



Disclaimer

The FDA chose a specific outcome algorithm that met its need for a given medical product-outcome assessment. The use of a specific outcome algorithm in a Sentinel assessment should not be interpreted as an endorsement from FDA to use the algorithm for all safety assessments. Investigators should always consider the objective, study design, analytic approach, and data source of a given medical product safety assessment when choosing the outcome algorithm. The suitability of an outcome algorithm may change when applied to different scenarios. For additional information, please refer to the [Best Practices for Conducting and Reporting Pharmacoepidemiologic Safety Studies Using Electronic Healthcare Data](#) guidance document provided by the FDA.

Overview

| | |
|------------------------------------|--|
| Title | Ischemic Stroke Algorithm Defined in "Risk of Stroke, Gastrointestinal Bleeding, and Intracranial Hemorrhage Following Apixaban or Warfarin Use in Patients with Non-Valvular Atrial Fibrillation" |
| Request ID | cder_mpl2p_wp009_nsdp_v01 |
| Description | <p>This report lists International Classification of Diseases, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM and ICD-10-CM) diagnosis codes and algorithms used to define ischemic stroke in this request.</p> <p>For additional information about the algorithm and how it was defined relative to the cohort and exposures of interest in the inferential analysis, see the analysis page here: https://www.sentinelinitiative.org/drugs/assessments/risk-stroke-gastrointestinal-bleeding-and-intracranial-hemorrhage-following.</p> |
| Outcome | Ischemic stroke |
| Algorithm to Define Outcome | Evidence of an ICD-9-CM or ICD-10-CM code used to define ischemic stroke as the principal diagnosis in the Inpatient care setting. |
| Query Period | December 28, 2012 - January 22, 2019 |
| Request Send Date | January 22, 2019 |



Glossary

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)

Outcome - outcome of interest (either primary or secondary)

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

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

Request Send Date - date the request was sent to Sentinel Data Partners



**International Classification of Diseases, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM and ICD-10-CM)
Diagnosis Codes Used to Define Ischemic Stroke in this Request**

| Codes | Description | Code Type |
|--------------|--|------------------|
| 433.01 | Occlusion and stenosis of basilar artery with cerebral infarction | ICD-9-CM |
| 433.11 | Occlusion and stenosis of carotid artery with cerebral infarction | ICD-9-CM |
| 433.21 | Occlusion and stenosis of vertebral artery with cerebral infarction | ICD-9-CM |
| 433.31 | Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction | ICD-9-CM |
| 433.81 | Occlusion and stenosis of other specified precerebral artery with cerebral infarction | ICD-9-CM |
| 433.91 | Occlusion and stenosis of unspecified precerebral artery with cerebral infarction | ICD-9-CM |
| 434.01 | Cerebral thrombosis with cerebral infarction | ICD-9-CM |
| 434.11 | Cerebral embolism with cerebral infarction | ICD-9-CM |
| 434.91 | Unspecified cerebral artery occlusion with cerebral infarction | ICD-9-CM |
| 436 | Acute, but ill-defined, cerebrovascular disease | ICD-9-CM |
| 163.22 | Cerebral infarction due to unspecified occlusion or stenosis of basilar arteries | ICD-10-CM |
| 163.139 | Cerebral infarction due to embolism of unspecified carotid artery | ICD-10-CM |
| 163.239 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries | ICD-10-CM |
| 163.019 | Cerebral infarction due to thrombosis of unspecified vertebral artery | ICD-10-CM |
| 163.119 | Cerebral infarction due to embolism of unspecified vertebral artery | ICD-10-CM |
| 163.219 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral arteries | ICD-10-CM |
| 163.59 | Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery | ICD-10-CM |
| 163.20 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified precerebral arteries | ICD-10-CM |
| 163.30 | Cerebral infarction due to thrombosis of unspecified cerebral artery | ICD-10-CM |
| 163.40 | Cerebral infarction due to embolism of unspecified cerebral artery | ICD-10-CM |
| 163.50 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery | ICD-10-CM |
| 167.89 | Other cerebrovascular disease | ICD-10-CM |
| 163.00 | Cerebral infarction due to thrombosis of unspecified precerebral artery | ICD-10-CM |
| 163.011 | Cerebral infarction due to thrombosis of right vertebral artery | ICD-10-CM |
| 163.012 | Cerebral infarction due to thrombosis of left vertebral artery | ICD-10-CM |
| 163.013 | Cerebral infarction due to thrombosis of bilateral vertebral arteries | ICD-10-CM |
| 163.02 | Cerebral infarction due to thrombosis of basilar artery | ICD-10-CM |
| 163.031 | Cerebral infarction due to thrombosis of right carotid artery | ICD-10-CM |
| 163.032 | Cerebral infarction due to thrombosis of left carotid artery | ICD-10-CM |
| 163.033 | Cerebral infarction due to thrombosis of bilateral carotid arteries | ICD-10-CM |
| 163.039 | Cerebral infarction due to thrombosis of unspecified carotid artery | ICD-10-CM |
| 163.09 | Cerebral infarction due to thrombosis of other precerebral artery | ICD-10-CM |
| 163.10 | Cerebral infarction due to embolism of unspecified precerebral artery | ICD-10-CM |
| 163.111 | Cerebral infarction due to embolism of right vertebral artery | ICD-10-CM |
| 163.112 | Cerebral infarction due to embolism of left vertebral artery | ICD-10-CM |
| 163.113 | Cerebral infarction due to embolism of bilateral vertebral arteries | ICD-10-CM |
| 163.12 | Cerebral infarction due to embolism of basilar artery | ICD-10-CM |
| 163.131 | Cerebral infarction due to embolism of right carotid artery | ICD-10-CM |
| 163.132 | Cerebral infarction due to embolism of left carotid artery | ICD-10-CM |
| 163.133 | Cerebral infarction due to embolism of bilateral carotid arteries | ICD-10-CM |

| Codes | Description | Code Type |
|--------------|--|------------------|
| I63.19 | Cerebral infarction due to embolism of other precerebral artery | ICD-10-CM |
| I63.211 | Cerebral infarction due to unspecified occlusion or stenosis of right vertebral arteries | ICD-10-CM |
| I63.212 | Cerebral infarction due to unspecified occlusion or stenosis of left vertebral arteries | ICD-10-CM |
| I63.213 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral arteries | ICD-10-CM |
| I63.231 | Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries | ICD-10-CM |
| I63.232 | Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries | ICD-10-CM |
| I63.233 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries | ICD-10-CM |
| I63.29 | Cerebral infarction due to unspecified occlusion or stenosis of other precerebral arteries | ICD-10-CM |
| I63.311 | Cerebral infarction due to thrombosis of right middle cerebral artery | ICD-10-CM |
| I63.312 | Cerebral infarction due to thrombosis of left middle cerebral artery | ICD-10-CM |
| I63.313 | Cerebral infarction due to thrombosis of bilateral middle cerebral arteries | ICD-10-CM |
| I63.319 | Cerebral infarction due to thrombosis of unspecified middle cerebral artery | ICD-10-CM |
| I63.321 | Cerebral infarction due to thrombosis of right anterior cerebral artery | ICD-10-CM |
| I63.322 | Cerebral infarction due to thrombosis of left anterior cerebral artery | ICD-10-CM |
| I63.323 | Cerebral infarction due to thrombosis of bilateral anterior arteries | ICD-10-CM |
| I63.329 | Cerebral infarction due to thrombosis of unspecified anterior cerebral artery | ICD-10-CM |
| I63.331 | Cerebral infarction due to thrombosis of right posterior cerebral artery | ICD-10-CM |
| I63.332 | Cerebral infarction due to thrombosis of left posterior cerebral artery | ICD-10-CM |
| I63.333 | Cerebral infarction to thrombosis of bilateral posterior arteries | ICD-10-CM |
| I63.339 | Cerebral infarction due to thrombosis of unspecified posterior cerebral artery | ICD-10-CM |
| I63.341 | Cerebral infarction due to thrombosis of right cerebellar artery | ICD-10-CM |
| I63.342 | Cerebral infarction due to thrombosis of left cerebellar artery | ICD-10-CM |
| I63.343 | Cerebral infarction to thrombosis of bilateral cerebellar arteries | ICD-10-CM |
| I63.349 | Cerebral infarction due to thrombosis of unspecified cerebellar artery | ICD-10-CM |
| I63.39 | Cerebral infarction due to thrombosis of other cerebral artery | ICD-10-CM |
| I63.411 | Cerebral infarction due to embolism of right middle cerebral artery | ICD-10-CM |
| I63.412 | Cerebral infarction due to embolism of left middle cerebral artery | ICD-10-CM |
| I63.413 | Cerebral infarction due to embolism of bilateral middle cerebral arteries | ICD-10-CM |
| I63.419 | Cerebral infarction due to embolism of unspecified middle cerebral artery | ICD-10-CM |
| I63.421 | Cerebral infarction due to embolism of right anterior cerebral artery | ICD-10-CM |
| I63.422 | Cerebral infarction due to embolism of left anterior cerebral artery | ICD-10-CM |
| I63.423 | Cerebral infarction due to embolism of bilateral anterior cerebral arteries | ICD-10-CM |
| I63.429 | Cerebral infarction due to embolism of unspecified anterior cerebral artery | ICD-10-CM |
| I63.431 | Cerebral infarction due to embolism of right posterior cerebral artery | ICD-10-CM |
| I63.432 | Cerebral infarction due to embolism of left posterior cerebral artery | ICD-10-CM |
| I63.433 | Cerebral infarction due to embolism of bilateral posterior cerebral arteries | ICD-10-CM |
| I63.439 | Cerebral infarction due to embolism of unspecified posterior cerebral artery | ICD-10-CM |
| I63.441 | Cerebral infarction due to embolism of right cerebellar artery | ICD-10-CM |
| I63.442 | Cerebral infarction due to embolism of left cerebellar artery | ICD-10-CM |
| I63.443 | Cerebral infarction due to embolism of bilateral cerebellar arteries | ICD-10-CM |
| I63.449 | Cerebral infarction due to embolism of unspecified cerebellar artery | ICD-10-CM |
| I63.49 | Cerebral infarction due to embolism of other cerebral artery | ICD-10-CM |
| I63.511 | Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery | ICD-10-CM |



| Codes | Description | Code Type |
|--------------|---|------------------|
| I63.512 | Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery | ICD-10-CM |
| I63.513 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle arteries | ICD-10-CM |
| I63.519 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery | ICD-10-CM |
| I63.521 | Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral artery | ICD-10-CM |
| I63.522 | Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral artery | ICD-10-CM |
| I63.523 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior arteries | ICD-10-CM |
| I63.529 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery | ICD-10-CM |
| I63.531 | Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral artery | ICD-10-CM |
| I63.532 | Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery | ICD-10-CM |
| I63.533 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior arteries | ICD-10-CM |
| I63.539 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery | ICD-10-CM |
| I63.541 | Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery | ICD-10-CM |
| I63.542 | Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery | ICD-10-CM |
| I63.543 | Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar arteries | ICD-10-CM |
| I63.549 | Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar artery | ICD-10-CM |
| I63.6 | Cerebral infarction due to cerebral venous thrombosis, nonpyogenic | ICD-10-CM |
| I63.8 | Other cerebral infarction | ICD-10-CM |
| I63.9 | Cerebral infarction, unspecified | ICD-10-CM |