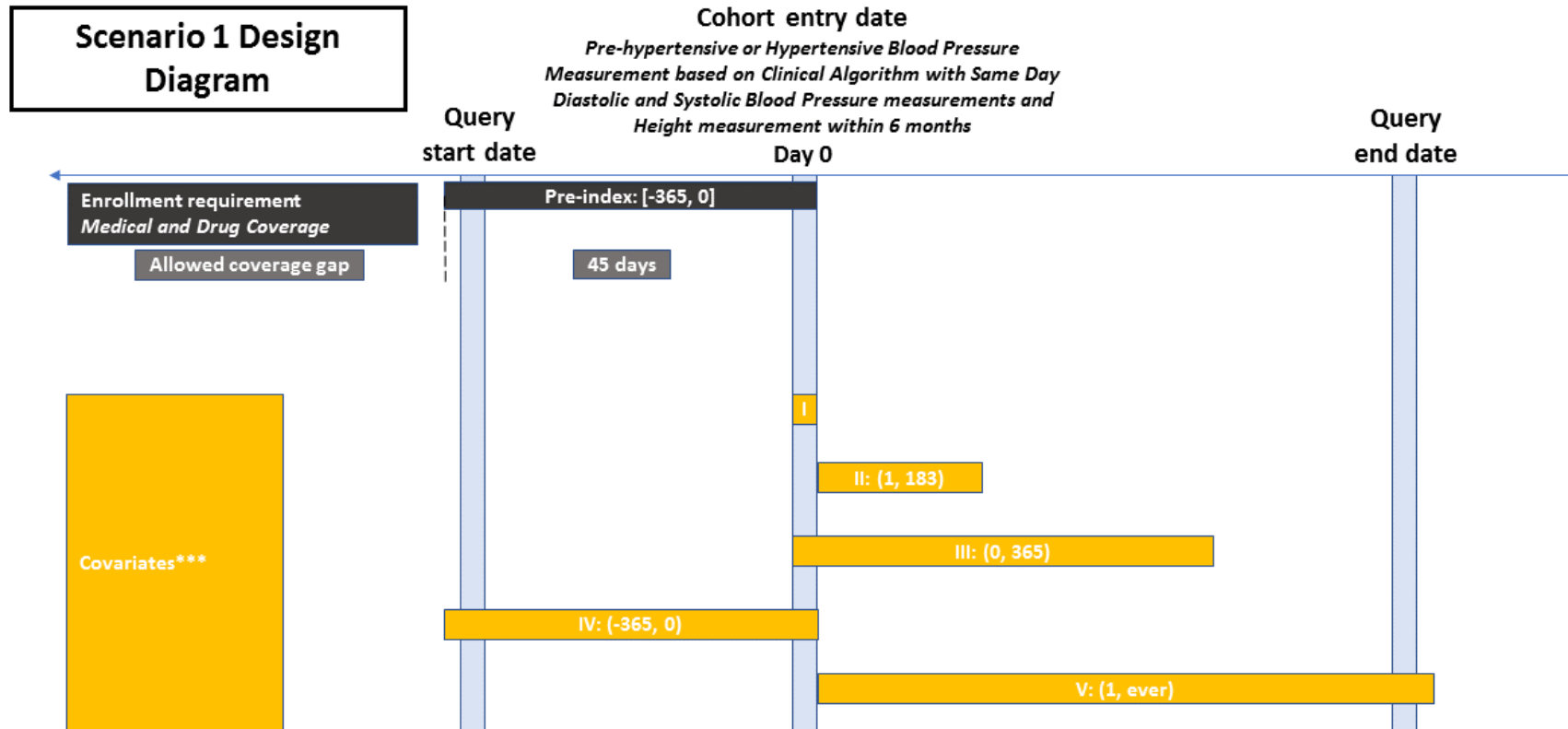
Baseline Characteristics						
Characteristic	Care setting	Principal diagnosis position	Evaluation period start (days)	Evaluation period end (days)	Exclude evidence of days supply if characteristic includes dispensings	Number of instances the characteristic should be found in evaluation period
Angiotensin receptor blockers	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Angiotensin-converting enzyme inhibitors	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Alpha antagonists	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Beta-blockers	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Calcium channel blockers	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Central Alpha-agonists	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Direct renin inhibitor	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Direct vasodilators	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Diuretics	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1
Combination products	N/A	N/A	1	End of enrollment	Evaluation period should search for only evidence of days supply	1

Appendix F. Specifications Defining Baseline Characteristic Parameters Used in this Request

Baseline Characteristics

Characteristic	Care setting	Principal diagnosis position	Evaluation period start (days)	Evaluation period end (days)	Exclude evidence of days supply if characteristic includes dispensings	Number of instances the characteristic should be found in evaluation period
Baseline Conditions						
Obesity	Any care setting	N/A	-365	0	N/A	1
BMI - Underweight	Any care setting	N/A	-365	0	N/A	1
BMI - Normal weight	Any care setting	N/A	-365	0	N/A	1
BMI - Overweight	Any care setting	N/A	-365	0	N/A	1
BMI - Obese	Any care setting	N/A	-365	0	N/A	1
Obesity + BMI Obese combo covariate						
Type 2 Diabetes	Any care setting	N/A	-365	0	N/A	1
Dyslipidemia	Any care setting	N/A	-365	0	N/A	1
Chronic Kidney Disease	Any care setting	N/A	-365	0	N/A	1
Cardiomegaly	Any care setting	N/A	-365	0	N/A	1
Pyelonephritis	Any care setting	N/A	-365	0	N/A	1
Vesicoureteral reflux	Any care setting	N/A	-365	0	N/A	1
Neurofibromatosis type 1	Any care setting	N/A	-365	0	N/A	1
Hyperthyroidism	Any care setting	N/A	-365	0	N/A	1
Tuberous sclerosis	Any care setting	N/A	-365	0	N/A	1
Systemic lupus erythematosus	Any care setting	N/A	-365	0	N/A	1
Cushing syndrome	Any care setting	N/A	-365	0	N/A	1
Williams syndrome	Any care setting	N/A	-365	0	N/A	1
Turner syndrome	Any care setting	N/A	-365	0	N/A	1
Mean number of ambulatory encounters (AV)	AV	N/A	-365	0	N/A	N/A
Mean number of emergency room encounters (ED)	ED	N/A	-365	0	N/A	N/A
Mean number of inpatient hospital encounters (IP)	IP	N/A	-365	0	N/A	N/A
Mean number of non-acute institutional encounters (IS)	IS	N/A	-365	0	N/A	N/A
Mean number of other ambulatory encounters (OA)	OA	N/A	-365	0	N/A	N/A

Appendix G. Design Diagram of Cohort Entry Requirements for this Request



***Covariates:

Window I: Age, year, race, sex, ethnicity, mean vitals measures (height, diastolic, systolic), hypertension category (pre-hypertensive, hypertension stage 1, or hypertension stage 2)

Window II: Additional valid blood pressure measurements

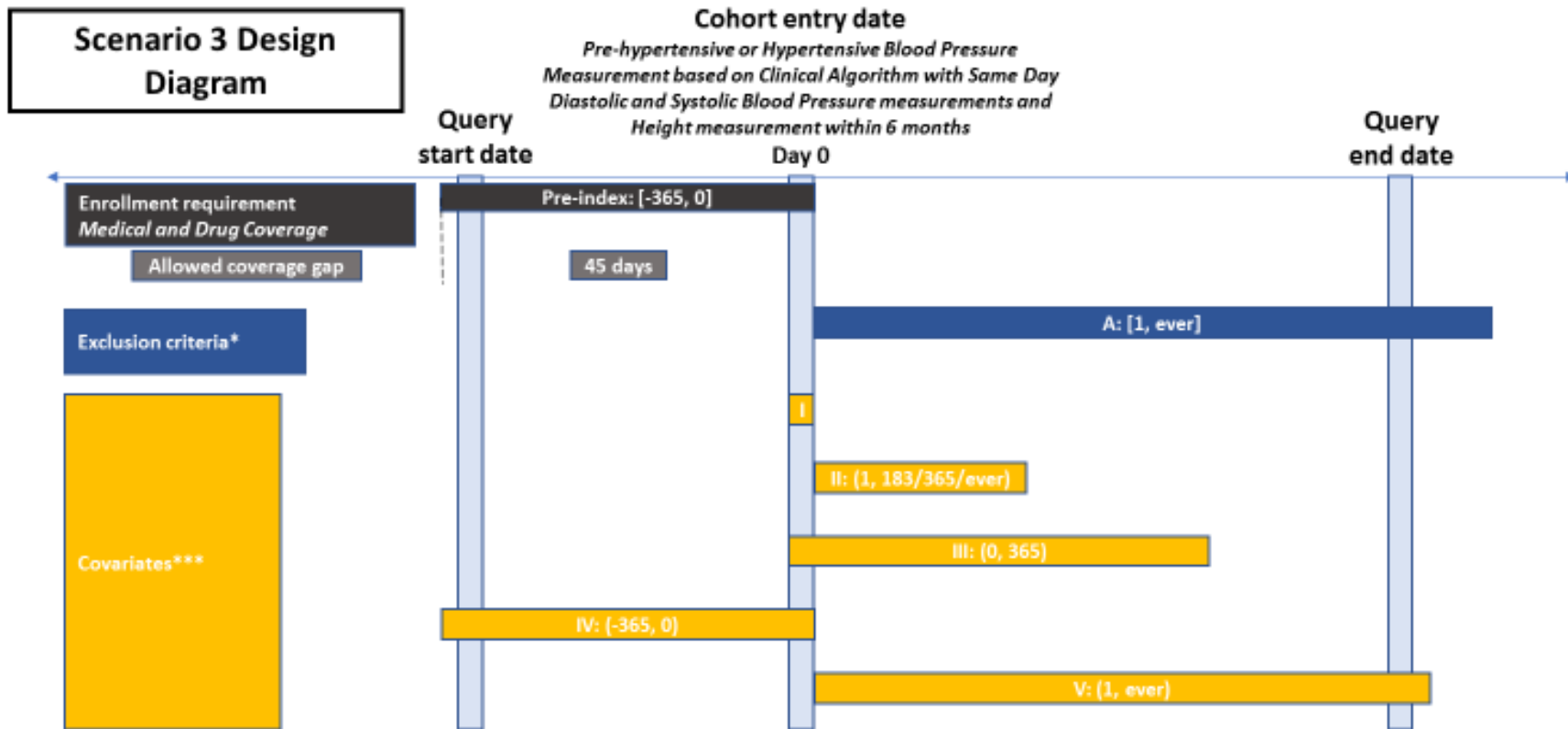
Window III: Claims hypertension algorithms, misclassification matrix (claims algorithm x clinical algorithm)

Window IV: Baseline medication use (angiotensin receptor blockers, ACE inhibitors, alpha antagonists, beta blockers, Ca channel blockers, central alpha agonists, direct renin inhibitors, direct vasodilators, diuretics, combination products), pre-existing conditions (abnormal BP exam, obesity, BMI, type 2 diabetes, dyslipidemia, chronic kidney disease, left ventricular hypertrophy, pyelonephritis, vesicoureteral reflux, neurofibromatosis type 1, hyperthyroidism, tuberous sclerosis, systemic lupus erythematosus, Cushing syndrome, Williams syndrome, Turner syndrome)

Window V: Post-index medication use

Appendix G. Design Diagram of Cohort Entry Requirements for this Request

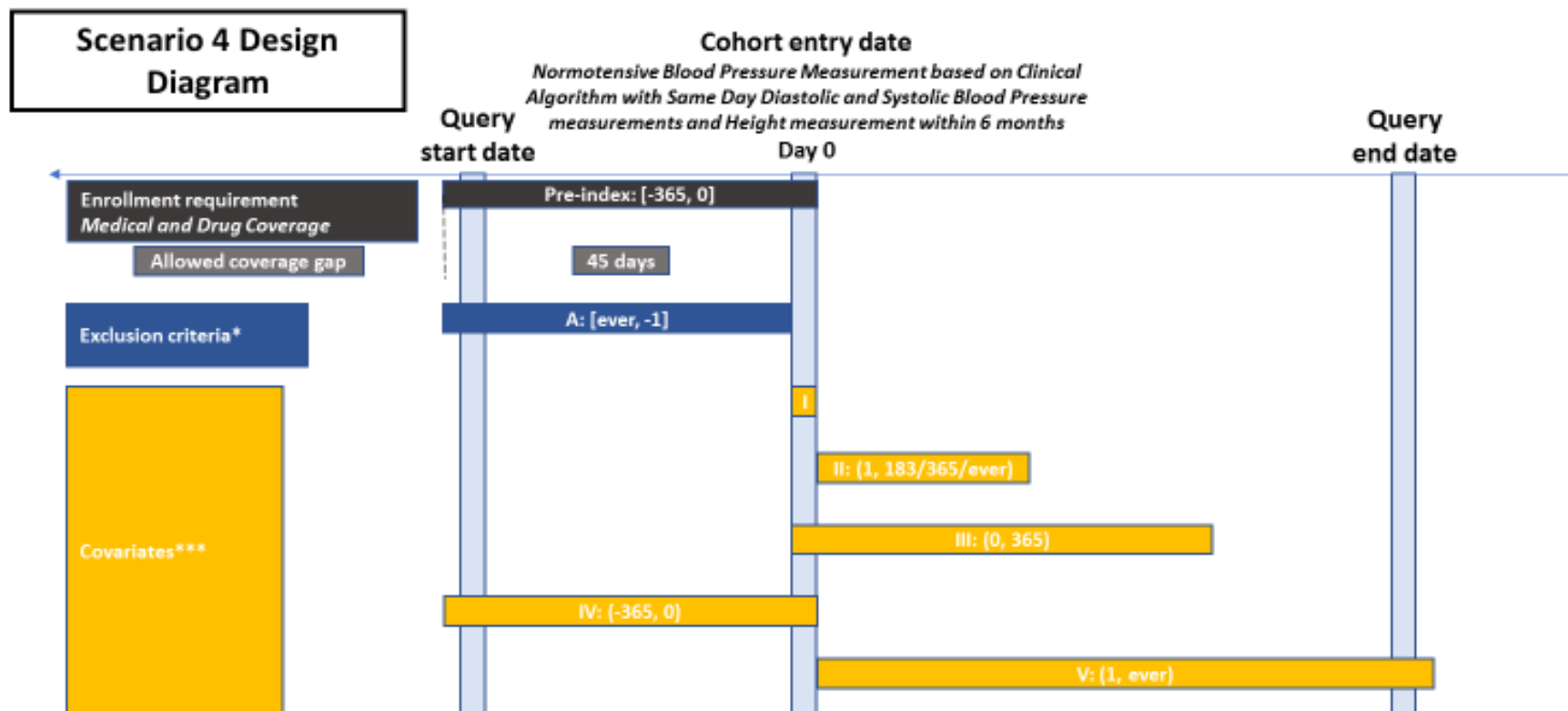
Scenario 3 Design Diagram



Exclusions
 Window A: Normotensive measure

*****Covariates:**
 Window I: Age, year, race, sex, ethnicity, mean vitals measures (height, diastolic, systolic), hypertension category (normotensive, pre-hypertensive, hypertension stage 1, or hypertension stage 2)
 Window II: Additional valid blood pressure measurements
 Window III: Claims hypertension algorithms, misclassification matrix (claims algorithm x clinical algorithm)
 Window IV: Baseline medication use (angiotensin receptor blockers, ACE inhibitors, alpha antagonists, beta blockers, Ca channel blockers, central alpha agonists, direct renin inhibitors, direct vasodilators, diuretics, combination products), pre-existing conditions (abnormal BP exam, obesity, BMI, type 2 diabetes, dyslipidemia, chronic kidney disease, left ventricular hypertrophy, pyelonephritis, vesicoureteral reflux, neurofibromatosis type 1, hyperthyroidism, tuberous sclerosis, systemic lupus erythematosus, Cushing syndrome, Williams syndrome, Turner syndrome)
 Window V: Post-index medication use

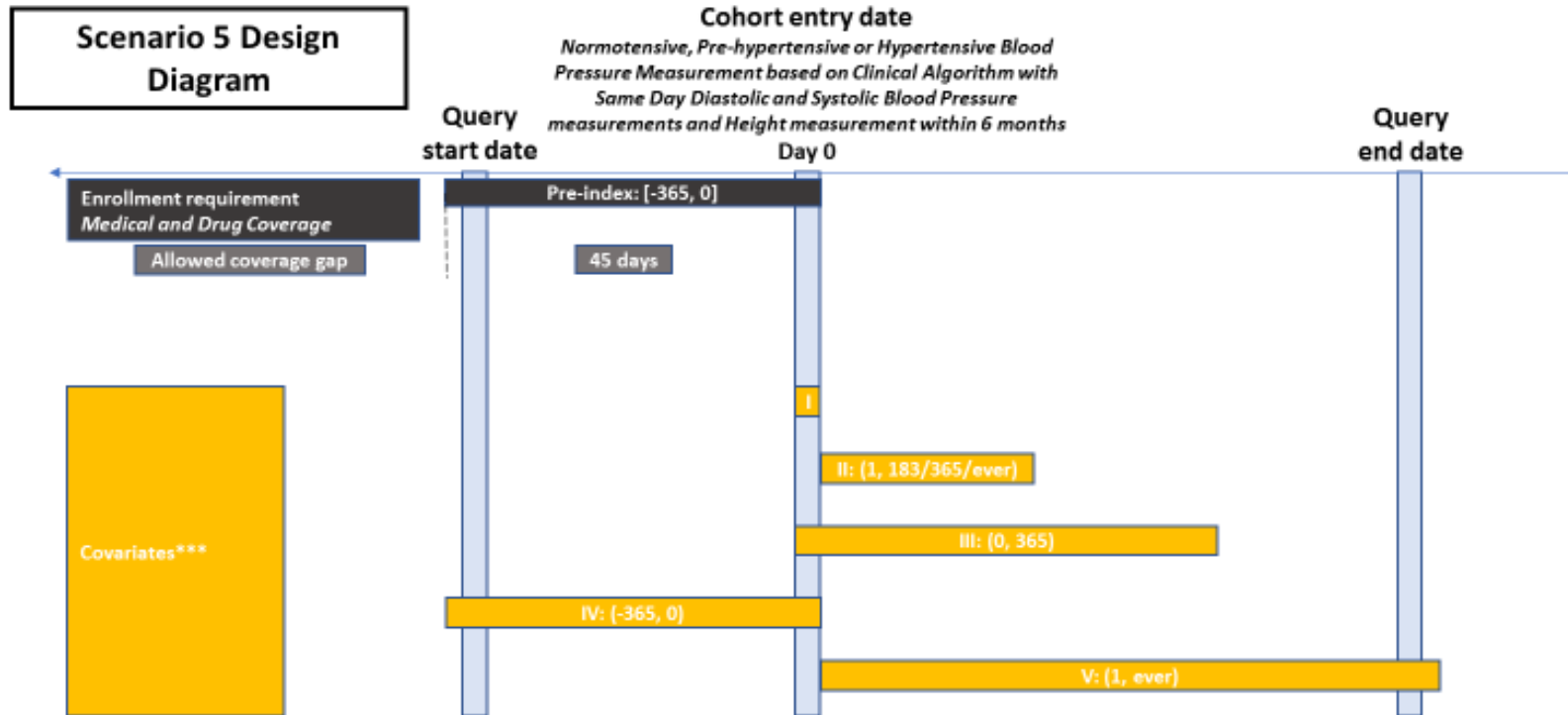
Appendix G. Design Diagram of Cohort Entry Requirements for this Request



***Exclusion Criteria**
 Window A: Prehypertensive or Hypertensive Blood Pressure Measurement

*****Covariates:**
 Window I: Age, year, race, sex, ethnicity, mean vitals measures (height, diastolic, systolic), hypertension category (normotensive, pre-hypertensive, hypertension stage 1, or hypertension stage 2)
 Window II: Additional valid blood pressure measurements
 Window III: Claims hypertension algorithms, misclassification matrix (claims algorithm x clinical algorithm)
 Window IV: Baseline medication use (angiotensin receptor blockers, ACE inhibitors, alpha antagonists, beta blockers, Ca channel blockers, central alpha agonists, direct renin inhibitors, direct vasodilators, diuretics, combination products), pre-existing conditions (abnormal BP exam, obesity, BMI, type 2 diabetes, dyslipidemia, chronic kidney disease, left ventricular hypertrophy, pyelonephritis, vesicoureteral reflux, neurofibromatosis type 1, hyperthyroidism, tuberous sclerosis, systemic lupus erythematosus, Cushing syndrome, Williams syndrome, Turner syndrome)
 Window V: Post-index medication use

Appendix G. Design Diagram of Cohort Entry Requirements for this Request



***Covariates:

Window I: Age, year, race, sex, ethnicity, mean vitals measures (height, diastolic, systolic), hypertension category (normotensive, pre-hypertensive, hypertension stage 1, or hypertension stage 2)

Window II: Additional valid blood pressure measurements

Window III: Claims hypertension algorithms, misclassification matrix (claims algorithm x clinical algorithm)

Window IV: Baseline medication use (angiotensin receptor blockers, ACE inhibitors, alpha antagonists, beta blockers, Ca channel blockers, central alpha agonists, direct renin inhibitors, direct vasodilators, diuretics, combination products), pre-existing conditions (abnormal BP exam, obesity, BMI, type 2 diabetes, dyslipidemia, chronic kidney disease, left ventricular hypertrophy, pyelonephritis, vesicoureteral reflux, neurofibromatosis type 1, hyperthyroidism, tuberous sclerosis, systemic lupus erythematosus, Cushing syndrome, Williams syndrome, Turner syndrome)

Window V: Post-index medication use