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

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

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

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

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Overview for Request cder_mpl2p_wp002_nsdp_v01

Request ID: cder_mpl2p_wp002_nsdp_v01

Request Description: FDA has requested execution of the Cohort Identification and Descriptive Analysis (CIDA) Tool, version 3.0.4, and a Rapid Analytic Development and Response (RADaR) module, to estimate the number of individuals exposed to ranolazine, and among them, the number who had a seizure that occurred during specified risk and control windows. This query was run against the Sentinel Distributed Database (SDD) from January 1, 2006 to varying end dates (please refer to Appendix A for Data Partner data completeness dates). This request was distributed to 12 Data Partners on November 18, 2016.

Study Design: This request utilized a self-controlled risk interval (SCRI) design. The exposure of interest, risk and control windows relative to the exposure date, and the occurrence of the health outcome of interest during the risk and control windows were identified. The number of exposed individuals and number of individuals with an event in the risk and/or control windows in the SDD were calculated overall and stratified by sex, age group, and time-to-event.

Exposure of Interest: The exposure of interest was ranolazine, which was defined using National Drug Codes (NDCs). Please refer to Appendix B for a list of drugs.

Exposure Cohort Eligibility Criteria: Those included in the cohort were required to be continuously enrolled in plans with medical and drug coverage for at least six months (183 days) before their ranolazine exposure and throughout the post-exposure risk and/or control windows (32 days), during which gaps in coverage of up to 45 days were allowed. Individuals were also required to be 18 years or older and to have had no evidence of any ranolazine use within the six months (183 days) prior to the ranolazine use of interest.

Inclusion and Exclusion Criteria : Eight cohorts of interest were evaluated. The inclusion and exclusion criteria for each cohort are described below:

1) Individuals were required to have no evidence of prior epilepsy treatment within six months (183 days) of their ranolazine use
   1a) and have evidence of liver impairment within six months of their ranolazine use.
   1b) and have evidence of renal disease within six months of their ranolazine use.
2) Individuals were required to have no evidence of prior epilepsy treatment within six months of their ranolazine use and have evidence of prior nitrate use within 2 weeks (14 days) of their ranolazine use
   2a) and have evidence of liver impairment within six months of their ranolazine use.
   2b) and have evidence of renal disease within six months of their ranolazine use.
3) Individuals were required to have evidence of prior epilepsy treatment within six months of their ranolazine use.
4) Individuals were required to have evidence of prior epilepsy treatment within six months and have evidence of prior nitrate use within 2 weeks of their ranolazine use.

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

Baseline Covariates: The following covariates were assessed during the baseline period: age, sex, comorbidity score, health service utilization, and any of the following conditions or medications: (1) angina pectoris or prinzmetal angina (2) chest pain (3) coronary atherosclerosis (4) liver impairment (5) renal disease (6) beta blockers (7) calcium channel blockers (8) nitrates. Occurrence of these covariates was evaluated in the six months (183 days) prior to the ranolazine exposure. Please see appendices D and E for specific codes.

Risk and Control Windows: The risk window was assessed from 0 to 10 days following the exposure of interest. The control window was assessed from 11 to 32 days following the exposure of interest.

Outcome of Interest/Analytic Cohort: The outcome of interest was a seizure 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 at least six months (183 days) prior to the outcome of interest. Seizure diagnoses were defined using International Classification of Diseases, Ninth Revision, Clinical Modification diagnosis codes (please refer to Appendix F for specific codes).

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

Limitations: Algorithms to define exposures, outcomes, and covariates are imperfect and, therefore, may be misclassified.

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

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

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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.

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 MSDD table "completeness" from the DMQA 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" sequence.

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.
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. Baseline Characteristics of Cohort of Patients without Evidence of Epilepsy Treatment Exposed to Ranolazine[1] from January 1, 2006 to September 30, 2015

Characteristic	Ranolazine	
	N	%/Std Dev[2]
Number of unique patients	47,495	100.0%
Patient Characteristics		
Mean age	67.5	11.7
Age: 18-44 years	1,534	3.2%
Age: 45-54 years	6,200	13.1%
Age: 55-64 years	12,811	27.0%
Age: 65-74 years	13,231	27.9%
Age: 75+ years	13,719	28.9%
Gender (Female)	17,594	37.0%
Gender (Male)	29,897	62.9%
Gender (Unknown)	4	0.0%
Recorded History of[3]:		
Combined comorbidity score	1.8	2.5
Angina Pectoris or Prinzmetal Angina	22,633	47.7%
Chest Pain	33,322	70.2%
Coronary Atherosclerosis	41,747	87.9%
Liver Impairment	3,543	7.5%
Renal Disease	10,946	23.0%
History of Use[4]:		
Beta Blockers	36,985	77.9%
Calcium Channel Blockers	3,230	6.8%
Nitrates	30,799	64.8%
Health Service Utilization Intensity:		
Mean number of generic drugs	11.6	5
Mean number of unique drug classes	11.4	4.6
Mean number of filled prescriptions	27.9	17
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 emergency room encounters (ED)	0.6	1.2
Mean number of ambulatory encounters (AV)	13	10.4
Mean number of other ambulatory encounters (OA)	3.1	5.2

[1]See Appendix B for the list of drugs used to define exposures

[2]Value represents standard deviation where no % follows the value

[3]See Appendix D for the list of procedure and diagnosis codes used to define covariates

[4]See Appendix E for the list of drugs used to define covariates

Table 1b. Baseline Characteristics of Cohort of Patients without Evidence of Epilepsy Treatment and with Nitrate Use Exposed to Ranolazine[1] from January 1, 2006 to September 30, 2015		
Characteristic	**Ranolazine with Nitrates**	
	N	**%/Std Dev[2]**
Number of unique patients	25,762	100.0%
Patient Characteristics		
Mean age	68.8	11.8
Age: 18-44 years	655	2.5%
Age: 45-54 years	2,967	11.5%
Age: 55-64 years	6,455	25.1%
Age: 65-74 years	7,229	28.1%
Age: 75+ years	8,456	32.8%
Gender (Female)	9,451	36.7%
Gender (Male)	16,309	63.3%
Gender (Unknown)	2	0.0%
Recorded History of[3]:		
Combined comorbidity score	2	2.6
Angina Pectoris or Prinzmetal Angina	13,721	53.3%
Chest Pain	19,098	74.1%
Coronary Atherosclerosis	23,770	92.3%
Liver Impairment	1,987	7.7%
Renal Disease	6,842	26.6%
History of Use[4]:		
Beta Blockers	21,423	83.2%
Calcium Channel Blockers	1,814	7.0%
Health Service Utilization Intensity:		
Mean number of generic drugs	12.7	4.9
Mean number of unique drug classes	12.3	4.5
Mean number of filled prescriptions	30.9	17.6
Mean number of inpatient hospital encounters (IP)	0.7	1
Mean number of non-acute institutional encounters (IS)	0.2	0.9
Mean number of emergency room encounters (ED)	0.7	1.2
Mean number of ambulatory encounters (AV)	13.4	10.8
Mean number of other ambulatory encounters (OA)	3.4	5.5

[1]See Appendix B for the list of drugs used to define exposures

[2]Value represents standard deviation where no % follows the value

[3]See Appendix D for the list of procedure and diagnosis codes used to define covariates

[4]See Appendix E for the list of drugs used to define covariates

Table 1c. Baseline Characteristics of Cohort of Patients with Evidence of Epilepsy Treatment Exposed to Ranolazine[1] from January 1, 2006 to September 30, 2015		
Characteristic	**Ranolazine**	
	N	**%/Std Dev[2]**
Number of unique patients	10,790	100.0%
Patient Characteristics		
Mean age	65.6	11.6
Age: 18-44 years	376	3.5%
Age: 45-54 years	1,715	15.9%
Age: 55-64 years	3,334	30.9%
Age: 65-74 years	2,887	26.8%
Age: 75+ years	2,478	23.0%
Gender (Female)	5,251	48.7%
Gender (Male)	5,539	51.3%
Gender (Unknown)	0	0.0%
Recorded History of[3]:		
Combined comorbidity score	2.7	2.8
Angina Pectoris or Prinzmetal Angina	5,177	48.0%
Chest Pain	8,215	76.1%
Coronary Atherosclerosis	9,547	88.5%
Liver Impairment	1,004	9.3%
Renal Disease	3,289	30.5%
History of Use[4]:		
Beta Blockers	8,551	79.2%
Calcium Channel Blockers	891	8.3%
Nitrates	7,411	68.7%
Health Service Utilization Intensity:		
Mean number of generic drugs	16.5	5.9
Mean number of unique drug classes	16.8	5.3
Mean number of filled prescriptions	42	22.1
Mean number of inpatient hospital encounters (IP)	0.8	1.2
Mean number of non-acute institutional encounters (IS)	0.4	1.3
Mean number of emergency room encounters (ED)	1	2.2
Mean number of ambulatory encounters (AV)	18	13.2
Mean number of other ambulatory encounters (OA)	5.2	8.2

[1]See Appendix B for the list of drugs used to define exposures

[2]Value represents standard deviation where no % follows the value

[3]See Appendix D for the list of procedure and diagnosis codes used to define covariates

[4]See Appendix E for the list of drugs used to define covariates

Table 1d. Baseline Characteristics of Cohort of Patients with Evidence of Epilepsy Treatment and Nitrate Use Exposed to Ranolazine[1] from January 1, 2006 to September 30, 2015

Characteristic	Ranolazine with Nitrates	
	N	%/Std Dev[2]
Number of unique patients	6,241	100.0%
Patient Characteristics		
Mean age	66.6	11.6
Age: 18-44 years	175	2.8%
Age: 45-54 years	917	14.7%
Age: 55-64 years	1,826	29.3%
Age: 65-74 years	1,724	27.6%
Age: 75+ years	1,599	25.6%
Gender (Female)	2,967	47.5%
Gender (Male)	3,274	52.5%
Gender (Unknown)	0	0.0%
Recorded History of[3]:		
Combined comorbidity score	2.9	2.9
Angina Pectoris or Prinzmetal Angina	3,347	53.6%
Chest Pain	4,966	79.6%
Coronary Atherosclerosis	5,776	92.5%
Liver Impairment	590	9.5%
Renal Disease	2,105	33.7%
History of Use[4]:		
Beta Blockers	5,181	83.0%
Calcium Channel Blockers	524	8.4%
Health Service Utilization Intensity:		
Mean number of generic drugs	17.4	5.8
Mean number of unique drug classes	17.5	5.2
Mean number of filled prescriptions	44.5	22.5
Mean number of inpatient hospital encounters (IP)	0.9	1.2
Mean number of non-acute institutional encounters (IS)	0.5	1.3
Mean number of emergency room encounters (ED)	1.1	2.2
Mean number of ambulatory encounters (AV)	18.1	12.5
Mean number of other ambulatory encounters (OA)	5.5	8.7

[1]See Appendix B for the list of drugs used to define exposures

[2]Value represents standard deviation where no % follows the value

[3]See Appendix D for the list of procedure and diagnosis codes used to define covariates

[4]See Appendix E for the list of drugs used to define covariates

Table 2: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria

	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 Treatment						
All	47,495	28	10	18	1.11	0.48, 2.48
Pre-existing liver impairment	3,812	5	1	4	0.50	0.11, 3.82
Pre-existing renal disease	11,537	18	7	11	1.27	0.46, 3.32
Without Evidence of Epilepsy Treatment and with Nitrate Use						
All	25,762	18	6	12	1.00	0.37, 2.83
Pre-existing liver impairment	2,159	3	1	2	1.00	0.03, 12.68
Pre-existing renal disease	7,213	13	5	8	1.25	0.40, 3.82
Evidence of Epilepsy Treatment						
All	10,790	11	6	5	2.40	0.73, 7.92
Evidence of Epilepsy Treatment and Nitrate Use						
All	6,241	9	5	4	2.50	0.68, 9.68

Table 3: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Sex

	Sex	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Without Evidence of Epilepsy Treatment					
All	F	17,594	12	3	9
	M	29,897	16	7	9
	U	4	0	0	0
Pre-existing liver impairment	F	1,497	4	0	4
	M	2,315	1	1	0
	U	0	0	0	0
Pre-existing renal disease	F	4,107	8	3	5
	M	7,429	10	4	6
	U	1	0	0	0
Without Evidence of Epilepsy Treatment and with Nitrate Use					
All	F	9,451	8	3	5
	M	16,309	10	3	7
	U	2	0	0	0
Pre-existing liver impairment	F	867	2	0	2
	M	1,292	1	1	0
	U	0	0	0	0
Pre-existing renal disease	F	2,587	6	3	3
	M	4,626	7	2	5
	U	0	0	0	0
Evidence of Epilepsy Treatment					
All	F	5,251	8	5	3
	M	5,539	3	1	2
	U	0	0	0	0
Evidence of Epilepsy Treatment and Nitrate Use					
All	F	2,967	6	4	2
	M	3,274	3	1	2
	U	0	0	0	0

Table 4: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Age Group

	Age Group	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Without Evidence of Epilepsy Treatment					
All	18-44	1,537	0	0	0
	45-54	6,217	2	0	2
	55-64	12,810	5	2	3
	65-74	13,232	5	3	2
	75+	13,699	16	5	11
Pre-existing liver impairment	18-44	128	0	0	0
	45-54	502	0	0	0
	55-64	1,062	1	0	1
	65-74	1,049	2	1	1
	75+	1,071	2	0	2
Pre-existing renal disease	18-44	113	0	0	0
	45-54	550	1	0	1
	55-64	1,918	3	2	1
	65-74	3,497	5	3	2
	75+	5,459	9	2	7
Without Evidence of Epilepsy Treatment and with Nitrate Use					
All	18-44	662	0	0	0
	45-54	2,985	2	0	2
	55-64	6,458	3	2	1
	65-74	7,245	4	2	2
	75+	8,412	9	2	7
Pre-existing liver impairment	18-44	62	0	0	0
	45-54	250	0	0	0
	55-64	573	0	0	0
	65-74	584	2	1	1
	75+	690	1	0	1
Pre-existing renal disease	18-44	59	0	0	0
	45-54	304	1	0	1
	55-64	1,123	2	2	0
	65-74	2,096	4	2	2
	75+	3,631	6	1	5

Table 4: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Age Group

	Age Group	Number of Patients in Exposure Cohort	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Evidence of Epilepsy Treatment					
All	18-44	389	0	0	0
	45-54	1,737	1	0	1
	55-64	3,327	1	1	0
	65-74	2,890	4	3	1
	75+	2,447	5	2	3
Evidence of Epilepsy Treatment and Nitrate Use					
All	18-44	183	0	0	0
	45-54	930	1	0	1
	55-64	1,828	1	1	0
	65-74	1,726	2	2	0
	75+	1,574	5	2	3

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Without Evidence of Epilepsy Treatment				
All	0	0	0	0
	1	2	2	0
	2	1	1	0
	3	1	1	0
	4	0	0	0
	5	3	3	0
	6	0	0	0
	7	1	1	0
	8	0	0	0
	9	0	0	0
	10	2	2	0
	11	1	0	1
	12	2	0	2
	13	1	0	1
	14	0	0	0
	15	0	0	0
	16	1	0	1
	17	0	0	0
	18	1	0	1
	19	1	0	1
	20	2	0	2
	21	0	0	0
	22	2	0	2
	23	0	0	0
	24	1	0	1
	25	0	0	0
	26	1	0	1
	27	0	0	0
	28	2	0	2
	29	1	0	1
	30	0	0	0
	31	0	0	0
	32	2	0	2

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Pre-existing liver impairment	0	0	0	0
	1	0	0	0
	2	0	0	0
	3	0	0	0
	4	0	0	0
	5	1	1	0
	6	0	0	0
	7	0	0	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	0	0	0
	12	0	0	0
	13	0	0	0
	14	0	0	0
	15	0	0	0
	16	0	0	0
	17	0	0	0
	18	0	0	0
	19	0	0	0
	20	0	0	0
	21	0	0	0
	22	1	0	1
	23	0	0	0
	24	0	0	0
	25	0	0	0
	26	1	0	1
	27	0	0	0
	28	2	0	2
	29	0	0	0
	30	0	0	0
	31	0	0	0
	32	0	0	0

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Pre-existing renal disease	0	0	0	0
	1	1	1	0
	2	0	0	0
	3	1	1	0
	4	0	0	0
	5	3	3	0
	6	0	0	0
	7	1	1	0
	8	0	0	0
	9	0	0	0
	10	1	1	0
	11	1	0	1
	12	1	0	1
	13	0	0	0
	14	0	0	0
	15	0	0	0
	16	0	0	0
	17	0	0	0
	18	1	0	1
	19	1	0	1
	20	1	0	1
	21	0	0	0
	22	2	0	2
	23	0	0	0
	24	1	0	1
	25	0	0	0
	26	1	0	1
	27	0	0	0
	28	2	0	2
	29	0	0	0
	30	0	0	0
	31	0	0	0
	32	0	0	0

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Without Evidence of Epilepsy Treatment and with Nitrate Use				
All	0	0	0	0
	1	1	1	0
	2	0	0	0
	3	1	1	0
	4	0	0	0
	5	3	3	0
	6	0	0	0
	7	1	1	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	1	0	1
	12	1	0	1
	13	1	0	1
	14	0	0	0
	15	0	0	0
	16	1	0	1
	17	0	0	0
	18	0	0	0
	19	1	0	1
	20	1	0	1
	21	0	0	0
	22	2	0	2
	23	0	0	0
	24	1	0	1
	25	0	0	0
	26	0	0	0
	27	0	0	0
	28	1	0	1
	29	1	0	1
	30	0	0	0
	31	0	0	0
	32	1	0	1

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Pre-existing liver impairment	0	0	0	0
	1	0	0	0
	2	0	0	0
	3	0	0	0
	4	0	0	0
	5	1	1	0
	6	0	0	0
	7	0	0	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	0	0	0
	12	0	0	0
	13	0	0	0
	14	0	0	0
	15	0	0	0
	16	0	0	0
	17	0	0	0
	18	0	0	0
	19	0	0	0
	20	0	0	0
	21	0	0	0
	22	1	0	1
	23	0	0	0
	24	0	0	0
	25	0	0	0
	26	0	0	0
	27	0	0	0
	28	1	0	1
	29	0	0	0
	30	0	0	0
	31	0	0	0
	32	0	0	0

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Pre-existing renal disease	0	0	0	0
	1	0	0	0
	2	0	0	0
	3	1	1	0
	4	0	0	0
	5	3	3	0
	6	0	0	0
	7	1	1	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	1	0	1
	12	1	0	1
	13	0	0	0
	14	0	0	0
	15	0	0	0
	16	0	0	0
	17	0	0	0
	18	0	0	0
	19	1	0	1
	20	1	0	1
	21	0	0	0
	22	2	0	2
	23	0	0	0
	24	1	0	1
	25	0	0	0
	26	0	0	0
	27	0	0	0
	28	1	0	1
	29	0	0	0
	30	0	0	0
	31	0	0	0
	32	0	0	0

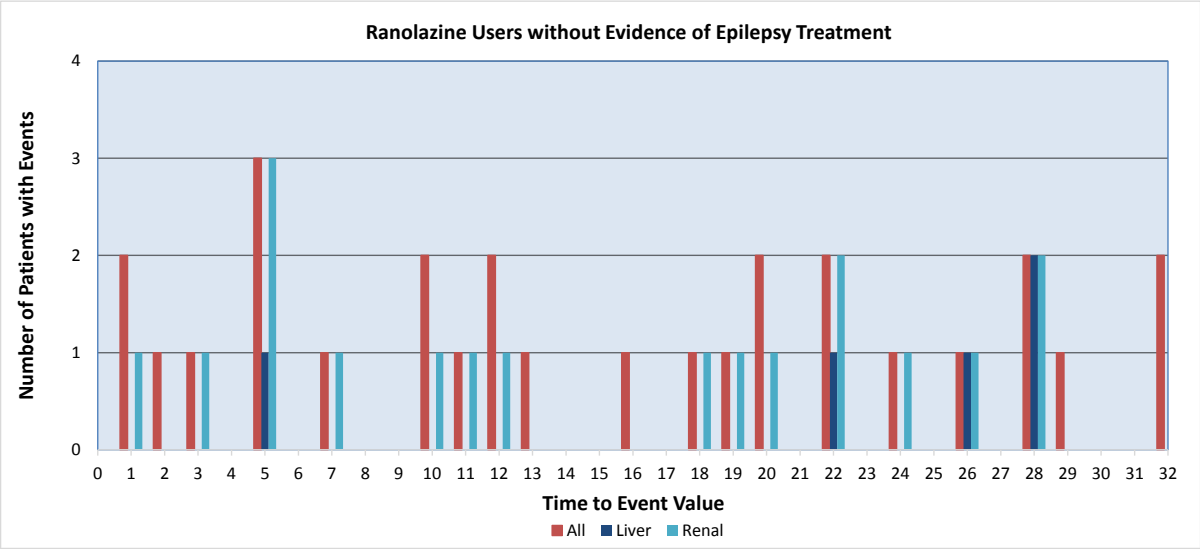
Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

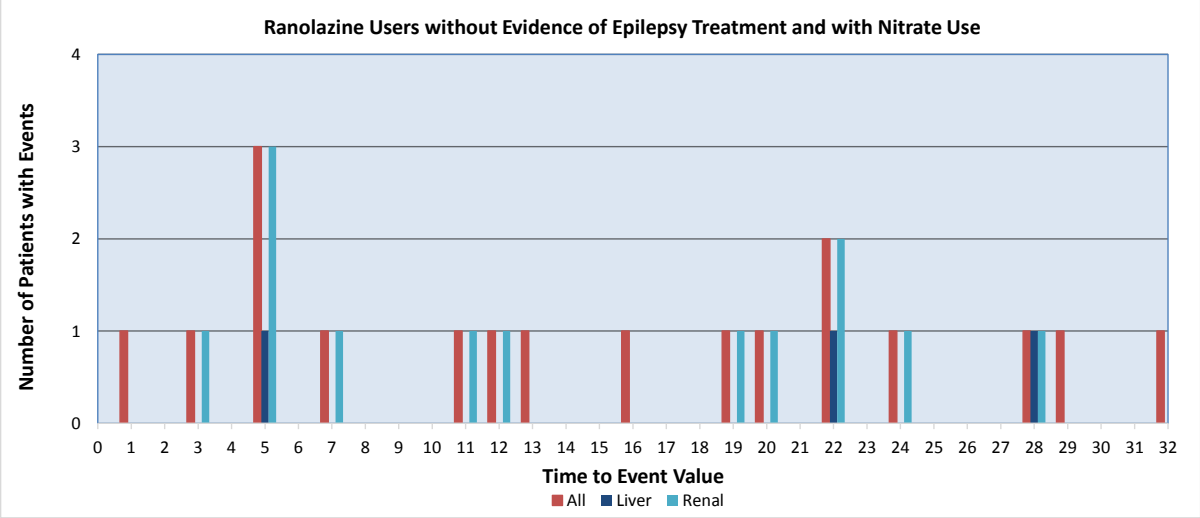
	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Evidence of Epilepsy Treatment				
All	0	0	0	0
	1	0	0	0
	2	1	1	0
	3	2	2	0
	4	0	0	0
	5	3	3	0
	6	0	0	0
	7	0	0	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	0	0	0
	12	0	0	0
	13	0	0	0
	14	0	0	0
	15	1	0	1
	16	0	0	0
	17	1	0	1
	18	0	0	0
	19	1	0	1
	20	0	0	0
	21	0	0	0
	22	0	0	0
	23	0	0	0
	24	0	0	0
	25	0	0	0
	26	1	0	1
	27	0	0	0
	28	0	0	0
	29	0	0	0
	30	0	0	0
	31	1	0	1
	32	0	0	0

Table 5: Summary of Incident Ranolazine Use and Seizure in the Sentinel Distributed Database between January 1st, 2006 and September 30th, 2015, by Inclusion and Exclusion Criteria, as well as Time to Event (TTE) Value

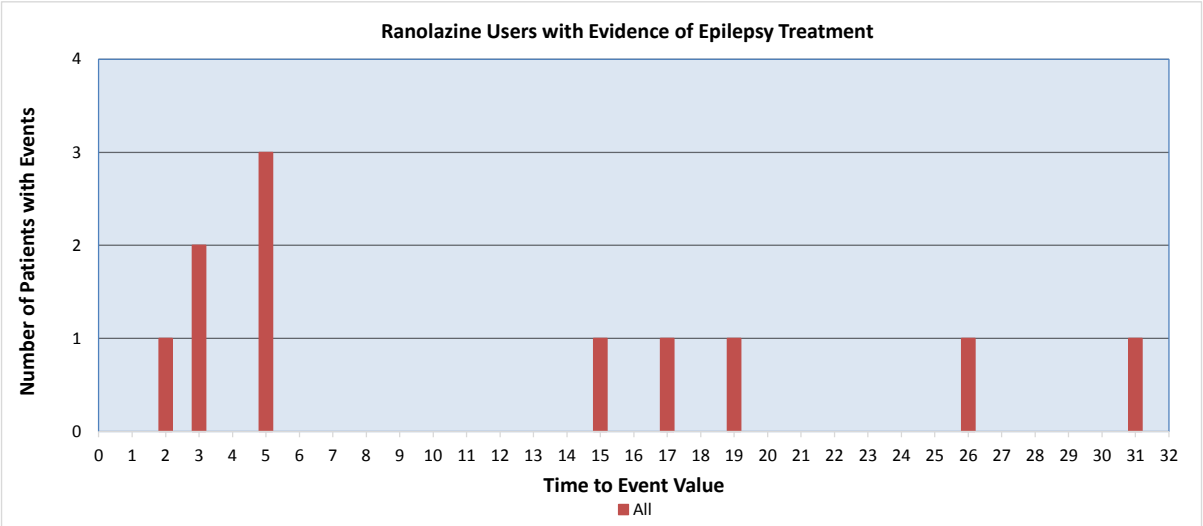
	TTE Value	Number of Patients in Analytic Cohort	Number of Events in Risk Window	Number of Events in Control Window
Evidence of Epilepsy Treatment and Nitrate Use				
All	0	0	0	0
	1	0	0	0
	2	1	1	0
	3	2	2	0
	4	0	0	0
	5	2	2	0
	6	0	0	0
	7	0	0	0
	8	0	0	0
	9	0	0	0
	10	0	0	0
	11	0	0	0
	12	0	0	0
	13	0	0	0
	14	0	0	0
	15	1	0	1
	16	0	0	0
	17	1	0	1
	18	0	0	0
	19	1	0	1
	20	0	0	0
	21	0	0	0
	22	0	0	0
	23	0	0	0
	24	0	0	0
	25	0	0	0
	26	0	0	0
	27	0	0	0
	28	0	0	0
	29	0	0	0
	30	0	0	0
	31	1	0	1
	32	0	0	0

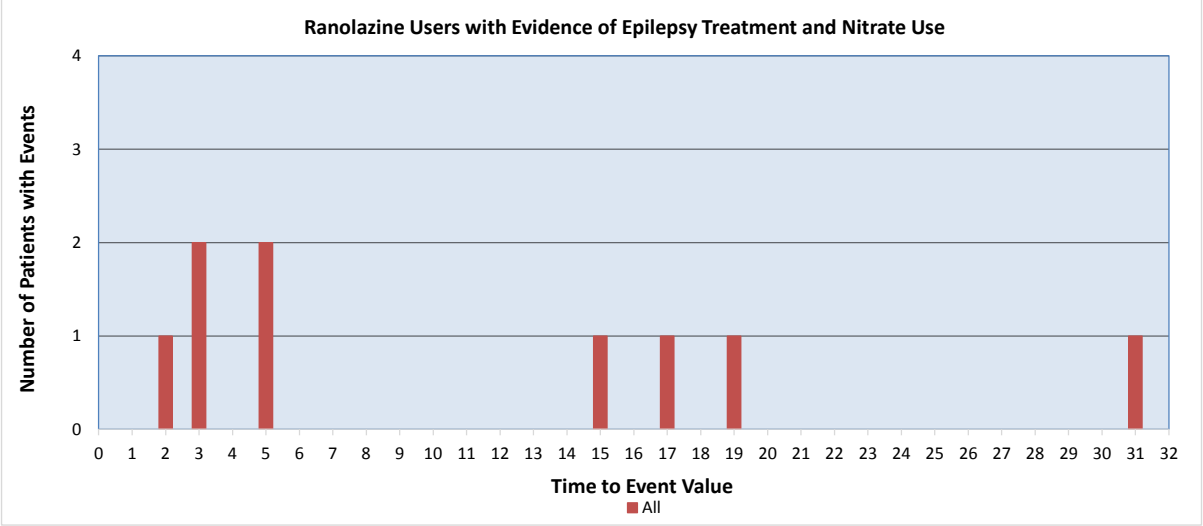
Time to Event (TTE) Figures: Figures Displaying Number of Patients with Seizure Events, by Inclusion and Exclusion Criteria, as well as TTE Value





Time to Event (TTE) Figures: Figures Displaying Number of Patients with Seizure Events, by Inclusion and Exclusion Criteria, as well as TTE Value





Appendix A: Data Completeness Dates and Exposure Identification Period End Dates for Each Data Partner

	DP001	DP002	DP003	DP004	DP005	DP006	DP007	DP008	DP009	DP010	DP011	DP012
Data Completeness Date	6/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	9/30/2015	6/30/2015	9/30/2015
Exposure Identification Period End Date*	4/30/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	7/31/2015	4/30/2015	7/31/2015

* The Exposure Identification Period End Date is the Data Partner Data Completeness Date minus the required follow-up period, rounded down to the nearest complete month.

Appendix B: List of Drugs Used to Define Exposures in this Request

Generic Name	Brand Name	Form	Route	Strength	Unit
Ranolazine					
RANOLAZINE	Ranexa	tablet extended release 12 hr	oral	500	mg
RANOLAZINE	Ranexa	tablet extended release 12 hr	oral	1,000	mg
RANOLAZINE	Ranexa	tablet extended release 12 hr	oral	500	mg

Appendix C: List of Codes and Generic Names Used to Define Inclusion and Exclusion Criteria in this Request

Code	Code Type	Description
Liver Impairment		
4560	ICD-9-CM Diagnosis	Esophageal varices with bleeding
4560*	ICD-9-CM Diagnosis	Esophageal varices with bleeding
4561	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
4561*	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
4562	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
4562*	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
5722	ICD-9-CM Diagnosis	Hepatic encephalopathy
5722*	ICD-9-CM Diagnosis	Hepatic encephalopathy
5723	ICD-9-CM Diagnosis	Portal hypertension
5723*	ICD-9-CM Diagnosis	Portal hypertension
5724	ICD-9-CM Diagnosis	Hepatorenal syndrome
5724*	ICD-9-CM Diagnosis	Hepatorenal syndrome
5728	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease
5728*	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease
5710	ICD-9-CM Diagnosis	ALCOHOLIC FATTY LIVER
5711	ICD-9-CM Diagnosis	AC ALCOHOLIC HEPATITIS
5712	ICD-9-CM Diagnosis	ALCOHOL LIVER CIRRHOSIS
5713	ICD-9-CM Diagnosis	ALCOHOL LIVER DAMAGE NOS
5715	ICD-9-CM Diagnosis	LIVER CIRRHOSIS W/O ALC
5720	ICD-9-CM Diagnosis	LIVER ABSCESS
5721	ICD-9-CM Diagnosis	PORTAL PYEMIA
5735	ICD-9-CM Diagnosis	HEPATOPULMONARY SYNDROME
7895	ICD-9-CM Diagnosis	ASCITES
78959	ICD-9-CM Diagnosis	ASCITES NEC
570	ICD-9-CM Diagnosis	ACUTE LIVER NECROSIS
5716	ICD-9-CM Diagnosis	BILIARY CIRRHOSIS
5718	ICD-9-CM Diagnosis	CHRONIC LIVER DIS NEC
5719	ICD-9-CM Diagnosis	CHRONIC LIVER DIS NOS
5730	ICD-9-CM Diagnosis	CHR PASS CONGEST LIVER
5734	ICD-9-CM Diagnosis	HEPATIC INFARCTION
5738	ICD-9-CM Diagnosis	LIVER DISORDERS NEC
5739	ICD-9-CM Diagnosis	LIVER DISORDER NOS
7824	ICD-9-CM Diagnosis	JAUNDICE NOS
7891	ICD-9-CM Diagnosis	HEPATOMEGALY
7904	ICD-9-CM Diagnosis	ELEVAT TRANSAMINASE/LDH
7905	ICD-9-CM Diagnosis	ABN SERUM ENZYME LEV NEC
7948	ICD-9-CM Diagnosis	ABN LIVER FUNCTION STUDY
V427	ICD-9-CM Diagnosis	LIVER TRANSPLANT STATUS
75160	ICD-9-CM Diagnosis	BILIARY & LIVER ANOM NOS
99682	ICD-9-CM Diagnosis	COMP LIVER TRANSPLANT
Renal Disease		
582	ICD-9-CM Diagnosis	Chronic glomerulonephritis
582*	ICD-9-CM Diagnosis	Chronic glomerulonephritis
582**	ICD-9-CM Diagnosis	Chronic glomerulonephritis
583	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic
583*	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic
583**	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic
5851	ICD-9-CM Diagnosis	Chronic kidney disease, Stage I
5851*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage I
5852	ICD-9-CM Diagnosis	Chronic kidney disease, Stage II (mild)
5852*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage II (mild)
5853	ICD-9-CM Diagnosis	Chronic kidney disease, Stage III (moderate)
5853*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage III (moderate)
5854	ICD-9-CM Diagnosis	Chronic kidney disease, Stage IV (severe)
5854*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage IV (severe)
5855	ICD-9-CM Diagnosis	Chronic kidney disease, Stage V
5855*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage V
5859	ICD-9-CM Diagnosis	Chronic kidney disease, unspecified
5859*	ICD-9-CM Diagnosis	Chronic kidney disease, unspecified
586	ICD-9-CM Diagnosis	Renal failure, unspecified
586*	ICD-9-CM Diagnosis	Renal failure, unspecified
586**	ICD-9-CM Diagnosis	Renal failure, unspecified
588	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
588*	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
588**	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
5810	ICD-9-CM Diagnosis	NS W LESION PROLIF GN
5811	ICD-9-CM Diagnosis	EPIMEMBRANOUS NEPHRITIS
5812	ICD-9-CM Diagnosis	MEMBRANOPROLIF NEPHROSIS
5813	ICD-9-CM Diagnosis	MINIMAL CHANGE NEPHROSIS
58181	ICD-9-CM Diagnosis	NEPHROTIC SYND IN DCE
58189	ICD-9-CM Diagnosis	NEPHROTIC SYNDROME NEC
5819	ICD-9-CM Diagnosis	NEPHROTIC SYNDROME NOS
587	ICD-9-CM Diagnosis	RENAL SCLEROSIS NOS

Code	Code Type	Description
5856	ICD-9-CM Diagnosis	ESRD
5859	ICD-9-CM Diagnosis	CHRONIC KIDNEY DIS NOS
V420	ICD-9-CM Diagnosis	KIDNEY TRANSPLANT STATUS
V451	ICD-9-CM Diagnosis	RENAL DIALYSIS STATUS
V4511	ICD-9-CM Diagnosis	DIALYSIS STATUS
V4512	ICD-9-CM Diagnosis	DIALYSIS NONCOMPLIANCE
V560	ICD-9-CM Diagnosis	RENAL DIALYSIS ENCOUNTER
V561	ICD-9-CM Diagnosis	FIT EXTRACORP RD CATH
V562	ICD-9-CM Diagnosis	FIT PERITONEAL RD CATH
V5631	ICD-9-CM Diagnosis	HEMODIALYS ADEQUACY TEST
V5632	ICD-9-CM Diagnosis	PD ADEQUACY TESTING
V568	ICD-9-CM Diagnosis	DIALYSIS ENCOUNTER NEC
5930	ICD-9-CM Diagnosis	NEPHROPTOSIS
5931	ICD-9-CM Diagnosis	KIDNEY HYPERTROPHY
5932	ICD-9-CM Diagnosis	ACQUIRED KIDNEY CYST
59381	ICD-9-CM Diagnosis	RENAL VASCULAR DISORDER
59389	ICD-9-CM Diagnosis	RENAL/URETER DISORD NEC
5939	ICD-9-CM Diagnosis	RENAL/URETER DISORD NOS
580	ICD-9-CM Diagnosis	Acute glomerulonephritis
580*	ICD-9-CM Diagnosis	Acute glomerulonephritis
580**	ICD-9-CM Diagnosis	Acute glomerulonephritis
584	ICD-9-CM Diagnosis	Acute kidney failure
584*	ICD-9-CM Diagnosis	Acute kidney failure
6462	ICD-9-CM Diagnosis	Unspecified renal disease in pregnancy without mention of hypertension
6462*	ICD-9-CM Diagnosis	Unspecified renal disease in pregnancy without mention of hypertension
3895	ICD-9-CM Procedure	VENOUS CATHETERIZATION FOR RENAL DIALYSIS
3927	ICD-9-CM Procedure	ARTERIOVENOSTOMY FOR RENAL DIALYSIS
3942	ICD-9-CM Procedure	REVISION OF ARTERIOVENOUS SHUNT RENAL DIALYSIS
3943	ICD-9-CM Procedure	REMOVAL OF ARTERIOVENOUS SHUNT RENAL DIALYSIS
3995	ICD-9-CM Procedure	HEMODIALYSIS
5498	ICD-9-CM Procedure	PERITONEAL DIALYSIS
0505F	CPT Procedure	HEMODIALYSIS PLAN OF CARE DOCUMENTED
0507F	CPT Procedure	PERITONEAL DIALYSIS PLAN DOCUMENTED
4053F	CPT Procedure	HEMODIALYSIS VIA FUNCTIONING AVGRAFT
4054F	CPT Procedure	HEMODIALYSIS VIA CATHETER
4055F	CPT Procedure	PATIENT RECEIVING PERITONEAL DIALYSIS
90740	CPT Procedure	HEPB VACCINE DIALYSIS/IMMUNSUP PAT 3 DOSE IM
90747	CPT Procedure	HEPB VACCINE DIALYSIS/IMMUNSUP PAT 4 DOSE IM
90935	CPT Procedure	HEMODIALYSIS PROCEDURE W/ PHYS/QHP EVALUATION
90937	CPT Procedure	HEMODIALYSIS PX REPEAT EVAL W/WO REVJ DIALYS RX
90940	CPT Procedure	HEMODIALYSIS ACCESS FLOW STUDY
90945	CPT Procedure	DIALYSIS OTHER/THAN HEMODIALYSIS 1 PHYS/QHP EVAL
90947	CPT Procedure	DIALYSIS OTH/THN HEMODIALY REPEAT PHYS/QHP EVALS
90963	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH <2YR OLD
90964	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 2-11 YR OLD
90965	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 12-19 YR OLD
90966	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 20 YR OLD
90989	CPT Procedure	DIALYSIS TRAINING PATIENT COMPLETED COURSE
90993	CPT Procedure	DIALYSIS TRAINING PATIENT PER TRAINING SESSION
90999	CPT Procedure	UNLISTED DIALYSIS PROCEDURE INPATIENT/OUTPATIENT
93990	CPT Procedure	DUPLEX SCAN HEMODIALYSIS ACCESS
99512	CPT Procedure	HOME VISIT HEMODIALYSIS
99559	CPT Procedure	HOME INFUSION OF PERITONEAL DIALYSIS PER VISIT
A4653	HCPCS Procedure	PERITON DIALYSIS CATHETER ANCHR DEVICE BELT EA
A4671	HCPCS Procedure	DISPBL CYCLER SET USED W/CYCLER DIALYSIS MACH EA
A4672	HCPCS Procedure	DRAINAGE EXTENSION LINE STERILE DIALYSIS EACH
A4673	HCPCS Procedure	EXT LINE W/EASY LOCK CONNECTORS USED W/DIALYSIS
A4680	HCPCS Procedure	ACTIVATED CARBON FILTER FOR HEMODIALYSIS EACH
A4690	HCPCS Procedure	DIALYZER ALL TYPES ALL SIZES HEMODIALYSIS EACH
A4714	HCPCS Procedure	TREATED WATER FOR PERITONEAL DIALYSIS PER GALLON
A4719	HCPCS Procedure	Y SET TUBING FOR PERITONEAL DIALYSIS
A4730	HCPCS Procedure	FISTULA CANNULATION SET FOR HEMODIALYSIS EACH
A4736	HCPCS Procedure	TOPICAL ANESTHETIC FOR DIALYSIS PER G
A4737	HCPCS Procedure	INJECTABLE ANESTHETIC FOR DIALYSIS PER 10 ML
A4740	HCPCS Procedure	SHUNT ACCESSORY HEMODIALYSIS ANY TYPE EACH
A4750	HCPCS Procedure	BLOOD TUBING ARTERIAL/VENOUS HEMODIALYSIS EACH
A4755	HCPCS Procedure	BLOOD TUBING ART&VENOUS COMBINED HEMODIALYSIS EA
A4760	HCPCS Procedure	DIALYSATE SOL TST KIT PERITON DIALYSIS TYPE EA
A4765	HCPCS Procedure	DIALYSATE CONC POWDER ADD PERITON DIALYSIS-PCKET
A4766	HCPCS Procedure	DIALYSATE CONC SOL ADD PERITON DIALYSIS-10 ML
A4770	HCPCS Procedure	BLOOD COLLECTION TUBE VACUUM FOR DIALYSIS PER 50
A4771	HCPCS Procedure	SERUM CLOTTING TIME TUBE FOR DIALYSIS PER 50
A4772	HCPCS Procedure	BLOOD GLUCOSE TEST STRIPS FOR DIALYSIS PER 50
A4773	HCPCS Procedure	OCCULT BLOOD TEST STRIPS FOR DIALYSIS PER 50
A4774	HCPCS Procedure	AMMONIA TEST STRIPS FOR DIALYSIS PER 50
A4780	HCPCS Procedure	STERILIZING AGENT DIALYSIS EQUIPMENT PER GALLON

Code	Code Type	Description
A4801	HCPCS Procedure	HEPARIN ANY TYPE FOR HEMODIALYSIS PER 1000 UNITS
A4802	HCPCS Procedure	PROTAMINE SULFATE FOR HEMODIALYSIS PER 50 MG
A4860	HCPCS Procedure	DISPBL CATHETER TIPS PERITONEAL DIALYSIS PER 10
A4880	HCPCS Procedure	STORAGE TANK W/WATER PURIFY REPLCE DIALYSIS TANK
A4900	HCPCS Procedure	CONT AMB PERITONEAL DIALYSIS SUPPLY KIT
A4901	HCPCS Procedure	CONT CYCLING PERITONEAL DIALYSIS SUPPLY KIT
A4905	HCPCS Procedure	INTERMITTENT PERITONEAL DIALYSIS SUPPLY KIT
A4910	HCPCS Procedure	NON-MEDICAL SUPPLIES DIALYSIS
A4911	HCPCS Procedure	DRAIN BAG/BOTTLE FOR DIALYSIS EACH
A4913	HCPCS Procedure	MISCELLANEOUS DIALYSIS SUPPLIES NOS
A4918	HCPCS Procedure	VENOUS PRESSURE CLAMP FOR HEMODIALYSIS EACH
A4929	HCPCS Procedure	TOURNIQUET FOR DIALYSIS EACH
C1037	HCPCS Procedure	CATH DIALYSIS VAXCEL CHRONIC DIALYSIS CATH
C1152	HCPCS Procedure	ACCESS SYST DIALYSIS LIFESITE ACCESS SYST
C1752	HCPCS Procedure	CATHETER HEMODIALYSIS SHORT-TERM
C1881	HCPCS Procedure	DIALYSIS ACCESS SYSTEM
E1500	HCPCS Procedure	CENTRIFUGE FOR DIALYSIS
E1520	HCPCS Procedure	HEPARIN INFUSION PUMP FOR HEMODIALYSIS
E1530	HCPCS Procedure	AIR BUBBLE DETECTOR HEMODIALYSIS EA REPLACEMENT
E1540	HCPCS Procedure	PRESSURE ALARM FOR HEMODIALYSIS EACH REPLACEMENT
E1550	HCPCS Procedure	BATH CONDUCTIVITY METER FOR HEMODIALYSIS EACH
E1560	HCPCS Procedure	BLOOD LEAK DETECTOR HEMODIALYSIS EA REPLACEMENT
E1580	HCPCS Procedure	UNIPUNCTURE CONTROL SYSTEM FOR HEMODIALYSIS
E1590	HCPCS Procedure	HEMODIALYSIS MACHINE
E1592	HCPCS Procedure	AUTO INTERMITTENT PERITONEAL DIALYSIS SYSTEM
E1594	HCPCS Procedure	CYCLER DIALYSIS MACHINE FOR PERITONEAL DIALYSIS
E1615	HCPCS Procedure	DEIONIZER WATER PURIFICATION SYSTEM HEMODIALYSIS
E1620	HCPCS Procedure	BLOOD PUMP FOR HEMODIALYSIS REPLACEMENT
E1625	HCPCS Procedure	WATER SOFTENING SYSTEM FOR HEMODIALYSIS
E1630	HCPCS Procedure	RECIPROCATING PERITONEAL DIALYSIS SYSTEM
E1634	HCPCS Procedure	PERITONEAL DIALYSIS CLAMPS EACH
E1636	HCPCS Procedure	SORBENT CARTRIDGES FOR HEMODIALYSIS PER 10
E1638	HCPCS Procedure	HEATING PAD PERITONEAL DIALYSIS ANY SIZE EACH
E1640	HCPCS Procedure	REPLACE COMPONENT HEMO/PERITONEALDIALYSIS PT OWN
E1699	HCPCS Procedure	DIALYSIS EQUIPMENT NOT OTHERWISE SPECIFIED
G0257	HCPCS Procedure	UNSCHD/EMERG DIALYSIS TX ESRD PT HOS OP NOT CERT
G0320	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; UND 2 YR AGE
G0321	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 2-11 YRS AGE
G0322	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 12-19 YR AGE
G0323	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 20 YRS&OLDER
G0324	HCPCS Procedure	ESRD REL SERVICE HOME DIALYSIS PER DAY; PT <2 YR
G0325	HCPCS Procedure	ESRD REL SERV HOME DIALYSIS PER DAY; PT 2-11 YRS
G0326	HCPCS Procedure	ERSD REL SERV HOME DIALYSIS PER DAY; PT 12-19 YR
G0327	HCPCS Procedure	ESRD REL SERV HOME DIALYSIS PER DAY; PT 20 YR >
G0365	HCPCS Procedure	VESSEL MAPPING OF VESSELS FOR HEMODIALYSIS ACESS
G8075	HCPCS Procedure	ESRD PT W/DOC DIALYSIS DOSE OF URR >/= TO 65%
G8076	HCPCS Procedure	ESRD PT W/DOC DIALYSIS DOSE OF URR < 65%
G8575	HCPCS Procedure	DEVELOPED POSTOP RENAL FAILURE/REQ DIALYSIS
G8576	HCPCS Procedure	NO POSTOP RENAL FAILURE/DIALYSIS NOT REQUIRED
G8714	HCPCS Procedure	HEMODIALYSIS TX PERF EXACTLY 3X PR WEEK >90 DAYS
G8956	HCPCS Procedure	PT RECV MAINT HEMODIALYSIS IN O/P DIALYSIS FAC
G9231	HCPCS Procedure	DOC ESRD DIALYSIS RENAL TRANSPLANT OR PREGNANCY
G9523	HCPCS Procedure	PT DISCONTINUED HEMODIALYSIS/PERITONEAL DIALYSIS
J0882	HCPCS Procedure	INJ DARBEPOETIN ALFA 1 MCG FOR ESRD DIALYSIS
J0886	HCPCS Procedure	INJ EPOETIN ALFA 1000 UNITS FOR ESRD DIALYSIS
K0610	HCPCS Procedure	PERITONEAL DIALYSIS CLAMPS EACH
K0611	HCPCS Procedure	DISPBL CYCLER SET USED W/CYCLER DIALYSIS MACH EA
K0612	HCPCS Procedure	DRAINAGE EXTENSION LINE STERILE DIALYSIS EACH
K0613	HCPCS Procedure	EXT LINE W/EASY LOCK CONNECTORS USED W/DIALYSIS
K0614	HCPCS Procedure	CHEM/ANTISEPTICS SOL CLEAN/STERILZE DIALYSIS EQP
Q4054	HCPCS Procedure	INJ DARBEPOETIN ALFA 1 MCG ERSD ON DIALYSIS
Q4055	HCPCS Procedure	INJECTION EPOETIN ALFA 1000 U ERSD ON DIALYSIS
Q4081	HCPCS Procedure	INJ EPOETIN ALFA 100 UNITS FOR ESRD ON DIALYSIS
S0194	HCPCS Procedure	DIALYSIS/STRESS VITAMIN SUPL ORAL 100 CAPSULES
S9339	HCPCS Procedure	HOME THERAPY; PERITONEAL DIALYSIS PER DIEM

Generic Name
Epilepsy Treatment
CLONAZEPAM
PHENOBARBITAL SODIUM
FELBAMATE
TOPIRAMATE
OXCARBAZEPINE
ZONISAMIDE
LEVETIRACETAM
FOSPHENYTOIN SODIUM
PHENYTOIN
ETHOSUXIMIDE
PHENYTOIN SODIUM EXTENDED
GABAPENTIN
METHSUXIMIDE
PREGABALIN
PHENYTOIN SODIUM
VALPROIC ACID (AS SODIUM SALT) (VALPROATE SODIUM)
DIVALPROEX SODIUM
VALPROIC ACID
CARBAMAZEPINE
LACOSAMIDE
LAMOTRIGINE
TIAGABINE HCL
PRIMIDONE
PHENOBARBITAL
EZOGABINE
ETHOTOIN
PERAMPANEL
RUFINAMIDE
ESLICARBAZEPINE ACETATE
VIGABATRIN
CLOBAZAM
LEVETIRACETAM IN SODIUM CHLORIDE, ISO-OSMOTIC
GABAPENTIN/DIETARY SUPPLEMENT, MISC COMBO NO.11
GABAPENTIN ENACARBIL
PHENOBARBITAL SODIUM IN 0.9 % SODIUM CHLORIDE
PHENTERMINE HCL/TOPIRAMATE
Nitrates
ISOSORBIDE DINITRATE
NITROGLYCERIN
ISOSORBIDE MONONITRATE
AMYL NITRITE
ISOSORBIDE
ISOSORBIDE DINITRATE/HYDRALAZINE HCL

Appendix D: List of Diagnosis and Procedure Codes Used to Define Covariates in this Request

Code	Code Type	Description
Angina Pectoris or Prinzmetal Angina		
413	ICD-9-CM Diagnosis	Angina pectoris
413.1	ICD-9-CM Diagnosis	Prinzmetal angina
413.9	ICD-9-CM Diagnosis	Other and unspecified angina pectoris
Coronary Atherosclerosis		
414.0	ICD-9-CM Diagnosis	Coronary atherosclerosis
414.00	ICD-9-CM Diagnosis	Coronary atherosclerosis of unspecified type of vessel, native or graft
414.01	ICD-9-CM Diagnosis	Coronary atherosclerosis of native coronary artery
414.02	ICD-9-CM Diagnosis	Coronary atherosclerosis of autologous vein bypass graft
414.03	ICD-9-CM Diagnosis	Coronary atherosclerosis of nonautologous biological bypass graft
414.04	ICD-9-CM Diagnosis	Coronary atherosclerosis of artery bypass graft
414.05	ICD-9-CM Diagnosis	Coronary atherosclerosis of unspecified type of bypass graft
414.06	ICD-9-CM Diagnosis	Coronary atherosclerosis, of native coronary artery of transplanted heart
414.07	ICD-9-CM Diagnosis	Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart
414.3	ICD-9-CM Diagnosis	Coronary atherosclerosis due to lipid rich plaque
414.4	ICD-9-CM Diagnosis	Coronary atherosclerosis due to calcified coronary lesion
Chest Pain		
786.5	ICD-9-CM Diagnosis	Chest pain
786.50	ICD-9-CM Diagnosis	Chest pain, unspecified
786.59	ICD-9-CM Diagnosis	Chest pain, other
Liver Impairment		
4560	ICD-9-CM Diagnosis	Esophageal varices with bleeding
4560*	ICD-9-CM Diagnosis	Esophageal varices with bleeding
4561	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
4561*	ICD-9-CM Diagnosis	Esophageal varices without mention of bleeding
4562	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
4562*	ICD-9-CM Diagnosis	Esophageal varices in diseases classified elsewhere
5722	ICD-9-CM Diagnosis	Hepatic encephalopathy
5722*	ICD-9-CM Diagnosis	Hepatic encephalopathy
5723	ICD-9-CM Diagnosis	Portal hypertension
5723*	ICD-9-CM Diagnosis	Portal hypertension
5724	ICD-9-CM Diagnosis	Hepatorenal syndrome
5724*	ICD-9-CM Diagnosis	Hepatorenal syndrome
5728	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease
5728*	ICD-9-CM Diagnosis	Other sequelae of chronic liver disease
5710	ICD-9-CM Diagnosis	ALCOHOLIC FATTY LIVER
5711	ICD-9-CM Diagnosis	AC ALCOHOLIC HEPATITIS
5712	ICD-9-CM Diagnosis	ALCOHOL LIVER CIRRHOSIS
5713	ICD-9-CM Diagnosis	ALCOHOL LIVER DAMAGE NOS
5715	ICD-9-CM Diagnosis	LIVER CIRRHOSIS W/O ALC
5720	ICD-9-CM Diagnosis	LIVER ABSCESS
5721	ICD-9-CM Diagnosis	PORTAL PYEMIA
5735	ICD-9-CM Diagnosis	HEPATOPULMONARY SYNDROME
7895	ICD-9-CM Diagnosis	ASCITES
78959	ICD-9-CM Diagnosis	ASCITES NEC
570A	ICD-9-CM Diagnosis	CUTE LIVER NECROSIS
5716	ICD-9-CM Diagnosis	BILIARY CIRRHOSIS
5718	ICD-9-CM Diagnosis	CHRONIC LIVER DIS NEC
5719	ICD-9-CM Diagnosis	CHRONIC LIVER DIS NOS
5730	ICD-9-CM Diagnosis	CHR PASS CONGEST LIVER
5734	ICD-9-CM Diagnosis	HEPATIC INFARCTION
5738	ICD-9-CM Diagnosis	LIVER DISORDERS NEC
5739	ICD-9-CM Diagnosis	LIVER DISORDER NOS
7824	ICD-9-CM Diagnosis	JAUNDICE NOS
7891	ICD-9-CM Diagnosis	HEPATOMEGALY
7904	ICD-9-CM Diagnosis	ELEVAT TRANSAMINASE/LDH
7905	ICD-9-CM Diagnosis	ABN SERUM ENZYME LEV NEC
7948	ICD-9-CM Diagnosis	ABN LIVER FUNCTION STUDY
V427	ICD-9-CM Diagnosis	LIVER TRANSPLANT STATUS
75160	ICD-9-CM Diagnosis	BILIARY & LIVER ANOM NOS
99682	ICD-9-CM Diagnosis	COMP LIVER TRANSPLANT
Renal Disease		
582	ICD-9-CM Diagnosis	Chronic glomerulonephritis
582*	ICD-9-CM Diagnosis	Chronic glomerulonephritis
582**	ICD-9-CM Diagnosis	Chronic glomerulonephritis
583	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic
583*	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic

Appendix D: List of Diagnosis and Procedure Codes Used to Define Covariates in this Request

Code	Code Type	Description
583**	ICD-9-CM Diagnosis	Nephritis and nephropathy not specified as acute or chronic
5851	ICD-9-CM Diagnosis	Chronic kidney disease, Stage I
5851*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage I
5852	ICD-9-CM Diagnosis	Chronic kidney disease, Stage II (mild)
5852*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage II (mild)
5853	ICD-9-CM Diagnosis	Chronic kidney disease, Stage III (moderate)
5853*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage III (moderate)
5854	ICD-9-CM Diagnosis	Chronic kidney disease, Stage IV (severe)
5854*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage IV (severe)
5855	ICD-9-CM Diagnosis	Chronic kidney disease, Stage V
5855*	ICD-9-CM Diagnosis	Chronic kidney disease, Stage V
5859	ICD-9-CM Diagnosis	Chronic kidney disease, unspecified
5859*	ICD-9-CM Diagnosis	Chronic kidney disease, unspecified
586	ICD-9-CM Diagnosis	Renal failure, unspecified
586*	ICD-9-CM Diagnosis	Renal failure, unspecified
586**	ICD-9-CM Diagnosis	Renal failure, unspecified
588	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
588*	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
588**	ICD-9-CM Diagnosis	Disorders resulting from impaired renal function
5810	ICD-9-CM Diagnosis	NS W LESION PROLIF GN
5811	ICD-9-CM Diagnosis	EPIMEMBRANOUS NEPHRITIS
5812	ICD-9-CM Diagnosis	MEMBRANOPROLIF NEPHROSIS
5813	ICD-9-CM Diagnosis	MINIMAL CHANGE NEPHROSIS
58181	ICD-9-CM Diagnosis	NEPHROTIC SYND IN DCE
58189	ICD-9-CM Diagnosis	NEPHROTIC SYNDROME NEC
5819	ICD-9-CM Diagnosis	NEPHROTIC SYNDROME NOS
587	ICD-9-CM Diagnosis	RENAL SCLEROSIS NOS
5856	ICD-9-CM Diagnosis	ESRD
5859	ICD-9-CM Diagnosis	CHRONIC KIDNEY DIS NOS
V420	ICD-9-CM Diagnosis	KIDNEY TRANSPLANT STATUS
V451	ICD-9-CM Diagnosis	RENAL DIALYSIS STATUS
V4511	ICD-9-CM Diagnosis	DIALYSIS STATUS
V4512	ICD-9-CM Diagnosis	DIALYSIS NONCOMPLIANCE
V560	ICD-9-CM Diagnosis	RENAL DIALYSIS ENCOUNTER
V561	ICD-9-CM Diagnosis	FIT EXTRACORP RD CATH
V562	ICD-9-CM Diagnosis	FIT PERITONEAL RD CATH
V5631	ICD-9-CM Diagnosis	HEMODIALYS ADEQUACY TEST
V5632	ICD-9-CM Diagnosis	PD ADEQUACY TESTING
V568	ICD-9-CM Diagnosis	DIALYSIS ENCOUNTER NEC
5930	ICD-9-CM Diagnosis	NEPHROPTOSIS
5931	ICD-9-CM Diagnosis	KIDNEY HYPERTROPHY
5932	ICD-9-CM Diagnosis	ACQUIRED KIDNEY CYST
59381	ICD-9-CM Diagnosis	RENAL VASCULAR DISORDER
59389	ICD-9-CM Diagnosis	RENAL/URETER DISORD NEC
5939	ICD-9-CM Diagnosis	RENAL/URETER DISORD NOS
580	ICD-9-CM Diagnosis	Acute glomerulonephritis
580*	ICD-9-CM Diagnosis	Acute glomerulonephritis
580**	ICD-9-CM Diagnosis	Acute glomerulonephritis
584	ICD-9-CM Diagnosis	Acute kidney failure
584*	ICD-9-CM Diagnosis	Acute kidney failure
6462	ICD-9-CM Diagnosis	Unspecified renal disease in pregnancy without mention of hypertension
6462*	ICD-9-CM Diagnosis	Unspecified renal disease in pregnancy without mention of hypertension
3895	ICD-9-CM Procedure	VENOUS CATHETERIZATION FOR RENAL DIALYSIS
3927	ICD-9-CM Procedure	ARTERIOVENOSTOMY FOR RENAL DIALYSIS
3942	ICD-9-CM Procedure	REVISION OF ARTERIOVENOUS SHUNT RENAL DIALYSIS
3943	ICD-9-CM Procedure	REMOVAL OF ARTERIOVENOUS SHUNT RENAL DIALYSIS
3995	ICD-9-CM Procedure	HEMODIALYSIS
5498	ICD-9-CM Procedure	PERITONEAL DIALYSIS
0505F	CPT Procedure	HEMODIALYSIS PLAN OF CARE DOCUMENTED
0507F	CPT Procedure	PERITONEAL DIALYSIS PLAN DOCUMENTED
4053F	CPT Procedure	HEMODIALYSIS VIA FUNCTIONING AVGRAFT
4054F	CPT Procedure	HEMODIALYSIS VIA CATHETER
4055F	CPT Procedure	PATIENT RECEIVING PERITONEAL DIALYSIS
90740	CPT Procedure	HEPB VACCINE DIALYSIS/IMMUNSUP PAT 3 DOSE IM
90747	CPT Procedure	HEPB VACCINE DIALYSIS/IMMUNSUP PAT 4 DOSE IM
90935	CPT Procedure	HEMODIALYSIS PROCEDURE W/ PHYS/QHP EVALUATION
90937	CPT Procedure	HEMODIALYSIS PX REPEAT EVAL W/WO REVJ DIALYS RX

Appendix D: List of Diagnosis and Procedure Codes Used to Define Covariates in this Request

Code	Code Type	Description
90940	CPT Procedure	HEMODIALYSIS ACCESS FLOW STUDY
90945	CPT Procedure	DIALYSIS OTHER/THAN HEMODIALYSIS 1 PHYS/QHP EVAL
90947	CPT Procedure	DIALYSIS OTH/THN HEMODIALY REPEAT PHYS/QHP EVALS
90963	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH <2YR OLD
90964	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 2-11 YR OLD
90965	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 12-19 YR OLD
90966	CPT Procedure	ESRD SVC HOME DIALYSIS FULL MONTH 20 YR OLD
90989	CPT Procedure	DIALYSIS TRAINING PATIENT COMPLETED COURSE
90993	CPT Procedure	DIALYSIS TRAINING PATIENT PER TRAINING SESSION
90999	CPT Procedure	UNLISTED DIALYSIS PROCEDURE INPATIENT/OUTPATIENT
93990	CPT Procedure	DUPLEX SCAN HEMODIALYSIS ACCESS
99512	CPT Procedure	HOME VISIT HEMODIALYSIS
99559	CPT Procedure	HOME INFUSION OF PERITONEAL DIALYSIS PER VISIT
A4653	HCPCS Procedure	PERITON DIALYSIS CATHETER ANCHR DEVICE BELT EA
A4671	HCPCS Procedure	DISPBL CYCLER SET USED W/CYCLER DIALYSIS MACH EA
A4672	HCPCS Procedure	DRAINAGE EXTENSION LINE STERILE DIALYSIS EACH
A4673	HCPCS Procedure	EXT LINE W/EASY LOCK CONNECTORS USED W/DIALYSIS
A4680	HCPCS Procedure	ACTIVATED CARBON FILTER FOR HEMODIALYSIS EACH
A4690	HCPCS Procedure	DIALYZER ALL TYPES ALL SIZES HEMODIALYSIS EACH
A4714	HCPCS Procedure	TREATED WATER FOR PERITONEAL DIALYSIS PER GALLON
A4719	HCPCS Procedure	Y SET TUBING FOR PERITONEAL DIALYSIS
A4730	HCPCS Procedure	FISTULA CANNULATION SET FOR HEMODIALYSIS EACH
A4736	HCPCS Procedure	TOPICAL ANESTHETIC FOR DIALYSIS PER G
A4737	HCPCS Procedure	INJECTABLE ANESTHETIC FOR DIALYSIS PER 10 ML
A4740	HCPCS Procedure	SHUNT ACCESSORY HEMODIALYSIS ANY TYPE EACH
A4750	HCPCS Procedure	BLOOD TUBING ARTERIAL/VENOUS HEMODIALYSIS EACH
A4755	HCPCS Procedure	BLOOD TUBING ART&VENOUS COMBINED HEMODIALYSIS EA
A4760	HCPCS Procedure	DIALYSATE SOL TST KIT PERITON DIALYSIS TYPE EA
A4765	HCPCS Procedure	DIALYSATE CONC POWDER ADD PERITON DIALYSIS-PCKET
A4766	HCPCS Procedure	DIALYSATE CONC SOL ADD PERITON DIALYSIS-10 ML
A4770	HCPCS Procedure	BLOOD COLLECTION TUBE VACUUM FOR DIALYSIS PER 50
A4771	HCPCS Procedure	SERUM CLOTTING TIME TUBE FOR DIALYSIS PER 50
A4772	HCPCS Procedure	BLOOD GLUCOSE TEST STRIPS FOR DIALYSIS PER 50
A4773	HCPCS Procedure	OCCULT BLOOD TEST STRIPS FOR DIALYSIS PER 50
A4774	HCPCS Procedure	AMMONIA TEST STRIPS FOR DIALYSIS PER 50
A4780	HCPCS Procedure	STERILIZING AGENT DIALYSIS EQUIPMENT PER GALLON
A4801	HCPCS Procedure	HEPARIN ANY TYPE FOR HEMODIALYSIS PER 1000 UNITS
A4802	HCPCS Procedure	PROTAMINE SULFATE FOR HEMODIALYSIS PER 50 MG
A4860	HCPCS Procedure	DISPBL CATHETER TIPS PERITONEAL DIALYSIS PER 10
A4880	HCPCS Procedure	STORAGE TANK W/WATER PURIFY REPLCE DIALYSIS TANK
A4900	HCPCS Procedure	CONT AMB PERITONEAL DIALYSIS SUPPLY KIT
A4901	HCPCS Procedure	CONT CYCLING PERITONEAL DIALYSIS SUPPLY KIT
A4905	HCPCS Procedure	INTERMITTENT PERITONEAL DIALYSIS SUPPLY KIT
A4910	HCPCS Procedure	NON-MEDICAL SUPPLIES DIALYSIS
A4911	HCPCS Procedure	DRAIN BAG/BOTTLE FOR DIALYSIS EACH
A4913	HCPCS Procedure	MISCELLANEOUS DIALYSIS SUPPLIES NOS
A4918	HCPCS Procedure	VENOUS PRESSURE CLAMP FOR HEMODIALYSIS EACH
A4929	HCPCS Procedure	TOURNIQUET FOR DIALYSIS EACH
C1037	HCPCS Procedure	CATH DIALYSIS VAXCEL CHRONIC DIALYSIS CATH
C1152	HCPCS Procedure	ACCESS SYST DIALYSIS LIFESITE ACCESS SYST
C1752	HCPCS Procedure	CATHETER HEMODIALYSIS SHORT-TERM
C1881	HCPCS Procedure	DIALYSIS ACCESS SYSTEM
E1500	HCPCS Procedure	CENTRIFUGE FOR DIALYSIS
E1520	HCPCS Procedure	HEPARIN INFUSION PUMP FOR HEMODIALYSIS
E1530	HCPCS Procedure	AIR BUBBLE DETECTOR HEMODIALYSIS EA REPLACEMENT
E1540	HCPCS Procedure	PRESSURE ALARM FOR HEMODIALYSIS EACH REPLACEMENT
E1550	HCPCS Procedure	BATH CONDUCTIVITY METER FOR HEMODIALYSIS EACH
E1560	HCPCS Procedure	BLOOD LEAK DETECTOR HEMODIALYSIS EA REPLACEMENT
E1580	HCPCS Procedure	UNIPUNCTURE CONTROL SYSTEM FOR HEMODIALYSIS
E1590	HCPCS Procedure	HEMODIALYSIS MACHINE
E1592	HCPCS Procedure	AUTO INTERMITTENT PERITONEAL DIALYSIS SYSTEM
E1594	HCPCS Procedure	CYCLER DIALYSIS MACHINE FOR PERITONEAL DIALYSIS
E1615	HCPCS Procedure	DEIONIZER WATER PURIFICATION SYSTEM HEMODIALYSIS
E1620	HCPCS Procedure	BLOOD PUMP FOR HEMODIALYSIS REPLACEMENT
E1625	HCPCS Procedure	WATER SOFTENING SYSTEM FOR HEMODIALYSIS
E1630	HCPCS Procedure	RECIPROCATING PERITONEAL DIALYSIS SYSTEM
E1634	HCPCS Procedure	PERITONEAL DIALYSIS CLAMPS EACH

Appendix D: List of Diagnosis and Procedure Codes Used to Define Covariates in this Request

Code	Code Type	Description
E1636	HCPCS Procedure	SORBENT CARTRIDGES FOR HEMODIALYSIS PER 10
E1638	HCPCS Procedure	HEATING PAD PERITONEAL DIALYSIS ANY SIZE EACH
E1640	HCPCS Procedure	REPLACE COMPONENT HEMO/PERITONEALDIALYSIS PT OWN
E1699	HCPCS Procedure	DIALYSIS EQUIPMENT NOT OTHERWISE SPECIFIED
G0257	HCPCS Procedure	UNSCHD/EMERG DIALYSIS TX ESRD PT HOS OP NOT CERT
G0320	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; UND 2 YR AGE
G0321	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 2-11 YRS AGE
G0322	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 12-19 YR AGE
G0323	HCPCS Procedure	ESRD REL SRVC HOM DIALYSIS FULL MO; 20 YRS&OLDER
G0324	HCPCS Procedure	ESRD REL SERVICE HOME DIALYSIS PER DAY; PT <2 YR
G0325	HCPCS Procedure	ESRD REL SERV HOME DIALYSIS PER DAY; PT 2-11 YRS
G0326	HCPCS Procedure	ERSD REL SERV HOME DIALYSIS PER DAY; PT 12-19 YR
G0327	HCPCS Procedure	ESRD REL SERV HOME DIALYSIS PER DAY; PT 20 YR >
G0365	HCPCS Procedure	VESSEL MAPPING OF VESSELS FOR HEMODIALYSIS ACESS
G8075	HCPCS Procedure	ESRD PT W/DOC DIALYSIS DOSE OF URR >/= TO 65%
G8076	HCPCS Procedure	ESRD PT W/DOC DIALYSIS DOSE OF URR < 65%
G8575	HCPCS Procedure	DEVELOPED POSTOP RENAL FAILURE/REQ DIALYSIS
G8576	HCPCS Procedure	NO POSTOP RENAL FAILURE/DIALYSIS NOT REQUIRED
G8714	HCPCS Procedure	HEMODIALYSIS TX PERF EXACTLY 3X PR WEEK >90 DAYS
G8956	HCPCS Procedure	PT RECV MAINT HEMODIALYSIS IN O/P DIALYSIS FAC
G9231	HCPCS Procedure	DOC ESRD DIALYSIS RENAL TRANSPLANT OR PREGNANCY
G9523	HCPCS Procedure	PT DISCONTINUED HEMODIALYSIS/PERITONEAL DIALYSIS
J0882	HCPCS Procedure	INJ DARBEPOETIN ALFA 1 MCG FOR ESRD DIALYSIS
J0886	HCPCS Procedure	INJ EPOETIN ALFA 1000 UNITS FOR ESRD DIALYSIS
K0610	HCPCS Procedure	PERITONEAL DIALYSIS CLAMPS EACH
K0611	HCPCS Procedure	DISPBL CYCLER SET USED W/CYCLER DIALYSIS MACH EA
K0612	HCPCS Procedure	DRAINAGE EXTENSION LINE STERILE DIALYSIS EACH
K0613	HCPCS Procedure	EXT LINE W/EASY LOCK CONNECTORS USED W/DIALYSIS
K0614	HCPCS Procedure	CHEM/ANTISEPTICS SOL CLEAN/STERILZE DIALYSIS EQP
Q4054	HCPCS Procedure	INJ DARBEPOETIN ALFA 1 MCG ERSD ON DIALYSIS
Q4055	HCPCS Procedure	INJECTION EPOETIN ALFA 1000 U ERSD ON DIALYSIS
Q4081	HCPCS Procedure	INJ EPOETIN ALFA 100 UNITS FOR ESRD ON DIALYSIS
S0194	HCPCS Procedure	DIALYSIS/STRESS VITAMIN SUPL ORAL 100 CAPSULES
S9339	HCPCS Procedure	HOME THERAPY; PERITONEAL DIALYSIS PER DIEM

Appendix E: List of Generic Names Used to Define Covariates in this Request

Generic Name
Beta Blockers
CARVEDILOL PHOSPHATE
CARVEDILOL
BETAXOLOL HCL
METOPROLOL TARTRATE/HYDROCHLOROTHIAZIDE
METOPROLOL TARTRATE
PROPRANOLOL HCL
PROPRANOLOL HCL/HYDROCHLOROTHIAZIDE
PENBUTOLOL SULFATE
ATENOLOL
SOTALOL HCL
NADOLOL
BISOPROLOL FUMARATE
NADOLOL/BENDROFLUMETHIAZIDE
PINDOLOL
LABETALOL HCL
METOPROLOL SUCCINATE
BISOPROLOL FUMARATE/HYDROCHLOROTHIAZIDE
ATENOLOL/CHLORTHALIDONE
METOPROLOL SUCCINATE/HYDROCHLOROTHIAZIDE
TIMOLOL MALEATE
ACEBUTOLOL HCL
NEBIVOLOL HCL
METOPROLOL TARTRATE/DIETARY SUPPLEMENT,COMB.10
PROPRANOLOL HCL
Calcium Channel Blockers
NICARDIPINE HCL
VERAPAMIL HCL
DILTIAZEM HCL
Nitrates
ISOSORBIDE DINITRATE
NITROGLYCERIN
ISOSORBIDE MONONITRATE
AMYL NITRITE
ISOSORBIDE
ISOSORBIDE DINITRATE/HYDRALAZINE HCL

Appendix F: List of Diagnosis Codes Used to Define Outcomes in this Request

Code	Code Type	Description
Seizure		
345	ICD-9-CM Diagnosis	Epilepsy and recurrent seizures
345*	ICD-9-CM Diagnosis	Epilepsy and recurrent seizures
345**	ICD-9-CM Diagnosis	Epilepsy and recurrent seizures
780.3	ICD-9-CM Diagnosis	Convulsions
780.3*	ICD-9-CM Diagnosis	Convulsions
333.2	ICD-9-CM Diagnosis	Myoclonus

Specifications for cder_mpl2p_wp002_nsdp_v01 (Part 1)

The Center for Drug Evaluation and Research (CDER) requested execution of the Cohort Identification and Descriptive Analysis (CIDA) tool, version 3.0.4, to investigate seizures among individuals exposed to ranolazine in the Sentinel Distributed Database (SDD) using a self-controlled risk interval (SCRI) design. Eight separate cohorts were examined for patients with no pre-existing conditions, pre-existing renal disease, or pre-exisitng liver impairment both individually and among patients exposed to nitrates. The two cohorts for patients with no pre-existing conditions were each examined twice based on history or no history of epilepsy treatment. The query period was from January 1, 2006 to varying end dates and the enrollment gap was set at 45 days. Age groups were split as follows: 18-44, 45-54, 55-64, 65-74, and 75+. In total, four different scenarios were examined.

Enrollment Gap: 45 days
Age Groups: 18-44, 45-54, 55-64, 65-74, 75+
Query Period: Group 1: January 1, 2006 - June 30, 2015
Group 2: January 1, 2006 - September 30, 2015
Coverage Requirement: Medical and Drug
Pre-exposure enrollment (days): 183

		Drug/Exposure									Inclusion/Exclusion Criteria				Baseline Covariates		Event/Outcome
Run	Scenario	Incident Exposure	Incident w/ respect to:	Washout (days)	Care Setting	Cohort Definition	Episode Gap	Exposure Extension Period	Minimum Episode Duration	Minimum Days Supplied	Pre-Existing Condition	Include/Exclude	Care Setting	Lookback Period	Covariate evaluation window (days)	Covariates	Event/Outcome
R01	1	Ranolazine	Ranolazine	183	Any	Retain first valid incident exposure episode only	2	2	32	0	Epilepsy Treatment	Exclude	Any	-183, -1	-183, 0	See Appendices D and E	Dummy
R02	2	Ranolazine	Ranolazine	183	Any	Retain first valid incident exposure episode only	2	2	32	0	Epilepsy Treatment Nitrate Use	Exclude Include	Any Any	-183, -1 -14, 0	-183, 0	See Appendices D and E	Dummy
R03	3	Ranolazine	Ranolazine	183	Any	Retain first valid incident exposure episode only	2	2	32	0	Epilepsy Treatment	Include	Any	-183, -1	-183, 0	See Appendices D and E	Dummy
R04	4	Ranolazine	Ranolazine	183	Any	Retain first valid incident exposure episode only	2	2	32	0	Epilepsy Treatment Nitrate Use	Include Include	Any Any	-183, -1 -14, 0	-183, 0	See Appendices D and E	Dummy

ICD-9, ICD-10, HCPCS, and CPT codes are provided by Optum360.
NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."

Specifications for Request: cder_mpl2p_wp002_nsdp_v01 (Part 2)

The Center for Drug Evaluation and Research (CDER) requested execution of the Cohort Identification and Descriptive Analysis (CIDA) tool, version 3.0.4, to investigate seizures among individuals exposed to ranolazine in the Sentinel Distributed Database (SDD) using a self-controlled risk interval (SCRI) design. Eight separate cohorts were examined for patients with no pre-existing conditions, pre-existing renal disease, or pre-existing liver impairment both individually and among patients exposed to nitrates. The two cohorts for patients with no pre-existing conditions were each examined twice based on history or no history of epilepsy treatment. The query period was from January 1, 2006 to varying end dates and the enrollment gap was set at 45 days. Age groups were split as follows: 18-44, 45-54, 55-64, 65-74, and 75+. In total, eight different scenarios were examined.

Query Period: 1/1/2006 - Current data completeness dates
Coverage Requirement: Medical and Drug Coverage
Enrollment Gap: 45 Days
Pre-Exposure Enrollment: 183
Post-Exposure Enrollment: 0
Age Groups: 18-44, 45-54, 55-64, 65-74, 75+

	R05			R06			R07	R08
	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
Description:	No pre-existing conditions; epilepsy exclusion	Pre-existing renal disease; epilepsy exclusion	Pre-existing liver impairment; epilepsy exclusion	No pre-existing conditions; nitrate inclusion; epilepsy exclusion	Pre-existing renal disease; nitrate inclusion; epilepsy exclusion	Pre-existing liver impairment; nitrate inclusion; epilepsy exclusion	No pre-existing conditions; epilepsy inclusion	No pre-existing conditions; nitrate inclusion; epilepsy inclusion
Exposure								
Incident exposure:	Ranolazine	Ranolazine	Ranolazine	Ranozaline	Ranolazine	Ranolazine	Ranolazine	Ranozaline
Care Setting:	Any	Any	Any	Any	Any	Any	Any	Any
Incident w/ respect to:	Ranolazine	Ranolazine	Ranolazine	Ranozaline	Ranolazine	Ranolazine	Ranolazine	Ranozaline
Washout (days):	183	183	183	183	183	183	183	183
Episode Gap:	2	2	2	2	2	2	2	2
Minimum Episode Duration:	32	32	32	0	32	32	32	0
Minimum Days Supplied:	0	0	0	0	0	0	0	0
Episode Extension Period:	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
Censor at Evidence of Death:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inclusion/ Exclusion Criteria								
Pre-existing Condition:	See frozen Type 2 R01	Renal Disease	Liver Impairment	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:	0, 10	0, 10	0, 10	0, 10	0, 10	0, 10	0, 10	0, 10
Control Window:	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32	11, 32
Event/ Outcome								
Event/Outcome:	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures
Care Setting/ Diagnosis Position:	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
Incident w/ respect to:	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures	Seizures
Incidence Care Setting/Diagnosis Position:	Any	Any	Any	Any	Any	Any	Any	Any
Washout (days):	183	183	183	183	183	183	183	183

ICD-9, ICD-10, HCPCS, and CPT codes are provided by Optum360. NDC codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."