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

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

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

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Overview for Request cder_mpl2p_wp006_nsdp_v01

Request ID: cder_mpl2p_wp006_nsdp_v01

Request Description: The goals of this request were to: 1) compare the baseline characteristics of ranolazine and beta blockers users and 2) estimate the risk of seizure events within specified risk and control windows for ranolazine users.

Sentinel Modular Program Tool Used: Cohort Identification and Descriptive Analysis Tool, Version 5.0.3, with additional ad hoc programming.

Data Source: Data from January 1, 2006 to September 30, 2015 from fourteen Data Partners contributing to the Sentinel Distributed Database (SDD) were included in this request. Please see Appendix A for a list of dates of available data from each Data Partner. The request package was sent to Data Partners on November 9, 2017.

Study Design: This request utilized a self-controlled risk interval (SCRI) design. For the cohorts that had a 32-day follow-up period, the exposure identification end date was July 31, 2015. For the cohort that had a 62-day follow-up period, the exposure identification end date was June 30, 2015. The outcome identification end date was September 20, 2015 for all cohorts. The number of exposed individuals and number of individuals with an event in the risk and/or control windows were calculated overall and stratified by age group.

Exposures of Interest: The exposures of interest were ranolazine and beta blockers, which were defined using National Drug Codes (NDCs). Please refer to Appendix B for generic drug names used to define exposures.

Cohort Eligibility Criteria: Eleven distinct cohorts were evaluated in this request: nine with ranolazine and two with beta blockers as the exposure of interest. Across all cohorts, members were required to be continuously enrolled in plans with medical and drug coverage for at least 183 days prior to their dispensing date and throughout the post-exposure risk and control windows, during which gaps in coverage of up to 45 days were allowed. Members were excluded if they had the exposure of interest in the 183 days prior to the index date. The following age groups were included in the cohort: 18-44, 45-54, 55-64, 65-74, and 75+ years. Only the first qualifying incident dispensing that occurred during the exposure identification period was included and a gap of two days was allowed between dispensings to be considered part of the same episode. A minimum episode requirement of 32 days was applied to all cohorts except for a sensitivity analysis cohort, in which the minimum episode requirement was 62 days. The end date of each exposure episode was extended by two days.

Additional cohort eligibility requirements were applied to each of the eleven cohorts. The nine ranolazine cohorts that were used to assess baseline characteristics, as well as the risk of seizure events, were defined as follows:

Ranolazine Exposure: Individuals were required to have no evidence of prior epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG), brain tumor, meningioma, or head trauma/injury within 183 days of their exposure use

- **Cohort 1:** and no additional inclusion or exclusion criteria.
- **Cohort 2:** and have evidence of renal disease within 183 days of their exposure use.
- **Cohort 3:** and have evidence of liver impairment within 183 days of their exposure use.
- **Cohort 4:** and no additional inclusion or exclusion criteria, but a different outcome definition (see below).

Ranolazine Exposure with Cytochrome-P450 Inhibitor Use: Individuals were required to have no evidence of prior epilepsy treatment, epilepsy/convulsions, EEG, brain tumor, meningioma, or head trauma/injury within 183 days of their exposure use and to have evidence of prior cytochrome-P450 (CYP3) inhibitor use within 14 days of their exposure use

- **Cohort 5:** and no additional inclusion or exclusion criteria.
- **Cohort 6:** and have evidence of renal disease within 183 days of their exposure use.
- **Cohort 7:** and have evidence of liver impairment within 183 days of their exposure use.

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Ranolazine Exposure with History of Epilepsy:

Cohort 8: Individuals were required to have no evidence of brain tumor, meningioma, or head trauma/injury within 183 days of their exposure use and to have evidence of prior epilepsy treatment, epilepsy/convulsions, or EEG within 183 days of their exposure use.

Ranolazine Exposure with 62-Day Minimum Episode (Sensitivity Analysis):

Cohort 9: Individuals were required to have no evidence of prior epilepsy treatment, epilepsy/convulsions, EEG, brain tumor, meningioma, or head trauma/injury within 183 days of their exposure use.

The two beta blockers cohorts that were used to assess baseline characteristics were defined as follows:

Beta Blockers Exposure: Individuals were required to have no evidence of prior ranolazine use, epilepsy treatment, epilepsy/convulsions, EEG, brain tumor, meningioma, or head trauma/injury within 183 days of their exposure use

Cohort 1: and no additional inclusion or exclusion criteria.

Cohort 2: and have evidence of renal disease within 183 days of their exposure use.

Please refer to Appendices C and D for specific codes used to define these inclusion and exclusion criteria.

Analytic Cohorts: Baseline characteristics of all eleven exposure cohorts were assessed. Only the cohorts with ranolazine as an exposure of interest were included in the SCRI analysis.

Outcomes of Interest: The main outcome of interest in the SCRI analysis was a seizure diagnosis that occurred in the inpatient care setting with a principal diagnosis position or in the emergency department care setting. The secondary outcome of interest was a seizure or myoclonus diagnosis that occurred in the inpatient care setting with a principal diagnosis position or the emergency department care setting. An outcome of interest was included if the individual had no evidence of the outcome in the 183 days prior to index date. Seizure and myoclonus diagnoses were defined using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes. Please refer to Appendix E for specific ICD-9-CM codes used to define primary and secondary outcomes of interest in this request.

Risk and Control Windows: Three separate risk windows were assessed for the analytic exposures of interest: 1-10 days, 11-20 days, and 21-30 days. For each of these risk windows, there were two possible control window periods, depending on the episode length for the analytic cohort. In cohort analyses with a minimum episode length of 32 days, the control window was from 21-32 days. In the sensitivity analysis cohort, the minimum episode length was 62 days, and correspondingly the control window was from 31-62 days.

Baseline Covariates: The following covariates were assessed during the baseline period: age, sex, race, Charlson/Elixhauser combined comorbidity score[1], health service utilization, and any of the following conditions or medications: acute myocardial infarction, angina pectoris and/or prinzmetal angina, convulsions, coronary atherosclerosis, coronary revascularization, EEG, epilepsy, hospitalized heart failure, liver impairment, renal disease, anti-epileptic drugs, beta blockers, calcium channel blockers, selective calcium channel blockers, and nitrates. Occurrence of these covariates was evaluated in the 183 days prior to the exposure. Please see Appendices F and G for specific codes used to identify covariates.

Analysis: Relative risks and 95% confidence intervals were calculated using exact logistic regression models with a fixed offset.

Please see Appendices H and I for the specifications of parameters used in the analyses for this request.

Limitations: Algorithms to define exposures, outcomes, inclusion and exclusion criteria, and covariates are imperfect and may be misclassified. Therefore, data should be interpreted with this limitation in mind.

Notes: Please contact the Sentinel Operations Center Query Fulfillment Team (qf@sentinelsystem.org) for questions and to provide comments/suggestions for future enhancements to this document.

[1]Gagne, J. J., Glynn, R. J., Avorn, J., Levin, R., Schneeweiss, S. (2011). "A combined comorbidity score predicted mortality in elderly patients better than existing scores." J Clin Epidemiol 64(7):749-759.

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Glossary of Terms for Analyses Using Self-Controlled Risk Interval (SCRI) Tool*

Analytic Cohort - to be included in the analytic cohort, patients in the exposure cohort must have an incident health outcome of interest (HOI) in the risk or control window and meet all post-exposure enrollment requirements.

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). Along with the Principal Diagnosis Indicator, 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.
- **Cohort Definition (drug/exposure) -** indicates how the cohort will be defined: (1) 01: Cohort includes only the first valid incident treatment episode during the duration of the surveillance activity; (2) 02: Cohort includes all valid incident treatment episodes during the duration of the surveillance activity.

Censored at Evidence of Death - indicates if risk and evaluation windows should be censored based on death date. If death and disenrollment occur on the same day, censoring will be attributed to death.

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).

Control Window - the number of days before or after exposure where the patient is considered to not be at risk for the outcome of interest due to the exposure.

Data Partner Data Completeness Date - determined by the surveillance team and may be based on information on specific SDD table "completeness" from the Data Management and Quality Assurance department.

Episodes - the number of index dates (e.g., date of exposure initiation).

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

Exposure Cohort - to be included in the exposure cohort, patients must have a valid exposure of interest. Valid means that all pre-exposure enrollment, incidence, and inclusion/exclusion criteria specified by the requester are met.

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

Post-Exposure Enrollment Requirement - indicates the number of days of continuous enrollment required from exposure date to whichever is greater: the end of the risk or control window. Longer post-exposure continuous enrollment requirements can also be specified.

Pre-Exposure Enrollment Requirement - indicates the number of days of continuous enrollment in the requester-defined coverage type required before exposure date.

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 Start Date - binds exposure date only; available data before the query start date may be used to determine if enrollment and incidence criteria are met and evaluate inclusion/exclusion criteria and presence/absence of covariates.

Query End Date - defines the last day that a patient can contribute follow-up time to the cohort and is used to calculate the latest possible date that a patient may contribute an exposure to the cohort.

Risk Window - The number of days after exposure where the patient is considered to be at risk for the outcome of interest due to exposure.

Same Day Exclusion - indicates if an exposure defined using NDCs should be excluded from consideration if more than one of the codes used to define the exposure is observed on the same day.

Surveillance Start Date - for time period 1 (i.e., the first look/evaluation for a Data Partner), this date is surveillance team defined and will often correspond to a medical product launch date.

Time period - refers to a specific look at/evaluation of the data. Requesters evaluate mutually exclusive time periods, by Data Partner, over the course of the surveillance activity.

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 outcome of interest.

*all terms may not be used in this report

Table 1a. Aggregated Baseline Table for Ranolazine (Cohort 1) and Beta Blockers (Cohort 1) Use in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

	Exposure Cohort					
	Ranolazine		Beta Blockers		Covariate Balance	
Characteristic	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Number of unique patients	52,155	100.0%	3,916,218	100.0%	---	---
Patient Characteristics	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Mean age	67.0	11.5	57.0	14.7	10.00	0.76
	Number	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Age: 18-44 years	1,745	3.30%	870,187	22.20%	-18.90	-0.59
Age: 45-54 years	7,109	13.60%	853,777	21.80%	-8.20	-0.22
Age: 55-64 years	14,583	28.00%	990,736	25.30%	2.70	0.06
Age: 65-74 years	14,432	27.70%	667,108	17.00%	10.70	0.26
Age: 75+ years	14,286	27.40%	534,410	13.60%	13.80	0.35
Gender (Female)	19,620	37.60%	1,994,294	50.90%	-13.30	-0.27
Gender (Male)	32,530	62.40%	1,921,666	49.10%	13.30	0.27
Gender (Unknown)	5	0.00%	258	0.00%	0.00	---
Race (American Indian or Alaska Native)	108	0.20%	10,631	0.30%	-0.10	-0.02
Race (Asian)	550	1.10%	105,644	2.70%	-1.60	-0.12
Race (Black or African American)	3,089	5.90%	285,190	7.30%	-1.40	-0.06
Race (Native Hawaiian or Other Pacific Islander)	239	0.50%	17,664	0.50%	0.00	0.00
Race (Unknown)	24,008	46.00%	1,926,234	49.20%	-3.20	-0.06
Race (White)	24,161	46.30%	1,570,855	40.10%	6.20	0.13
Year (2006)	528	1.00%	192,817	4.90%	-3.90	-0.23
Year (2007)	1,522	2.90%	267,830	6.80%	-3.90	-0.18
Year (2008)	3,077	5.90%	427,601	10.90%	-5.00	-0.18
Year (2009)	4,862	9.30%	517,714	13.20%	-3.90	-0.12
Year (2010)	5,725	11.00%	470,283	12.00%	-1.00	-0.03
Year (2011)	6,801	13.00%	442,624	11.30%	1.70	0.05
Year (2012)	7,731	14.80%	447,083	11.40%	3.40	0.10
Year (2013)	8,402	16.10%	445,267	11.40%	4.70	0.14
Year (2014)	8,631	16.50%	443,721	11.30%	5.20	0.15
Year (2015)	4,876	9.30%	261,278	6.70%	2.60	0.10
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Charlson/Elixhauser Combined Comorbidity Score[1]	1.8	2.5	0.6	1.9	1.2	0.54
	Number	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Acute Myocardial Infarction	8,808	16.90%	222,769	5.70%	11.20	0.36
Angina Pectoris/Prinzmetal Angina	24,894	47.70%	164,813	4.20%	43.50	1.14
Convulsions	-	0.00%	-	0.00%	0.00	---
Coronary Atherosclerosis	45,763	87.70%	704,167	18.00%	69.70	1.95
Coronary Revascularization	23,870	45.80%	307,078	7.80%	38.00	0.95
Electroencephalogram (EEG)	-	0.00%	-	0.00%	0.00	---
Epilepsy	-	0.00%	-	0.00%	0.00	---
Hospitalized Heart Failure	6,903	13.20%	174,877	4.50%	8.70	0.31

Table 1a. Aggregated Baseline Table for Ranolazine (Cohort 1) and Beta Blockers (Cohort 1) Use in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

	Exposure Cohort					
	Ranolazine		Beta Blockers		Covariate Balance	
Recorded History during Baseline Period:	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Liver Impairment	1,226	2.40%	81,469	2.10%	0.30	0.02
Renal Disease	11,512	22.10%	395,091	10.10%	12.00	0.33
History of Use:	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Anti-Epileptic Medications	1	0.00%	44	0.00%	0.00	---
Beta Blockers	41,319	79.20%	3,916,218	100.00%	-20.80	-0.72
Calcium Channel Blockers	16,981	32.60%	703,866	18.00%	14.60	0.34
Nitrates	34,305	65.80%	292,083	7.50%	58.30	1.52
Selective Calcium Channel Blockers	3,663	7.00%	180,873	4.60%	2.40	0.10
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters (AV)	13.2	10.7	7.2	8.2	6	0.63
Mean number of emergency room encounters (ED)	0.6	1.2	0.3	0.8	0.3	0.29
Mean number of inpatient hospital encounters (IP)	0.6	1	0.3	0.6	0.3	0.36
Mean number of non-acute institutional encounters (IS)	0.2	0.9	0.1	0.5	0.1	0.14
Mean number of other ambulatory encounters (OA)	3.1	5.4	2	4.1	1.1	0.23
Mean number of filled prescriptions	28.6	17.6	12.5	11.2	16.1	1.09
Mean number of generics	11.8	5.1	6.4	4.1	5.4	1.17

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1b. Aggregated Baseline Table for Ranolazine (Cohort 2) and Beta Blockers (Cohort 2) Use among those with Prior Evidence of Renal Disease in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

	Exposure Cohort					
	Ranolazine		Beta Blockers		Covariate Balance	
Characteristic	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Number of unique patients	11,512	100.0%	395,098	100.0%	---	---
Patient Characteristics	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Mean age	72.3	10.9	66.8	13.8	5.5	0.44
	Number	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Age: 18-44 years	135	1.20%	34,729	8.80%	-7.60	-0.35
Age: 45-54 years	719	6.20%	48,793	12.30%	-6.10	-0.21
Age: 55-64 years	2,224	19.30%	82,822	21.00%	-1.70	-0.04
Age: 65-74 years	3,449	30.00%	99,229	25.10%	4.90	0.11
Age: 75+ years	4,985	43.30%	129,525	32.80%	10.50	0.22
Gender (Female)	4,118	35.80%	168,631	42.70%	-6.90	-0.14
Gender (Male)	7,392	64.20%	226,419	57.30%	6.90	0.14
Gender (Unknown)	2	0.00%	48	0.00%	0.00	---
Race (American Indian or Alaska Native)	30	0.30%	1,193	0.30%	0.00	0.00
Race (Asian)	123	1.10%	11,945	3.00%	-1.90	-0.13
Race (Black or African American)	969	8.40%	44,793	11.30%	-2.90	-0.10
Race (Native Hawaiian or Other Pacific Islander)	100	0.90%	3,669	0.90%	0.00	0.00
Race (Unknown)	4,256	37.00%	150,636	38.10%	-1.10	-0.02
Race (White)	6,034	52.40%	182,862	46.30%	6.10	0.12
Year (2006)	76	0.70%	13,281	3.40%	-2.70	-0.19
Year (2007)	244	2.10%	20,481	5.20%	-3.10	-0.17
Year (2008)	533	4.60%	37,566	9.50%	-4.90	-0.19
Year (2009)	952	8.30%	46,147	11.70%	-3.40	-0.11
Year (2010)	1,209	10.50%	45,689	11.60%	-1.10	-0.04
Year (2011)	1,497	13.00%	46,211	11.70%	1.30	0.04
Year (2012)	1,774	15.40%	48,857	12.40%	3.00	0.09
Year (2013)	1,988	17.30%	50,808	12.90%	4.40	0.12
Year (2014)	2,040	17.70%	53,364	13.50%	4.20	0.12
Year (2015)	1,199	10.40%	32,694	8.30%	2.10	0.07
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Charlson/Elixhauser Combined Comorbidity Score[1]	4.7	2.6	3.4	2.8	1.3	0.48
	Number	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Acute Myocardial Infarction	3,097	26.90%	43,196	10.90%	16.00	0.42
Angina Pectoris/Prinzmetal Angina	5,618	48.80%	26,619	6.70%	42.10	1.07
Convulsions	-	0.00%	-	0.00%	0.00	---
Coronary Atherosclerosis	10,643	92.50%	125,669	31.80%	60.70	1.60
Coronary Revascularization	5,976	51.90%	53,393	13.50%	38.40	0.90
Electroencephalogram (EEG)	-	0.00%	-	0.00%	0.00	---
Epilepsy	-	0.00%	-	0.00%	0.00	---
Hospitalized Heart Failure	3,641	31.60%	67,374	17.10%	14.50	0.34

Table 1b. Aggregated Baseline Table for Ranolazine (Cohort 2) and Beta Blockers (Cohort 2) Use among those with Prior Evidence of Renal Disease in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

	Exposure Cohort					
	Ranolazine		Beta Blockers		Covariate Balance	
Recorded History during Baseline Period:	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Liver Impairment	362	3.10%	17,442	4.40%	-1.30	-0.07
Renal Disease	11,512	100.00%	395,098	100.00%	0.00	---
History of Use:	**Number**	**%**	**Number**	**%**	**Absolute Difference**	**Standardized Difference**
Anti-Epileptic Medications	-	0.00%	7	0.00%	0.00	---
Beta Blockers	9,905	86.00%	395,098	100.00%	-14.00	-0.57
Calcium Channel Blockers	4,901	42.60%	144,485	36.60%	6.00	0.12
Nitrates	8,299	72.10%	48,830	12.40%	59.70	1.52
Selective Calcium Channel Blockers	857	7.40%	34,422	8.70%	-1.30	-0.05
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Absolute Difference**	**Standardized Difference**
Mean number of ambulatory encounters (AV)	18.3	14.6	12.7	14.3	5.6	0.39
Mean number of emergency room encounters (ED)	0.9	1.6	0.6	1.4	0.3	0.20
Mean number of inpatient hospital encounters (IP)	1.1	1.3	0.7	1	0.4	0.34
Mean number of non-acute institutional encounters (IS)	0.5	1.5	0.3	1.3	0.2	0.14
Mean number of other ambulatory encounters (OA)	5.4	7.7	4.6	7.1	0.8	0.11
Mean number of filled prescriptions	34.4	18.6	19.2	14.1	15.2	0.92
Mean number of generics	14.4	5.3	9.5	4.9	4.9	0.96

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1c. Aggregated Baseline Table for Ranolazine (Cohort 3) Use among those with Prior Evidence of Liver Impairment in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	1,226	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	62.6	10.1
	Number	**%**
Age: 18-44 years	56	4.60%
Age: 45-54 years	244	19.90%
Age: 55-64 years	448	36.50%
Age: 65-74 years	319	26.00%
Age: 75+ years	159	13.00%
Gender (Female)	479	39.10%
Gender (Male)	747	60.90%
Gender (Unknown)	0	0.00%
Race (American Indian or Alaska Native)	1	0.10%
Race (Asian)	16	1.30%
Race (Black or African American)	60	4.90%
Race (Native Hawaiian or Other Pacific Islander)	6	0.50%
Race (Unknown)	539	44.00%
Race (White)	604	49.30%
Year (2006)	5	0.40%
Year (2007)	26	2.10%
Year (2008)	49	4.00%
Year (2009)	101	8.20%
Year (2010)	114	9.30%
Year (2011)	134	10.90%
Year (2012)	182	14.80%
Year (2013)	224	18.30%
Year (2014)	251	20.50%
Year (2015)	140	11.40%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	3.4	2.6
	Number	**%**
Acute Myocardial Infarction	257	21.00%
Angina Pectoris/Prinzmetal Angina	607	49.50%
Convulsions	0	0.00%
Coronary Atherosclerosis	1,088	88.70%
Coronary Revascularization	590	48.10%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	216	17.60%
Liver Impairment	1,226	100.00%
Renal Disease	362	29.50%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	0	0.00%
Beta Blockers	998	81.40%
Calcium Channel Blockers	388	31.60%

Table 1c. Aggregated Baseline Table for Ranolazine (Cohort 3) Use among those with Prior Evidence of Liver Impairment in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	808	65.90%
Selective Calcium Channel Blockers	88	7.20%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	17.6	11.8
Mean number of emergency room encounters (ED)	1.2	1.9
Mean number of inpatient hospital encounters (IP)	1	1.3
Mean number of non-acute institutional encounters (IS)	0.2	0.9
Mean number of other ambulatory encounters (OA)	4.3	6.2
Mean number of filled prescriptions	33.3	19.4
Mean number of generics	14.2	5.8

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1d. Aggregated Baseline Table for Ranolazine (Cohort 4) Use with Expanded Outcome Definition in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	52,155	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	67.0	11.5
	Number	**%**
Age: 18-44 years	1,745	3.30%
Age: 45-54 years	7,109	13.60%
Age: 55-64 years	14,583	28.00%
Age: 65-74 years	14,432	27.70%
Age: 75+ years	14,286	27.40%
Gender (Female)	19,620	37.60%
Gender (Male)	32,530	62.40%
Gender (Unknown)	5	0.00%
Race (American Indian or Alaska Native)	108	0.20%
Race (Asian)	550	1.10%
Race (Black or African American)	3,089	5.90%
Race (Native Hawaiian or Other Pacific Islander)	239	0.50%
Race (Unknown)	24,008	46.00%
Race (White)	24,161	46.30%
Year (2006)	528	1.00%
Year (2007)	1,522	2.90%
Year (2008)	3,077	5.90%
Year (2009)	4,862	9.30%
Year (2010)	5,725	11.00%
Year (2011)	6,801	13.00%
Year (2012)	7,731	14.80%
Year (2013)	8,402	16.10%
Year (2014)	8,631	16.50%
Year (2015)	4,876	9.30%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	1.8	2.5
	Number	**%**
Acute Myocardial Infarction	8,808	16.90%
Angina Pectoris/Prinzmetal Angina	24,894	47.70%
Convulsions	0	0.00%
Coronary Atherosclerosis	45,763	87.70%
Coronary Revascularization	23,870	45.80%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	6,903	13.20%
Liver Impairment	1,226	2.40%
Renal Disease	11,512	22.10%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	1	0.00%
Beta Blockers	41,319	79.20%
Calcium Channel Blockers	16,981	32.60%

Table 1d. Aggregated Baseline Table for Ranolazine (Cohort 4) Use with Expanded Outcome Definition in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	34,305	65.80%
Selective Calcium Channel Blockers	3,663	7.00%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	13.2	10.7
Mean number of emergency room encounters (ED)	0.6	1.2
Mean number of inpatient hospital encounters (IP)	0.6	1
Mean number of non-acute institutional encounters (IS)	0.2	0.9
Mean number of other ambulatory encounters (OA)	3.1	5.4
Mean number of filled prescriptions	28.6	17.6
Mean number of generics	11.8	5.1

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1e. Aggregated Baseline Table for Ranolazine (Cohort 5) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	14,976	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	68.3	11.4
	Number	**%**
Age: 18-44 years	407	2.70%
Age: 45-54 years	1,712	11.40%
Age: 55-64 years	3,883	25.90%
Age: 65-74 years	4,413	29.50%
Age: 75+ years	4,561	30.50%
Gender (Female)	5,670	37.90%
Gender (Male)	9,304	62.10%
Gender (Unknown)	2	0.00%
Race (American Indian or Alaska Native)	37	0.20%
Race (Asian)	146	1.00%
Race (Black or African American)	1,055	7.00%
Race (Native Hawaiian or Other Pacific Islander)	91	0.60%
Race (Unknown)	6,452	43.10%
Race (White)	7,195	48.00%
Year (2006)	122	0.80%
Year (2007)	381	2.50%
Year (2008)	786	5.20%
Year (2009)	1,358	9.10%
Year (2010)	1,690	11.30%
Year (2011)	1,921	12.80%
Year (2012)	2,248	15.00%
Year (2013)	2,555	17.10%
Year (2014)	2,481	16.60%
Year (2015)	1,434	9.60%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	2.8	2.7
	Number	**%**
Acute Myocardial Infarction	3,268	21.80%
Angina Pectoris/Prinzmetal Angina	6,756	45.10%
Convulsions	0	0.00%
Coronary Atherosclerosis	13,338	89.10%
Coronary Revascularization	7,062	47.20%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	3,568	23.80%
Liver Impairment	386	2.60%
Renal Disease	4,550	30.40%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	0	0.00%
Beta Blockers	13,386	89.40%
Calcium Channel Blockers	6,368	42.50%

Table 1e. Aggregated Baseline Table for Ranolazine (Cohort 5) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	10,132	67.70%
Selective Calcium Channel Blockers	3,213	21.50%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	15	11.8
Mean number of emergency room encounters (ED)	0.7	1.4
Mean number of inpatient hospital encounters (IP)	0.8	1.1
Mean number of non-acute institutional encounters (IS)	0.3	1.1
Mean number of other ambulatory encounters (OA)	3.9	6.3
Mean number of filled prescriptions	33.6	18.4
Mean number of generics	13.7	5.2

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1f. Aggregated Baseline Table for Ranolazine (Cohort 6) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use and Renal Disease in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	4,550	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	72.4	10.6
	Number	**%**
Age: 18-44 years	46	1.00%
Age: 45-54 years	248	5.50%
Age: 55-64 years	854	18.80%
Age: 65-74 years	1,451	31.90%
Age: 75+ years	1,951	42.90%
Gender (Female)	1,594	35.00%
Gender (Male)	2,956	65.00%
Gender (Unknown)	0	0.00%
Race (American Indian or Alaska Native)	15	0.30%
Race (Asian)	54	1.20%
Race (Black or African American)	423	9.30%
Race (Native Hawaiian or Other Pacific Islander)	48	1.10%
Race (Unknown)	1,635	35.90%
Race (White)	2,375	52.20%
Year (2006)	30	0.70%
Year (2007)	84	1.80%
Year (2008)	188	4.10%
Year (2009)	352	7.70%
Year (2010)	492	10.80%
Year (2011)	574	12.60%
Year (2012)	701	15.40%
Year (2013)	847	18.60%
Year (2014)	791	17.40%
Year (2015)	491	10.80%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	5.3	2.5
	Number	**%**
Acute Myocardial Infarction	1,395	30.70%
Angina Pectoris/Prinzmetal Angina	2,069	45.50%
Convulsions	0	0.00%
Coronary Atherosclerosis	4,229	92.90%
Coronary Revascularization	2,375	52.20%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	1,995	43.80%
Liver Impairment	155	3.40%
Renal Disease	4,550	100.00%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	0	0.00%
Beta Blockers	4,269	93.80%
Calcium Channel Blockers	2,111	46.40%

Table 1f. Aggregated Baseline Table for Ranolazine (Cohort 6) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use and Renal Disease in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	3,327	73.10%
Selective Calcium Channel Blockers	760	16.70%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	19.8	15.3
Mean number of emergency room encounters (ED)	0.9	1.7
Mean number of inpatient hospital encounters (IP)	1.3	1.4
Mean number of non-acute institutional encounters (IS)	0.5	1.6
Mean number of other ambulatory encounters (OA)	6.1	8.4
Mean number of filled prescriptions	38.2	19.2
Mean number of generics	15.7	5.2

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1g. Aggregated Baseline Table for Ranolazine (Cohort 7) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use and Liver Impairment in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	386	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	63.8	10.3
	Number	**%**
Age: 18-44 years	12	3.10%
Age: 45-54 years	69	17.90%
Age: 55-64 years	146	37.80%
Age: 65-74 years	101	26.20%
Age: 75+ years	58	15.00%
Gender (Female)	140	36.30%
Gender (Male)	246	63.70%
Gender (Unknown)	0	0.00%
Race (American Indian or Alaska Native)	0	0.00%
Race (Asian)	5	1.30%
Race (Black or African American)	21	5.40%
Race (Native Hawaiian or Other Pacific Islander)	2	0.50%
Race (Unknown)	162	42.00%
Race (White)	196	50.80%
Year (2006)	1	0.30%
Year (2007)	9	2.30%
Year (2008)	10	2.60%
Year (2009)	26	6.70%
Year (2010)	37	9.60%
Year (2011)	42	10.90%
Year (2012)	60	15.50%
Year (2013)	71	18.40%
Year (2014)	83	21.50%
Year (2015)	47	12.20%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	4.3	2.7
	Number	**%**
Acute Myocardial Infarction	105	27.20%
Angina Pectoris/Prinzmetal Angina	188	48.70%
Convulsions	0	0.00%
Coronary Atherosclerosis	339	87.80%
Coronary Revascularization	186	48.20%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	120	31.10%
Liver Impairment	386	100.00%
Renal Disease	155	40.20%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	0	0.00%
Beta Blockers	340	88.10%
Calcium Channel Blockers	171	44.30%

Table 1g. Aggregated Baseline Table for Ranolazine (Cohort 7) Use among those with Prior Evidence of Cytochrome-P450 (CYP3) Inhibitor Use and Liver Impairment in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	254	65.80%
Selective Calcium Channel Blockers	81	21.00%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	19.3	12.2
Mean number of emergency room encounters (ED)	1.2	1.9
Mean number of inpatient hospital encounters (IP)	1.2	1.4
Mean number of non-acute institutional encounters (IS)	0.3	0.8
Mean number of other ambulatory encounters (OA)	5	7.5
Mean number of filled prescriptions	38.6	20.2
Mean number of generics	16	6

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1h. Aggregated Baseline Table for Ranolazine (Cohort 8) Use among those with Prior Evidence of Epilepsy in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	8,051	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	64.2	12.1
	Number	**%**
Age: 18-44 years	467	5.80%
Age: 45-54 years	1,508	18.70%
Age: 55-64 years	2,546	31.60%
Age: 65-74 years	1,780	22.10%
Age: 75+ years	1,750	21.70%
Gender (Female)	4,044	50.20%
Gender (Male)	4,007	49.80%
Gender (Unknown)	0	0.0%
Race (American Indian or Alaska Native)	19	0.20%
Race (Asian)	52	0.60%
Race (Black or African American)	403	5.00%
Race (Native Hawaiian or Other Pacific Islander)	17	0.20%
Race (Unknown)	3,598	44.70%
Race (White)	3,962	49.20%
Year (2006)	80	1.00%
Year (2007)	216	2.70%
Year (2008)	459	5.70%
Year (2009)	743	9.20%
Year (2010)	839	10.40%
Year (2011)	1,025	12.70%
Year (2012)	1,096	13.60%
Year (2013)	1,332	16.50%
Year (2014)	1,462	18.20%
Year (2015)	799	9.90%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	2.5	2.8
	Number	**%**
Acute Myocardial Infarction	1,517	18.80%
Angina Pectoris/Prinzmetal Angina	3,954	49.10%
Convulsions	818	10.20%
Coronary Atherosclerosis	6,996	86.90%
Coronary Revascularization	3,836	47.60%
Electroencephalogram (EEG)	1,138	14.10%
Epilepsy	741	9.20%
Hospitalized Heart Failure	1,379	17.10%
Liver Impairment	256	3.20%
Renal Disease	1,957	24.30%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	6,760	84.00%
Beta Blockers	6,400	79.50%
Calcium Channel Blockers	2,847	35.40%

Table 1h. Aggregated Baseline Table for Ranolazine (Cohort 8) Use among those with Prior Evidence of Epilepsy in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	5,567	69.10%
Selective Calcium Channel Blockers	821	10.20%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	17.5	13.4
Mean number of emergency room encounters (ED)	1.2	2.3
Mean number of inpatient hospital encounters (IP)	0.9	1.3
Mean number of non-acute institutional encounters (IS)	0.3	1.1
Mean number of other ambulatory encounters (OA)	4.8	7.5
Mean number of filled prescriptions	39.5	21.4
Mean number of generics	15.7	6

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 1i. Aggregated Baseline Table for Ranolazine (Cohort 9) Use with 62 Day Minimum Episode Duration in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

Characteristic	Number	%
Number of unique patients	24,587	100.0%
Patient Characteristics	**Mean**	**Standard Deviation**
Mean age	67.9	11.2
	Number	**%**
Age: 18-44 years	607	2.50%
Age: 45-54 years	2,870	11.70%
Age: 55-64 years	6,832	27.80%
Age: 65-74 years	7,097	28.90%
Age: 75+ years	7,181	29.20%
Gender (Female)	8,685	35.30%
Gender (Male)	15,899	64.70%
Gender (Unknown)	3	0.00%
Race (American Indian or Alaska Native)	47	0.20%
Race (Asian)	284	1.20%
Race (Black or African American)	1,163	4.70%
Race (Native Hawaiian or Other Pacific Islander)	106	0.40%
Race (Unknown)	11,173	45.40%
Race (White)	11,814	48.00%
Year (2006)	212	0.90%
Year (2007)	650	2.60%
Year (2008)	1,352	5.50%
Year (2009)	2,216	9.00%
Year (2010)	2,605	10.60%
Year (2011)	3,196	13.00%
Year (2012)	3,796	15.40%
Year (2013)	4,194	17.10%
Year (2014)	4,318	17.60%
Year (2015)	2,048	8.30%
Recorded History during Baseline Period:	**Mean**	**Standard Deviation**
Charlson/Elixhauser Combined Comorbidity Score[1]	1.8	2.4
	Number	**%**
Acute Myocardial Infarction	4,244	17.30%
Angina Pectoris/Prinzmetal Angina	11,870	48.30%
Convulsions	0	0.00%
Coronary Atherosclerosis	21,817	88.70%
Coronary Revascularization	11,429	46.50%
Electroencephalogram (EEG)	0	0.00%
Epilepsy	0	0.00%
Hospitalized Heart Failure	3,131	12.70%
Liver Impairment	544	2.20%
Renal Disease	5,395	21.90%
History of Use:	**Number**	**%**
Anti-Epileptic Medications	1	0.00%
Beta Blockers	19,964	81.20%
Calcium Channel Blockers	8,254	33.60%

Table 1i. Aggregated Baseline Table for Ranolazine (Cohort 9) Use with 62 Day Minimum Episode Duration in the Sentinel Distributed Database from January 1, 2006 to September 30, 2015

History of Use:	Number	%
Nitrates	16,643	67.70%
Selective Calcium Channel Blockers	1,788	7.30%
Health Service Utilization Intensity:	**Mean**	**Standard Deviation**
Mean number of ambulatory encounters (AV)	13.1	10.2
Mean number of emergency room encounters (ED)	0.6	1.1
Mean number of inpatient hospital encounters (IP)	0.6	0.9
Mean number of non-acute institutional encounters (IS)	0.2	0.8
Mean number of other ambulatory encounters (OA)	3.1	5.4
Mean number of filled prescriptions	28.9	17.8
Mean number of generics	12	5.1

[1]The Combined Comorbidity Raw Score is calculated based on comorbidites observed during a requester-defined window around the exposure episode start date (index date).

Table 2. Summary of Incident Ranolazine Use and Seizure Events in the Sentinel Distributed Database between January 1, 2006 and September 30, 2015, by Cohort and Outcome

		Risk Window from Days 1-10[1]				
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Relative Risk	95% Confidence Interval
Without Evidence of Epilepsy						
Ranolazine	52,155	17	12	5	2.88	(1.01, 8.33)
Ranolazine, pre-existing renal disease	11,512	11	8	3	3.20	(0.82, 14.01)
Ranolazine, pre-existing liver impairment	1,226	1	0	1	---	---
Ranolazine, myoclonus and seizure outcome	52,155	20	13	7	2.23	(0.89, 5.99)
Ranolazine, 62-day minimum episode duration	24,587	5	2	3	2.13	(0.27, 13.60)
Without Evidence of Epilepsy and with Cytochrome-P450 (CYP3) Inhibitor Use						
Ranolazine	14,976	9	5	4	1.50	(0.41, 4.39)
Ranolazine, pre-existing renal disease	4,550	6	4	2	2.40	(0.45, 17.64)
Ranolazine, pre-existing liver impairment	386	0	0	0	---	---
With Evidence of Epilepsy						
Ranolazine	8,051	3	2	1	2.40	(0.19, 69.41)

		Risk Window from Days 11-20[1]				
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Relative Risk	95% Confidence Interval
Without Evidence of Epilepsy						
Ranolazine	52,155	16	11	5	2.64	(0.93, 7.85)
Ranolazine, pre-existing renal disease	11,512	7	4	3	1.60	(0.35, 8.08)
Ranolazine, pre-existing liver impairment	1,226	1	0	1	---	---
Ranolazine, myoclonus and seizure outcome	52,155	19	12	7	2.06	(0.78, 5.58)
Ranolazine, 62-day minimum episode duration	24,587	8	5	3	5.33	(1.31, 25.53)
Without Evidence of Epilepsy and with CYP3 Inhibitor Use						
Ranolazine	14,976	8	4	4	1.20	(0.29, 5.00)
Ranolazine, pre-existing renal disease	4,550	4	2	2	1.20	(0.13, 11.02)
Ranolazine, pre-existing liver impairment	386	0	0	0	---	---
With Evidence of Epilepsy						
Ranolazine	8,051	5	4	1	4.80	(0.63, 18.54)

		Risk Window from Days 21-30[2]				
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Relative Risk	95% Confidence Interval
Without Evidence of Epilepsy						
Ranolazine, 62-day minimum episode duration	24,587	4	1	3	1.07	(0.04, 9.58)

[1]If episode length is 32 days, control window is from 21-32 days; if episode length is 62 days, control window is from 31-62 days.

[2]Control window is from 31-62 days.

Table 3. Summary of Incident Ranolazine Use and Seizure Events in the Sentinel Distributed Database between January 1, 2006 and September 30, 2015, by Cohort, Outcome, and Age

		Risk Window from Days 1-10[1]			Risk Window from Days 11-20[1]			Risk Window from Days 21-30[2]		
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Without Evidence of Epilepsy										
Ranolazine										
18-44 years	1,745	0	0	0	3	3	0	---	---	---
45-54 years	7,109	1	0	1	2	1	1	---	---	---
55-64 years	14,583	3	2	1	1	0	1	---	---	---
65-74 years	14,432	3	2	1	2	1	1	---	---	---
75+ years	14,286	10	8	2	8	6	2	---	---	---
Ranolazine, pre-existing renal disease										
18-44 years	135	0	0	0	0	0	0	---	---	---
45-54 years	719	1	0	1	1	0	1	---	---	---
55-64 years	2,224	1	1	0	0	0	0	---	---	---
65-74 years	3,449	3	2	1	2	1	1	---	---	---
75+ years	4,985	6	5	1	4	3	1	---	---	---
Ranolazine, pre-existing liver impairment										
18-44 years	56	0	0	0	0	0	0	---	---	---
45-54 years	244	0	0	0	0	0	0	---	---	---
55-64 years	448	0	0	0	0	0	0	---	---	---
65-74 years	319	1	0	1	1	0	1	---	---	---
75+ years	159	0	0	0	0	0	0	---	---	---
Ranolazine, myoclonus and seizure outcome										
18-44 years	1,745	0	0	0	3	3	0	---	---	---
45-54 years	7,109	1	0	1	2	1	1	---	---	---
55-64 years	14,583	3	2	1	2	1	1	---	---	---
65-74 years	14,432	5	3	2	3	1	2	---	---	---
75+ years	14,286	11	8	3	9	6	3	---	---	---

Table 3. Summary of Incident Ranolazine Use and Seizure Events in the Sentinel Distributed Database between January 1, 2006 and September 30, 2015, by Cohort, Outcome, and Age

		Risk Window from Days 1-10[1]			Risk Window from Days 11-20[1]			Risk Window from Days 21-30[2]		
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Ranolazine, 62-day minimum episode duration										
18-44 years	607	0	0	0	2	2	0	0	0	0
45-54 years	2,870	0	0	0	1	1	0	0	0	0
55-64 years	6,832	2	0	2	2	0	2	2	0	2
65-74 years	7,097	2	1	1	2	1	1	1	0	1
75+ years	7,181	1	1	0	0	1	0	1	1	0
Without Evidence of Epilepsy and with Cytochrome-P450 (CYP3) Inhibitor Use										
Ranolazine										
18-44 years	407	0	0	0	1	1	0	---	---	---
45-54 years	1,712	1	0	1	1	0	1	---	---	---
55-64 years	3,883	1	0	1	1	0	1	---	---	---
65-74 years	4,413	1	1	0	1	1	0	---	---	---
75+ years	4,561	6	4	2	4	2	2	---	---	---
Ranolazine, pre-existing renal disease										
18-44 years	46	0	0	0	0	0	0	---	---	---
45-54 years	248	1	0	1	1	0	1	---	---	---
55-64 years	854	0	0	0	0	0	0	---	---	---
65-74 years	1,451	1	1	0	1	1	0	---	---	---
75+ years	1,951	4	3	1	2	1	1	---	---	---
Ranolazine, pre-existing liver impairment										
18-44 years	12	0	0	0	0	0	0	---	---	---
45-54 years	69	0	0	0	0	0	0	---	---	---
55-64 years	146	0	0	0	0	0	0	---	---	---
65-74 years	101	0	0	0	0	0	0	---	---	---
75+ years	58	0	0	0	0	0	0	---	---	---

Table 3. Summary of Incident Ranolazine Use and Seizure Events in the Sentinel Distributed Database between January 1, 2006 and September 30, 2015, by Cohort, Outcome, and Age

		Risk Window from Days 1-10[1]			Risk Window from Days 11-20[1]			Risk Window from Days 21-30[2]		
	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
With Evidence of Epilepsy										
Ranolazine										
18-44 years	467	0	0	0	1	1	0	---	---	---
45-54 years	1,508	1	0	1	1	0	1	---	---	---
55-64 years	2,546	1	1	0	1	1	0	---	---	---
65-74 years	1,780	1	1	0	0	0	0	---	---	---
75+ years	1,750	0	0	0	2	2	0	---	---	---

[1]If episode length is 32 days, control window is from 21-32 days; if episode length is 62 days, control window is from 31-62 days

[2]Control window is from 31-62 days

Figure 1. Number of Ranolazine Users with Seizure Events among Members with No Prior Evidence of Epilepsy per Time to Event Value, by Cohort

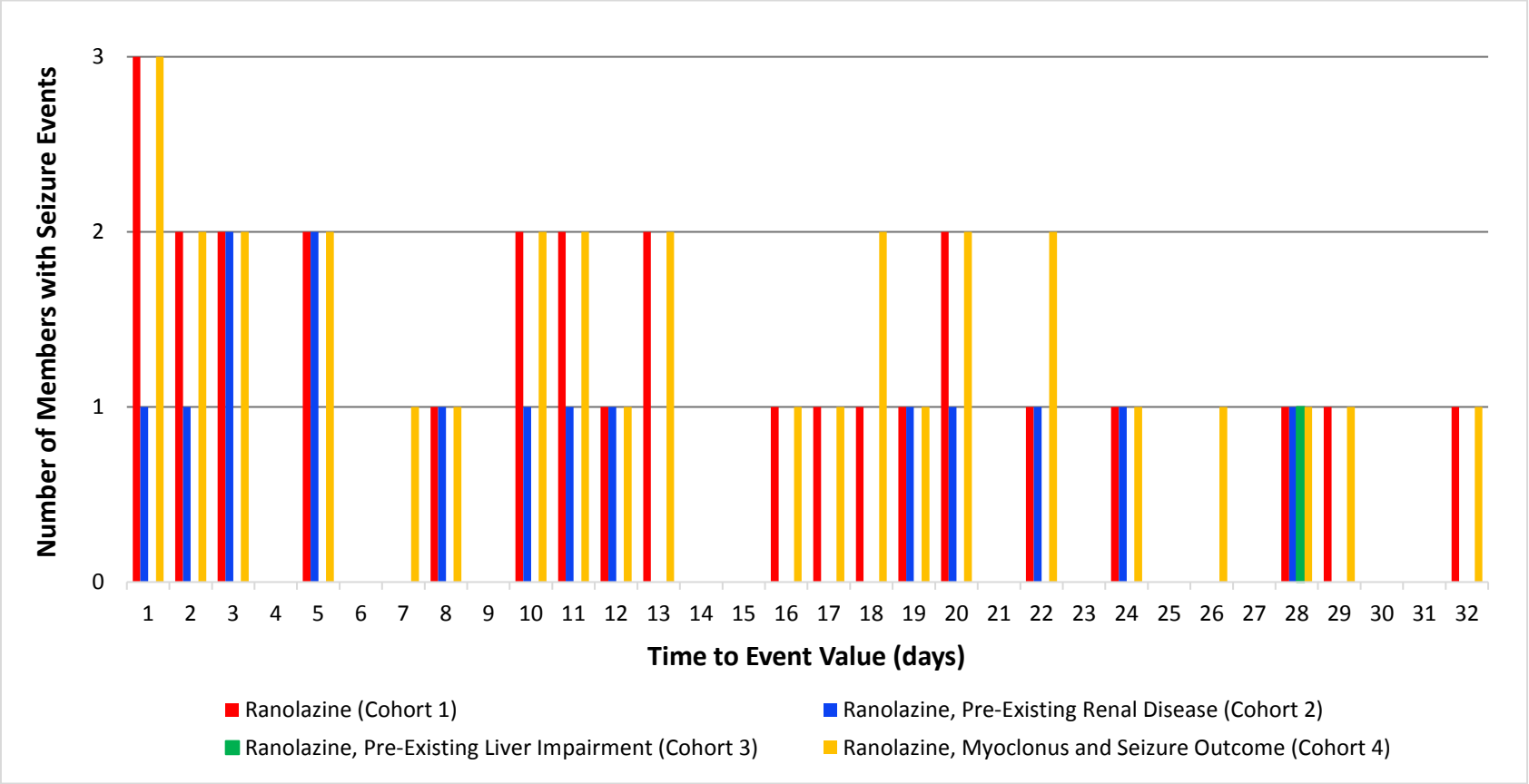


Figure 2. Number of Ranolazine Users with Seizure Events among Members with No Prior Evidence of Epilepsy and Evidence of Cytochrome-P450 (CYP3) Inhibitor Use per Time to Event Value, by Cohort

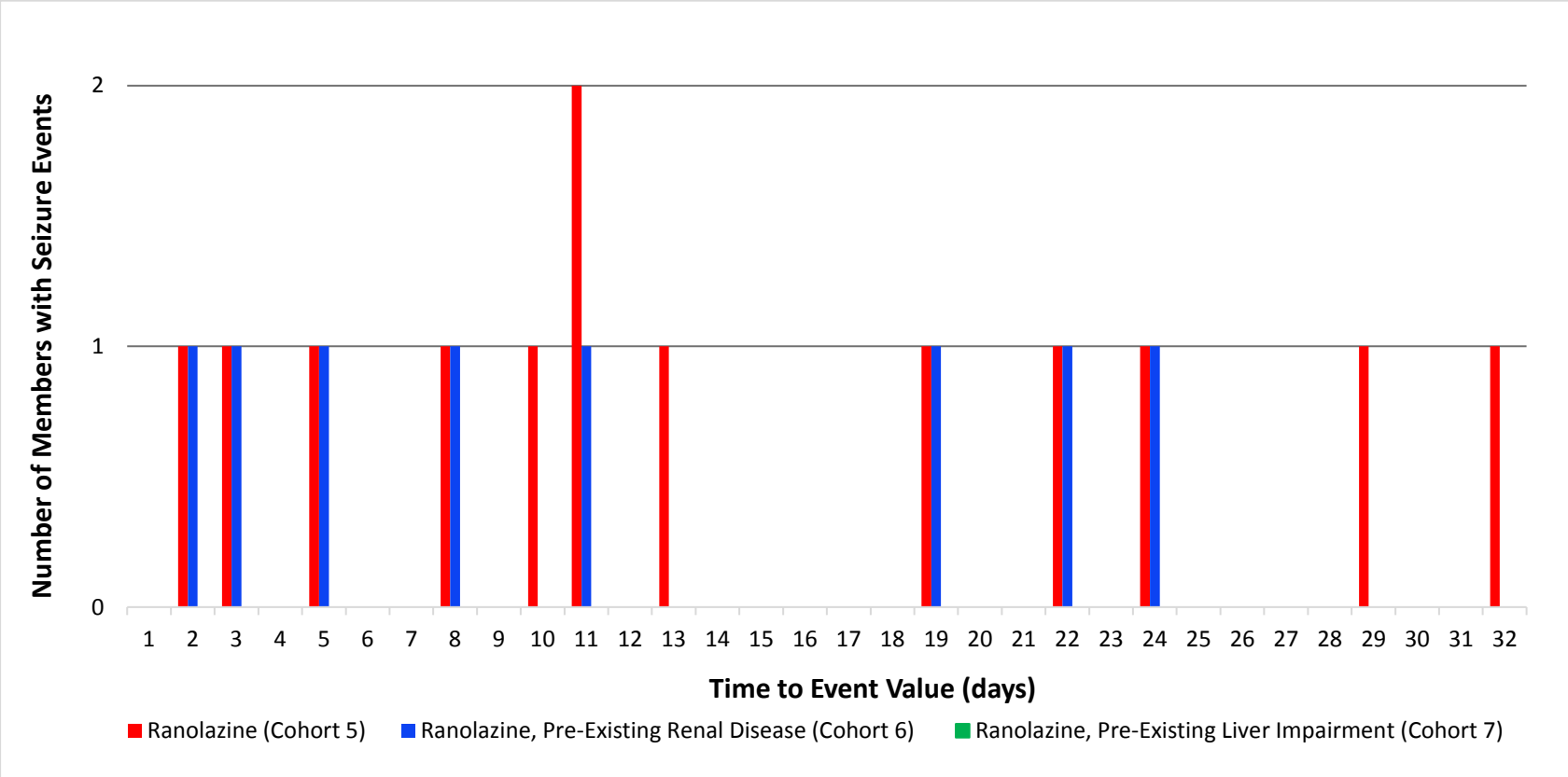


Figure 3. Number of Ranolazine Users with Seizure Events among Members with Prior Evidence of Epilepsy per Time to Event Value

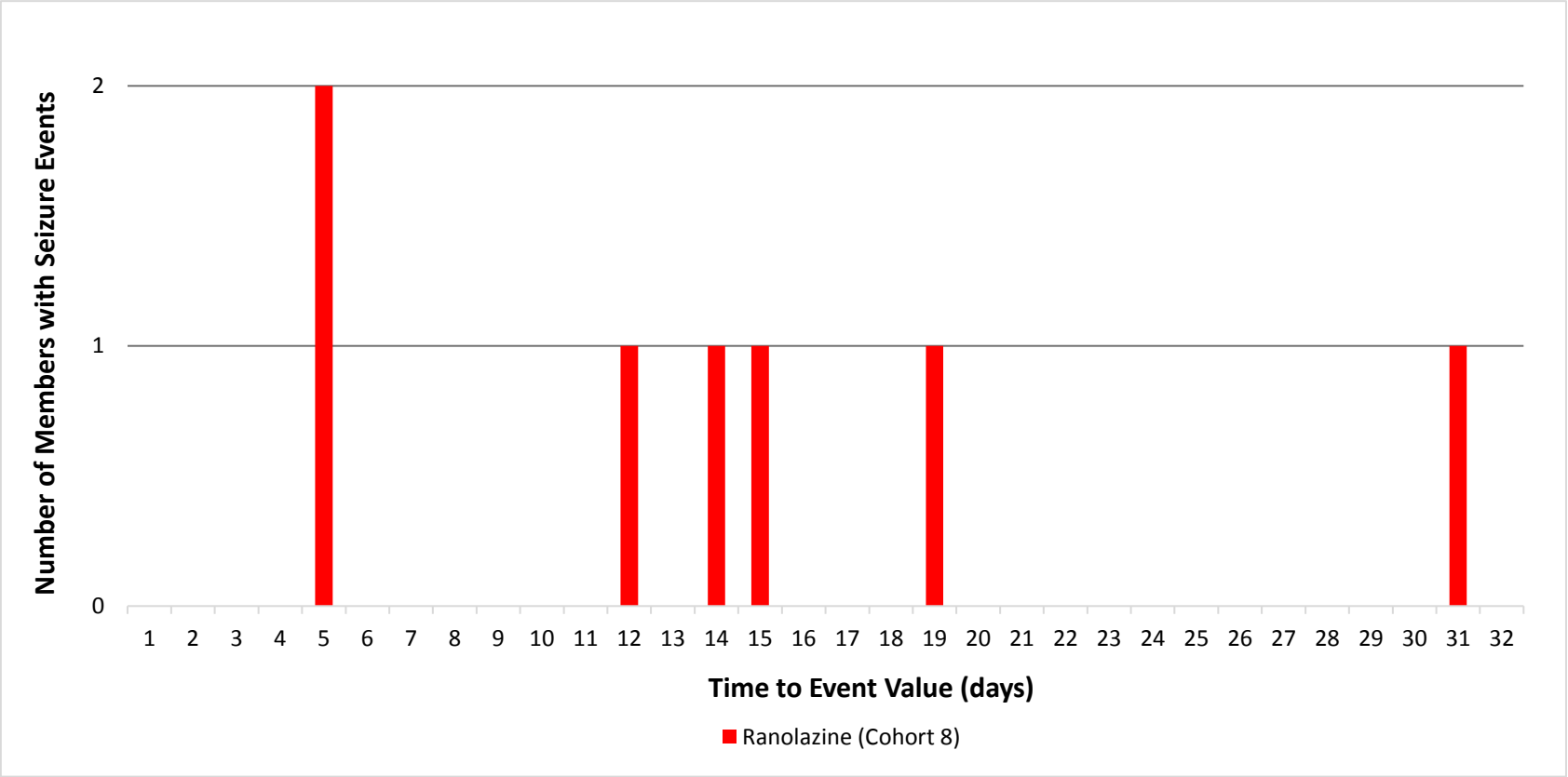
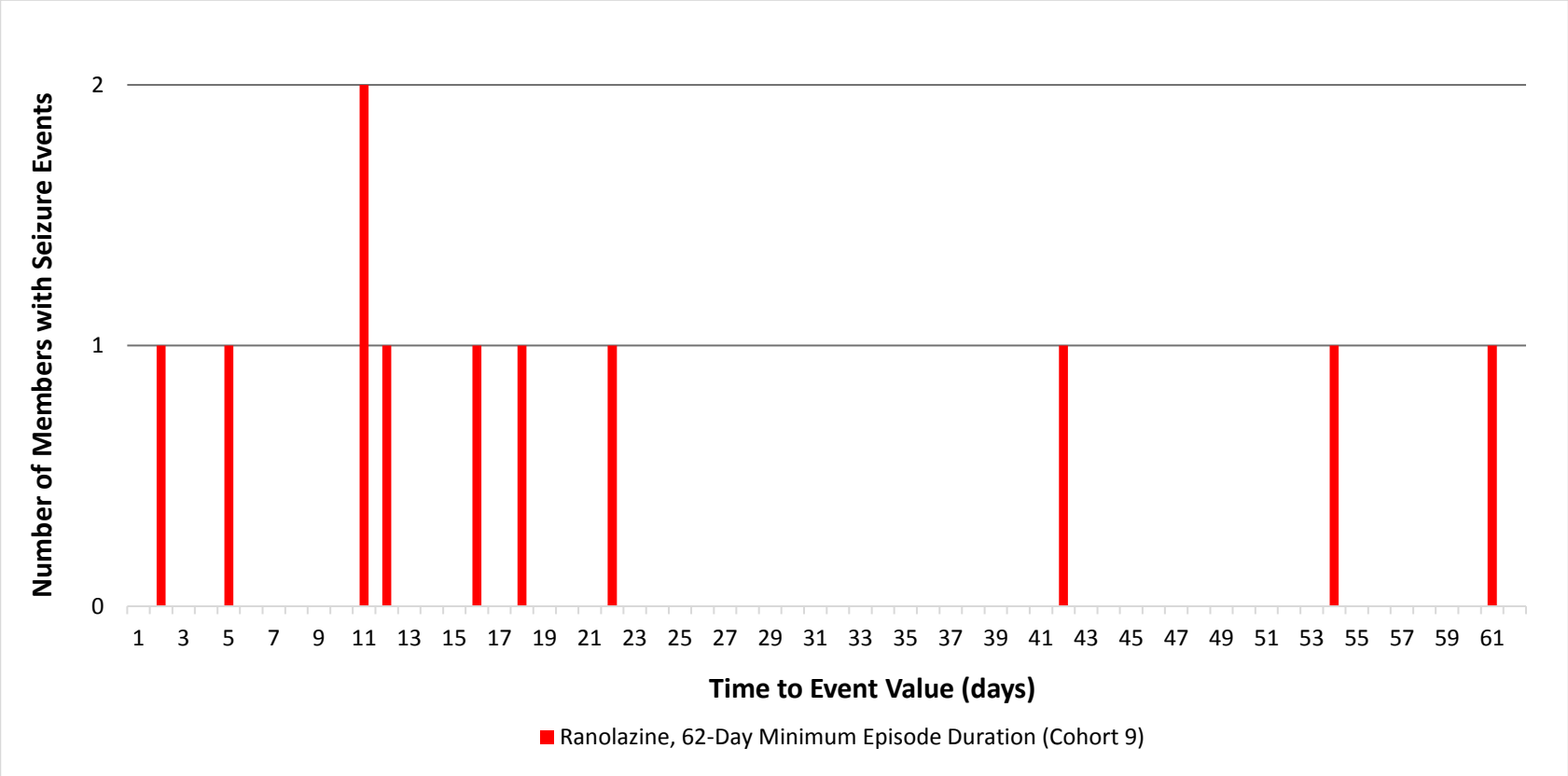


Figure 4. Number of Ranolazine Users with 62 Day Minimum Episode Duration, with Seizure Events among Members with No Prior Evidence of Epilepsy per Time to Event Value



Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date (November 9, 2017)

DP ID	Data Start Date[1]	Data End Date[1]
DP001	1/1/2006	9/30/2015
DP002	1/1/2006	9/30/2015
DP003	1/1/2006	9/30/2015
DP004	1/1/2006	9/30/2015
DP005	1/1/2006	9/30/2015
DP006	1/1/2006	9/30/2015
DP007	1/1/2006	9/30/2015
DP008	1/1/2006	9/30/2015
DP009	1/1/2006	9/30/2015
DP010	1/1/2006	9/30/2015
DP011	6/1/2007	9/30/2015
DP012	1/1/2008	9/30/2015
DP013	1/1/2008	9/30/2015
DP014	1/1/2012	9/30/2015

[1]Start Date and End Date are first calculated by individual table (enrollment, dispensing, etc). End Date is defined as the greatest year-month with a record count that is within 80% of the previous year-month. After Start Dates and End Dates are calculated by individual tables, the overall DP End Date is the minimum of all the table End Dates.

Appendix B. List of Generic Drug Names Used to Define Exposures in this Request

Generic Name
Ranolazine
Ranolazine
RANOLAZINE TAB SR 12HR 500 MG
RANOLAZINE TAB SR 12HR 1000 MG
Beta Blockers
ACEBUTOLOL HCL
ATENOLOL
ATENOLOL/CHLORTHALIDONE
BETAXOLOL HCL
BISOPROLOL FUMARATE
BISOPROLOL FUMARATE/HYDROCHLOROTHIAZIDE
CARVEDILOL
CARVEDILOL PHOSPHATE
LABETALOL HCL
METOPROLOL SUCCINATE
METOPROLOL SUCCINATE/HYDROCHLOROTHIAZIDE
METOPROLOL TARTRATE
METOPROLOL TARTRATE/DIETARY SUPPLEMENT,COMB.10
METOPROLOL TARTRATE/HYDROCHLOROTHIAZIDE
NADOLOL
NADOLOL/BENDROFLUMETHIAZIDE
NEBIVOLOL HCL
PENBUTOLOL SULFATE
PINDOLOL
PROPRANOLOL HCL
PROPRANOLOL HCL/HYDROCHLOROTHIAZIDE
SOTALOL HCL
TIMOLOL MALEATE

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
	Epilepsy, Convulsions, Electroencephalogram (EEG)	
345	Epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.0	Generalized nonconvulsive epilepsy	ICD-9-CM Diagnosis
345.00	Generalized nonconvulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.01	Generalized nonconvulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.1	Generalized convulsive epilepsy	ICD-9-CM Diagnosis
345.10	Generalized convulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.11	Generalized convulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.2	Epileptic petit mal status	ICD-9-CM Diagnosis
345.3	Epileptic grand mal status	ICD-9-CM Diagnosis
345.4	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial	ICD-9-CM Diagnosis
345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.5	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures	ICD-9-CM Diagnosis
345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.6	Infantile spasms	ICD-9-CM Diagnosis
345.60	Infantile spasms without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.61	Infantile spasms with intractable epilepsy	ICD-9-CM Diagnosis
345.7	Epilepsia partialis continua	ICD-9-CM Diagnosis
345.70	Epilepsia partialis continua without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.71	Epilepsia partialis continua with intractable epilepsy	ICD-9-CM Diagnosis
345.8	Other forms of epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.80	Other forms of epilepsy and recurrent seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.81	Other forms of epilepsy and recurrent seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.9	Unspecified epilepsy	ICD-9-CM Diagnosis
345.90	Unspecified epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.91	Unspecified epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
780.3	Convulsions	ICD-9-CM Diagnosis
780.39	Other convulsions	ICD-9-CM Diagnosis
780.31	Febrile convulsions (simple), unspecified	ICD-9-CM Diagnosis
780.32	Complex febrile convulsions	ICD-9-CM Diagnosis
780.33	Post traumatic seizures	ICD-9-CM Diagnosis
794.02	Nonspecific abnormal electroencephalogram [EEG]	ICD-9-CM Diagnosis
89.14	Electroencephalogram	ICD-9-CM Diagnosis
89.19	Video and radio-telemetered electroencephalographic monitoring	ICD-9-CM Diagnosis
95812	Electroencephalogram (EEG) extended monitoring; 41-60 minutes	CPT Procedure
95813	Electroencephalogram (EEG) extended monitoring; greater than 1 hour	CPT Procedure

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
95816	Electroencephalogram (EEG); including recording awake and drowsy	CPT Procedure
95819	Electroencephalogram (EEG); including recording awake and asleep	CPT Procedure
95822	Electroencephalogram (EEG); recording in coma or sleep only	CPT Procedure
95824	Electroencephalogram (EEG); cerebral death evaluation only	CPT Procedure
95827	Electroencephalogram (EEG); all night recording	CPT Procedure
95829	Electrocorticogram at surgery (separate procedure)	CPT Procedure
95830	Insertion by physician or other qualified health care professional of sphenoidal electrodes for electroencephalographic (EEG) recording	CPT Procedure
95950	Monitoring for identification and lateralization of cerebral seizure focus, electroencephalographic (eg, 8 channel EEG) recording and interpretation, each 24 hours	CPT Procedure
95951	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, combined electroencephalographic (EEG) and video recording and interpretation (eg, for presurgical localization), each 24 hours	CPT Procedure
95953	Monitoring for localization of cerebral seizure focus by computerized portable 16 or more channel EEG, electroencephalographic (EEG) recording and interpretation, each 24 hours, unattended	CPT Procedure
95954	Pharmacological or physical activation requiring physician or other qualified health care professional attendance during EEG recording of activation phase (eg, thiopental activation test)	CPT Procedure
95955	Electroencephalogram (EEG) during nonintracranial surgery (eg, carotid surgery)	CPT Procedure
95956	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, electroencephalographic (EEG) recording and interpretation, each 24 hours, attended by a technologist or nurse	CPT Procedure
95957	Digital analysis of electroencephalogram (EEG) (eg, for epileptic spike analysis)	CPT Procedure
95958	Wada activation test for hemispheric function, including electroencephalographic (EEG)	CPT Procedure
95961	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; initial hour of attendance by a physician or other qualified health care professional	CPT Procedure
95962	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; each additional hour of attendance by a physician or other qualified health care professional (List separately in addition to code for primary procedure)	CPT Procedure
A4556	Electrodes (e.g., apnea monitor), per pair	HCPCS Procedure
	Brain Tumor	
191	Malignant neoplasm of brain	ICD-9-CM Diagnosis
191.0	Malignant neoplasm of cerebrum, except lobes and ventricles	ICD-9-CM Diagnosis
191.1	Malignant neoplasm of frontal lobe of brain	ICD-9-CM Diagnosis
191.2	Malignant neoplasm of temporal lobe of brain	ICD-9-CM Diagnosis
191.3	Malignant neoplasm of parietal lobe of brain	ICD-9-CM Diagnosis
191.4	Malignant neoplasm of occipital lobe of brain	ICD-9-CM Diagnosis
191.5	Malignant neoplasm of ventricles of brain	ICD-9-CM Diagnosis
191.6	Malignant neoplasm of cerebellum NOS	ICD-9-CM Diagnosis

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Code	Description	Code Type
191.7	Malignant neoplasm of brain stem	ICD-9-CM Diagnosis
191.8	Malignant neoplasm of other parts of brain	ICD-9-CM Diagnosis
191.9	Malignant neoplasm of brain, unspecified site	ICD-9-CM Diagnosis
192.0	Malignant neoplasm of cranial nerves	ICD-9-CM Diagnosis
192.1	Malignant neoplasm of cerebral meninges	ICD-9-CM Diagnosis
198.3	Secondary malignant neoplasm of brain and spinal cord	ICD-9-CM Diagnosis
237.5	Neoplasm of uncertain behavior of brain and spinal cord	ICD-9-CM Diagnosis
237.6	Neoplasm of uncertain behavior of meninges	ICD-9-CM Diagnosis
239.6	Neoplasm of unspecified nature of brain	ICD-9-CM Diagnosis
	Head Trauma or Injury	
800	Fracture of vault of skull	ICD-9-CM Diagnosis
800.0	Closed fracture of vault of skull without mention of intracranial injury	ICD-9-CM Diagnosis
800.00	Closed fracture of vault of skull without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
800.01	Closed fracture of vault of skull without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
800.02	Closed fracture of vault of skull without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.03	Closed fracture of vault of skull without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.04	Closed fracture of vault of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.05	Closed fracture of vault of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.06	Closed fracture of vault of skull without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.09	Closed fracture of vault of skull without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
800.1	Closed fracture of vault of skull with cerebral laceration and contusion	ICD-9-CM Diagnosis
800.10	Closed fracture of vault of skull with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
800.11	Closed fracture of vault of skull with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
800.12	Closed fracture of vault of skull with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.13	Closed fracture of vault of skull with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.14	Closed fracture of vault of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.15	Closed fracture of vault of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis

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Code	Description	Code Type
800.16	Closed fracture of vault of skull with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.19	Closed fracture of vault of skull with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
800.2	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
800.20	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
800.21	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
800.22	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.23	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.24	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.25	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.26	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.29	Closed fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
800.3	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
800.30	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
800.31	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
800.32	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.33	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.34	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.35	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.36	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.39	Closed fracture of vault of skull with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
800.4	Closed fracture of vault of skull with intercranial injury of other and unspecified nature	ICD-9-CM Diagnosis
800.40	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
800.41	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
800.42	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.43	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.44	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.45	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.46	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.49	Closed fracture of vault of skull with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
800.5	Open fracture of vault of skull without mention of intracranial injury	ICD-9-CM Diagnosis
800.50	Open fracture of vault of skull without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
800.51	Open fracture of vault of skull without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
800.52	Open fracture of vault of skull without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.53	Open fracture of vault of skull without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.54	Open fracture of vault of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.55	Open fracture of vault of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.56	Open fracture of vault of skull without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.59	Open fracture of vault of skull without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
800.6	Open fracture of vault of skull with cerebral laceration and contusion	ICD-9-CM Diagnosis
800.60	Open fracture of vault of skull with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
800.61	Open fracture of vault of skull with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
800.62	Open fracture of vault of skull with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
800.63	Open fracture of vault of skull with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.64	Open fracture of vault of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.65	Open fracture of vault of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.66	Open fracture of vault of skull with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.69	Open fracture of vault of skull with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
800.7	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
800.70	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
800.71	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
800.72	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.73	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.74	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.75	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.76	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.79	Open fracture of vault of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
800.8	Open fracture of vault of skull with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
800.80	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
800.81	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
800.82	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.83	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.84	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis

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Code	Description	Code Type
800.85	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.86	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.89	Open fracture of vault of skull with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
800.9	Open fracture of vault of skull with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
800.90	Open fracture of vault of skull with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
800.91	Open fracture of vault of skull with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
800.92	Open fracture of vault of skull with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
800.93	Open fracture of vault of skull with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
800.94	Open fracture of vault of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
800.95	Open fracture of vault of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
800.96	Open fracture of vault of skull with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
800.99	Open fracture of vault of skull with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
801	Fracture of base of skull	ICD-9-CM Diagnosis
801.0	Closed fracture of base of skull without mention of intracranial injury	ICD-9-CM Diagnosis
801.00	Closed fracture of base of skull without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
801.01	Closed fracture of base of skull without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
801.02	Closed fracture of base of skull without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.03	Closed fracture of base of skull without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.04	Closed fracture of base of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.05	Closed fracture of base of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.06	Closed fracture of base of skull without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
801.09	Closed fracture of base of skull without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
801.1	Closed fracture of base of skull with cerebral laceration and contusion	ICD-9-CM Diagnosis
801.10	Closed fracture of base of skull with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
801.11	Closed fracture of base of skull with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
801.12	Closed fracture of base of skull with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.13	Closed fracture of base of skull with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.14	Closed fracture of base of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.15	Closed fracture of base of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.16	Closed fracture of base of skull with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.19	Closed fracture of base of skull with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
801.2	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
801.20	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
801.21	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
801.22	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.23	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.24	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.25	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.26	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.29	Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
801.3	Closed fracture of base of skull with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
801.30	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
801.31	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
801.32	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.33	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.34	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.35	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.36	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.39	Closed fracture of base of skull with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
801.4	Closed fracture of base of skull with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
801.40	Closed fracture of base of skull with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
801.41	Closed fracture of base of skull with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
801.42	Closed fracture of base of skull with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.43	Closed fracture of base of skull with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.44	Closed fracture of base of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.45	Closed fracture of base of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.46	Closed fracture of base of skull with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.49	Closed fracture of base of skull with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
801.5	Open fracture of base of skull without mention of intracranial injury	ICD-9-CM Diagnosis
801.50	Open fracture of base of skull without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
801.51	Open fracture of base of skull without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
801.52	Open fracture of base of skull without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
801.53	Open fracture of base of skull without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.54	Open fracture of base of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.55	Open fracture of base of skull without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.56	Open fracture of base of skull without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.59	Open fracture of base of skull without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
801.6	Open fracture of base of skull with cerebral laceration and contusion	ICD-9-CM Diagnosis
801.60	Open fracture of base of skull with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
801.61	Open fracture of base of skull with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
801.62	Open fracture of base of skull with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.63	Open fracture of base of skull with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.64	Open fracture of base of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.65	Open fracture of base of skull with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.66	Open fracture of base of skull with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.69	Open fracture of base of skull with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
801.7	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
801.70	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
801.71	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
801.72	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.73	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.74	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.75	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis

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Code	Description	Code Type
801.76	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.79	Open fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
801.8	Open fracture of base of skull with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
801.80	Open fracture of base of skull with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
801.81	Open fracture of base of skull with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
801.82	Open fracture of base of skull with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.83	Open fracture of base of skull with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.84	Open fracture of base of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.85	Open fracture of base of skull with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.86	Open fracture of base of skull with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.89	Open fracture of base of skull with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
801.9	Open fracture of base of skull with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
801.90	Open fracture of base of skull with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
801.91	Open fracture of base of skull with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
801.92	Open fracture of base of skull with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
801.93	Open fracture of base of skull with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
801.94	Open fracture of base of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
801.95	Open fracture of base of skull with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
801.96	Open fracture of base of skull with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
801.99	Open fracture of base of skull with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
802	Fracture of face bones	ICD-9-CM Diagnosis

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Code	Description	Code Type
802.0	Nasal bones, closed fracture	ICD-9-CM Diagnosis
802.1	Nasal bones, open fracture	ICD-9-CM Diagnosis
802.2	Mandible, closed fracture	ICD-9-CM Diagnosis
802.20	Closed fracture of unspecified site of mandible	ICD-9-CM Diagnosis
802.21	Closed fracture of condylar process of mandible	ICD-9-CM Diagnosis
802.22	Closed fracture of subcondylar process of mandible	ICD-9-CM Diagnosis
802.23	Closed fracture of coronoid process of mandible	ICD-9-CM Diagnosis
802.24	Closed fracture of unspecified part of ramus of mandible	ICD-9-CM Diagnosis
802.25	Closed fracture of angle of jaw	ICD-9-CM Diagnosis
802.26	Closed fracture of symphysis of body of mandible	ICD-9-CM Diagnosis
802.27	Closed fracture of alveolar border of body of mandible	ICD-9-CM Diagnosis
802.28	Closed fracture of other and unspecified part of body of mandible	ICD-9-CM Diagnosis
802.29	Closed fracture of multiple sites of mandible	ICD-9-CM Diagnosis
802.3	Mandible, open fracture	ICD-9-CM Diagnosis
802.30	Open fracture of unspecified site of mandible	ICD-9-CM Diagnosis
802.31	Open fracture of condylar process of mandible	ICD-9-CM Diagnosis
802.32	Open fracture of subcondylar process of mandible	ICD-9-CM Diagnosis
802.33	Open fracture of coronoid process of mandible	ICD-9-CM Diagnosis
802.34	Open fracture of unspecified part of ramus of mandible	ICD-9-CM Diagnosis
802.35	Open fracture of angle of jaw	ICD-9-CM Diagnosis
802.36	Open fracture of symphysis of body of mandible	ICD-9-CM Diagnosis
802.37	Open fracture of alveolar border of body of mandible	ICD-9-CM Diagnosis
802.38	Open fracture of other and unspecified part of body of mandible	ICD-9-CM Diagnosis
802.39	Open fracture of multiple sites of mandible	ICD-9-CM Diagnosis
802.4	Malar and maxillary bones, closed fracture	ICD-9-CM Diagnosis
802.5	Malar and maxillary bones, open fracture	ICD-9-CM Diagnosis
802.6	Orbital floor (blow-out), closed fracture	ICD-9-CM Diagnosis
802.7	Orbital floor (blow-out), open fracture	ICD-9-CM Diagnosis
802.8	Other facial bones, closed fracture	ICD-9-CM Diagnosis
802.9	Other facial bones, open fracture	ICD-9-CM Diagnosis
803	Other and unqualified skull fractures	ICD-9-CM Diagnosis
803.0	Other closed skull fracture without mention of intracranial injury	ICD-9-CM Diagnosis
803.00	Other closed skull fracture without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
803.01	Other closed skull fracture without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
803.02	Other closed skull fracture without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.03	Other closed skull fracture without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.04	Other closed skull fracture without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis

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Code	Description	Code Type
803.05	Other closed skull fracture without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.06	Other closed skull fracture without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.09	Other closed skull fracture without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
803.1	Other closed skull fracture with cerebral laceration and contusion	ICD-9-CM Diagnosis
803.10	Other closed skull fracture with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
803.11	Other closed skull fracture with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
803.12	Other closed skull fracture with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.13	Other closed skull fracture with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.14	Other closed skull fracture with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.15	Other closed skull fracture with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.16	Other closed skull fracture with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.19	Other closed skull fracture with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
803.2	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
803.20	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
803.21	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
803.22	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.23	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.24	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.25	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.26	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.29	Other closed skull fracture with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
803.3	Closed skull fracture with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis

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Code	Description	Code Type
803.30	Other closed skull fracture with other and unspecified intracranial hemorrhage, unspecified state of unconsciousness	ICD-9-CM Diagnosis
803.31	Other closed skull fracture with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
803.32	Other closed skull fracture with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.33	Other closed skull fracture with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.34	Other closed skull fracture with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.35	Other closed skull fracture with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.36	Other closed skull fracture with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.39	Other closed skull fracture with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
803.4	Other closed skull fracture with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
803.40	Other closed skull fracture with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
803.41	Other closed skull fracture with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
803.42	Other closed skull fracture with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.43	Other closed skull fracture with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.44	Other closed skull fracture with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.45	Other closed skull fracture with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.46	Other closed skull fracture with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.49	Other closed skull fracture with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
803.5	Other open skull fracture without mention of intracranial injury	ICD-9-CM Diagnosis
803.50	Other open skull fracture without mention of injury, state of consciousness unspecified	ICD-9-CM Diagnosis
803.51	Other open skull fracture without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
803.52	Other open skull fracture without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
803.53	Other open skull fracture without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.54	Other open skull fracture without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.55	Other open skull fracture without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.56	Other open skull fracture without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.59	Other open skull fracture without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
803.6	Other open skull fracture with cerebral laceration and contusion	ICD-9-CM Diagnosis
803.60	Other open skull fracture with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
803.61	Other open skull fracture with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
803.62	Other open skull fracture with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.63	Other open skull fracture with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.64	Other open skull fracture with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.65	Other open skull fracture with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.66	Other open skull fracture with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.69	Other open skull fracture with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
803.7	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
803.70	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
803.71	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
803.72	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.73	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.74	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.75	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis

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Code	Description	Code Type
803.76	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.79	Other open skull fracture with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
803.8	Other open skull fracture with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
803.80	Other open skull fracture with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
803.81	Other open skull fracture with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
803.82	Other open skull fracture with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.83	Other open skull fracture with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.84	Other open skull fracture with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.85	Other open skull fracture with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.86	Other open skull fracture with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.89	Other open skull fracture with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
803.9	Other open skull fracture with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
803.90	Other open skull fracture with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
803.91	Other open skull fracture with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
803.92	Other open skull fracture with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
803.93	Other open skull fracture with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
803.94	Other open skull fracture with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
803.95	Other open skull fracture with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
803.96	Other open skull fracture with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
803.99	Other open skull fracture with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
804	Multiple fractures involving skull or face with other bones	ICD-9-CM Diagnosis

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Code	Description	Code Type
804.0	Closed fractures involving skull or face with other bones, without mention of intracranial injury	ICD-9-CM Diagnosis
804.00	Closed fractures involving skull or face with other bones, without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
804.01	Closed fractures involving skull or face with other bones, without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
804.02	Closed fractures involving skull or face with other bones, without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.03	Closed fractures involving skull or face with other bones, without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.04	Closed fractures involving skull or face with other bones, without mention or intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
804.05	Closed fractures involving skull of face with other bones, without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
804.06	Closed fractures involving skull of face with other bones, without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.09	Closed fractures involving skull of face with other bones, without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
804.1	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion	ICD-9-CM Diagnosis
804.10	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
804.11	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis
804.12	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.13	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.14	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
804.15	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
804.16	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.19	Closed fractures involving skull or face with other bones, with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
804.2	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis

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Code	Description	Code Type
804.20	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
804.21	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
804.22	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.23	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.24	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing consci	ICD-9-CM Diagnosis
804.25	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing c	ICD-9-CM Diagnosis
804.26	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.29	Closed fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
804.3	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
804.30	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
804.31	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
804.32	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.33	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.34	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to preexisting conscious	ICD-9-CM Diagnosis
804.35	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing cons	ICD-9-CM Diagnosis
804.36	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.39	Closed fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
804.4	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
804.40	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
804.41	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
804.42	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.43	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.44	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing con	ICD-9-CM Diagnosis
804.45	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existin	ICD-9-CM Diagnosis
804.46	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.49	Closed fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
804.5	Open fractures involving skull or face with other bones, without mention of intracranial injury	ICD-9-CM Diagnosis
804.50	Open fractures involving skull or face with other bones, without mention of intracranial injury, unspecified state of consciousness	ICD-9-CM Diagnosis
804.51	Open fractures involving skull or face with other bones, without mention of intracranial injury, no loss of consciousness	ICD-9-CM Diagnosis
804.52	Open fractures involving skull or face with other bones, without mention of intracranial injury, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.53	Open fractures involving skull or face with other bones, without mention of intracranial injury, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.54	Open fractures involving skull or face with other bones, without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
804.55	Open fractures involving skull or face with other bones, without mention of intracranial injury, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
804.56	Open fractures involving skull or face with other bones, without mention of intracranial injury, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.59	Open fractures involving skull or face with other bones, without mention of intracranial injury, unspecified concussion	ICD-9-CM Diagnosis
804.6	Open fractures involving skull or face with other bones, with cerebral laceration and contusion	ICD-9-CM Diagnosis
804.60	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, unspecified state of consciousness	ICD-9-CM Diagnosis
804.61	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, no loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
804.62	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.63	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.64	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
804.65	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
804.66	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.69	Open fractures involving skull or face with other bones, with cerebral laceration and contusion, unspecified concussion	ICD-9-CM Diagnosis
804.7	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage	ICD-9-CM Diagnosis
804.70	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
804.71	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
804.72	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.73	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.74	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing consciou	ICD-9-CM Diagnosis
804.75	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing con	ICD-9-CM Diagnosis
804.76	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.79	Open fractures involving skull or face with other bones with subarachnoid, subdural, and extradural hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
804.8	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage	ICD-9-CM Diagnosis
804.80	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, unspecified state of consciousness	ICD-9-CM Diagnosis
804.81	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, no loss of consciousness	ICD-9-CM Diagnosis
804.82	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
804.83	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.84	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious l	ICD-9-CM Diagnosis
804.85	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing consci	ICD-9-CM Diagnosis
804.86	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.89	Open fractures involving skull or face with other bones, with other and unspecified intracranial hemorrhage, unspecified concussion	ICD-9-CM Diagnosis
804.9	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
804.90	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, unspecified state of consciousness	ICD-9-CM Diagnosis
804.91	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, no loss of consciousness	ICD-9-CM Diagnosis
804.92	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
804.93	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
804.94	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness and return to pre-existing consc	ICD-9-CM Diagnosis
804.95	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing	ICD-9-CM Diagnosis
804.96	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
804.99	Open fractures involving skull or face with other bones, with intracranial injury of other and unspecified nature, unspecified concussion	ICD-9-CM Diagnosis
850	Concussion	ICD-9-CM Diagnosis
850.0	Concussion with no loss of consciousness	ICD-9-CM Diagnosis
850.1	Concussion with brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
850.11	Concussion, with loss of consciousness of 30 minutes or less	ICD-9-CM Diagnosis
850.12	Concussion, with loss of consciousness 31 to 59 minutes	ICD-9-CM Diagnosis
850.2	Concussion with moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
850.3	Concussion with prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
850.4	Concussion with prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
850.5	Concussion with loss of consciousness of unspecified duration	ICD-9-CM Diagnosis

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Code	Description	Code Type
850.9	Unspecified concussion	ICD-9-CM Diagnosis
851	Cerebral laceration and contusion	ICD-9-CM Diagnosis
851.0	Cortex (cerebral) contusion without mention of open intracranial wound	ICD-9-CM Diagnosis
851.00	Cortex (cerebral) contusion without mention of open intracranial wound, state of consciousness unspecified	ICD-9-CM Diagnosis
851.01	Cortex (cerebral) contusion without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.02	Cortex (cerebral) contusion without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.03	Cortex (cerebral) contusion without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.04	Cortex (cerebral) contusion without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.05	Cortex (cerebral) contusion without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.06	Cortex (cerebral) contusion without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.09	Cortex (cerebral) contusion without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.1	Cortex (cerebral) contusion with open intracranial wound	ICD-9-CM Diagnosis
851.10	Cortex (cerebral) contusion with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.11	Cortex (cerebral) contusion with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.12	Cortex (cerebral) contusion with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.13	Cortex (cerebral) contusion with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.14	Cortex (cerebral) contusion with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.15	Cortex (cerebral) contusion with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.16	Cortex (cerebral) contusion with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.19	Cortex (cerebral) contusion with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.2	Cortex (cerebral) laceration without mention of open intracranial wound	ICD-9-CM Diagnosis
851.20	Cortex (cerebral) laceration without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.21	Cortex (cerebral) laceration without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.22	Cortex (cerebral) laceration without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
851.23	Cortex (cerebral) laceration without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.24	Cortex (cerebral) laceration without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.25	Cortex (cerebral) laceration without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.26	Cortex (cerebral) laceration without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.29	Cortex (cerebral) laceration without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.3	Cortex (cerebral) laceration with open intracranial wound	ICD-9-CM Diagnosis
851.30	Cortex (cerebral) laceration with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.31	Cortex (cerebral) laceration with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.32	Cortex (cerebral) laceration with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.33	Cortex (cerebral) laceration with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.34	Cortex (cerebral) laceration with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.35	Cortex (cerebral) laceration with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.36	Cortex (cerebral) laceration with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.39	Cortex (cerebral) laceration with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.4	Cerebellar or brain stem contusion without mention of open intracranial wound	ICD-9-CM Diagnosis
851.40	Cerebellar or brain stem contusion without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.41	Cerebellar or brain stem contusion without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.42	Cerebellar or brain stem contusion without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.43	Cerebellar or brain stem contusion without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.44	Cerebellar or brain stem contusion without mention of open intracranial wound, prolonged (more than 24 hours) loss consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.45	Cerebellar or brain stem contusion without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.46	Cerebellar or brain stem contusion without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis

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Code	Description	Code Type
851.49	Cerebellar or brain stem contusion without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.5	Cerebellar or brain stem contusion with open intracranial wound	ICD-9-CM Diagnosis
851.50	Cerebellar or brain stem contusion with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.51	Cerebellar or brain stem contusion with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.52	Cerebellar or brain stem contusion with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.53	Cerebellar or brain stem contusion with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.54	Cerebellar or brain stem contusion with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.55	Cerebellar or brain stem contusion with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.56	Cerebellar or brain stem contusion with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.59	Cerebellar or brain stem contusion with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.6	Cerebellar or brain stem laceration without mention of open intracranial wound	ICD-9-CM Diagnosis
851.60	Cerebellar or brain stem laceration without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.61	Cerebellar or brain stem laceration without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.62	Cerebellar or brain stem laceration without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.63	Cerebellar or brain stem laceration without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.64	Cerebellar or brain stem laceration without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.65	Cerebellar or brain stem laceration without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.66	Cerebellar or brain stem laceration without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.69	Cerebellar or brain stem laceration without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.7	Cerebellar or brain stem laceration with open intracranial wound	ICD-9-CM Diagnosis
851.70	Cerebellar or brain stem laceration with open intracranial wound, state of consciousness unspecified	ICD-9-CM Diagnosis
851.71	Cerebellar or brain stem laceration with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
851.72	Cerebellar or brain stem laceration with open intracranial wound, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
851.73	Cerebellar or brain stem laceration with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.74	Cerebellar or brain stem laceration with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.75	Cerebellar or brain stem laceration with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.76	Cerebellar or brain stem laceration with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.79	Cerebellar or brain stem laceration with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.8	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound	ICD-9-CM Diagnosis
851.80	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.81	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.82	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.83	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
851.84	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to preexisting conscious level	ICD-9-CM Diagnosis
851.85	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious leve	ICD-9-CM Diagnosis
851.86	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.89	Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
851.9	Other and unspecified cerebral laceration and contusion, with open intracranial wound	ICD-9-CM Diagnosis
851.90	Other and unspecified cerebral laceration and contusion, with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
851.91	Other and unspecified cerebral laceration and contusion, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
851.92	Other and unspecified cerebral laceration and contusion, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
851.93	Other and unspecified cerebral laceration and contusion, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis

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Code	Description	Code Type
851.94	Other and unspecified cerebral laceration and contusion, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
851.95	Other and unspecified cerebral laceration and contusion, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
851.96	Other and unspecified cerebral laceration and contusion, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
851.99	Other and unspecified cerebral laceration and contusion, with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
852	Subarachnoid, subdural, and extradural hemorrhage, following injury	ICD-9-CM Diagnosis
852.0	Subarachnoid hemorrhage following injury without mention of open intracranial wound	ICD-9-CM Diagnosis
852.00	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
852.01	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.02	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
852.03	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.04	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
852.05	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.06	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.09	Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
852.1	Subarachnoid hemorrhage following injury, with open intracranial wound	ICD-9-CM Diagnosis
852.10	Subarachnoid hemorrhage following injury, with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
852.11	Subarachnoid hemorrhage following injury, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.12	Subarachnoid hemorrhage following injury, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
852.13	Subarachnoid hemorrhage following injury, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.14	Subarachnoid hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
852.15	Subarachnoid hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.16	Subarachnoid hemorrhage following injury, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.19	Subarachnoid hemorrhage following injury, with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
852.2	Subdural hemorrhage following injury without mention of open intracranial wound	ICD-9-CM Diagnosis
852.20	Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
852.21	Subdural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.22	Subdural hemorrhage following injury, without mention of open intracranial wound, brief (less than one hour) loss of consciousness	ICD-9-CM Diagnosis
852.23	Subdural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.24	Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
852.25	Subdural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.26	Subdural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.29	Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
852.3	Subdural hemorrhage following injury, with open intracranial wound	ICD-9-CM Diagnosis
852.30	Subdural hemorrhage following injury, with open intracranial wound, state of consciousness unspecified	ICD-9-CM Diagnosis
852.31	Subdural hemorrhage following injury, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.32	Subdural hemorrhage following injury, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
852.33	Subdural hemorrhage following injury, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.34	Subdural hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
852.35	Subdural hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.36	Subdural hemorrhage following injury, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.39	Subdural hemorrhage following injury, with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
852.4	Extradural hemorrhage following injury without mention of open intracranial wound	ICD-9-CM Diagnosis
852.40	Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
852.41	Extradural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.42	Extradural hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
852.43	Extradural hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.44	Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
852.45	Extradural hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.46	Extradural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.49	Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
852.5	Extradural hemorrhage following injury with open intracranial wound	ICD-9-CM Diagnosis
852.50	Extradural hemorrhage following injury, with open intracranial wound, state of consciousness unspecified	ICD-9-CM Diagnosis
852.51	Extradural hemorrhage following injury, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
852.52	Extradural hemorrhage following injury, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
852.53	Extradural hemorrhage following injury, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
852.54	Extradural hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
852.55	Extradural hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
852.56	Extradural hemorrhage following injury, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
852.59	Extradural hemorrhage following injury, with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
853	Other and unspecified intracranial hemorrhage following injury	ICD-9-CM Diagnosis
853.0	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound	ICD-9-CM Diagnosis
853.00	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
853.01	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
853.02	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
853.03	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
853.04	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to preexisting conscious lev	ICD-9-CM Diagnosis
853.05	Other and unspecified intracranial hemorrhage following injury. Without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscio	ICD-9-CM Diagnosis
853.06	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
853.09	Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
853.1	Other and unspecified intracranial hemorrhage following injury with open intracranial wound	ICD-9-CM Diagnosis
853.10	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
853.11	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
853.12	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
853.13	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
853.14	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
853.15	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
853.16	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
853.19	Other and unspecified intracranial hemorrhage following injury, with open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
854	Intracranial injury of other and unspecified nature	ICD-9-CM Diagnosis
854.0	Intracranial injury of other and unspecified nature without mention of open intracranial wound	ICD-9-CM Diagnosis
854.00	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
854.01	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
854.02	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
854.03	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
854.04	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
854.05	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
854.06	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
854.09	Intracranial injury of other and unspecified nature, without mention of open intracranial wound, unspecified concussion	ICD-9-CM Diagnosis
854.1	Intracranial injury of other and unspecified nature with open intracranial wound	ICD-9-CM Diagnosis
854.10	Intracranial injury of other and unspecified nature, with open intracranial wound, unspecified state of consciousness	ICD-9-CM Diagnosis
854.11	Intracranial injury of other and unspecified nature, with open intracranial wound, no loss of consciousness	ICD-9-CM Diagnosis
854.12	Intracranial injury of other and unspecified nature, with open intracranial wound, brief (less than 1 hour) loss of consciousness	ICD-9-CM Diagnosis
854.13	Intracranial injury of other and unspecified nature, with open intracranial wound, moderate (1-24 hours) loss of consciousness	ICD-9-CM Diagnosis
854.14	Intracranial injury of other and unspecified nature, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness and return to pre-existing conscious level	ICD-9-CM Diagnosis
854.15	Intracranial injury of other and unspecified nature, with open intracranial wound, prolonged (more than 24 hours) loss of consciousness, without return to pre-existing conscious level	ICD-9-CM Diagnosis
854.16	Intracranial injury of other and unspecified nature, with open intracranial wound, loss of consciousness of unspecified duration	ICD-9-CM Diagnosis
854.19	Intracranial injury of other and unspecified nature, with open intracranial wound, with unspecified concussion	ICD-9-CM Diagnosis
873.0	Open wound of scalp, without mention of complication	ICD-9-CM Diagnosis
873.1	Open wound of scalp, complicated	ICD-9-CM Diagnosis
873.8	Other and unspecified open wound of head without mention of complication	ICD-9-CM Diagnosis
873.9	Other and unspecified open wound of head, complicated	ICD-9-CM Diagnosis
925.1	Crushing injury of face and scalp	ICD-9-CM Diagnosis
959.01	Head injury, unspecified	ICD-9-CM Diagnosis
	Liver Impairment	
571	Chronic liver disease and cirrhosis	ICD-9-CM Diagnosis
571.0	Alcoholic fatty liver	ICD-9-CM Diagnosis
571.1	Acute alcoholic hepatitis	ICD-9-CM Diagnosis

Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Inclusion and Exclusion Criteria in this Request

Code	Description	Code Type
571.2	Alcoholic cirrhosis of liver	ICD-9-CM Diagnosis
571.3	Unspecified alcoholic liver damage	ICD-9-CM Diagnosis
571.4	Chronic hepatitis	ICD-9-CM Diagnosis
571.40	Unspecified chronic hepatitis	ICD-9-CM Diagnosis
571.41	Chronic persistent hepatitis	ICD-9-CM Diagnosis
571.42	Autoimmune hepatitis	ICD-9-CM Diagnosis
571.49	Other chronic hepatitis	ICD-9-CM Diagnosis
571.5	Cirrhosis of liver without mention of alcohol	ICD-9-CM Diagnosis
571.6	Biliary cirrhosis	ICD-9-CM Diagnosis
571.8	Other chronic nonalcoholic liver disease	ICD-9-CM Diagnosis
571.9	Unspecified chronic liver disease without mention of alcohol	ICD-9-CM Diagnosis
	Meningioma	
225.2	Benign neoplasm of cerebral meninges	ICD-9-CM Diagnosis
225.0	Benign neoplasm of brain	ICD-9-CM Diagnosis
225.1	Benign neoplasm of cranial nerves	ICD-9-CM Diagnosis
	Renal Disease	
580	Acute glomerulonephritis	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
580.8	Acute glomerulonephritis with other specified pathological lesion in kidney	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	Nephrotic syndrome	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
581.8	Nephrotic syndrome with other specified pathological lesion in kidney	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	Chronic glomerulonephritis	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
582.8	Chronic glomerulonephritis with other specified pathological lesion in kidney	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

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Code	Description	Code Type
582.9	Chronic glomerulonephritis with unspecified pathological lesion in kidney	ICD-9-CM Diagnosis
583	Nephritis and nephropathy, not specified as acute or chronic	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
583.8	Nephritis and nephropathy, not specified as acute or chronic, with other specified pathological lesion in kidney	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
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	Acute kidney failure	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	Chronic kidney disease (CKD)	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	Disorders resulting from impaired renal function	ICD-9-CM Diagnosis
588.0	Renal osteodystrophy	ICD-9-CM Diagnosis
588.1	Nephrogenic diabetes insipidus	ICD-9-CM Diagnosis
588.8	Other specified disorder resulting from impaired renal function	ICD-9-CM Diagnosis
588.81	Secondary hyperparathyroidism (of renal origin)	ICD-9-CM Diagnosis

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Code	Description	Code Type
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
589	Small kidney of unknown cause	ICD-9-CM Diagnosis
589.0	Unilateral small kidney	ICD-9-CM Diagnosis
589.1	Bilateral small kidneys	ICD-9-CM Diagnosis
589.9	Unspecified small kidney	ICD-9-CM Diagnosis
592	Calculus of kidney and ureter	ICD-9-CM Diagnosis
592.0	Calculus of kidney	ICD-9-CM Diagnosis
592.1	Calculus of ureter	ICD-9-CM Diagnosis
592.9	Unspecified urinary calculus	ICD-9-CM Diagnosis
788.0	Renal colic	ICD-9-CM Diagnosis
996.81	Complications of transplanted kidney	ICD-9-CM Diagnosis
V42.0	Kidney replaced by transplant	ICD-9-CM Diagnosis
55.6	Transplant of kidney	ICD-9-CM Procedure
55.61	Renal autotransplantation	ICD-9-CM Procedure
55.69	Other kidney transplantation	ICD-9-CM Procedure

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
Epilepsy Treatment	
BRIVARACETAM	BRIVIACT
CARBAMAZEPINE	CARBAMAZEPINE
CARBAMAZEPINE	CARBAMAZEPINE XR
CARBAMAZEPINE	EQUETRO
CARBAMAZEPINE	CARBATROL
CARBAMAZEPINE	TEGRETOL
CARBAMAZEPINE	EPITOL
CARBAMAZEPINE	TEGRETOL XR
CARBAMAZEPINE	CARBAMAZEPINE ER
CARBAMAZEPINE CAP SR 12HR 200 MG	CARBATROL
CARBAMAZEPINE CAP SR 12HR 300 MG	CARBATROL
CARBAMAZEPINE CHEW TAB 100 MG	TEGRETOL
CARBAMAZEPINE CHEW TAB 100 MG	CARBAMAZEPINE
CARBAMAZEPINE TAB 200 MG	CARBAMAZEPINE
CARBAMAZEPINE TAB 200 MG	TEGRETOL
CARBAMAZEPINE TAB SR 12HR 200 MG	CARBAMAZEPINE ER
CARBAMAZEPINE TAB SR 12HR 400 MG	CARBAMAZEPINE ER
CLOBAZAM	ONFI
CLONAZEPAM	clonazepam
CLONAZEPAM	CLONAZEPAM
CLONAZEPAM	KLONOPIN
CLONAZEPAM	CEBERCLON
CLONAZEPAM TAB 0.5 MG	CLONAZEPAM
CLONAZEPAM TAB 1 MG	CLONAZEPAM
CLONAZEPAM TAB 1 MG	KLONOPIN
CLONAZEPAM TAB 2 MG	KLONOPIN
CLONAZEPAM TAB 2 MG	CLONAZEPAM
DIVALPROEX SODIUM	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM	DEPAKOTE ER
DIVALPROEX SODIUM	DEPAKOTE
DIVALPROEX SODIUM	DIVALPROEX SODIUM
DIVALPROEX SODIUM	DEPAKOTE SPRINKLE
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DIVALPROEX SODIUM DR
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DIVALPROEX SODIUM
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DEPAKOTE
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DIVALPROEX SODIUM DR
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DIVALPROEX SODIUM
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DEPAKOTE
DIVALPROEX SODIUM TAB ER 24 HR 250 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 250 MG	DEPAKOTE ER
DIVALPROEX SODIUM TAB SR 24 HR 250 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 500 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 500 MG	DIVALPROEX SODIUM
ESLICARBAZEPINE ACETATE	APTIOM

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
ETHOSUXIMIDE	ZARONTIN
ETHOSUXIMIDE	ETHOSUXIMIDE
ETHOSUXIMIDE SOLN 250 MG 5ML	ETHOSUXIMIDE
EZOGABINE	POTIGA
FELBAMATE	FELBATOL
FELBAMATE	FELBAMATE
LACOSAMIDE	VIMPAT
LAMOTRIGINE	LAMOTRIGINE ODT
LAMOTRIGINE	LAMOTRIGINE
LAMOTRIGINE	LAMICTAL ODT
LAMOTRIGINE	LAMICTAL
LAMOTRIGINE	LAMICTAL (GREEN)
LAMOTRIGINE	LAMICTAL ODT (ORANGE)
LAMOTRIGINE	LAMOTRIGINE ODT (ORANGE)
LAMOTRIGINE	LAMICTAL ODT (BLUE)
LAMOTRIGINE	LAMOTRIGINE ODT (BLUE)
LAMOTRIGINE	LAMICTAL ODT (GREEN)
LAMOTRIGINE	LAMOTRIGINE ODT (GREEN)
LAMOTRIGINE	LAMOTRIGINE ER
LAMOTRIGINE	LAMICTAL XR
LAMOTRIGINE	LAMICTAL XR (ORANGE)
LAMOTRIGINE	LAMICTAL XR (BLUE)
LAMOTRIGINE	LAMICTAL XR (GREEN)
LAMOTRIGINE TAB 100 MG	LAMOTRIGINE
LAMOTRIGINE TAB 100 MG	LAMICTAL
LAMOTRIGINE TAB 150 MG	LAMOTRIGINE
LAMOTRIGINE TAB 150 MG	LAMICTAL
LAMOTRIGINE TAB 200 MG	LAMOTRIGINE
LAMOTRIGINE TAB 25 MG	LAMOTRIGINE
LAMOTRIGINE TAB CHEWABLE DISPERSIBLE 25 MG	LAMOTRIGINE
LAMOTRIGINE TAB CHEWABLE DISPERSIBLE 5 MG	LAMOTRIGINE
LAMOTRIGINE TAB DISP 25 MG	LAMOTRIGINE CHEWABLE DISPERSIBLE
LAMOTRIGINE TAB SR 24HR 300 MG	LAMOTRIGINE ER
LORAZEPAM	LORAZEPAM
LORAZEPAM	LORAZEPAM INTENSOL
LORAZEPAM	ATIVAN
LORAZEPAM TAB 0.5 MG	ATIVAN
LORAZEPAM TAB 0.5 MG	LORAZEPAM
LORAZEPAM TAB 1 MG	ATIVAN
LORAZEPAM TAB 1 MG	LORAZEPAM
LORAZEPAM TAB 2 MG	ATIVAN
LORAZEPAM TAB 2 MG	LORAZEPAM
OXCARBAZEPINE	OXCARBAZEPINE
OXCARBAZEPINE	TRILEPTAL
OXCARBAZEPINE	OXTELLAR XR

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Generic Name	Brand Name
OXCARBAZEPINE TAB 150 MG	OXCARBAZEPINE
OXCARBAZEPINE TAB 300 MG	OXCARBAZEPINE
OXCARBAZEPINE TAB 300 MG	TRILEPTAL
OXCARBAZEPINE TAB 600 MG	OXCARBAZEPINE
PERAMPANEL	FYCOMPA
PHENYTOIN	DILANTIN
PHENYTOIN	PHENYTOIN
PHENYTOIN	DILANTIN 125
PHENYTOIN SODIUM	PHENYTOIN SODIUM
PHENYTOIN SODIUM EXTENDED	DILANTIN
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SOIDUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTEK
PHENYTOIN SODIUM EXTENDED CAP 100 MG	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED CAP 100 MG	DILANTIN
PHENYTOIN SUSP 125 MG 5ML	PHENYTOIN
PRIMIDONE	PRIMIDONE
PRIMIDONE	MYSOLINE
PRIMIDONE TAB 250 MG	PRIMIDONE
PRIMIDONE TAB 250 MG	MYSOLINE
PRIMIDONE TAB 50 MG	PRIMIDONE
RUFINAMIDE	BANZEL
TIAGABINE HCL	GABITRIL
TIAGABINE HCL	TIAGABINE HCL
TIAGABINE HCL TAB 12 MG	GABITRIL
TIAGABINE HCL TAB 16 MG	GABITRIL
TIAGABINE HCL TAB 2 MG	GABITRIL
TIAGABINE HCL TAB 4 MG	GABITRIL
TOPIRAMATE	QUDEXY XR
TOPIRAMATE	TOPIRAMATE ER
TOPIRAMATE	TROKENDI XR
TOPIRAMATE	TOPAMAX
TOPIRAMATE	TOPIRAMATE
TOPIRAMATE	TOPIRAGEN
TOPIRAMATE TAB 100 MG	TOPIRAMATE
TOPIRAMATE TAB 100 MG	TOPAMAX
TOPIRAMATE TAB 200 MG	TOPIRAMATE
TOPIRAMATE TAB 200 MG	TOPAMAX
TOPIRAMATE TAB 25 MG	TOPIRAMATE
TOPIRAMATE TAB 25 MG	TOPAMAX
TOPIRAMATE TAB 50 MG	TOPAMAX
TOPIRAMATE TAB 50 MG	TOPIRAMATE
VALPROATE SODIUM	VALPROIC ACID

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
VALPROATE SODIUM SYRUP 250 MG 5ML	VALPROIC ACID
VALPROIC ACID	DEPAKENE
VALPROIC ACID	VALPROIC ACID
VALPROIC ACID	STAVZOR
VALPROIC ACID (AS SODIUM SALT) (VALPROATE SODIUM)	VALPROIC ACID
VALPROIC ACID CAP 250 MG	VALPROIC ACID
VIGABATRIN	SABRIL
ZONISAMIDE	ZONISAMIDE
ZONISAMIDE	ZONEGRAN
ZONISAMIDE CAP 100 MG	ZONISAMIDE
ZONISAMIDE CAP 25 MG	ZONISAMIDE
ZONISAMIDE CAP 50 MG	ZONISAMIDE
Cytochrome-P450 (CYP3) Inhibitor	
AMIODARONE HCL	Pacerone
AMIODARONE HCL	amiodarone
AMIODARONE HCL	Cordarone
APREPITANT	aprepitant
APREPITANT	Emend
ATAZANAVIR SULFATE/COBICISTAT	Evotaz
BOCEPREVIR	Victrelis
CARVEDILOL	carvedilol
CARVEDILOL	Coreg
CARVEDILOL PHOSPHATE	Coreg CR
CIMETIDINE	cimetidine
CIMETIDINE	Tagamet HB
CIMETIDINE	Acid Reducer (cimetidine)
CIMETIDINE	Heartburn Relief (cimetidine)
CIMETIDINE	Tagamet
CIMETIDINE	Acid Relief (cimetidine)
CIMETIDINE	Heartburn
CIMETIDINE	Heartburn 200
CIMETIDINE HCL	cimetidine HCl
CIPROFLOXACIN	Cipro
CIPROFLOXACIN	ciprofloxacin
CIPROFLOXACIN HCL	Cipro
CIPROFLOXACIN HCL	ciprofloxacin HCl
CIPROFLOXACIN HCL	ProQuin XR
CIPROFLOXACIN HCL	Cipro Cystitis
CIPROFLOXACIN/CIPROFLOXACIN HCL	Cipro XR
CIPROFLOXACIN/CIPROFLOXACIN HCL	ciprofloxacin (mixture)
CLARITHROMYCIN	Biaxin
CLARITHROMYCIN	clarithromycin
CLARITHROMYCIN	Biaxin XL
CLARITHROMYCIN	Biaxin XL Pak
COBICISTAT	Tybost

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
CRIZOTINIB	Xalkori
CYCLOSPORINE	cyclosporine
CYCLOSPORINE	Sandimmune
CYCLOSPORINE, MODIFIED	Neoral
CYCLOSPORINE, MODIFIED	cyclosporine modified
CYCLOSPORINE, MODIFIED	Gengraf
DARUNAVIR ETHANOLATE/COBICISTAT	Prezcobix
DEXTROMETHORPHAN HBR/QUINIDINE SULFATE	Nuedexta
DILTIAZEM HCL	Cardizem LA
DILTIAZEM HCL	diltiazem HCl
DILTIAZEM HCL	Tiazac
DILTIAZEM HCL	Cardizem CD
DILTIAZEM HCL	Cardizem
DILTIAZEM HCL	DILT-CD
DILTIAZEM HCL	Diltzac ER
DILTIAZEM HCL	Diltia XT
DILTIAZEM HCL	Cartia XT
DILTIAZEM HCL	DILT-XR
DILTIAZEM HCL	Matzim LA
DILTIAZEM HCL	Taztia XT
DILTIAZEM HCL	Dilacor XR
DRONEDARONE HCL	Multaq
ELVITEGRAVIR/COBICISTAT/EMTRICITABINE/TENOFOVIR ALAFENAMIDE	Genvoya
ELVITEGRAVIR/COBICISTAT/EMTRICITABINE/TENOFOVIR DISOPROXIL	Stribild
ERYTHROMYCIN BASE	Ery-Tab
ERYTHROMYCIN BASE	erythromycin
ERYTHROMYCIN BASE	PCE
ERYTHROMYCIN BASE	Eryc
ERYTHROMYCIN BASE	E-Mycin
ERYTHROMYCIN ESTOLATE	erythromycin estolate
ERYTHROMYCIN ETHYLSUCCINATE	erythromycin ethylsuccinate
ERYTHROMYCIN ETHYLSUCCINATE	E.E.S. 400
ERYTHROMYCIN ETHYLSUCCINATE	EryPed
ERYTHROMYCIN ETHYLSUCCINATE	EryPed 400
ERYTHROMYCIN ETHYLSUCCINATE	E.E.S. 200
ERYTHROMYCIN ETHYLSUCCINATE	EryPed 200
ERYTHROMYCIN ETHYLSUCCINATE	E.E.S. Granules
ERYTHROMYCIN ETHYLSUCCINATE/SULFISOXAZOLE ACETYL	erythromycin-sulfisoxazole
ERYTHROMYCIN ETHYLSUCCINATE/SULFISOXAZOLE ACETYL	Pediazole
ERYTHROMYCIN STEARATE	erythromycin stearate
ERYTHROMYCIN STEARATE	Erythrocin (as stearate)
FLUCONAZOLE	fluconazole
FLUCONAZOLE	Diflucan

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
FLUVOXAMINE MALEATE	fluvoxamine
FLUVOXAMINE MALEATE	Luvox CR
IDELALISIB	Zydelig
IMATINIB MESYLATE	Gleevec
IMATINIB MESYLATE	imatinib
INDINAVIR SULFATE	Crixivan
ITRACONAZOLE	Sporanox Pulsepak
ITRACONAZOLE	itraconazole
ITRACONAZOLE	Onmel
ITRACONAZOLE	Sporanox
KETOCONAZOLE	ketoconazole
KETOCONAZOLE	Nizoral
LANSOPRAZOLE/AMOXICILLIN TRIHYDRATE/CLARITHROMYCIN	Prevpac
LANSOPRAZOLE/AMOXICILLIN TRIHYDRATE/CLARITHROMYCIN	amoxicil-clarithromy-lansopraz
LAPATINIB DITOSYLATE	Tykerb
LOPINAVIR/RITONAVIR	lopinavir-ritonavir
LOPINAVIR/RITONAVIR	Kaletra
NEFAZODONE HCL	nefazodone
NEFAZODONE HCL	Serzone
NELFINAVIR MESYLATE	Viracept
OMBITASVIR/PARITAPREVIR/RITONAVIR	Technivie
OMBITASVIR/PARITAPREVIR/RITONAVIR/DASABUVIR SODIUM	Viekira Pak
OMBITASVIR/PARITAPREVIR/RITONAVIR/DASABUVIR SODIUM	Viekira XR
OMEPRAZOLE/CLARITHROMYCIN/AMOXICILLIN TRIHYDRATE	Omeclamox-Pak
POSACONAZOLE	Noxafil
PROPAFENONE HCL	propafenone
PROPAFENONE HCL	Rythmol SR
PROPAFENONE HCL	Rythmol
QUINIDINE GLUCONATE	quinidine gluconate
QUINIDINE SULFATE	Quinidex Extentabs
QUINIDINE SULFATE	quinidine sulfate
RITONAVIR	Norvir
RITONAVIR	Norvir Soft Gelatin
SAQUINAVIR	Fortovase
SAQUINAVIR MESYLATE	Invirase
TELAPREVIR	Incivek
TIPRANAVIR	Aptivus
TIPRANAVIR/VITAMIN E TPGS	Aptivus
TRANDOLAPRIL/VERAPAMIL HCL	trandolapril-verapamil
TRANDOLAPRIL/VERAPAMIL HCL	Tarka
VERAPAMIL HCL	verapamil
VERAPAMIL HCL	Calan SR
VERAPAMIL HCL	Verelan
VERAPAMIL HCL	Verelan PM
VERAPAMIL HCL	Isoptin SR

Appendix D. List of Generic and Brand Drug Names Used to Define Inclusion and Exclusion Criteria in this Request

Generic Name	Brand Name
VERAPAMIL HCL	Covera-HS
VERAPAMIL HCL	Calan
VORICONAZOLE	voriconazole
VORICONAZOLE	Vfend

Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes Used to Define Outcomes in this Request

Code	Description	Code Type
	Seizure	
345	Epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.0	Generalized nonconvulsive epilepsy	ICD-9-CM Diagnosis
345.00	Generalized nonconvulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.01	Generalized nonconvulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.1	Generalized convulsive epilepsy	ICD-9-CM Diagnosis
345.10	Generalized convulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.11	Generalized convulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.2	Epileptic petit mal status	ICD-9-CM Diagnosis
345.3	Epileptic grand mal status	ICD-9-CM Diagnosis
345.4	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures	ICD-9-CM Diagnosis
345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.5	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures	ICD-9-CM Diagnosis
345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.6	Infantile spasms	ICD-9-CM Diagnosis
345.60	Infantile spasms without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.61	Infantile spasms with intractable epilepsy	ICD-9-CM Diagnosis
345.7	Epilepsia partialis continua	ICD-9-CM Diagnosis
345.70	Epilepsia partialis continua without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.71	Epilepsia partialis continua with intractable epilepsy	ICD-9-CM Diagnosis
345.8	Other forms of epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.80	Other forms of epilepsy and recurrent seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.81	Other forms of epilepsy and recurrent seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.9	Unspecified epilepsy	ICD-9-CM Diagnosis
345.90	Unspecified epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.91	Unspecified epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
780.3	Convulsions	ICD-9-CM Diagnosis
780.39	Other convulsions	ICD-9-CM Diagnosis
780.31	Febrile convulsions (simple), unspecified	ICD-9-CM Diagnosis
780.32	Complex febrile convulsions	ICD-9-CM Diagnosis
780.33	Post traumatic seizures	ICD-9-CM Diagnosis
	Seizure and Myoclonus	
333.2	Myoclonus	ICD-9-CM Diagnosis
345	Epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.0	Generalized nonconvulsive epilepsy	ICD-9-CM Diagnosis
345.00	Generalized nonconvulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.01	Generalized nonconvulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis

Appendix E. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis Codes Used to Define Outcomes in this Request

Code	Description	Code Type
345.1	Generalized convulsive epilepsy	ICD-9-CM Diagnosis
345.10	Generalized convulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.11	Generalized convulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.2	Epileptic petit mal status	ICD-9-CM Diagnosis
345.3	Epileptic grand mal status	ICD-9-CM Diagnosis
345.4	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures	ICD-9-CM Diagnosis
345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.5	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures	ICD-9-CM Diagnosis
345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.6	Infantile spasms	ICD-9-CM Diagnosis
345.60	Infantile spasms without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.61	Infantile spasms with intractable epilepsy	ICD-9-CM Diagnosis
345.7	Epilepsia partialis continua	ICD-9-CM Diagnosis
345.70	Epilepsia partialis continua without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.71	Epilepsia partialis continua with intractable epilepsy	ICD-9-CM Diagnosis
345.8	Other forms of epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.80	Other forms of epilepsy and recurrent seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.81	Other forms of epilepsy and recurrent seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.9	Unspecified epilepsy	ICD-9-CM Diagnosis
345.90	Unspecified epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.91	Unspecified epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
780.3	Convulsions	ICD-9-CM Diagnosis
780.39	Other convulsions	ICD-9-CM Diagnosis
780.31	Febrile convulsions (simple), unspecified	ICD-9-CM Diagnosis
780.32	Complex febrile convulsions	ICD-9-CM Diagnosis
780.33	Post traumatic seizures	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
	Acute Myocardial Infarction	
410	Acute myocardial infarction	ICD-9-CM Diagnosis
410.0	Acute myocardial infarction of anterolateral wall	ICD-9-CM Diagnosis
410.00	Acute myocardial infarction of anterolateral wall, episode of care unspecified	ICD-9-CM Diagnosis
410.01	Acute myocardial infarction of anterolateral wall, initial episode of care	ICD-9-CM Diagnosis
410.02	Acute myocardial infarction of anterolateral wall, subsequent episode of care	ICD-9-CM Diagnosis
410.1	Acute myocardial infarction of other anterior wall	ICD-9-CM Diagnosis
410.10	Acute myocardial infarction of other anterior wall, episode of care unspecified	ICD-9-CM Diagnosis
410.11	Acute myocardial infarction of other anterior wall, initial episode of care	ICD-9-CM Diagnosis
410.12	Acute myocardial infarction of other anterior wall, subsequent episode of care	ICD-9-CM Diagnosis
410.2	Acute myocardial infarction of inferolateral wall	ICD-9-CM Diagnosis
410.20	Acute myocardial infarction of inferolateral wall, episode of care unspecified	ICD-9-CM Diagnosis
410.21	Acute myocardial infarction of inferolateral wall, initial episode of care	ICD-9-CM Diagnosis
410.22	Acute myocardial infarction of inferolateral wall, subsequent episode of care	ICD-9-CM Diagnosis
410.3	Acute myocardial infarction of inferoposterior wall	ICD-9-CM Diagnosis
410.30	Acute myocardial infarction of inferoposterior wall, episode of care unspecified	ICD-9-CM Diagnosis
410.31	Acute myocardial infarction of inferoposterior wall, initial episode of care	ICD-9-CM Diagnosis
410.32	Acute myocardial infarction of inferoposterior wall, subsequent episode of care	ICD-9-CM Diagnosis
410.4	Acute myocardial infarction of other inferior wall	ICD-9-CM Diagnosis
410.40	Acute myocardial infarction of other inferior wall, episode of care unspecified	ICD-9-CM Diagnosis
410.41	Acute myocardial infarction of other inferior wall, initial episode of care	ICD-9-CM Diagnosis
410.42	Acute myocardial infarction of other inferior wall, subsequent episode of care	ICD-9-CM Diagnosis
410.5	Acute myocardial infarction of other lateral wall	ICD-9-CM Diagnosis
410.50	Acute myocardial infarction of other lateral wall, episode of care unspecified	ICD-9-CM Diagnosis
410.51	Acute myocardial infarction of other lateral wall, initial episode of care	ICD-9-CM Diagnosis
410.52	Acute myocardial infarction of other lateral wall, subsequent episode of care	ICD-9-CM Diagnosis
410.6	Acute myocardial infarction, true posterior wall infarction	ICD-9-CM Diagnosis
410.60	Acute myocardial infarction, true posterior wall infarction, episode of care unspecified	ICD-9-CM Diagnosis
410.61	Acute myocardial infarction, true posterior wall infarction, initial episode of care	ICD-9-CM Diagnosis
410.62	Acute myocardial infarction, true posterior wall infarction, subsequent episode of care	ICD-9-CM Diagnosis
410.7	Acute myocardial infarction, subendocardial infarction	ICD-9-CM Diagnosis
410.70	Acute myocardial infarction, subendocardial infarction, episode of care unspecified	ICD-9-CM Diagnosis
410.71	Acute myocardial infarction, subendocardial infarction, initial episode of care	ICD-9-CM Diagnosis
410.72	Acute myocardial infarction, subendocardial infarction, subsequent episode of care	ICD-9-CM Diagnosis
410.8	Acute myocardial infarction of other specified sites	ICD-9-CM Diagnosis
410.80	Acute myocardial infarction of other specified sites, episode of care unspecified	ICD-9-CM Diagnosis
410.81	Acute myocardial infarction of other specified sites, initial episode of care	ICD-9-CM Diagnosis
410.82	Acute myocardial infarction of other specified sites, subsequent episode of care	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
410.9	Acute myocardial infarction, unspecified site	ICD-9-CM Diagnosis
410.90	Acute myocardial infarction, unspecified site, episode of care unspecified	ICD-9-CM Diagnosis
410.91	Acute myocardial infarction, unspecified site, initial episode of care	ICD-9-CM Diagnosis
410.92	Acute myocardial infarction, unspecified site, subsequent episode of care	ICD-9-CM Diagnosis
	Angina Pectoris or Prinzmetal Angina	
413	Angina pectoris	ICD-9-CM Diagnosis
413.0	Angina decubitus	ICD-9-CM Diagnosis
413.1	Prinzmetal angina	ICD-9-CM Diagnosis
413.9	Other and unspecified angina pectoris	ICD-9-CM Diagnosis
	Convulsions	
780.3	Convulsions	ICD-9-CM Diagnosis
780.39	Other convulsions	ICD-9-CM Diagnosis
780.31	Febrile convulsions (simple), unspecified	ICD-9-CM Diagnosis
780.32	Complex febrile convulsions	ICD-9-CM Diagnosis
780.33	Post traumatic seizures	ICD-9-CM Diagnosis
	Coronary Atherosclerosis	
414.0	Coronary atherosclerosis	ICD-9-CM Diagnosis
414.00	Coronary atherosclerosis of unspecified type of vessel, native or graft	ICD-9-CM Diagnosis
414.01	Coronary atherosclerosis of native coronary artery	ICD-9-CM Diagnosis
414.02	Coronary atherosclerosis of autologous vein bypass graft	ICD-9-CM Diagnosis
414.03	Coronary atherosclerosis of nonautologous biological bypass graft	ICD-9-CM Diagnosis
414.04	Coronary atherosclerosis of artery bypass graft	ICD-9-CM Diagnosis
414.05	Coronary atherosclerosis of unspecified type of bypass graft	ICD-9-CM Diagnosis
414.06	Coronary atherosclerosis, of native coronary artery of transplanted heart	ICD-9-CM Diagnosis
414.07	Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart	ICD-9-CM Diagnosis
414.3	Coronary atherosclerosis due to lipid rich plaque	ICD-9-CM Diagnosis
414.4	Coronary atherosclerosis due to calcified coronary lesion	ICD-9-CM Diagnosis
	Coronary Revascularization	
V45.81	Postprocedural aortocoronary bypass status	ICD-9-CM Diagnosis
V45.82	Postprocedural percutaneous transluminal coronary angioplasty status	ICD-9-CM Diagnosis
V45.88	Status post administration of tPA (rtPA) in a different facility within the last 24 hours prior to a	ICD-9-CM Diagnosis
00.66	Percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy	ICD-9-CM Diagnosis
36.0	Removal of coronary artery obstruction and insertion of stent(s)	ICD-9-CM Diagnosis
36.03	Open chest coronary artery angioplasty	ICD-9-CM Diagnosis
36.04	Intracoronary artery thrombolytic infusion	ICD-9-CM Diagnosis
36.06	Insertion of non-drug-eluting coronary artery stent(s)	ICD-9-CM Diagnosis
36.07	Insertion of drug-eluting coronary artery stent(s)	ICD-9-CM Diagnosis
36.09	Other removal of coronary artery obstruction	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
36.1	Bypass anastomosis for heart revascularization	ICD-9-CM Diagnosis
36.10	Aortocoronary bypass for heart revascularization, not otherwise specified	ICD-9-CM Diagnosis
36.11	(Aorto)coronary bypass of one coronary artery	ICD-9-CM Diagnosis
36.12	(Aorto)coronary bypass of two coronary arteries	ICD-9-CM Diagnosis
36.13	(Aorto)coronary bypass of three coronary arteries	ICD-9-CM Diagnosis
36.14	(Aorto)coronary bypass of four or more coronary arteries	ICD-9-CM Diagnosis
36.15	Single internal mammary-coronary artery bypass	ICD-9-CM Diagnosis
36.16	Double internal mammary-coronary artery bypass	ICD-9-CM Diagnosis
36.17	Abdominal-coronary artery bypass	ICD-9-CM Diagnosis
36.19	Other bypass anastomosis for heart revascularization	ICD-9-CM Diagnosis
36.2	Heart revascularization by arterial implant	ICD-9-CM Diagnosis
36.3	Other heart revascularization	ICD-9-CM Diagnosis
36.31	Open chest transmyocardial revascularization	ICD-9-CM Diagnosis
36.32	Other transmyocardial revascularization	ICD-9-CM Diagnosis
36.33	Endoscopic transmyocardial revascularization	ICD-9-CM Diagnosis
36.34	Percutaneous transmyocardial revascularization	ICD-9-CM Diagnosis
36.39	Other heart revascularization	ICD-9-CM Diagnosis
	Electroencephalogram (EEG)	
794.02	Nonspecific abnormal electroencephalogram [EEG]	ICD-9-CM Diagnosis
89.14	Electroencephalogram	ICD-9-CM Procedure
89.19	Video and radio-telemetered electroencephalographic monitoring	ICD-9-CM Procedure
95812	Electroencephalogram (EEG) extended monitoring; 41-60 minutes	CPT Procedure
95813	Electroencephalogram (EEG) extended monitoring; greater than 1 hour	CPT Procedure
95816	Electroencephalogram (EEG); including recording awake and drowsy	CPT Procedure
95819	Electroencephalogram (EEG); including recording awake and asleep	CPT Procedure
95822	Electroencephalogram (EEG); recording in coma or sleep only	CPT Procedure
95824	Electroencephalogram (EEG); cerebral death evaluation only	CPT Procedure
95827	Electroencephalogram (EEG); all night recording	CPT Procedure
95829	Electrocorticogram at surgery (separate procedure)	CPT Procedure
95830	Insertion by physician or other qualified health care professional of sphenoidal electrodes for electroencephalographic (EEG) recording	CPT Procedure
95950	Monitoring for identification and lateralization of cerebral seizure focus, electroencephalographic (eg, 8 channel EEG) recording and interpretation, each 24 hours	CPT Procedure
95951	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, combined electroencephalographic (EEG) and video recording and interpretation (eg, for presurgical localization), each 24 hours	CPT Procedure
95953	Monitoring for localization of cerebral seizure focus by computerized portable 16 or more channel EEG, electroencephalographic (EEG) recording and interpretation, each 24 hours, unattended	CPT Procedure

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
95954	Pharmacological or physical activation requiring physician or other qualified health care professional attendance during EEG recording of activation phase (eg, thiopental activation test)	CPT Procedure
95955	Electroencephalogram (EEG) during nonintracranial surgery (eg, carotid surgery)	CPT Procedure
95956	Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, electroencephalographic (EEG) recording and interpretation, each 24 hours, attended by a technologist or nurse	CPT Procedure
95957	Digital analysis of electroencephalogram (EEG) (eg, for epileptic spike analysis)	CPT Procedure
95958	Wada activation test for hemispheric function, including electroencephalographic (EEG)	CPT Procedure
95961	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; initial hour of attendance by a physician or other qualified health care professional	CPT Procedure
95962	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; each additional hour of attendance by a physician or other qualified health care professional (List separately in addition to code for primary procedure)	CPT Procedure
A4556	Electrodes (e.g., apnea monitor), per pair	HCPCS Procedure
	Epilepsy	
345	Epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.0	Generalized nonconvulsive epilepsy	ICD-9-CM Diagnosis
345.00	Generalized nonconvulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.01	Generalized nonconvulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.1	Generalized convulsive epilepsy	ICD-9-CM Diagnosis
345.10	Generalized convulsive epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.11	Generalized convulsive epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
345.2	Epileptic petit mal status	ICD-9-CM Diagnosis
345.3	Epileptic grand mal status	ICD-9-CM Diagnosis
345.4	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial	ICD-9-CM Diagnosis
345.40	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.41	Localization-related (focal) (partial) epilepsy and epileptic syndromes with complex partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.5	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures	ICD-9-CM Diagnosis
345.50	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.51	Localization-related (focal) (partial) epilepsy and epileptic syndromes with simple partial seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.6	Infantile spasms	ICD-9-CM Diagnosis
345.60	Infantile spasms without mention of intractable epilepsy	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
345.61	Infantile spasms with intractable epilepsy	ICD-9-CM Diagnosis
345.7	Epilepsia partialis continua	ICD-9-CM Diagnosis
345.70	Epilepsia partialis continua without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.71	Epilepsia partialis continua with intractable epilepsy	ICD-9-CM Diagnosis
345.8	Other forms of epilepsy and recurrent seizures	ICD-9-CM Diagnosis
345.80	Other forms of epilepsy and recurrent seizures, without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.81	Other forms of epilepsy and recurrent seizures, with intractable epilepsy	ICD-9-CM Diagnosis
345.9	Unspecified epilepsy	ICD-9-CM Diagnosis
345.90	Unspecified epilepsy without mention of intractable epilepsy	ICD-9-CM Diagnosis
345.91	Unspecified epilepsy with intractable epilepsy	ICD-9-CM Diagnosis
	Hospitalized Heart Failure	
402.01	Malignant hypertensive heart disease with heart failure	ICD-9-CM Diagnosis
402.11	Benign hypertensive heart disease with heart failure	ICD-9-CM Diagnosis
402.91	Hypertensive heart disease, unspecified, with heart failure	ICD-9-CM Diagnosis
404.01	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney	ICD-9-CM Diagnosis
404.03	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney	ICD-9-CM Diagnosis
404.11	Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease	ICD-9-CM Diagnosis
404.13	Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease	ICD-9-CM Diagnosis
404.91	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease	ICD-9-CM Diagnosis
404.93	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease	ICD-9-CM Diagnosis
428	Heart failure	ICD-9-CM Diagnosis
428.0	Congestive heart failure, unspecified	ICD-9-CM Diagnosis
428.1	Left heart failure	ICD-9-CM Diagnosis
428.2	Systolic heart failure	ICD-9-CM Diagnosis
428.20	Unspecified systolic heart failure	ICD-9-CM Diagnosis
428.21	Acute systolic heart failure	ICD-9-CM Diagnosis
428.22	Chronic systolic heart failure	ICD-9-CM Diagnosis
428.23	Acute on chronic systolic heart failure	ICD-9-CM Diagnosis
428.3	Diastolic heart failure	ICD-9-CM Diagnosis
428.30	Unspecified diastolic heart failure	ICD-9-CM Diagnosis
428.31	Acute diastolic heart failure	ICD-9-CM Diagnosis
428.32	Chronic diastolic heart failure	ICD-9-CM Diagnosis
428.33	Acute on chronic diastolic heart failure	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
428.4	Combined systolic and diastolic heart failure	ICD-9-CM Diagnosis
428.40	Unspecified combined systolic and diastolic heart failure	ICD-9-CM Diagnosis
428.41	Acute combined systolic and diastolic heart failure	ICD-9-CM Diagnosis
428.42	Chronic combined systolic and diastolic heart failure	ICD-9-CM Diagnosis
428.43	Acute on chronic combined systolic and diastolic heart failure	ICD-9-CM Diagnosis
428.9	Unspecified heart failure	ICD-9-CM Diagnosis
37.66	Insertion of implantable heart assist system	ICD-9-CM Procedure
	Liver Impairment	
571	Chronic liver disease and cirrhosis	ICD-9-CM Diagnosis
571.0	Alcoholic fatty liver	ICD-9-CM Diagnosis
571.1	Acute alcoholic hepatitis	ICD-9-CM Diagnosis
571.2	Alcoholic cirrhosis of liver	ICD-9-CM Diagnosis
571.3	Unspecified alcoholic liver damage	ICD-9-CM Diagnosis
571.4	Chronic hepatitis	ICD-9-CM Diagnosis
571.40	Unspecified chronic hepatitis	ICD-9-CM Diagnosis
571.41	Chronic persistent hepatitis	ICD-9-CM Diagnosis
571.42	Autoimmune hepatitis	ICD-9-CM Diagnosis
571.49	Other chronic hepatitis	ICD-9-CM Diagnosis
571.5	Cirrhosis of liver without mention of alcohol	ICD-9-CM Diagnosis
571.6	Biliary cirrhosis	ICD-9-CM Diagnosis
571.8	Other chronic nonalcoholic liver disease	ICD-9-CM Diagnosis
571.9	Unspecified chronic liver disease without mention of alcohol	ICD-9-CM Diagnosis
	Renal Disease	
580	Acute glomerulonephritis	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
580.8	Acute glomerulonephritis with other specified pathological lesion in kidney	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	Nephrotic syndrome	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
581.8	Nephrotic syndrome with other specified pathological lesion in kidney	ICD-9-CM Diagnosis

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
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	Chronic glomerulonephritis	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
582.8	Chronic glomerulonephritis with other specified pathological lesion in kidney	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	Nephritis and nephropathy, not specified as acute or chronic	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	ICD-9-CM Diagnosis
583.8	Nephritis and nephropathy, not specified as acute or chronic, with other specified pathological lesion in kidney	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
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	Acute kidney failure	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

Appendix F. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Diagnosis and Procedure Codes, and Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) Procedure Codes Used to Define Covariates in this Request

Code	Description	Code Type
585	Chronic kidney disease (CKD)	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	Disorders resulting from impaired renal function	ICD-9-CM Diagnosis
588.0	Renal osteodystrophy	ICD-9-CM Diagnosis
588.1	Nephrogenic diabetes insipidus	ICD-9-CM Diagnosis
588.8	Other specified disorder resulting from impaired renal function	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
589	Small kidney of unknown cause	ICD-9-CM Diagnosis
589.0	Unilateral small kidney	ICD-9-CM Diagnosis
589.1	Bilateral small kidneys	ICD-9-CM Diagnosis
589.9	Unspecified small kidney	ICD-9-CM Diagnosis
592	Calculus of kidney and ureter	ICD-9-CM Diagnosis
592.0	Calculus of kidney	ICD-9-CM Diagnosis
592.1	Calculus of ureter	ICD-9-CM Diagnosis
592.9	Unspecified urinary calculus	ICD-9-CM Diagnosis
788.0	Renal colic	ICD-9-CM Diagnosis
996.81	Complications of transplanted kidney	ICD-9-CM Diagnosis
V42.0	Kidney replaced by transplant	ICD-9-CM Diagnosis
55.6	Transplant of kidney	ICD-9-CM Procedure
55.61	Renal autotransplantation	ICD-9-CM Procedure
55.69	Other kidney transplantation	ICD-9-CM Procedure

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
Epilepsy Treatment	
BRIVARACETAM	BRIVIACT
CARBAMAZEPINE	CARBAMAZEPINE
CARBAMAZEPINE	CARBAMAZEPINE XR
CARBAMAZEPINE	EQUETRO
CARBAMAZEPINE	CARBATROL
CARBAMAZEPINE	TEGRETOL
CARBAMAZEPINE	EPITOL
CARBAMAZEPINE	TEGRETOL XR
CARBAMAZEPINE	CARBAMAZEPINE ER
CARBAMAZEPINE CAP SR 12HR 200 MG	CARBATROL
CARBAMAZEPINE CAP SR 12HR 300 MG	CARBATROL
CARBAMAZEPINE CHEW TAB 100 MG	TEGRETOL
CARBAMAZEPINE CHEW TAB 100 MG	CARBAMAZEPINE
CARBAMAZEPINE TAB 200 MG	CARBAMAZEPINE
CARBAMAZEPINE TAB 200 MG	TEGRETOL
CARBAMAZEPINE TAB SR 12HR 200 MG	CARBAMAZEPINE ER
CARBAMAZEPINE TAB SR 12HR 400 MG	CARBAMAZEPINE ER
CLOBAZAM	ONFI
CLONAZEPAM	clonazepam
CLONAZEPAM	CLONAZEPAM
CLONAZEPAM	KLONOPIN
CLONAZEPAM	CEBERCLON
CLONAZEPAM TAB 0.5 MG	CLONAZEPAM
CLONAZEPAM TAB 1 MG	CLONAZEPAM
CLONAZEPAM TAB 1 MG	KLONOPIN
CLONAZEPAM TAB 2 MG	KLONOPIN
CLONAZEPAM TAB 2 MG	CLONAZEPAM
DIVALPROEX SODIUM	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM	DEPAKOTE ER
DIVALPROEX SODIUM	DEPAKOTE
DIVALPROEX SODIUM	DIVALPROEX SODIUM
DIVALPROEX SODIUM	DEPAKOTE SPRINKLE
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DIVALPROEX SODIUM DR
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DIVALPROEX SODIUM
DIVALPROEX SODIUM TAB DELAYED RELEASE 250 MG	DEPAKOTE
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DIVALPROEX SODIUM DR
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DIVALPROEX SODIUM
DIVALPROEX SODIUM TAB DELAYED RELEASE 500 MG	DEPAKOTE
DIVALPROEX SODIUM TAB ER 24 HR 250 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 250 MG	DEPAKOTE ER
DIVALPROEX SODIUM TAB SR 24 HR 250 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 500 MG	DIVALPROEX SODIUM ER
DIVALPROEX SODIUM TAB SR 24 HR 500 MG	DIVALPROEX SODIUM
ESLICARBAZEPINE ACETATE	APTIOM

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
ETHOSUXIMIDE	ZARONTIN
ETHOSUXIMIDE	ETHOSUXIMIDE
ETHOSUXIMIDE SOLN 250 MG 5ML	ETHOSUXIMIDE
EZOGABINE	POTIGA
FELBAMATE	FELBATOL
FELBAMATE	FELBAMATE
LACOSAMIDE	VIMPAT
LAMOTRIGINE	LAMOTRIGINE ODT
LAMOTRIGINE	LAMOTRIGINE
LAMOTRIGINE	LAMICTAL ODT
LAMOTRIGINE	LAMICTAL
LAMOTRIGINE	LAMICTAL (GREEN)
LAMOTRIGINE	LAMICTAL ODT (ORANGE)
LAMOTRIGINE	LAMOTRIGINE ODT (ORANGE)
LAMOTRIGINE	LAMICTAL ODT (BLUE)
LAMOTRIGINE	LAMOTRIGINE ODT (BLUE)
LAMOTRIGINE	LAMICTAL ODT (GREEN)
LAMOTRIGINE	LAMOTRIGINE ODT (GREEN)
LAMOTRIGINE	LAMOTRIGINE ER
LAMOTRIGINE	LAMICTAL XR
LAMOTRIGINE	LAMICTAL XR (ORANGE)
LAMOTRIGINE	LAMICTAL XR (BLUE)
LAMOTRIGINE	LAMICTAL XR (GREEN)
LAMOTRIGINE TAB 100 MG	LAMOTRIGINE
LAMOTRIGINE TAB 100 MG	LAMICTAL
LAMOTRIGINE TAB 150 MG	LAMOTRIGINE
LAMOTRIGINE TAB 150 MG	LAMICTAL
LAMOTRIGINE TAB 200 MG	LAMOTRIGINE
LAMOTRIGINE TAB 25 MG	LAMOTRIGINE
LAMOTRIGINE TAB CHEWABLE DISPERSIBLE 25 MG	LAMOTRIGINE
LAMOTRIGINE TAB CHEWABLE DISPERSIBLE 5 MG	LAMOTRIGINE
LAMOTRIGINE TAB DISP 25 MG	LAMOTRIGINE CHEWABLE DISPERSIBLE
LAMOTRIGINE TAB SR 24HR 300 MG	LAMOTRIGINE ER
LORAZEPAM	LORAZEPAM
LORAZEPAM	LORAZEPAM INTENSOL
LORAZEPAM	ATIVAN
LORAZEPAM TAB 0.5 MG	ATIVAN
LORAZEPAM TAB 0.5 MG	LORAZEPAM
LORAZEPAM TAB 1 MG	ATIVAN
LORAZEPAM TAB 1 MG	LORAZEPAM
LORAZEPAM TAB 2 MG	ATIVAN
LORAZEPAM TAB 2 MG	LORAZEPAM
OXCARBAZEPINE	OXCARBAZEPINE
OXCARBAZEPINE	TRILEPTAL
OXCARBAZEPINE	OXTELLAR XR

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
OXCARBAZEPINE TAB 150 MG	OXCARBAZEPINE
OXCARBAZEPINE TAB 300 MG	OXCARBAZEPINE
OXCARBAZEPINE TAB 300 MG	TRILEPTAL
OXCARBAZEPINE TAB 600 MG	OXCARBAZEPINE
PERAMPANEL	FYCOMPA
PHENYTOIN	DILANTIN
PHENYTOIN	PHENYTOIN
PHENYTOIN	DILANTIN 125
PHENYTOIN SODIUM	PHENYTOIN SODIUM
PHENYTOIN SODIUM EXTENDED	DILANTIN
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SODIUM
PHENYTOIN SODIUM EXTENDED	PHENYTOIN SOIDUM EXTENDED
PHENYTOIN SODIUM EXTENDED	PHENYTEK
PHENYTOIN SODIUM EXTENDED CAP 100 MG	PHENYTOIN SODIUM EXTENDED
PHENYTOIN SODIUM EXTENDED CAP 100 MG	DILANTIN
PHENYTOIN SUSP 125 MG 5ML	PHENYTOIN
PRIMIDONE	PRIMIDONE
PRIMIDONE	MYSOLINE
PRIMIDONE TAB 250 MG	PRIMIDONE
PRIMIDONE TAB 250 MG	MYSOLINE
PRIMIDONE TAB 50 MG	PRIMIDONE
RUFINAMIDE	BANZEL
TIAGABINE HCL	GABITRIL
TIAGABINE HCL	TIAGABINE HCL
TIAGABINE HCL TAB 12 MG	GABITRIL
TIAGABINE HCL TAB 16 MG	GABITRIL
TIAGABINE HCL TAB 2 MG	GABITRIL
TIAGABINE HCL TAB 4 MG	GABITRIL
TOPIRAMATE	QUDEXY XR
TOPIRAMATE	TOPIRAMATE ER
TOPIRAMATE	TROKENDI XR
TOPIRAMATE	TOPAMAX
TOPIRAMATE	TOPIRAMATE
TOPIRAMATE	TOPIRAGEN
TOPIRAMATE TAB 100 MG	TOPIRAMATE
TOPIRAMATE TAB 100 MG	TOPAMAX
TOPIRAMATE TAB 200 MG	TOPIRAMATE
TOPIRAMATE TAB 200 MG	TOPAMAX
TOPIRAMATE TAB 25 MG	TOPIRAMATE
TOPIRAMATE TAB 25 MG	TOPAMAX
TOPIRAMATE TAB 50 MG	TOPAMAX
TOPIRAMATE TAB 50 MG	TOPIRAMATE
VALPROATE SODIUM	VALPROIC ACID

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
VALPROATE SODIUM SYRUP 250 MG 5ML	VALPROIC ACID
VALPROIC ACID	DEPAKENE
VALPROIC ACID	VALPROIC ACID
VALPROIC ACID	STAVZOR
VALPROIC ACID (AS SODIUM SALT) (VALPROATE SODIUM)	VALPROIC ACID
VALPROIC ACID CAP 250 MG	VALPROIC ACID
VIGABATRIN	SABRIL
ZONISAMIDE	ZONISAMIDE
ZONISAMIDE	ZONEGRAN
ZONISAMIDE CAP 100 MG	ZONISAMIDE
ZONISAMIDE CAP 25 MG	ZONISAMIDE
ZONISAMIDE CAP 50 MG	ZONISAMIDE
Beta Blockers	
ACEBUTOLOL HCL	acebutolol
ACEBUTOLOL HCL	Sectral
ATENOLOL	atenolol
ATENOLOL	Tenormin
ATENOLOL/CHLORTHALIDONE	Tenoretic 50
ATENOLOL/CHLORTHALIDONE	Tenoretic 100
ATENOLOL/CHLORTHALIDONE	atenolol-chlorthalidone
BETAXOLOL HCL	Kerlone
BETAXOLOL HCL	betaxolol
BISOPROLOL FUMARATE	bisoprolol fumarate
BISOPROLOL FUMARATE	Zebeta
BISOPROLOL FUMARATE/HYDROCHLOROTHIAZIDE	bisoprolol-hydrochlorothiazide
BISOPROLOL FUMARATE/HYDROCHLOROTHIAZIDE	Ziac
CARVEDILOL	Coreg
CARVEDILOL	carvedilol
CARVEDILOL PHOSPHATE	Coreg CR
LABETALOL HCL	labetalol
LABETALOL HCL	Normodyne
LABETALOL HCL	Trandate
METOPROLOL SUCCINATE	metoprolol succinate
METOPROLOL SUCCINATE	Toprol XL
METOPROLOL SUCCINATE/HYDROCHLOROTHIAZIDE	Dutoprol
METOPROLOL TARTRATE	Lopressor
METOPROLOL TARTRATE	metoprolol tartrate
METOPROLOL TARTRATE/DIETARY SUPPLEMENT,COMB.10	Hypertensolol
METOPROLOL TARTRATE/HYDROCHLOROTHIAZIDE	Lopressor HCT
METOPROLOL TARTRATE/HYDROCHLOROTHIAZIDE	metoprolol ta-hydrochlorothiaz
NADOLOL	nadolol
NADOLOL	Corgard
NADOLOL/BENDROFLUMETHIAZIDE	nadolol-bendroflumethiazide
NADOLOL/BENDROFLUMETHIAZIDE	Corzide
NEBIVOLOL HCL	Bystolic

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
PENBUTOLOL SULFATE	Levatol
PINDOLOL	pindolol
PROPRANOLOL HCL	Inderal
PROPRANOLOL HCL	Inderal LA
PROPRANOLOL HCL	propranolol
PROPRANOLOL HCL	InnoPran XL
PROPRANOLOL HCL	metoprolol tartrate
PROPRANOLOL HCL	Hemangeol
PROPRANOLOL HCL	Inderal XL
PROPRANOLOL HCL/HYDROCHLOROTHIAZIDE	Inderide
PROPRANOLOL HCL/HYDROCHLOROTHIAZIDE	propranolol-hydrochlorothiazide
SOTALOL HCL	sotalol
SOTALOL HCL	Sotalol AF
SOTALOL HCL	Sorine
SOTALOL HCL	Sotylize
SOTALOL HCL	Betapace
SOTALOL HCL	Betapace AF
TIMOLOL MALEATE	timolol maleate
PROPRANOLOL HCL	Inderal XL
Calcium Channel Blockers	
AMLODIPINE BESYLATE	amlodipine
AMLODIPINE BESYLATE	Norvasc
DILTIAZEM HCL	Cardizem LA
DILTIAZEM HCL	Cardizem
DILTIAZEM HCL	Cardizem CD
DILTIAZEM HCL	diltiazem HCl
DILTIAZEM HCL	Tiazac
DILTIAZEM HCL	Cartia XT
DILTIAZEM HCL	Diltia XT
DILTIAZEM HCL	Dilacor XR
DILTIAZEM HCL	Matzim LA
DILTIAZEM HCL	DILT-XR
DILTIAZEM HCL	DILT-CD
DILTIAZEM HCL	Diltzac ER
DILTIAZEM HCL	Taztia XT
FELODIPINE	Plendil
FELODIPINE	felodipine
ISRADIPINE	DynaCirc CR
ISRADIPINE	isradipine
ISRADIPINE	DynaCirc
NICARDIPINE HCL	Cardene SR
NICARDIPINE HCL	Cardene
NICARDIPINE HCL	nicardipine
NIFEDIPINE	Adalat CC
NIFEDIPINE	Procardia

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
NIFEDIPINE	Procardia XL
NIFEDIPINE	Nifedical XL
NIFEDIPINE	Nifediac CC
NIFEDIPINE	nifedipine
NIFEDIPINE	Afeditab CR
NIMODIPINE	Nimotop
NIMODIPINE	nimodipine
NIMODIPINE	Nymalize
NISOLDIPINE	nisoldipine
NISOLDIPINE	Sular
VERAPAMIL HCL	Calan
VERAPAMIL HCL	Calan SR
VERAPAMIL HCL	Covera-HS
VERAPAMIL HCL	Isoptin SR
VERAPAMIL HCL	Verelan
VERAPAMIL HCL	Verelan PM
VERAPAMIL HCL	verapamil
Nitrates	
AMYL NITRITE	amyl nitrite
ISOSORBIDE	isosorbide (bulk)
ISOSORBIDE DINITRATE	Isordil Titradose
ISOSORBIDE DINITRATE	Dilatrate-SR
ISOSORBIDE DINITRATE	isosorbide dinitrate
ISOSORBIDE DINITRATE	Isordil
ISOSORBIDE DINITRATE	ISOCHRON
ISOSORBIDE DINITRATE	IsoDitrate
ISOSORBIDE DINITRATE/HYDRALAZINE HCL	BiDil
ISOSORBIDE MONONITRATE	Imdur
ISOSORBIDE MONONITRATE	Monoket
ISOSORBIDE MONONITRATE	isosorbide mononitrate
ISOSORBIDE MONONITRATE	Ismo
NITROGLYCERIN	Nitrostat
NITROGLYCERIN	Nitro-Dur
NITROGLYCERIN	Minitran
NITROGLYCERIN	nitroglycerin
NITROGLYCERIN	Nitro-Bid
NITROGLYCERIN	Nitrolingual
NITROGLYCERIN	Nitromist
NITROGLYCERIN	Nitro-Time
NITROGLYCERIN	NitroTab
NITROGLYCERIN	NitroQuick
NITROGLYCERIN	Nitrek
NITROGLYCERIN	Rectiv
Selective Calcium Channel Blockers	
DILTIAZEM HCL	Cardizem LA

Appendix G. List of Generic and Brand Drug Names Used to Define Covariates in this Request

Generic Name	Brand Name
DILTIAZEM HCL	Cardizem
DILTIAZEM HCL	Cardizem CD
DILTIAZEM HCL	diltiazem HCl
DILTIAZEM HCL	Tiazac
DILTIAZEM HCL	Cartia XT
DILTIAZEM HCL	Diltia XT
DILTIAZEM HCL	Dilacor XR
DILTIAZEM HCL	Matzim LA
DILTIAZEM HCL	DILT-XR
DILTIAZEM HCL	DILT-CD
DILTIAZEM HCL	Diltzac ER
DILTIAZEM HCL	Taztia XT
NICARDIPINE HCL	Cardene SR
NICARDIPINE HCL	Cardene
NICARDIPINE HCL	nicardipine
VERAPAMIL HCL	Calan
VERAPAMIL HCL	Calan SR
VERAPAMIL HCL	Covera-HS
VERAPAMIL HCL	Isoptin SR
VERAPAMIL HCL	Verelan
VERAPAMIL HCL	Verelan PM
VERAPAMIL HCL	verapamil

Appendix H. Specifications for Parameters for this Request, Part 1

This request utilized the Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.0.3 to investigate seizures among individuals exposed to ranolazine and beta blockers in the Sentinel Distributed Database (SDD) using a self-controlled risk interval (SCRI) design.

Query Period: January 1, 2006 - September 30, 2015
Coverage Requirement: Medical and Drug Coverage
Enrollment Gap: 45 days
Pre-Exposure Enrollment: 183 days
Post-Exposure Enrollment: 0 days
Age Groups: 18-44, 45-54, 55-64, 65-74, 75+ Years
Results Stratified by: Age, Time to Event

		Exposure									Inclusion/Exclusion Criteria				Outcome
Run	Scenario	Incident Exposure	Incidence Criteria	Washout (days)	Cohort Definition	Censor at Evidence of Death	Episode Gap	Exposure Extension Period	Minimum Episode Duration	Minimum Days Supplied	Pre-Existing Condition	Include/ Exclude	Care Setting	Lookback Period	Outcome
R01	1	Ranolazine	Ranolazine	183	Retain first valid incident exposure episode only	Yes	2	2	32	0	Epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG), brain tumor, meningioma, head trauma/injury	Exclude	Any	-183, 0	Dummy
R02	2	Ranolazine	Ranolazine	183	Retain first valid incident exposure episode only	Yes	2	2	32	0	Epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG), brain tumor, meningioma, head trauma/injury	Exclude	Any	-183, 0	Dummy
											CYP3 inhibitors use	Include	Any	-14, 0	
R03	3	Ranolazine	Ranolazine	183	Retain first valid incident exposure episode only	Yes	2	2	32	0	Brain tumor, meningioma, head trauma/injury	Exclude	Any	-183, 0	Dummy
											Epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG)	Include	Any	-183, 0	
R04	4	Ranolazine	Ranolazine	183	Retain first valid incident exposure episode only	Yes	2	2	62	0	Epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG), brain tumor, meningioma, head trauma/injury	Exclude	Any	-183, 0	Dummy
R05	5	Beta Blockers	Beta Blockers	183	Retain first valid incident exposure episode only	Yes	2	2	32	0	Ranolazine	Exclude	Any	-183, 0	Dummy
											Epilepsy treatment, epilepsy/convulsions, electroencephalogram (EEG), brain tumor, meningioma, head trauma/injury	Exclude	Any	-183, 0	

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Appendix I. Specifications for Parameters for this Request, Part 2

This request utilized the Cohort Identification and Descriptive Analysis (CIDA) tool, version 5.0.3 to investigate seizures among individuals exposed to ranolazine and beta blockers in the Sentinel Distributed Database (SDD) using a self-controlled risk interval (SCRI) design.

Query Period: January 1, 2006 - September 30, 2015
Coverage Requirement: Medical and Drug Coverage
Enrollment Gap: 45 Days
Pre-Exposure Enrollment: 183
Post-Exposure Enrollment: 32 days for scenarios 1-8, 10; 62 days for scenario 9
Age Groups: 18-44, 45-54, 55-64, 65-74, 75+ Years
Results Stratified by: Age, Time to Event

	R06				R07			R08	R09
	Frozen CDM from R01 of Type 2 Request				Frozen CDM from R02 of Type 2 Request			Frozen CDM from R03 of Type 2 Request	Frozen CDM from R04 of Type 2 Request
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Description:	**Main analysis**	**Pre-existing renal disease**	**Pre-existing liver impairment**	**Outcome definition excluding myoclonus**	**CYP3 inhibitors inclusion**	**CYP3 inhibitors inclusion; pre-existing renal disease**	**CYP3 inhibitors inclusion; pre-existing liver impairment**	**Epilepsy inclusion**	**Longer ranolazine episode**
Group:	NoPEC	Renal	Liver	NoPEC_myo	NoPEC_CYP	Renal_CYP	Liver_CYP	Epilepsy	Ranexa_2
Exposure									
Incident exposure:	Ranolazine	Ranolazine	Ranolazine	Ranozaline	Ranozaline	Ranolazine	Ranolazine	Ranolazine	Ranolazine
Care Setting:	Any	Any	Any	Any	Any	Any	Any	Any	Any
Incident with respect to:	Ranolazine	Ranolazine	Ranolazine	Ranozaline	Ranozaline	Ranolazine	Ranolazine	Ranolazine	Ranozaline
Washout (days):	183	183	183	183	183	183	183	183	183
Episode Gap:	2	2	2	2	2	2	2	2	2
Minimum Episode Duration:	32	32	32	32	32	32	32	32	62
Minimum Days Supplied:	0	0	0	0	0	0	0	0	0
Episode Extension Period:	2	2	2	2	2	2	2	2	2
Cohort Definition:	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only	Retain first valid incident exposure episode only
Censor at Evidence of Death:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	R06				R07			R08	R09
	Frozen CDM from R01 of Type 2 Request				Frozen CDM from R02 of Type 2 Request			Frozen CDM from R03 of Type 2 Request	Frozen CDM from R04 of Type 2 Request
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Inclusion/ Exclusion Criteria									
Pre-existing Condition:	See frozen Type 2 R01	Renal Disease	Liver Impairment	See frozen Type 2 R01	See frozen Type 2 R02	Renal Disease	Liver Impairment	See frozen Type 2 R03	See frozen Type 2 R04
Care Setting:		Any	Any			Any	Any		
Include/Exclude:		Include	Include			Include	Include		
Lookback Period:		-183,0	-183,0			-183,0	-183,0		
Pre-existing Condition:		See frozen Type 2 R01	See frozen Type 2 R01			See frozen Type 2 R02	See frozen Type 2 R02		
Care Setting:									
Include/Exclude:									
Lookback Period:									
Outcome Assessment Windows									
Risk Window:	1, 10	1, 10	1, 10	1, 10	1, 10	1, 10	1, 10	1, 10	1, 10
Control Window:	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32	11, 62
Event/ Outcome									
Event/Outcome:	Seizures	Seizures	Seizures	Seizures (with myoclonus)	Seizures	Seizures	Seizures	Seizures	Seizures
Care Setting:	IPP or ED	IPP or ED	IPP or ED	IPP or ED	IPP or ED	IPP or ED	IPP or ED	IPP or ED	IPP or ED
Envelope Macro:	Off	Off	Off	Off	Off	Off	Off	Off	Off
Incident with respect to:	Seizures	Seizures	Seizures	Seizures (with myoclonus)	Seizures	Seizures	Seizures	Seizures	Seizures
Incidence Care Setting:	Any	Any	Any	Any	Any	Any	Any	Any	Any
Washout (days):	183	183	183	183	183	183	183	183	183
Baseline Covariates									
Evaluation Window:	-183, 0	-183, 0	-183, 0	-183, 0	-183, 0	-183, 0	-183, 0	-183, 0	-183, 0
Covariates:	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G	Appendix F and G

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